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City of Roseville Employees Retirement System

Police and Fire

June 30, 2021 | 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, 2021. 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, 2022 through June 30, 2023.

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



Nick Meggos, EA, FCA
Enrolled Actuary No. 20-7406



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January 10, 2022

Date

Executive Summary

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, 2020	June 30, 2021
Funded Status Measures		
Accrued Liability	\$134,951,333	\$139,082,032
Actuarial Value of Assets	\$84,859,448	\$90,252,086
Unfunded Accrued Liability	\$50,091,885	\$48,829,946
Funded Percentage (AVA)	62.9%	64.9%
Funded percentage (MVA)	61.0%	73.8%
Interest Rate	7.50%	7.00%
Cost Measures		
Recommended Total Contribution	\$4,719,470	\$4,131,121
Recommended Contribution (as a percentage of payroll)	49.2%	43.4%
Asset Performance		
Market Value of Assets	\$82,312,590	102,672,614
Actuarial Value of Assets	\$84,859,448	90,252,086
Actuarial Value/Market Value	103.1%	87.9%
Member Information		
Active Members	106	106
Terminated Vested Members	3	4
Retirees, Beneficiaries, and Disabled Members	183	187
Total	292	297
Covered Payroll	\$9,590,234	\$9,525,285

Changes Since Prior Valuation and Key Notes

The report reflects the assumption changes recommended in the July 1, 2021 Experience Study Report, including the following:

- The interest rate was lowered from 7.50% to 7.00% to reflect future capital market assumptions and the expected return on assets. This change resulted in an increase in accrued liability.
- The withdrawal rates for Police were changed to reflect future anticipated experience.
- The salary scale was lowered to reflect lower pay expectations for future years.

The administrative expense load was decreased from \$135,000 to \$130,000 based on the prior year's actual administrative expenses paid.

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, 2021

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: 35.7%

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: 9.3%

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: 9.6%

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.

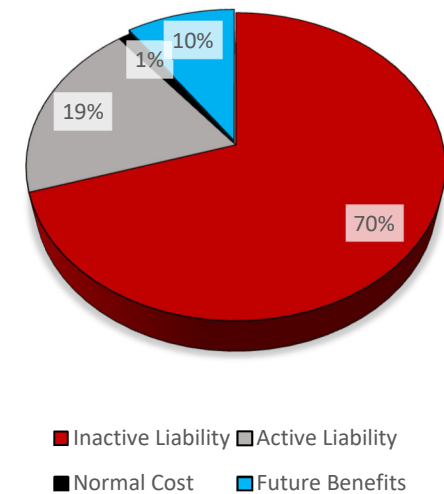
Assets and Liabilities

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, 2021
Present Value of Future Benefits	
Active members	
Retirement	\$39,521,619
Disability	2,621,926
Death	439,781
Termination	3,480,868
Refund of Employee Contributions	474,071
Total active	\$46,538,265
Inactive members	
Retired and Disabled members	\$100,610,842
Beneficiaries	8,198,675
Terminated vested members	461,702
Total inactive	\$109,271,219
 Total	 \$155,809,484
 Present Value of Future Payrolls	 \$93,799,910
Present Value of Future Employee Contributions	\$9,230,463

Breakdown of Present Value of Future Benefits



Assets and Liabilities

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, 2021
Accrued Liabilities	
Active members	
Retirement	\$27,055,088
Disability	1,352,939
Death	229,048
Termination	1,173,738
Total Active	<u>\$29,810,813</u>
Inactive members	
Retired and Disabled members	\$100,610,842
Beneficiaries	8,198,675
Terminated vested members	461,702
Total Inactive	<u>\$109,271,219</u>
 Total	 \$139,082,032
 Total Normal Cost	 \$1,763,092

Assets and Liabilities

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, 2021
Asset Value Reconciliation	
Value of assets, beginning of year	\$82,312,590
Contributions	
Employer	\$4,400,637
Employee	1,000,364
Total	\$5,401,001
Investment income, net expenses	\$24,895,673
Benefit payments and refunds	(9,807,141)
Administrative expenses	(129,509)
Value of assets, end of year	\$102,672,614
Return on Market Value	31.1%
Actuarial Value of Plan Assets	
Actuarial value, end of year	\$90,252,086

\$81,923,755 was transferred from the City of Roseville Employees Retirement System to the Police and Fire Plan shortly after July 1, 2020. The Beginning of Year Value of Assets shown above reflects the market value utilized in the June 30, 2020 Police and Fire Employees Actuarial Valuation Report.

Assets and Liabilities

Asset Information (continued)

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

	June 30, 2021
1. Actuarial value of assets, beginning of year	\$84,859,448
2. Market value of assets, beginning of year	\$82,312,590
3. Contributions	\$5,401,001
4. Admin Expenses	(129,509)
5. Benefit Payments and Refunds	(9,807,141)
6. Expected Total Investment Income	6,194,372
7. Market Value of Assets, end of year	102,672,614
8. Investment Income, net expenses	24,895,673
9. Amount of Phased-In Recognition (8-6)	18,701,301
10. Investment Gain/Loss	
a. From current year (9*.25)	4,675,325
b. From 1 year prior	(553,913)
c. From 2 years prior	(486,098)
d. From 3 years prior	98,601
e. Total	3,733,915
11. Preliminary Actuarial value of assets, end of year (1 + 3 + 4 + 5 +6 +10e)	\$90,252,086
12. 80% of Market value of assets	\$82,138,091
13. 120% of Market value of assets	\$123,207,137
14. Final Actuarial value of assets	\$90,252,086
15. Return on Actuarial Value	12.0%

Assets and Liabilities

Reconciliation of Gain/Loss

	June 30, 2021
Liability (gain)/loss	
Actuarial liability (06/30/2020)	\$134,951,333
Normal cost	2,085,776
Benefit payments	(9,807,141)
Expected Interest	9,916,664
Assumption changes	3,805,053
Plan provision changes	0
Expected actuarial liability (06/30/2021)	\$140,951,685
Actual actuarial liability (06/30/2021)	\$139,082,032
Liability (gain)/loss	(\$1,869,653)
Asset (gain)/loss	
Actuarial value of assets (06/30/2020)	\$84,859,448
Contributions	5,401,001
Benefit payments and expenses	(9,936,650)
Expected Investment return	6,194,372
Change in actuarial value of assets method	0
Expected actuarial value of assets (06/30/2021)	\$86,518,171
Actual actuarial value of assets (06/30/2021)	\$90,252,086
Asset (gain)/loss	(\$3,733,915)
Total (gain)/loss	(\$5,603,568)

Contribution Requirements

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, 2021
Funded Position	
1. Entry age accrued liability	\$139,082,032
2. Actuarial value of assets	90,252,086
3. Unfunded actuarial accrued liability (UAAL)	<u>\$48,829,946</u>
4. Expected Contribution Discounted to June 30, 2021	<u>4,640,313</u>
5. Unfunded actuarial accrued liability to amortize	<u>\$44,189,633</u>
Employer Contributions	
1. Normal Cost	
(a) Total normal cost	\$1,763,092
(b) Expected participant contributions	927,227
(c) Net normal cost	<u>\$835,865</u>
2. Administrative expenses	130,000
3. Amortization of UAAL	2,830,240
4. Interest	<u>335,016</u>
5. Total recommended contribution for July 2022- June 2023	\$4,131,121
6. Expected covered payroll	\$9,525,285
As a percentage of covered payroll	43.4%
7. Total Normal Cost as a Percentage of Covered Payroll	18.5%

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, 2021	
	Plan Assumptions	State Treasury Uniform Assumptions
Funded Ratio		
<i>Interest Rate</i>	7.00%	7.00%
<i>Mortality</i>	<i>PubS-2010 with Scale MP 2020</i>	<i>PubS-2010 with Scale MP 2019</i>
Accrued Liability	\$140,014,091	\$140,408,332
Market Value of Assets	\$102,672,614	\$102,672,614
Unfunded Accrued Liability, MVA Basis	\$37,341,477	\$37,735,718
Funded Percentage (MVA)	73.33%	73.12%
Actuarial Determined Contribution		
<i>Interest Rate</i>	7.50%	7.00%
<i>Mortality</i>	<i>PubS-2010 with Scale MP 2020</i>	<i>PubS-2010 with Scale MP 2019</i>
Actuarially Determined Contribution July 1, 2021 – June 30, 2022	\$4,719,470	\$5,317,204

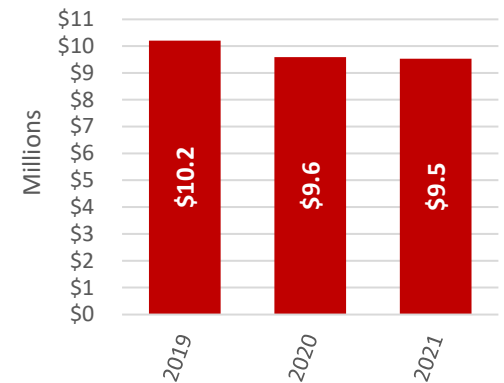
Demographic Information

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, 2020	June 30, 2021
Participant Counts		
Active Participants	106	106
Retired Participants	142	150
Disabled Participants	4	3
Beneficiaries	37	34
Terminated Vested Participants	3	4
Total Participants	292	297
Active Participant Demographics		
Average Age	38.8	37.3
Average Service	11.1	9.9
Average Compensation	\$90,474	\$89,861
Covered Payroll	\$9,590,234	\$9,525,285

History of Covered Payroll



Demographic Information

Demographic Information (continued)

	June 30, 2020	June 30, 2021
Retiree Statistics		
Count	142	150
Average Age	65.3	65.3
Average Monthly Benefit	\$4,617	\$4,693
Disabled Participant Statistics		
Count	4	3
Average Age	70.2	68.2
Average Monthly Benefit	\$1,971	\$2,180
Beneficiary Statistics		
Count	37	34
Average Age	70.7	70.1
Average Monthly Benefit	\$2,044	\$2,062
Terminated Vested Participant Statistics		
Count	3	4
Average Age	42.7	38.9
Average Monthly Benefit	\$1,457	\$1,159

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

Participant Reconciliation

	Active	Terminated Vested	Retired	Disabled	Beneficiaries	Totals
Prior Year	106	3	142	4	37	292
Active						
To Terminated Vested	(1)	1				0
To Retired	(10)		10			0
To Lump Sum Cash-Out	(3)					(3)
Terminated Vested						
To Retired						
To Lump Sum Cash-Out						
Retired						
To Disabled						
To Death			(2)	(1)		(3)
Survivor						
To Death					(4)	(4)
Additions	14				1	15
Departures						
Current Year	106	4	150	3	34	297

Participant Reconciliation

Active Participant Schedule

Active participant information grouped based on age and service.

Age Group	Years of Service										Total	Average Pay
	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		
Under 25	6	7									13	\$71,571
25 to 29	3	7	6								16	\$78,064
30 to 34	2	6	12								20	\$85,216
35 to 39	1		7	5							13	\$86,049
40 to 44		1	2	4	7	2					16	\$97,433
45 to 49		1	1	2	1	13					18	\$111,133
50 to 54	1		1		3	2	1				8	\$94,466
55 to 59					1	1					2	\$103,918
60 to 64											0	\$0
65 to 69											0	\$0
70 & up											0	\$0
Total	13	22	29	11	12	18	1	0	0	0	106	\$89,861

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 <i>Plan Provision by Group</i> table. Benefit formula is the following: $FAC \times \text{Years of Credited Service} \times \text{Multiplier}$, with a maximum allowable benefit of $\text{Maximum Multiplier} \times FAC$
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 <i>Plan Provisions by Group</i> 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 <i>Plan Provisions by Group</i> for details

Annuity Withdrawal

Eligibility	Command, Police (except POAM hired after July 1, 2012) and Fire members
Benefit	<p>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.</p> <p>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.</p>

Plan Provisions

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

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)	2.50%	70%	15% increase in year 5	10%	20 Years and age 50	5 Years Max

Actuarial Assumptions

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, 2021.

Actuarial Assumptions, Methods and Additional Information for Funding

Valuation Date	June 30, 2021
Participant Information as of	June 30, 2021
Asset Information as of	June 30, 2021
Cost Method	Entry Age Normal Cost Method
Amortization Method	Level percent of payroll
Remaining Amortization Period	23 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	\$130,000 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%.

Actuarial Assumptions

Annual Pay Increases

The 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-2020

Disabled

PubS-2010 Disabled Mortality with scale MP-2020

Actuarial Assumptions

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%

Actuarial Assumptions

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

Several assumption changes were made following the July 2021 Experience Study

- The interest rate was lowered from 7.50% to 7.00%
- The salary scale was lowered to reflect expected future pay increases
- The withdrawal rates for Police were changed to reflect future expected experience