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City of Roseville
Employees Retirement System

Police and Fire

June 30, 2022 | Actuarial Valuation Report

Nyhart Actuary & Employee Benefits

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At the request of the plan sponsor, this report summarizes City of Roseville Employees Retirement System (Police and Fire) as of June 30, 2022. The purpose of this report is to communicate the following results of the valuation:

• Determine Funded Status; and
• Determine Recommended Contribution for the fiscal year July 1, 2023 through June 30, 2024.

This report has been prepared in accordance with the applicable Federal and State laws. Consequently, it may not be appropriate for other purposes. Please contact Nyhart prior to disclosing this report to any other party or relying on its content for any purpose other than that explained above. Failure to do so may result in misrepresentation or misinterpretation of this report.

The results in this report were prepared using information provided to us by other parties. The census information has been provided to us by the employer. Asset information has been provided to us by the trustee. We have reviewed the provided data for reasonableness when compared to prior information provided, but have not audited the data. Where relevant data may be missing, we have made assumptions we believe to be reasonable. We are not aware of any significant issues with and have relied on the data provided. Any errors in the data provided may result in a different result than those provided in this report. A summary of the data used in the valuation is included in this report.

The actuarial assumptions and methods were chosen by the Board. In our opinion, all actuarial assumptions and methods are individually reasonable and in combination represent our best estimate of anticipated experience of the plan. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following:

- plan experience differing from that anticipated by the economic or demographic assumptions;
- changes in economic or demographic assumptions;
- increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period); and
- changes in plan provisions or applicable law.

We did not perform an analysis of the potential range of future measurements due to the limited scope of our engagement. This report has been prepared in accordance with generally accepted actuarial principles and practice.

This actuarial valuation and/or cost determination was prepared and completed by me or under my direct supervision, and I acknowledge responsibility for the results. To the best of my knowledge, the results are complete and accurate, and in my opinion, the techniques and assumptions used are reasonable.

Actuarial Certification

In preparing these results, Nyhart used ProVal valuation software designed by Winklevoss Technologies, LLC. This software is widely used for the purpose of performing pension valuations. We coded the plan provisions, assumptions, methods, and participant data summarized in this report, and reviewed the liability and cost outputs for reasonableness. We are not aware of any weaknesses or limitations in the software, and have determined it is appropriate for performing this valuation.

Neither Nyhart nor any of its employees have any relationship with the plan or its sponsor which could impair or appear to impair the objectivity of this report. To the extent that this report or any attachment concerns tax matters, it is not intended to be used and cannot be used by a taxpayer for the purpose of avoiding penalties that may be imposed by law.

The undersigned are compliant with the continuing education requirements of the Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States and are available for any questions.

Nyhart

Derek Schmitt

Derek Schmitt, FSA, EA, MAAA
Enrolled Actuary No. 20-07642

Danielle Winegardner

Danielle Winegardner, FSA, EA, MAAA
Enrolled Actuary No. 20-8260

January 26, 2023
Date

Summary Results

The actuarial valuation's primary purpose is to produce a scorecard measure displaying the funding progress of the plan toward the ultimate goal of paying benefits at retirement. The accrued liability is based on an entry age level percentage of pay.

	June 30, 2021	June 30, 2022
Funded Status Measures		
Accrued Liability	$139,082,032	$139,103,300
Actuarial Value of Assets	$90,252,086	$89,739,093
Unfunded Accrued Liability	$48,829,946	$49,364,207
Funded Percentage (AVA)	64.9%	64.5%
Funded percentage (MVA)	73.8%	60.9%
Interest Rate	7.00%	7.00%
Cost Measures		
Recommended Total Contribution	$4,131,121	$4,219,554
Recommended Contribution (as a percentage of payroll)	43.4%	45.9%
Asset Performance		
Market Value of Assets	102,672,614	84,723,847
Actuarial Value of Assets	90,252,086	89,739,093
Actuarial Value/Market Value	87.9%	105.9%
Member Information		
Active Members	106	99
Terminated Vested Members	4	8
Retirees, Beneficiaries, and Disabled Members	187	193
Total	297	300
Covered Payroll	$9,525,285	$9,150,284

Changes Since Prior Valuation and Key Notes

The report reflects the following assumption changes:

- The mortality assumption was changed from PubS-2010 Mortality with Scale MP-2020 to the PubS-2010 Mortality Table with Scale MP-2021. This caused an increase to liability and contribution requirements.

  The administrative expense load was decreased from $130,000 to $120,000 based on the prior year's actual administrative expenses paid.

The report also reflects the changes in benefit formula for Fire participants as described on page 22.

Identification of Risks

The results presented in this report are shown as single point values. However, these values are derived using assumptions about future markets and demographic behavior. If actual experience deviates from our assumptions, the actual results for the plan will consequently deviate from those presented in this report. Therefore, it is critical to understand the risks facing this pension plan. The following table shows the risks we believe are most relevant to the City of Roseville Employees Retirement System. The risks are generally ordered with those we believe to have the most significance at the top. Also shown are possible methods by which a more detailed assessment of the risk can be performed.

Type of Risk	Method to Assess Risk
Investment Return	Scenario Testing; Asset Liability Study
Demographic Risk	Scenario Testing; Stress Testing; Experience Study
Participant Longevity	Stress Testing; Experience Study
Salary Growth	Scenario Testing; Experience Study; Review Future Budgets

Plan Maturity Measures – June 30, 2022

Each pension plan has a distinct life-cycle. New plans promise future benefits to active employees and then accumulate assets to pre-fund those benefits. As the plan matures, benefits are paid and the pre-funded assets begin to decumulate until ultimately, the plan pays out all benefits. A plan's maturity has a dramatic influence on how risks should be viewed. The following maturity measures illustrate where the City of Roseville Employees Retirement System falls in its life-cycle.

Duration of Liabilities: 11.1%

Duration is the most common measure of plan maturity. It is defined as the sensitivity of the liabilities to a change in the interest rate assumption. The metric also approximates the weighted average length of time, in years, until benefits are expected to be paid. A plan with high duration is, by definition, more sensitive to changes in interest rates. A plan with low duration is more susceptible to risk if asset performance deviates from expectations as there would be less time to make up for market losses in adverse market environments while more favorable environments could result in trapped surplus from gains. Conversely, high duration plans can often take on more risk when investing, and low duration plans are less sensitive to interest rate fluctuations.

Demographic Distribution - Ratio of Actively Accruing Participants to All Participants: 33.0%

A plan with a high ratio is more sensitive to fluctuations in salary (if a salary-based plan) and statutory changes. A plan with a low ratio is at higher risk from demographic experience. Such a plan should pay close attention to valuation assumptions as there will be less opportunity to realize future offsetting gains or losses when current experience deviates from assumptions. Plans with a low ratio also have limited opportunities to make alterations to plan design to affect future funded status.

Asset Leverage - Ratio of Payroll for Plan Participants to Market Value of Assets: 10.8%

Younger plans typically have a large payroll base from which to draw in order to fund the plan while mature plans often have a large pool of assets dedicated to providing benefits to a population primarily consisting of members no longer on payroll. Plans with low asset leverage will find it more difficult to address underfunding, as the contributions needed to make up the deficit will represent a higher percentage of payroll than for a plan with high asset leverage.

Benefit Payment Percentage - Ratio of Annual Benefit Payments to Market Value of Assets: 13.4%

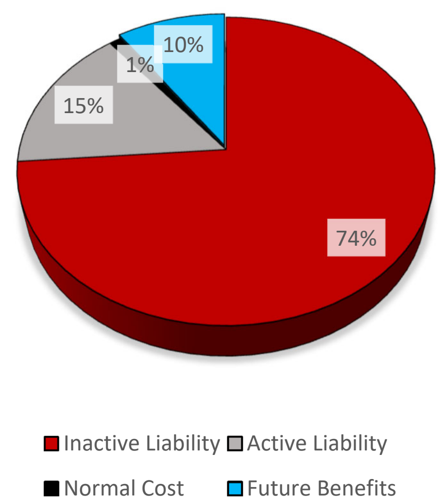
As a plan enters its decumulation phase, a larger percentage of the pre-funded assets are paid out each year to retirees. A high percentage is not cause for alarm as long as the plan is nearly fully funded. However, such a plan is more sensitive to negative asset performance, especially if cash contributions are not an option to make up for losses.

Present Value of Future Benefits

The Present Value of Future Benefits represents the discounted value of all future benefits expected to be payable to current members, considering future service and compensation not yet earned.

	June 30,2022
Present Value of Future Benefits	
Active members	
Retirement	$34,229,843
Disability	2,441,874
Death	408,105
Termination	3,282,143
Refund of Employee Contributions	512,776
Total active	$40,874,741
Inactive members	
Retired and Disabled members	$105,260,722
Beneficiaries	9,088,967
Terminated vested members	576,707
Total inactive	$114,926,396
Total	$155,801,137
Present Value of Future Payrolls	$93,538,718
Present Value of Future Employee Contributions	$9,231,880

Breakdown of Present Value of Future Benefits



Accrued Liability

The Accrued Liability measures the present value of benefits earned as of the valuation date, using a specified set of actuarial assumptions. It is not a long-term snapshot of the liabilities.

	June 30, 2022
Accrued Liabilities	
Active members	
Retirement	$21,703,307
Disability	1,201,694
Death	203,006
Termination	1,068,897
Total Active	$24,176,904
Inactive members	
Retired and Disabled members	$105,260,722
Beneficiaries	9,088,967
Terminated vested members	576,707
Total Inactive	$114,926,396
Total	$139,103,300
Total Normal Cost	$1,667,694

Asset Information

The amount of assets backing the pension promise is the most significant driver of volatility and future costs within a pension plan. The investment performance of the assets directly offsets the ultimate cost.

	Market Value June 30, 2022
Asset Value Reconciliation	
Value of assets, beginning of year	$102,672,614
Contributions	
Employer	$4,719,470
Employee	1,056,751
Total	$5,776,221
Investment income, net expenses	($12,281,327)
Benefit payments and refunds	(11,324,446)
Administrative expenses	(119,215)
Value of assets, end of year	$84,723,847
Return on Market Value	(12.3%)
Actuarial Value of Plan Assets	
Actuarial value, end of year	$89,739,093

Asset Information (continued)

Plan Assets are used to develop funded percentages and contribution requirements.

		June 30, 2022
1.	Actuarial value of assets, beginning of year	$90,252,086
2.	Market value of assets, beginning of year	$102,672,614
3.	Contributions	$5,776,221
4.	Admin Expenses	(119,215)
5.	Benefit Payments and Refunds	(11,324,446)
6.	Expected Total Investment Income	6,119,286
7.	Market Value of Assets, end of year	84,723,847
8.	Investment Income, net expenses	(12,281,327)
9.	Amount of Phased-In Recognition (8-6)	(18,400,613)
10.	Investment Gain/Loss	
	a. From current year (9*.25)	(4,600,153)
	b. From 1 year prior	4,675,325
	c. From 2 years prior	(553,913)
	d. From 3 years prior	(486,098)
	e. Total	(964,839)
11.	Preliminary Actuarial value of assets, end of year (1 + 3 + 4 + 5 +6 +10e)	$89,739,093
12.	80% of Market value of assets	$67,779,078
13.	120% of Market value of assets	$101,668,616
14.	Final Actuarial value of assets	$89,739,093
15.	Return on Actuarial Value	5.9%

Reconciliation of Gain/Loss

	June 30, 2022
Liability (gain)/loss	
Actuarial liability (06/30/2021)	$139,082,032
Normal cost	1,763,092
Benefit payments	(11,324,446)
Expected Interest	9,469,507
Assumption changes	159,546
Plan provision changes	41,961
Expected actuarial liability (06/30/2022)	$139,191,692
Actual actuarial liability (06/30/2022)	$139,103,300
Liability (gain)/loss	($88,392)
Asset (gain)/loss	
Actuarial value of assets (06/30/2021)	$90,252,086
Contributions	5,776,221
Benefit payments and expenses	(11,443,661)
Expected Investment return	6,119,286
Change in actuarial value of assets method	0
Expected actuarial value of assets (06/30/2022)	$90,703,932
Actual actuarial value of assets (06/30/2022)	$89,739,093
Asset (gain)/loss	$964,839
Total (gain)/loss	$876,447

Development of Recommended Contribution

The minimum recommended contribution is the annual amount necessary to fund the plan according to funding policies and/or applicable laws. The recommended contribution is composed of the normal cost, administrative expenses, plus an amortization charge.

	June 30, 2022
Funded Position	
1. Entry age accrued liability	$139,103,300
2. Actuarial value of assets	89,739,093
3. Unfunded actuarial accrued liability (UAAL)	$49,364,207
4. Expected Contribution Discounted to June 30, 2022	4,061,832
5. Unfunded actuarial accrued liability to amortize	$45,302,375
Employer Contributions	
1. Normal Cost	
(a) Total normal cost	$1,667,694
(b) Expected participant contributions	894,497
(c) Net normal cost	$773,197
2. Administrative expenses	120,000
3. Amortization of UAAL	2,984,169
4. Interest	342,188
5. Total recommended contribution for July 2023- June 2024	$4,219,554
6. Expected covered payroll	$9,150,284
As a percentage of covered payroll	46.1%
7. Total Normal Cost as a Percentage of Covered Payroll	18.2%

Michigan PA 202 Reporting Requirements

Under Michigan PA 202 Reporting, the Funded Ratio and Actuarial Determined Contribution must also be reported under State Treasury Uniform Assumptions as shown.

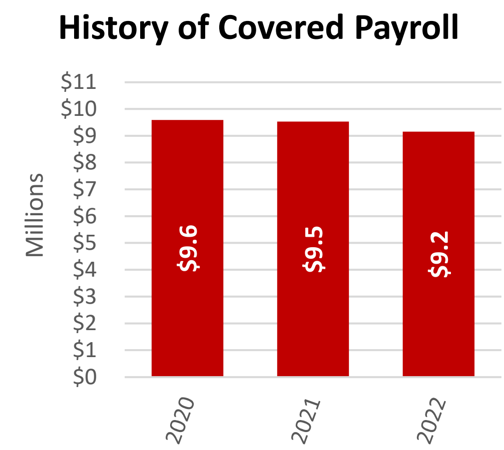
	June 30, 2022	
	Plan Assumptions	**State Treasury Uniform Assumptions**
Funded Ratio		
Interest Rate	*7.00%*	*6.85%*
Mortality	*PubS-2010 with Scale MP 2021*	*PubS-2010 with Scale MP 2020*
Accrued Liability	$139,197,616	$141,365,935
Market Value of Assets	$84,723,847	$84,723,847
Unfunded Accrued Liability, MVA Basis	$54,473,769	$56,642,088
Funded Percentage (MVA)	**60.87%**	**59.93%**
Actuarial Determined Contribution		
Interest Rate	*7.50%*	*6.85%*
Mortality	*PubS-2010 with Scale MP 2020*	*PubS-2010 with Scale MP 2020*
Amortization	*24 years*	*17 years*
Actuarially Determined Contribution*	$4,719,470	$6,413,023

*The Actuarially Determined Contribution payable for the fiscal year ending June 30, 2022 is calculated as of June 30, 2020 and based on data, assumptions, and plan provisions summarized in the June 30, 2020 Actuarial Valuation Report. The Actuarially Determined Contribution under Uniform Assumptions is calculated using the same information except as noted above.

Demographic Information

The foundation of a reliable actuarial report is the participant information provided by the plan sponsor. Monitoring trends in demographic information is crucial for long-term pension planning.

	June 30, 2021	June 30, 2022
Participant Counts		
Active Participants	106	99
Retired Participants	150	154
Disabled Participants	3	2
Beneficiaries	34	37
Terminated Vested Participants	4	8
Total Participants	297	300
Active Participant Demographics		
Average Age	37.3	36.7
Average Service	9.9	9.1
Average Compensation	$89,861	$92,427
Covered Payroll	$9,525,285	$9,150,284



Demographic Information (continued)

	June 30, 2021	June 30, 2022
Retiree Statistics		
Count	150	154
Average Age	65.3	64.9
Average Monthly Benefit	$4,693	$4,720
Disabled Participant Statistics		
Count	3	2
Average Age	68.2	60.2
Average Monthly Benefit	$2,180	$2,728
Beneficiary Statistics		
Count	34	37
Average Age	70.1	70.0
Average Monthly Benefit	$2,062	$2,106
Terminated Vested Participant Statistics		
Count	4	8
Average Age	38.9	35.2
Average Monthly Benefit	$1,159	$766

Monitoring the average age of the population is important due to the relationship of actuarial cost to age. Generally speaking, an older population generates a higher actuarial cost.

Changes in the ratio of active to retired participants can be a significant driver of costs in a volatile asset market.

Participant Reconciliation

	Active	Terminated Vested	Retired	Disabled	Beneficiaries	Totals
Prior Year	106	4	150	3	34	297
Active						
To Terminated Vested	(3)	3				0
To Retired	(10)		10			0
To Lump Sum Cash-Out	(4)					(4)
Terminated Vested						
To Retired						
To Lump Sum Cash-Out						
Retired						
To Disabled						
To Death			(6)	(1)		(7)
Survivor						
To Death					(1)	(1)
Additions	10	1			4	15
Departures						
Current Year	99	8	154	2	37	300

Active Participant Schedule

Active participant information grouped based on age and service.

	Years of Service											
Age Group	**Under 1**	**1 to 4**	**5 to 9**	**10 to 14**	**15 to 19**	**20 to 24**	**25 to 29**	**30 to 34**	**35 to 39**	**40 & Up**	**Total**	**Average Pay**
Under 25	4	4									8	$73,927
25 to 29	1	14	6								21	$84,942
30 to 34	3	7	8	2							20	$86,013
35 to 39			7	3	1						11	$90,316
40 to 44	2	1	3	4	7	1					18	$97,379
45 to 49			2	1	3	6	1				13	$118,323
50 to 54		1	1		1	5					8	$96,922
55 to 59											0	$0
60 to 64											0	$0
65 to 69											0	$0
70 & up											0	$0
Total	10	27	27	10	12	12	1	0	0	0	99	$92,427

Plan Status	The plan provides ongoing benefit accruals and participation is open to new entrants
Accrual of Benefits	A participant shall accumulate a benefit payable at normal retirement date based upon compensation and credited service earned as of the date of determination.

Benefits

Normal Retirement

Eligibility	Police, Fire, and Command: Age 50 with 20 or more years of credited service or age 55 with 10 or more years of service. May retire prior to age 50 with 20 or more years of credited service with forfeiture of i) health insurance premiums prior to age 50 and ii) post-retirement escalation. Through 6/30/2023, Police who retire prior to age 50 with 20+ years of service will still get the insurance benefits.
Benefit	The benefit amounts attributable to service retirements and the conditions under which such benefits may be paid are described *Plan Provision by Group* table. Benefit formula is the following: FAC x Years of Credited Service x Multiplier, with a maximum allowable benefit of Maximum Multiplier x FAC

Deferred Retirement Option Program (DROP)

Eligibility	Police: Age 50 with 20 years of service. Fire: Age 50 with 20 years of service. Command: Age 50 with 20 years of service.
Conditions	See the *Plan Provisions by Group* table for details Command: Contribute 9% of compensation, not eligible for annuity withdrawal Police and Fire: Contribute 10% of compensation, not eligible for annuity withdrawal DROP balances receive return of 3% per year

Deferred Retirement (Vested Benefit)

Eligibility	Termination of City employment with 10 or more years of credited service.
Benefit	Police and Fire: Accrued regular retirement amount payable beginning at age 50 with 20 years of service or age 55 with 10 years of service

Duty Disability Retirement

Eligibility	Total and permanent disability incurred in line of duty with the City for which Worker's Compensation is paid.
Benefit	Police, Fire, and Command: Minimum to age 50, 15% of FAC. Not eligible for annuity withdrawal. For all members, upon termination of Worker's Compensation period, or attainment of age 65, if earlier, service credit increased to include years in receipt of Worker's Compensation. Minimum - 50% of FAC.

Non-Duty Disability

Eligibility	Total and permanent disability after 10 years of credited service.
Benefit	Police, Fire, and Command: Accrued regular retirement amount. Not eligible for annuity withdrawal.

Duty Death in Service

Eligibility	Death incurred in line of duty with the City, or death of disability retiree as a result of same injury or disease for which he was retired; Worker's Compensation is being paid as a result of the death.
Benefit	Termination of Worker's Compensation period, an amount equal to Worker's Compensation payments are continued to unmarried spouse, unmarried children under age 18, and parents who were in receipt of Worker's Compensation as a result of the death. Command and Police members, benefit is continued until remarried or death. Minimum amount to spouse of a deceased Police or Fire member may continue after age 18 if Board finds child to be incapable of self-support due to a disability which began prior to attainment of age 18. Accumulated contributions are refunded.

Non-Duty Death in Service

Eligibility	Any age with 10 or more years of credited service.
Benefit	100% survivor actuarial equivalent of accrued regular retirement amount to elected beneficiary

Post-Retirement Increase

Eligibility	Command, Police, and Fire members with effective dates of retirement on or after July 1, 1977 and July 1, 1976, respectively. If began normal retirement prior to age 50, forfeit post-retirement cost-of-living adjustments.
Benefit	See *Plan Provisions by Group* for details

Annuity Withdrawal

Eligibility	Command, Police (except POAM hired after July 1, 2012) and Fire members
Benefit	A police or fire member retiring with a normal retirement allowance may elect to withdraw all or part of their member contributions. The member's pension shall be reduced by the actuarial equivalent of the amount withdrawn. If a member elects the Annuity Withdrawal Option, the member shall only receive a distribution of ninety-five percent (95%) of the amount elected to be withdrawn, and the remaining five percent (5%) shall be credited to the Retirement System. The additional two percent (2%) employee contribution agreed to by the Command Officers and Patrolman contracts and interest earned on those contributions shall not be available for the Annuity Withdrawal Option and any contribution (and interest) to the City's retirement system by a Command, Patrolman or Fire member participating in the City's Deferred Retirement Option Plan ("DROP") shall not be subject to the Annuity Withdrawal Option. Effective July 1, 2016, the extra 2% contribution and interest earned can now be withdrawn upon retirement for Command Officers. The additional 2% contribution paid prior to July 1, 2016 along with interest cannot be withdrawn.

Final Average Compensation See the *Plan Provisions by Group* table for details.

Employee Contributions See the *Plan Provision by Group* table for details.

Plan Provisions Not Included We are not aware of any plan provisions not included in the valuation

Adjustments Made for Subsequent Events

We are not aware of any event following the measurement date and prior to the date of this report that would materially impact the results of this report

Changes Since Prior Report All Fire actives are now subject to a maximum benefit of 75% of Final Average Compensation. Under the prior plan provisions, the maximum was 75% if hired before January 1, 2011 and 70% if hired after January 1, 2011.

The benefit multiplier for all Fire actives for service before November 1, 2013 is now 2.8%. Under old plan provisions, the benefit multiplier was 2.5% before November 1, 2013 if hired after January 1, 2011.

Plan Provision by Group

EMPLOYEES HIRED PRIOR TO JULY 1, 2012

UNION	RETIREMENT ELIGIBILITY Service/Age	FINAL AVERAGE COMP	BENEFIT MULTIPLIER Service earned prior to 6/30/2012	BENEFIT MULTIPLIER Service earned after 6/30/2012	MAXIMUM MULTIPLIER Hired Prior to 7/1/1994 vs Hired After 7/1/1994	COLA Retired Prior to 7/1/2012 (5/20/2013 for Command)	COLA Retired After 7/1/2012 (5/20/2013 for Command)	MEMBER CONTR RATE	DROP PARTICIPATION	DROP TERMS
COMMAND OFFICERS	10 / 55; 20 / 50; or 20 / any age but forfeitures apply	Any 3 years out of last 10 years*	2.8% to 25 yrs; 1.5% to 29 yrs		75%	15% increase years 5 and 10	15% increase year 5	9%	20 Years and age 50	7 Years Max
POLICE PATROL OFFICERS	10 / 55; 20 / 50; or 20 / any age but forfeitures apply	Any 3 years out of last 10 years*	2.8% to 25 yrs; 1.5% to 29 yrs		75%	15% increase years 5 and 10	15% increase year 5	9.00% / 10.00% DROP	20 Years and age 50	7 Years Max
FIREFIGHTERS	10 / 55; 20 / 50; or 20 / any age but forfeitures apply	Any 3 years out of last 10 years*	2.8% thru 10/31/2013 up to 25 years 2.5% effective 11/1/2013 with no service cap		75%	15% increase years 5 and 10	15% increase year 5	10%	20 Years and age 50	5 Years Max

**Year is any 4 consecutive quarters

Plan Provision by Group

EMPLOYEES HIRED ON OR AFTER JULY 1, 2012 (January 1, 2011 FOR FIREFIGHTERS)								
UNION	**RETIREMENT ELIGIBILITY Service/Age**	**FINAL AVERAGE COMP**	**BENEFIT MULTIPLIER**	**MAXIMUM MULTIPLIER**	**COLA**	**MEMBER CONTR RATE**	**DROP PARTICIPATION**	**DROP TERMS**
COMMAND OFFICERS	10 / 55; 20 / 50; or 20 / any age but forfeitures apply	Any 3 years out of last 10 years (Year is any 4 consecutive quarters)	2.8% to 25 yrs; 1.5% to 29 yrs	75%	15% increase year 5	9%	20 Years and age 50	7 Years Max
***Promoted on or after 7/1/2016**			POAM Multiplier	70%		10%		
POLICE PATROL OFFICERS	10 / 55; 20 / 50; or 20 / any age but forfeitures apply	Any 3 years out of last 10 years (Year is any 4 consecutive quarters)	2.50%	70%	N/A	10%	20 Years and age 50	7 Years Max
FIREFIGHTERS	10 / 55; 20 / 50; or 20 / any age but forfeitures apply	Any 3 years out of last 10 years (Year is any 4 consecutive quarters)	2.8% thru 10/31/2013 up to 25 years 2.5% effective 11/1/2013 with no service cap	75%	15% increase in year 5	10%	20 Years and age 50	5 Years Max

Except where otherwise indicated, the following assumptions were selected by the plan sponsor with the concurrence of the prior actuary. Actuarial Assumptions adopted based on most recent Experience Study, dated July 1, 2022.

Actuarial Assumptions, Methods and Additional Information for Funding

Valuation Date	June 30, 2022
Participant Information as of	June 30, 2022
Asset Information as of	June 30, 2022
Cost Method	Entry Age Normal Cost Method
Amortization Method	Level percent of payroll
Remaining Amortization Period	22 years (25-year closed began in 2019)
Payroll Growth Assumptions	3.0%
Asset Valuation Method	4-year adjusted market value
Interest Rates	7.0% (net of investment expenses)
Investment Rate of Return	The interest rate is the long term rate of return on assets. This assumption is supported by the investment mix of the plan assets and long-term capital market return assumptions.
Expense Loading	$120,000 was added to cover anticipated administrative expenses
Marital Status and Ages	No assumptions
Lump Sum Payments	Lump Sum Payments included in the calculation of average pay upon which benefits are computed were assumed to increase benefits by 10%. Using non-consecutive quarters in FAC was assumed to increase benefits by 1%.

Annual Pay Increases

T***he rates of salary increase*** used for individual members are in accordance with the following table:

Sample Ages	Years of Service	Total
ALL	**0**	21.00%
	1	16.00%
	2	13.00%
	3	8.00%
	4	6.50%
25	**5 & Over**	11.50%
30		5.00%
35		3.00%
40		3.00%
45		3.00%
50		2.00%
55		1.00%
60		1.00%
65		1.00%

Mortality Rates

Healthy — PubS-2010 Mortality Table with scale MP-2021

Disabled — PubS-2010 Disabled Mortality with scale MP-2021

Retirement Rates

Retirement rates are based on the last experience study conducted in 2021. Retirement rates are separated by age of participant, as shown below.

Age Retiring	Police	Fire
50	50%	50%
51	25%	35%
52	25%	25%
53	25%	25%
54	25%	25%
55	25%	25%
56	25%	25%
57	25%	25%
58	25%	25%
59	25%	25%
60	100%	100%

Disability Rates

Disability rates vary by age, gender, and division. This assumption measures the probability of members retiring with a disability benefit.

Sample Ages	Police/Fire
20	0.10%
25	0.15%
30	0.20%
35	0.25%
40	0.50%
45	0.65%
50	0.80%
55	0.95%

Withdrawal Rates

Withdrawal rates vary by service for first 5 years of employment, and vary by age after 5 years.

Sample Ages	Years of Service	Police	Fire
ALL	0	12.00%	10.00%
	1	10.00%	7.00%
	2	8.00%	5.00%
	3	5.00%	4.00%
	4	4.00%	3.50%
20	5 & Over	4.00%	3.50%
25		4.00%	3.50%
30		4.00%	2.90%
35		4.00%	1.50%
40		4.00%	0.60%
45		4.00%	0.50%
50		4.00%	0.50%
55		1.00%	0.50%
60		1.00%	0.50%
65		1.00%	0.50%

Changes Since Prior Report

- The mortality assumption was changed from PubS-2010 Mortality with Scale MP-2020 to the PubS-2010 Mortality Table with Scale MP-2021. This caused an increase to liability and contribution requirements.
- The administrative expense load was decreased from $130,000 to $120,000 based on the prior year's actual administrative expenses paid.