



**Municipal Pensions
Oversight Board**

**City of Charleston
West Virginia
Firemen's Pension Plan**

Actuarial Valuation as of July 1, 2022
to Determine the City's Contribution for
the Fiscal Year Ending June 30, 2024

Bolton

Submitted by:

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Bolton

Employee Benefits, Actuarial & Investment Consulting

October 5, 2023

Mr. Benjamin Adams
City Treasurer
501 Virginia Street, East
Charleston, WV 25301

Assistant Chief William Jones
Pension Board Secretary
City of Charleston
Firemen's Pension and Relief Fund

Re: *City of Charleston Firemen's Pension and Relief Fund*
Actuarial Valuation Report for the Year Beginning July 1, 2022

Dear Mr. Adams and Assistant Chief Jones:

The following sets forth the actuarial valuation of the City of Charleston Firemen's Pension and Relief Fund as of July 1, 2022. Sections I and II of the report provide a summary of results and the actuarial certification, respectively. Sections III and IV contain the development of the City's contribution for the 2024 fiscal year. Section V contains asset information. Sections VI and VII provide experience gain/loss and risk measure information, respectively. Section VIII provides projections. Sections IX through XI provide a summary of the census data, plan provisions, assumptions and actuarial methods. Section XII provides a glossary of many of the terms used in this report.

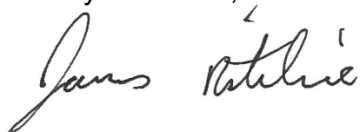
The purpose of this report is to provide information on:

- The sponsor's funding requirements for the fiscal year ending June 30, 2024, based on the selected funding policy, i.e., the **Optional** funding policy as defined in West Virginia Code §8-22-20(e)(1)
- The Fund's eligibility to receive an allocation of the premium tax for the fiscal year ending June 30, 2024
- The Fund's requirement to provide supplemental benefits for the plan year beginning July 1, 2024

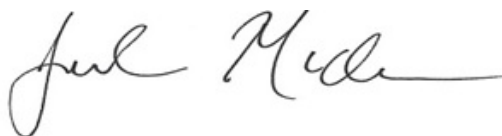
If the City is considering the issuance of pension obligation bonds, the City must contact Bolton and the Municipal Pensions Oversight Board for the determination of the adjustments to information in the valuation report required under WV Code.

This report may not be used for any other purpose; Bolton is not responsible for the consequences of any unauthorized use. We are available to answer any questions on the material in this report or to provide explanations or further details as appropriate.

Respectfully submitted,



James E. Ritchie, ASA, EA, FCA, MAAA



Jordan McClane, FSA, EA, FCA, MAAA



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Section I. Executive Summary

Background

Bolton has prepared the following report that sets forth the actuarial valuation of the City of Charleston Firemen’s Pension and Relief Fund (the Plan) as of July 1, 2022. Please note that some columns and rows in the tables on the following pages may not add due to rounding.

Funding Policy

The Plan is valued using the Optional funding policy as described in WV Code §8-22-20. The City of Charleston (the City) switched from the Conservation funding policy to the Optional funding policy effective August 21, 2023.

Summary of Results

The following table presents a two-year summary of the Plan’s estimated pension contribution requirements.

Estimated Employer Contribution Requirements	FYE 2023 ¹	FYE 2024
1. Estimated Employer Normal Cost with Interest	\$ N/A	\$ 1,039,940
2. Estimated Payroll ²	\$ N/A	\$ 5,503,556
3. Normal Cost Rate ²	N/A	18.90%
4. Amortization of Unfunded Liability with Interest ³	\$ N/A	\$ 7,889,481
5. Estimated Premium Tax Allocation	\$ 1,710,555	\$ 2,135,874
6. Unfunded Liability Payment Net of Premium Tax Allocation (4. – 5., not less than 0)	\$ N/A	\$ 5,753,607
7. Estimated Net Employer Contribution (1. + 6.)	\$ 8,088,370	\$ 6,793,547

¹ “N/A” is displayed for some line items for the FYE 2023 column since the contribution for that year was developed under the City’s former funding policy, the Conservation funding policy, rather than the Optional funding policy. For the development of the FYE 2023 contribution, please refer to the July 1, 2021 actuarial valuation report.

² The methodology currently employed by the City for determining the dollar amount of the normal cost (NC) component of the contribution is to multiply the NC rate by the actual payroll for the fiscal year (FY) beginning on the valuation date (i.e. the NC rate in the FYE 2024 column will be multiplied by the actual FY 2023 payroll to determine the NC component of the FY 2024 contribution). As such, the payroll shown here is the estimated payroll for the fiscal year preceding the fiscal year denoted in the column label. For this reason, this NC rate may differ from the NC rate presented in the Projected Net Employer Normal Cost exhibit on page 8.

³ FYE 2024 amortization of unfunded liability with interest reflects the additional employer contribution of \$18,368,423 reported in the FYE 2023 asset statement.



In conjunction with switching to the Optional funding policy, the City expressed interest in fully funding the plan by 2046, rather than the year that the initial unfunded liability upon switching to the Optional funding policy is set to be fully amortized, 2050. Displayed below is a summary of the Plan’s estimated pension contribution if the initial unfunded liability upon switching to the Optional funding policy is amortized over 23 years, rather than the 26.5 years remaining for the Optional funding policy.

Estimated Employer Contribution	FYE 2024
1. Estimated Employer Normal Cost with Interest	\$ 1,039,940
2. Estimated Payroll	\$ 5,503,556
3. Normal Cost Rate	18.90%
4. Amortization of Unfunded Liability with Interest	\$ 8,334,213
5. Estimated Premium Tax Allocation	\$ 2,135,874
6. Unfunded Liability Payment Net of Premium Tax Allocation (4. – 5., not less than 0)	\$ 6,198,339
7. Estimated Net Employer Contribution (1. + 6.)	\$ 7,238,279

The following table presents a three-year historical summary of the Plan assets and liabilities.

	July 1, 2020	July 1, 2021	July 1, 2022
Actuarial Accrued Liability (AAL)	\$ 197,719,787	\$ 192,094,519	\$ 146,820,719
Actuarial Value of Assets (AVA)	\$ 24,185,663	\$ 27,375,651	\$ 29,813,137
Unfunded Actuarial Accrued Liability	\$ 173,534,124	\$ 164,718,868	\$ 117,007,582
Funding Percentage	12.2%	14.3%	20.3%

The contributions shown above are assumed to be paid in equal monthly installments throughout the fiscal year. Details of the determination of the City’s contribution for FYE 2024 are shown in Section IV of this report.

The City of Charleston’s City Council passed Resolution Number 499-14 on September 15, 2014, which increased the City’s sales and use tax rate from one-half percent to one percent and directed the proceeds from the additional one-half percent to a dedicated fund that is separate from the Plan’s irrevocable trust. For FYE 2023, this fund, titled the Uniform Pension Reserve Fund, was equally allocated to both Charleston Fire and Police plans to help pay off the initial unfunded liability now that both plans have adopted the Optional funding policy. This additional allocation of \$18,368,423 has been reflected in the FYE 2024 estimated net employer contribution.

Risk Measures

Generally, the primary risk that a plan sponsor incurs from a defined benefit plan is the risk of substantial increases in annual contributions. For plans that develop contributions using a generally accepted actuarial funding policy, these increases occur most frequently due to

variation in the investment returns. The following table shows four commonly used measures of the relative riskiness of a pension plan, relative to the plan sponsor and the employee groups covered by the plan. More detail is provided later in this report.

Risk Measure	July 1, 2020	July 1, 2021	July 1, 2022
Inactive AAL Percent of Total AAL	69.0%	71.9%	76.2%
Assets (MVA) to Payroll	3.8	4.9	5.2
Liabilities to Payroll	31.7	31.0	26.7
Benefit Payments to Contributions	0.9	0.9	0.9

Experience Analysis

The following factors affected the City’s funded status:

- As mentioned above, a contribution in the amount of \$18,368,423, which was in excess of the policy contribution, was reported on the annual asset report for FYE 2023. This valuation reflects this additional contribution in the projection of the unfunded liability as of July 1, 2023, which is used in the development of the FY 2024 employer contribution requirement.
- This is the first valuation that captures the benefit offsets for members in this plan who had participated in the West Virginia Public Employees Retirement System (PERS) with the City of Charleston Ambulance Service before it was absorbed by the Charleston Fire Department. These offsets decreased Plan liabilities by approximately \$1.8 million.
- The Plan now uses the Optional funding policy. City contribution requirements between FY 2023 and FY 2024 are expected to decrease by 16.0% from \$8,088,370 to \$6,793,547. This decrease reflects the increase in the discount rate, the additional contribution for FY 2023 of \$18,368,423, and change in the funding policy from the Conservation to the Optional funding policy.
- The discount rate changed from 4.75% to 7.00%.
- Liabilities decreased by 23.6%, while the market value of assets and actuarial value of assets increased/(decreased) by (7.0%) and 8.9%, respectively.
- The Plan’s funded ratio increased from 14.3% to 20.3% and the Plan is expected to be 100% funded in 2050, or by 2046 if the higher contribution amount is made each year.
- The return on the market value of assets for FY 2022 was (10.4%), while the return on the actuarial value of assets for FY 2022 was 4.8%.
- Since the Plan uses the Optional funding policy, the Plan is automatically considered solvent for purposes of receiving the state premium tax allocation and granting COLAs as long as the municipality makes the required contributions each year.

Changes in Methods, Assumptions, and Plan Amendments

The discount rate changed from 4.75% to 7.00%. The primary reason for the discount rate change was the investment of Plan assets with the IMB, which was assumed to occur prior to the change in funding policy. Thus, the entire unfunded liability in this valuation is amortized over a single initial unfunded base.

There were no changes to the Plan provisions reflected in this valuation.

Sources of Information

The July 1, 2022 participant data and market value of assets were provided by or at the direction of the City of Charleston. While we have reviewed this data for consistency and completeness, we have not audited this data.

Supplemental Benefit Eligibility

West Virginia Code §8-22-26a requires that all retirees, surviving beneficiaries, disability pensioners or future retirees receive a Supplemental Pension Benefit (i.e. cost-of-living adjustments, or COLAs) payable on the first day of July, based on a percentage increase equal to any increase in the consumer price index as calculated by the United States Department of Labor, Bureau of Statistics for the preceding year. The COLA shall not exceed 4% per year and is not payable to a retiree until the first day of July after the second anniversary of the retiree's date of retirement. Additionally, the COLA shall be calculated on only the first \$15,000 of the annual benefit paid and on the COLAs that have been accumulated by the retiree since benefit commencement. If, at any time after the COLA becomes applicable, the total accumulated percentage increase in benefit on the allowable amount becomes less than 75% of the total accumulated percentage increase in the consumer price index over that same period of time, the 4% limitation shall be inapplicable until such time as the accumulated COLAs equal 75% of the accumulated increase in the consumer price index. The consumer price index used to determine the COLA is the CPI-U US City Average all items with a base of 1982-1984 equal to 100. The increase is measured as the increase in the annual average from the second prior calendar year to the annual average from the prior calendar year.

The COLA is only payable to the extent that the actuary certifies to the Board of Trustees of the fund the amount of increase in the supplemental benefits, if any, which may be paid, and which will preserve the minimum standards for actuarial soundness of the fund as set forth in West Virginia Code §8-22-20. This plan uses the Optional funding policy. Funds that use the Optional funding policy are expected to be solvent after 15 years given that the required contribution is actuarially developed as the normal cost plus amortization of the unfunded liability. The plan may not be able to grant COLAs if the City is not paying the required contribution determined under the Optional funding policy.

Premium Tax

West Virginia Code §33-3-14d established a 1% tax on premiums for fire insurance and casualty insurance policies. The proceeds from this tax are used to fund the West Virginia Teachers Retirement System, the Fire Protection Fund for volunteer and part-volunteer fire companies and the Municipal Pensions Security Fund, which is managed by the Municipal Pensions Oversight Board (MPOB). The MPOB allocates funds from the Municipal Pensions Security Fund to each eligible municipality's police and fire fund⁴ that is less than 100% funded on an actuarial basis. The funds from the Base Allocation are allocated proportionately to each fire and police fund based on the average monthly number of police officers and firefighters who worked at least 100 hours per month (regardless of whether the police and fire employees participate in the municipality's pension plan or the West Virginia state Municipal Police and Firefighters Retirement System (MPFRS)). The funds from the Excess Allocation are allocated proportionately to each fire and police fund based on the average monthly number of police officers and firefighters who worked at least 100 hours per month and the average monthly number of retired police officers and firefighters (regardless of whether the police and fire

⁴ If pension obligation bonds have been issued to fund a plan, the premium tax dollars are annually allocated to the bond trustee once the plan sponsor deposits into the pension fund the annual required contributions in accordance with Code §8-22-20. The premium tax allocation to the bond trustee ceases once the bonds have been paid in full.

employees and retirees participate in the municipality's pension plan or the West Virginia MPFRS).

West Virginia Code §8-22-19 requires a plan sponsor to deposit into the pension fund the required contributions in accordance with Code §8-22-20 at least on a monthly basis at a rate of one-twelfth of the annual requirement in order to receive the premium tax allocation described above. A municipality may pre-pay this contribution. If the allocable portion of the Municipal Pensions Security Fund is not paid to the pension and relief fund within eighteen months, the portion is forfeited by the pension and relief fund and is allocable to other eligible municipal policemen's and firemen's pension and relief funds in accordance with West Virginia Code §33-3-14d.

Solvency Requirements

West Virginia Code requires that plans be solvent in order to receive the state premium tax allocation as well as to grant the COLA. In order to be considered solvent, the fund must be projected to have assets greater than \$1 for the next 15 years. This plan uses the Optional funding policy. Funds that use the Optional funding policy are expected to be solvent after 15 years as long as the City is contributing the entire contribution calculated under the Optional funding policy each year.

Actuarial Projections

Section VIII of this report provides long-range projections of assets, liabilities, funded status, and contributions for the pension fund. The projections are shown to help the municipality understand the future funded status and future contribution requirements based on an expected set of assumptions.

Impact of COVID-19

Because the long-term net impact of COVID-19 on mortality, salary increases, and changes in turnover and retirement behavior is difficult to estimate at this time, we have not made any adjustments to the assumptions for the potential impact of the COVID-19 pandemic.

Section II. Actuarial Certification

This actuarial valuation sets forth our calculation of an estimate of the liabilities of the City of Charleston Firemen's Pension and Relief Fund, together with a comparison of these liabilities with the value of the Plan assets, as submitted by the City of Charleston (the City). This liability calculation and comparison with assets is applicable for the valuation date only. The future is uncertain, and the Plan may become better funded or more poorly funded in the future. This valuation does not provide any guarantee that the Plan will be able to provide the promised benefits in the future.

The information in this report was prepared for the internal use of the MPOB, the West Virginia Legislature's Joint Committee on Pensions and Retirement, the City and their auditors in connection with their review of the City's financial statements and our actuarial valuation of the Plan. The purpose of this report is to provide information on the following:

- The sponsor's funding requirements for the fiscal year ending June 30, 2024, based on the selected funding policy, i.e., the **Optional** funding policy as defined in West Virginia Code §8-22-20(e)(1)
- The Fund's eligibility to receive an allocation of the premium tax for the fiscal year ending June 30, 2024
- The Fund's requirement to provide supplemental benefits for the plan year beginning July 1, 2024

This report is neither intended nor necessarily suitable for other purposes, including any analysis surrounding the consideration of pension obligation bonds (POBs). WV Code §8-33-4a(d) requires the POB analysis to be based on the most recent actuarial valuation report with appropriate adjustments for timing, experience and other factors. Cities considering the issuance of POBs must contact Bolton and the MPOB to determine the appropriate adjustments that must be made for purposes of meeting the requirement of the Code. Bolton is not responsible for the consequences of any other use or the reliance upon this report by any other party.

This report is based on plan provisions, census data, and asset data submitted by the City. We have relied on this information for purposes of preparing this report. We have not audited the census or asset data provided; however, based on our review, the data appears to be reasonable and consistent with previously provided information and appropriate for the purpose of producing this report. Unless otherwise noted in our report, we believe the information provided is sufficiently complete and reliable for purposes of the results presented in this report. The accuracy of the results presented in this report is dependent upon the accuracy and completeness of the underlying information. The City is solely responsible for the validity and completeness of this information.

The City is responsible for selecting the Plan's funding policy. The MPOB selects the actuarial valuation methods, asset valuation methods, and assumptions based on the advice of the Plan's actuary. The policies, methods and assumptions used in this valuation are those that have been so prescribed by the MPOB, in consultation with Bolton, and are described in this report. The MPOB is solely responsible for communicating to Bolton any changes required thereto.

The City of Charleston Firemen's Pension Fund Board of Trustees is solely responsible for selecting the Plan's investment manager and assisting the investment manager in the selection of



the Plan's investment policies, asset allocations and individual investments. Bolton's actuaries have not provided any investment advice to the City.

This is a deterministic valuation in that it is based on a single set of assumptions. This set of assumptions is one possible basis for our calculations. We may consider that some factors are not material to the valuation of the Plan and may not provide a specific assumption for those factors. The Plan may have used other assumptions in the past. We will likely consider changes in assumptions at a future date in conjunction with the MPOB.

Different assumptions or scenarios within the range of possibilities may also be reasonable and results based on those assumptions would be different. As a result of the uncertainty inherent in a forward-looking projection over a very long period of time, no one projection is uniquely "correct" and many alternative projections of the future could also be regarded as reasonable. Two different actuaries could, quite reasonably, arrive at different results based on the same data and different views of the future.

The City could reasonably ask how the valuation would change if we used a different assumption set or if plan experience exhibited variations from our assumptions. This report does not contain such an analysis. That type of analysis would be a separate assignment.

In addition, decisions regarding benefit improvements, benefit changes, the Plan's investment policy, pension obligation bonds, and similar issues should not be based on this valuation. These issues are complex and other factors should be considered when making such decisions. Other factors might include the anticipated vitality of the local economy and future growth expectations, as well as other economic and financial factors.

The cost of this Plan is determined by the benefits promised by the Plan, the Plan's participant population, the investment experience of the Plan and many other factors. An actuarial valuation is a budgeting tool for the City. It does not affect the cost of the Plan. Different funding policies and methods provide for different timing of contributions to the Plan. As the experience of the Plan evolves, it is normal for the level of contributions to the Plan to change. If a contribution is not made for a particular year, either by deliberate choice or because of an error in a calculation, that contribution can be made in later years. We are not responsible for the consequences of any decision by the City to make contributions at a future time rather than an earlier time. The City is responsible for funding the cost of the Plan.

The report is conditioned on the assumption of an ongoing plan and is not meant to present the actuarial position of the Plan in the case of plan termination. 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 or additional cost or contribution requirements based on the Plan's funded status), and changes in plan provisions or applicable law.

The valuation was completed using both proprietary and third-party models (including software and tools). We have tested these models to ensure they are used for their intended purposes, within their known limitations, and without any known material inconsistencies unless otherwise stated.

The calculations in this report have been computed in accordance with our understanding of generally accepted actuarial principles and practices and fairly reflect the actuarial position of the



Plan. The various actuarial assumptions and methods which have been used are, in our opinion, appropriate for the purposes of this report.

We make every effort to ensure that our calculations are accurately performed. We reserve the right to correct any potential errors by amending the results of this report or by including the corrections in a future valuation report.

Bolton does not practice law and, therefore, cannot and does not provide legal advice. Any statutory interpretation on which this report is based reflects Bolton's understanding as an actuarial firm. Bolton recommends that recipients of this report consult with legal counsel when making any decisions regarding compliance with WV Code, ERISA, the Internal Revenue Code, or any other statute or regulation.

The MPOB, Pension Board, or the City should notify Bolton promptly after receipt of this report if the City disagrees with anything contained in the report or is aware of any information that would affect the results of the report that has not been communicated to Bolton or incorporated herein. The report will be deemed final and acceptable to the City unless the City promptly provides such notice to Bolton.

The undersigned credentialed actuaries meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein. We are not aware of any direct or material indirect financial interest or relationship, including investments or other services, which could create a conflict of interest that would impair the objectivity of our work.

We are available to answer any questions on the material in this report to provide explanations or further details as appropriate.

Jim Ritchie, ASA, EA, FCA, MAAA

Jordan McClane, FSA, EA, FCA, MAAA



Section III. Normal Cost and Liabilities

Net Employer Normal Cost

The breakdown of the Net Employer Normal Cost as of the valuation date is illustrated below.

Net Employer Normal Cost (BOY)		7/1/2021	7/1/2022
1. Normal Cost	\$	2,806,814	\$ 1,459,946
2.a. Administrative Expenses (MOY)	\$	8,080	\$ 8,980
2.b. Administrative Expenses (BOY)	\$	7,895	\$ 8,681
3. Gross Normal Cost (1. + 2.b.)	\$	2,814,709	\$ 1,468,627
4. Expected Employee Contributions (BOY)	\$	484,596	\$ 425,926
5. Net Employer Normal Cost (3. – 4.)	\$	2,330,113	\$ 1,042,701
(% of Compensation)		38.48%	19.60%

Projected Net Employer Normal Cost

The breakdown of the Projected Net Employer Normal Cost as of the first anniversary of the valuation date (i.e. the first day of the contribution year) is illustrated below.

Projected Net Employer Normal Cost (BOY)			
Valuation Date		7/1/2021	7/1/2022
Projection Date		7/1/2022	7/1/2023
1. Projected Normal Cost	\$	2,655,629	\$ 1,408,126
2.a. Projected Administrative Expenses (MOY)	\$	8,282	\$ 9,205
2.b. Projected Administrative Expenses (BOY)	\$	8,092	\$ 8,899
3. Projected Gross Normal Cost (1. + 2.b.)	\$	2,663,721	\$ 1,417,025
4. Projected Employee Contributions (BOY)	\$	454,622	\$ 411,677
5. Projected Net Employer Normal Cost (3. – 4.)	\$	2,209,099	\$ 1,005,348
(% of Compensation)		38.90%	19.55%



Unfunded Actuarial Accrued Liability

Below is a summary of the key valuation results.

		7/1/2021		7/1/2022	
1. Actuarial Accrued Liability	<u>Count</u>			<u>Count</u>	
a. Active	80	\$ 53,959,999		71	\$ 34,976,572
b. Retirees	167	107,297,504		169	86,931,618
c. Survivors	47	9,342,491		44	8,084,522
d. Disableds	40	19,969,040		37	14,997,874
e. Deferred Vesteds	2	1,453,633		3	1,758,281
f. Former Members Due Refunds	1	71,852		1	71,852
g. Total	337	\$ 192,094,519		325	\$ 146,820,719
2. Present Value of Future Normal Costs		\$ 19,618,291		\$ 8,882,159	
3. Present Value of Benefits (1.g. + 2.)		\$ 211,712,810		\$ 155,702,878	
4. Actuarial Value of Assets		\$ 27,375,651		\$ 29,813,137	
5. Unfunded Actuarial Accrued Liability (1.g. – 4.)		\$ 164,718,868		\$ 117,007,582	
6. Funded Ratio (4. / 1.g.)		14.25%		20.31%	

Projected Unfunded Actuarial Accrued Liability

The development of the Projected Unfunded Actuarial Accrued Liability as of the first anniversary of the valuation date (i.e. the first day of the contribution year) is illustrated below.

Projected Unfunded Actuarial Accrued Liability	7/1/2021	7/1/2022
1. Unfunded Actuarial Accrued Liability on Valuation Date	\$ 164,718,868	\$ 117,007,582
2. Net Employer Normal Cost, Excluding Expenses (BOY)	\$ 2,322,218	\$ 1,034,020
3. Expected Expenses (MOY)	\$ 8,080	\$ 8,980
4. Projected Employer Contribution Fiscal Year Beginning on the Valuation Date ⁵	\$ 7,496,214	\$ 26,456,793
5. Expected Premium Tax Allocation Fiscal Year Beginning on the Valuation Date	\$ 1,861,484	\$ 1,710,555
6. Projected Unfunded Actuarial Accrued Liability on Valuation Date + 1 Year	\$ 165,406,442	\$ 97,177,272

⁵ The projected unfunded actuarial accrued liability as of 7/1/2023, which is presented in the 7/1/2022 column, reflects the additional employer contribution of \$18,368,423 reported in the FYE 2023 annual asset report.



Section IV. Determination of City Contributions

Development of Estimated Minimum Required Contribution for Funding Purposes and Actuarially Determined Contribution for GASB Purposes

The development of the Estimated Minimum Employer Contribution for funding purposes and the Actuarially Determined Contribution for GASB purposes is illustrated below.

Estimated Minimum Employer Contribution	FYE 2023		FYE 2024	
1. Projected Gross Normal Cost, Including Administrative Expenses (BOY)	\$	2,663,721	\$	1,417,025
2. Projected Employee Contributions (BOY)	\$	454,622	\$	411,677
3. Projected Net Employer Normal Cost (BOY) (1. – 2.)	\$	2,209,099	\$	1,005,348
4. Interest on Normal Cost	\$	51,857	\$	34,592
5. Projected Total Employer Normal Cost with Interest (3. + 4.)	\$	2,260,956	\$	1,039,940
6. Amortization of Projected Unfunded Liability	\$	10,036,981	\$	7,627,049
7. Interest on Projected Unfunded Liability Payment	\$	235,613	\$	262,432
8. Unfunded Liability Payment with Interest (6. + 7.)	\$	10,272,594	\$	7,889,481
9. Estimated Premium Tax Allocation	\$	1,710,555	\$	2,135,874
10. Unfunded Liability Payment Net of Premium Tax Allocation (8. – 9., not less than 0)	\$	8,562,039	\$	5,753,607
11. Net Employer Contribution (5. + 10.)	\$	10,822,995	\$	6,793,547
12. Actuarially Determined Contribution for GASB Purposes (5. + 8., not less than 0)	\$	12,533,550	\$	8,929,421



Schedule of Amortization Bases for Funding and GASB Purposes

Below is a schedule of the amortization bases as of July 1, 2023 used to develop the Estimated Minimum Employer Contribution for funding purposes and the Actuarially Determined Contribution for GASB purposes.

Description	Date Established	Remaining Years	Outstanding Amount	Payment / (Credit)
Initial Unfunded	7/1/2023	26.5	\$ 97,177,272	\$ 7,627,049
Total			\$ 97,177,272	\$ 7,627,049

Section V. Assets

Asset Allocation

The table below shows the amount of funds invested in each account as of June 30, 2021 and June 30, 2022.

Assets Held by Category	June 30, 2021		June 30, 2022	
Cash and Deposits	\$	4,635,238	\$	404,771
Receivables				
Contributions	\$	0	\$	1,371
Investment Income		33,523		0
Total Receivables	\$	33,523	\$	1,371
Investment				
Government Securities	\$	978,100	\$	0
Fixed Income		6,279,297		4,008,698
Equities		19,429,886		6,581,269
Alternative Investments		0		18,235,376
Other		0		0
Total Investments	\$	26,687,283	\$	28,825,343
Total Assets	\$	31,356,044	\$	29,231,485
Payables				
Investment Expense	\$	0	\$	0
Benefits and Withdrawals		732,260		754,128
Administrative Expense		0		0
Total Payables	\$	732,260	\$	754,128
Net Position	\$	30,623,784	\$	28,477,357



Reconciliation of Assets

Below is a reconciliation of assets (unaudited) from July 1, 2020 through June 30, 2022.

Plan Year Ending	June 30, 2021	June 30, 2022
1. Beginning of Year Market Value of Assets	\$ 23,647,016	\$ 30,623,784
Adjustments to Market Value of Assets	0	0
Beginning of Year Market Value of Assets	\$ 23,647,016	\$ 30,623,784
2. Additions		
a. Contributions		
(i) Local Government	\$ 7,263,224	\$ 7,773,934
(ii) State Government	1,963,296	1,861,484
(iii) Employee	530,627	471,696
(iv) Total	9,757,147	10,107,114
b. Receivable Contributions		
(i) Local Government	0	1,371
(ii) State Government	0	0
(iii) Employee Contributions	0	0
(iv) Total	0	1,371
c. Earnings on Investments		
(i) Net Appreciation/(Depreciation)	5,549,561	(2,763,782)
(ii) Net Realized Gain (Loss) on Sale/Exchange	0	(701,545)
(iii) Interest and Dividends	397,194	289,034
(iv) Other Income	0	0
(v) Investment Expense	(126,622)	(73,573)
(vi) Receivable Investment Income	33,523	0
(vii) Payable Investment Expenses	0	0
(viii) Net Investment Income	5,853,656	(3,249,866)
d. Other Revenue	0	0
e. Total Additions	\$ 15,610,803	\$ 6,858,619
3. Disbursements		
a. Benefit Payments	\$ 7,891,826	\$ 8,158,456
b. Withdrawals	0	84,890
c. Administrative Expenses		
(i) Municipal Fees	0	0
(ii) Other Expenses	9,949	7,572
(iii) Total Administrative Expenses	9,949	7,572
d. Payable Benefits and Withdrawals	732,260	754,128
e. Payable Administrative Expenses	0	0
f. Total Disbursements	\$ 8,634,035	\$ 9,005,046
4. Net Increase (2.e. – 3.f.)	6,976,768	(2,146,427)
5. Net Assets (1. + 4.)	\$ 30,623,784	\$ 28,477,357
6. Rate of Return Net of Investment Fees (2I / [A + B – I] Method ⁶)	24.2%	-10.4%

⁶ A = beginning-of-year market value of assets, B = end-of-year market value of assets, I = investment return during the year

(Gain)/Loss on Market Value of Assets for Plan Year Ended June 30, 2022

MVA (Gain)/Loss for Plan Year Ended June 30, 2022			
Market Value of Assets (MVA)			
a.	MVA as of 7/1/2021	\$	30,623,784
b.	Interest on a. to 6/30/2022		1,454,630
c.	Contributions with Interest to 6/30/2022		10,345,744
d.	Benefit Payments with Interest to 6/30/2022		9,190,982
e.	Administrative Expenses with Interest to 6/30/2022		7,750
f.	Expected MVA at 6/30/2022 (a. + b. + c. – d. – e.)		33,225,426
g.	Actual MVA at 6/30/2022		28,477,357
h.	MVA (Gain)/Loss (f. - g.)		4,748,069

Development of Actuarial Value of Assets

The actuarial asset value as of July 1, 2022 is determined by spreading the asset gain or loss for each year over a four-year period. The asset gain or loss is the amount by which the actual asset return differs from the expected asset return on a market-value basis.

				July 1, 2022
1.	Market Value of Assets		\$	28,477,357
2.	Spreading of Investment (Gains)/Losses			
	Fiscal Year	(Gain)/Loss	% Deferred	Amount Deferred
	2022	\$ 4,748,069	75%	\$ 3,561,052
	2021	(4,809,641)	50%	(2,404,821)
	2020	718,196	25%	179,549
	a.	Total Deferred		1,335,780
3.	Actuarial Value of Assets (1. + 2.a.)		\$	29,813,137
4.	Rate of Return Net of Investment Fees (2I / [A + B – I] Method)			4.78%



Section VI. Experience (Gain)/Loss

Experience (Gain)/Loss for Plan Year Ended June 30, 2022

Experience (Gain)/Loss for Plan Year Ended June 30, 2022		
1. Liabilities		
a. Actuarial Accrued Liability as of 7/1/2021	\$	192,094,519
b. Normal Cost as of 7/1/2021		2,806,814
c. Interest on a. and b. to 6/30/2022		9,257,813
d. Benefit Payments with Interest to 6/30/2022		9,190,982
e. Effect of Assumption Changes		(44,929,830)
f. Expected Liability at 7/1/2022 (a. + b. + c. - d. + e.)		150,038,334
g. Actual Liability at 7/1/2022		146,820,719
h. Liability (Gain)/Loss (g. - f.)		(3,217,615)
2. Actuarial Value of Assets (AVA)		
a. AVA as of 7/1/2021	\$	27,375,651
b. Interest on a. to 6/30/2022		1,300,343
c. Contributions with Interest to 6/30/2022		10,345,744
d. Benefit Payments with Interest to 6/30/2022		9,190,982
e. Administrative Expenses with Interest to 6/30/2022		7,750
f. Expected AVA at 6/30/2022 (a. + b. + c. - d. - e.)		29,823,006
g. Actual AVA at 6/30/2022		29,813,137
h. AVA (Gain)/Loss (f. - g.)		9,869
3. Total (Gain)/Loss (1h. + 2h.)	\$	(3,207,746)

The gains and losses shown are only for liability and asset gains and losses. Any change in the Unfunded Actuarial Accrued Liability from funding more or less than needed to cover Normal Cost and interest on the Unfunded Actuarial Accrued Liability is a separate amount.

Section VII. Risk Measures

Risk Measures

Pension plans are complicated financial instruments designed to provide income security for plan participants as they move through their working lives and into retirement. As such they can be subject to many different forces that can put the plan in better or worse positions over time. The primary risk that a plan sponsor incurs from a defined benefit plan is the risk of substantial increases in annual contributions.

The “maturity” level of a plan can indicate the likely sensitivity the plan will have to different events whether positive or negative. Variations in the investment returns are a common source of these types of events or shocks. Other sources might be experience that differs from that assumed, assumption changes or plan changes.

Actuarial Standard of Practice No. 51 *Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions* requires actuaries to provide information so that users of the report can better understand the potential for future results to vary from the results presented in this report and identify risks on the plan’s future financial condition. This standard does not require the assessment to be based on numerical calculations. In some cases, a more in-depth review of plan risk is warranted.

Examples of risk common to most public plans include the following (generally listed from greatest to least risk):

- Investment risk: The potential that investment returns will be different than expected. The Trustees are well aware of this risk. This valuation reflects the smoothing of asset returns, which reduces the risk of wide year-by-year contribution changes due to investment return fluctuations but does not ultimately reduce the risk inherent in a defined benefit plan.
- Contribution risk: Most commonly this is associated with the potential that actual future contributions are not made in accordance with the plan’s actuarially based funding policy.
- Longevity and other demographic risks: The potential that mortality or other demographic experience will be different than expected.
- Asset/liability mismatch risk: The potential that changes in asset values are not matched by changes in the value of liabilities.
- Cash flow risks: The potential that contributions coming into the plan will not cover benefit payments. While common in well-funded plans, this still requires the use of interest, dividends or principal to cover benefit payments. When assets need to be sold (or more cash held) it can be an issue. Poorly funded plans with DROP lump sum payments can magnify the issue.

One item left off this list is “interest rate risk” (i.e., the potential that interest rates will be different than expected). This risk is common in corporate ERISA plans where funding is based on bond rates. Interest rates on bonds are still an important consideration when setting an expected return assumption and can change over time.

There are several plan maturity measures that can be significant to understanding the risks associated with the plan. The following table shows four commonly used measures of the relative riskiness of a pension plan, relative to the plan sponsor and the employee group covered by the plan and how they have changed over time.

Risk Measure	July 1, 2020	July 1, 2021	July 1, 2022
Inactive AAL Percent of Total AAL	69.0%	71.9%	76.2%
Assets (MVA) to Payroll	3.8	4.9	5.2
Liabilities to Payroll	31.7	31.0	26.7
Benefit Payments to Contributions	0.9	0.9	0.9

The Assets to Payroll ratio, also called the Asset Volatility Ratio (AVR), is equal to the market value of assets (MVA) divided by payroll. A higher AVR implies that the plan is exposed to greater contribution volatility. The current *Assets to Payroll* of 5.2 indicates that a 1% asset gain/loss is about 5.2% of the annual payroll.

The Liabilities to Payroll ratio, also called the Liability Volatility Ratio (LVR), is equal to the Actuarial Accrued Liability (AAL) divided by payroll. A higher LVR implies that the plan is exposed to greater contribution volatility due to changes in liability measurements. The current *Liabilities to Payroll* of 26.7 indicates that a 1% change in liability is about 26.7% of the annual payroll.

The use of payroll in these risk measures is generally an easily available substitute for the employer’s revenue and often reflects the employer’s ability to afford the plan. However, this plan is closed to new entrants, and thus, the payroll figure used in these metrics generally does not align with revenue as it represents only current active members (as of July 1, 2022) who were hired prior to adopting the Optional funding policy. Each of these measures are a measure of plan maturity. The common evolution of a pension plan is to become more mature over time. Mature plans present more risk to plan sponsors because changes to the liability or assets will result in large changes in the unfunded liability as compared to the overall size of the employer as measured by payroll. As a result, the change in the metrics over time can be as important as the nominal size of the metric itself.

Additional Review

In some instances, more detailed quantitative assessment of risks is warranted either by the above maturity metrics, part of a periodic self-assessment of risks, or due to changes in investment allocations and capital market assumptions. The following are examples of tests that could be performed:

- **Scenario Test**—A process for assessing the impact of one possible event, or several simultaneously or sequentially occurring possible events, on a plan's financial condition. A scenario test could show, for example, the effect of a layoff or reduction in workforce, or early retirement program.
- **Sensitivity Test**—A process for assessing the impact of a change in an actuarial assumption on an actuarial measurement. A sensitivity analysis could demonstrate, for example, the impact of a decrease in the valuation discount rate or a change in future life expectancies.
- **Stochastic Modeling**—A process for generating numerous potential outcomes by allowing for random variations in one or more inputs over time for the purpose of assessing the distribution of those outcomes. This type of analysis could show, for example, a range of potential future contribution levels and the likelihood of contributions increasing to a certain level.
- **Stress Test**—A process for assessing the impact of adverse changes in one or relatively few factors affecting a plan's financial condition. A stress test could show, for example, the impact of a single year or period of several years with significant investment losses.

Section VIII. Projections



Table 1 – 40-Year Projection of Optional Funding

Year End June 30	Number (BOY)		Assets										Actuarial Accrued Liability	Unfunded Liability	Projected Unfunded Liability	Funded Ratio
	Active	Non-Active	MVA (BOY)	Benefit Payments	Expenses	Employer Contrib. ⁷	Employee Contrib.	Premium Tax Allocation	Investment Income	MVA (EOY)	AVA (EOY)					
2022	80	257	\$30,623,784	\$8,997,474	\$7,572	\$7,775,305	\$471,696	\$1,861,484	(3,249,866)	\$28,477,357	\$29,813,137	\$146,820,719	\$117,007,582	\$97,177,272	20.31%	
2023	71	254	\$28,477,357	\$9,302,091	\$8,980	\$26,456,793	\$440,581	\$1,710,555	\$2,657,382	\$50,431,597	\$51,603,221	\$149,038,154	\$97,434,933	\$96,094,436	34.62%	
2024	66	254	\$50,431,597	\$9,543,507	\$9,205	\$6,793,547	\$425,842	\$2,135,874	\$3,523,418	\$53,757,566	\$54,944,583	\$151,105,639	\$96,161,056	\$94,701,117	36.36%	
2025	61	254	\$53,757,566	\$9,826,158	\$9,288	\$6,755,806	\$407,134	\$2,153,625	\$3,745,176	\$56,983,861	\$56,983,861	\$152,955,086	\$95,971,225	\$94,490,170	37.26%	
2026	56	255	\$56,983,861	\$10,192,525	\$9,399	\$6,565,978	\$374,785	\$2,263,209	\$3,954,533	\$59,940,442	\$59,940,442	\$154,430,612	\$94,490,170	\$92,756,231	38.81%	
2027	48	259	\$59,940,442	\$10,608,536	\$9,510	\$6,559,454	\$337,190	\$2,322,318	\$4,147,691	\$62,689,049	\$62,689,049	\$155,445,280	\$92,756,231	\$90,900,915	40.33%	
2028	41	260	\$62,689,049	\$10,937,611	\$9,557	\$6,427,209	\$306,570	\$2,382,906	\$4,325,250	\$65,183,816	\$65,183,816	\$156,084,731	\$90,900,915	\$88,915,728	41.76%	
2029	37	260	\$65,183,816	\$11,226,878	\$9,666	\$6,291,086	\$278,714	\$2,445,007	\$4,486,421	\$67,448,500	\$67,448,500	\$156,364,228	\$88,915,728	\$86,791,576	43.14%	
2030	32	260	\$67,448,500	\$11,543,775	\$9,741	\$6,121,595	\$245,665	\$2,526,989	\$4,629,895	\$69,419,128	\$69,419,128	\$156,210,704	\$86,791,576	\$84,518,734	44.44%	
2031	26	260	\$69,419,128	\$11,913,086	\$9,779	\$5,940,302	\$203,247	\$2,598,875	\$4,749,906	\$70,988,593	\$70,988,593	\$155,507,327	\$84,518,734	\$82,086,794	45.65%	
2032	21	261	\$70,988,593	\$12,272,885	\$9,883	\$5,751,863	\$161,834	\$2,684,204	\$4,842,412	\$72,146,138	\$72,146,138	\$154,232,932	\$82,086,794	\$79,484,618	46.78%	
2033	16	261	\$72,146,138	\$12,525,174	\$9,950	\$5,607,604	\$129,935	\$2,753,753	\$4,911,089	\$73,013,395	\$73,013,395	\$152,498,013	\$79,484,618	\$76,700,289	47.88%	
2034	13	259	\$73,013,395	\$12,757,884	\$10,015	\$5,458,739	\$99,739	\$2,833,280	\$4,960,363	\$73,597,617	\$73,597,617	\$150,297,906	\$76,700,289	\$73,721,057	48.97%	
2035	9	257	\$73,597,617	\$12,942,748	\$10,039	\$5,303,601	\$70,762	\$2,922,106	\$4,991,618	\$73,932,917	\$73,932,917	\$147,653,974	\$73,721,057	\$70,533,279	50.07%	
2036	6	254	\$73,932,917	\$12,993,137	\$10,058	\$5,180,759	\$54,861	\$3,008,543	\$5,011,555	\$74,185,440	\$74,185,440	\$144,718,719	\$70,533,279	\$67,122,357	51.26%	
2037	5	250	\$74,185,440	\$13,009,681	\$10,111	\$5,060,469	\$42,720	\$3,103,939	\$5,027,386	\$74,400,162	\$74,400,162	\$141,522,519	\$67,122,357	\$63,472,670	52.57%	
2038	4	245	\$74,400,162	\$12,984,467	\$10,120	\$4,873,124	\$31,936	\$3,269,125	\$5,042,151	\$74,621,911	\$74,621,911	\$138,094,581	\$63,472,670	\$59,567,505	54.04%	
2039	3	240	\$74,621,911	\$12,921,639	\$10,123	\$4,773,973	\$24,599	\$3,353,225	\$5,059,065	\$74,901,011	\$74,901,011	\$134,468,516	\$59,567,505	\$55,419,248	55.70%	
2040	2	235	\$74,901,011	\$12,850,988	\$10,120	\$4,643,015	\$16,458	\$3,439,427	\$5,079,213	\$75,218,016	\$75,218,016	\$130,637,264	\$55,419,248	\$50,988,439	57.58%	
2041	1	229	\$75,218,016	\$12,742,633	\$10,067	\$4,535,257	\$10,363	\$3,527,784	\$5,104,256	\$75,642,976	\$75,642,976	\$126,631,415	\$50,988,439	\$46,396,686	59.73%	
2042	1	224	\$75,642,976	\$12,598,346	\$10,094	\$4,211,024	\$6,822	\$3,701,289	\$5,133,659	\$76,087,330	\$76,087,330	\$122,484,016	\$46,396,686	\$41,483,512	62.12%	
2043	0	217	\$76,087,330	\$12,430,293	\$9,978	\$4,096,616	\$4,542	\$3,811,080	\$5,170,312	\$76,729,609	\$76,729,609	\$118,213,121	\$41,483,512	\$36,226,415	64.91%	
2044	0	211	\$76,729,609	\$12,248,549	\$9,945	\$3,936,903	\$2,501	\$3,966,824	\$5,221,320	\$77,598,663	\$77,598,663	\$113,825,078	\$36,226,415	\$30,601,320	68.17%	
2045	0	205	\$77,598,663	\$12,044,018	\$9,904	\$3,833,795	\$1,681	\$4,068,373	\$5,289,111	\$78,737,701	\$78,737,701	\$109,339,021	\$30,601,320	\$24,582,470	72.01%	
2046	0	198	\$78,737,701	\$11,824,349	\$9,805	\$3,633,520	\$1,301	\$4,267,920	\$5,376,367	\$80,182,655	\$80,182,655	\$104,765,125	\$24,582,470	\$18,142,300	76.54%	
2047	0	192	\$80,182,655	\$11,596,650	\$9,746	\$3,522,972	\$592	\$4,377,192	\$5,485,282	\$81,962,297	\$81,962,297	\$100,104,597	\$18,142,300	\$11,251,319	81.88%	
2048	0	185	\$81,962,297	\$11,352,353	\$9,625	\$3,410,634	\$458	\$4,489,197	\$5,618,251	\$84,118,859	\$84,118,859	\$95,370,178	\$11,251,319	\$3,877,969	88.20%	
2049	0	179	\$84,118,859	\$11,098,424	\$9,546	\$3,185,747	\$184	\$4,713,560	\$5,777,923	\$86,688,303	\$86,688,303	\$90,566,272	\$3,877,969	-	95.72%	
2050	0	172	\$86,688,303	\$10,832,627	\$9,402	\$9,402	-	\$4,011,403	\$5,833,476	\$85,700,555	\$85,700,555	\$85,700,555	-	-	100.00%	
2051	0	165	\$85,700,555	\$10,554,315	\$9,245	\$9,245	-	-	\$5,635,886	\$80,782,126	\$80,782,126	\$80,782,126	-	-	100.00%	
2052	0	159	\$80,782,126	\$10,265,603	\$9,132	\$9,132	-	-	\$5,301,530	\$75,818,053	\$75,818,053	\$75,818,053	-	-	100.00%	
2053	0	152	\$75,818,053	\$9,966,595	\$8,948	\$8,948	-	-	\$4,964,333	\$70,815,791	\$70,815,791	\$70,815,791	-	-	100.00%	
2054	0	145	\$70,815,791	\$9,657,486	\$8,749	\$8,749	-	-	\$4,624,810	\$65,783,115	\$65,783,115	\$65,783,115	-	-	100.00%	
2055	0	139	\$65,783,115	\$9,338,311	\$8,597	\$8,597	-	-	\$4,283,505	\$60,728,309	\$60,728,309	\$60,728,309	-	-	100.00%	
2056	0	132	\$60,728,309	\$9,009,166	\$8,368	\$8,368	-	-	\$3,940,994	\$55,660,137	\$55,660,137	\$55,660,137	-	-	100.00%	
2057	0	125	\$55,660,137	\$8,670,255	\$8,122	\$8,122	-	-	\$3,597,883	\$50,587,765	\$50,587,765	\$50,587,765	-	-	100.00%	
2058	0	119	\$50,587,765	\$8,321,954	\$7,925	\$7,924	-	-	\$3,254,802	\$45,520,612	\$45,520,612	\$45,520,612	-	-	100.00%	
2059	0	112	\$45,520,612	\$7,964,814	\$7,645	\$7,645	-	-	\$2,912,389	\$40,468,187	\$40,468,187	\$40,468,187	-	-	100.00%	
2060	0	106	\$40,468,187	\$7,599,614	\$7,416	\$7,416	-	-	\$2,571,285	\$35,439,858	\$35,439,858	\$35,439,858	-	-	100.00%	
2061	0	99	\$35,439,858	\$7,227,433	\$7,099	\$7,099	-	-	\$2,232,108	\$30,444,533	\$30,444,533	\$30,444,533	-	-	100.00%	
2062	0	93	\$30,444,533	\$6,849,621	\$6,835	\$6,835	-	-	\$1,895,435	\$25,490,347	\$25,490,347	\$25,490,347	-	-	100.00%	
2063	0	87	\$25,490,347	\$6,467,796	\$6,554	\$6,554	-	-	\$1,561,780	\$20,584,331	\$20,584,331	\$20,584,331	-	-	100.00%	

⁷ Reflects an additional employer contribution of \$18,368,423 reported in the FYE 2023 annual asset report.

Table 1 – 40-Year Projection of Optional Funding (Cont.)

Year End June 30	Total Payroll	Employer Contributions									
		Employee Contrib. (BOY)	Gross Normal Cost	Interest on Net Normal Cost	Net Employer Normal Cost	Amortization of UAAL	Mid-Year Interest on Amortization	Premium Tax Allocation	Net Employer Amortization	Expenses	Optional Employer Contrib.
2024	\$5,319,080	\$411,677	\$1,408,126	\$34,286	\$1,030,735	\$7,627,049	\$262,432	\$2,135,874	\$5,753,607	\$9,205	\$6,793,547
2025	\$5,084,772	\$393,591	\$1,342,345	\$32,645	\$981,399	\$7,655,339	\$263,405	\$2,153,625	\$5,765,119	\$9,288	\$6,755,806
2026	\$4,678,779	\$362,318	\$1,226,075	\$29,720	\$893,477	\$7,662,654	\$263,657	\$2,263,209	\$5,663,102	\$9,399	\$6,565,978
2027	\$4,209,240	\$325,974	\$1,101,009	\$26,667	\$801,702	\$7,802,105	\$268,455	\$2,322,318	\$5,748,242	\$9,510	\$6,559,454
2028	\$3,827,987	\$296,372	\$1,002,088	\$24,282	\$729,998	\$7,802,105	\$268,455	\$2,382,906	\$5,687,654	\$9,557	\$6,427,209
2029	\$3,479,907	\$269,443	\$903,494	\$21,816	\$655,867	\$7,802,105	\$268,455	\$2,445,007	\$5,625,553	\$9,666	\$6,291,086
2030	\$3,065,667	\$237,493	\$786,873	\$18,903	\$568,283	\$7,802,105	\$268,455	\$2,526,989	\$5,543,571	\$9,741	\$6,121,595
2031	\$2,535,631	\$196,486	\$640,061	\$15,263	\$458,838	\$7,802,105	\$268,455	\$2,598,875	\$5,471,685	\$9,779	\$5,940,302
2032	\$2,018,726	\$156,451	\$500,246	\$11,829	\$355,624	\$7,802,105	\$268,455	\$2,684,204	\$5,386,356	\$9,883	\$5,751,863
2033	\$1,620,802	\$125,613	\$397,118	\$9,342	\$280,847	\$7,802,105	\$268,455	\$2,753,753	\$5,316,807	\$9,950	\$5,607,604
2034	\$1,242,967	\$96,421	\$300,832	\$7,033	\$211,444	\$7,802,105	\$268,455	\$2,833,280	\$5,237,280	\$10,015	\$5,458,739
2035	\$882,375	\$68,408	\$208,689	\$4,827	\$145,108	\$7,802,105	\$268,455	\$2,922,106	\$5,148,454	\$10,039	\$5,303,601
2036	\$684,543	\$53,036	\$158,105	\$3,615	\$108,684	\$7,802,105	\$268,455	\$3,008,543	\$5,062,017	\$10,058	\$5,180,759
2037	\$532,379	\$41,299	\$122,251	\$2,785	\$83,737	\$7,802,105	\$268,455	\$3,103,939	\$4,966,621	\$10,111	\$5,060,469
2038	\$398,427	\$30,874	\$90,395	\$2,048	\$61,569	\$7,802,105	\$268,455	\$3,269,125	\$4,801,435	\$10,120	\$4,873,124
2039	\$306,585	\$23,781	\$68,749	\$1,547	\$46,515	\$7,802,105	\$268,455	\$3,353,225	\$4,717,335	\$10,123	\$4,773,973
2040	\$204,992	\$15,911	\$45,904	\$1,032	\$31,025	\$7,773,815	\$267,482	\$3,439,427	\$4,601,870	\$10,120	\$4,643,015
2041	\$129,159	\$10,018	\$28,621	\$640	\$19,243	\$7,766,501	\$267,230	\$3,527,784	\$4,505,947	\$10,067	\$4,535,257
2042	\$85,044	\$6,595	\$18,909	\$424	\$12,738	\$7,627,049	\$262,432	\$3,701,289	\$4,188,192	\$10,094	\$4,211,024
2043	\$56,638	\$4,391	\$12,354	\$274	\$8,237	\$7,627,049	\$262,432	\$3,811,080	\$4,078,401	\$9,978	\$4,096,616
2044	\$31,187	\$2,418	\$6,576	\$143	\$4,301	\$7,627,049	\$262,432	\$3,966,824	\$3,922,657	\$9,945	\$3,936,903
2045	\$20,961	\$1,625	\$4,315	\$93	\$2,783	\$7,627,049	\$262,432	\$4,068,373	\$3,821,108	\$9,904	\$3,833,795
2046	\$16,223	\$1,258	\$3,340	\$72	\$2,154	\$7,627,049	\$262,432	\$4,267,920	\$3,621,561	\$9,805	\$3,633,520
2047	\$7,377	\$572	\$1,478	\$31	\$937	\$7,627,049	\$262,432	\$4,377,192	\$3,512,289	\$9,746	\$3,522,972
2048	\$5,709	\$443	\$1,144	\$24	\$725	\$7,627,049	\$262,432	\$4,489,197	\$3,400,284	\$9,625	\$3,410,634
2049	\$2,301	\$178	\$449	\$9	\$280	\$7,627,049	\$262,432	\$4,713,560	\$3,175,921	\$9,546	\$3,185,747
2050	-	-	-	-	-	\$3,877,994	\$133,434	\$4,011,403	\$25	\$9,402	\$9,402
2051	-	-	-	-	-	-	-	-	-	\$9,245	\$9,245
2052	-	-	-	-	-	-	-	-	-	\$9,132	\$9,132
2053	-	-	-	-	-	-	-	-	-	\$8,948	\$8,948
2054	-	-	-	-	-	-	-	-	-	\$8,749	\$8,749
2055	-	-	-	-	-	-	-	-	-	\$8,597	\$8,597
2056	-	-	-	-	-	-	-	-	-	\$8,368	\$8,368
2057	-	-	-	-	-	-	-	-	-	\$8,122	\$8,122
2058	-	-	-	-	-	-	-	-	-	\$7,925	\$7,924
2059	-	-	-	-	-	-	-	-	-	\$7,645	\$7,645
2060	-	-	-	-	-	-	-	-	-	\$7,416	\$7,416
2061	-	-	-	-	-	-	-	-	-	\$7,099	\$7,099
2062	-	-	-	-	-	-	-	-	-	\$6,835	\$6,835
2063	-	-	-	-	-	-	-	-	-	\$6,554	\$6,554



Section IX. Participant Information

Participant Summary

The following table summarizes the counts, ages and benefit information for plan participants used in the prior and current valuations.

	July 1, 2021	July 1, 2022
1. Actives		
a. Number	80	71
b. Average Age	45.2	45.5
c. Average Service	17.6	18.0
d. Average Salary	\$ 79,843	\$ 80,580
2. Retirees		
a. Number	167	169
b. Average Age	65.6	65.8
c. Total Annual Benefits	\$ 6,931,012	\$ 7,131,947
3. Survivors		
a. Number	47	44
b. Average Age	75.6	74.5
c. Total Annual Benefits	\$ 835,183	\$ 852,744
4. Disableds		
a. Number	40	37
b. Average Age	59.4	59.3
c. Total Annual Benefits	\$ 1,128,468	\$ 1,091,888
5. Deferred Vesteds		
a. Number	2	3
b. Average Age	48.6	49.3
c. Total Annual Benefits	\$ 77,380	\$ 125,236
6. Members Owed Refunds		
a. Number	1	1
b. Average Age	48.9	49.9
c. Total Refunds Owed	\$ 71,852	\$ 71,852



Active Age/Service Distribution Including Compensation

Shown below is the age and service distribution of active participants in the City of Charleston Firemen’s Pension and Relief Fund. The compensation shown is the average projected pay for the plan year beginning July 1, 2022.

Credited Service as of July 1, 2022

Participant Age	Credited Service as of July 1, 2022							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30 & Up	
Under 25	-	-	-	-	-	-	-	-
25 - 29	-	-	-	-	-	-	-	-
30 - 34	-	-	2	-	-	-	-	2
35 - 39	-	-	49,296	-	-	-	-	49,296
40 - 44	-	-	6	5	-	-	-	11
45 - 49	-	-	67,666	70,171	-	-	-	68,805
50 - 54	-	-	10	5	3	-	-	18
55 - 59	-	-	74,557	72,723	89,602	-	-	76,555
60 - 64	-	-	2	8	8	4	-	22
65 & Up	-	-	77,537	77,478	85,768	111,310	-	86,649
Totals	-	-	1	9	4	3	-	17
	-	-	79,431	83,189	92,848	102,311	-	88,615
	-	-	-	-	1	-	-	1
	-	-	-	-	74,992	-	-	74,992
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
Totals	-	-	21	27	16	7	-	71
	-	-	70,698	77,148	87,584	107,454	-	80,580

Averages

Age	45.5
Service	18.0



Participant Reconciliation

Shown below is the reconciliation of participants between the prior and current valuation date.

	Actives	Retirees	Survivors	Disableds	Deferred Vesteds	Due Refund	Total
Participants as of 7/1/2021	80	167	47	40	2	1	337
New	-	-	-	-	-	-	-
Rehired	-	-	-	-	-	-	-
Terminated - Vested	(1)	-	-	-	1	-	-
Terminated - Nonvested	-	-	-	-	-	-	-
Disabled	-	-	-	-	-	-	-
Retired	(7)	7	-	-	-	-	-
Paid Refund	-	-	-	-	-	-	-
Payments Expired	-	-	-	-	-	-	-
Deceased - No Survivor	(1)	(2)	(6)	(3)	-	-	(12)
Deceased - With Survivor	-	(3)	-	-	-	-	(3)
New Beneficiary	-	-	3	-	-	-	3
New QDRO	-	-	-	-	-	-	-
Corrections	-	-	-	-	-	-	-
Participants as of 7/1/2022	71	169	44	37	3	1	325

Section X. Summary of Plan Provisions

Plan Year

July 1 – June 30.

Eligibility to Participate

All compensated employees of the relevant Fire or Police Department are eligible to participate in the Firemen's or Policemen's Pension and Relief Fund (Plan). If the fund uses the Optional, Optional II, or Conservation funding policies, only members hired prior to the date of the change to one of these policies are eligible to participate in the Plan.

Average Annual Compensation

The average of the three twelve-consecutive-month periods of employment in which the member received the highest salary or compensation. While the months in each twelve-month period need to be consecutive, the three "twelve-consecutive-month periods" do not need to be consecutive.

Each twelve-consecutive-month annual compensation is limited to 120% of the *Average Adjusted Salary*, which is the average of the Adjusted Salary for the two consecutive twelve-consecutive-month periods immediately preceding the twelve-consecutive-month period used in determining benefits.

The *Adjusted Salary* for any preceding year is the respective preceding year total salary multiplied by the ratio of base salary of the year used in determining benefits to the base salary from the respective preceding year. A preceding year is either the "year one" which is the second twelve consecutive month period preceding the twelve-consecutive-month period used to determine benefits or "year two" which is the twelve-consecutive-month period immediate preceding the twelve-consecutive-month period used to determine benefits.

Employee Contributions

Participating employees hired before January 1, 2010: 8.00% of compensation.

Participating employees hired on or after January 1, 2010: 9.50% of compensation.

Employer Contributions

The municipality has elected to contribute the minimum employer contribution under the Optional funding policy.

Credited Service

The number of years that the member has contributed to the employees' retirement and benefit fund.

Absence from service because of sickness or injury for a period of two years or less shall not be construed as time out of service.

Military Service — Any current member who has been on qualified military service in the armed forces of the United States with an honorable discharge may, within six months from his or her date of discharge, be given credit for continuous service in the paid police or fire department.

A member may receive retirement eligibility service (i.e. eligibility towards the 20 years of service for normal retirement) for qualified military service only if the military service was prior to November 18, 2009 or the member repays, without interest, member assessments that were missed during the period of military service.

Any member who has served in active duty with the armed forces of the United States, whether prior to or subsequent to becoming a member of a paid police or fire department, shall receive an additional 1% of Average Annual Compensation for each full continuous year so served in active military duty, up to a maximum of an additional 4%.

Normal Retirement Eligibility

Members are eligible at the earlier of age 50 with 20 years of credited service or age 65.

Normal Retirement Benefit

The annual retirement benefit equals the sum of:

- 60% of average annual compensation, for service up to 20 years; not less than \$6,000
- 2% for each year of service between 20 and 25 years
- 1% for each year of service between 25 and 30 years
- Employees serving in the military are eligible for an additional 1% of average annual compensation for each year of military service up to four years.

The maximum benefit is limited to 75% of average annual compensation.

Termination Benefits

Any member who terminates employment prior to retirement and has at least 20 years of credited service will be entitled to a pension benefit equal to the normal retirement benefit commencing at age 50.

Refunds: Any member who terminates from their department with fewer than 20 years of credited service and prior to age 65 shall be refunded all deductions made from his salary, without interest. Any member who receives such a refund and subsequently wishes to reenter (available only if the municipal plan is still open as of such date) the department must repay to the pension fund all sums refunded with interest at the rate of 8% per annum.

Disability Retirement Eligibility

Members are eligible after earning five years of service. There is no years of service requirement if disability is service related. Disability is defined in WV Code §8-22-23a as the inability to perform adequately the job duties required of the member, as described in the National Fire Protection Association (NFPA) Standard 1582's Chapter 9 Essential Job Tasks - Specific Evaluations of Medical Conditions in Members.

Disability Retirement Benefit

The monthly disability benefit equals the sum of:

- 60% of monthly salary at disability, but not less than \$500, plus
- Employees serving in the military are eligible for an additional benefit of 1% of monthly salary at disability for each year of military service up to four years.

Disability benefits, when aggregated with monthly state workers compensation benefits, shall not exceed 100% of the member's monthly compensation at the time of disability. For permanent disabilities, the benefit is paid for life, while for temporary disabilities, the benefit is paid during the disability period not to exceed four 26-week periods.

Ordinary (non line-of-duty) disability pensions are offset by \$1 per every \$3 of other income. There is no offset if total other income is \$18,200 (as of 2022, indexed by state minimum wage for years after 2022) or less.

Death Benefit Eligibility

Members are eligible after earning five years of service. There is no years of service requirement if death is service related. Retirees and terminated vested participants are also eligible.

Death Benefit

For surviving spouses, this benefit is equal to 60% of the participant's benefit at the participant's date of retirement and is indexed for cost-of-living adjustments through the commencement date of this death benefit (and annually each July thereafter) using the methodology outlined in the *Supplemental Benefit (Cost of Living Adjustment – COLA)* subsection below. This benefit may not be less than \$300 per month and is payable to the spouse until death or remarriage.

Other dependents (children, parents, brothers and sisters) are also eligible for death benefits. Similar to the death benefit payable to a surviving spouse, these death benefits are derived at the participant's date of retirement and indexed for COLAs. To each dependent:

- Child: 20% of the participant's benefit until the child attains age 18 or marries; for a disabled child, payments continue beyond age 18 if the child remains disabled.
- Orphaned child: 25% of the participant's benefit until the child attains age 18 or marries; for a disabled orphaned child, payments continue beyond age 18 if the child remains disabled.
- Parent: 10% of the participant's benefit for life.
- Sibling: the sum of fifty dollars per month (but a total not to exceed \$100 per month) until such individual attains the age of age 18 or marries.

The total amount, derived as the participant's date of retirement, of all benefits payable to survivors cannot exceed the amount of the participant's benefit at the participant's date of retirement. Due to the COLA methodology, the sum of the benefits payable to survivors as of any time after the participant's date of retirement *may*, in some circumstances, exceed the participant's benefit amount. In no case shall the payments to the surviving spouse and children be reduced below 65 percent of the total amount paid to all dependents.

If the member is not yet in receipt of pension benefits at the date of death, then the member's benefit for purposes of deriving the death benefit to the surviving spouse and dependents is calculated using the maximum of the member's actual service at the date of death and 20 years.

Normal Form

Life annuity with a 60% spouse's survivor benefit. The benefit payable to the spouse as of the member's date of death is determined by taking 60% of the member's benefit at the member's

retirement date and indexing that amount to the date of death using the COLA methodology described in the *Supplemental Benefit (Cost of Living Adjustment – COLA)* section below. No other optional forms are allowed under the Plan.

Supplemental Benefit (Cost of Living Adjustment – COLA)

If a plan meets the criteria outlined in the *Supplemental Benefit Eligibility* subsection within *Section I. Executive Summary*, then all retirees, surviving beneficiaries, and disability pensioners shall be granted automatic cost-of-living benefits commencing on the first day of July following two years of retirement. The benefits equal the percentage increase in the Consumer Price Index, limited to 4% (2% for some disability retirees), multiplied by the sum of the allowable amount, which is the first \$15,000 of the total annual benefits paid and the accumulated supplemental pension amounts for prior years. The consumer price index currently used to determine the supplemental benefit is the CPI-U US City Average all items with a base of 1982-1984 equal to 100. The increase is measured as the increase in the annual average from the second prior calendar year to the annual average from the prior calendar year.

Changes in Plan Provisions Since Prior Valuation

None.

Section XI. Actuarial Methods and Assumptions

Actuarial Cost Method

The actuarial valuation uses the Entry Age Normal cost method calculated on an individual basis with level percentage of pay normal cost.

West Virginia Funding Policies

Under West Virginia Code §8-22-20(c)(1), there are five funding policies available for plan sponsors. Those funding policies are summarized below:

- **Standard Funding Policy:** Employer contributions are equal to the sum of (1) the net employer normal cost and (2) an amortization of the unfunded actuarial liability, less the state premium tax allocation applicable to the plan year, not less than \$0. Prior to the July 1, 2020 actuarial valuation, the unfunded actuarial accrued liability was amortized over a single, closed period of 40-years from July 1, 1991, using level dollar amortization (8.0 years remaining for contributions developed for the fiscal year ending June 30, 2024). Beginning with the July 1, 2020 valuation, the unfunded actuarial accrued liability as of July 1, 2019 continues to be amortized over that same closed, decreasing period but new bases will be amortized using a layered approach with the following initial amortization periods when each base is created:
 - Experience gains and losses: 15 years
 - Assumption changes: 15 years
 - Plan changes: 5 years

West Virginia Code §8-22-20(c)(3) requires that plans contribute at least the normal cost until the plan is at least 125% funded. Upon reaching 125% funded, the actuary may provide an actuarial recommendation that the normal cost does not need to be paid by the employer for that fiscal year and the municipality may then elect to not make a contribution for that fiscal year. Other than this requirement, the Code does not detail any other policies or methodologies for a plan in a surplus position.

To orderly track the surplus position, which will become particularly relevant once a plan breaches 125% funded for the first time, and to develop an actuarially determined contribution (ADC) for GASB purposes, actuarial surpluses (the amount by which assets exceed actuarial accrued liabilities) will be amortized over 30 years using a single open amortization base and all existing prior bases will be eliminated. Provided, however, for funding purposes, the credit installments from the surplus base will be inapplicable at least until the plan reaches 125% funded. Finally, if an overfunded plan subsequently becomes less than 100% funded, the surplus base will be eliminated, the unfunded actuarial accrued liability will be amortized over 15 years, and any subsequent gains and losses, assumption changes, or plan changes will be amortized according to the schedule outlined above for plans with an actuarial deficiency.

The Standard funding policy is consistent with generally accepted actuarial standards of practice.

- **Alternative Funding Policy:** Employer contributions equal 107% of the prior year's employer contribution. The state premium tax allocation is contributed in addition to the employer contributions.

The Alternative funding policy is not consistent with generally accepted actuarial standards of practice because the policy does not reflect emerging experience gains and losses and may not produce an actuarially sound pattern of contributions or funded ratio.

- **Optional Funding Policy:** Allows plan sponsors using either the Standard funding policy or Alternative funding policy to close the current local Plan to new hires and switch to this funding policy, under which they would contribute to the Plan on an actuarially determined basis. Effective July 1, 2023, plan sponsors using the Conservation funding policy may switch to the Optional funding policy and the plan would remain closed to new hires. The actuarially determined employer contribution is equal to the net employer normal cost, plus a level dollar amortization of the unfunded actuarial liability, less the state premium tax allocation applicable to the plan year, not less than \$0. The closed amortization period for contributions developed for the fiscal year ending June 30, 2024 is 8.0 years for sponsors who previously used the Standard funding policy and 26.5 years for sponsors who previously used the Alternative or Conservation funding policies. Beginning with the July 1, 2020 valuation, the unfunded actuarial accrued liability as of July 1, 2019 continues to be amortized over those same closed, decreasing periods but new bases will be amortized using a layered approach using the same amortization periods as those used in the Standard Funding Policy listed above. Similarly, surplus amortization will follow the methodology outlined in the Standard Funding Policy.

For plans that switch from the Alternative or Conservation funding policy on or after the July 1, 2020 valuation, the initial unfunded actuarial accrued liability prior to any assumption changes or plan changes that became effective during the year ending on the valuation date will be amortized over the maximum of 15 years and the remaining period described above (26.5 years).

Members hired after the adoption date of the Optional funding policy are covered in the statewide pension plan – The Municipal Police Officers and Firefighters Retirement System (MPFRS).

The Optional funding policy is consistent with generally accepted actuarial standards of practice.

- **Optional II Funding Policy:** Allows plan sponsors using the Alternative funding policy or Conservation funding policy to switch to this funding policy, under which they would contribute to the Plan on an actuarially determined basis. If switching from the Alternative funding policy, the current local Plan would close to new hires. The actuarially determined employer contribution is equal to the net employer normal cost, plus a level dollar amortization of the unfunded actuarial liability, less the state premium tax allocation applicable to the plan year, not less than \$0. The initial unfunded closed amortization period for contributions developed for the fiscal year ending June 30, 2024 is 40 years.

Upon switching to the Optional II funding policy, the initial unfunded actuarial accrued liability prior to any assumption changes or plan changes that became effective during the year ending on the valuation date will be amortized over the maximum of 15 years

and the remaining period described in the previous paragraph (40 years). New unfunded liability bases created after the switch will be amortized using a layered approach using the same amortization periods as those used in the Standard Funding Policy listed above. Similarly, surplus amortization will follow the methodology outlined in the Standard Funding Policy.

Members hired after the adoption date of the Optional II funding policy are covered in the statewide pension plan – MPFRS.

The Optional II funding policy is consistent with generally accepted actuarial standards of practice.

- Conservation Funding Policy:** Formerly allowed plan sponsors using the Alternative funding policy to close the current local Plan to new hires and contribute to the plan on a pay-as-you-go basis. Effective July 1, 2023, plan sponsors are prohibited from switching to the Conservation funding policy. Sponsors using the Conservation funding policy are required to assign a portion of the state premium tax allocation and member contributions to an accumulation account that is projected to grow to 100% of the remaining actuarial liabilities at the end of a 35-year projection period.

Members hired after the adoption date of the Conservation funding policy are covered in the statewide pension plan – MPFRS.

The Conservation funding policy is not consistent with generally accepted actuarial principles.

This Plan is valued using the **Optional** funding policy.

Amortization Method for GASB

Amortization Policies	
Standard, Optional, and Optional II Funding Policies	Same as for funding purposes (described above)
Alternative and Conservation Funding Policies	The methodology used for plans that switch to the Optional funding policy on or after July 1, 2020 for funding purposes (described above)

Basis for Selection of Actuarial Methods

While the funding policies and funding amortization methodology are defined in the West Virginia Code, the following actuarial methods used in the valuation were set by the MPOB on the basis of Bolton’s 2020 *Actuarial Methods Recommendation Report*. These actuarial methods are, in the opinion of the signing actuaries, reasonable for the intended purposes.

Asset Method

Actuarial Value of Assets using four-year smoothing. Returns on the market value of assets above or below the assumed rate of return are gradually recognized using straight-line amortization over a four-year period.

Roll-Forward Method

For the actuarially-based funding policies (Standard, Optional, and Optional II), valuation results are rolled forward one year to align the contribution calculation with the contribution year:

- To develop the projected unfunded actuarial accrued liability (UAAL), the UAAL on the valuation date is increased by the employer normal cost (which is net of employee contributions) and expected expenses, both with interest, and decreased by the expected employer contribution, including the premium tax allocation, for the fiscal year beginning on the valuation date, with interest.
- The projected normal cost for the contribution year is derived using a valuation software projection (open-group projection for plans open to new entrants and closed-group projection for plans closed to new entrants).

Projection Methods

The projections of future assets, liabilities, funded status and contributions are based on the following assumptions:

- Compensation will increase and members will leave the active workforce according to the actuarial valuation assumptions.
- For closed group projections, new hires that replace active members who retire, terminate, die or become disabled are not assumed to enter the Plan.
- The sponsor contributes the amount determined by the applicable funding policy each year.
- For plans that are less than 100% funded as of the valuation date, the contribution during the projection period is capped at the amount needed to achieve and maintain a funded status of 100%.
- Assets grow at the assumed rate of return (discount rate).
- Non-vested members receive a refund of their accumulated employee contribution account balance during the year in which they terminate.
- New amortization bases are not created for contribution gains that may occur during the projection period as a result of the premium tax allocation exceeding the unfunded liability amortization payment.

Premium Tax Allocation

The premium tax allocation is projected using the following methodology:

- The Base Allocation is a fixed amount equal to \$8,709,689 in all future years. This amount is allocated to each individual Pension and Relief Fund in proportion to the number of eligible members, which includes active members covered in either the Pension and Relief Fund or the statewide plan, Municipal Police Officers and Firefighters Retirement System (MPFRS). We assume that the percentage of eligible members of the Pension and Relief Fund and MPFRS for a single municipal plan (e.g., Charleston Fire) to the total eligible members for all municipalities remains constant throughout the projection period.
- The Excess Allocation is equal to the excess of the current year premium tax assigned to all Pension and Relief Funds over the total Base Allocation. This amount is allocated to each individual Pension and Relief Fund in proportion to the number of eligible active and retired members covered in either the Pension and Relief Fund or the MPFRS.
- We have assumed all Pension and Relief Funds will make the minimum statutory contribution requirement and will receive 100% of the total allocation assigned to the individual plan until they are 100% funded. Once a plan attains a funded ratio of at least 100%, the premium tax that would have been allocated to the plan had the funded ratio been lower than 100% is reallocated in subsequent years to all remaining plans that are less than 100% funded.
- The total available premium tax allocation, net of expenses, as of September 1, 2023, includes a Base Allocation of \$8,709,689, an Excess Allocation of \$12,751,652, and an Expired Premium Tax Allocation of \$358,083.
- For the plan year ending June 30, 2023, all Pension and Relief Funds reported a total of 1,736.67 eligible active members and 2,247.38 eligible retired members. The City of Charleston Firemen's Pension and Relief Fund reported 157.25 eligible active members and 252.00 eligible retired members, based on the average number of plan participants for the 12-month period ending June 30, 2023. The Fund is eligible to receive a premium tax allocation of \$2,135,873.68 for the fiscal year ending June 30, 2024.
- The total premium tax allocation is assumed to increase by 2.50% in calendar years ending on and after 2024.

Basis for Selection of Actuarial Assumptions

Unless otherwise noted, the actuarial assumptions used in the valuation were set by the MPOB on the basis of an actuarial experience study prepared in 2020 covering the period July 1, 2014 through July 1, 2017. These assumptions are, in the opinion of the actuaries signing this report, reasonable for the intended purposes.

Discount Rate

The following table outlines the factors used to determine the discount rate:

Discount Rate Matrix for Plans Not Investing with the IMB				
Funded Ratio as of Valuation Date ⁸	Equity Exposure ⁹	Projected Funded Ratio after 15 Years ⁸	Discount Rate – Standard and Optional Policies	Discount Rate – Alternative and Conservation Policies
30% or more	60% or more	70% or more	6.50%	6.25%
30% or more	50% or more	70% or more	6.25%	6.00%
30% or more	40% or more	60% or more	6.00%	5.50%
15% or more	30% or more	50% or more	5.75%	5.00%
15% or more	20% or more	40% or more	5.50%	4.75%
Less than 15%	Less than 20%	15% or more	5.00%	4.25%
Less than 15%	Less than 20%	Less than 15%	5.00%	4.00%

Discount Rate Matrix for Plans Investing with the IMB				
Funded Ratio as of Valuation Date ⁸	Equity Exposure ⁹	Projected Funded Ratio after 15 Years ⁸	Discount Rate – Standard and Optional Policies ¹⁰	Discount Rate – Alternative and Conservation Policies
30% or more	N/A	70% or more	7.00%	6.50%
30% or more	N/A	70% or more	7.00%	6.00%
15% or more	N/A	50% or more	7.00%	5.50%
15% or more	N/A	40% or more	7.00%	5.25%
Less than 15%	N/A	15% or more	7.00%	4.75%
Less than 15%	N/A	Less than 15%	7.00%	4.50%

As of June 30, 2022	
Plan Investing with the IMB	Yes
Actuarially-Based Funding Policy	Yes
Actuarial Value of Assets	\$ 29,813,137
Liabilities Using a 6.0% Discount Rate	\$ 166,303,389
Funded Ratio	17.93%
Equity Exposure	55%
Projected Funded Ratio after 15 Years	33%
Discount Rate	7.00%

⁸ Funded ratios based on a 6.0% investment return assumption for plans using an actuarially sound funding policy (Standard, Optional, or Optional II) and a 5.0% investment return assumption for other plans (Alternative or Conservation).

⁹ Based on target allocation percentage outlined in the investment policy.

¹⁰ Assumes the IMB maintains a current growth asset target above 70%. If this policy changes, the assumption should be reviewed.

Inflation

2.50%, compounded annually.

Cost of Living Increase in Benefits

2.50% on first \$15,000 of annual benefit and on the accumulated supplemental pension amounts for prior years. Assumed to be payable to all members receiving payments.

Salary Increases

The following assumed rates are used:

Years of Service	Increase
0	20.00%
1	9.00%
2	6.50%
3	6.00%
4-28	5.00%
29-33	4.00%
34+	3.50%

Pay Spiking

A load of 6% is applied to active retirement and active termination pension benefits to account for unused accrued leave time (vacation and sick) that is included in pensionable earnings used to compute the average annual compensation.

Mortality

Pre Decrement

SOA PubS-2010(B) Employee¹¹ Mortality Table¹² with the 2010 base rates projected generationally from 2010 using the SOA Mortality Improvement **Scale MP-2019**.

Post Decrement

For Terminated Vested Members, Healthy Retirees, and Beneficiaries:

SOA PubS-2010(B) Healthy Retiree Mortality Table with the 2010 base rates projected generationally from 2010 using the SOA Mortality Improvement **Scale MP-2019**.

For Disabled Retirees:

SOA PubS-2010 Disabled Retiree Mortality Table with the 2010 base rates **set forward five years** and projected generationally from 2010 using the SOA Mortality Improvement **Scale MP-2019**.

Mortality improvement projections to the valuation date represent current mortality and mortality improvement projections beyond the valuation date represent future mortality improvement.

¹¹ Table name abbreviations from *Society of Actuaries Pub-2010 Public Retirement Plans Mortality Tables Report* published in January 2019. For example, *PubS-2010(B) Employee* translates to the Amount-Weighted Public Safety 2010 Below Median Employee Mortality Table.

¹² Assumes 10% of deaths are duty-related and 90% are non-duty related.

Retirement Rates

Members need a minimum of 20 years of service in order to be eligible for normal retirement. The retirement rates below are for years of service greater than or equal to 20 years of service:

Age	Fire	Police
50	55%	60%
51-52	35%	40%
53-54	25%	40%
55-56	25%	50%
57-59	25%	40%
60	100%	100%

Terminated-vested members (members who terminate employment after attaining 20 years of service but prior to commencing pension benefits) are assumed to retire at age 50.

Termination of Employment

Sample termination rates are as follows:

Age	Fire	Police
20	15%	25%
25	7%	10%
30	5%	8%
35	2%	6%
40	2%	3.5%
45	1%	2%
50	0%	0%

Non-Vested Terminations

The employee contribution account balance is assumed to be paid on the valuation date for current non-vested terminated members and on the termination date for future non-vested terminations.

Disability Rates

Sample disability rates are as follows:

Age	Rates ¹³
30	0.33%
40	0.76%
50	1.18%

¹³ Assumes that 50% of disabilities are duty related and 50% are non-duty related. Also assumes that 5% of non-duty disabled members receive a 20% reduction in benefits through age 65 due to gainful employment.

Marital Status

70% assumed to be married with wives 3 years younger than husbands. Widows and widowers are not expected to re-marry in the future.

Form of Payment

Benefits are assumed to be paid as a life annuity with a 60% spousal death benefit taking into account the re-indexing of the spouse's supplemental benefit as provided in WV Code §8-22-26a.

Non-Spouse Beneficiaries

Pre-retirement death benefits are loaded by 6% and post-retirement death benefits are loaded by 1% to estimate the impact of benefits provided to non-spouse beneficiaries (children, parents, siblings).

Administrative Expenses

Total administrative expenses for the fiscal year are equal to the average of the administrative expenses for the prior two fiscal years, increased by 2.50% annually for inflation.

Future expenses are assumed to increase by the general inflation assumption and are adjusted for headcount.

Changes in Methods/Assumptions Since Prior Valuation

The discount rate changed from 4.75% to 7.00%. The primary reason for the discount rate change was the investment of Plan assets with the IMB, which was assumed to occur prior to the change in funding policy. Thus, the entire unfunded liability in this valuation is amortized over a single initial unfunded base.

Section XII. Glossary

Actuarial Accrued Liability (AAL)

The difference between the Present Value of Future Benefits and the Present Value of Future Normal Costs or the portion of the present value of future benefits allocated to service before the valuation date in accordance with the actuarial cost method. Represents the present value of benefits expected to be paid from the plan in the future allocated to service prior to the date of the measurement.

Actuarial Assumptions

Estimates of future plan experience such as investment return, expected lifetimes and the likelihood of receiving a pension from the pension plan. Demographic, or “people” assumptions include rates of mortality, retirement and separation. Economic, or “money” assumptions, include expected investment return, inflation and salary increases.

Actuarial Cost Method

A procedure for allocating the Present Value of Future Benefits into the Present Value of Future Normal Costs and the Actuarial Accrued Liability. Also known as the “funding method”.

Actuarial Value of Assets (AVA)

The value of the assets as of a given date, used by the actuary for valuation purposes. The AVA may be the market or fair value of plan assets or a smoothed value in order to reduce the year-to-year volatility of calculated results, such as the funded ratio and the actuarially determined contribution (ADC).

Actuarially Determined Contribution (ADC)

The employer’s periodic determined contribution to a pension plan, calculated in accordance with the assumptions and methods used by the plan actuary.

Amortization Method

A procedure for payment of the Unfunded Actuarial Accrued Liability (UAAL) by means of periodic contributions of interest and principal. The components of the amortization payment for the UAAL includes the amortization period length, amortization payment increase (level dollar or level percentage of pay), and amortization type (closed or open).

Experience Gain/Loss

A measure of the difference between actuarial experience and experience anticipated by a set of actuarial assumptions during the period between two actuarial valuation dates, in accordance with the actuarial cost method being used.

Funded Ratio

The actuarial value of assets expressed as a percentage of the plan’s actuarial accrued liability.

Market Value of Assets (MVA)

The value of the assets as of a given date held in the trust available to pay for benefits of the pension plan.

Normal Cost

That portion of the Present Value of Future Benefits and expenses which is allocated to a valuation year by the Actuarial Cost Method.

Present Value of Future Benefits (PVFB)

The present value of amounts which are expected to be paid at various future times to active members, retired members, beneficiaries receiving benefits, and inactive, non-retired members entitled to either a refund or a future retirement benefit. Expressed another way, it is the value that would have to be invested on the valuation date so that the amount invested plus investment earnings would provide sufficient assets to pay all projected benefits and expenses when due.

Present Value of Future Normal Cost (PVFNC)

The portion of the Present Value of Future Benefits (PVFB) allocated to future service.

Unfunded Actuarial Accrued Liabilities (UAAL)

The difference between the Actuarial Accrued Liability (AAL) and the Actuarial Value of Assets (AVA).