

CITY OF LIVONIA  
EMPLOYEES RETIREMENT SYSTEM  
ACTUARIAL VALUATION  
AS OF NOVEMBER 30, 2021  
CONTRIBUTIONS APPLICABLE TO THE  
PLAN/FISCAL YEAR BEGINNING DECEMBER 1, 2022  
P.A. 202 VALUATION  
AS OF NOVEMBER 30, 2021  
GASB 67/68 DISCLOSURE INFORMATION  
AS OF NOVEMBER 30, 2021



**FOSTER & FOSTER**  
ACTUARIES AND CONSULTANTS



March 4, 2022

Board of Trustees  
City of Livonia Employees Retirement System

Re: Actuarial Valuation Report (including GASB Statements No. 67 and No. 68) – City of Livonia Employees Retirement System

Dear Board:

We are pleased to present to the Board this report of the annual actuarial valuation of the City of Livonia Employees Retirement System. Included are the related results for GASB Statements No. 67 and No. 68. The funding valuation was performed to determine whether the assets and contributions are sufficient to provide the prescribed benefits and to develop the appropriate funding requirements for the applicable plan year. The calculation of the liability for GASB results was performed for the purpose of satisfying the requirements of GASB Statements No. 67 and No. 68. Use of the results for other purposes may not be applicable and could produce significantly different results.

The valuations have been conducted in accordance with generally accepted actuarial principles and practices, including the applicable Actuarial Standards of Practice as issued by the Actuarial Standards Board, and reflect laws and regulations issued to date pursuant to the Retirement System, as well as applicable federal laws and regulations. In our opinion, the assumptions used in this valuation, as adopted by the Board of Trustees, represent reasonable expectations of anticipated plan experience. Future actuarial measurements may differ significantly from the current measurements presented in this report for a variety of reasons including: changes in applicable laws, changes in plan provisions, changes in assumptions, or plan experience differing from expectations. Due to the limited scope of the valuations, we did not perform an analysis of the potential range of such future measurements.

The funding percentages and unfunded accrued liability as measured based on the actuarial value of assets will differ from similar measures based on the market value of assets. These measures, as provided, are appropriate for determining the adequacy of future contributions, but may not be appropriate for the purpose of settling a portion or all of its liabilities.

In conducting the valuations, we have relied on personnel, plan design, and asset information supplied by the Board, financial reports prepared by the custodian bank and the actuarial assumptions and methods described in the Actuarial Assumptions section of this report. While we cannot verify the accuracy of all this information, the supplied information was reviewed for consistency and reasonableness. As a result of this review, we have no reason to doubt the substantial accuracy of the information and believe that it has produced appropriate results. This information, along with any adjustments or modifications, is summarized in various sections of this report.

The total pension liability, net pension liability, and certain sensitivity information shown in the GASB results are based on an actuarial valuation performed as of the valuation date.

In performing the analysis, we used third-party software to model (calculate) the underlying liabilities and costs. These results are reviewed in the aggregate and for individual sample lives. The output from the software is either used directly or input into internally developed models to generate the costs. All internally developed models are reviewed as part of the process. As a result of this review, we believe that the models have produced reasonable results. We do not believe there are any material inconsistencies among assumptions or unreasonable output produced due to the aggregation of assumptions.

The undersigned are familiar with the immediate and long-term aspects of pension valuations and meet the Qualification Standards of the American Academy of Actuaries necessary to render the actuarial opinions contained herein. All of the sections of this report are considered an integral part of the actuarial opinions.

To our knowledge, no associate of Foster & Foster, Inc. working on valuations of the program has any direct financial interest or indirect material interest in the City of Livonia, nor does anyone at Foster & Foster, Inc. act as a member of the Board of Trustees of the City of Livonia Employees Retirement System. Thus, there is no relationship existing that might affect our capacity to prepare and certify this actuarial report.

If there are any questions, concerns, or comments about any of the items contained in this report, please contact us at 630-620-0200.

Respectfully submitted,

Foster & Foster, Inc.

By:   
Jason L. Franken, FSA, EA, MAAA

JLF/lke  
Enclosures

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SUMMARY OF REPORT

The regular annual actuarial valuation of the City of Livonia Employees Retirement System, performed as of November 30, 2021, has been completed and the results are presented in this Report. The contribution amounts set forth herein are applicable to the plan/fiscal year beginning December 1, 2022.

The contribution requirements, compared with those set forth in the November 30, 2020 actuarial report, are as follows:

Valuation Date	11/30/2021	11/30/2020
Applicable to Fiscal Year Beginning	<u>12/1/2022</u>	<u>12/1/2021</u>
Total Recommended Contribution	\$1,945,146	\$2,582,842
Member Contributions (Est.)	(158,259)	(189,702)
City Recommended Contribution	1,786,887	2,393,140

As you can see, the Total Recommended Contribution shows a decrease from the November 30, 2020 actuarial valuation report. The decrease is due to favorable investment return experience.

Plan experience was favorable overall on the basis of the plan's actuarial assumptions. The primary source of favorable experience was an investment return of 11.17% (Actuarial Asset Basis) which exceeded the 7.30% assumption. This gain was offset in part by a loss associated with unfavorable retirement experience.

## CHANGES SINCE THE PRIOR VALUATION

The valuation reflects no plan changes.

The valuation reflects the following assumption change since the prior valuation. These changes were based on an experience study performed June 2021.

- The assumed interest rate was lowered from 7.30% to 7.20%.
- Salary increases were lowered to a flat 4.00% assumption.
- The mortality rate was updated to reflect the most current morality improvement scale.
- Lower retirement rates were adopted for younger General members.
- There was a reduction to the disability rates assumption.

The valuation reflects no method changes.

COMPARATIVE SUMMARY OF PRINCIPAL VALUATION RESULTS

Valuation Date	New Assump <u>11/30/2021</u>	Old Assump <u>11/30/2021</u>	<u>11/30/2020</u>
<b>A. Participant Data</b>			
Number Included			
Actives	34	34	42
Service Retirees	450	450	454
Beneficiaries	87	87	85
Disability Retirees	14	14	15
Terminated Vested	<u>6</u>	<u>6</u>	<u>8</u>
Total	591	591	604
Total Projected Annual Payroll	\$3,307,766	\$3,335,280	\$3,997,860
Payroll Under Assumed Ret. Age	3,077,566	3,104,488	3,777,764
Annual Rate of Payments to:			
Service Retirees	17,129,793	17,129,793	16,803,271
Beneficiaries	1,698,335	1,698,335	1,685,031
Disability Retirees	395,812	395,812	419,047
Terminated Vested	36,127	36,127	110,046
<b>B. Assets</b>			
Actuarial Value	219,469,685	219,469,685	214,405,059
Market Value	241,839,981	241,839,981	222,607,697
<b>C. Liabilities</b>			
Present Value of Benefits (PVB)			
Actives			
Retirement Benefits	27,288,643	27,060,837	32,026,649
Disability Benefits	245,152	485,551	703,415
Death Benefits	104,166	101,775	117,346
Vested Benefits	57,825	57,284	85,563
Service Retirees <sup>2</sup>	188,423,883	187,591,850	182,952,003
Beneficiaries	14,421,422	14,399,064	14,434,357
Disability Retirees	4,045,910	4,036,267	4,292,464
Terminated Vested	<u>410,777</u>	<u>408,410</u>	<u>1,216,983</u>
Total	234,997,778	234,141,038	235,828,780

C. Liabilities - (Continued)	New Assump <u>11/30/2021</u>	Old Assump <u>11/30/2021</u>	<u>11/30/2020</u>
Present Value of Future Salaries	8,445,526	8,543,007	11,652,495
Present Value of Future Member Contributions (PVFMC)	393,448	393,448	538,925
Total Normal Cost	0	0	0
Present Value of Future Normal Costs (EAN)	1,545,097	2,019,367	2,846,222
Total Actuarial Accrued Liability (EAN)	233,452,681	232,121,671	232,982,558
Total Normal Cost (EAN)	588,570	765,782	952,539
Unfunded Present Value of Benefits (UPVB = PVB - AVA)	15,528,093	14,671,353	21,423,721
Funded Ratio (AVA / AL)	94.0%	94.5%	92.0%

	New Assump <u>11/30/2021</u>	Old Assump <u>11/30/2021</u>	<u>11/30/2020</u>
D. Actuarial Present Value of Accrued Benefits			
Vested Accrued Benefits			
Inactives	207,301,992	206,435,591	202,895,807
Actives	21,784,570	21,609,174	24,859,569
Member Contributions	<u>3,272,338</u>	<u>3,272,338</u>	<u>3,699,800</u>
Total	232,358,900	231,317,103	231,455,176
Non-vested Accrued Benefits	<u>97,764</u>	<u>98,313</u>	<u>103,691</u>
Total Present Value Accrued Benefits	232,456,664	231,415,416	231,558,867
Funded Ratio (MVA / PVAB)	104.0%	104.5%	96.1%
Increase (Decrease) in Present Value of Accrued Benefits Attributable to:			
Assumption Changes	1,041,248	0	
Plan Amendments	0	0	
Plan Experience	0	3,422,320	
Benefits Paid	0	(19,748,739)	
Interest	0	16,182,968	
Other	<u>0</u>	<u>0</u>	
Total	1,041,248	(143,451)	

	New Assump	Old Assump	
Valuation Date	11/30/2021	11/30/2021	11/30/2020
Applicable to Fiscal Year Beginning	<u>12/1/2022</u>	<u>12/1/2022</u>	<u>12/1/2021</u>
E. Pension Cost			
Normal Cost <sup>1</sup>	\$0	\$0	\$0
Administrative Expenses <sup>1</sup>	0	0	0
Payment Required to Amortize Unfunded Present Value of Benefits over 13 years (as of 11/30/2021) <sup>1</sup>	1,945,146	1,849,045	2,582,842
Total Recommended Contribution	1,945,146	1,849,045	2,582,842
Expected Member Contributions <sup>1</sup>	(158,259)	(171,149)	(189,702)
Expected City Contribution	1,786,887	1,677,896	2,393,140
F. Past Contributions			
Plan Years Ending:	<u>11/30/2021</u>		
Total Recommended Contribution	2,123,839		
City	1,948,481		
Actual Contributions Made:			
Members (excluding buyback)	175,358		
City	<u>1,948,485</u>		
Total	2,123,843		
G. Net Actuarial (Gain)/Loss	N/A		

<sup>1</sup> Contributions developed as of 11/30/2021 displayed above have been adjusted to account for assumed interest.

H. Schedule Illustrating the Amortization of the Total Unfunded Actuarial Accrued Liability as of:

<u>Year</u>	Projected Unfunded <u>PVB</u>
2021	15,528,093
2022	14,700,970
2023	13,814,294
2026	10,752,504
2029	6,980,608
2031	3,991,661
2034	0

I. (i) 3 Year Comparison of Actual and Assumed Salary Increases

		<u>Actual</u>	<u>Assumed</u>
Year Ended	11/30/2021	4.40%	4.95%
Year Ended	11/30/2020	4.75%	5.07%
Year Ended	11/30/2019	N/A	N/A

(ii) 3 Year Comparison of Investment Return on Actuarial Value

		<u>Actual</u>	<u>Assumed</u>
Year Ended	11/30/2021	11.17%	7.30%
Year Ended	11/30/2020	8.06%	7.40%
Year Ended	11/30/2019	7.10%	7.50%

PENSION COST BY DIVISION

	<u>General</u>	<u>Police</u>	<u>Fire</u>	<u>Total</u>
Present Value of Future Salaries	2,592,674	3,457,196	2,395,656	8,445,526
Projected Payroll	666,984	1,314,218	1,096,364	3,077,566
Total Present Value of Future Benefits	67,284,985	105,105,864	62,606,928	234,997,778
Actuarial Value of Assets <sup>1</sup>	62,838,954	98,160,719	58,470,011	219,469,685
Total Unfunded Present Value of Benefits	4,446,031	6,945,145	4,136,917	15,528,093
Total Normal Cost <sup>1</sup>	0	0	0	0
Administrative Expenses <sup>1 1</sup>	0	0	0	0
Payment Required to Amortize Unfunded Present Value of Benefits over 13 years (as of 11/30/2021) <sup>1</sup>	556,938	869,992	518,216	1,945,146
Total Recommended Contribution <sup>1</sup>	556,938	869,992	518,216	1,945,146
Expected Member Contributions <sup>1</sup>	(23,095)	(82,276)	(52,888)	(158,259)
Expected City Contribution	533,843	787,716	465,328	1,786,887
Entry Age Normal Costs (as a % of Payroll) <sup>2</sup>				
Entry Age Normal Cost	14.26%	21.00%	19.83%	19.12%
Member Contributions	3.23%	5.84%	4.50%	4.82%
City Entry Age Normal Cost Percentage	11.03%	15.16%	15.33%	14.30%

<sup>1</sup> Contributions developed as of 11/30/2021 displayed above have been adjusted to account for assumed interest.

<sup>2</sup> Entry Age Normal percentages for illustrative purposes only.

DEVELOPMENT OF NOVEMBER 30, 2021 AMORTIZATION PAYMENT

(1)	Total Unfunded Present Value of Benefits as of November 30, 2020	\$21,423,721
(2)	Sponsor Normal Cost developed as of November 30, 2020	0
(3)	Expected administrative expenses for the year ended November 30, 2021	0
(4)	Expected interest on (1), (2) and (3)	1,563,932
(5)	Sponsor contributions to the System during the year ended November 30, 2021	1,948,485
(6)	Expected interest on (5)	71,120
(7)	Total Unfunded Present Value of Benefits as of as of November 30, 2021, (1)+(2)+(3)+(4)-(5)-(6)	20,968,048
(8)	Change to UPVB due to Assumption Change	856,740
(9)	Change to UPVB due to Actuarial (Gain)/Loss	(6,296,695)
(10)	Total Unfunded Present Value of Benefits as of November 30, 2021	15,528,093
(11)	UPVB Subject to Amortization (100% PVB less AVA)	15,528,093

<u>Date</u> <u>Established</u>	<u>Years</u> <u>Remaining</u>	<u>11/30/2021</u> <u>Amount</u>	<u>Amortization</u> <u>Amount</u>
11/30/2021	13	15,528,093	1,814,502

## DETAILED ACTUARIAL (GAIN)/LOSS ANALYSIS

(1) Unfunded Present Value of Benefits (UPVB) as of November 30, 2020	\$21,423,721
(2) Expected UPVB as of November 30, 2021	20,968,048
(3) Summary of Actuarial (Gain)/Loss, by component:	
Investment Return (Actuarial Asset Basis)	(7,946,263)
Salary Increases	(119,980)
Active Decrements	749,091
Inactive Mortality	(42,558)
Other	<u>1,063,015</u>
Change in UPVB due to (Gain)/Loss	(6,296,695)
Change to UPVB due to Assumption Change	<u>856,740</u>
(4) Actual UPVB as of November 30, 2021	\$15,528,093

RECONCILIATION OF CHANGES IN CONTRIBUTION REQUIREMENT

(1) Contribution Determined as of November 30, 2020	\$ 2,393,140
(2) Summary of Contribution Impact by component:	
Investment Return (Actuarial Asset Basis)	(1,001,475)
Salary Increases	(15,121)
Active Decrements	94,409
Inactive Mortality	(5,364)
Contributions (More) or Less than Recommended	-
Change in Expected Member Contributions	(18,553)
Assumption Change	108,991
Other	<u>230,860</u>
Total Change in Contribution	(606,253)
(3) Contribution Determined as of November 30, 2021	\$1,786,887

P.A. 202 REPORTING  
AS OF NOVEMBER 30, 2021

Michigan Public Act 202 of 2017 requires municipal retirement systems in the state to submit information concerning their actuarial accrued liabilities and funded status based on uniform assumptions. The information is to be furnished by the municipality on Form 5572.

Form 5572

Line

24	Actuarial Value of Assets	219,469,685
25	Actuarial Accrued Liabilities	238,167,814
26	Funded Ratio	92.1%
27	Actuarially Determined Contribution	2,973,907

The information was calculated based on the following assumptions, in compliance with the Uniform Assumptions pursuant to PA 202, applicable for fiscal year 2021. All other assumptions are as described in the Actuarial Assumptions and Methods section of this report.

Investment Rate of Return	7.00%
Discount Rate (equivalent single rate used)	7.00%
Periods with sufficient assets	7.00%
Periods without sufficient assets	2.20%
Salary Increase	Experience-based rates
Mortality Table	Pub-2010 with MP-2019
Amortization Period for Unfunded	
Actuarial Accrued Liability	13 years
Cost Method	Entry Age Normal
Amortization Method	Level-dollar, closed

## RECOMMENDED RESERVE TRANSFERS

Below are the recommended transfers to the Reserve for Retired Benefit Payments from the Reserve for Employer Contributions. This transfer will set the Reserve for Retired Benefit payments equal to the retired life liabilities as of November 30, 2021.

Division	Reported Reserve for Retired Benefit Payments	Computed Retiree Liabilities	Recommended Transfer from Reserve for Employer Contributions
General	58,712,325	61,605,602	2,893,277
Police	89,164,849	92,802,199	3,637,350
Fire	<u>49,012,833</u>	<u>52,483,413</u>	<u>3,470,580</u>
Total	\$196,890,007	\$206,891,214	\$10,001,207

## FUNDING HISTORY

Valuation Date	Entry Age Normal			Present Value of Future Benefits			
	Valuation Assets <sup>1</sup>	Entry Age Normal Actuarial Accrued Liabilities <sup>1 2</sup>	Funded Ratio	Unfunded Actuarial Accrued Liabilities <sup>1</sup>	Present Value of Future Benefits <sup>1</sup>	Funded Ratio	Unfunded PVB
11/30/2002	199,627	159,272	125.3%	(40,355)			
11/30/2003	203,505	159,900	127.3%	(43,605)			
11/30/2004	199,578	164,378	121.4%	(35,200)			
11/30/2005	200,005	167,226	119.6%	(32,779)			
11/30/2006	205,101	169,506	121.0%	(35,595)			
11/30/2007	215,675	173,486	124.3%	(42,189)			
11/30/2008	210,519	179,096	117.5%	(31,423)			
11/30/2009	207,959	190,134	109.4%	(17,825)			
11/30/2010	203,934	195,105	104.5%	(8,829)			
11/30/2011	194,515	196,420	99.0%	1,905			
11/30/2012	186,245	200,224	93.0%	13,979			
11/30/2013	197,513	201,390	98.1%	3,877			
11/30/2014	207,103	202,435	102.3%	(4,668)			
11/30/2015	213,228	207,438	102.8%	(5,790)			
11/30/2016	217,503	210,779	103.2%	(6,724)			
11/30/2017	223,050	219,436	101.6%	(3,614)			
11/30/2018	220,158	220,656	99.8%	498			
11/30/2019	215,977	230,707	93.6%	14,731	234,517	92.1%	18,540
11/30/2020	214,405	232,983	92.0%	18,577	235,829	90.9%	21,424
11/30/2021	219,470	233,453	94.0%	13,983	234,998	93.4%	15,528

<sup>1</sup> Values are reported in \$1,000's. All values are reported after any applicable assumption and benefit changes for the year.

<sup>2</sup> Contribution requirements are calculated based on the unfunded present value of benefits. Entry Age Normal results are for informational purposes only.

RECOMMENDED CONTRIBUTION HISTORY

Recommended % of Payroll Contributions

Valuation Date	Fiscal Year Ending Nov 30	General	Police	Fire	Recommended Dollar Contribution
11/30/2001	2003	0.00%	0.00%	0.00%	0
11/30/2002	2004	0.00%	0.00%	12.70%	0
11/30/2003	2005	0.00%	0.00%	0.00%	0
11/30/2004	2006	0.00%	0.00%	0.00%	0
11/30/2005	2007	0.00%	0.00%	0.00%	0
11/30/2006	2008	0.00%	0.00%	0.00%	0
11/30/2007	2009	0.00%	0.00%	0.00%	0
11/30/2008	2010	0.00%	0.00%	0.00%	0
11/30/2009	2011	0.00%	0.00%	0.00%	0
11/30/2010	2012	8.98%	3.55%	7.49%	829,363
11/30/2011	2013	28.42%	12.10%	19.81%	2,307,296
11/30/2012	2014	45.75%	23.71%	50.70%	4,132,710
11/30/2013	2015	20.07%	17.96%	33.10%	2,262,146
11/30/2014	2016	0.00%	4.23%	22.48%	856,625
11/30/2015	2017	4.49%	4.49%	4.49%	407,269
11/30/2016	2018	0.00%	0.00%	0.00%	0
11/30/2017	2019	7.45%	7.45%	7.45%	497,856
11/30/2018	2020	22.26%	22.26%	22.26%	1,434,991
11/30/2019	2021	N/A	N/A	N/A	1,948,481
11/30/2020	2022	N/A	N/A	N/A	2,393,140
11/30/2021	2023	N/A	N/A	N/A	1,786,887

PROJECTION OF BENEFIT PAYMENTS

Year	Payments for Current Actives	Payments for Current Inactives	Total Payments
2021	1,686,939	19,122,277	20,809,216
2022	1,609,877	18,889,107	20,498,984
2023	2,318,342	18,636,515	20,954,857
2024	2,166,870	18,367,546	20,534,416
2025	2,119,384	18,086,992	20,206,376
2026	2,283,682	17,792,338	20,076,020
2027	2,206,487	17,482,975	19,689,462
2028	2,266,404	17,161,396	19,427,800
2029	2,210,675	16,828,161	19,038,836
2030	2,226,003	16,484,449	18,710,452
2031	2,225,913	16,129,849	18,355,762
2032	2,223,425	15,765,130	17,988,555
2033	2,219,369	15,390,507	17,609,876
2034	2,209,936	15,002,668	17,212,604
2035	2,199,236	14,603,103	16,802,339
2036	2,183,614	14,192,774	16,376,388
2037	2,172,187	13,772,826	15,945,013
2038	2,148,437	13,345,345	15,493,782
2039	2,120,607	12,910,708	15,031,315
2040	2,091,638	12,469,433	14,561,071
2041	2,059,715	12,022,125	14,081,840
2042	2,024,592	11,569,380	13,593,972
2043	1,986,330	11,111,740	13,098,070
2044	1,944,691	10,649,652	12,594,343
2045	1,899,560	10,183,503	12,083,063
2046	1,850,732	9,713,538	11,564,270
2047	1,798,021	9,239,915	11,037,936
2048	1,741,261	8,762,895	10,504,156
2049	1,680,350	8,282,798	9,963,148
2050	1,615,248	7,800,150	9,415,398
2051	1,545,964	7,315,849	8,861,813
2052	1,472,585	6,831,096	8,303,681
2053	1,395,280	6,347,419	7,742,699
2054	1,314,337	5,866,666	7,181,003
2055	1,230,146	5,390,916	6,621,062
2056	1,143,233	4,922,632	6,065,865
2057	1,054,302	4,464,705	5,519,007
2058	964,181	4,020,207	4,984,388
2059	873,856	3,592,325	4,466,181
2060	784,384	3,184,165	3,968,549

## ACTUARIAL ASSUMPTIONS AND METHODS

Interest Rate	7.20% per year compounded annually, net of investment related expenses. 7.30% in prior year's valuation.
Mortality Rate	<p><b>Active Lives – Police and Fire:</b> PubS-2010 Employee mortality, generational improvements with Scale MP-2021. 0% of active deaths are assumed to be in the line of duty.</p> <p><b>Active Lives – General:</b> PubG-2010 Employee mortality, generational improvements with Scale MP-2021.</p> <p><b>Inactive Lives – Police and Fire:</b> PubS-2010 Healthy Retiree mortality, generational improvements with Scale MP-2021.</p> <p><b>Inactive Lives – General:</b> PubG-2010 Healthy Retiree mortality, generational improvements with Scale MP-2021.</p>
Retirement Age	See tables later in this section. These tables are based on an experience study performed in 2021.
Disability Rate	See table later in this section. 0% of the police and fire disabilities are assumed to be in the line of duty. These tables are based on an experience study performed in 2021.
Termination Rate	See tables later in this section. These tables are based on an experience study performed in 2021.
Annuity Withdrawal Assumptions	100% of members are assumed to elect a lump sum of member contributions in exchange for a reduced annuity benefit at retirement. The annuity offset is equal to the annuitized value of the member contributions using a 1.00% assumed interest rate
Inflation	2.50%.
Salary Increases	4.00%. This is based on an experience study performed in 2021.
Marital Status	90% of Members are assumed to be married.
Spouse's Age	Males are assumed to be three years older than females.
Funding Method	Aggregate.
Actuarial Asset Method	Investment gains and losses are smoothed over a five-year period. In the first year, 20% of the gain or loss is recognized. In

the second year 40%, in the third year 60%, in the fourth year 80%, and in the fifth year 100% of the gain or loss is recognized. The actuarial investment gain or loss is defined as the actual return on investments minus the actuarial assumed investment return. Actuarial Assets shall not be less than 80% nor greater than 120% of the Market Value of Assets.

Funding Policy Amortization Method The unfunded present value of benefits is amortized according to a Level-dollar method over a closed period. 13 years as of November 30, 2021.

Payroll Growth N/A.

Decrement Tables

<u>% Terminating During the Year</u>			<u>% Becoming Disabled During the Year</u>			<u>% Retiring During the Year (General)</u>	
	Police &			Police &			
Age	General	Fire	Age	General	Fire	Age	Rate
20	4.00%	1.62%	20	0.010%	0.035%	45 - 54	50%
25	4.00%	1.62%	25	0.020%	0.060%	55	45%
30	3.50%	1.40%	30	0.035%	0.120%	56	30%
35	3.25%	0.83%	35	0.055%	0.200%	57 - 58	25%
40	2.00%	0.32%	40	0.080%	0.275%	59	30%
45	1.25%	0.18%	45	0.100%	0.355%	60 - 61	25%
50	1.25%	0.18%	50	0.125%	0.435%	62 - 68	20%
55	0.75%	0.18%	55	0.150%	0.515%	69	100%
60	0.50%	0.18%	60	0.150%	0.515%		
66+	0.00%	0.00%					

<u>% Retiring During the Year (Police)</u>				<u>% Retiring During the Year (Fire)</u>					
Service	Age			Service	Age				
	<52	52 - 59	60+		<52	52	53	54 - 59	60+
<25	0%	10%	100%	<25	0%	35%	20%	10%	100%
25	75%	75%	100%	25 - 29	40%	40%	40%	40%	100%
26 - 29	25%	25%	100%	30	100%	100%	100%	100%	100%
30	100%	100%	100%						

## GLOSSARY

Total Annual Payroll is the projected annual rate of pay as of the valuation date of all covered Members.

Present Value of Benefits is the single sum value on the valuation date of all future benefits to be paid to current Members, Retirees, Beneficiaries, Disability Retirees and Vested Terminations.

Aggregate Actuarial Cost Method (Level Dollar) is the method used to determine required contributions under the Plan. The unfunded present value of benefits is amortized over a closed period (14 years as November 30, 2021)

Total Required Contribution is equal to the amortization of the unfunded present value of benefits, plus assumed expenses, less expected member contributions paid.

Normal (Current Year's) Cost is the current year's cost for benefits yet to be funded.

Unfunded Accrued Liability is a liability which arises when a pension plan is initially established or improved and such establishment or improvement is applicable to all years of past service.

Entry Age Normal Cost Method - Under this method, the normal cost is the sum of the individual normal costs for all active participants. For an active participant, the normal cost is the participant's normal cost accrual rate, multiplied by the participant's current compensation.

- (a) The normal cost accrual rate equals:
  - (i) the present value of future benefits for the participant, determined as of the participant's entry age, divided by
  - (ii) the present value of the compensation expected to be paid to the participant for each year of the participant's anticipated future service, determined as of the participant's entry age.
- (b) In calculating the present value of future compensation, the salary scale is applied both retrospectively and prospectively to estimate compensation in years prior to and subsequent to the valuation year based on the compensation used for the valuation.
- (c) The accrued liability is the sum of the individual accrued liabilities for all participants and beneficiaries. A participant's accrued liability equals the present value, at the participant's attained age, of future benefits less the present value at the participant's attained age of the individual normal costs payable in the future. A beneficiary's accrued liability equals the present value, at the beneficiary's attained age, of future benefits. The unfunded accrued liability equals the total accrued liability less the actuarial value of assets.
- (d) Under this method, the entry age used for each active participant is the participant's age at the time he or she would have commenced participation if the plan had always been in existence under current terms, or the age as of which he or she first earns service credits for purposes of benefit accrual under the current terms of the plan.

## DISCUSSION OF RISK

ASOP No. 51, Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions, states that the actuary should identify risks that, in the actuary's professional judgment, may reasonably be anticipated to significantly affect the plan's future financial condition.

Throughout this report, actuarial results are determined under various assumption scenarios. These results are based on the premise that all future plan experience will align with the plan's actuarial assumptions; however, there is no guarantee that actual plan experience will align with the plan's assumptions. It is possible that actual plan experience will differ from anticipated experience in an unfavorable manner that will negatively impact the plan's funded position.

Below are examples of ways in which plan experience can deviate from assumptions and the potential impact of that deviation. Typically, this results in an actuarial gain or loss representing the current-year financial impact on the plan's unfunded liability of the experience differing from assumptions; this gain or loss is amortized over a period of time determined by the plan's amortization method. When assumptions are selected that adequately reflect plan experience, gains and losses typically offset one another in the long term, resulting in a relatively low impact on the plan's contribution requirements associated with plan experience. When assumptions are too optimistic, losses can accumulate over time and the plan's amortization payment could potentially grow to an unmanageable level.

- Investment Return: When the rate of return on the Actuarial Value of Assets falls short of the assumption, this produces a loss representing assumed investment earnings that were not realized. Further, it is unlikely that the plan will experience a scenario that matches the assumed return in each year as capital markets can be volatile from year to year. Therefore, contribution amounts can vary in the future.
- Salary Increases: When a plan participant experiences a salary increase that was greater than assumed, this produces a loss representing the cost of an increase in anticipated plan benefits for the participant as compared to the previous year. The total gain or loss associated with salary increases for the plan is the sum of salary gains and losses for all active participants.
- Payroll Growth: The plan's payroll growth assumption, if one is used, causes a predictable annual increase in the plan's amortization payment in order to produce an amortization payment that remains constant as a percentage of payroll if all assumptions are realized. If payroll does not increase according to the plan's payroll growth assumption, the plan's amortization payment can increase significantly as a percentage of payroll even if all assumptions other than the payroll growth assumption are realized.
- Demographic Assumptions: Actuarial results take into account various potential events that could happen to a plan participant, such as retirement, termination, disability, and death. Each of these potential events is assigned a liability based on the likelihood of the event and the financial consequence of the event for the plan. Accordingly, actuarial liabilities reflect a blend of financial consequences associated with various possible outcomes (such as retirement at one of various possible ages). Once the outcome is known (e.g. the participant retires) the liability is adjusted to reflect the known outcome. This adjustment produces a gain or loss depending on whether the outcome was more or less favorable than other outcomes that could have occurred.

- **Contribution Risk:** This risk results from the potential that actual employer contributions may deviate from actuarially determined contributions, which are determined in accordance with the Board’s funding policy. The funding policy is intended to result in contribution requirements that if paid when due, will result in a reasonable expectation that assets will accumulate to be sufficient to pay plan benefits when due. Contribution deficits, particularly large deficits and those that occur repeatedly, increase future contribution requirements and put the plan at risk for not being able to pay plan benefits when due.

### Impact of Plan Maturity on Risk

For newer pension plans, most of the participants and associated liabilities are related to active members who have not yet reached retirement age. As pension plans continue in operation and active members reach retirement ages, liabilities begin to shift from being primarily related to active members to being shared amongst active and retired members. Plan maturity is a measure of the extent to which this shift has occurred. It is important to understand that plan maturity can have an impact on risk tolerance and the overall risk characteristics of the plan. For example, plans with a large amount of retired liability do not have as long of a time horizon to recover from losses (such as losses on investments due to lower than expected investment returns) as plans where the majority of the liability is attributable to active members. For this reason, less tolerance for investment risk may be warranted for highly mature plans with a substantial inactive liability. Similarly, mature plans paying substantial retirement benefits resulting in a small positive or net negative cash flow can be more sensitive to near term investment volatility, particularly if the size of the fund is shrinking, which can result in less assets being available for investment in the market.

To assist with determining the maturity of the plan, we have provided some relevant metrics in the table following titled “Plan Maturity Measures and Other Risk Metrics”. Highlights of this information are discussed below:

- The Support Ratio, determined as the ratio of active to inactive members, has decreased from 8.9% on November 30, 2019 to 6.1% on November 30, 2021, indicating that the plan has been maturing.
- The Accrued Liability Ratio, determined as the ratio of the Inactive Accrued Liability, which is the liability associated with members who are no longer employed but are due a benefit from the plan, to the Total Accrued Liability, is 88.8%. With a plan of this maturity, losses due to lower than expected investment returns or demographic factors will need to be made up for over a shorter time horizon than would be needed for a less mature plan.
- The Funded Ratio, determined as the ratio of the Actuarial Value of Assets to the Total Accrued Liability, has stayed approximately the same from November 30, 2019 to November 30, 2021.
- The Net Cash Flow Ratio, determined as the ratio of the Net Cash Flow (contributions minus benefit payments and administrative expenses) to the Market Value of Assets, increased from -8.7% on November 30, 2019 to -7.4% on November 30, 2021. The current Net Cash Flow Ratio of -7.4% indicates that contributions are not currently covering the plan's benefit payments and administrative expenses.

It is important to note that the actuary has identified the risks above as the most significant risks based on the characteristics of the plan and the nature of the project, however, it is not an exhaustive list of potential risks that could be considered. Additional advanced modeling, as well as the identification of additional risks, can be provided at the request of the audience addressed on page 2 of this report.

PLAN MATURITY MEASURES AND OTHER RISK METRICS

	<u>11/30/2021</u>	<u>11/30/2020</u>	<u>11/30/2019</u>
<u>Support Ratio</u>			
Total Actives	34	42	51
Total Inactives	557	562	574
Actives / Inactives	6.1%	7.5%	8.9%

Asset Volatility Ratio

Market Value of Assets (MVA)	241,839,981	222,607,697	218,901,336
Total Annual Payroll	3,307,766	3,997,860	4,809,720
MVA / Total Annual Payroll	7,311.3%	5,568.2%	4,551.2%

Accrued Liability (AL) Ratio

Inactive Accrued Liability	207,301,992	202,895,807	197,807,249
Total Accrued Liability	233,452,681	232,982,558	230,707,146
Inactive AL / Total AL	88.8%	87.1%	85.7%

Funded Ratio

Actuarial Value of Assets (AVA)	219,469,685	214,405,059	215,976,582
Total Accrued Liability	233,452,681	232,982,558	230,707,146
AVA / Total Accrued Liability	94.0%	92.0%	93.6%

Net Cash Flow Ratio

Net Cash Flow <sup>1</sup>	(17,880,568)	(18,466,445)	(19,111,839)
Market Value of Assets (MVA)	241,839,981	222,607,697	218,901,336
Ratio	-7.4%	-8.3%	-8.7%

<sup>1</sup> Determined as total contributions minus benefit payments and administrative expenses.

STATEMENT OF FIDUCIARY NET POSITION  
November 30, 2021

<u>ASSETS</u>	MARKET VALUE
Cash and Cash Equivalents:	
Other Short-term Investments	5,314,908
Cash and Cash Equivalents	192,830
 Total Cash and Equivalents	 5,507,738
 Receivables:	
Contributions Receivable	182,538
Accounts Receivable-Other	100,701
Accrued Past Due Interest	164,074
 Total Receivable	 447,313
 Investments:	
U.S. Government Bonds	2,971,278
Corporate Bonds	4,898,062
Other Fixed Income	31,567,732
Equities	168,966,310
Real Estate	28,216,041
 Total Investments	 236,619,423
 Other Assets	 205,906
 Total Assets	 242,780,380
 <u>LIABILITIES</u>	
 Liabilities:	
Payable:	
Accounts Payable-Purchase of Investments	940,399
 Total Liabilities	 940,399
 Net Assets:	
Active and Retired Members' Equity	241,839,981
 NET POSITION RESTRICTED FOR PENSIONS	 241,839,981
 TOTAL LIABILITIES AND NET ASSETS	 242,780,380

STATEMENT OF CHANGES IN FIDUCIARY NET POSITION  
FOR THE YEAR ENDED November 30, 2021  
Market Value Basis

ADDITIONS

Contributions:		
Member	175,358	
City	1,948,485	
Total Contributions		2,123,843
Investment Income:		
Miscellaneous Income	42,657	
Net Realized Gain (Loss)	15,858,335	
Unrealized Gain (Loss)	17,586,655	
Net Increase in Fair Value of Investments		33,487,647
Interest & Dividends		4,274,360
Less Expenses <sup>1</sup>		(649,157)
Net Investment Income		37,112,850
Total Additions		39,236,693

DEDUCTIONS

Distributions to Members:		
Benefit Payments	19,070,223	
Refunds	678,516	
Total Distributions		19,748,739
Administrative Expenses		255,672
Total Deductions		20,004,411
Net Increase in Net Position		19,232,282
NET POSITION RESTRICTED FOR PENSIONS		
Beginning of the Year		222,607,697
Adjustment to beginning of year		2
End of the Year		241,839,981

<sup>1</sup> Expenses include investment advisory, custodial and performance monitoring fees

ACTUARIAL ASSET VALUATION

November 30, 2021

Development of Actuarial Value of Assets

Market Value of Assets, 11/30/2021	241,839,981
(Gains)/Losses Not Yet Recognized	(22,370,296)
Preliminary Actuarial Value of Assets, 11/30/2021	219,469,685
11/30/2021 Limited Actuarial Assets, Total	219,469,685

Development of Investment Gain/Loss

Market Value of Assets, 11/30/2020	222,607,699
Actuarial Value of Assets, 11/30/2020	214,405,059
Contributions Less Benefit Payments and Administrative Expenses	(17,880,568)
Expected Investment Earnings <sup>1</sup>	14,998,929
Actual Net Investment Earnings	37,112,850
2021 Actuarial Investment Gain/(Loss)	22,113,921

<sup>1</sup> Expected Investment Earnings = 7.30% x (214,405,059 + 0.5 x -17,880,568)

Gains/(Losses) Not Yet Recognized

Plan Year	Gain/(Loss)	Amounts Not Yet Recognized by Valuation Year			
		2021	2022	2023	2024
11/30/2018	(17,718,032)	(3,543,606)	0	0	0
11/30/2019	10,259,094	4,103,638	2,051,819	0	0
11/30/2020	6,865,212	4,119,127	2,746,085	1,373,042	0
11/30/2021	22,113,921	17,691,137	13,268,353	8,845,568	4,422,784
Total		22,370,296	18,066,257	10,218,610	4,422,784

Development of Asset Returns

(A) 11/30/2020 Actuarial Assets:	214,405,059
(I) Net Investment Income:	
1. Change in Actuarial Value	3,418,997
2. Investment Expenses	(649,157)
Total	22,945,192
(B) 11/30/2021 Preliminary Actuarial Assets:	219,469,685
Actuarial Asset Rate of Return = (2 x I) / (A + B - I):	11.17%
Market Value of Assets Rate of Return:	17.37%
Actuarial Gain/(Loss) due to Investment Return (Actuarial Asset Basis)	7,946,263

CHANGES IN NET ASSETS AVAILABLE FOR BENEFITS  
November 30, 2021  
Actuarial Asset Basis

INCOME		
Contributions:		
Member	175,358	
City	1,948,485	
Total Contributions		2,123,843
Earnings from Investments		
Interest & Dividends	4,274,360	
Miscellaneous Income	42,657	
Net Realized Gain (Loss)	15,858,335	
Change in Actuarial Value	3,418,999	
Total Earnings and Investment Gains		23,594,351
EXPENSES		
Administrative Expenses:		
Investment Related <sup>1</sup>	649,157	
Other	255,672	
Total Administrative Expenses		904,829
Distributions to Members:		
Benefit Payments	19,070,223	
Refunds	678,516	
Total Distributions		19,748,739
Change in Net Assets for the Year		5,064,626
Net Assets Beginning of the Year		214,405,059
Net Assets End of the Year		219,469,685

<sup>1</sup> Investment Related expenses include investment advisory, custodial and performance monitoring fees.

RESERVE BALANCES

	November 30, 2021	November 30, 2020
Reserve for Employees' Contributions	3,426,291	3,879,443
Reserve for Employer Contributions	41,523,863	26,355,412
Reserve for Retired Benefit Payments	196,890,007	192,372,842
Reserve for Health Insurance	<u>0</u>	<u>0</u>
Total	241,840,161	222,607,697

STATISTICAL DATA

Valuation Date	<u>11/30/2021</u>	<u>11/30/2020</u>	<u>11/30/2019</u>
<u>Actives</u>			
Number	34	42	51
Average Current Age	52.9	51.6	50.9
Average Age at Employment	26.2	26.0	26.0
Average Past Service	26.7	25.6	24.9
Average Annual Salary	\$97,157	\$94,993	\$89,795
<u>Service Retirees</u>			
Number	450	454	461
Average Current Age	70.0	69.9	N/A
Average Annual Benefit	\$38,066	\$37,012	\$40,475
<u>Beneficiaries</u>			
Number	87	85	86
Average Current Age	75.8	75.5	N/A
Average Annual Benefit	\$19,521	\$19,824	N/A
EDROs incl. in Beneficiaries	23	22	N/A
<u>Disability Retirees</u>			
Number	14	15	17
Average Current Age	71.5	70.7	N/A
Average Annual Benefit	\$28,272	\$27,936	N/A
<u>Terminated Vested</u>			
Number	6	8	10
Average Current Age	70.0	64.6	N/A
Average Annual Benefit	\$6,021	\$13,756	\$13,225

STATISTICAL DATA BY DIVISION

	<u>11/30/2021</u>	<u>11/30/2020</u>	<u>11/30/2019</u>
<u>Actives - General</u>			
Number	10	10	13
Average Current Age	56.7	55.7	57.2
Average Age at Employment	27.3	27.3	29.6
Average Past Service	29.4	28.4	27.6
Average Annual Salary	\$66,418	\$64,133	\$66,639
<u>Actives - Police</u>			
Number	14	18	24
Average Current Age	49.8	49.4	48.1
Average Age at Employment	24.2	24.8	24.1
Average Past Service	25.5	24.6	24.0
Average Annual Salary	\$101,623	\$96,295	\$93,358
<u>Actives - Fire</u>			
Number	10	14	14
Average Current Age	53.3	51.7	50.1
Average Age at Employment	27.7	26.8	26.2
Average Past Service	25.7	24.8	23.9
Average Annual Salary	\$121,642	\$115,360	\$105,189

AGE AND SERVICE DISTRIBUTION  
TOTAL

AGE	PAST SERVICE											Total	Total Pay <sup>1</sup>
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30+		
45 - 49	0	0	0	0	0	0	0	0	7	2	0	9	\$ 988,432
50 - 54	0	0	0	0	0	0	0	0	4	10	0	14	\$ 1,404,608
55 - 59	0	0	0	0	0	0	0	0	1	2	5	8	\$ 665,387
60 - 64	0	0	0	0	0	0	0	0	0	2	1	3	\$ 244,897
65+	0	0	0	0	0	0	0	0	0	0	0	0	\$ 0
Total	0	0	0	0	0	0	0	0	12	16	6	34	\$ 3,303,324

<sup>1</sup> Total Pay is salaries for the period ending 11/30/2021.

AGE DISTRIBUTION  
RETIREES, DISABLEDS AND BENEFICIARIES

AGE	<u>General</u>		<u>Police</u>		<u>Fire</u>		<u>Total</u>	
	Count	Annual Pensions	Count	Annual Pensions	Count	Annual Pensions	Count	Annual Pensions
< 45	0	\$ 0	0	\$ 0	0	\$ 0	0	\$ 0
45 - 49	0	\$ 0	7	\$ 321,580	0	\$ 0	7	\$ 321,580
50 - 54	4	\$ 75,360	26	\$ 1,388,793	9	\$ 619,249	39	\$ 2,083,401
55 - 59	14	\$ 486,111	49	\$ 2,534,359	11	\$ 764,597	74	\$ 3,785,067
60 - 64	30	\$ 973,155	26	\$ 1,404,260	17	\$ 1,060,465	73	\$ 3,437,880
65 - 69	35	\$ 1,199,799	7	\$ 210,186	13	\$ 682,273	55	\$ 2,092,258
70 - 74	53	\$ 1,468,051	17	\$ 472,352	14	\$ 632,490	84	\$ 2,572,893
75 - 79	36	\$ 854,449	19	\$ 685,513	15	\$ 482,273	70	\$ 2,022,235
80 - 84	33	\$ 588,311	25	\$ 715,216	11	\$ 259,788	69	\$ 1,563,315
85 - 89	24	\$ 399,125	9	\$ 231,657	9	\$ 160,905	42	\$ 791,687
90 - 94	16	\$ 227,418	4	\$ 89,482	5	\$ 82,197	25	\$ 399,097
95 - 99	9	\$ 96,207	0	\$ 0	3	\$ 43,097	12	\$ 139,303
100 +	1	\$ 15,224	0	\$ 0	0	\$ 0	1	\$ 15,224
Total	255	\$ 6,383,209	189	\$ 8,053,398	107	\$ 4,787,334	551	\$ 19,223,940

AGE DISTRIBUTION  
INACTIVE VESTED MEMBERS

AGE	<u>General</u>		<u>Police</u>		<u>Fire</u>		<u>Total</u>	
	Count	Annual Pensions	Count	Annual Pensions	Count	Annual Pensions	Count	Annual Pensions
< 45	0	\$ 0	0	\$ 0	0	\$ 0	0	\$ 0
45 - 49	0	\$ 0	0	\$ 0	0	\$ 0	0	\$ 0
50 - 54	0	\$ 0	0	\$ 0	0	\$ 0	0	\$ 0
55 - 59	3	\$ 20,505	0	\$ 0	0	\$ 0	3	\$ 20,505
60 - 64	0	\$ 0	0	\$ 0	0	\$ 0	0	\$ 0
65 - 69	0	\$ 0	1	\$ 5,822	0	\$ 0	1	\$ 5,822
70 - 74	0	\$ 0	0	\$ 0	0	\$ 0	0	\$ 0
75 - 79	0	\$ 0	0	\$ 0	0	\$ 0	0	\$ 0
80 - 84	0	\$ 0	1	\$ 7,000	0	\$ 0	1	\$ 7,000
85 - 89	0	\$ 0	0	\$ 0	0	\$ 0	0	\$ 0
90 - 94	0	\$ 0	0	\$ 0	0	\$ 0	0	\$ 0
95 - 99	0	\$ 0	0	\$ 0	0	\$ 0	0	\$ 0
100 +	1	\$ 2,800	0	\$ 0	0	\$ 0	1	\$ 2,800
<b>Total</b>	<b>4</b>	<b>\$ 23,305</b>	<b>2</b>	<b>\$ 12,822</b>	<b>0</b>	<b>\$ 0</b>	<b>6</b>	<b>\$ 36,127</b>

VALUATION PARTICIPANT RECONCILIATION

1. Active lives

a. Number in prior valuation 11/30/2020	42
b. Terminations	
i. Vested (partial or full) with deferred benefits	0
ii. Non-vested or full lump sum distribution received	0
iii. Refunded	0
c. Deaths	
i. Beneficiary receiving benefits	0
ii. No future benefits payable	0
d. Disabled	0
e. Retired	(8)
f. Continuing participants	34
g. New entrants	<u>0</u>
h. Total active life participants in valuation	34

2. Non-Active lives (including beneficiaries receiving benefits)

	Service Retirees, Vested Receiving <u>Benefits</u>	Receiving Death <u>Benefits</u>	Receiving Disability <u>Benefits</u>	Vested <u>Deferred</u>	<u>Total</u>
a. Number prior valuation	454	85	15	8	562
Retired	10	0	0	(2)	8
Vested Deferred	0	0	0	0	0
Death, With Survivor	(3)	3	0	0	0
Death, No Survivor	(9)	(2)	0	0	(11)
Disabled	0	0	0	0	0
Refund of Contributions	0	0	0	0	0
Rehires	0	0	0	0	0
New EDROs	0	1	0	0	1
Data Corrections	(2)	0	(1)	0	(3)
Hired/Termed in Same Year	0	0	0	0	0
b. Number current valuation	450	87	14	6	557

## SUMMARY OF CURRENT PLAN PROVISIONS

### Plan Administration

The Plan is a single employer defined benefit pension plan administered by a Board of Trustees comprised of:

- a.) The mayor or mayor's designated administrative representative,
- b.) A member of the City Council, selected by the Council,
- c.) A member of the Civil Service Commission,
- d.) A police or fire member, elected by police and fire members,
- e.) A member of any retirement plan established by city ordinance who is not a police or fire member.

### Membership Requirements

Membership includes all persons in the classified and unclassified service of the City who perform services on a permanent part-time or full-time basis. New employees do not become members in this Retirement System.

### Average Final Compensation

The average of the highest annual compensations received during any 3 years of service contained within the 10 years of service immediately preceding retirement, including base salary, longevity, shift differential, paid time off, holiday pay, and payment of accumulated vacation time up to the limits established by the respective bargaining agreements. In addition, merit pay is included for Police members and Paramedic/EMT or ALS bonuses are included for firefighters.

### Voluntary Retirement Eligibility

#### General Members:

30 years of service regardless of age, or age 55 with 10 years of service. Permanent part-time General members need only 10 calendar years of membership instead of 10 years of credited service.

#### Police Members:

25 years of service regardless of age, or age 52 with 10 years of service. Early Retirement: Age 50 with 10 years but less than 25 years of service, benefit reduced ½% per month below age 52.

#### Fire Members:

25 years of service regardless of age (effective 10/17/16), or age 52 with 10 years of service. Early Retirement: Age 50 with 10 years of service, benefit reduced ½% per month below age 52.

Normal Pension Amount

- General Members: 2.5% of the member’s average final compensation (AFC) times years of credited service; maximum is 75% of AFC.
- Police Members: 2.8% of the member’s average final compensation (AFC) times the first 24 years of credited service, plus 7.8% of AFC for the 25<sup>th</sup> year of credited service; maximum 75% AFC.
- Fire Members: 2.8% of the member’s average final compensation (AFC) times years of credited service; maximum 75% AFC.

Deferred Pension (Vesting)

- Eligibility Termination of City employment, other than by death or disability, prior to attaining voluntary retirement age but after completing at least 10 full years of credited service.
- Amount A monthly pension, payable beginning at voluntary retirement age (or early retirement age with a reduced benefit), computed in the same manner as a normal pension but based on credited service and AFC at time of termination of City employment.

Disability Retirement

- Eligibility Termination of City employment by reason of total and permanent disability after completing at least 10 full years of credited service, except that in the event of a duty disability the 10 year service requirement is waived.
- Amount 1) Disability incurred after age 55: A monthly pension computed in the same manner as a normal pension but based on credited service and AFC at the time of termination. (2) Disability incurred before age 55: A monthly pension computed in the same manner as a normal pension but based on AFC at time of termination and the credited service the member would have completed had employment continued until age 55, provided that in the event of a duty disability the pension payable to age 55 shall not be less than 75% of AFC. Worker’s compensation benefits are deducted. For non-duty disability cases, the following limitations apply:

<u>Actual Years of Service</u>	<u>Maximum Total Years Used to Compute Benefit</u>	<u>Maximum Benefit As a Percent of AFC</u>
10-15	20	50.0%
16-20	25	62.5
over 20	30- or actual service if greater	75.0

Non-Duty Death

Eligibility	Death after completing 10 years of credited service, but before termination of City employment. If member had not attained age 55 at the time of death, the death benefit shall commence at the time they would have attained voluntary retirement age. Member must either: (1) have elected Option A and named a beneficiary, or (2) leave a surviving spouse in the event Option A was not elected.
Amount	Monthly pension the beneficiary would have received had the member retired the day before death (notwithstanding that he might not have attained his voluntary retirement age) and elected the 100% joint and survivor Option A.

Duty Death

Eligibility	Death from causes arising solely and exclusively out of and in the course of a member's City employment.
Amount	Surviving spouse, or unmarried children under age 18 (if no surviving spouse), or dependent parents (if no surviving spouse or children) shall receive a monthly pension equal to the pension payable if the member had become duty disabled, elected the 100% survivor option and subsequently died. The option factor for children or parents is assumed to equal 80%. The benefit shall continue until: (a) death in the case of the widow, (b) death, marriage, adoption or attainment of age 18 in the case of the children. Worker's compensation benefits are deducted.

Employee Contributions

General - Local 1917	3.66% of compensation.
- Others	3.10% of compensation.
Police - LPOA	2.55% of compensation.
- LCOA, Police Chief, And Deputy Chief	6.25% of compensation (eff. 8/24/2010); 7.30% of compensation when City contribution rate exceeds 4.18%
Fire	4.50% of compensation (effective 10/17/2016)
Annuity Withdrawal	Upon voluntary, mandatory or disability retirement (or deferred retirement, in the case of General members), a member may withdraw his accumulated contributions with interest and receive an actuarially reduced lifetime benefit.

## Cost-of-Living Allowance

An additional cost-of-living allowance will be paid to all retirees. The monthly amount is determined as follows.

(1) Members retired before December 1, 1979:

- (1) \$20/month for one year commencing one year after retirement.
- (2) \$40/month for one year commencing two years after retirement.
- (3) \$40/month for one year commencing three years after retirement.
- (4) \$60/month for one year commencing four years after retirement.
- (5) \$80/month commencing five years after retirement.

(2) Members retiring on or after December 1, 1979 and before December 1, 1986:

- (1) \$20/month for one year commencing one year after retirement.
- (2) \$40/month for one year commencing two years after retirement.
- (3) \$60/month for one year commencing three years after retirement.
- (4) \$80/month commencing four years after retirement.

(3) Members retiring on or after December 1, 1986:

- (1) \$20/month for one year commencing one year after retirement.
- (2) \$40/month for one year commencing two years after retirement.
- (3) \$60/month for one year commencing three years after retirement.
- (4) \$80/month for one year commencing four years after retirement.
- (5) \$100/month for one year commencing five years after retirement.
- (6) \$120/month commencing six years after retirement.

(4) General members (excluding District Court), and Police Dispatchers retiring on or after December 1, 2007:

- (a) \$25/month for one year commencing one year after retirement.
- (b) \$50/month for one year commencing two years after retirement.
- (c) \$75/month for one year commencing three years after retirement.
- (d) \$100/month for one year commencing four years after retirement.
- (e) \$125/month for one year commencing five years after retirement.
- (f) \$150/month for one year commencing six years after retirement.
- (g) \$175/month for one year commencing seven years after retirement.
- (h) \$200/month for one year commencing eight years after retirement.
- (i) \$225/month for one year commencing nine years after retirement.
- (j) \$250/month commencing ten years after retirement.

(5) Fire and Police members (excluding dispatchers) retiring on or after December 1, 2006 (March 20, 2006 for Fire) and before December 1, 2008:

- (a) \$20/month for one year commencing one year after retirement.
- (b) \$40/month for one year commencing two years after retirement.
- (c) \$60/month for one year commencing three years after retirement.
- (d) \$80/month for one year commencing four years after retirement.
- (e) \$100/month for one year commencing five years after retirement.
- (f) \$120/month for one year commencing six years after retirement.
- (g) \$140/month for one year commencing seven years after retirement.
- (h) \$160/month for one year commencing eight years after retirement.
- (i) \$180/month for one year commencing nine years after retirement.
- (j) \$200/month commencing ten years after retirement

(6) Police and Fire members retiring on or after December 1, 2008:

- (a) \$25/month for one year commencing one year after retirement.
- (b) \$50/month for one year commencing two years after retirement.
- (c) \$75/month for one year commencing three years after retirement.
- (d) \$100/month for one year commencing four years after retirement.
- (e) \$125/month for one year commencing five years after retirement.
- (f) \$150/month for one year commencing six years after retirement.
- (g) \$175/month for one year commencing seven years after retirement.
- (h) \$200/month for one year commencing eight years after retirement.
- (i) \$225/month for one year commencing nine years after retirement.
- (j) \$250/month commencing ten years after retirement

(7) Fire members retiring on or after 10/17/16, and LPOA, LLSA & Police Command on or after 12/1/2017, in addition to (6) above:

- (k) \$275/month for one year commencing eleven years after retirement.
- (l) \$300/month for one year commencing twelve years after retirement
- (m) \$325/month for one year commencing thirteen years after retirement.
- (n) \$325/month for one year commencing fourteen years after retirement.
- (o) \$375/month commencing fifteen years after retirement.

For Police retirees retiring before December 1, 1991 and for Fire retirees retiring before December 1, 1993, the maximum increase is \$80 per month.

SUMMARY

Valuation Date	11/30/2021	11/30/2020
Measurement Date	11/30/2021	11/30/2020
Plan Membership:		
Inactives Currently Receiving Benefits <sup>1</sup>	551	554
Inactives Not Yet Receiving Benefits	6	8
Active Plan Members	<u>34</u>	<u>42</u>
Total	591	604
Covered Payroll	\$ 3,303,324	\$ 3,997,860
Net Pension Liability		
Total Pension Liability	\$ 233,344,915	\$ 232,814,033
Plan Fiduciary Net Position	<u>241,839,981</u>	<u>222,607,699</u>
Net Pension Liability	\$ (8,495,066)	\$ 10,206,334
Plan Fiduciary Net Position		
As a Percentage of Total Pension Liability	103.64%	95.62%
Net Pension Liability		
As a Percentage of Covered Payroll	-257.17%	255.29%
Total Pension Expense	\$ (3,040,771)	\$ 3,103,328
Development of Single Discount Rate		
Single Discount Rate	7.20%	7.30%
Long-Term Expected Rate of Return	7.20%	7.30%
High-quality Municipal Bond Rate	2.23%	2.03%
Number of Years Future Benefit Payments		
Are Expected to be Paid	99	99

<sup>1</sup> Includes members with EDRO (23 for the 11/30/2021 measurement date).

SCHEDULE OF CHANGES IN NET PENSION LIABILITY  
PLAN AND CITY REPORTING

GASB 68 Reporting Period Ending	11/30/2021	11/30/2020
Measurement Date	<u>11/30/2021</u>	<u>11/30/2020</u>
Total Pension Liability		
Service Cost	997,853	908,315
Interest	16,347,439	16,419,283
Changes of Benefit Terms	-	-
Differences Between Expected and Actual Experience	1,562,337	2,210,334
Changes of Assumptions	1,371,992	2,035,532
Benefit Payments, Including Refunds of Employee Contributions	<u>(19,748,739)</u>	<u>(19,466,578)</u>
Net Change in Total Pension Liability	530,882	2,106,886
Total Pension Liability - Beginning	<u>232,814,033</u>	<u>230,707,147</u>
Total Pension Liability - Ending (a)	\$ 233,344,915	\$ 232,814,033
 Plan Fiduciary Net Position		
Contributions - Employer	1,948,485	1,019,900
Contributions - Employee	175,358	212,251
Net Investment Income	37,112,850	22,172,808
Benefit Payments, Including Refunds of Employee Contributions	(19,748,739)	(19,466,578)
Administrative Expense	<u>(255,672)</u>	<u>(232,019)</u>
Net Change in Plan Fiduciary Net Position	19,232,282	3,706,362
Plan Fiduciary Net Position - Beginning	<u>222,607,699</u>	<u>218,901,337</u>
Plan Fiduciary Net Position - Ending (b)	\$ 241,839,981	\$ 222,607,699
 Net Pension Liability - Ending (a) - (b)	\$ (8,495,066)	\$ 10,206,334
 Plan Fiduciary Net Position as a Percentage of the Total Pension Liability	103.64%	95.62%
 Covered Payroll	\$ 3,303,324	\$ 3,997,860
Net Pension Liability as a Percentage of Covered Payroll	-257.17%	255.29%

STATEMENT OF CHANGES IN NET PENSION LIABILITY  
CITY REPORTING

	Increase (Decrease)		
	Total Pension Liability	Plan Fiduciary Net Position	Net Pension Liability
	(a)	(b)	(a)-(b)
Balances at November 30, 2020	\$232,814,033	\$222,607,699	\$ 10,206,334
Changes for a Year:			
Service Cost	997,853	-	997,853
Interest	16,347,439	-	16,347,439
Differences Between Expected and Actual Experience	1,562,337	-	1,562,337
Changes of Assumptions	1,371,992	-	1,371,992
Changes of Benefit Terms	-	-	-
Contributions - Employer	-	1,948,485	(1,948,485)
Contributions - Employee	-	175,358	(175,358)
Net Investment Income	-	37,112,850	(37,112,850)
Benefit Payments, Including Refunds of Employee Contributions	(19,748,739)	(19,748,739)	-
Administrative Expense	-	(255,672)	255,672
Net Changes	530,882	19,232,282	(18,701,400)
Balances at November 30, 2021	\$233,344,915	\$241,839,981	\$ (8,495,066)

*Sensitivity of Net Pension Liability to changes in the Discount Rate:*

	Current Discount		
	1% Decrease	Rate	1% Increase
	6.20%	7.20%	8.20%
Sponsor's Net Pension Liability	\$ 13,899,428	\$ (8,495,066)	\$ (27,481,564)

*Pension Plan Fiduciary Net Position*

Detailed information about the Pension Plan's Fiduciary Net Position is available in a separately issued Plan financial report.

PENSION EXPENSE AND DEFERRED OUTFLOWS OF RESOURCES AND DEFERRED INFLOWS OF  
RESOURCES RELATED TO PENSIONS  
YEAR-END NOVEMBER 30, 2021

For the year ended November 30, 2021, the Sponsor will recognize a pension expense of (\$3,040,771). On November 30, 2021, the Sponsor reported deferred outflows of resources and deferred inflows of resources related to pensions from the following sources:

	Deferred Outflows of Resources	Deferred Inflows of Resources
Differences between actual and expected experience	0	0
Changes of assumptions	0	0
Net difference between projected and actual earnings on pension plan investments	0	21,801,874
Total	\$0	\$21,801,874

Amounts reported as deferred outflows of resources and deferred inflows of resources related to pensions will be recognized in pension expense as follows:

Year-ended November 30:	
2022	(\$4,100,323)
2023	(\$7,764,026)
2024	(\$5,634,499)
2025	(\$4,303,026)
2026	\$0
Thereafter	\$0

COMPONENTS OF PENSION EXPENSE  
YEAR-END NOVEMBER 30, 2021

	Net Pension Liability	Deferred Inflows	Deferred Outflows	Pension Expense
Beginning Balance	\$ 10,206,334	\$ 15,417,134	\$ 7,327,404	
Total Pension Liability Factors:				
Service Cost	997,853	-	-	997,853
Interest	16,347,439	-	-	16,347,439
Changes in Benefit Terms	-	-	-	-
Differences Between Expected and Actual Experience With Regard to Economic or Demographic Assumptions	1,562,337	-	1,562,337	-
Current Year Amortization	-	-	(1,562,337)	1,562,337
Changes in Assumptions About Future Economic or Demographic Factors or Other Inputs	1,371,992	-	1,371,992	-
Current Year Amortization	-	-	(1,371,992)	1,371,992
Benefit Payments, Including Refunds of Employee Contributions	(19,748,739)	-	-	-
Net Change	<u>530,882</u>	<u>-</u>	<u>-</u>	<u>20,279,621</u>
Plan Fiduciary Net Position:				
Contributions - Employer	1,948,485	-	-	-
Contributions - Employee	175,358	-	-	(175,358)
Projected Net Investment Income	15,597,721	-	-	(15,597,721)
Difference Between Projected and Actual Earnings on Pension Plan Investments	21,515,129	21,515,129	-	-
Current Year Amortization	-	(11,466,687)	(3,663,702)	(7,802,985)
Benefit Payments, Including Refunds of Employee Contributions	(19,748,739)	-	-	-
Administrative Expenses	(255,672)	-	-	255,672
Net Change	<u>19,232,282</u>	<u>10,048,442</u>	<u>(3,663,702)</u>	<u>(23,320,392)</u>
Ending Balance	<u>\$ (8,495,066)</u>	<u>\$ 25,465,576</u>	<u>\$ 3,663,702</u>	<u>\$ (3,040,771)</u>

AMORTIZATION SCHEDULE – EXPERIENCE

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

Year Base Established	Differences Between Expected and Actual Experience	Recognition Period (Years)	2021	2022	2023	2024	2025	Thereafter
2021	\$ 1,562,337	1	\$ 1,562,337	\$ -	\$ -	\$ -	\$ -	\$ -
Net Increase (Decrease) in Pension Expense			\$ 1,562,337	\$ -	\$ -	\$ -	\$ -	\$ -

AMORTIZATION SCHEDULE – CHANGES OF ASSUMPTIONS

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

Year Base Established	Effects of Changes in Assumptions	Recognition Period (Years)	2021	2022	2023	2024	2025	Thereafter
2021	\$ 1,371,992	1	\$ 1,371,992	\$ -	\$ -	\$ -	\$ -	\$ -
Net Increase (Decrease) in Pension Expense			\$ 1,371,992	\$ -	\$ -	\$ -	\$ -	\$ -

AMORTIZATION SCHEDULE – INVESTMENTS

Increase (Decrease) in Pension Expense Arising from the Recognition of the Differences Between Projected and Actual Earnings on Pension Plan Investments

Year Base Established	Differences Between Projected and Actual Earnings	Recognition Period (Years)	2021	2022	2023	2024	2025	Thereafter
2021	\$ (21,515,129)	5	\$ (4,303,025)	\$ (4,303,026)	\$ (4,303,026)	\$ (4,303,026)	\$ (4,303,026)	\$ -
2020	\$ (6,657,365)	5	\$ (1,331,473)	\$ (1,331,473)	\$ (1,331,473)	\$ (1,331,473)	\$ -	\$ -
2019	\$ (10,647,631)	5	\$ (2,129,526)	\$ (2,129,526)	\$ (2,129,527)	\$ -	\$ -	\$ -
2018	\$ 18,318,510	5	\$ 3,663,702	\$ 3,663,702	\$ -	\$ -	\$ -	\$ -
2017	\$ (18,513,315)	5	\$ (3,702,663)	\$ -	\$ -	\$ -	\$ -	\$ -
Net Increase (Decrease) in Pension Expense			\$ (7,802,985)	\$ (4,100,323)	\$ (7,764,026)	\$ (5,634,499)	\$ (4,303,026)	\$ -

## SCHEDULE OF CONTRIBUTIONS

Plan Year-End	Actuarially Determined Contribution	Contributions in Relation to the Actuarially Determined Contributions	Contribution Deficiency (Excess)	Covered Payroll	Contributions as a Percentage of Covered Payroll
11/30/2021	1,948,485	1,948,485	-	3,303,324	58.99%
11/30/2020	1,019,901	1,019,901	-	3,997,860	25.51%
11/30/2019	432,885	432,885	-	4,579,558	9.45%
11/30/2018	-	558,568	558,568	6,446,503	8.66%
11/30/2017	336,320	336,320	-	6,682,629	5.03%
11/30/2016	815,291	815,291	-	7,625,911	10.69%
11/30/2015	2,158,914	2,158,914	-	9,070,569	23.80%
11/30/2014	3,634,058	3,634,058	-	9,312,278	39.02%
11/30/2013	2,082,219	2,082,219	-	9,870,211	21.10%
11/30/2012	747,119	747,119	-	11,282,045	6.62%

The following assumptions were used to determine the Actuarially Determined Contribution for the plan year ending November 30, 2021:

Calculation Timing	The Actuarially Determined Contribution is calculated using a November 30, 2019 valuation date.
Interest Rate	7.40%
Mortality Rate	RP 2000 Combined Healthy Annuitant Mortality Projected to 2014.
Assumptions	All other assumptions and methods used for determining the Actuarially Determined Contribution can be found in the November 30, 2019 Actuarial Valuation Report for the Employees Retirement System prepared by Rodwan Consulting Company.

ASSUMPTIONS – GASB PENSION LIABILITY AND PENSION EXPENSE

The GASB 67/GASB 68 Pension Liability for Plan reporting as of November 30, 2021 and GASB 68 Pension Expense were determined as follows:

Valuation Date	November 30, 2021
Measurement Date	November 30, 2021
GASB 68 Expense Measurement Period	December 1, 2020 - November 30, 2021
Reporting Period	December 1, 2020 - November 30, 2021
Discount Rate	7.20%
Inflation	2.50%
Salary Increases	Age-based rates
Other Assumptions	A summary of complete assumptions can be found in the accompanying Actuarial Valuation as of November 30, 2021 for the Employees Retirement System prepared by Foster & Foster Actuaries and Consultants.

The GASB 67/GASB 68 Total Pension Liability and GASB 68 Pension Expense reflect the following assumption changes:

These changes were based on an experience study performed June 2021:

- The assumed interest rate was lowered from 7.30% to 7.20%.
- Salary increases were lowered to a flat 4.00% assumption.
- The mortality rate was updated to reflect the most current morality improvement scale.
- Lower retirement rates were adopted for younger General members.
- There was a reduction to the disability rates assumption.

NOTES TO THE FINANCIAL STATEMENTS

*Discount Rate*

The Discount Rate used to measure the Total Pension Liability was 7.20 percent.

The projection of cash flows used to determine the Discount Rate assumed that Plan Member contributions will be made at the current contribution rate and that Sponsor contributions will be made at rates equal to the difference between actuarially determined contribution rates and the Member rate. Based on those assumptions, the Pension 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 Pension Plan investments (7.20 percent) was applied to all periods of projected benefit payments to determine the Total Pension Liability.

For the purpose of this valuation, the expected rate of return on pension plan investments is 7.20 percent. The municipal bond rate is 2.23 percent (based on the daily rate closest to, but not later than the measurement date of the S&P Municipal Bond 20 Year High Grade Rate Index). The resulting single discount rate is 7.20 percent.

SUMMARY OF CURRENT PLAN

Pension Fund

The Plan is established and administered by the City of Livonia Employees Retirement System

Plan Administration

The Plan is a single employer defined benefit pension plan administered by a Board of Trustees comprised of:

- a.) The mayor or mayor's designated administrative representative,
- b.) A member of the City Council, selected by the Council,
- c.) A member of the Civil Service Commission,
- d.) A police or fire member, elected by police and fire members,
- e.) A member of any retirement plan established by city ordinance who is not a police or fire member.

Benefits Provided

The Plan provides retirement, termination, disability and death benefits.

A summary of the benefit provisions can be found in the accompanying Actuarial Valuation as of November 30, 2021 for the Employees Retirement System prepared by Foster & Foster.