



City of Lansing Police and Fire Retirement System

Actuarial Valuation For Funding and Contributions

as of December 31, 2023

September 2024

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Executive Summary

September 30, 2024

City of Lansing Police and Fire Retirement System
124 W. Michigan Avenue
8th Floor
Lansing, MI 48933

Members of the Board:

The following report sets forth the Actuarial Valuation of the City of Lansing Police and Fire Retirement System (the System) as of December 31, 2023. The report is based on participant data and asset summary as submitted by the Plan Administrator and City finance department. We relied on this information without auditing it.

INVESTMENT PERFORMANCE

The total Market Value of Pension Plan Assets for the plan year ending December 31, 2023 was \$302,341,024. Plan assets exclude from this a reserve for healthcare benefits. The total yield of the fund for the plan year ending December 31, 2023 was 15.6% on the market value of assets and 5.9% on an actuarial basis, taking into account recognition of prior gains and losses.

The Plan uses a smoothing method to determine the City's contributions. Under this method, asset gains or losses are spread over a 5-year period. The gains and losses are determined every year by comparing actual investment returns with expected asset performance.

Details of the development of the Actuarial Value of Assets are shown on page 8.

FUNDING PROGRESS

The Actuarial Accrued Liability as of December 31, 2023 is \$535,706,469 compared to the Actuarial Value of Assets of \$324,940,417 (excluding healthcare reserve), resulting in a plan funded ratio of 60.7%. Using the market value of assets, this ratio is 56.4%. Details are on page 15.

CONTRIBUTION

The total Actuarially Determined Employer Contribution for fiscal year 2025 is \$21,648,376, which is estimated to be 77.5% of payroll. About 16.3% of payroll represents the Normal Cost, with the remaining amount representing a payment towards the System's unfunded liability. Details are on page 16.

ASSUMPTION AND METHOD CHANGES

There have been no changes in actuarial assumptions or methods.

BENEFIT CHANGES

There have been no changes in plan provisions since the prior valuation.

Actuarial Certification

The purposes of this report are to establish the City contribution for the next fiscal year, and to evaluate the funding progress of the System.

The accounting report for the System, under GASB 67 and 68, is provided under separate cover, and serves a different purpose. All the figures presented in this report are to be used for funding and contribution purposes.

Boomershine Consulting Group (BCG) uses a valuation system that we lease from an external vendor. The valuation software (an actuarial model) was developed and is supported by the independent vendor. BCG's actuarial consultants understand the intended purposes of the model and its operation.

The purpose of the valuation system is to develop actuarial liabilities and costs in accordance with a set of inputs. Inputs are determined by BCG and include actuarial assumptions, actuarial cost method(s), benefit provisions, and participant data. The output from the valuation model includes actuarial accrued liabilities, normal costs, and various present value calculations. For this valuation, BCG has reviewed the model output, including test lives, to ensure that the results are reasonable, valid, and consistent. BCG uses the output from the valuation model to perform the valuation calculations that appear in this report.

This report has been prepared in accordance with generally accepted actuarial principles and practices. In the opinion of the Retirement Board and its actuary, the actuarial assumptions used are reasonable related to Retirement System experience and expectations, and represent the best estimate of Retirement System experience.

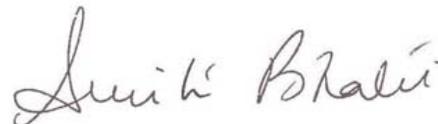
The undersigned are members of the American Academy of Actuaries, and are qualified to render the actuarial opinions presented in this report.

Respectfully Submitted,

BOOMERSHINE CONSULTING GROUP, L.L.C.



Gregory M. Stump, FSA, EA, MAAA, FCA
Chief Actuary



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Senior Consulting Actuary

Section 1: Plan Asset Information

1.1: Summary of Plan Assets

Market Value of Total Fund as of January 1, 2023		\$334,493,081
Receipts:		
Employer Contribution	\$20,638,901	
Employer Contribution - Healthcare Reserve	1,350,000	
Member Contributions	2,967,886	
Investment Income		
Interest	86,889	
Realized Gain/(Loss)	14,219,268	
Market Appreciation/(Depreciation)	27,079,028	
Total Additions		\$66,341,972
Disbursements:		
Member Refunds	\$140,297	
Distributions to Participants/ Beneficiaries	37,681,153	
Administrative Expenses and Other	1,691,901	
Investment Expenses	162,471	
Other	1,502	
Total Disbursements		\$39,677,324
Net Increase/(Decrease) in Assets		\$26,664,648
Market Value of Total Fund as of December 31, 2023		\$361,157,729

1.2: Reconciliation of Fund Reserves

	EMPLOYEE SAVINGS FUND	RETIREMENT RESERVE	HEALTHCARE RESERVE	TOTAL
12/31/2022	\$25,098,064	\$255,453,171	\$53,941,846	\$334,493,081
1/1/2023	\$25,098,064	\$255,453,171	\$53,941,846	\$334,493,081
Additions:				
EE Contributions	2,967,886			2,967,886
ER Contributions		20,638,901	1,350,000	21,988,901
Interest:	3.00%	7.00%	6.53%	
Annual Credits	752,942	15,244,041	3,524,859	19,521,842
Deductions:				
Refunds/Benefits	(140,297)	(37,681,153)		(37,821,450)
Adjustment/Transfers	(1,474,501)	21,481,970		20,007,469
12/31/2023	\$27,204,094	\$275,136,930	\$58,816,705	\$361,157,729
			Pension Assets:	\$302,341,024

Employees Savings Fund

<i>Purpose</i>	Keep track of employee contribution balances, and interest credited to such. Interest is credited at 3% annually.
<i>Relevance to Plan Funding</i>	Does not directly impact plan funding

Retirement Reserve Fund

<i>Purpose</i>	Provides funds to finance regular benefit payments to retirees. Interest is credited at the actuarial assumed rate of return. An adjustment is applied annually to correspond with changes in the market value of plan assets.
<i>Relevance to Plan Funding</i>	Does not directly impact plan funding

Healthcare Reserve

<i>Purpose</i>	Funds invested with pension assets, but segregated to be used for retiree healthcare benefits. Interest is credited annually at a 5-year average rate.
<i>Relevance to Plan Funding</i>	Excluded from pension assets to determine contributions towards pension funds

1.3: Development of Actuarial Value of Assets

Market Value of Pension Assets as of January 1, 2023			\$280,551,235
Plus: Contributions during 2023			23,606,787
Less: Benefit Payments, Refunds			37,821,450
Less: Administrative Expenses/Other			1,691,901
Plus: Expected Return during 2023			22,218,309
Expected Market Value as of December 31, 2023			283,087,050
Actual Market Value as of December 31, 2023			\$302,341,024
Investment Gain/(Loss) for 2023 (actual – expected)			19,253,974
Deferral of Gains/(Losses)			
Less: 80% of 2023 Gain/(Loss)	80% *	19,253,974	\$15,403,179
Less: 60% of 2022 Gain/(Loss)	60% *	(76,698,774)	(46,019,264)
Less: 40% of 2021 Gain/(Loss)	40% *	15,609,523	6,243,809
Less: 20% of 2020 Gain/(Loss)	20% *	8,864,214	1,772,843
Total Deferred Gain/(Loss)			(\$22,599,433)
Actuarial Value of Assets - December 31, 2023			\$324,940,457
as % of Market Value of Assets			107.5%
Estimated Rate of Return on the Actuarial Value			4.9%

As of 12/31/2022, the Actuarial Value of Assets is computed by first excluding the healthcare reserve.

1.4: Historical Investment Returns

<u>Year</u>	<u>Market Value Return</u>	<u>Actuarial Value Return</u>
2014	6.20%	9.60%
2015	-0.10%	7.20%
2016	6.10%	6.29%
2017	15.50%	8.72%
2018	(4.18%)	3.23%
2019	17.18%	7.05%
2020	10.48%	9.95%
2021	11.68%	9.83%
2022	(15.00%)	3.53%
2023	15.64%	4.86%
5 Year Compound Return	7.28%	7.01%
10 Year Compound Return	5.88%	7.00%

Section 2: Participant Summary

2.1: Reconciliation of Plan Participants

	Active Participants	Non-vested Terminations Due Refunds	Deferred Vested Terminations	Retired	Disabled	Beneficiary/ EDRO	Total
Participants as of December 31, 2022	362	50	18	546	75	170	1,221
Retired	(29)		(2)	31			0
Terminated Vested							
Terminated, Contribution Refund	(3)	(1)					(4)
Terminated Non- Vested Contribution Due	(20)	20					
Disabled	(1)				1		0
Deceased				(7)	(1)	(8)	(16)
New Beneficiary / EDRO						12	12
Rehired							
New Hires	31						31
Data Adjustments				1	(1)	(1)	(1)
Participants as of December 31, 2023	340	69	16	571	74	173	1,243

2.2: Demographic Summary

Active Participants	<u>12/31/2022</u>	<u>12/31/2023</u>
Number of Active Participants	362	340
Average Age	37.4	37.1
Average Service	10.3	10.0
Average Salary	\$84,452	\$89,399

Inactive Participants	<u>12/31/2022</u>			<u>12/31/2023</u>		
	<u>Fire</u>	<u>Police</u>	<u>Total</u>	<u>Fire</u>	<u>Police</u>	<u>Total</u>
Number of Retired Participants	239	307	546	250	321	571
Average Age	66.4	67.0	66.7	66.4	67.0	66.7
Average Annual Benefit	\$59,066	\$53,386	\$55,872	\$60,543	\$54,238	\$56,998
Number of Disabled Participants	39	36	75	39	35	74
Average Age	57.7	55.2	56.5	58.7	56.5	57.6
Average Annual Benefit	\$46,539	\$50,289	\$48,339	\$46,539	\$51,563	\$48,915
Number of Beneficiaries/EDROs	73	96	169	69	104	173
Average Age	77.3	72.0	74.3	76.2	71.7	73.5
Average Annual Benefit	\$21,216	\$24,739	\$23,217	\$22,055	\$24,146	\$23,312
Number of Deferred Vested	5	13	18	5	11	16
Average Age	50.8	49.0	49.5	51.8	48.9	49.8
Average Annual Benefit	\$34,519	\$36,737	\$36,121	\$34,519	\$37,587	\$36,629

Section 3: Valuation Summary

3.1: Summary of Actuarial Liability and Funding Progress

	12/31/2022	12/31/2023
Actuarial Accrued Liability (AAL)		
Active Employees	\$114,246,324	\$103,999,849
Inactive	5,990,845	5,210,239
<u>Retirees and Beneficiaries</u>	<u>401,813,939</u>	<u>426,496,381</u>
Total Actuarial Accrued Liability	\$522,051,108	\$535,706,469
Actuarial Value of Assets (AVA)	323,236,205	324,940,457
Unfunded Actuarial Accrued Liability (AAL-AVA)	\$198,814,903	\$210,766,012
Plan Funding Ratio (AVA/AAL)	61.9%	60.7%

3.2: Development of Actuarially Determined Employer Contribution (ADEC)

	12/31/2022	12/31/2023
	FY2023	FY2025
1) Total Entry Age Normal Cost	\$8,124,019	\$7,265,472
2) <u>Estimated Employee Contributions</u>	<u>3,010,740</u>	<u>2,719,321</u>
3) Net City Normal Cost: (1) – (2)	\$5,113,279	\$4,546,151
4) Pensionable Payroll	\$30,565,795	27,949,745
5) City Normal Cost Rate (% of pay): (3) ÷ (4)	16.7%	16.3%
6) Amortization of Unfunded Actuarial Accrued Liability	\$15,525,622 (18 years)	\$17,102,225 (17 years)
7) Actuarially Determined Employer Contribution: (3) + (6)	\$20,638,901	\$21,648,376

Estimated Cash Flow for Next Five Years

Fiscal Year	City Contribution*	Member Contributions	Benefit Payments
2026	\$22,800,000	\$2,800,000	\$39,600,000
2027	24,100,000	2,900,000	40,200,000
2028	25,800,000	3,000,000	40,700,000
2029	25,900,000	3,100,000	41,400,000
2030	26,500,000	3,100,000	41,900,000

* These amounts are based on one set of assumptions. If actual experience is less favorable than assumed, the City contributions will be higher. Estimated member contributions shown above do not include any purchases of service.

Section 4: Actuarial Assumptions and Methods

Funding Method and Amortization: Entry Age Normal Actuarial Cost Method. The contribution equals the sum of the normal cost and the amount necessary to amortize the unfunded actuarial liability as a level percent of payroll over a closed period (17 years remaining as of December 31, 2023).

Asset Smoothing Method: Investment gains and losses are determined annually and each is spread over a 5-year period. There is an 80% - 120% corridor around market value. The value of the healthcare reserve is excluded from this calculation.

Investment Return: 7.00% compounded annually, net of investment expenses and including inflation

Cost of Living (inflation): The cost of living as measured by the Consumer Price Index (CPI) is assumed to increase at the rate of 2.50% per year.

Salary Increases: Increases in salary are assumed to be equal to inflation, plus 7.25% per year for the first 5 years of service, then 1.00% per year thereafter.

Mortality: Pub2010S (Below Median), 50% for pre-retirement deaths. For Disabled members, the Pub2010G (Below Median) tables are used). Each of these tables is projected generationally with Scale SSA (2021).

A 50% factor is applied to the active population.

Percent Married: 90% of participants are assumed to be married. Male spouses are assumed to be three years older than their female spouse.

Disability: Rates of disability vary based on the age of the member.

95% of disabilities are assumed to be duty related.

Sample rates are shown below:

<u>Age</u>	<u>Rate</u>
20	0.1200%
30	0.6000%
40	0.9375%
50	1.1250%
60	0.0000%

Termination: Rates of termination vary based on the service of the member.
 Sample Rates are shown below:

<u>Fire</u>		<u>Police</u>	
<u>Years of Service</u>	<u>Rate</u>	<u>Age</u>	<u>Rate</u>
0	2.0%	20	15.0%
1	1.6%	25	8.6%
5	0.7%	30	4.9%
10	0.2%	35	2.8%
15	0.05%	40	1.6%
20	0.00%	45	0.9%
		50+	0.0%

Retirement: Rates of retirement vary based on the service of the member as shown below.

<u>Years of Service</u>	<u>Fire</u>	<u>Police</u>
10-24	40%	40%
25	90%	90%
26-29	60%	25%
30+	100%	100%

Also 100% at mandatory retirement ages.

Changes in assumptions and methods since the prior valuation

None

The assumptions outlined above are based on the 2015 – 2019 experience study. The next study will cover experience through 2024.

Section 5: Summary of Plan Benefits

All benefits are subject to the language in the City Ordinance and relevant collective bargaining agreements.

Employee Group Covered:	Police Officers (CCLP-S and CCLP-NS), and Fire Fighters (IAFF)
Normal Retirement:	Age 55 or 25 years of service, except a firefighter whose membership commenced on or after May 19, 2014, and a police officer whose membership commenced on or after August 1, 2014, full retirement is at age 50 with 25 years of service
Mandatory Retirement:	Age 60 - Police Officers; age 70 - Firefighters
Normal Form of Benefit:	Monthly life annuity with 50% of the benefit payable to the spouse upon the member's death.
Member Contribution Rates:	10.0% of pay for all groups
Included Compensation:	Effective July 1, 2022, for Police Officers hired after August 1, 2014 and for Firefighters hired after May 19, 2014, included Compensation will be Base Wages.
Final Average Compensation:	Final Average Compensation means the monthly average of the member's final compensation that is included in Included Compensation, paid during the period of the member's 36 highest consecutive months of credited service as a police officer, or firefighter (24 months for police officers hired before July 1, 1999). If the member has less than 24 (36) months of credited service, the member's final average compensation shall be the monthly average of the Included Compensation paid for his or her total period of credited service.
Normal Retirement Benefit Formula:	3.2% of Final Average Compensation times years of credited service, not to exceed 25 years. Pension benefit is capped at 110% of Base Wage for firefighters, Police – Non-Supervisors and Police – Supervisors (115% of Base Pay for Police-Supervisors prior to July 15, 2019). Benefit Multiplier is changed to 2.5% and Pension Benefit is capped at 110% of Base Wage for hires on or after May 20, 2014 for firefighters and August 1, 2014 for police officers. Effective July 1, 2022: For Police Officers hired on or after August 1, 2014 and for Firefighters hired on or after May 19, 2014: Benefit Multiplier is changed to 3.0% for years of credited service not to exceed 25 years limited to 75% of Base Pay and 1.0% for years of credited service between 25 – 30, not to exceed 30 years limited to 80% of Base Pay.
Termination Prior to Retirement	
Eligibility	Vesting is after 10 years of credited service
Benefit Amount	Benefit is payable beginning at age 55 and computed in the same manner as the Normal Retirement Benefit, but based on credited service and Final Average Compensation at date of termination.

Duty Disability

Eligibility	Members are eligible for Duty Disability Retirement benefits immediately upon employment.
Benefit Amount (Before Retirement Eligibility)	The Duty Disability Retirement Benefit payable to members is equal to 2/3 of Final Average Compensation.
Benefit Amount (After Retirement Eligibility)	Benefit is paid at the effective date of disability retirement as a Life Annuity and is equal to the accrued Retirement Benefit. In computing the benefit amount, credited service is increased to include the period of disability, and Final Average Compensation is calculated using current rates of compensation for those with similar rank. The Disability Benefit will be offset by any workers' compensation payable on account of the disability.

Non-Duty Disability

Eligibility	Members are eligible for Non-Duty Disability Retirement benefits after completing 10 years of service.
Benefit Amount	Benefit is paid at the effective date of disability retirement as a Life Annuity and is equal to the accrued Retirement benefit, with a maximum benefit equal to 2/3 of the annual rate of compensation of either a full-paid police patrol officer or a full-paid firefighter as of the date of retirement, whichever is higher.

Death incurred in the Line of Duty

Eligibility	The Death in Line of Duty Benefit is payable to the survivors of a member who died as a result of an injury or disease arising out of and in the course of duty.
Benefit Amount - Fire	Accumulated Contributions will be paid to the designated survivor or legal representative (if no designated survivor). Benefit is payable to the surviving spouse, equal to the greater of 80% of the deceased member's Final Average Compensation, or 80% of the top paid base salary for the rank the officer held at the time of his or her death. Benefit is payable to the surviving children under age 21, if there is no surviving spouse.
Benefit Amount - Police	A benefit is payable to the widow(er), equal to the greater of 80% of the deceased member's Final Average Compensation, or 80% of the top paid base salary for the rank the officer held at the time of his or her death. Benefit is paid to surviving children if there is no surviving spouse.

Non-Duty Pre-Retirement Death

Eligibility	The non-duty pre-retirement death benefit is payable upon the death of a member after earning 10 years of credited service.
Benefit Amount	50% of the accrued retirement benefit, computed in the same manner as the Retirement Benefit payable as a Life Annuity and no less than 20% of the deceased member's final average compensation.

Optional Benefit Forms

Prior to retirement, a member may elect a full benefit or a reduced benefit of either 93% or 86% of the original amount, thereby providing the spouse a benefit of either 50%, 75% or 86%, respectively.

Refund of Accumulated Contributions

A member who terminates employment prior to being vested shall be paid his/her accumulated contributions.

Ad Hoc Cost-of-Living Adjustments

One-time cost of living increases were granted in 1973, 1984 and 1987.

Post Retirement Benefit Adjustments

Effective January 1, 1995 and each January 1 thereafter, the annual benefit amount will be increased by \$525 for each retiree who meets each of the following conditions:

- 1) 25 or more years of credited service at the time of retirement
- 2) Age 60 as of the January 1 increase date
- 3) Has been retired at least 6 months as of the January 1 increase date

The \$525 amount is reduced for retirees who elected the 75% or 86% optional forms of benefit (\$488.25 and \$451.50, respectively).

Spouses of deceased members are also eligible for benefit increases each January 1 if:

- 1) The deceased member had at least 25 years of credited service at the time of retirement
- 2) The deceased member would have attained at least age 60 as of the January 1 increase date
- 3) The deceased member had been deceased at least 6 months as of the January 1 increase date.

The spouse's annual benefit increase amount is adjusted based on the form of payment elected by the deceased member, according to the following schedule:

<u>Spouse Benefit %</u>	<u>Annual Benefit Increase</u>
50%	\$262.50
75%	\$393.75
86%	\$451.50

The benefit increases accumulate from year to year, but cumulative benefit increases shall not exceed cumulative increases in the Consumer Price Index.

Changes in Plan provisions since the prior valuation

None

Glossary of Terms

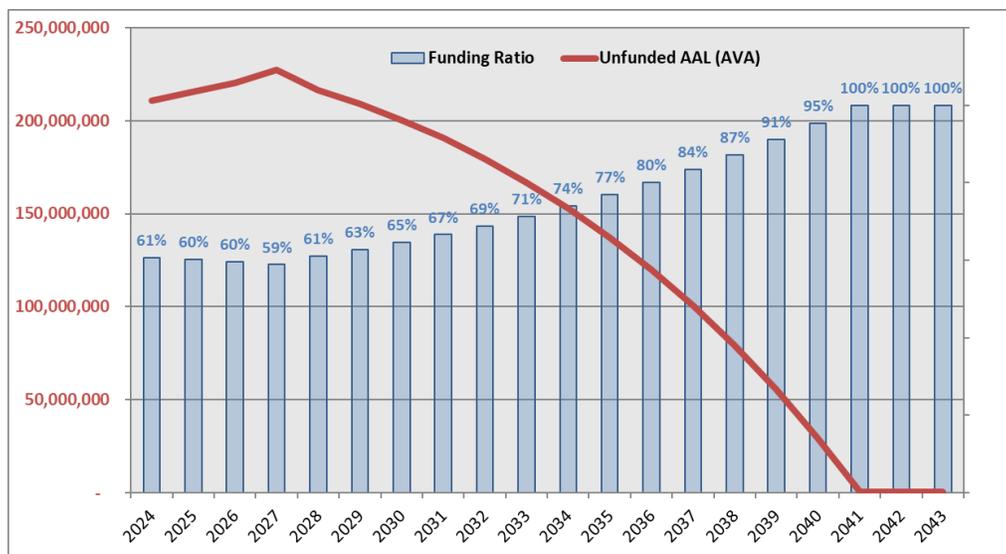
Actuarial Accrued Liability (AAL):	The portion of benefits deemed to be accrued by participants based on past service. The AAL serves as the asset funding target, when annual contributions are determined.
Actuarial Value of Assets (AVA):	The smoothed value of assets, used to compute the Unfunded AAL. The purpose of the AVA is to control volatility in annual cash contributions .
Amortization of Unfunded Liability:	The portion of the annual cash contribution that represents a portion of the Unfunded AAL. The amortization can be positive or negative.
Actuarially Determined Employer Contribution (ADEC):	The contribution determined by the actuary for funding purposes .
Market Value of Assets (MVA):	The total value of Plan assets available to pay benefits.
Normal Cost:	That portion of the annual contribution that represents one year's accrual of benefits. In funding calculations, this is known as the Service Cost.
Unfunded Actuarial Accrued Liability:	The difference between the Actuarial Value of Assets and the Actuarial Accrued Liability, used for funding purposes .

Appendix I: 20 Year Projection of Funding and Contributions

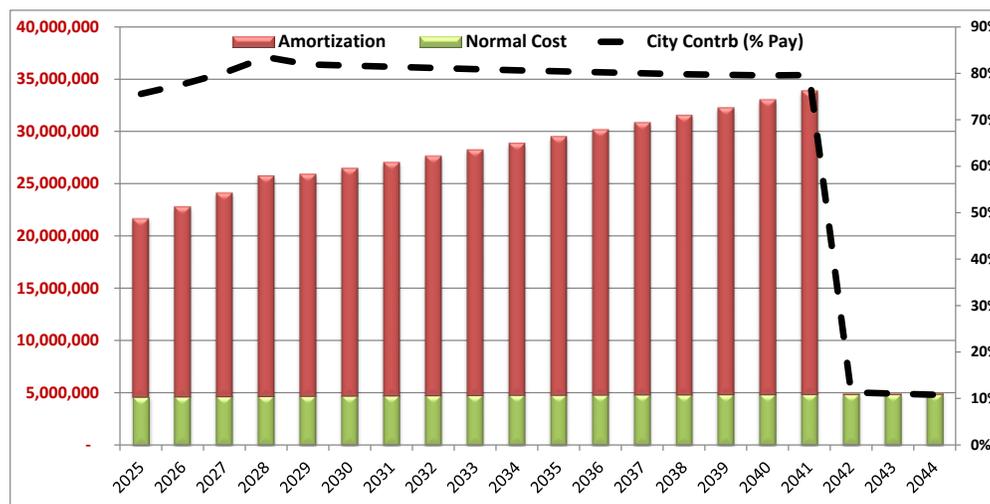
The graphs below show a projection of expected funding progress and City contributions to the Fund. We can see that the Plan is on a path to eliminating the unfunded liability (top graph, red line) and significantly improving the funding ratio. During this time, the City contribution rate is expected to remain close to 80% of payroll, before eventually declining. The actual funding progress and contributions over this time period will differ from what is shown here, due to the actual experience of the Plan.

As shown in the second graph the majority of the contribution is currently, and is expected to continue to be, a payment towards the unfunded actuarial liability.

Projection of Funding Progress



Projection of City Contributions



Appendix II: History of Employer Contributions and Funding Progress

History of Employer Contributions

Fiscal Year Ending	Actuarially Determined Employer Contribution	Actual Employer Contribution
6/30/2016	\$10,884,312	\$10,884,312
6/30/2017	11,521,768	11,521,768
6/30/2018	12,562,547	12,686,000 (1)
6/30/2019	13,554,239	13,554,239 (2)
6/30/2020	15,457,647	15,457,647 (3)
6/30/2021	16,950,155	16,950,155
6/30/2022	18,263,635	18,263,635 (4)
6/30/2023	18,165,988	18,165,988
6/30/2024	20,638,901	20,638,901
6/30/2025	21,403,263	To be determined

(1) Reflects changes made to actuarial assumptions as of 12/31/2016, including return assumption of 7.35%, with underlying 2.85% inflation.

(2) Reflects changes made to the discount rate and the rate of inflation as of 12/31/2017.

(3) Paid in calendar year 2020, so not reflected in System assets as of 12/31/2019

(4) Reflects changes made to actuarial assumptions as of 12/31/2020, including return assumption of 7.00%, with underlying 2.50% inflation.

History of Funding Progress

Valuation Date	Actuarial Value of Assets (AVA)	Actuarial Accrued Liability (AAL)	Percentage Funded	Unfunded Actuarial Accrued Liability
12/31/2014	\$288,785,965	\$395,089,321	73.1%	\$106,303,356
12/31/2015	292,531,481	410,189,555	71.3%	117,658,075
12/31/2016	294,311,956	424,264,103	69.4%	129,952,147 (1)
12/31/2017	302,362,351	441,891,242	68.4%	139,528,892 (2)
12/31/2018	296,163,457	457,988,405	64.7%	161,824,949
12/31/2019	286,067,027	463,371,047	61.7%	177,304,020
12/31/2020	313,770,079	488,579,829	64.2%	174,809,750 (3)
12/31/2021	329,564,511	500,182,752	65.9%	170,618,241
12/31/2022	323,236,205	522,051,108	61.9%	198,814,903
12/31/2023	327,961,201	535,706,469	61.2%	207,745,268

(1) Reflects changes made to actuarial assumptions as of 12/31/2016, including return assumption of 7.35%, with underlying 2.85% inflation.

(2) Reflects changes made to actuarial assumptions as of 12/31/2017, return assumption of 7.25%, with underlying 2.75% inflation.

(3) Reflects changes made to actuarial assumptions as of 12/31/2020, return assumption of 7.00%, with underlying 2.50% inflation.

Appendix III: Act 202 Valuation Summary

The figures shown on this page are based on the same assumptions as outlined above, except for the amortization period and investment return assumption. The valuation is otherwise in compliance with the State’s Act 202 Uniform assumptions.

Actuarial Accrued Liability State Uniform Assumptions		12/31/2023
		6.90%
Total Actuarial Accrued Liability		\$555,626,898
<u>Actuarial Value of Assets</u>		<u>324,940,457</u>
Unfunded Actuarial Accrued Liability		\$230,686,441
Plan Funding Ratio		58.5%

City Contribution State Uniform Assumptions

		6.90%
1) Total Entry Age Normal Cost		\$7,673,346
2) <u>Estimated Employee Contributions</u>		<u>2,719,321</u>
3) Net City Normal Cost: (1) – (2)		\$4,954,025
4) Valuation Payroll		\$27,949,745
5) City Normal Cost Rate (% of pay): (3) ÷ (4)		17.7%
6) Amortization of Unfunded Actuarial Accrued Liability (15 years)		\$19,394,774
7) Amortization Rate (% of Pay): (6) ÷ (4)		69.4%
8) Total Contribution Rate: (5) + (7)		87.1%
9) Projected Payroll		\$27,949,745
10) Total City Contribution for FY2025 - Uniform Assumptions: (8) x (9)		\$24,348,799

Appendix IV: Risk Assessment

There are a number of risks inherent in managing a pension plan/trust. Some of the most substantial risks include (not an all-inclusive list):

- Investment Return Risk: Future investment returns may be unfavorable compared to what is assumed for Plan funding purposes.
- Investment Volatility Risk: Investment returns will vary from year to year and over time, with a possible single or multiple year significant drop in plan assets. This impacts contribution amounts as well as compound returns.
- Longevity Risk: Plan members and beneficiaries may live longer than projected, and thus be entitled to additional years of benefit payments versus what had been expected.
- Other Demographic Risks: Future demographic experience may be unfavorable compared to expected rates of retirement, termination, and disability. Future salary increases may also be higher than expected, thereby increasing the liability of pay-related benefits.

Investment Risk

The following table shows the impact of an investment return assumption of 4.00%, with all other factors being held the same as the valuation basis. This would have a significant impact on funding and contributions.

(\$ mm)	Current Return	Lower
	Assumption	Assumption (4.00%)
Actuarial Liability	\$535.7	\$750.0
Plan Assets	\$328.0	\$328.0
Unfunded Liability	\$207.7	\$422.0
Funding Ratio	61%	44%
Employer Contribution (EOY)	\$21.9	\$40.8
Total Contribution Rate	76.6%	142.7%

The actuarial liability in the right column can also be considered a low default-risk obligation measure. The discount rate shown above would be the required rate for an unfunded plan under GASB 68, and is therefore based on expected returns on municipal bonds (i.e., the plan sponsor’s estimated borrowing cost). This results in a higher liability. This discount rate would also be appropriate if the fund was invested in high quality fixed income securities. As shown in the table above, this would also entail a greater shortfall in funding and accompanying higher annual contributions.

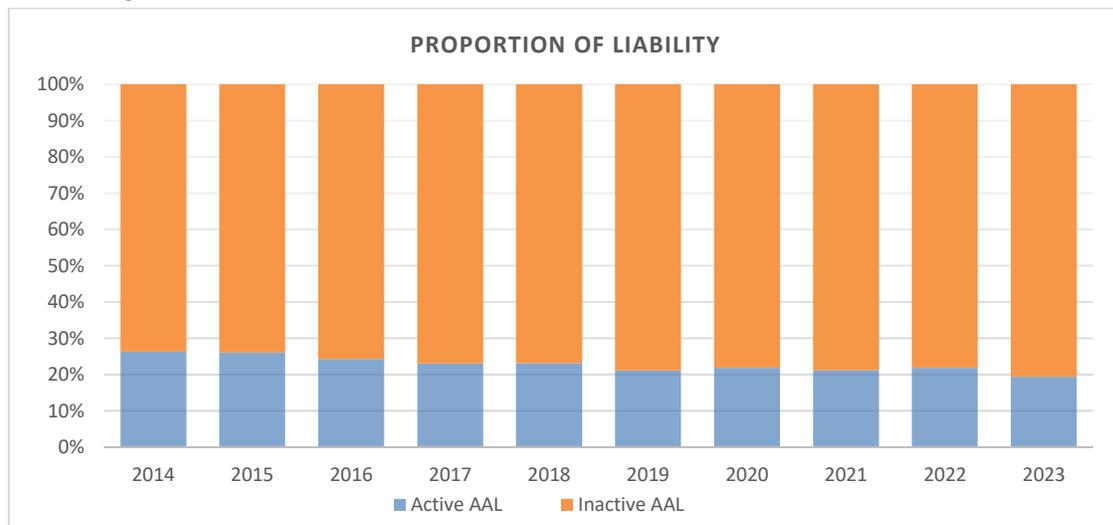
The difference in funded status between the two columns above can be thought of as an estimate of the present value of future expected investment returns from “risky” assets (e.g., equities). These additional returns are not guaranteed: any long-term shortfalls in investment returns will need to be made up for with additional contributions to ensure benefit security for Plan participants.

Plan Maturity

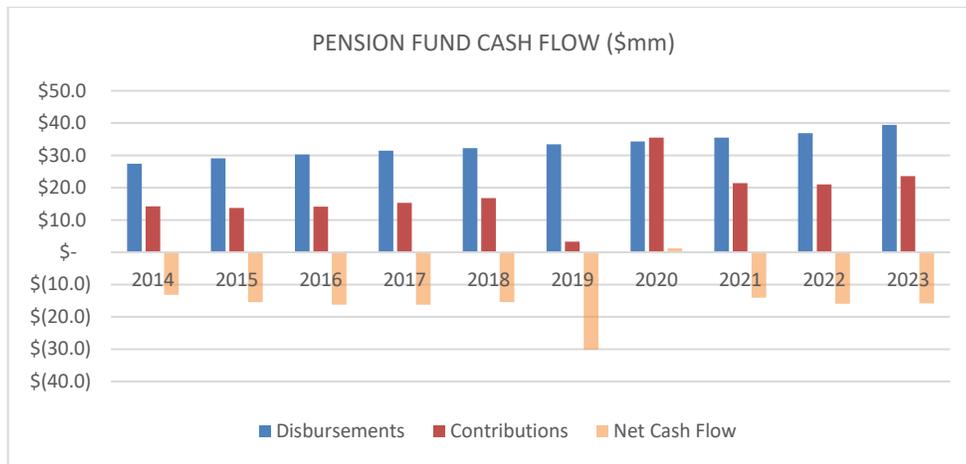
Another challenging risk faced by many pension plans is the maturing of the plan over time. This can be seen in the number of inactive (retirees, beneficiaries, etc.) versus the number of active employees in the plan population, as well as the liability of each group. As the plan matures, several risks emerge, including:

- Higher ratio of assets to payroll, which leads to a greater degree of contribution rate volatility.
- Negative cash flow (benefit payments exceeding contributions), which exacerbates the impact of an economic downturn.
- Greater degree of longevity risk (as illustrated above).
- Higher ratio of Actuarial Accrued Liability to Normal Cost, which causes more contribution volatility when demographic experience is unfavorable.

The following graphs illustrate some of these plan maturity measures in recent years, showing how the plan is maturing over time.



The System's actuarial liability has been steadily increasing in inactive proportion, from about 70% to about 80% inactive currently. This is evidence of a very mature plan, which carries with it the risks described above.



The fund has experienced negative cash flow (disbursements greater than contributions) for at least the last decade, with a total ten-year negative net cash flow of about \$150 million. This is another indication of a very mature plan. However, continued City contributions at the actuarially determined amounts will lead to funding improvement and a lower level of risk associated with negative cash flows.

Note: The employer contributions for fiscal years 2020 and 2021 were both made in calendar year 2020.

Appendix V: Benefit Costs by Group

Employee Group(s)	# Employees	Benefit Multiplier	Total Normal Cost	% of Pay	Net City Normal Cost	% of Pay
Police I	83	3.20%	\$2,456,977	27.0%	\$ 1,619,246	17.8%
Police II	101	3.00%	1,292,093	22.4%	716,526	12.4%
Fire I	62	3.20%	1,927,309	27.7%	1,233,901	17.7%
Fire II	<u>94</u>	<u>3.00%</u>	<u>1,589,093</u>	<u>25.9%</u>	<u>976,478</u>	<u>15.9%</u>
All Police and Fire Employees in Valuation	340	N/A	\$7,265,472	26.0%	\$4,546,151	16.3%