Shelby Township Fire and Police Retirement System

December 31, 2022

Actuarial Valuation Report

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Actuarial Certification

At the request of the plan sponsor, this report summarizes the Retirement System for the Township of Shelby Fire and Police as of December 31, 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.

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.

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

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 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

Danielle Winegardner

Danielle Winegardner, FSA, EA, MAAA

Joseph V Oneal

Joseph Oneal, ASA

April 4, 2023
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

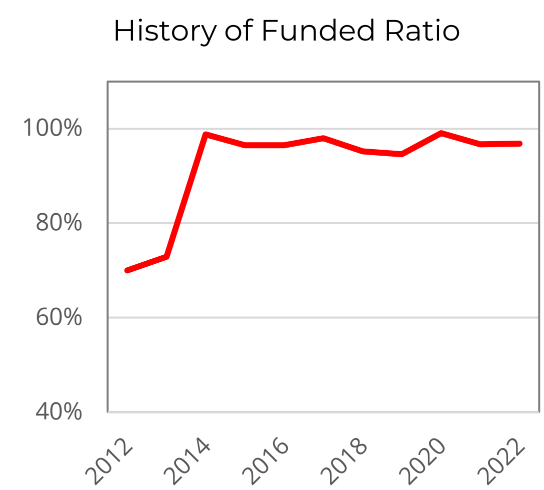
While the plan's liability and normal cost determine the current contribution recommendations, the true cost is controlled only by the “defined” benefit and investment income generated by the underlying assets. The actuarial process only controls the timing of costs.

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.

	December 31, 2021	December 31, 2022
Funded Status Measures		
Accrued Liability	$134,082,919	$138,031,121
Actuarial Value of Assets	$129,701,906	$133,685,669
Unfunded Actuarial Accrued Liability (UAAL)	$4,381,013	$4,345,452
Funded Percentage (AVA)	96.73%	96.85%
Funded Percentage (MVA)	106.97%	86.66%
Cost Measures		
Recommended Contribution for Year Beginning	$2,118,615	$2,054,212
Recommended Contribution (as a percentage of payroll)	22.55%	23.97%
Asset Performance		
Market Value of Assets (MVA)	$143,423,831	$119,623,544
Actuarial Value of Assets (AVA)	$129,701,906	$133,685,669
Actuarial Value/Market Value	90.43%	111.76%
Market Value Rate of Return	14.60%	(13.12)%
Actuarial Value Rate of Return	10.68%	7.33%
Participant Information		
Active Participants	82	71
Terminated Vested Participants	3	4
Retirees and Beneficiaries	139	148
Total	224	223
Expected Payroll	$9,397,019	$8,571,149



Changes since Prior Valuation and Key Notes

There have been no assumption or plan provision changes since the prior valuation.

Historical Valuation Summary

	12/31/2018	12/31/2019	12/31/2020	12/31/2021	12/31/2022
Funding					
Accrued Liability	$112,226,489	$119,391,472	$122,741,936	$134,082,919	$138,031,121
Actuarial Value of Assets	$106,783,670	$112,879,185	$121,607,091	$129,701,906	$133,685,669
Unfunded Actuarial Accrued Liability	$5,442,819	$6,512,287	$1,134,845	$4,381,013	$4,345,452
Funded Percentage	95.15%	94.55%	99.08%	96.73%	96.85%
Normal Cost (NC)	$1,796,478	$1,889,293	$1,833,877	$1,851,067	$1,702,756
NC as a Percent of Covered Payroll	17.69%	18.56%	17.76%	19.70%	19.87%
Actual Contribution	$2,652,828	$2,562,785	$2,395,632*	$2,118,615	Feb-24
Recommended Contribution	$2,301,925	$2,562,785	$1,447,092	$2,118,615	$2,054,212
Recommended Contribution (% of Pay)	22.30%	23.95%	13.45%	22.55%	23.97%
Interest Rate	7.50%	7.50%	7.50%	7.00%	7.00%
Rate of Return					
Actuarial Value of Assets	4.99%	9.77%	10.96%	10.68%	7.33%
Market Value of Assets	(5.57)%	20.78%	12.85%	14.60%	(13.12)%
Demographic Information					
Active Participants	99	98	96	82	71
Terminated Vested Participants	4	4	3	3	4
Retired Participants	98	99	101	113	119
Beneficiaries	20	20	22	25	28
Disabled Participants	1	1	1	1	1
Total Participants	222	222	223	224	223
Covered Payroll	$9,888,486	$10,176,936	$10,328,060	$8,998,819	$8,207,668
Average Covered Pay	$99,884	$103,846	$107,584	$109,742	$115,601

*The Township contributed an additional $948,540 on 12/15/2022

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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 Shelby Township Fire and Police Plan. 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; Stochastic Modeling
Participant Longevity	Projections and Contribution Strategy
Early Retirement	Scenario Testing; Review population and retirement rates
Salary Growth	Review salary history and future budgets; scenario testing

Plan Maturity Measures - January 1, 2023

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 Shelby Township Fire and Police Plan falls in its life-cycle.

Duration of Liabilities: 10.6

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: 31.8%

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: 7.2%

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: 6.8%

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:

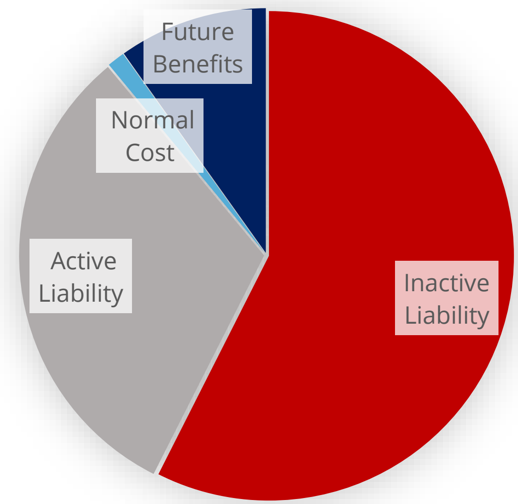
- Actuarial Accrued Liabilities
- Asset Information
- Summary of Contributions

Present Value of Future Benefits

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

	December 31, 2022
Present Value of Future Benefits	
Active participants	
Retirement	$54,384,947
Disability	2,161,337
Death	458,944
Termination	309,857
Refund of contributions	654
Total active	$57,315,739
Inactive participants	
Retired participants	$83,763,288
Beneficiaries	6,845,801
Disabled participants	524,660
Terminated vested participants	629,422
Total inactive	$91,763,171
Total	$149,078,910
Present value of future payrolls	$54,419,284

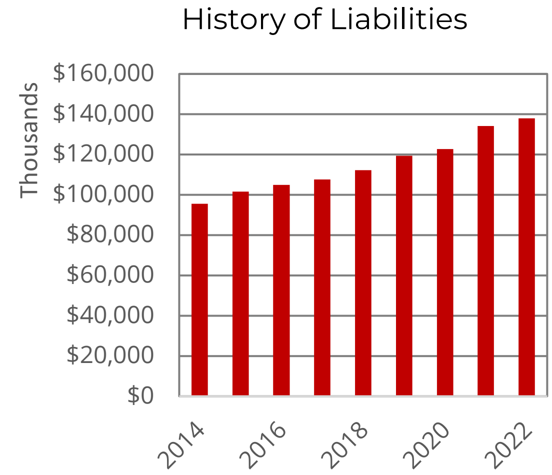
Breakdown of Present Value of Future Benefits

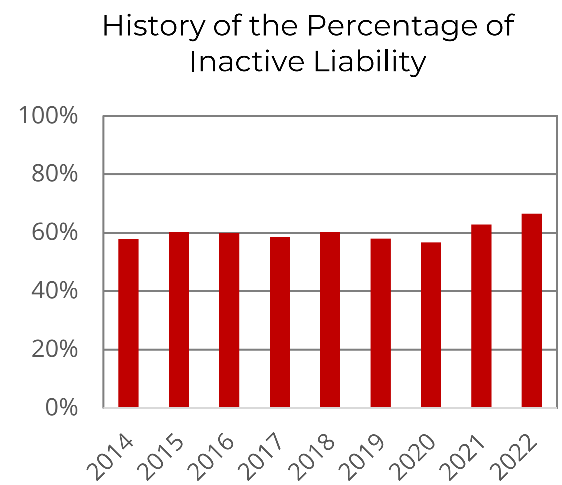


Actuarial Accrued Liability

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

	December 31, 2022
Funding Liabilities – Entry Age Normal as Percent of Pay	
Active participants	
Retirement	$44,612,705
Disability	1,316,442
Death	302,678
Termination	123,104
Refund of contributions	(86,979)
Total Active	$46,267,950
Inactive participants	
Retired participants	$83,763,288
Beneficiaries	6,845,801
Disabled participants	524,660
Terminated vested participants	629,422
Total Inactive	91,763,171
Total	$138,031,121
Normal Cost	$1,702,756
Interest Rate	7.00%



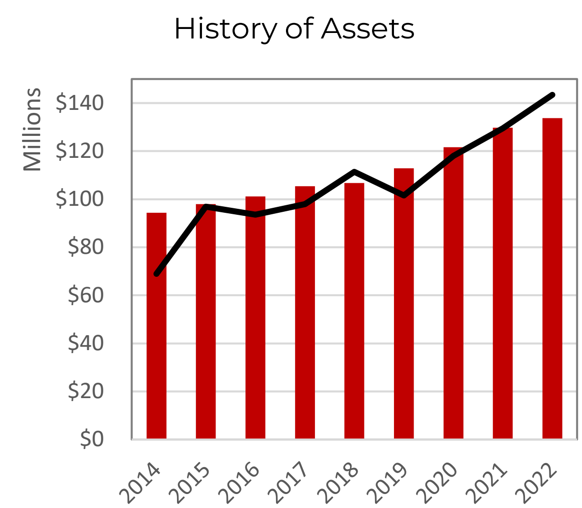


Assets and Liabilities

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.

	December 31, 2022
Market Value Reconciliation	
Market value of assets, beginning of year	$143,423,831
Contributions	
Employer contributions	2,395,632
Employee contributions	442,148
Total	$2,837,780
Investment income	($18,474,273)
Refund of Member Contributions	($117,293)
Benefit payments	($8,046,501)
Market value of assets, end of current year	$119,623,544
Return on Market Value	(13.12)%
Market value of assets available for pension benefits	$119,623,544
Actuarial Value of Assets	$133,685,669
Assets Reserves	
Reserves for	
Employees' contributions	$7,068,130
Employer contributions	29,245,700
Retired benefit payments	83,309,714
Total reserves at market	$119,623,544
Funding value adjustment	$14,062,125
Actuarial value of assets	$133,685,669



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

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Assets and Liabilities

Asset Information (continued) – 25% Write-Up Method

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

	December 31, 2022
1. Expected Investment Income	
(a) Actuarial value of assets, prior year	$129,701,906
(b) Employee Contributions	442,148
(c) Employer Contributions	2,395,632
(d) Refund of Member Contributions	117,293
(e) Benefit payments	8,046,501
(f) Expected Investment Income – end of year [7.0% x (a) + 7.0% x (1/2) x {(b)+(c)-(d)-(e)}]	$8,892,723
2. Market value of Investment Income, current year	($18,474,273)
3. Amount subject to phase in [(2) – (1f)]	($27,366,996)
4. Phase in of gain/(loss) [25% x (3)]	($6,841,749)
5. Phased-In Recognition of Investment Income	
(a) Current Year Phase in of gain/(loss) (4)	($6,841,749)
(b) First Prior Year	2,405,291
(c) Second Prior Year	1,652,536
(d) Third Prior Year	3,200,976
(e) Total	$417,054
6. Preliminary actuarial value of assets, current year [(1a)+(1b)+(1c)-(1d)-(1e)+(1f)+(5e)]	$133,685,669
7. 80% Market value of assets (Market Value = $119,623,544)	$95,698,836
8. 120% Market value of assets (Market Value = $119,623,544)	$143,548,253
9. Final actuarial value of assets	$133,685,669
10. Return on actuarial value of assets	7.33%

Reserve Allocation

In financing the Actuarial Accrued Liabilities, the Valuation Assets were distributed as follows:

Reserves for	Active and Deferred Vested Members	Retired Members	Contingency Reserve	Total
Employees' Contributions	$7,068,130			$7,068,130
Employer Contributions	35,483,790	$7,824,035		43,307,825
Retired Benefit Payments		83,309,714		83,309,714
Total	$42,551,920	$91,133,749	None	$133,685,669

The Unfunded Actuarial Accrued Liabilities were distributed as follows:

Reserves for	Active and Deferred Vested Members	Retired Members	Total
Computed Actuarial Accrued Liabilities	$46,897,372	$91,133,749	$138,031,121
Applied Assets	42,551,920	91,133,749	133,685,669
Unfunded Actuarial Accrued Liabilities	$4,345,452	$0	$4,345,452

Funding Results

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

- Reconciliation of Gain/Loss
- Recommended Contribution

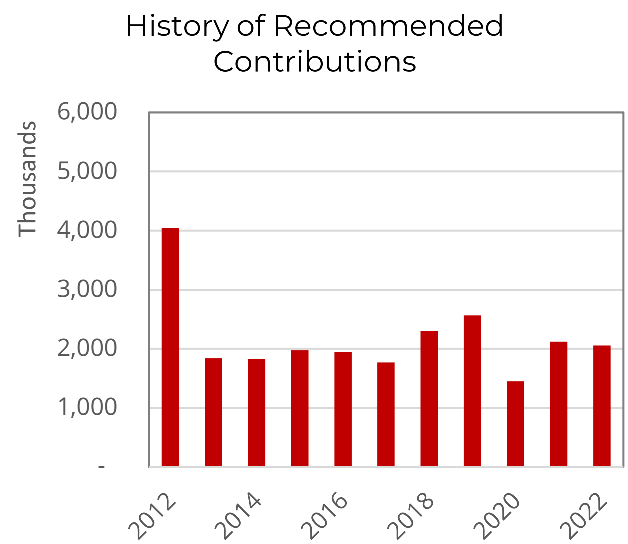
Reconciliation of Gain/Loss

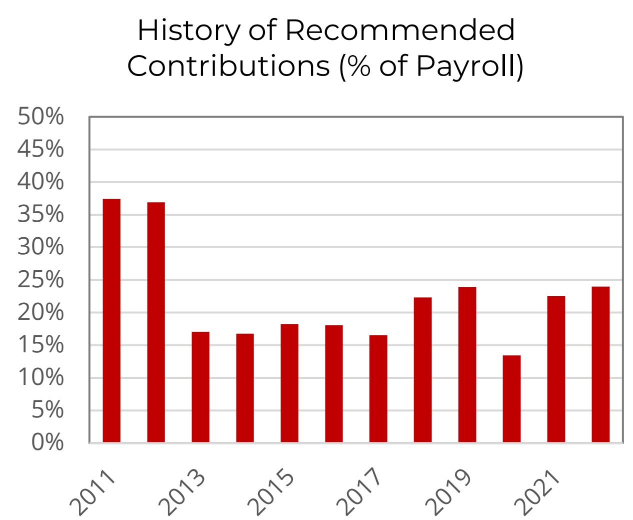
	December 31, 2022
Liability (Gain)/Loss	
1. Actuarial liability, beginning of prior year	$134,082,919
2. Normal cost for prior year	1,851,067
3. Benefit payments	(8,163,794)
4. Expected Interest	9,229,646
5. Change in Assumptions	0
6. Expected actuarial liability, beginning of current year	$136,999,838
7. Actual actuarial liability	138,031,121
8. Liability (Gain)/Loss, (7) – (6)	$1,031,283
Asset (Gain)/Loss	
9. Actuarial value of assets, beginning of prior year	$129,701,906
10. Contributions	2,837,780
11. Benefit payments	(8,163,794)
12. Expected Investment return	8,892,723
13. Expected actuarial value of assets, beginning of current year	$133,268,615
14. Actual actuarial value of assets, beginning of current year	133,685,669
15. Asset (Gain)/Loss, (13) – (14)	($417,054)
Total (Gain)/Loss, (8) + (15)	$614,229

Development of Recommended Contribution

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

	December 31, 2022
Funded Position	
1. Entry age accrued liability	$138,031,121
2. Actuarial value of assets	133,685,669
3. Unfunded actuarial accrued liability (UAAL)	$4,345,452
Employer Contributions	
1. Normal Cost	
(a) Total normal cost	$1,702,756
(b) Expected participant contributions	421,380
(c) Net normal cost	$1,281,376
2. Administrative expenses	0
3. Amortization of UAAL	627,654
4. Interest	145,182
5. Total recommended contribution for February 2024	$2,054,212
6. Expected covered payroll	$8,571,149
Total Contribution as a percentage of covered payroll	23.97%
Net Normal Cost as a percentage of covered payroll	16.09%





Schedule of Amortization Bases

Date Established	Type	Remaining Period	Remaining Balance	Amortization Payment
	Initial Balance	4	55,200	15,231
12/31/2022	(Gain)/Loss	10	288,309	38,363
12/31/2021	(Gain)/Loss	9	(2,471,413)	(354,513)
12/31/2021	Assumption Change	9	6,473,356	928,573
Total			**$ 4,345,452**	**$ 627,654**

Michigan PA 202 Reporting Requirements

	December 31, 2022	
Funding Assumptions	**Plan Assumptions**	**2022 State Treasury Uniform Assumptions**
Funded Ratio		
Interest Rate	7.00%	6.85%
Mortality	Pub-S 2010 with MP-2021 Generational Improvement Scale	Pub-S 2010 with MP-2021 Generational Improvement Scale
Accrued Liability	$138,031,121	$140,238,055
Market Value of Assets	$119,623,544	$119,623,544
Unfunded Accrued Liability, MVA Basis	$18,407,577	$20,614,511
Funded Percentage (MVA)	**86.66%**	**85.30%**
Underfunded Status	**Not Underfunded**	
Actuarially Determined Contribution, Payable During Fiscal Year 2022	$1,447,092	$1,972,954

The Actuarially Determined Contribution payable during 2022 is calculated as of December 31, 2020 and based on data, assumptions, and plan provisions summarized in the December 31, 2020 Actuarial Valuation Report. The Actuarially Determined Contribution under Uniform Assumptions is calculated using the same date, assumptions, plan provisions other than a 6.85% discount rate.

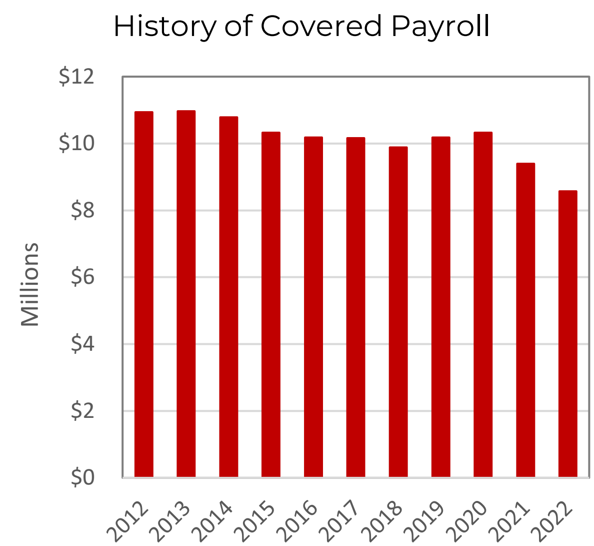
Data, Assumptions, and Plan Provisions

- 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.

	December 31, 2021	December 31, 2022
Participant Counts		
Active Participants	82	71
Retired Participants	113	119
Beneficiaries	25	28
Disabled Participants	1	1
Terminated Vested Participants	3	4
Total Participants	224	223
Active Participant Demographics (Ongoing)		
Average Age	46.9	47.1
Average Service	19.5	19.9
Average Compensation	$109,742	$115,601
Total Covered Payroll	$8,998,819	$8,207,660



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Demographic Information (continued)

	December 31, 2021	December 31, 2022
Retiree Statistics		
Average Age	67.1	66.9
Average Monthly Benefit	$5,194	$5,276
Beneficiary Statistics		
Average Age	67.2	67.4
Average Monthly Benefit	$1,612	$1,925
Disabled Participant Statistics		
Average Age	65.6	66.6
Average Monthly Benefit	$4,035	$4,035
Terminated Vested Participant Statistics		
Average Age	51.7	49.4
Average Monthly Benefit	$1,944	$1,859

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	Disabled	Retired	Beneficiaries	Totals
Prior Year	82	3	1	113	25	224
Active						
To Retired	(9)			9		0
To Terminated Vested	(1)	1				0
To Death	(1)					(1)
Terminated Vested						
To Retired						
Retired						
To Survivor						
To Death				(3)		(3)
Survivor						
To Death					(1)	(1)
Additions					4	4
Departures						
Current Year	71	4	1	119	28	223

Active Participant Schedule

Active participant information grouped based on age and service.

Age Group	Years of Service									Total
	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	
Under 25										0
25 to 29										0
30 to 34										0
35 to 39		2	6							8
40 to 44		1	1	8	7					17
45 to 49		1	2	2	20	1				26
50 to 54				2	10	3				15
55 to 59				1	2	2				5
60 to 64										0
65 to 69										0
70 & up										0
Total	0	4	9	13	39	6		0	0	71

Plan Status

Act 379 of the Public Acts of 1986 and most recently amended for Shelby Township Police Patrol Officers' Association effective January 1, 2013 and for Shelby Township Firefighters' Association effective December 31, 2014

Eligibility for Participation

Any full time permanent firefighters and police officers employed by the Township. The Plan is closed to new hires for Police Patrol and Fire.

Accrual of Benefits

A participant shall accumulate a benefit payable at normal retirement date based on credited service as of the date of determination and the accrual rate associated with their classification.

If a Command Officer (hired prior to April 1, 2014) decides to "opt out" of the Shelby Township Fire & Police Retirement System to instead participate in the Township's discretionary contribution plan for general employees, credited service accruals are frozen but average compensation will continue to accrue.

Benefits

Normal Retirement

Eligibility	25 or more years of service or age 60 regardless of service (age 50 with at least 25 years of service for the Fire Chief)
Benefit	
Police	2.5% times Average Compensation times credited service (up to 25 years) plus 1% times Average Compensation times credited service in excess of 25 years.
Fire	If hired on or before August 18, 2010, 2.5% times Average Compensation times credited service (up to 25 years) plus 1% times Average Compensation times credited service in excess of 25 years capped at 5 additional years.
	If hired after August 18, 2010, 2.25% times Average Compensation times credited service (up to 25 years) plus 1% times Average Compensation times credited service in excess of 25 years capped at 5 additional years.

Death after Retirement Survivor's Pension

Eligibility	Payable to surviving spouse of retired member receiving a single life annuity effective July 1, 1975 or later
Benefit	60% of the single life annuity the late retiree was receiving

Death before Retirement In Line of Duty

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

Death before Retirement Not In Line of Duty

Eligibility	*Police Command and Fire Chief*: 20 years of service *Fire*: 10 years of service *Police Patrol*: 8 years of service
Benefit	Married participant: spouse will receive single life annuity actuarially reduced in accordance with Option I elected.

Termination Benefit

Eligibility	*Police Patrol:* 8 years of service *All Others:* 10 years of service
Benefit	Accrued retirement benefit payable at participant's normal retirement date. If the participant terminates prior to the service requirement a refund of the accumulated contributions with interest will be issued.

Disability Benefit In Line of Duty

Eligibility	Immediately upon total and permanent disability
Benefit	50% of Average Compensation up to age 55, then Normal Retirement Benefit with service credited from date of disability to age 55

Disability Benefit Not In Line of Duty

Eligibility	*Police*: 10 years of service and deemed to be totally and permanently disabled *Fire*: 5 years of service and deemed to be totally and permanently disabled
Benefit	*Police Patrol*: 2.0% times Average Compensation times credited service if less than 15 years, otherwise 2.5% times Average Compensation *Police Command hired prior to July 1, 1995*: 1.5% times Average Compensation times credited service if less than 15 years, otherwise 2.5% times Average Compensation *Police Command hired on or after July 1, 1995*: 1.5% times Average Compensation times credited service if less than 15 years, otherwise 2.0% times Average Compensation *Fire Chief, and Fire*: 1.5% times Average Compensation times credited service up to age 55, 2.0% times Average Compensation times credited service beginning at age 55.

Compensation

Police Patrol: Compensation includes regular wages, overtime pay, longevity pay, holiday pay, unused sick leave in pay, compensatory time in pay, court time, show-up time, and accrued unused vacation.

Police Command hired prior to July 1, 1995: Compensation includes regular wages, overtime pay, longevity pay, holiday pay, unused sick leave in pay, compensatory time in pay, court time, show-up time, and accrued unused vacation.

Police Command hired after July 1, 1995: Compensation includes the base annual wage plus overtime.

Fire Chief: Compensation includes wages, overtime pay, longevity pay, and holiday pay earned while Chief. For time prior to appointment, compensation follows the definition for Fire hired on or before August 1, 2010.

Fire hired on or before August 1, 2010: Compensation includes base rate of pay, overtime pay, longevity pay, holiday pay, sick leave payments, and unused vacation.

Fire hired after August 1, 2010: Compensation is the base rate of pay only.

Average Compensation

Police Patrol: Average Compensation is the average of the 3 highest amounts of the last 5 years preceding retirement.

Police Command and Fire: Average Compensation is the average of the 3 highest amounts of the last 10 years preceding retirement.

Fire Chief: Average Compensation is the average of the 3 highest amounts of the last 10 years preceding retirement.

Credited Service

For Vesting and Benefit Accrual
All years and completed months of continuous service with the Township of Shelby.

Employee Contributions

5% of gross pensionable compensation

Payment Forms

Normal Form
Single Participants: Single Life Annuity
Married Participants: Qualified Joint and 60% Survivor Annuity.
Optional Forms
50% and 100% Joint and Survivor Annuity

Actuarial Equivalence

Actuarial Equivalence will be computed using the valuation assumptions

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 Valuation

None

Data, Assumptions, and Plan Provisions

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

December 31, 2022

Participant and Asset Information Collected as of

December 31, 2022

Cost Method

Individual Entry Age Cost Method % of pay

Amortization Method

Changes in Unfunded Actuarial Accrued Liability amortized over 10-year closed layers. Historical UAAL amortized over closed 5-year period.

Asset Valuation Method

25% Write-Up Method: Expected actuarial value of assets, adjusted by 25% of the difference between expected actuarial value and actual market value.

Interest Rates *(CO)*

7.00% net of expenses
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.

Annual Pay Increases *(FE)*

Pay increases follow the schedule below:
The annual pay increase reflects a general salary inflation assumption of 3.50% and a merit increase up to 5.25%.

These assumptions are based on the latest experience study with the general salary inflation assumption reviewed and updated for the December 31, 2015 valuation.

Age	Base Rate	Merit Rate
20	3.50%	5.25%
25	3.50%	5.25%
30	3.50%	3.50%
35	3.50%	1.50%
40	3.50%	1.00%
45	3.50%	0.50%
50	3.50%	0.25%
55	3.50%	0.00%
60	3.50%	0.00%

Final Average Pay Adjustment

Fire hired on or before August 18, 2010 and Fire Chief
6.0% increase at retirement

Police Command hired before July 1, 1995, and Police Patrol
5.0% increase at retirement

Fire hired after August 18, 2010 and Police Command hired after July 1, 1995
No adjustment

Mortality Rates *(FE)*

Healthy & Disabled

Pub-2010 Public Safety base table projected using fully generation improvements based on the Society of Actuaries' MP-2021 projection scale.

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 Participants assumed to be married with wives assumed to be 3 years younger than husbands.

Retirement Rates *(FE)*

Rates are based on years of service for everyone except Fire Chief.

Service	Rate
25-29 years	25%
30+ years	100%

Rates for Fire Chief are based on age and service.

Age	Service	Rate
50-54	25+ years	25%
55+	30+ years	100%

The retirement rate assumption is based on the latest experience study reviewed and updated for the December 31, 2015 valuation.

Disability Rates *(FE)*

Rates are based on age and gender. Sample rates are below.

Age	Male	Female
20	0.07%	0.03%
25	0.09%	0.05%
30	0.10%	0.07%
35	0.14%	0.13%
40	0.21%	0.19%
45	0.32%	0.28%
50	0.52%	0.45%
55	0.92%	0.76%
60	1.53%	1.10%

The disability rate assumption is based on the latest experience study reviewed and updated for the December 31, 2015 valuation.

Withdrawal Rates *(FE)*

Rates are based on age and service. Sample rates are below.

Age	Service	Rate
ALL	0	10.0%
ALL	1	4.2%
ALL	2	3.0%
ALL	3	2.4%
ALL	4	2.1%
25	5+	2.1%
30	5+	1.7%
35	5+	0.9%
40	5+	0.4%
45	5+	0.3%
50	5+	0.3%
55	5+	0.3%

The withdrawal rate assumption is based on the latest experience study reviewed and updated for the December 31, 2015 valuation.

Changes since Prior Valuation

There have been no assumption or plan provision changes since the prior valuation.

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