Waterford Township

Policemen and Firemen Retirement System

January 1, 2022

Actuarial Valuation Report

Table of Contents

Actuarial Certification

At the request of the plan sponsor, this report summarizes the actuarial results of the Waterford Township Policemen and Firemen Retirement System as of January 1, 2022. The purpose of this report is to communicate the following results of the valuation:

• Funded Status;
• and Determine Recommended Contribution.

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 and asset information has been provided to us by the employer. 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.

In preparing these results, Nyhart used ProVal valuation software developed 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.

The actuarial assumptions and methods were chosen by the employer. 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.

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.

Actuarial Certification

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, FSA, EA, MAAA

Nick Meggos, FSA, EA, MAAA

August 27, 2022
Date

Executive Summary

The actuarial report provides the plan sponsor with several ways to measure the funded status of the pension plan. The following detail is included in the report:

- Recommended Contribution
- Asset Performance
- Plan Demographics

This report is filled with actuarial terminology. However, the ultimate objective of the valuation is to provide a rational method of funding the plan. It is necessary to fund the benefit promised by the employer in a manner that is logical and employer friendly, yet safeguards the participants' interest. The actuarially derived contribution, however, is not the true cost of the pension plan. The true cost is illustrated by the following formula:

Ultimate Pension Cost = Benefits Paid - Investment Income + Plan Expenses

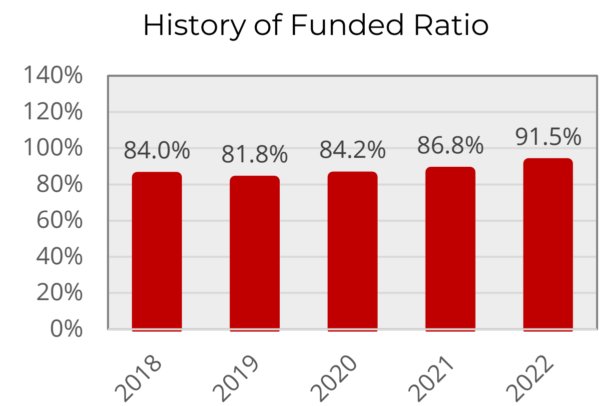
While the plan's liability and normal cost determine the current contribution recommendations, the true cost is controlled only by the "defined" benefit and investment income generated by the underlying assets. The actuarial process only controls the timing of costs.

We suggest that a plan sponsor treat the actuarial report as you would treat a scorecard. It is simply a measure of progress toward the ultimate goal of paying all pension benefits when participants retire.

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.

	January 1, 2021	January 1, 2022
Funded Status Measures		
Accrued Liability	$116,874,883	$118,354,615
Actuarial Value of Assets	$101,487,695	$108,247,340
Unfunded Actuarial Accrued Liability (UAAL)	$15,387,188	$10,107,275
Funded Percentage (AVA)	86.8%	91.5%
Funded Percentage (MVA)	93.3%	103.4%
Cost Measures		
Recommended Contribution for End of Next Year	$2,898,154	$2,317,855
Recommended Contribution (as a percentage of payroll)	50.3%	42.0%
Asset Performance		
Market Value of Assets (MVA)	$109,095,826	$122,373,664
Actuarial Value of Assets (AVA)	$101,487,695	$108,247,340
Actuarial Value/Market Value	93.0%	88.5%
Market Value Rate of Return	13.0%	16.8%
Actuarial Value Rate of Return	10.6%	11.5%
Participant Information		
Active Participants	60	53
Terminated Vested Participants	1	1
Retirees and Beneficiaries	172	173
Total	233	227
Expected Payroll	$5,786,009	$5,521,826



Changes since Prior Valuation and Key Notes

The mortality table has been updated from using PubS-2010 Mortality Table with generational improvements using SOA Scale MP-2020 to PubS-2020 Mortality Table with generational improvements using SOA Scale MP-2021. This change results in an increase in liability and normal cost.

The following assumptions were updated on January 1, 2022 in conjunction with the experience study performed during 2022:

- The salary scale assumption was changed to a flat 5.0%.
- The retirement assumption was changed as shown in the final section of this report.
- The withdrawal assumption was removed. All employees are assumed to work until retirement eligibility.
- The marital assumption was changed as shown in the final section of this report.

The expense load was decreased from $60,000 to $40,000 to reflect expenses expected to be paid for the year.

Five Year Valuation Summary

	01/01/2018*	01/01/2019*	01/01/2020	01/01/2021	01/01/2022
Funding					
Accrued Liability	$110,153,757	$112,691,156	$113,583,379	$116,874,883	$118,354,615
Actuarial Value of Assets	$92,511,847	$92,135,050	$95,592,685	$101,487,695	$108,247,340
Unfunded Actuarial Accrued Liability	$17,641,910	$20,556,106	$17,990,694	$15,387,188	$10,107,275
Funded Percentage	84.0%	81.8%	84.2%	86.8%	91.5%
Normal Cost (NC)			$1,458,008	$1,461,771	$1,446,453
NC as a Percent of Covered Payroll			22.8%	25.3%	26.2%
Actual Contribution**	$3,046,883	$3,328,794	$3,051,813	TBD	TBD
Recommended Contribution	$3,046,883	$3,328,794	$3,051,813	$2,898,154	$2,317,855
Recommended Contribution (% of Pay)	43.2%	50.2%	47.2%	50.1%	42.0%
Interest Rate	7.00%	6.75%	6.75%	6.75%	6.75%
Expense Load Assumption			$60,000	$60,000	$40,000
Rate of Return					
Actuarial Value of Assets	7.5%	4.2%	9.6%	10.6%	11.5%
Market Value of Assets	15.1%	(6.3%)	21.4%	13.0%	16.8%
Demographic Information* **					
Active Participants	80	74	72	60	53
Terminated Vested Participants	2	1	1	1	1
Retired Participants	154	161	163	150	150
Beneficiaries				12	13
Disabled Participants				10	10
Total Participants			236	233	227
Covered Payroll	$6,605,568	$6,251,905	$6,391,970	$5,786,009	$5,521,826
Average Covered Pay	$82,570	$84,485	$88,777	$96,433	$104,185

*Participant counts from the prior actuary did not provide a more detailed split of inactive participants.

**Actual contributions shown are made during the following calendar year. For example, the 1/1/2019 recommended contribution of $3,328,794 was made during 2020.

*** Prior actuary classified DROP participants as Actives. For 1/1/21 and beyond, they will be classified as retirees.

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 Waterford Township Policemen and Firemen 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
Interest Rates	Scenario Testing; Asset Liability Study
Participant Longevity	Projections and Contribution Strategy
Salary Growth	Scenario testing

Plan Maturity Measures - January 1, 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 Waterford Township Policemen and Firemen Retirement System falls in its life-cycle.

Duration of Liabilities: 10.2

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: 23.3%

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: 4.5%

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: 6.5%

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

The basic building blocks of the actuarial report are contained in this section. These include:

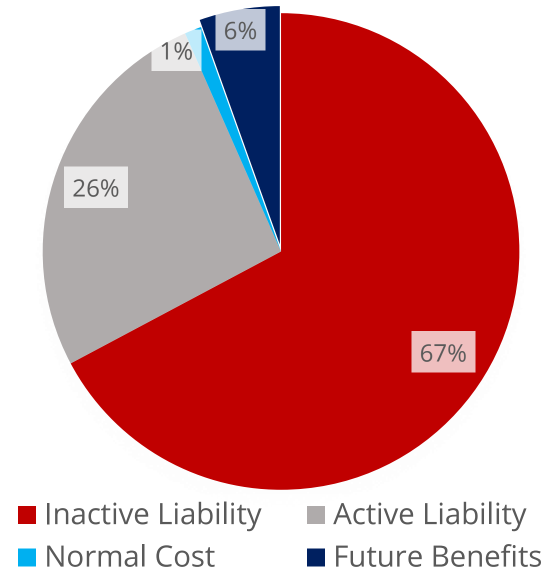
- Actuarial Accrued Liabilities
- Asset Information
- Summary of Contributions

Present Value of Future Benefits

The Present Value of Future Benefits represents the future benefits payable to the existing participants.

	January 1, 2022
Present Value of Future Benefits	
Active participants	
Retirement	$38,066,950
Disability	$3,274,251
Death	$199,002
Termination	$0
Total active	$41,540,203
Inactive participants	
Retired participants	$76,548,718
Beneficiaries	$3,800,116
Disabled Participants	$4,287,434
Terminated vested participants	$539,027
Total inactive	$85,175,295
Total	$126,715,498
Present value of future payrolls	$29,469,215

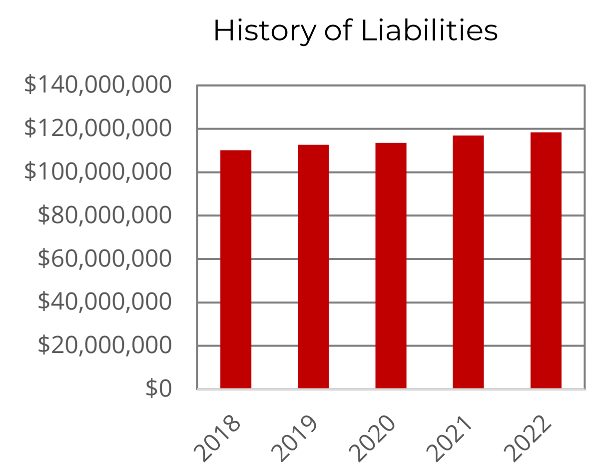
Breakdown of Present Value of Future Benefits



Actuarial Accrued Liability

The Actuarial Accrued Liability measures the present value of benefits earned as of the valuation date, using a specified set of actuarial assumptions.

	January 1, 2022
Active participants	
Retirement	$31,022,250
Disability	$2,028,846
Death	$128,224
Termination	$0
Total Ongoing Active	$33,179,320
Inactive participants	
Retired participants	$76,548,718
Beneficiaries	$3,800,116
Disabled Participants	$4,287,434
Terminated vested participants	$539,027
Total Inactive	$85,175,295
Total Actuarial Accrued Liability	$118,354,615
Normal Cost	$1,446,453
Interest Rate	6.75%



Assets and Liabilities

Reconciliation of Actuarial Accrued Liabilities

A plan's Actuarial Accrued Liability will change from one year to the next. It increases due to benefit accruals (Normal Cost) and interest, and it decreases as benefits are paid. Demographic experience, assumptions changes, and plan changes can cause increases or decreases.

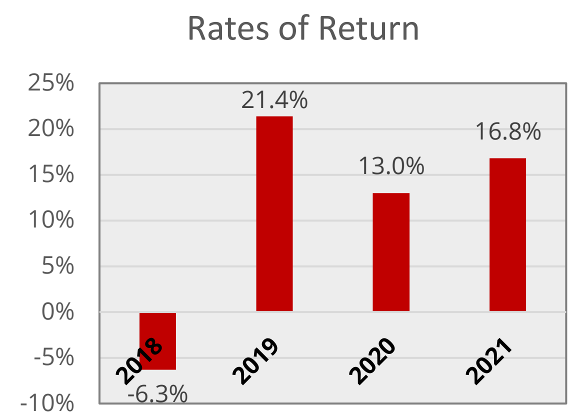
	January 1, 2022
1. Actuarial Accrued Liability prior year	$116,874,883
2. Increases or decreases due to:	
(a) Normal Cost	$1,461,771
(b) Interest Adjustment	$7,718,095
(c) Benefits Paid	$(7,989,006)
(d) Demographic Experience	$1,766,910
(e) Interest Rate Changes	$0
(f) Other Assumption Changes	$(1,478,038)
(g) Plan Changes	$0
3. Actuarial Accrued Liability current year	$118,354,615

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.

	January 1, 2022
Market Value Reconciliation	
Market value of assets, beginning of prior year	$109,095,826
Contributions	
Employer contributions	3,051,813
Employee contributions	303,661
Total	$3,355,474
Investment income	$17,937,349
Benefit payments	(7,989,006)
Administrative expenses	(25,979)
Market value of assets, beginning of current year (without receivable contributions)	$122,373,664
Discounted receivable contributions	$0
Market value of assets, beginning of current year (with discounted receivables)	$122,373,664
Historical Rates of Return	
Rate of return for 2021	16.8%
Rate of return for 2020	13.0%
Rate of return for 2019	21.4%
Rate of return for 2018	(6.3%)
Actuarial Value of Assets	
Value at beginning of current year	$108,247,340



Monitoring the pension plan's investment performance is crucial to eliminating surprises.

Asset Information (continued) – 25% Phase in

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

	January 1, 2022
Investment Gain or (Loss)	
1. Prior year's market value of assets	$109,095,826
2. Employer contributions for the prior plan year	3,051,813
3. Employee contributions for the prior plan year	303,661
4. Benefit payments during the prior plan year	(7,989,006)
5. Administrative expenses during the prior plan year	(25,979)
6. Expected earnings at 6.75% to the end of the plan year on	
(a) Market value of assets	$7,363,968
(b) Contributions	111,399
(c) Benefit payments	(265,226)
(d) Administrative expenses	(1,754)
(e) Total expected earnings, (a) + (b) + (c) + (d)	$7,208,387
7. Expected market value of assets, (1) + (2) + (3) + (4) + (5) + (6e)	$111,644,702
8. Actual market value of assets	$122,373,664
9. Investment Gain or (Loss), (8) – (7)	$10,728,962
Actuarial Value of Assets	
10. Market value of assets	$122,373,664
11. Deferred Investment gains or (losses)	
(a) Current year (75%)	$8,046,722
(b) First prior year (50%)	3,064,799
(c) Second prior year (25%)	3,014,803
(d) Total	14,126,324
12. Preliminary actuarial value of assets, (10 – (11d))	$108,247,340
13. 80% Market value of assets	$97,898,932
14. 120% Market value of assets	$146,848,396
15. Final actuarial value of assets	$108,247,340
16. Return on actuarial value of assets	11.5%

Reconciliation of Gain/Loss

	January 1, 2022
Liability (Gain)/Loss	
1. Actuarial liability, beginning of prior year	$116,874,883
2. Normal cost for prior year	1,461,771
3. Benefit payments	(7,989,006)
4. Expected Interest	7,718,095
5. Change in Assumptions	(1,478,038)
6. Change in Plan Provisions	0
7. Expected actuarial liability, beginning of current year	$116,587,705
8. Actual actuarial liability	$118,354,615
9. Liability Gain/(Loss), (7) – (8)	$(1,766,910)
Asset Gain/(Loss)	
10. Actuarial value of assets, beginning of prior year	$101,487,695
11. Contributions	3,355,474
12. Benefit payments	(7,989,006)
13. Administrative expenses	(25,979)
14. Expected Investment return	6,693,161
15. Expected actuarial value of assets, beginning of current year	$103,521,345
16. Actual actuarial value of assets, beginning of current year	$108,247,340
17. Asset Gain/(Loss), (16) – (15)	$4,725,995
Total Gain/(Loss), (17) + (9)	$2,959,085

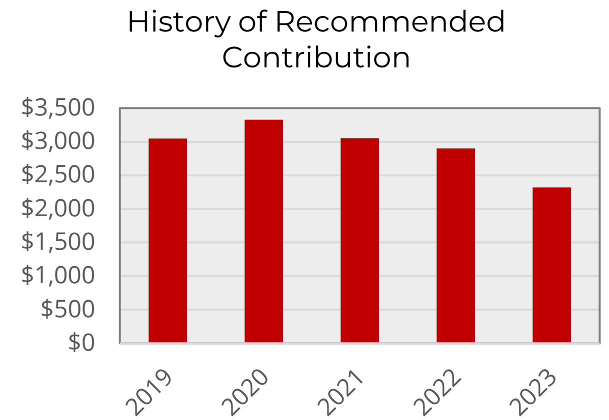
Reconciliation of Unfunded Actuarial Accrued Liability (UAAL)

	January 1, 2022
1. UAAL beginning of prior year	$15,387,188
2. Normal Cost for prior year	1,461,771
3. Administrative Expenses	25,979
4. Contributions	(3,355,474)
5. Interest	1,024,934
6. Expected UAAL, beginning of current year	$14,544,398
7. Changes due to:	
(a) Amendments	$0
(b) Assumptions	
(1) Interest Rate Update	$0
(2) All Other Assumption Changes	$(1,478,038)
(c) Funding Methods	0
(d) Plan Provisions	0
(e) Total	$(1,478,038)
8. Gain/(Loss) due to:	
(a) Assets	$4,725,995
(b) Liabilities	(1,766,910)
(c) Total	$2,959,085
9. UAAL beginning of current year [(6)+(7)-(8)]	$10,107,275

Development of Recommended Contribution

The recommended contribution is the annual amount necessary to fund the plan according to funding policies and/or applicable laws.

Normal Cost	
1. Normal Cost	
(a) Total Normal Cost	$1,446,453
(b) Expected participant contributions	(269,328)
(c) Expected Administrative Expenses	40,000
(d) Net normal cost as of January 1, 2022	$1,217,125
As a percentage of expected 2022 payroll	22.0%
(e) Net normal cost as of December 31, 2023	$1,386,982
Amortization of Unrecognized Actuarial Accrued Liability (UAAL)	
1. Calculation of UAAL	
(a) Entry Age Normal Accrued Liability	$118,354,615
(b) Actuarial Value of Assets	108,247,340
(c) UAAL as of January 1, 2022	$10,107,275
2. Anticipated 12/31/2022 UAAL Contribution discounted to January 1	2,714,898
3. Remaining UAAL to Amortize	7,392,377
4. Amortization Period	13
5. UAAL Amortization as of January 1, 2022	$816,873
6. UAAL Amortization as of December 31, 2023	$930,873
2023 Contribution	
1. Net Normal Cost	$1,386,982
2. UAAL Amortization	930,873
3. Total Contribution Payable on December 31, 2023	$2,317,855
As a percentage of expected 2023 payroll	42.0%
Payment Timing Alternatives	
Middle of Fiscal Year	$2,243,377
Beginning of Fiscal Year	$2,171,293



Funding Results

Michigan PA 202 Reporting Requirements

	January 1, 2022	
Funding Assumptions	**Plan Assumptions**	**State Treasury Uniform Assumptions**
Funded Ratio		
Interest Rate	6.75%	6.75%
Mortality	PubS-2010 Mortality with SOA Scale MP-21	No change
Accrued Liability	$118,354,615	$118,354,615
Market Value of Assets	$122,373,664	$122,373,664
Unfunded Accrued Liability, MVA Basis	$(4,019,049)	$(4,019,049)
Funded Percentage (MVA)	**103.40%**	**103.40%**
Underfunded Status	Not Underfunded	Not Underfunded
Actuarially Determined Contribution (end of the following year)	$2,317,855	$2,317,855

Data, Assumptions, and Plan Provisions

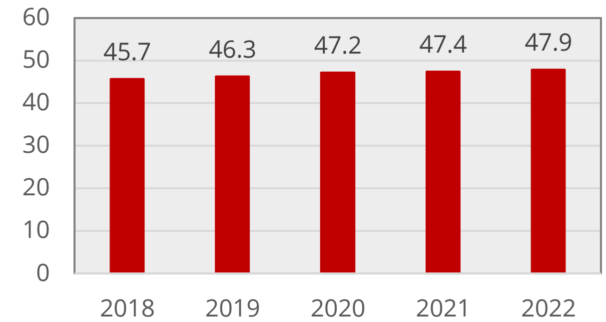
- Demographic Information
- Plan Provisions
- Assumptions and Methods

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.

	January 1, 2021	January 1, 2022
Participant Counts		
Active Participants*	60	53
Retired Participants	150	150
Beneficiaries	12	13
Disabled Participants	10	10
Terminated Vested Participants	1	1
Total Participants	233	227
Active Participant Demographics (Ongoing)		
Average Age	47.4	47.9
Average Service	18.9	19.2
Average Compensation	$96,433	$104,185
Total Covered Payroll	$5,786,009	$5,521,826

History of Average Active Participant Age



*Prior actuary classified DROP participants as Actives. For 1/1/21 and beyond, they will be classified as retirees

Demographic Information (continued)

	January 1, 2021	January 1, 2022
Retiree Statistics		
Average Age	65.1	65.2
Average Monthly Benefit	$3,595	$3,645
DROP Balances	$1,470,758	$1,347,274
Beneficiary Statistics		
Average Age	70.3	66.5
Average Monthly Benefit	$2,099	$2,246
Disabled Participant Statistics		
Average Age	63.8	62.3
Average Monthly Benefit	$3,080	$3,071
Terminated Vested Participant Statistics		
Average Age	44.1	45.1
Average Monthly Benefit	$3,444	$3,444

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	Beneficiaries	Disabled	Totals
Prior Year	60	1	150	12	10	233
Active						
To Death	0	0	0	0	0	0
To Terminated Vested	0	0	0	0	0	0
To Retired	(7)	0	7	0	0	0
Terminated Vested						
To Active	0	0	0	0	0	0
To Retired	0	0	0	0	0	0
To Survivor	0	0	0	0	0	0
To Death	0	0	0	0	0	0
Retired						
To Death with Beneficiary	0	0	(3)	3	0	0
To Death without Beneficiary	0	0	(3)	0	0	(3)
Survivor						
To Death	0	0	0	(2)	0	(2)
Additions	0	0	0	0	0	0
Departures	0	0	(1)	0	0	(1)
Current Year	53	1	150	13	10	227

*For purposes of this participant reconciliation, DROP participants are included in the Retired count.

Active Participant Schedule

Active participant information grouped based on age and service.

	Years of Service									
Age Group	0 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
Under 25										0
25 to 29										0
30 to 34										0
35 to 39			5	2						7
40 to 44			2	1	2					5
45 to 49				6	13	3				22
50 to 54				4	13	15				32
55 to 59					1	5				6
60 to 64						1	1			2
65 to 69										0
70 & up										0
Total	0	0	7	13	29	24	1	0	0	74

Plan Status

The plan is closed to new entrants and participants continue to accrue benefits

Eligibility for Participation

Police Officers and Police Supervisors hired prior to 11/1/2014 and Firefighters hired prior to January 1, 2012

Accrual of Benefits

A participant shall accumulate a benefit payable at Normal Retirement Date based on Compensation as of the date of determination of the accrued benefit and benefit service as of the date of determination.

Benefits

Normal Retirement

Eligibility	25 years of service or age 60
Benefit	2.5% of Final Average Compensation times years of service with a maximum benefit of 75% of Final Average Compensation. Final Average Compensation for this benefit uses the highest 3 salaries out of the last 10 years.

For Police Officers and Police Supervisors hired between January 1, 2004 and November 1, 2014 and Firefighters hired between February 12, 2007 and December 31, 2011:

Eligibility	Age 55 with 25 years of service or age 60 with 10 years of service Firefighters can also retire at any age with 30 years of service
Benefit	2.3% of Final Average Compensation times years of service (up to 25 years) plus 1.5% of Final Average Compensation for each year of service over 25 with a maximum benefit of 71% of Final Average Compensation. Final Average Compensation for this benefit uses the highest 3 salaries out of the last 5 years.

Deferred Retirement

Eligibility	8 years of service for Management and Administration 10 years of service for all others
Benefit	Accrued retirement benefit payable at the date that retirement would have occurred had participant remained in employment using service, Final Average Compensation, and benefit formula at the date of termination

Late Retirement

Eligibility	Participation continues after normal retirement date.
Benefit	Retirement benefit determined at Late Retirement Date based on Normal Retirement Benefit formula and plan compensation and benefit service at such date.

Non-Duty Death before Retirement

Eligibility	20 years of service (10 years of service for Fire and COAM)
Benefit	Spouse receives 100% of the benefit the participant would have received if retirement occurred on the day before death and the joint and 100% survivor annuity option (Option 1) was elected. Payments begin immediately if participant is eligible for early retirement at death or deferred to earliest retirement date of participant if later.

Duty Death before Retirement

Eligibility	Expiration of workers' compensation to the survivors of a member who died in the line of duty
Benefit	Same amount paid by workers' compensation

Non-Duty Disability

Eligibility	5 years of service and deemed to be totally and permanently disabled
Benefit	To Age 55: 1.5% of Final Average Compensation times years of service At Age 55: Same as Normal Retirement

Duty Disability

Eligibility	Payable upon the total and permanent disability of a member in the line of duty. Members of the 401(a) Defined Contribution Plan are eligible for Duty Disability benefits, which are to be offset by the balance of their 401(a) account.
Benefit	To Age 55: 62.5% of Final Average Compensation At Age 55: Same as Service Retirement Pension with service credit from date of disability to age 55

COLA

Eligibility	Police and Fire Management & Administrative with 25 years of service at retirement
Increase	2.0% of the original benefit. Each year of manager service completed after reaching retirement eligibility entitles a retired manger to 2 annual increases with a maximum of 10 annual increases.

Credited Service

For Vesting and Benefit Accrual
All years and completed months of service

Compensation

Management: Base pay
Non-Management: Base pay plus holiday pay, overtime, and longevity pay

Average Compensation

Average Compensation is the average of the 3 highest consecutive amounts of the last 10 completed years preceding retirement.

For Police Officers and Police Supervisors hired between January 1, 2004 and November 1, 2014 and
Firefighters hired between February 12, 2007 and December 31, 2011:

Average Compensation is the average of the 3 highest consecutive amounts of the last 5 completed years preceding retirement.

Employee Contributions

5.00% of compensation
Refund of member contributions including interest at retirement is permitted. Annuity withdrawal is based on Merrill Lynch Corporate and Government Master Bond Average for the month of retirement (or upon entering the DROP).

Payment Forms

Normal Form

A Single Life Annuity for single participants, Joint and 60% Survivor Annuity for married participants (not reduced for Actuarial Equivalence)

Optional Forms

Life Annuity, 60% Joint and Survivor Annuity, 100% Joint and Survivor Annuity

Deferred Retirement Option Plan (DROP)

Participants in the Police Officer Union are ineligible to participate in the DROP. Effective January 1, 2012, Police Supervisors are ineligible to DROP. Management participants from both Police and Fire are no longer eligible for the DROP, apart from those already participating or grandfathered as of December 31, 2016.

All Others: A member may participate in the DROP after attaining eligibility for Normal Retirement. The monthly amount into the DROP account is based on the pension calculated at the time they enter the DROP. Participants continue to make contributions to the plan, but the additional contributions do not affect their benefit during the DROP period. Service and pay earned during DROP participation does not affect the benefit during or after DROP participation. The DROP account is credited with the System's prior calendar year's market rate of return (but not greater than 4% interest) each year. Additions cease at the earlier of 5 years of DROP participation, the 33rd year of service, or separation from service. Upon actual retirement, the member may receive the DROP account balance in the form of a lump sum or as an additional annuity. Interest on the DROP account will continue to accrue while balance remains (including after actual retirement).

DROP participants must elect whether or not to take the annuity withdrawal option upon entering the DROP. However, the actual payment of employee contributions does not occur until exiting the DROP. During the DROP period, monthly payments reflect the reduction for annuity withdrawal based on the employee contribution balance (including interest) upon entering the DROP. After the DROP period, monthly payments reflect the reduction for annuity withdrawal based on the employee contribution balance (including interest) upon exiting the DROP. As a result, the monthly benefit paid during the DROP period is adjusted upon actual retirement for the final annuity withdrawal calculation

Actuarial Equivalence

All optional forms (other than annuity withdrawal) are actuarially equivalent based on:

- 7.0% interest
- 1971 GAM Male table, blended 90% with no setback and 10% with 5-year setback

Military Service Purchases

Fire: Military service prior to employment may be purchased.

Police Officers and Police Supervisors (as of 1/1/2013): Military and/or sworn service time may be purchased.

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.

Except where otherwise indicated, the following assumptions were selected by the plan sponsor with the concurrence of the actuary. Prescribed assumptions are based on the requirements of the relevant law, the Internal Revenue Code, and applicable regulation. The actuary was not able to evaluate the prescribed assumptions for reasonableness for the purpose of the measurement.

Valuation Date	January 1, 2022
Participant and Asset Information Collected as of	January 1, 2022
Cost Method	Entry Age Normal Level Percent of Pay Method
Amortization Method	13-year closed level dollar amortization of Unfunded Actuarial Accrued Liability
Asset Valuation Method	Market value of assets with a 4-year phase in of gains and losses, subject to a 20% corridor
Interest Rates *(CO)*	6.75% This rate has been set by the plan sponsor in conjunction with the 2022 assumption study. It reflects forward-looking expectations from the plan's asset advisor and published studies, as well as historical returns and peer benchmarks.
Annual Pay Increases *(FE)*	5.00%

Mortality Rates *(FE)*

Healthy	PubS-2010 Mortality with generational improvements projected beginning in 2010 based on the SOA Scale MP-21
Disabled	PubS-2010 Disabled Mortality with generational improvements projected beginning in 2010 based on the SOA Scale MP-21
	50% of active member deaths are assumed to be in the line of duty.
	As the plan is not large enough to have credible experience, mortality assumptions are set to reflect general population trends.
Marital Status and Ages *(FE)*	100% of members are assumed to be married for purposes of death-in-service benefits. 60% of the active members are assumed to be married at retirement and death for purposes of the automatic survivor benefit. Wives assumed to be 3 years younger than husbands.
Payment Form Election *(FE)*	60% Joint and Survivor Annuity at Normal Retirement (if married). Annuity Withdrawal is elected and DROP is not elected.
Retirement Rates *(FE)*	Retirement rates vary by years of service.

Status	Rate
25-29 Years of Service	60%
30+ Years of Service	100%

Disability Rates *(FE)*	None
Withdrawal Rates *(FE)*	None
Expense Loading	$40,000 was added to cover anticipated administrative expenses

FE indicates an assumption representing an estimate of future experience
MD indicates an assumption representing observations of estimates inherent in market data
CO indicates an assumption representing a combination of an estimate of future experience and observations of market data