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City of Allentown Firemen's Pension Plan

Actuarial Valuation Report as of January 1, 2023

Produced by Cheiron

September 2023

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September 27, 2023

City of Allentown Pension Board
Department of Finance, Room 227
435 Hamilton Street
Allentown, Pennsylvania 18101-1699

Dear Members of the Board:

At your request, we have conducted our annual actuarial valuation of the City of Allentown Firemen's Pension Plan as of January 1, 2023. The purpose of this report is to present the annual actuarial valuation of the City of Allentown Firemen's Pension Plan. This report is for the use of the City of Allentown's Pension Board and its auditors in preparing financial reports in accordance with applicable law and accounting requirements. The report does not include calculations under GASB Statements No. 67 and No. 68 which are provided in a separate report.

Your attention is called to the Foreword in which we refer to the general approach employed in the preparation of this report. We also comment on the sources and reliability of both the data and the actuarial assumptions on which our findings are based. The results of this report are only applicable to the funded status of the Plan as of January 1, 2023 and will be used to determine the Plan's 2024 and 2025 Minimum Municipal Obligation (MMO). The final MMOs are dependent upon the payroll of the active population as provided by the City.

Future actuarial valuation results may differ significantly from the current actuarial valuation results presented in this report due to such factors as the following: plan experience differing from that anticipated by the assumptions; changes in assumptions; and changes in plan provisions or applicable law. The results and projections provided in this report rely on future plan experience conforming to the underlying assumptions and methods outlined in this report. To the extent that the actual plan experience deviates from the underlying assumptions and methods, or there are any changes in plan provisions or applicable laws, the results would vary accordingly and projections may change materially.

This report and its contents have been prepared in accordance with generally recognized and accepted actuarial principles and practices and our understanding of the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board as well as applicable laws and regulations. Furthermore, as credentialed actuaries, we meet the Qualification Standards of the American Academy of Actuaries to render the opinion contained in this report. This report does not address any contractual or legal issues. We are not attorneys and our firm does not provide any legal services or advice.

This report was prepared exclusively for the City of Allentown's Pension Board for the purpose described herein. Other users of this report are not intended users as defined in the Actuarial Standards of Practice, and Cheiron assumes no duty or liability to such other users.

Sincerely,
Cheiron

Karen Zangara

Karen Zangara, FSA, EA, MAAA
Principal Consulting Actuary

Brett Warren

Brett Warren, FSA, EA, MAAA
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FOREWORD

Cheiron has performed the actuarial valuation of the City of Allentown Firemen's Pension Plan as of January 1, 2023. The purpose of this report is to:

1) **Measure and disclose**, as of the valuation date, the financial condition of the Plan, in compliance with Act 205;
2) **Indicate trends** in the financial progress of the Plan; and
3) **Determine an estimated Minimum Municipal Obligation** (MMO) for calendar year 2025 and to provide the actual MMOs for 2023 and 2024 in accordance with Act 44 and Act 205.

An actuarial valuation establishes and analyzes Plan assets and liabilities on a consistent basis and traces the progress of both from one year to the next. It includes measurement of the Plan's investment performance, as well as an analysis of actuarial liability gains and losses.

Section I presents a summary containing our findings and disclosing important trends experienced by the Plan in recent years as well as a risk assessment, which includes a review of potential risk and projected financial outlook associated with the plan.

Section II contains details on Plan assets, together with pertinent performance measurements.

Section III provides details on the Plan's liabilities.

Section IV provides the amortization requirements, the actual MMOs for 2023 and 2024, and the estimated MMO for 2025. The actual 2025 MMO amount will be finalized once the payroll for the 2025 year is provided by the City of Allentown. The 2024 and 2025 MMOs are based on the January 1, 2023 actuarial valuation results.

The appendices to this report contain supplemental information based upon assets excluding proceeds from pension obligation bonds, a summary of the Plan's membership at the valuation date, a summary of the major provisions of the Plan, and the actuarial methods and assumptions used in the valuation.

In preparing our report, we relied on information (some oral and some written) supplied by the City of Allentown ("City") and its auditors, Zelenkofske Axelrod LLC. This information includes, but is not limited to, plan provisions, employee data, and financial information. We performed an informal examination of the obvious characteristics of the data for the reasonableness and consistency in accordance with Actuarial Standards of Practice No. 23.

SECTION I – BOARD SUMMARY

The following table sets out the principal results of this year's valuation and compares them to last year's results.

Table I-1
Summary of Principal Plan Results

Valuation as of:		**1/1/2021**		**1/1/2023**	**% Change**
Participant Counts					
Actives		128		127	-0.8%
Terminated Vested and Inactive Members		1		3	200.0%
In Pay Status		192		191	-0.5%
Total		321		321	0.0%
Annual Salaries of Active Members (from prior year)*	$	10,919,071	$	11,064,056	1.3%
Average Annual Salary		85,305		87,119	2.1%
W-2 Wages for Active Members (from prior year)		12,011,495		12,845,274	6.9%
Annual Retirement Allowances for					
Retired Members and Beneficiaries	$	8,180,825	$	8,557,461	4.6%
Average Monthly Retirement Benefit		3,551		3,734	5.2%
Financial Information					
Market Value of Assets (MVA)	$	125,783,300	$	121,776,933	-3.2%
Actuarial Value of Assets (AVA)		117,897,805		132,425,581	12.3%
Actuarial Liability	$	134,967,566	$	142,333,301	5.5%
Unfunded Actuarial Liability		17,069,761		9,907,720	-42.0%
Funding Ratio (MVA)		93.2%		85.6%	
Funding Ratio (AVA)		87.4%		93.0%	

** Includes overtime pay up to 10% of base pay for members hired prior to January 1, 2012.

The Unfunded Actuarial Liability is based on the AVA.

General Comments

- For plans that are either not distressed or minimally distressed, the future gains and losses of the Plan are required to be amortized over the lesser of the maximum amortization periods, as outlined in Appendix D, or the average future service for the active participants in the Plan which is 11.21 years as of January 1, 2023 and, per Act 205, rounded up to 12 years. The City of Allentown was determined to be minimally distressed (86% funded on an aggregate AVA basis for all plans) by the Pennsylvania Auditor General in 2022 and in accordance with Act 205 Section 502. Plan distress categories as outlined by Act 44 are provided below:

Funding Ratio	Distress Level
90% and above	None
70% to 89%	Minimal
50% to 69%	Moderate
Less than 50%	Severe

- The City adopted Ordinance 57 on September 16, 2015, as allowed under Section 202(b)(4) of Act 205, to change the plan's amortization method. The amortization payments of the unfunded actuarial liability (UAL) will be the lesser of (1) the traditional amortization of individual bases or (2) the level dollar rolling amortization of the total UAL over 10 years, if the funding level of the Plan exceeds 70%. In this valuation, the lesser amount is the 10-year amortization of the UAL which is shown in Section IV of this report.
- The Board adopted a reduction in the discount rate from 7.40% to 7.30% which increased the liabilities by $1.50 million.
- In August 2023, a vested benefit was added to the ordinance which was effective January 1, 2021. The plan change allows members who have completed at least 12 years of service but have not met the minimum age and service requirements for retirement to be eligible for a vested benefit. The plan change is reflected for the 2023 valuation which increased the liabilities by $0.18 million.
- The Market Value of Assets returned 16.76% in 2021 and -12.18% in 2022.
- The Actuarial Value of Asset (AVA) method, which smooths gains and losses over 5 years, was applied. Over the two-year period covering 2021 and 2022, there was an AVA gain of $4.60 million.
- On the liability side, the Plan experienced a two-year gain totaling $1.38 million mainly due to active pay increases lower than expected for continuing actives.
- Overall, the Plan experienced a net gain (investment gain and liability gain) of $5.97 million during the two-year period covering 2021 and 2022.

Risk Assessment

Significant risks that may result in actual future measurements deviating from those expected by this valuation include investment risk, as well as longevity and other demographic risk. Investment risk is the potential that future investment returns will deviate from those that are expected. Longevity and other demographic risk is the potential that mortality or other demographic experience will deviate from that which is expected by the valuation assumptions.

The volatility of the measurements due to differences in the actual investment returns is examined later in this section with projections that assume rates of return other than the valuation assumption. We anticipate that for this plan the demographic assumption that presents the most risk to future actual measurements deviating from expected is the rate of salary increase, which impacts the Cost of Living Adjustment (COLA) growth for retirees, and potentially the mortality rate.

- If salary/rank pay growth is generally lower than anticipated, the plan's future financial status will be improved while if salary/rank pay is generally higher than anticipated, it will be degraded from that expected by this valuation. Salary/rank pay growth is especially a risk for the plan because of how this impacts not only liabilities for active participants, but for retirees as well because their COLA increase occurs when the pension allowance falls below half of the current salary for a firefighter of the same rank based upon rank at retirement.
- If mortality rates are generally higher than anticipated, the plan's future financial status will be improved while if mortality rates are generally lower than anticipated, then it will decline from that expected by this valuation.

In the "Trends" part of this section, historical measures shown that demonstrate the potential volatility of the Plan's actuarial measurements as a result of deviation of actual experience from assumptions, have grown in recent years.

The remainder of this section analyzes past trends in the Plan's funding and presents projections under various economic outlooks.

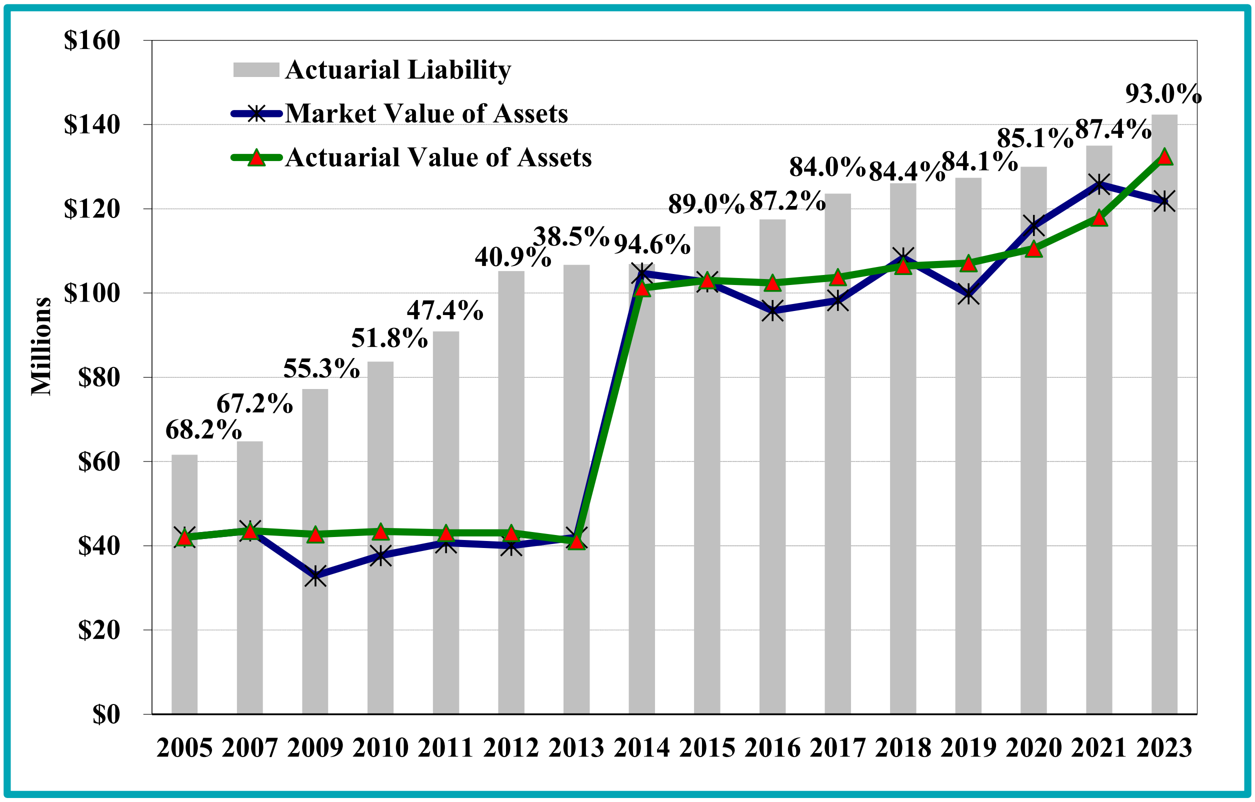
SECTION I – BOARD SUMMARY

Trends

It is important to take a step back from the latest results and view them in the context of the Plan's recent history. Below we present a series of charts which display key factors in the valuations over the last several years.

Assets and Liabilities

The gray bars represent the Actuarial Liability mentioned in this report. The green and blue lines represent the asset values. Prior to 2007, the Actuarial Value of Assets equaled the Market Value of Assets. The funding ratios shown in the graph above each gray bar are equal to the Actuarial Value of Assets divided by the Actuarial Liability. The January 1, 2014 assets reflect the $61.2 million Note contribution in 2013 and increased the funding ratio to 94.6%.

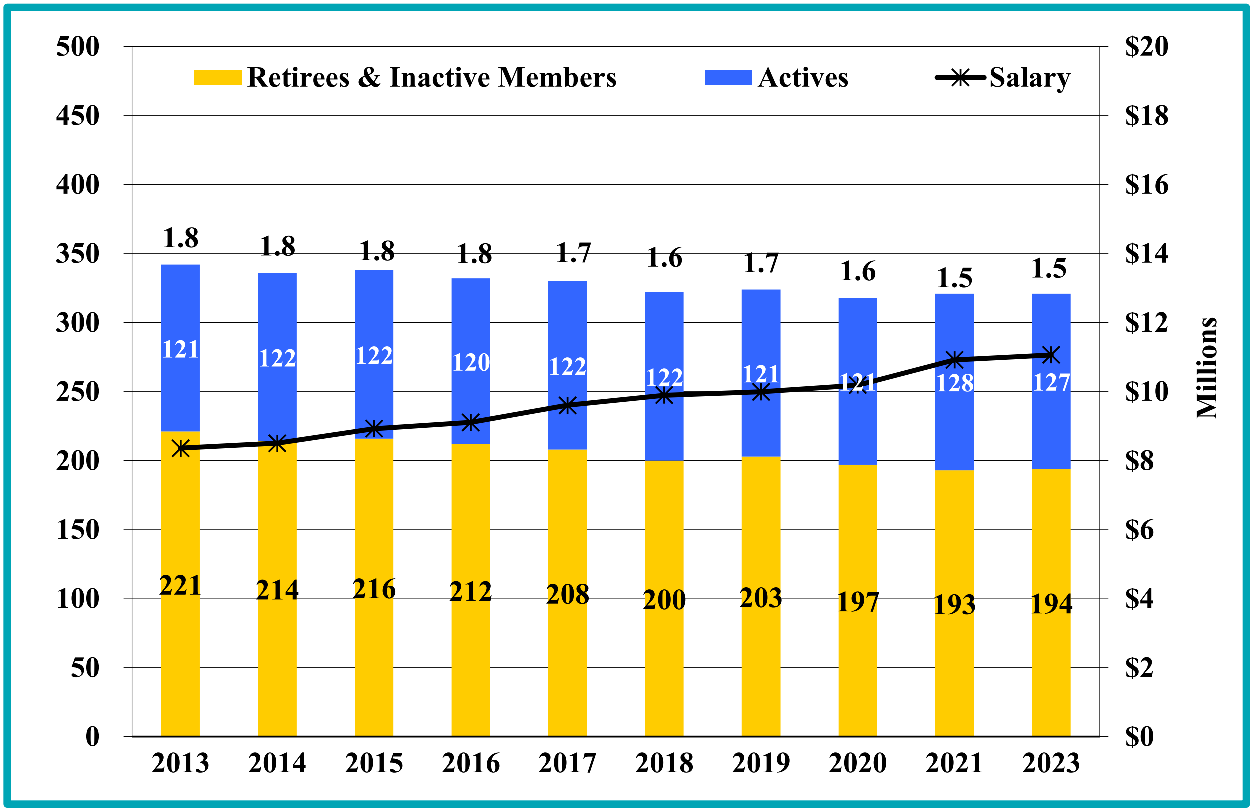


Results before 2010 are from the prior actuary. Valuations performed biennially from 2005 – 2009 and 2021 – 2023. The Actuarial Liability results for 2014 reflect the 2013 assumptions, in order that the 2015 results reflect all assumption changes since the prior Act 205 filing. This is required under Act 205.

SECTION I – BOARD SUMMARY

Participant Trends

Here we compare the membership counts (left-hand scale) and the total salary (right-hand scale). The ratio (at the top of each bar) is the number of inactive participants divided by the number of active participants. The amount shown is pensionable pay for the year (base pay plus overtime pay limited to 10% of the base pay). The ratio of inactive to active participants is a measure of the maturity of the plan. When this ratio is above one, the fund is more mature and potentially at a higher risk. This is because the assets backing the retiree benefits have become large relative to the contribution base, i.e., the active participant payroll. As assets grow relative to the pensionable payroll, any asset gain or loss can have a significant impact, resulting in volatile costs from year-to-year even with the application of asset smoothing methods.

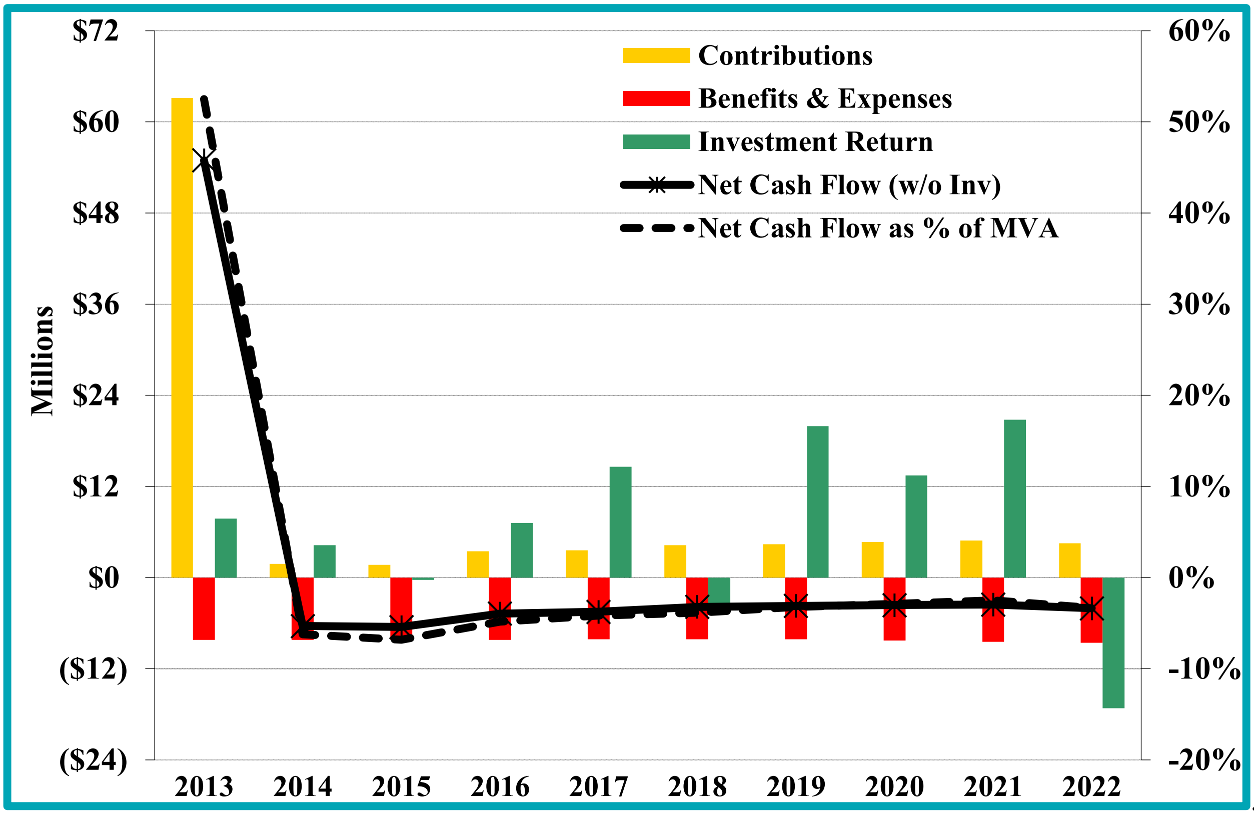


SECTION I – BOARD SUMMARY

Cash Flows

Plan cash flow is a critical measure, as it reflects the ability to make benefit payments without necessitating difficult investment decisions, especially during volatile markets. The laddered bond approach the Board has adopted for this plan helps to mitigate this risk. Cash flow is defined as contributions received less benefit payments and expenses.

The Plan's net cash flow (NCF) has been negative except for 2013. Due to the $63.1 million contribution, which includes a $61.2 million Note payment (under section 404(h) of Act 205) from the City's water and sewer lease proceeds, the plan had a substantial positive net cash flow in 2013. As anticipated, the plan experienced negative net cash flows from 2014-2022. The implication of a plan in a negative cash flow position is that return on investment must first cover the negative cash flow before the assets can increase. The NCF as a percentage of the Market Value of Assets (right vertical axis) was about negative 3.3% in 2022, so the net assets will not increase unless investment returns exceed 3.3%, if there are similar cash flows in 2023.

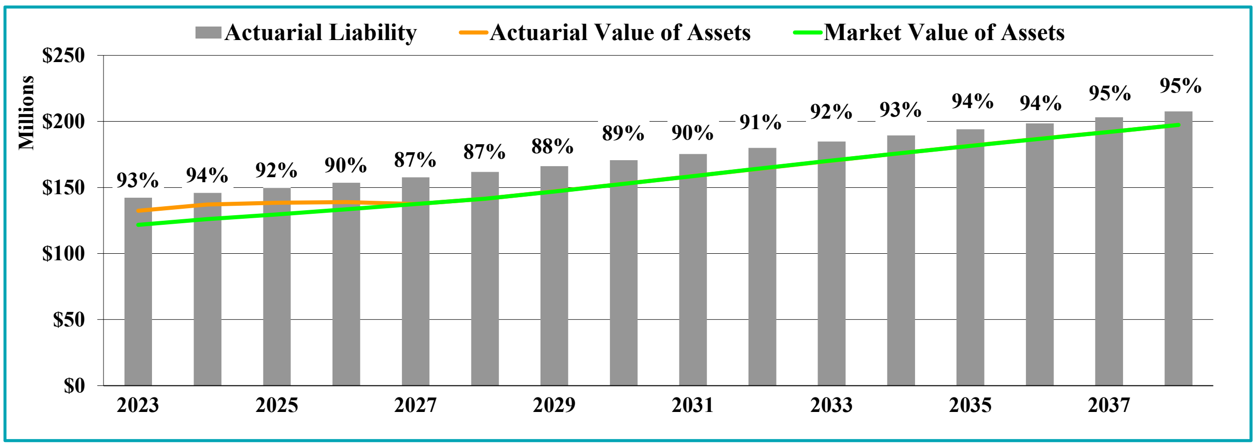


SECTION I – BOARD SUMMARY

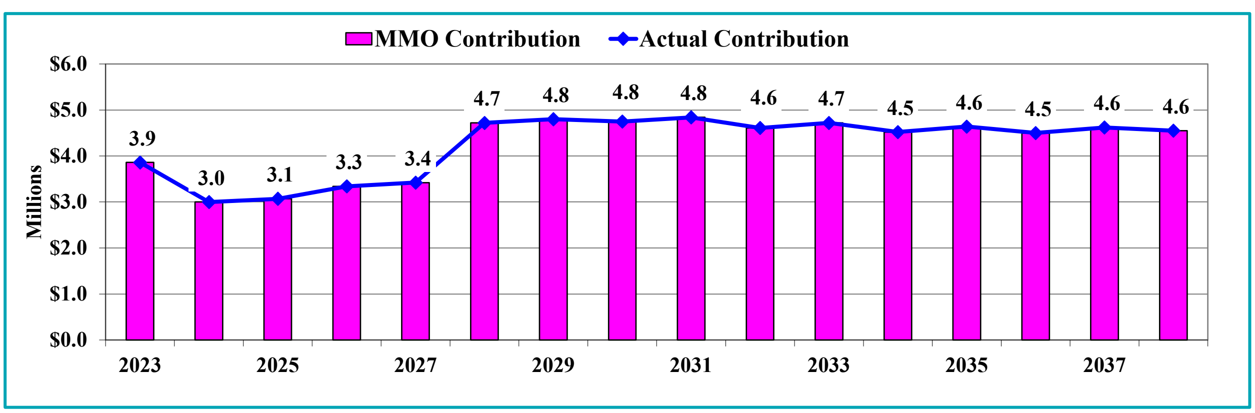
Baseline Projections - Asset Returns of 7.30% per year

We have included two charts projecting the funded ratio and Minimum Municipal Obligations for the next 15 years, assuming that the Plan's assets earn 7.30%.

The gray bars represent the liabilities with the orange and green lines representing the asset values. The Actuarial Value of Assets and the Market Value of Assets are expected to converge over the next five years. This projection assumes all assumptions outlined in Appendix D are fully realized and that the MMO is paid in full each year. The funded ratio (Actuarial Value of Assets divided by liabilities) listed on top of each of the bars initially decreases to 87%, as deferred investment losses are recognized, and then increases to 95% at the end of the 15-year period. Due to the 10-year rolling amortization funding method, the funding ratio will not attain a 100% funded ratio but it will continue to approach the 100% level assuming all assumptions are met.



This next chart projects the MMO over the same period. On top of each bar is the projected MMO amount in millions of dollars. The 10-year rolling amortization (which is expected to be lower than the traditional amortization) is included in the calculation of the UAL amortization amount for the MMO. If all assumptions are met, the projected MMO after 15 years will be $4.6 million.

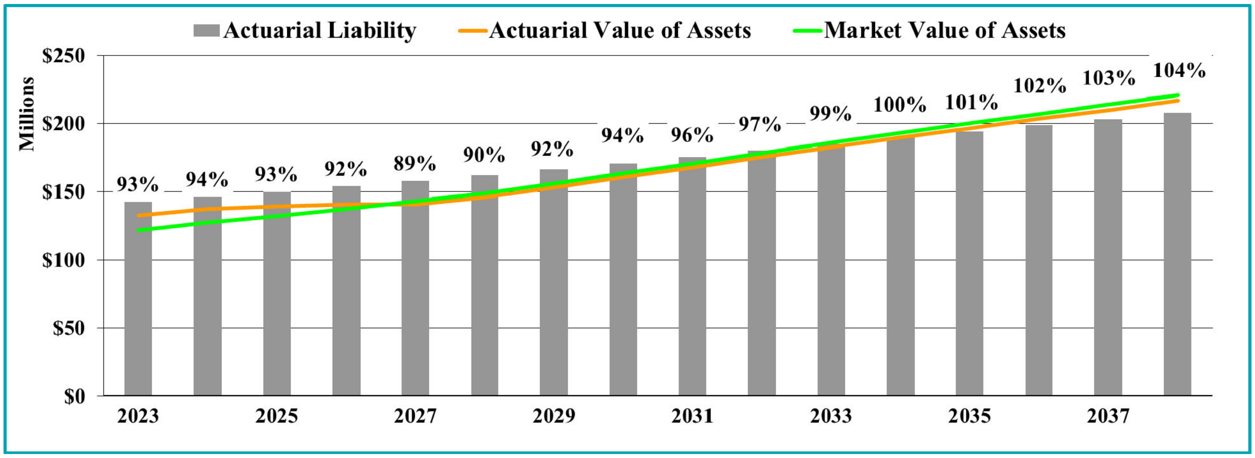


SECTION I – BOARD SUMMARY

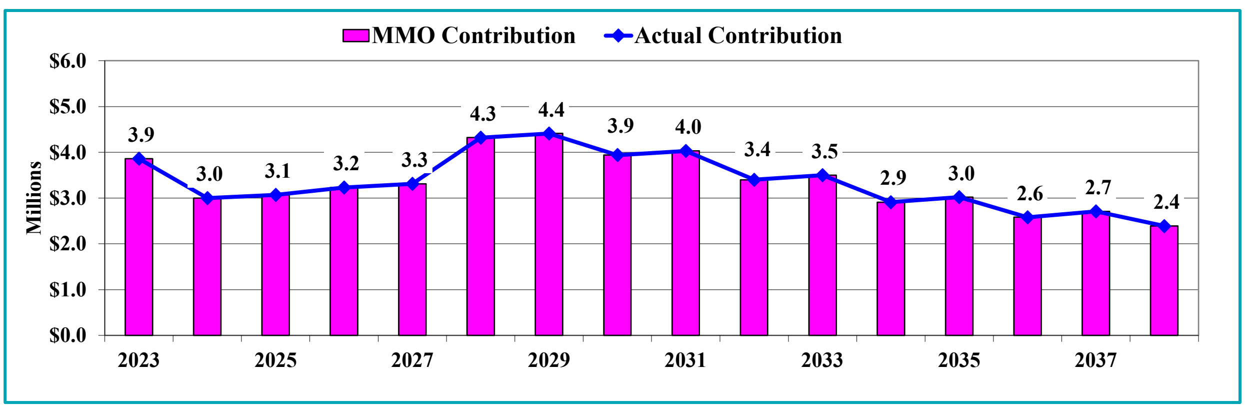
<u>Optimistic Projections - Asset Returns of 8.30% per year</u>

The charts below show the expected progress of the Plan over 15 years, assuming that the Plan's assets earn 8.30%, 1.0% higher than the valuation assumption. All other assumptions are consistent with the Baseline projections.

The funded ratio (Actuarial Value of Assets divided by liabilities) listed on top of each of the bars increases to 104% at the end of the 15-year period.



This next chart projects the MMO over the same period. On top of each bar is the projected MMO amount in millions of dollars. The 10-year rolling amortization is included in the calculation of the UAL amortization amount for the MMO.

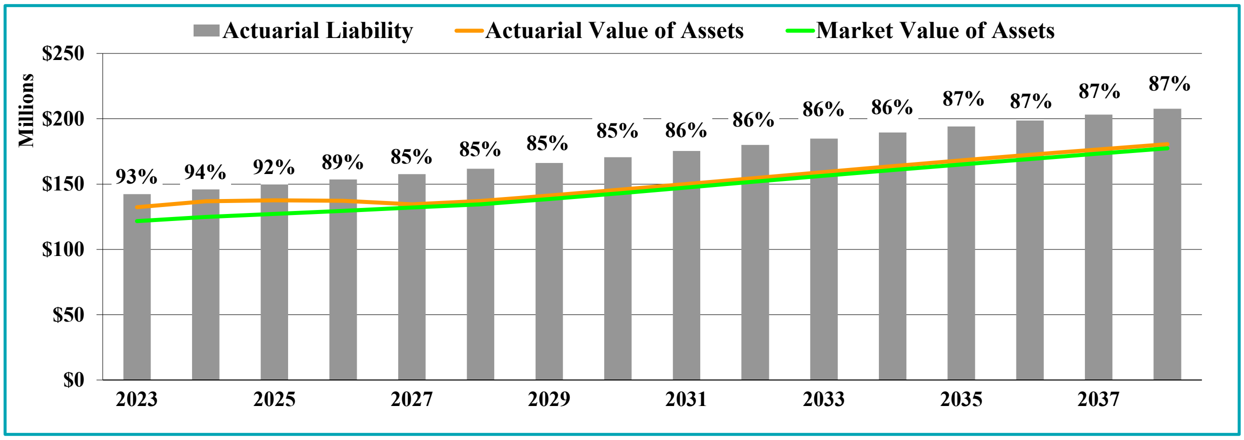


SECTION I – BOARD SUMMARY

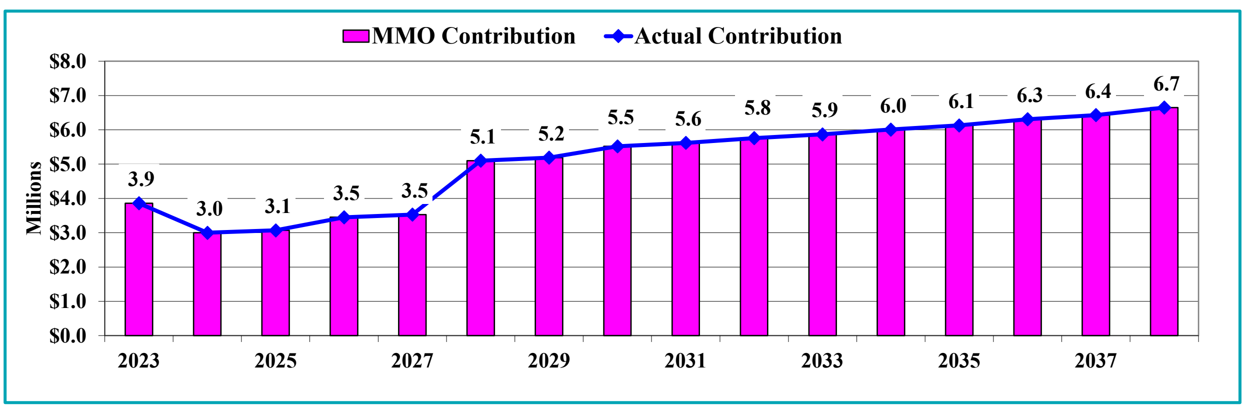
Pessimistic Projections - Asset Returns of 6.30% per year

The charts below show the expected progress of the Plan over 15 years, assuming that the Plan's assets earn 6.30%, 1.0% lower than the valuation assumption. All other assumptions are consistent with the Baseline projections.

The funded ratio (Actuarial Value of Assets divided by liabilities) listed on top of each of the bars initially decreases to 85%, as deferred investment losses are recognized, and then gradually increases to 87% at the end of the 15-year period. This gradual decrease in the funding ratio is due to the 10-year rolling amortization being applied every year along with the annual underperformance of the asset returns. If in fact this scenario occurred, discussion with the pension board over the reduction in the discount rate assumption would likely occur.



This next chart projects the MMO over the same period. On top of each bar is the projected MMO amount in millions of dollars. The 10-year rolling amortization is included in the calculation of the UAL amortization amount for the MMO.



SECTION I – BOARD SUMMARY

The projections provided above are based upon the January 1, 2023 valuation and the methods, assumptions, plan provisions and data as outlined in this report. To the extent that the actual plan experience deviates from the underlying assumptions and methods, (for example, if the asset returns are less than expected, the demographic data experience is different from the assumptions, or there are any changes in plan provisions or applicable laws) *the results will vary accordingly and possibly materially*, resulting in potentially larger MMOs than currently expected. Please note that these projections should be replaced once new data and valuations are completed in the future.

The MMO Pay used in the MMO calculation in the table below is provided by the City of Allentown and may differ from the valuation pay provided throughout this report which is based on actual participant data included in the actuarial valuation as of January 1 of each year.

Table I-2
Minimum Municipal Obligation (Actual and *Estimated)*

Based Upon Valuation Report	**1/1/2021**	**1/1/2023**	**1/1/2023**
Calendar Year	**2023**	**2024**	***2025***
(1) MMO Pay *(Estimated)*	$ 13,065,552	$ 14,229,859	*$ 14,870,000*
(2) Normal Cost %	16.27%	16.13%	16.13%
(3) Total Normal Cost	2,125,765	2,295,276	2,398,531
(4) Amortization of UAL	2,304,917	1,332,956	1,332,956
(5) Total Administration Expense	80,000	80,000	80,000
(6) Total Financial Requirement	$ 4,510,682	$ 3,708,232	*$ 3,811,487*
(7) Estimated Employee Contributions	653,278	711,493	*743,500*
(8) Minimum Municipal Obligation [(6)-(7)]	$ 3,857,404	$ 2,996,739	*$ 3,067,987*

SECTION II – ASSETS

Pension Plan assets play a key role in the financial operation of the Plan and in the decisions the Board may make with respect to future deployment of those assets. The level of assets, the allocation of assets among asset classes, and the methodology used to measure assets will likely have an impact on benefit levels, contributions, and the ultimate security of participants' benefits.

In this section, we present detailed information on Plan assets including:

- **Disclosure** of Plan assets at January 1, 2022 and January 1, 2023;
- Statement of the **changes** in market values during the year;
- An assessment of **investment performance**; and
- Development of the **actuarial value of assets**.

Disclosure

The market value of assets represents the "snap-shot" or "cash-out" values which provide the principal basis for measuring financial performance from one year to the next. Market values, however, can fluctuate widely with corresponding swings in the marketplace.

Table II-1
Disclosure of Plan Assets*

	1/1/2022	1/1/2023
Assets		
Investments	$ 142,945,014	$ 121,715,378
Receivables	70,434	67,614
Due from City's General Fund	0	0
Total Assets	$ 143,015,448	$ 121,782,992
Liabilities		
Accounts Payable	$ 9,413	$ 6,059
Due to City's General Fund	0	0
Total Liabilities	$ 9,413	$ 6,059
Net Assets Available for Benefits	**$ 143,006,035**	**$ 121,776,933**

* Assets are based on the Annual Comprehensive Financial Report (ACFR) for each year end.

SECTION II – ASSETS

Changes in Market Value

The components of asset change are:

- Contributions
- Benefit payments
- Expenses (administrative and investment consulting)
- Investment income (realized and unrealized)

The specific changes during the 2021 and 2022 plan years are presented below:

Table II-2
Changes in Market Value

	2021	2022
Beginning of Year Assets	$ 125,783,300	$ 143,006,035
Additions		
Employer Contributions	$ 4,107,655	$ 3,841,351
Member Contributions	769,281	667,563
Interest and Dividends	2,404,649	2,703,503
Net Appreciation / (Depreciation)	18,372,590	(19,874,439)
Total Additions	$ 25,654,175	$ (12,662,022)
Deductions		
Benefit Payments	$ 8,347,280	$ 8,495,601
Administrative expense	84,160	71,479
Total Deductions	$ 8,431,440	$ 8,567,080
Net Change in Market Value of Assets	$ 17,222,735	$ (21,229,102)
End of Year Assets	$ 143,006,035	$ 121,776,933

The two-year average of the administrative expenses paid from the plan assets, rounded to the nearest $10,000, is $80,000, which includes the investment consultant fees as reported as a separate line item on the asset statements. This is the projected expense estimate for the 2024 and 2025 MMO determinations.

SECTION II – ASSETS

Investment Performance

The following table calculates the investment related gain/loss for the most recent two calendar years on a market value basis. The market value gain/loss is an appropriate measure for comparing the actual asset performance to the long-term 7.40% assumption. Effective January 1, 2023, the long-term investment return assumption changed to 7.30%. Future investment gains and losses will be calculated relative to the new assumption.

Table II-3
Market Value of Assets Gain/(Loss)

Item	2021	2022	Total Period
Beginning of Year Market Value	$ 125,783,300	$ 143,006,035	$ 125,783,300
Contributions	4,876,936	4,508,914	9,385,850
Benefit Payments	(8,347,280)	(8,495,601)	(16,842,881)
Administrative Expenses	(84,160)	(71,479)	(155,639)
Expected Investment Earnings (7.40%)	9,178,795	10,434,974	18,755,484
Expected Market Value on December 31	$ 131,407,591	$ 149,382,843	$ 136,926,114
Investment Gain / (Loss)	11,598,444	(27,605,910)	(15,149,181)
End of Year Market Value	$ 143,006,035	$ 121,776,933	$ 121,776,933
Return	16.76%	-12.18%	1.47%

The Total Period reconciliation reflects total benefit payments, contributions and expenses during this two-year period. Investment earnings do not follow the additive property and instead are calculated based on the beginning and end of Total Period values.

SECTION II – ASSETS

Assets at Actuarial Value

The Actuarial Value of Asset (AVA) method smooths gains and losses over five years. The resulting value is then limited to be no greater than 120% and no less than 80% of the Market Value of Assets on the valuation date. Additional details regarding this actuarial methodology are included in Appendix D of the report.

The table below shows the development of the actuarial asset value applied to this valuation.

Table II-4
Development of Actuarial Value of Assets
5-Year Smoothing Method

Market Value of Assets as of January 1, 2023					$ 121,776,933
Plan Year	**Investment Gains / (Losses)**	**Percent Recognized**	**Percent Deferred**		**Amount Deferred**
2018	$ (12,666,680)	100%	0%		$ 0
2019	12,606,295	80%	20%		2,521,259
2020	4,889,388	60%	40%		1,955,755
2021	11,598,444	40%	60%		6,959,066
2022	(27,605,910)	20%	80%		(22,084,728)
					$ (10,648,648)
Preliminary Actuarial Value as of January 1, 2023					$ 132,425,581
Corridor for Actuarial Value					
- Lower Limit				80%	$ 97,421,546
- Upper Limit				120%	$ 146,132,320
Actuarial Value of Assets as of January 1, 2023					$ 132,425,581
- as a percent of Market Value of Assets					108.7%

SECTION II – ASSETS

The following table calculates the investment related gain/loss for the most recent two calendar years on an actuarial value basis.

Table II-5
Actuarial Value of Assets Gain/(Loss)

Item	2021	2022	Total Period
Beginning of Year Actuarial Value	$ 117,897,805	$ 128,284,466	$ 117,897,805
Contributions	4,876,936	4,508,914	9,385,850
Benefit Payments	(8,347,280)	(8,495,601)	(16,842,881)
Administrative Expenses	(84,160)	(71,479)	(155,639)
Expected Investment Earnings (7.40%)	8,595,268	9,345,577	17,545,249
Expected Actuarial Value on December 31	$ 122,938,569	$ 133,571,877	$ 127,830,384
Investment Gain / (Loss)	5,345,897	(1,146,296)	4,595,197
End of Year Actuarial Value	$ 128,284,466	$ 132,425,581	$ 132,425,581
Return	12.01%	6.49%	9.25%

The Total Period reconciliation reflects total benefit payments, contributions and expenses during this two-year period. Investment earnings do not follow the additive property and instead are calculated based on the beginning and end of Total Period values.

SECTION III – LIABILITIES

In this section, we present detailed information on Plan liabilities including:

- **Disclosure** of Plan liabilities at January 1, 2021 and January 1, 2023; and
- Statement of **changes** in these liabilities during the two-year period.

Disclosure

Two types of liabilities are calculated and presented in this report.

- **Present Value of Benefits:** Used for analyzing the financial outlook of the Plan, this represents the amount of money needed today to fully fund all future benefits and expenses of the Plan, assuming participants continue to accrue benefits.
- **Actuarial Liability:** Used for funding calculations, this liability is calculated by taking the Present Value of Benefits above and subtracting the present value of future Member Contributions and future Employer Normal Costs under an acceptable actuarial funding method. Employer Normal Costs are developed under the **Entry Age Normal** funding method, with normal cost as a percent of pay determined to be level at each active participant's entry age.

The following table discloses both of these liabilities for the current and prior valuations. The liability is also compared to the Plan's assets to determine the **net surplus** or **unfunded liability**. The net surplus or unfunded liability shown in this report is not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the Plan's benefit obligation in the event of a plan termination or other similar actions.

SECTION III – LIABILITIES

Table III-1 Liabilities/Net (Surplus)/Unfunded				
		January 1, 2021		January 1, 2023
Present Value of Future Benefits				
(1) Active Participant Benefits				
Retirement Benefits	$	57,410,255	$	59,532,229
Disability Benefits	$	1,552,035	$	1,617,427
Survivor Benefits		1,384,336	$	1,401,257
Refund of Members Contribution with Interest		0		0
Other: Vested Benefits		292,606		967,437
Total Active Participant Benefits*	$	60,639,232	$	63,518,350
(2) Inactive Participant Benefits				
Retirement Benefits	$	81,267,225	$	85,133,242
Disability Benefits	$	2,829,009	$	3,748,882
Survivor Benefits		8,926,938	$	8,981,144
Terminated Vested and Inactive Members		613		10,195
Total Inactive Participant Benefits	$	93,023,785	$	97,873,463
(3) **Present Value of Benefits (PVFB)** [(1) +(2)]	**$**	**153,663,017**	**$**	**161,391,813**
Actuarial Value of Assets (AVA)	$	117,897,805	$	132,425,581
Present Value of Future Contributions		35,765,212		28,966,232
Total Resources	**$**	**153,663,017**	**$**	**161,391,813**
Actuarial Liability				
Present Value of Benefits (PVFB)	$	153,663,017	$	161,391,813
Present Value of Future Normal Costs (PVFNC)		18,695,451		19,058,512
Actuarial Liability (AL = PVFB – PVFNC)	**$**	**134,967,566**	**$**	**142,333,301**
Actuarial Value of Assets (AVA)		117,897,805		132,425,581
Net (Surplus)/Unfunded (AL – AVA)	**$**	**17,069,761**	**$**	**9,907,720**

* The amount of the accumulated member contributions without accrued interest is $7,075,502 for all active members as of January 1, 2023.

Changes in Liabilities

The Liabilities disclosed in the prior table are expected to change at each valuation. The components of that change, depending upon which liability is analyzed, can include:

- Benefits accrued since the last valuation
- Plan amendments changing benefits
- Passage of time which adds interest to the prior liability
- Benefits paid to retirees since the last valuation
- Participants retiring, terminating, or dying at rates different than expected
- A change in actuarial or investment assumptions
- A change in the actuarial funding method

Unfunded liabilities will change because of all of the above, and also due to changes in Plan assets resulting from:

- Contributions different than expected
- Investment earnings different than expected

In each valuation, we report on those elements of change which are of particular significance, potentially affecting the long-term financial outlook of the Plan. In the following table we present key changes in liabilities since the valuation as of January 1, 2021. The accrual of benefits is the normal cost under the Entry Age Normal cost method.

Table III-2
Change in Actuarial Liability

Liabilities on 01/01/2021	$	134,967,566
Liabilities on 01/01/2023		142,333,301
Liability Increase (Decrease)	$	7,365,735
Change Due to:		
Plan Amendment	$	178,046
Assumption Change		1,497,249
Method Change		0
Accrual of Benefits		3,995,709
Benefit Payments		(16,842,881)
Passage of Time		19,913,041
Liability (Gain)/Loss		(1,375,429)
Total	$	7,365,735

SECTION III – LIABILITIES

The following table provides the Normal Cost, which is the cost for the additional benefit accrued during the year. The Normal Cost as a percent of payroll as of January 1, 2021 is used to calculate the 2023 MMO. The Normal Cost as a percent of payroll as of January 1, 2023 is used to calculate the 2024 and 2025 MMO.

Table III-3
Normal Cost and Normal Cost as Percentage of W-2 Payroll

	2021	2023
Normal Cost	$ 1,953,892	$ 2,072,281
W-2 Wages for active members	$ 12,011,495	$ 12,845,274
Normal Cost as a Percent of the Estimated Payroll	16.27%	16.13%

SECTION IV – MINIMUM MUNICIPAL OBLIGATION

The actuarial funding method used to determine the normal cost and the unfunded actuarial liability is the **Entry Age Normal** (EAN) cost method. The normal cost is based on the normal cost rate determined by taking the value, as of entry age into the plan, of each member's projected future benefits. This value is then divided by the value, also at entry age, of each member's expected future salary producing a normal cost rate as a percent of salary that should remain relatively constant over a participant's career. The normal cost rate is multiplied by current salary to determine each member's normal cost. The total normal cost of the plan is the summation of each member's normal cost. Finally, the normal cost is reduced by the total member contributions to produce the employer normal cost.

The actuarial liability for active participants is the present value of all future benefits expected to be earned under the plan minus the present value of future normal costs. The actuarial liability for inactive participants is the present value of all future pension benefits to be paid from the plan to the retirees and vested terminated participants. The unfunded actuarial liability is the difference between the EAN actuarial liability and the actuarial value of assets.

The amortization requirement is the annual contribution to reduce the unfunded actuarial liability recognized over a certain time period, as outlined in Act 205 and revised by Act 44. The amortization time periods are provided in Appendix D of this report.

In the following charts, we show the actual MMOs for 2023 and 2024. The payroll amounts shown reflect the information provided by the City for those years.

The MMO for 2025 has been estimated based on the results of this valuation and the 2024 estimated payroll. The actual amount will vary based on actual payroll as provided by the City of Allentown.

SECTION IV – MINIMUM MUNICIPAL OBLIGATION

The MMO pay used in the MMO calculation in the table below is provided by the City of Allentown and may differ from the valuation pay provided throughout this report which is based upon actual participant data included in the actuarial valuation as of January 1 of each year.

Table IV-1
Minimum Municipal Obligation (Actual and *Estimated*)

Based on Valuation Report:	**1/1/2021**	**1/1/2023**	***1/1/2023***
Calendar Year:	**2023**	**2024**	***2025***
1. MMO pay (actual/*estimated)* (prior year W2 pay reported by the City)	$ 13,065,552	$ 14,229,859	*$ 14,870,000*
2. Total Normal Cost Percentage	16.27%	16.13%	16.13%
3. Total Normal Cost [(1) x (2)]	$ 2,125,765	$ 2,295,276	*$ 2,398,531*
4. Total Amortization Requirement	2,304,917	1,332,956	1,332,956
5. Total Administrative Expenses	80,000	80,000	80,000
6. **Total Financial Requirement** [(3) + (4) + (5)]	**$ 4,510,682**	**$ 3,708,232**	***$ 3,811,487***
7. Estimated Member Contribution Rate	5.00%	5.00%	*5.00%*
8. Estimated Member Contributions [(1) x Member Contribution Rate]	653,278	711,493	*743,500*
9. Estimated Employer Portion of MMO [(6) - (8)]	$ 3,857,404	$ 2,996,739	*$ 3,067,987*

SECTION IV – MINIMUM MUNICIPAL OBLIGATION

The following table summarizes the development of the gains and losses from 2021 to 2023.

Table IV-2 Development of Actuarial Gain / (Loss)		
Unfunded Liability as of 01/01/2021	$	17,069,761
Normal Cost	$	3,995,709
Contributions made		
a. Employee Contributions	$	(1,436,844)
b. Local Portion		(7,949,006)
Actual Expenses	$	155,639
Interest on above		2,367,792
Plan Changes	$	178,046
Assumption Changes		1,497,249
Method Changes		0
Expected Unfunded Liability as of 01/01/2023	$	15,878,346
Actual Unfunded Liability as of 01/01/2023		9,907,720
Actuarial Gain / (Loss)	$	5,970,626
- Investment Gain / (Loss)		4,595,197
- Liability Gain / (Loss)		1,375,429

This table provides the gains/(losses) for the new amortization base.

Table IV-3 Total Gain/(Loss)		
Investment Gain / (Loss)	$	4,595,197
Liability Gain / (Loss)		1,375,429
Timing and interest Gain / (Loss)		(23,793)
Total Gain/(Loss)	$	5,946,833

SECTION IV – MINIMUM MUNICIPAL OBLIGATION

The following table provides the schedule of amortization bases as of January 1, 2023. The total $5,946,833 actuarial gain reflects the explicit gain for the two-year period as provided above along with the timing and interest loss due to the delayed contribution method as followed under Act 205.

The assumption change base of $1,497,249 accounts for the change in the assumption for the interest rate used to value liabilities which is detailed in Appendix D. The plan change base of $178,0464 reflects the addition of the vested benefit which is detailed in Appendix C. The amortized payments prior to 2023 were re-determined based on the updated interest rate assumption.

Table IV-4a
Schedule of Amortization Bases Including Bond Proceeds for Minimum Contributions as of January 1, 2023

Original Date	Type	Original Amount	Original Period	Remaining Period	Payment	Balance	Date Fully Amortized
1/1/2003	Investment Loss	$ 5,622,162	30	10	$ 29,846	$ 221,843	12/31/2032
1/1/2005	Plan Amendment	10,203,173	20	2	63,298	122,290	12/31/2024
1/1/2007	Assumption Change	(3,114,099)	20	4	(19,219)	(69,381)	12/31/2026
1/1/2009	Assumption Change	(9,855,348)	20	6	(60,528)	(306,722)	12/31/2028
1/1/2009	Actuarial Loss	24,467,226	20	6	150,267	761,475	12/31/2028
1/1/2011	Actuarial Loss	15,494,705	20	8	94,726	599,934	12/31/2030
1/1/2013	Assumption Change	46,266	15	5	327	1,427	12/31/2027
1/1/2013	Actuarial Loss	27,694,316	20	10	168,580	1,253,040	12/31/2032
1/1/2015	Assumption Change	2,760,787	14	6	301,485	1,527,768	12/31/2028
1/1/2015	Actuarial Loss	1,436,184	14	6	156,835	794,758	12/31/2028
1/1/2017	Assumption Change	4,204,011	13	7	478,480	2,738,203	12/31/2029
1/1/2017	Actuarial Loss	7,896,896	13	7	898,785	5,143,490	12/31/2029
1/1/2019	Actuarial Loss	2,475,309	12	8	295,731	1,872,979	12/31/2030
1/1/2021	Assumption Change	1,436,239	12	10	171,347	1,273,602	12/31/2032
1/1/2021	Actuarial Gain	(1,979,618)	12	10	(236,173)	(1,755,448)	12/31/2032
1/1/2023	Plan Change	178,046	10	10	23,954	178,046	12/31/2032
1/1/2023	Assumption Change	1,497,249	12	12	178,501	1,497,249	12/31/2034
1/1/2023	Actuarial Gain	(5,946,833)	12	12	(708,978)	(5,946,833)	12/31/2034
					$ 1,987,264	$ 9,907,720	

SECTION IV – MINIMUM MUNICIPAL OBLIGATION

In 2015, the City adopted Ordinance 57 changing the plan's amortization method. The Unfunded Actuarial Liability Amortization is outlined in Appendix D and is the lesser of: the traditional amortization of individual bases, or the 10-year level dollar rolling amortization of the total Unfunded Actuarial Liability. The chart below shows the determination of the UAL payment for 2023.

Table IV-4b UAL Amortization Payment	
1. Traditional Amortization	$ 1,987,264
2. 10-year Rolling Amortization	$ 1,332,956
3. Minimum of (1) or (2)	$ 1,332,956

By paying the 10-year rolling amortization amount when this amount is less than the traditional amortization amount, the plan will incur losses equal to the difference between these two amortization amounts. These losses will be recognized in future valuations. The City may choose to contribute more to the Plan in any given year.

For the 2023 actuarial valuation, the traditional amortization amount is greater than the 10-year rolling amortization amount.

APPENDIX A – SUPPLEMENTAL INFORMATION EXCLUDING BOND PROCEEDS

Allentown received the proceeds of a Pension Obligation Bond in 1996 and Note payment in 2013 which improved the financial status of the Plan. This section provides the development of the unfunded liability based upon assets without the bond proceeds and the Note payment and the amortization amount of this unfunded liability.

Under Act 205 section 404, municipalities that issue bonds (or notes) to fund the unfunded actuarial liabilities must complete Exhibit I of the Act 205 form reflecting the funded status and MMO determination of the plan as if the bond issuance (or notes) had not occurred. The contributions used for determining the assets excluding the bonds and the Note payment as of the valuation date are based upon "hypothetical amortization contributions that would have been made had bond issue proceeds not been deposited", as described on the Act 205 form. In addition, investment earnings exclude earnings on bond issue proceeds (as instructed) by applying the rate of market returns for the year on the assets excluding the bonds.

The tables in this section consist of:

- Market Value of Assets without Bond Proceeds
- Actuarial Value of Assets without Bond Proceeds
- Unfunded Liability without Bond Proceeds
- Actuarial (Gain)/Loss without Bond Proceeds
- Schedule of Amortization bases without Bond Proceeds

Table A-1
Market Value of Assets with Gain/(Loss) without Bond

	2021	2022	Total Period
Beginning of Year Market Value	**$ 89,716,396**	**$ 105,792,127**	**$ 89,716,396**
Contributions	9,397,381	9,028,809	18,426,190
Benefit Payments	(8,347,280)	(8,495,601)	(16,842,881)
Administrative Expenses	(84,160)	(71,479)	(155,639)
Investment Earnings*	15,109,790	(12,914,470)	2,195,320
Estimated Market Value on December 31	**$ 105,792,127**	**$ 93,339,386**	**$ 93,339,386**
Expected Investment Earnings (7.40%)	6,674,115	7,845,396	13,895,272
Expected Market Value on December 31	$ 97,356,452	$ 114,099,252	$ 105,039,338
Investment Gain / (Loss)	8,435,675	(20,759,866)	(11,699,952)
End of Year Market Value	$ 105,792,127	$ 93,339,386	$ 93,339,386

* Based upon market value with bond returns in Table II - 3

APPENDIX A – SUPPLEMENTAL INFORMATION EXCLUDING BOND PROCEEDS

Table A-2
Development of Actuarial Value of Assets Without Bond
5-Year Smoothing Method

Market Value of Assets as of January 1, 2023					$ 93,339,386
Plan Year	**Investment Gains / (Losses)**	**Percent Recognized**	**Percent Deferred**		**Amount Deferred**
2018	$ (7,865,519)	100%	0%		$ 0
2019	8,342,414	80%	20%		1,668,483
2020	3,409,643	60%	40%		1,363,857
2021	8,435,675	40%	60%		5,061,405
2022	(20,759,866)	20%	80%		(16,607,893)
					$ (8,514,148)
Preliminary Actuarial Value as of January 1, 2023					$ 101,853,534
Corridor for Actuarial Value					
- Lower Limit				80%	$ 74,671,509
- Upper Limit				120%	$ 112,007,263
Actuarial Value of Assets as of January 1, 2023					$ 101,853,534
- as a percent of Market Value of Assets					109.1%

Table A-3
Liabilities/Net (Surplus)/Unfunded Based upon Assets without Bond

	January 1, 2023
Actuarial Liability	$ 142,333,301
Actuarial Value of Assets without Bond	101,853,534
Net (Surplus)/Unfunded without Bond (AL – AVA)	$ 40,479,767

APPENDIX A – SUPPLEMENTAL INFORMATION EXCLUDING BOND PROCEEDS

The following table provides the explicit gains/(losses) of the unfunded liability based upon the assets without the bond.

Table A-4
Development of Actuarial Gain/(Loss) without the Bond

Unfunded Liability without Bond as of 01/01/2021	$	50,701,743
Normal Cost	$	3,995,709
Contributions made		
a. Employee Contributions	$	(1,436,844)
b. Local Portion		(16,989,346)
Actual Expense	$	155,639
Interest on above		6,854,302
Plan Changes	$	178,046
Assumption Changes	$	1,497,249
Method Changes		0
Expected Unfunded Liability as of 01/01/2023	$	44,956,498
Actual Unfunded Liability as of 01/01/2023		40,479,767
Actuarial Gain / (Loss)	$	4,476,731
- Investment Gain / (Loss)		3,101,302
- Liability Gain / (Loss)		1,375,429

Table A-5
Total Gain/(Loss) without Bond

Investment Gain / (Loss)	$	3,101,302
Liability Gain / (Loss)		1,375,429
Timing and interest Gain / (Loss)		(80,453)
Total Gain/(Loss)	$	4,396,278

APPENDIX A – SUPPLEMENTAL INFORMATION EXCLUDING BOND PROCEEDS

The following table provides the schedule of amortization bases as of January 1, 2023 without bond proceeds. Plan amendments and assumption changes prior to January 1, 2015 have not been adjusted by the 2013 Cancellation Ratio based on the 2013 Note contribution paid by the City, which triggered the application of Act 205 Section 404(h) to the Amortization Bases Including Bond Proceeds.

Table A-6
Schedule of Amortization Bases Excluding Bond for Minimum Contributions as of January 1, 2023

Original Date	Type	Original Amount	Original Period	Remaining Period	Annual Payment	Remaining Balance	Date Fully Amortized
1/1/2002	Investment Loss	440,914	30	9	35,022	241,736	12/31/2031
1/1/2003	Investment Loss	4,216,279	30	10	334,193	2,484,022	12/31/2032
1/1/2005	Plan Amendment	10,203,173	20	2	945,077	1,825,857	12/31/2024
1/1/2007	Assumption Change	(3,114,099)	20	4	(286,952)	(1,035,896)	12/31/2026
1/1/2009	Assumption Change	(8,441,714)	20	6	(774,079)	(3,922,622)	12/31/2028
1/1/2009	Actuarial Loss	21,806,758	20	6	1,999,610	10,132,966	12/31/2028
1/1/2011	Actuarial Loss	15,362,399	20	8	1,402,224	8,880,811	12/31/2030
1/1/2013	Assumption Change	46,266	15	5	4,878	21,289	12/31/2027
1/1/2013	Actuarial Loss	28,941,356	20	10	2,630,327	19,550,941	12/31/2032
1/1/2015	Assumption Change	2,760,787	14	6	301,485	1,527,769	12/31/2028
1/1/2015	Actuarial Loss	797,999	14	6	87,144	441,598	12/31/2028
1/1/2017	Assumption Change	4,204,011	13	7	478,479	2,738,201	12/31/2029
1/1/2017	Actuarial Loss	1,371,433	13	7	156,090	893,258	12/31/2029
1/1/2019	Actuarial Gain	(76,432)	12	8	(9,131)	(57,833)	12/31/2030
1/1/2021	Assumption Change	1,436,239	12	10	171,347	1,273,601	12/31/2032
1/1/2021	Actuarial Gain	(2,024,163)	12	10	(241,487)	(1,794,948)	12/31/2032
1/1/2023	Plan Change	178,046	10	10	23,954	178,046	12/31/2032
1/1/2023	Assumption Change	1,497,249	12	12	178,501	1,497,249	12/31/2034
1/1/2023	Actuarial Gain	(4,396,278)	12	12	(524,122)	(4,396,278)	12/31/2034
					$ 6,912,560	$ 40,479,767	

APPENDIX A – SUPPLEMENTAL INFORMATION EXCLUDING BOND PROCEEDS

The City adopted Ordinance 57 changing the plan's amortization method. The Unfunded Actuarial Liability Amortization is outlined in Appendix D and is the lesser of: the traditional amortization of individual bases, or the 10-year level dollar rolling amortization of the total Unfunded Actuarial Liability. The chart below shows the determination of the UAL payment for 2023.

Table A-7 UAL Amortization Payment Excluding Bond		
1. Traditional Amortization	$	6,912,560
2. 10-year Rolling Amortization	$	5,446,031
3. Minimum of (1) or (2)	$	5,446,031

APPENDIX B – MEMBERSHIP INFORMATION

The data for this valuation was provided by the City as of January 1, 2023. Cheiron did not audit any of the data; however, we performed an informal examination of the obvious characteristics of the data for reasonableness and consistency in accordance with Actuarial Standards of Practice No. 23.

The following is a list of data charts contained in this section:

- Summary of Participant Data
- Age/Service Distribution for Active Participants, including counts and total salary
- Counts and Total Benefit Amount by Age for Retirees, Beneficiaries, and Disabled Participants
- Reconciliation of Active, Terminated Vested, and In-Pay Participants

SUMMARY OF PARTICIPANT DATA				
		1/1/2021		1/1/2023
Active Participants				
Count		128		127
New Entrants		11		9
Average Age		42.8		43.6
Average Benefit Service		13.4		13.9
Annual Payroll*	$	10,919,071	$	11,064,056
Retirees and Beneficiaries Receiving Payments				
Count		192		191
Average Age		69.9		70.0
Annual Benefits	$	8,180,825	$	8,557,461
Average Monthly Benefit	$	3,551	$	3,734
Terminated Vested Participants and Inactive Members				
Count		1		3
Accumulated Member Contributions w/o Interest	$	613	$	10,195
Annual Benefits	$	0	$	0
Average Monthly Benefit	$	0	$	0

The estimated benefit payments for the current plan year are $8,880,092.

*Includes overtime pay up to 10% of base pay for members hired prior to January 1, 2012.

APPENDIX B – MEMBERSHIP INFORMATION

Summary of Active Data with Pensionable Pay as of January 1, 2023

	YEARS OF CREDITED SERVICE																			
	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	
Attained Age	No.	Average Comp.	No.	Average Comp.	No.	Average Comp.	No.	Average Comp.	No.	Average Comp.	No.	Average Comp.	No.	Average Comp.	No.	Average Comp.	No.	Average Comp.	No.	Average Comp.
Under 25	0	$ 0	2	$ 70,283	0	$ 0	0	$ 0	0	$ 0	0	$ 0	0	$ 0	0	$ 0	0	$ 0	0	$ 0
25 to 29	3	50,948	7	66,517	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30 to 34	3	51,085	6	74,440	2	80,126	3	81,598	0	0	0	0	0	0	0	0	0	0	0	0
35 to 39	0	0	1	63,371	2	81,074	11	88,062	0	0	0	0	0	0	0	0	0	0	0	0
40 to 44	1	51,087	2	62,272	2	84,620	14	89,578	5	94,210	2	99,685	0	0	0	0	0	0	0	0
45 to 49	0	0	0	0	0	0	11	91,292	6	96,216	12	99,339	1	91,375	0	0	0	0	0	0
50 to 54	0	0	0	0	0	0	5	91,363	4	109,407	7	93,166	6	97,210	0	0	0	0	0	0
55 to 59	0	0	0	0	0	0	2	85,783	0	0	4	97,142	1	91,190	1	91,417	0	0	0	0
60 to 64	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	98,946	0	0
65 to 69	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
70 & up	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

APPENDIX B – MEMBERSHIP INFORMATION

Summary of Inactive Data as of January 1, 2023

AGE DISTRIBUTION OF INACTIVE PARTICIPANTS PENSIONERS AND BENEFICIARIES RECEIVING BENEFITS AS OF JANUARY 1, 2023								
	Disability Retirements		Normal, Early Deferred Vested Retirements		Surviving Spouses and Beneficiaries Receiving Benefits		Total	
Age	Number	Monthly Benefit	Number	Monthly Benefit	Number	Monthly Benefit	Number	Monthly Benefit
Under 55	1	$ 3,243	17	$ 85,387	3	$ 8,464	21	$ 97,094
55-59	1	5,681	24	132,170	2	2,411	27	140,262
60-64	1	6,461	25	131,804	2	1,532	28	139,797
65-69	1	3,487	18	83,309	6	19,732	25	106,528
70-74	1	901	12	46,859	7	19,864	20	67,624
75-79	1	2,615	14	46,130	6	11,392	21	60,137
80 & Over	4	5,875	23	60,616	22	35,188	49	101,679
Total	10	$ 28,263	133	$ 586,275	48	$ 98,583	**191**	**$ 713,121**

APPENDIX B – MEMBERSHIP INFORMATION

Participant Reconciliation from January 1, 2021 To January 1, 2023

		Actives	Inactive	Disabled	Retired	Beneficiary	Total
January 1, 2021 valuation		**128**	**1**	**9**	**135**	**48**	**321**
Additions / QDROs		**9**	2				**11**
Reductions							
a.	Terminated - not vested, refund due	(2)					(2)
b.	Deaths without beneficiary				(3)	(7)	(10)
	Total	**7**	**2**		**(3)**	**(7)**	**(1)**
Changes in status							
a.	Terminated - vested						
b.	Retired	(7)			7		
c.	Disabled	(1)		1			
d.	Died with beneficiary				(7)	7	
e.	Data corrections				1		1
	Total	**(8)**		**1**	**1**	**7**	**1**
January 1, 2023 valuation		**127**	**3**	**10**	**133**	**48**	**321**

APPENDIX B – MEMBERSHIP INFORMATION

Active Members	Count	Annual Pay
As of last valuation date	128	$ 10,919,071
Separations from active service		
Refund of contributions	2	$ 53,197
Separation with deferred benefit	0	0
Separation due refund	0	0
Disability	1	99,412
Death	0	0
Retirement with service retirement benefit	7	725,171
Total separations	**10**	**$ 877,780**
As of current valuation date using prior pay	**118**	**$ 10,041,291**
As of current valuation date using current pay	**118**	**$ 10,584,655**
New entrants	9	479,401
As of current valuation date	**127**	**$ 11,064,056**

APPENDIX B – MEMBERSHIP INFORMATION

Service retirement benefit recipients	Count	Annual Benefit
As of last valuation date	135	$ 6,760,975
New Benefit recipients	8	530,347
Total	**143**	**$ 7,291,322**
Terminations	0	$ 0
Deaths	10	294,501
Others	0	0
Total terminations	**10**	**$ 294,501**
COLA increase		38,482
QDRO Decrease		0
As of current valuation date	**133**	**$ 7,035,303**

Disability benefit recipients	Count	Annual Benefit
As of last valuation date	9	$ 257,174
New Benefit recipients	1	77,535
Total	**10**	**$ 334,709**
Terminations	0	$ 0
Deaths	0	0
Others	0	0
Total terminations	**0**	**$ 0**
COLA increase		4,451
As of current valuation date	**10**	**$ 339,160**

APPENDIX B – MEMBERSHIP INFORMATION

Surviving Spouses	Count	Annual Benefit
As of last valuation date	48	$ 1,162,676
New Benefit recipients	7	174,483
Total	**55**	**$ 1,337,159**
Terminations	0	$ 0
Deaths	7	155,327
Others	0	0
Total terminations	**7**	**$ 155,327**
COLA increase (QDRO)		1,166
As of current valuation date	**48**	**$ 1,182,998**

Inactive Refund Due	Count	Annual Benefit
As of last valuation date	1	$ 613
New recipients	2	9,582
Total	**3**	**$ 10,195**
Others	0	0
Total terminations	**0**	**$ 0**
As of current valuation date	**3**	**$ 10,195**

APPENDIX C – SUMMARY OF PLAN PROVISIONS

1. Normal Retirement

Participants hired prior to January 1, 2012:

Eligibility: 20 years of service.

Basic Benefit: The retirement benefit shall be determined by the rate of monthly pay of the employee at the time of retirement or the highest average annual salary during any five years of service. Salary will include base pay, longevity, holiday pay, festive pay, shift differential and overtime. Overtime shall be limited to 10% of base pay. The benefit will be a percent of pay in accordance with the following table:

Years of Service	Percent of Benefit
20	50.5%
21	54.0
22	58.0
23	62.0
24	66.0
25	70.0

The minimum benefit is $10,400 per year.

Participants hired on or after January 1, 2012:

Eligibility: Age 50 with 20 years of service.

Basic Benefit: The retirement benefit shall be 50% of monthly pay at time of retirement or the highest average annual salary during any five years of service.

Service Increment: One-fortieth (1/40th) times the Basic Benefit for each year of service in excess of 20 years. The total Service Increment cannot exceed $2,400 in total annual benefit increase (i.e., $200 additional monthly benefit). Service after attaining age 65 is excluded.

Salary will include base pay plus longevity pay.

The minimum benefit is $10,400 per year.

2. Early Retirement

None permitted.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

3. Termination Benefits

Vesting 100% after 12 years of service: Termination before normal retirement eligibility: Member becomes eligible for retirement at the point he would have attained eligibility for normal retirement had he continued in employment. Prior to 20 years, the benefit is based upon a pro-rated portion of the normal retirement benefit. After 20 years, the benefit is the normal retirement benefit.

Non-Vested Benefit: Refund of contributions (including any military buy-back contributions, if applicable) without interest.

4. Preretirement Death Benefits

Surviving spouse, dependent child(ren) or dependent parent(s): 100% of the pension benefit applicable to the member.

Other beneficiaries: Refund of contributions (including any military buy-back contributions, if applicable) without interest.

5. Disability Benefits

Less than 2 years of service: 10% of Salary
At least 2 years of service but less than 5 years: 20% of Salary
At least 5 years of service but less than 10 years: 30% of Salary
At least 10 years of service but less than 15 years: 40% of Salary
At least 15 years of service but less than 20 years: 50% of Salary
At least 20 years of service: Same as normal retirement

Salary is defined under normal retirement benefit.

6. Postretirement Death Benefits

Surviving spouse, dependent child(ren) or dependent parent(s): 100% of the pension benefit applicable to the member.

Other beneficiaries: None.

7. Credit for Military Service

Any member with military service prior to becoming a member in the Plan may purchase credited military service, not to exceed five (5) years of such service.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

8. Purchased Service

Not applicable.

9. Employee Contributions

5% of salary per year. Salary will include base pay, longevity, holiday pay, festive pay, shift differential and overtime.

For new hires after 1/1/2012, additional contribution of $24 per year for a service increment.

10. Cost of Living Adjustment

Participants retiring between January 1, 2005 and December 31, 2011 and their beneficiaries shall receive an annual COLA once each retiree is eligible for the COLA. Annual COLAs do not occur until the pension allowance is less than half of the current salary for a firefighter based upon rank at retirement. Such increases shall be in conformity with the uniform scale, which may be based on the cost of living, but the total of such allowances shall not at any time exceed ½ of the current salary benefit paid to the firefighter of the highest grade.

11. Changes Since Last Valuation (i.e., since January 1, 2021 under Act 205)

Effective January 1, 2021, a vested benefit was added for members with at least 12 years of service but who were not eligible for normal retirement benefits.

APPENDIX D – ACTUARIAL ASSUMPTIONS AND METHODS

A. Demographic and Economic Assumptions

1. Mortality Rates

Healthy Mortality: RP-2000 Blue Collar Combined Healthy Mortality Table projected generationally from base year 2000 using 50% of Scale AA.

Disabled Mortality: RP-2000 Disabled Mortality Table.

The mortality assumption was set by the City of Allentown Pension Board, which has control over the selection of the pension valuation assumptions, rather than the actuary. Based upon limited data, this mortality assumption was reviewed and appears to be reasonable in terms of reflecting projected mortality improvement in the future.

2. Disability Rates

100% of the 1955 United Auto Workers Table.

Age	Male	Female
30	0.04%	0.06%
35	0.05%	0.08%
40	0.07%	0.10%
45	0.10%	0.15%
50	0.18%	0.26%
55	0.36%	0.49%
60	0.90%	1.21%
>=65	0.00%	0.00%

3. Termination Rates

Plan specific rates based, in part, on the following table:

Age	Male	Female
25	5.00%	7.50%
30	3.75%	5.00%
35	2.50%	3.75%
40	1.50%	2.50%
45	0.75%	1.25%
>=50	0.00%	0.00%

APPENDIX D – ACTUARIAL ASSUMPTIONS AND METHODS

4. Retirement Rates for Active Employees

Immediately upon attainment of age 62 with 20 years of service. If younger than age 62, a select and ultimate table with increasing rates.

The retirement assumption was set by the City of Allentown Pension Board, which has control over the selection of the pension valuation assumptions, rather than the actuary. Based upon our best professional judgment and with limited available data, we would be inclined to state that this retirement assumption may not represent the best estimate of future retirement experience under the Plan, although the new benefit tier might change retirement behavior to better match this assumption in the future.

	Years of Service					
Age	<=20	21	22	23	24	>=25
<=46	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
47	0.0%	0.0%	0.0%	0.0%	15.0%	15.0%
48	0.0%	0.0%	0.0%	0.0%	15.0%	15.0%
49	0.0%	0.0%	0.0%	0.0%	15.0%	15.0%
50	0.0%	0.0%	0.0%	10.0%	20.0%	20.0%
51	0.0%	0.0%	0.0%	10.0%	20.0%	20.0%
52	0.0%	0.0%	0.0%	10.0%	20.0%	20.0%
53	0.0%	0.0%	0.0%	10.0%	20.0%	20.0%
54	0.0%	0.0%	0.0%	10.0%	25.0%	25.0%
55	0.0%	5.0%	5.0%	15.0%	25.0%	25.0%
56	0.0%	10.0%	10.0%	15.0%	25.0%	25.0%
57	0.0%	10.0%	10.0%	15.0%	25.0%	25.0%
58	0.0%	10.0%	10.0%	15.0%	25.0%	25.0%
59	0.0%	10.0%	10.0%	15.0%	25.0%	25.0%
60	0.0%	25.0%	25.0%	25.0%	25.0%	25.0%
61	0.0%	25.0%	25.0%	25.0%	25.0%	25.0%
>=62	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Assumed retirement date for active participants who are assumed to terminate prior to attaining retirement eligibility or current terminated vested participants is the date the Member would have attained eligibility for normal retirement had the member continued in employment.

5. Percent Married

80% of active members are assumed to be married.

6. Age of Spouse

Female spouse is assumed to be two years younger than male spouse.

APPENDIX D – ACTUARIAL ASSUMPTIONS AND METHODS

7. Investment Return

7.30% per annum, net of investment expenses.

8. Salary Increase

Salary increases:

With Merit Increases:	4.5% compounded annually.
Without Merit Increases:	3.5% compounded annually.

9. Overtime

Participants hired prior to January 1, 2012 are assumed to attain overtime pay equal to 10% of base pay at retirement.

10. Credit for Military Service

Military service purchased as of the valuation date, as provided by the City, is reflected in the valuation results. Future possible military service purchases are not assumed.

11. Form of Annuity

Married participants: 100% Joint and Survivor Annuity.

Single participants: Life Annuity.

12. Cost of Living Adjustment

2.4% per year upon eligibility to receive a COLA.

For participants eligible to receive a COLA, the pay of the same rank as the participant as of their retirement date is projected into the future to determine the date that future benefit increases are expected to begin.

13. Expenses

Expenses are assumed to equal the two-year average of paid administrative expenses from the most recent actuarial valuation, rounded to the nearest $10,000. Expenses are assumed to increase based on without merit salary scale in the future for MMO projections.

APPENDIX D – ACTUARIAL ASSUMPTIONS AND METHODS

14. Rationale for Assumptions

In accordance with Actuarial Standard of Practice No. 27, the rationale for the 7.30% discount rate is based on the Board's investment risk preference, the Plan's current asset allocation, and the investment manager's capital market outlook.

The demographic assumptions were selected by the City of Allentown Pension Board. Some of these assumptions have been updated since Cheiron became the actuary to the Plan. The rates of mortality were selected based on plan experience as reviewed by Cheiron with the Board. These assumptions are monitored for reasonability.

15. Changes since last biennial valuation (i.e., since January 1, 2021 under Act 205)

The investment return assumption was decreased from 7.40% to 7.30%.

APPENDIX D – ACTUARIAL ASSUMPTIONS AND METHODS

B. Actuarial Methods

1. Funding Method

Under the entry age normal actuarial cost method, the individual entry age normal cost is determined for each participant by calculating the annual contribution rate as a level percent of pay required to fund that individual's expected benefits, based on the current plan provisions, over the participant's expected active working lifetime with the Plan at entry.

At the valuation date, the present value of future normal cost is calculated for each individual participant by multiplying the entry age normal cost by the present value of the participant's expected future salary with the Plan. The cost for each participant is then summed to yield the present value of future normal costs.

The excess of the present value of future benefits for all individuals at the valuation date over the present value of future normal costs is called the actuarial liability, or past service liability.

2. Amortization Method

Under Act 44 of 2009, the unfunded actuarial liability is amortized as a level dollar amount over the lesser of:

(a) (i) 30 years, with respect to the initial liability as of 1/1/85 (or first valuation);

(ii) 20 years, with respect to actuarial gains and losses;

(iii) 15 years, with respect to changes due to actuarial assumptions;

(iv) 10 years, with respect to changes in benefits not mandated by the state for active members;

(v) 1 year, with respect to changes in benefits not mandated by the state for currently retired members;

(vi) 20 years, with respect to state mandated benefit changes;

or

(b) The average assumed working lifetime of active employees as of the date the liability was established, rounded to the next highest whole year.

If the Plan for the prior biennial valuation was determined to be moderately or severely distressed, then the amortization period is only determined by (a).

APPENDIX D – ACTUARIAL ASSUMPTIONS AND METHODS

Due to the Ordinance 57 passed by City Council on September 16, 2015 if the Plan is greater than 70% funded, the amortization amount is the lesser of the traditional amortization of individual bases using the amortization periods described above or the 10-year level-dollar rolling amortization of the total unfunded actuarial liability. This comparison between the two amortization amounts occurs biennially for the odd-year actuarially valuation, and the amortization method employed by the subsequent MMO amounts based upon the biennial valuation cannot change. For example, amortization method for the two MMO determinations associated with the unfunded actuarial liability as of the odd-year valuation date must, over the two year period, both be based on either the 10-year rolling amortization method or the traditional layered amortization method.

This 10-year rolling amortization method is asymptotic in nature, where 100% full funding of the UAL is not projected to occur if all assumptions are met and the 10-year-rolling method applies, although the funding ratio is projected to improve.

3. Actuarial Value of Assets

The actuarial value of assets is determined in accordance with Section 3.16 of Revenue Procedure 2000-40, using a five-year smoothing period. The resulting actuarial value of assets is then limited to be no greater than 120% and no less than 80% of the market value of assets on the valuation date.

4. Disclosure regarding Models Used

Cheiron utilizes ProVal, an actuarial valuation software leased from Winklevoss Technologies (WinTech) to calculate liabilities and project benefit payments. We have relied on WinTech as the developer of ProVal. We have reviewed ProVal and have a basic understanding of it and have used ProVal in accordance with its original intended purpose. We have not identified any material inconsistencies in assumptions or output of ProVal that would affect this actuarial valuation.

Projections in this report were developed using P-scan, our proprietary tool for the intended purpose of developing projections. The model is also used to stress test the impact of volatile asset returns over the projection period. While the assumptions individually are reasonable for the underlying report that supports the projections, specifically for projection purposes, they are also considered reasonable in the aggregate.

5. Changes in Method Since Last Valuation

None