Municipal Pensions Oversight Board

Municipal Policemen's and Firemen's Pension and Relief Funds of West Virginia

Consolidated Actuarial Valuation Report
for the Year Beginning July 1, 2023

Bolton

Submitted by:

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Bolton

October 31, 2024

Mr. Blair Taylor
Executive Director
West Virginia Municipal Pensions Oversight Board
301 Eagle Mountain Road, Suite 251
Charleston, WV 25311

Re: Consolidated Actuarial Valuation Report for the Year Beginning July 1, 2023

Dear Mr. Taylor:

The purpose of this report is to provide the West Virginia Legislature's Joint Committee on Pensions and Retirement a summary of the results of the actuarial valuations for the 53 municipal policemen's and firemen's pension and relief funds.

Section I provides an executive summary of the key results of the 53 actuarial valuations. Section II provides background on the discount rate used to value liabilities and the rate used by each plan. Section III provides details of the valuation results for each plan and for all plans by funding policy, the development of the total gains and losses on liabilities and plan assets, and a summary of the combined assets for all the plans. Section IV provides a discussion on risk measures. Section V provides a description of the requirements to receive the premium tax and to pay COLAs as well as the plans impacted by the solvency tests. Section VI provides a description of the analysis provided in the individual reports regarding changes in funding policies. Section VII provides information regarding plans that adopted a Deferred Retirement Option Plan (DROP). Section VIII provides some conclusions and recommendations. Sections IX through XI provide a summary of the census data, plan provisions, actuarial methods, and assumptions. Section XII provides a glossary of many of the terms used in this report.

The purpose of an actuarial valuation for each municipal pension and relief fund is to provide information on:

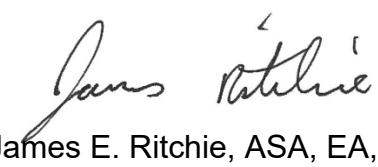
- The municipality's funding requirements for the fiscal year ending June 30, 2025, based on the selected funding policy
- The plan's eligibility to receive an allocation of the premium tax for the fiscal year ending June 30, 2025
- The plan's requirement to provide supplemental benefits for the plan year beginning July 1, 2025
- For plans that can change their funding policy, current and projected contribution requirements and funded statuses under other available funding policies.

This report may not be used for any other purpose; Bolton is not responsible for the consequences of any unauthorized use.

Bolton

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

Respectfully submitted,



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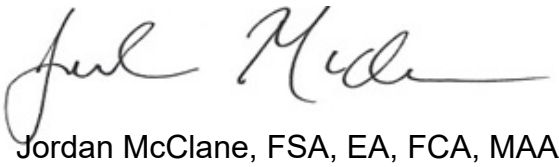

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Section I. Executive Summary

Background

Bolton has prepared a July 1, 2023 actuarial valuation for each of the 53 municipal policemen's and firemen's pension and relief funds (plans) that fall under the oversight of the Municipal Pensions Oversight Board (MPOB). The actuarial valuations were prepared in accordance with West Virginia Code §8-22-20 and §8-22-20a. This report summarizes the results of the 53 actuarial valuations and the requirements of those valuations are included by reference in this report.

The results for the valuations were generated 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.

Note that some columns and rows in the tables presented throughout this report may not add due to rounding.

Summary of Results

The following table presents a five-year summary of the total estimated pension contributions for all 53 pension plans.

($ in millions)	FYE 2021	FYE 2022	FYE 2023	FYE 2024	FYE 2025
Employee Contributions	$ 6.3	$ 5.9	$ 6.1	$ 6.3	$ 6.5
Net City Contributions	$ 52.7	$ 47.1	$ 47.7	$ 43.5	$ 45.1
Premium Tax Allocation	$ 20.0	$ 19.5	$ 18.0	$ 19.2	$ 22.3
Total Contribution	$ 79.0	$ 72.6	$ 71.8	$ 68.9	$ 73.9

The following table presents a five-year summary of the total liabilities, assets, and funded status for all 53 pension plans.

($ in millions)	July 1, 2019	July 1, 2020	July 1, 2021	July 1, 2022	July 1, 2023
Accrued Liability	$ 1,605.6	$ 1,550.9	$ 1,545.6	$ 1,511.7	$ 1,549.7
Actuarial Asset Value	$ 444.6	$ 476.9	$ 532.0	$ 564.1	$ 669.6
Unfunded Accrued Liability	$ 1,161.0	$ 1,074.1	$ 1,013.7	$ 947.6	$ 880.1
Funding Percentage	28%	31%	34%	37%	43%

The following table presents a five-year summary of the aggregated estimated payments towards the total unfunded liability for all 53 pension plans.

($ in millions)	FYE 2021	FYE 2022	FYE 2023	FYE 2024	FYE 2025
1. Normal Cost with Interest	$ 35.3	$ 30.1	$ 29.0	$ 27.9	$ 25.8
2. Employee Contributions	$ 6.3	$ 5.9	$ 6.1	$ 6.3	$ 6.5
3. Net Normal Cost with Interest (1. - 2.)	$ 29.0	$ 24.1	$ 23.0	$ 21.6	$ 19.3
4. Net Normal Cost as a % of Payroll[1]	37%	32%	30%	28%	24%
5. Employer Contribution plus State Premium Tax	$ 72.7	$ 66.3	$ 65.5	$ 62.6	$ 67.5
6. Unfunded Liability	$ 1,161.0	$ 1,074.1	$ 1,013.7	$ 947.6	$ 880.1
7. Net Payment Toward Unfunded Liability (5. - 3.)	$ 43.8	$ 42.2	$ 42.5	$ 41.0	$ 48.1
8. Percent of Unfunded Liability Expected to be Paid (7. / 6.)	3.8%	3.9%	4.2%	4.3%	5.5%

The following table presents the dollar-weighted average funded status since 2014 for the 53 plans by funding policy.

Funded Ratio	Standard Policy Plans		Optional Policy Plans from Standard		Optional Policy Plans from Alternative		Optional Policy Plans from Conservation		Optional II Policy Plans		Alternative Policy Plans		Conservation Policy Plans	
Year	No.	Average	No.	Average	No.	Average	No.	Average	No.	Average	No.	Average	No.	Average
2023	3	64%	12	99%	17	57%	2	35%	3	22%	14	31%	2	25%
2022	3	64%	12	99%	17	50%	2	22%	0	N/A	16	29%	3	22%
2021	4	77%	11	102%	15	47%	0	N/A	0	N/A	18	32%	5	17%
2020	4	71%	11	94%	15	42%	0	N/A	0	N/A	18	29%	5	14%
2019	4	68%	11	84%	15	37%	0	N/A	0	N/A	18	27%	5	12%
2018	4	68%	11	80%	15	33%	0	N/A	0	N/A	18	26%	5	12%
2017	5	65%	10	75%	14	32%	0	N/A	0	N/A	20	24%	4	11%
2016	5	59%	10	69%	11	30%	0	N/A	0	N/A	25	21%	2	9%
2015	5	62%	10	67%	10	28%	0	N/A	0	N/A	26	22%	2	9%
2014	5	67%	10	71%	8	29%	0	N/A	0	N/A	28	26%	2	9%

The table on the following page presents the dollar-weighted average net employer contribution (excluding the state premium tax allocation) as a percentage of payroll[1] since the fiscal year ending June 30, 2016 for the 53 plans by funding policy.

[1] The methodology for determining the dollar amount of the normal cost (NC) component of the contribution for municipalities using either the Standard, Optional, or Optional II funding policies is to multiply the NC rate developed in the actuarial valuation reports by the actual payroll for the fiscal year prior to the fiscal year in which the contribution is expected to be made. As such, the payroll used as the divisor for both the NC percentage and the employer contribution rate is the expected payroll for the fiscal year prior to the contribution year.

Employer Contribution Rate	Standard Policy Plans		Optional Policy Plans from Standard		Optional Policy Plans from Alternative		Optional Policy Plans from Conservation		Optional II Policy Plans		Alternative Policy Plans		Conservation Policy Plans	
Year	No.	Average	No.	Average	No.	Average	No.	Average	No.	Average	No.	Average	No.	Average
2025	3	37%	12	21%	17	61%	2	118%	3	63%	14	31%	2	81%
2024	3	44%	12	22%	17	64%	2	112%	0	N/A	16	32%	3	81%
2023	4	35%	11	29%	15	76%	0	N/A	0	N/A	18	36%	5	114%
2022	4	39%	11	32%	15	79%	0	N/A	0	N/A	18	35%	5	105%
2021	4	45%	11	48%	15	100%	0	N/A	0	N/A	18	33%	5	99%
2020	4	41%	11	55%	15	102%	0	N/A	0	N/A	18	32%	5	87%
2019	4	41%	10	60%	14	106%	0	N/A	0	N/A	20	31%	4	85%
2018	4	47%	10	71%	14	111%	0	N/A	0	N/A	20	31%	4	87%
2017	4	37%	10	63%	11	106%	0	N/A	0	N/A	25	37%	2	85%
2016	4	28%	10	49%	10	86%	0	N/A	0	N/A	26	35%	2	73%

Experience Analysis

The plans collectively experienced a net actuarial loss of $56.0 million, which comprises a loss on liabilities of $55.0 million (3.7% of expected liabilities) and a loss on assets of $1.0 million (0.1% of expected assets). The following were the primary causes of the gains and/or losses:

- In aggregate, salary for returning actives was approximately 4.2% larger than expected based on the assumptions, which contributed to the loss on liabilities.
- A COLA of 8.0% exceeded the 2.5% actuarial assumption, which also contributed to the loss on liabilities. The COLA is payable on the first $15,000 of the original annual benefit and on prior COLAs.
- The weighted average returns on the market value of assets and actuarial value of assets were 10.3% and 5.6%, respectively, compared to the weighted average (by BOY asset value) discount rate of 5.9%. Returns less than anticipated by the discount rate assumption resulted in a loss on assets.

Offsetting the liability loss was a net $44.8 million (2.8% of liabilities) decrease in liabilities due to changes in the discount rate. Of the 14 plans that had a change in discount rate, 12 had increases in their discount rate. Further offsetting the liability loss was an additional $6.0 million decrease in liabilities due to the adoption of new assumptions pursuant to the 2023 *Experience Study Report*.

Commentary on Actuarial Health of Plans

The total funded status, using the actuarial value of assets, of all plans combined is 43%. The funded statuses among the individual plans range from 11% (South Charleston Fire) to 191% (Welch Police). The dollar-weighted average funded ratios for plans that use the Conservation funding policy and for plans that use the Alternative funding policy are 25% and 31%, respectively. Both funding policies result in contribution requirements that are expected to increase over time and are likely to increase at a higher rate than the municipalities' revenues. The average annual expected increases in the employer contribution amount over the next five years for municipalities that use the Conservation funding policy and for municipalities that use the Alternative funding policy are approximately 5% and 7%, respectively. If a municipality's revenues increase by a smaller percentage than these increases, the pension contributions will continue to become a larger percentage of the overall budget. Municipalities using either one of these methods run the risk of not being able to make the policy contributions in the future. If the municipality cannot sustain the future contribution amounts, the pension plans may eventually become insolvent, meaning that benefits may not get paid.

Plans that use either the Optional funding policy or Standard funding policy are better funded. The dollar-weighted average funded ratio, using the actuarial value of assets, for plans that use the Optional from Alternative funding policy is 57%. The dollar-weighted average funded ratios for plans that use the Optional from Standard funding policy and for plans that currently use the Standard policy are 99% and 64%, respectively. The dollar-weighted average funded ratios for plans that use the Optional from Conservation funding policy and for plans that use the Optional II funding policy are lower, since those plans recently switched to those policies within the past two years. Plans using any of these policies (Standard, Optional, or Optional II), regardless of their previous policy, are generally expected to experience a level or decreasing contribution as a percentage of payroll in the future.

Alternative Funding Policy

The Alternative funding policy does not adhere to actuarial principles generally considered necessary to be classified as a reasonable funding method. Alternative funding policy contributions will most likely increase at a much faster rate than payroll or municipality revenues, resulting in the pension plan encompassing a larger percentage of the city's budget each year. That percentage could grow to an unsustainable level and, at some point in the future, the plan may be unable to pay the benefits promised to plan members.

The primary goal of a funding policy that adheres to actuarial principles is that member benefits are fully funded by the time the members retire. This results in matching the cost of the members' benefits to the service they provide the municipality. To achieve a level cost allocation methodology, these benefits could be funded over the member's career as either a level dollar amount or a level percentage of pay using contributions developed as the sum of two components. The first component, the normal cost, represents the cost of the member earning an additional year of benefit accrual. The second component, the amortization of the unfunded liability, funds any shortfall in assets compared to plan liabilities over a specified number of years. If an employer is not funding at least the sum of the normal cost and the interest on the unfunded liability, then the unfunded liability will continue to grow and the plan could become insolvent in the future. Ideally, the amortization of the unfunded liability should be over a period of no more than 20 to 25 years. In some cases, a longer amortization period may be warranted.

The following table shows a distribution of the 14 plans that use the Alternative funding policy segregated by whether their contributions cover the normal cost or the normal cost plus interest on the unfunded actuarial liability (UAL). If the contributions cover the normal cost plus the interest on the unfunded actuarial liability, the table shows the number of years their current contribution level would take to pay off the unfunded actuarial liability, assuming future experience exactly matches the assumptions.

Amount Covered by Current Contribution	Number of Plans
Less than the Normal Cost	1
More than the Normal Cost but does not cover the interest on the UAL	10
Pays off UAL in more than 70 years	0
Pays off UAL in 60 to 69 years	0
Pays off UAL in 50 to 59 years	0
Pays off UAL in less than 50 years	3

Projected Funded Status

The following chart shows the percentage of plans by funding policy that are projected to be 100% funded by a certain year: 2031 for valuation dates prior to July 1, 2020 and the valuation year plus 16 years (15* year amortization policy plus 1 year to account for the difference between the contribution year and the valuation year) for valuation dates on or after July 1, 2020.

Val Year	Percentage of Plans Projected to be 100% Funded by 16th Anniversary of Valuation Date*						
	Standard	Optional from Standard	Optional from Alternative	Optional from Conservation	Optional II	Alternative	Conservation
2023	100%	100%	53%	0%	0%	14%	50%
2022	100%	100%	18%	0%	N/A	6%	33%
2021	100%	100%	20%	N/A	N/A	6%	0%
2020	100%	100%	20%	N/A	N/A	11%	0%
2019	100%	100%	7%	N/A	N/A	0%	0%
2018	100%	100%	7%	N/A	N/A	0%	0%
2017	100%	100%	7%	N/A	N/A	0%	0%
2016	100%	100%	0%	N/A	N/A	4%	0%
2015	100%	100%	0%	N/A	N/A	4%	0%
2014	100%	100%	13%	N/A	N/A	18%	0%

* The amortization period for the unfunded liability as of July 1, 2019 for the Standard and Optional from Standard funding policies is linked to 2031, but any new (beginning with the July 1, 2020 valuation) annual gains and losses (due to investment return, demographics, assumption changes, or plan changes) create new amortization layers and are recognized over 15 years (5 years for plan changes) for all Standard and Optional funding policies. As such, for rows corresponding to years prior to 2020, the table shows the percentage of plans that were projected to be 100% funded by 2031, while for the 2020, 2021, 2022, and 2023 rows, the table shows the percentage of plans that are projected to be 100% funded by the valuation year plus 16 years.

Premium Tax and Supplemental Benefit (COLA) Eligibility

West Virginia Code §8-22-20 has been historically interpreted to require plans that use the Alternative funding policy to be projected to be solvent in the next 15 years in order to receive the State premium tax allocation. West Virginia Code §8-22-26a requires the actuary to certify whether the minimum funding for actuarial soundness will be preserved if a COLA is granted for the year. The MPOB has interpreted this provision to mean that if a plan is projected to be solvent over the next 15 years, the COLA must be granted.

Plans that use the Standard, Optional, Optional II, and Conservation funding policies will always be projected to be solvent over the next 15 years so long as the municipalities make the required contribution under the respective funding policy. The solvency test applied to Alternative policy plans is that a plan's assets must be projected to be greater than $0 for the next 15 years. This projection is performed on an open group basis for the premium tax allocation and closed group basis for granting the COLA. The rationale for using an open group basis for the premium tax and a closed group basis for the COLA is that the open group projection is generally an easier threshold for passing the solvency test compared to the closed group projection and receiving premium tax dollars generally has a positive impact on a plan's funded status, while granting COLAs lowers a plan's funded status.

No plans are required to make additional contributions for FYE 2025 to meet either one of the solvency tests.

Changes in Funding Policy

Plans that use the Alternative funding policy or the Conservation funding policy may change to the Optional or Optional II funding policies. Plans that use the Standard funding policy may change to the Optional funding policy. The individual actuarial valuations provide projections for plans that use the Alternative or Conservation funding policy that show the impact of switching to the Optional or Optional II funding policies in the next plan year or at a time in the future that may be fiscally advantageous for the plan to switch to either method.

The Alternative and Conservation funding policies do not follow actuarial principles for a reasonable funding policy. Under these funding policies, the contributions are generally expected to increase at a greater rate than payroll and municipality revenues, which will result in an increased burden to municipalities in the future. At some point, the municipalities may not be able to pay all of the benefits due from the plan. ***We recommend that municipalities consider switching to a more actuarially sound funding policy as soon as possible***.

Dunbar Fire switched from the Conservation funding policy to the Optional II funding policy.

Martinsburg Fire and Police switched from the Alternative funding policy to the Optional II funding policy.

Deferred Retirement Option Plan (DROPs)

West Virginia Code Section §8-22-25a(e) requires the MPOB to (1) annually report to the Legislature's Joint Committee on Pensions and Retirement the status of any deferred retirement option programs (DROPs) submitted to the MPOB for approval (i.e., prospective DROP analysis) and to (2) provide a report once every five years to the Legislature's Joint Committee on Pensions and Retirement on the status of each active DROP (i.e., retrospective DROP analysis).

Prospective DROP studies were performed during this valuation cycle for the Firemen's Pension and Relief Fund for the City of South Charleston and for the Policemen's Pension and Relief Fund for the City of Vienna. The DROP for South Charleston Fire and the DROP for Vienna Police were adopted effective June 13, 2024, and March 21, 2024, respectively. Our analyses assumed every active member has a probability of entering DROP and possibly extending employment beyond the expected date of normal retirement eligibility.

The following table summarizes the estimated impact of the proposed DROP designs as of a July 1, 2022 valuation date:

Cost/(Savings) of Proposed DROP Design	Present Value as of July 1, 2022
South Charleston Fire	(2,123,785)
Vienna Police	(198,087)

South Charleston Fire uses the Alternative funding policy whereas Vienna Police uses the Optional funding policy. Plans that have a DROP and use either the Optional or Standard funding policies are required under WV Code §8-22-25a(d)(1) to continue to contribute the normal cost for members in DROP. The estimated savings for the Vienna Police plan is due primarily to that requirement and, without it, the DROP would be expected to result in an estimated cost.

The analyses for these two plans examined whether adding the proposed DROP as designed would improve or worsen the long-term financial status of the funds. Our estimates did not consider certain potential impacts to the plan sponsor, such as the impact to compensation or fringe benefits.

Additionally, this valuation cycle was not on the five-year interval for performing retrospective DROP studies and, as such, no retrospective studies were performed.

Changes in Methods, Assumptions, and Plan Amendments

There were no changes to the actuarial methods.

There were 14 plans that had a change in the valuation discount rate. Please see *Section II. Discount Rate* for more information.

Pursuant to the *2023 Experience Study Report*, the Municipal Pensions Oversight Board (MPOB) adopted the following assumption changes:

- **COLA**: decreased rate from 2.50% to 2.45%
- **Mortality improvement projection scale**: scale updated from SOA Scale MP-2019 to SOA Scale MP-2021
- **Retirement rates**:
  - Fire: decreased rates at ages 57-59
  - Police: increased rates at ages 50 and 57-59
- **Termination rates**:
  - Fire: increased all rates below age 30
  - Police: increased rates at ages 21-24 and 27-28
- **Disability rates**: decreased all rates by 25%.

The South Charleston Fire and Vienna Police plans both adopted a deferred retirement option program (DROP). For more information, see the above section *Deferred Retirement Option Program* (DROP).

Special Funding Situations

There are five funds for which the sponsoring cities have approved the continued overpayment of miscalculated benefits. The five funds are:

- Huntington Fire
- Huntington Police
- Morgantown Fire
- Morgantown Police
- St. Albans Fire

For these five funds, the required contribution is calculated as the sum of (1) the contribution under the relevant funding policy as if the payments were corrected and (2) the expected overpayments for the contribution year on a pay-as-you-go basis pursuant to West Virginia Code 8-22-27a(d).

Summary of Plan Statistics

Plan	Active	Retired	Inactive	Total	Funding Policy	Open	Closed	Discount Rate	Return on Assets	AVA	UAAL	Funded Ratio
Beckley Fire	40	58	1	99	Alternative	O		5.00%	11.03%	23,483,308	26,353,324	47%
Beckley Police	58	54	0	112	Alternative	O		6.25%	10.06%	29,404,311	10,185,119	74%
Belle Police	0	4	0	4	Optional		C	7.00%	9.71%	1,496,736	(291,178)	124%
Bluefield Fire	13	39	0	52	Alternative	O		5.00%	9.03%	4,949,934	13,123,155	27%
Bluefield Police	27	31	5	63	Alternative	O		6.25%	11.50%	9,173,202	5,604,734	62%
Charles Town Police	0	4	0	4	Standard		C	5.75%	5.88%	558,732	525,840	52%
Charleston Fire	61	267	2	330	Optional		C	7.00%	6.51%	51,198,725	101,535,047	34%
Charleston Police	73	219	4	296	Optional		C	7.00%	6.52%	54,115,255	92,637,686	37%
Chester Police	1	5	1	7	Optional		C	7.00%	8.04%	2,018,219	119,612	94%
Clarksburg Fire	41	57	3	101	Optional		C	6.25%	7.84%	17,001,595	17,423,022	49%
Clarksburg Police	35	46	7	88	Optional		C	6.25%	5.59%	16,606,412	10,812,893	61%
Dunbar Fire	9	24	1	34	Optional II		C	7.00%	3.34%	2,351,178	9,841,071	19%
Dunbar Police	4	14	0	18	Optional		C	7.00%	4.71%	6,649,454	962,246	87%
Elkins Fire	3	1	0	4	Optional		C	6.25%	9.02%	2,543,309	(627,806)	133%
Elkins Police	3	11	0	14	Optional		C	6.25%	10.95%	4,326,757	514,358	89%
Fairmont Fire	28	53	0	81	Conservation		C	4.75%	5.87%	8,266,287	41,898,001	16%
Fairmont Police	15	49	3	67	Conservation		C	6.00%	6.45%	11,372,647	15,844,172	42%
Grafton Fire	0	6	1	7	Optional		C	6.00%	6.99%	2,014,960	246,491	89%
Grafton Police	0	7	0	7	Optional		C	6.00%	7.00%	2,077,774	(258,737)	114%
Huntington Fire	46	158	6	210	Optional		C	5.50%	9.33%	40,668,499	69,793,744	37%
Huntington Police	32	151	0	183	Optional		C	5.75%	10.01%	49,334,530	60,825,775	45%
Logan Fire	9	0	1	10	Standard	O		6.50%	11.90%	2,122,067	885,572	71%
Logan Police	10	4	1	15	Standard	O		6.50%	10.78%	1,630,985	1,060,705	61%
Martinsburg Fire	36	35	11	82	Optional II		C	7.00%	8.84%	4,282,997	25,479,621	14%
Martinsburg Police	37	40	10	87	Optional II		C	7.00%	4.89%	10,741,241	24,871,772	30%
Morgantown Fire	59	61	0	120	Alternative	O		4.25%	6.91%	14,992,929	47,969,394	24%
Morgantown Police	61	70	5	136	Alternative	O		4.25%	7.46%	17,722,134	65,679,796	21%
Moundsville Fire	2	10	0	12	Optional		C	6.50%	9.03%	1,689,292	1,041,512	62%
Moundsville Police	4	18	0	22	Optional		C	6.50%	4.39%	6,056,965	2,740,851	69%
Nitro Fire	15	12	1	28	Alternative	O		4.25%	5.87%	2,915,382	10,119,313	22%
Nitro Police	19	17	2	38	Alternative	O		4.75%	7.89%	5,830,080	9,901,402	37%
Oak Hill Police	4	7	1	12	Optional		C	6.25%	6.76%	5,227,681	(578,544)	112%
Parkersburg Fire	34	99	2	135	Optional		C	5.75%	10.39%	27,463,939	33,235,826	45%
Parkersburg Police	36	87	7	130	Optional		C	6.00%	11.14%	26,444,580	28,498,836	48%
Point Pleasant Police	2	8	0	10	Optional		C	7.00%	9.49%	2,979,031	981,212	75%
Princeton Fire	14	18	4	36	Alternative	O		4.25%	10.63%	3,125,420	10,047,898	24%
Princeton Police	19	19	2	40	Alternative	O		5.00%	10.72%	5,433,387	9,229,264	37%
South Charleston Fire	52	48	4	104	Alternative	O		4.25%	6.05%	5,044,976	41,207,750	11%
South Charleston Police	46	41	2	89	Alternative	O		4.25%	9.35%	4,468,532	30,777,606	13%
St. Albans Fire	22	29	7	58	Alternative	O		4.00%	7.98%	2,799,183	20,889,230	12%
St. Albans Police	24	25	9	58	Alternative	O		5.50%	6.69%	8,616,159	9,740,340	47%
Star City Police	2	4	1	7	Optional		C	6.50%	8.14%	2,334,906	(314,854)	116%
Vienna Police	19	19	3	41	Optional		C	6.50%	9.76%	12,238,398	2,285,250	84%
Weirton Fire	15	22	0	37	Optional		C	6.50%	9.03%	15,382,885	1,912,480	89%
Weirton Police	26	54	0	80	Optional		C	5.75%	8.56%	12,535,666	22,252,678	36%
Welch Police	2	3	0	5	Optional		C	6.50%	8.32%	3,600,699	(1,714,523)	191%
Weston Fire	3	4	0	7	Optional		C	6.25%	7.38%	1,641,527	378,876	81%
Weston Police	1	3	1	5	Optional		C	6.25%	7.43%	1,761,410	(475,640)	137%
Westover Police	1	6	0	7	Optional		C	6.50%	7.15%	3,023,797	51,822	98%
Wheeling Fire	46	125	3	174	Optional		C	7.00%	21.23%	66,820,955	1,733,736	97%
Wheeling Police	27	97	6	130	Optional		C	7.00%	20.94%	47,103,612	1,090,879	98%
Williamson Fire	3	11	1	15	Optional		C	7.00%	8.14%	2,272,247	1,266,038	64%
Williamson Police	2	8	1	11	Optional		C	7.00%	9.24%	1,704,427	784,833	68%
Totals	**1,141**	**2,262**	**119**	**3,522**				**5.87%**	**10.06%**	**669,619,313**	**880,099,500**	**43%**

Section II. Discount Rate

The discount rate is used to discount future benefit payments in order to determine the liability for a pension plan. The lower the discount rate used, the higher the liability will be. In general, a discount rate for a public pension plan is determined based on the weighted expected return of the various asset classes in the portfolio supporting the plan. Public pension plans that do not have assets or fund benefits from their general funds tend to use a discount rate that is similar to a municipal bond yield, which is usually much lower than the expected return on the asset portfolio of a funded plan. Because many of the pension plans under MPOB's oversight have funding percentages well below 50%, using the expected asset return to discount the liabilities may not be reasonable. Therefore, the MPOB has adopted a methodology for determining the discount rate that takes into consideration the funded status of the plans as well as the underlying asset allocation of the funds and the funding policy.

Discount Rate Distribution

The discount rate is determined based on a plan's funded status (current and projected), equity exposure, and funding policy. A more detailed description of the discount rate methodology can be found in *Section XI. Actuarial Methods and Assumptions*. The following table provides the discount rate used for the July 1, 2023 valuation for each of the 53 pension plans.

Municipality	Plan	Discount Rate
Beckley	Fire	5.00%
Beckley	Police	6.25%
Belle	Police	7.00%
Bluefield	Fire	5.00%
Bluefield	Police	6.25%
Charles Town	Police	5.75%
Charleston	Fire	7.00%
Charleston	Police	7.00%
Chester	Police	7.00%
Clarksburg	Fire	6.25%
Clarksburg	Police	6.25%
Dunbar	Fire	7.00%
Dunbar	Police	7.00%
Elkins	Fire	6.25%
Elkins	Police	6.25%
Fairmont	Fire	4.75%
Fairmont	Police	6.00%
Grafton	Fire	6.00%
Grafton	Police	6.00%
Huntington	Fire	5.50%
Huntington	Police	5.75%
Logan	Fire	6.50%
Logan	Police	6.50%
Martinsburg	Fire	7.00%
Martinsburg	Police	7.00%
Morgantown	Fire	4.25%
Morgantown	Police	4.25%
Moundsville	Fire	6.50%
Moundsville	Police	6.50%
Nitro	Fire	4.25%
Nitro	Police	4.75%
Oak Hill	Police	6.25%
Parkersburg	Fire	5.75%
Parkersburg	Police	6.00%
Point Pleasant	Police	7.00%
Princeton	Fire	4.25%
Princeton	Police	5.00%
South Charleston	Fire	4.25%
South Charleston	Police	4.25%
St. Albans	Fire	4.00%
St. Albans	Police	5.50%
Star City	Police	6.50%
Vienna	Police	6.50%
Weirton	Fire	6.50%
Weirton	Police	5.75%
Welch	Police	6.50%
Weston	Fire	6.25%
Weston	Police	6.25%
Westover	Police	6.50%
Wheeling	Fire	7.00%
Wheeling	Police	7.00%
Williamson	Fire	7.00%
Williamson	Police	7.00%
Average[2]		5.87%

[2] Weighted average by liabilities on the valuation date.

Changes in Discount Rate

The following table lists the plans that had a change in their discount rate from the 2022 valuation to 2023 valuation.

Plan Name	2022 Discount Rate	2023 Discount Rate
Beckley Fire	4.75%	5.00%
Beckley Police	5.50%	6.25%
Dunbar Fire	4.75%	7.00%
Dunbar Police	6.00%	7.00%
Elkins Fire	6.00%	6.25%
Fairmont Fire	4.25%	4.75%
Fairmont Police	6.25%	6.00%
Martinsburg Fire	4.25%	7.00%
Martinsburg Police	4.25%	7.00%
Moundsville Fire	5.75%	6.50%
Parkersburg Police	5.75%	6.00%
St. Albans Fire	4.25%	4.00%
Weirton Police	5.50%	5.75%
Westover Police	6.25%	6.50%

Section III. Actuarial Valuation Results

Key Valuation Results by Funding Policy

Below is a summary of the key valuation results by funding policy as of July 1, 2023.

	Standard	Opt. from Stan.	Opt. from Alt.	Opt. From Con.	Optional II	Alternative	Conservation	All Plans
Participating Plans	3	12	17	2	3	14	2	53
Plan Membership								
(a) Actives	19	36	358	134	82	469	43	1,141
(b) Retirees	5	53	650	312	70	328	73	1,491
(c) Survivors	3	18	231	104	13	127	23	519
(d) Disableds	0	9	84	70	16	67	6	252
(e) Deferred Vesteds	1	2	22	5	2	8	1	41
(f) Due Refunds	1	5	15	1	20	34	2	78
(g) Total	29	123	1,360	626	203	1,033	148	3,522
Payroll (Exp for FYE 2024)	903,346	2,426,783	24,270,301	10,938,996	6,670,294	31,523,738	3,307,051	80,040,509
Exp Benefit Payments	240,039	2,527,243	35,159,376	18,913,653	4,437,729	20,072,489	3,823,699	85,174,228
Actuarial Accrued Liabilities								
(a) Actives	3,787,932	12,807,691	163,673,990	74,354,977	28,056,564	166,488,255	28,081,635	477,251,044
(b) Retirees	2,022,333	24,154,438	347,432,300	170,367,958	39,881,831	218,540,067	42,948,974	845,347,901
(c) Survivors	731,318	3,005,434	41,869,006	21,196,766	2,452,372	27,245,227	3,837,053	100,337,176
(d) Disableds	0	2,717,811	31,275,690	30,148,598	5,913,902	29,400,298	2,026,070	101,482,369
(e) Deferred Vesteds	227,527	802,326	11,661,545	3,346,562	1,038,292	6,753,216	459,352	24,288,820
(f) Due Refunds	14,791	73,388	238,331	71,852	224,919	360,199	28,023	1,011,503
(g) Total Liabilities	6,783,901	43,561,088	596,150,862	299,486,713	77,567,880	448,787,262	77,381,107	1,549,718,813
Funded Levels								
Market Value of Assets	4,154,721	41,670,302	340,184,987	104,333,050	16,587,271	135,311,422	19,229,482	661,471,235
Actuarial Value of Assets	4,311,784	43,308,771	341,711,491	105,313,980	17,375,416	137,958,937	19,638,934	669,619,313
Unfunded Liability	2,472,117	252,317	254,439,371	194,172,733	60,192,464	310,828,325	57,742,173	880,099,500
Funded Ratio - MVA	61%	96%	57%	35%	21%	30%	25%	43%
Funded Ratio - AVA	64%	99%	57%	35%	22%	31%	25%	43%
Normal Cost								
Net Employer Normal Cost	151,106	402,581	5,142,878	1,730,188	928,367	9,831,885	938,582	19,125,587
(% of Payroll)	17%	17%	22%	16%	14%	33%	29%	25%
FYE 2025 Contributions								
Total Employer Contributions	333,198	498,149	14,891,879	12,907,966	4,186,670	9,628,594	2,689,616	45,136,072
(% of Payroll)	37%	21%	61%	118%	63%	31%	81%	56%
State Premium Tax Allocation	217,009	835,762	7,578,354	4,872,892	1,243,949	6,484,583	1,082,487	22,315,036
(% of Payroll)	24%	34%	31%	45%	19%	21%	33%	28%
Employee Contributions	79,885	183,883	1,752,596	831,678	563,048	2,820,501	258,129	6,489,720
(% of Payroll)	9%	8%	7%	8%	8%	9%	8%	8%
Total Contributions	630,092	1,517,794	24,222,829	18,612,536	5,993,667	18,933,678	4,030,232	73,940,828
2025 Solvency Contribution								
To Receive State Allocation	-	-	-	-	-	-	-	-
To Provide COLA Benefits	-	-	-	-	-	-	-	-

Below is a summary of the key valuation results by funding policy as of July 1, 2022.

	Standard	Opt. from Stan.	Opt. from Alt.	Opt. From Con.	Optional II	Alternative	Conservation	All Plans
Participating Plans	3	12	17	2	0	16	3	53
Plan Membership								
(a) Actives	14	40	390	148	-	533	58	1,183
(b) Retirees	5	54	648	312	-	375	89	1,483
(c) Survivors	3	17	239	89	-	141	24	513
(d) Disableds	0	9	89	73	-	79	9	259
(e) Deferred Vesteds	1	2	21	6	-	10	2	42
(f) Due Refunds	1	4	14	1	-	54	4	78
(g) Total	24	126	1,401	629	-	1,192	186	3,558
Payroll (Exp for FYE 2023)	643,868	2,419,480	25,070,594	11,322,191	-	34,276,930	3,733,700	77,466,763
Exp Benefit Payments	224,573	2,410,785	33,411,169	17,771,169	-	21,751,096	4,309,093	79,877,885
Actuarial Accrued Liabilities								
(a) Actives	2,860,652	12,292,874	161,783,549	73,029,465	-	187,381,840	33,369,978	470,718,358
(b) Retirees	1,987,078	23,777,442	335,692,176	162,341,040	-	249,767,784	48,053,869	821,619,389
(c) Survivors	703,077	2,664,200	41,231,315	17,042,430	-	28,779,998	3,818,809	94,239,829
(d) Disableds	0	2,636,246	31,375,393	29,717,356	-	32,542,496	3,601,678	99,873,169
(e) Deferred Vesteds	216,014	925,462	10,506,354	3,452,591	-	8,237,740	684,272	24,022,433
(f) Due Refunds	14,791	38,129	188,470	71,852	-	813,054	62,977	1,189,273
(g) Total Liabilities	5,781,612	42,334,353	580,777,257	285,654,734	-	507,522,912	89,591,583	1,511,662,451
Funded Levels								
Market Value of Assets	3,334,111	38,842,381	269,737,021	60,859,873	-	139,298,099	18,971,134	531,042,619
Actuarial Value of Assets	3,724,773	41,817,016	288,268,318	62,459,072	-	148,190,607	19,647,849	564,107,635
Unfunded Liability	2,056,839	517,337	292,508,939	223,195,662	-	359,332,305	69,943,734	947,554,816
Funded Ratio - MVA	58%	92%	46%	21%	-	27%	21%	35%
Funded Ratio - AVA	64%	99%	50%	22%	-	29%	22%	37%
Normal Cost								
Net Employer Normal Cost	121,548	413,514	5,746,111	1,937,616	-	11,616,769	1,314,143	21,149,701
(% of Payroll)	19%	18%	24%	18%	-	36%	36%	28%
FYE 2024 Contributions								
Total Employer Contributions	283,094	530,211	16,017,152	12,663,593	-	10,952,543	3,008,438	43,455,031
(% of Payroll)	44%	22%	64%	112%	-	32%	81%	56%
State Premium Tax Allocation	163,757	732,269	6,460,404	4,180,657	-	6,493,066	1,147,334	19,177,487
(% of Payroll)	25%	30%	26%	37%	-	19%	31%	25%
Employee Contributions	56,014	188,543	1,841,037	861,568	-	3,060,022	303,529	6,310,713
(% of Payroll)	9%	8%	7%	8%	-	9%	8%	8%
Total Contributions	502,865	1,451,023	24,318,593	17,705,818	-	20,505,631	4,459,301	68,943,231
2024 Solvency Contribution								
To Receive State Allocation	-	-	-	-	-	-	-	-
To Provide COLA Benefits	-	-	-	-	-	-	-	-

Key Valuation Results by Municipality

Below is a summary of the key valuation results for each individual municipality as of July 1, 2023.

	Beckley Fire	Beckley Police	Belle Police	Bluefield Fire	Bluefield Police	Charles Town Police
Discount Rate	5.00%	6.25%	7.00%	5.00%	6.25%	5.75%
Plan Membership						
(a) Actives	40	58	0	13	27	0
(b) Retirees	40	32	3	23	18	1
(c) Survivors	12	12	1	9	11	3
(d) Disableds	6	10	0	7	2	0
(e) Deferred Vesteds	1	0	0	0	0	0
(f) Former Members Due Refunds	0	0	0	0	5	0
(g) Total	99	112	4	52	63	4
Payroll (Expected for FYE 2024)	3,431,407	3,221,969	0	763,241	1,476,990	0
Expected Benefit Payments	3,066,285	2,077,593	124,039	1,024,301	881,684	96,589
Actuarial Accrued Liabilities						
(a) Actives	15,541,229	14,765,353	0	2,620,673	3,784,563	0
(b) Retirees	28,334,109	18,761,461	1,067,986	11,264,646	8,796,425	353,254
(c) Survivors	2,436,285	2,655,349	137,572	1,491,750	1,580,840	731,318
(d) Disableds	2,786,970	3,407,267	0	2,696,020	609,991	0
(e) Deferred Vesteds	738,039	0	0	0	0	0
(f) Former Members Due Refunds	0	0	0	0	6,117	0
(g) Total Liabilities	49,836,632	39,589,430	1,205,558	18,073,089	14,777,936	1,084,572
Funded Levels						
Market Value of Assets	23,824,106	29,289,642	1,498,997	4,838,241	9,157,978	530,319
Actuarial Value of Assets	23,483,308	29,404,311	1,496,736	4,949,934	9,173,202	558,732
Unfunded Liability	26,353,324	10,185,119	-291,178	13,123,155	5,604,734	525,840
Funded Ratio - MVA	48%	74%	124%	27%	62%	49%
Funded Ratio - AVA	47%	74%	124%	27%	62%	52%
Normal Cost						
Net Employer Normal Cost	904,686	544,406	0	219,578	258,669	1,092
(% of Payroll)	35%	17%	N/A	29%	18%	N/A
FYE 2025 Contributions						
Total Employer Contributions	1,081,534	825,424	0	668,144	542,037	19,747
(% of Payroll)	32%	26%	N/A	88%	37%	N/A
State Premium Tax Allocation	665,365	713,182	0	291,990	337,385	62,620
(% of Payroll)	19%	22%	N/A	38%	23%	N/A
Employee Contributions	236,786	280,757	0	72,255	140,343	0
(% of Payroll)	7%	9%	N/A	9%	10%	N/A
Total Contributions	1,983,685	1,819,363	0	1,032,389	1,019,765	82,367
Additional 2025 Solvency Contribution						
To Receive State Allocation	-	-	-	-	-	-
To Provide COLA Benefits	-	-	-	-	-	-
MVA Return	11.03%	10.06%	9.71%	9.03%	11.50%	5.88%
Funding Policy	Alternative	Alternative	Optional	Alternative	Alternative	Standard

	Charleston Fire	Charleston Police	Chester Police	Clarksburg Fire	Clarksburg Police	Dunbar Fire
Discount Rate	7.00%	7.00%	7.00%	6.25%	6.25%	7.00%
Plan Membership						
(a) Actives	61	73	1	41	35	9
(b) Retirees	173	139	3	37	26	18
(c) Survivors	58	46	2	15	13	1
(d) Disableds	36	34	0	5	7	5
(e) Deferred Vesteds	1	4	0	1	1	0
(f) Former Members Due Refunds	1	0	1	2	6	1
(g) Total	330	296	7	101	88	34
Payroll (Expected for FYE 2024)	4,904,623	6,034,373	74,896	2,234,749	2,271,976	579,619
Expected Benefit Payments	10,105,021	8,808,632	187,963	2,007,248	1,570,660	816,907
Actuarial Accrued Liabilities						
(a) Actives	31,230,722	43,124,255	129,120	13,389,640	8,187,336	2,445,388
(b) Retirees	94,567,840	75,800,118	1,557,036	16,617,826	14,637,227	7,438,381
(c) Survivors	10,919,346	10,277,420	416,416	2,266,810	2,291,974	131,627
(d) Disableds	15,261,060	14,887,538	0	1,475,570	1,800,479	2,164,475
(e) Deferred Vesteds	682,952	2,663,610	0	615,955	460,687	0
(f) Former Members Due Refunds	71,852	0	35,259	58,816	41,602	12,378
(g) Total Liabilities	152,733,772	146,752,941	2,137,831	34,424,617	27,419,305	12,192,249
Funded Levels						
Market Value of Assets	50,350,211	53,982,839	2,008,297	16,316,188	15,771,150	2,221,261
Actuarial Value of Assets	51,198,725	54,115,255	2,018,219	17,001,595	16,606,412	2,351,178
Unfunded Liability	101,535,047	92,637,686	119,612	17,423,022	10,812,893	9,841,071
Funded Ratio - MVA	33%	37%	94%	47%	58%	18%
Funded Ratio - AVA	34%	37%	94%	49%	61%	19%
Normal Cost						
Net Employer Normal Cost	862,265	867,923	14,002	496,078	387,870	98,438
(% of Payroll)	18%	15%	19%	23%	18%	18%
FYE 2025 Contributions						
Total Employer Contributions	6,733,824	6,174,142	14,416	1,111,137	607,268	591,197
(% of Payroll)	137%	102%	19%	50%	27%	102%
State Premium Tax Allocation	2,506,744	2,366,148	57,602	648,327	552,660	228,709
(% of Payroll)	51%	39%	77%	29%	24%	39%
Employee Contributions	385,888	445,790	6,924	171,058	190,910	50,772
(% of Payroll)	8%	7%	9%	8%	8%	9%
Total Contributions	9,626,456	8,986,080	78,942	1,930,522	1,350,838	870,678
Additional 2025 Solvency Contribution						
To Receive State Allocation	-	-	-	-	-	-
To Provide COLA Benefits	-	-	-	-	-	-
MVA Return	6.51%	6.52%	8.04%	7.84%	5.59%	3.34%
Funding Policy	Optional	Optional	Optional	Optional	Optional	Optional II

	Dunbar Police	Elkins Fire	Elkins Police	Fairmont Fire	Fairmont Police	Grafton Fire
Discount Rate	7.00%	6.25%	6.25%	4.75%	6.00%	6.00%
Plan Membership						
(a) Actives	4	3	3	28	15	0
(b) Retirees	10	0	9	43	30	5
(c) Survivors	1	1	2	8	15	0
(d) Disableds	3	0	0	2	4	1
(e) Deferred Vesteds	0	0	0	0	1	0
(f) Former Members Due Refunds	0	0	0	0	2	1
(g) Total	18	4	14	81	67	7
Payroll (Expected for FYE 2024)	275,560	190,641	198,590	2,141,353	1,165,698	0
Expected Benefit Payments	480,267	39,137	390,923	2,192,401	1,631,298	196,294
Actuarial Accrued Liabilities						
(a) Actives	1,753,383	1,717,321	627,770	21,387,995	6,693,640	0
(b) Retirees	4,622,651	0	3,820,419	26,707,880	16,241,094	1,981,707
(c) Survivors	113,210	198,182	392,926	1,142,736	2,694,317	0
(d) Disableds	1,122,456	0	0	925,677	1,100,393	243,062
(e) Deferred Vesteds	0	0	0	0	459,352	0
(f) Former Members Due Refunds	0	0	0	0	28,023	36,682
(g) Total Liabilities	7,611,700	1,915,503	4,841,115	50,164,288	27,216,819	2,261,451
Funded Levels						
Market Value of Assets	6,109,762	2,462,219	4,227,947	8,191,854	11,037,628	1,932,437
Actuarial Value of Assets	6,649,454	2,543,309	4,326,757	8,266,287	11,372,647	2,014,960
Unfunded Liability	962,246	-627,806	514,358	41,898,001	15,844,172	246,491
Funded Ratio - MVA	80%	129%	87%	16%	41%	85%
Funded Ratio - AVA	87%	133%	89%	16%	42%	89%
Normal Cost						
Net Employer Normal Cost	132,520	50,510	26,180	755,262	183,320	1,197
(% of Payroll)	50%	27%	14%	36%	16%	N/A
FYE 2025 Contributions						
Total Employer Contributions	137,540	0	26,407	1,602,732	1,086,884	1,263
(% of Payroll)	50%	0%	13%	75%	93%	N/A
State Premium Tax Allocation	180,004	0	160,721	597,314	485,173	70,960
(% of Payroll)	65%	0%	81%	28%	42%	N/A
Employee Contributions	19,397	11,208	16,694	169,225	88,904	0
(% of Payroll)	7%	6%	8%	8%	8%	N/A
Total Contributions	336,941	11,208	203,822	2,369,271	1,660,961	72,223
Additional 2025 Solvency Contribution						
To Receive State Allocation	-	-	-	-	-	-
To Provide COLA Benefits	-	-	-	-	-	-
MVA Return	4.71%	9.02%	10.95%	5.87%	6.45%	6.99%
Funding Policy	Optional	Optional	Optional	Conservation	Conservation	Optional

	Grafton Police	Huntington Fire	Huntington Police	Logan Fire	Logan Police	Martinsburg Fire
Discount Rate	6.00%	5.50%	5.75%	6.50%	6.50%	7.00%
Plan Membership						
(a) Actives	0	46	32	9	10	36
(b) Retirees	1	99	114	0	4	25
(c) Survivors	4	43	23	0	0	6
(d) Disableds	2	16	14	0	0	4
(e) Deferred Vesteds	0	6	0	1	0	0
(f) Former Members Due Refunds	0	0	0	0	1	11
(g) Total	7	210	183	10	15	82
Payroll (Expected for FYE 2024)	0	3,342,779	2,836,741	496,444	406,902	2,876,809
Expected Benefit Payments	132,042	6,068,890	6,573,574	5,554	137,896	1,660,448
Actuarial Accrued Liabilities						
(a) Actives	0	31,267,733	25,258,763	2,780,112	1,007,820	12,178,659
(b) Retirees	756,507	58,846,108	74,039,968	0	1,669,079	15,492,636
(c) Survivors	498,080	9,349,304	5,055,707	0	0	1,064,340
(d) Disableds	564,450	7,224,094	5,805,867	0	0	969,888
(e) Deferred Vesteds	0	3,775,004	0	227,527	0	0
(f) Former Members Due Refunds	0	0	0	0	14,791	57,095
(g) Total Liabilities	1,819,037	110,462,243	110,160,305	3,007,639	2,691,690	29,762,618
Funded Levels						
Market Value of Assets	2,002,409	40,055,854	48,098,792	2,061,918	1,562,484	4,258,655
Actuarial Value of Assets	2,077,774	40,668,499	49,334,530	2,122,067	1,630,985	4,282,997
Unfunded Liability	-258,737	69,793,744	60,825,775	885,572	1,060,705	25,479,621
Funded Ratio - MVA	110%	36%	44%	69%	58%	14%
Funded Ratio - AVA	114%	37%	45%	71%	61%	14%
Normal Cost						
Net Employer Normal Cost	3,656	950,392	585,203	104,103	45,911	429,442
(% of Payroll)	N/A	29%	21%	22%	12%	15%
FYE 2025 Contributions						
Total Employer Contributions	3,858	3,915,818	3,402,412	153,382	160,069	1,875,801
(% of Payroll)	N/A	117%	120%	31%	39%	65%
State Premium Tax Allocation	0	1,466,859	1,453,473	91,034	63,355	475,063
(% of Payroll)	N/A	44%	51%	18%	16%	17%
Employee Contributions	0	210,993	182,826	40,065	39,820	243,531
(% of Payroll)	N/A	6%	6%	8%	10%	8%
Total Contributions	3,858	5,593,670	5,038,711	284,481	263,244	2,594,395
Additional 2025 Solvency Contribution						
To Receive State Allocation	-	-	-	-	-	-
To Provide COLA Benefits	-	-	-	-	-	-
MVA Return	7.00%	9.33%	10.01%	11.90%	10.78%	8.84%
Funding Policy	Optional	Optional	Optional	Standard	Standard	Optional II

	Martinsburg Police	Morgantown Fire	Morgantown Police	Moundsville Fire	Moundsville Police	Nitro Fire
Discount Rate	7.00%	4.25%	4.25%	6.50%	6.50%	4.25%
Plan Membership						
(a) Actives	37	59	61	2	4	15
(b) Retirees	27	47	50	3	10	7
(c) Survivors	6	14	12	6	8	3
(d) Disableds	7	0	8	1	0	2
(e) Deferred Vesteds	2	0	3	0	0	0
(f) Former Members Due Refunds	8	0	2	0	0	1
(g) Total	87	120	136	12	22	28
Payroll (Expected for FYE 2024)	3,213,866	4,626,324	4,877,096	129,083	247,731	1,000,826
Expected Benefit Payments	1,960,374	2,407,737	3,324,310	218,312	526,946	445,296
Actuarial Accrued Liabilities						
(a) Actives	13,432,517	27,259,736	32,510,209	763,906	2,653,091	6,331,424
(b) Retirees	16,950,814	33,476,377	40,632,858	817,206	5,095,834	4,545,414
(c) Survivors	1,256,405	2,226,210	3,534,232	918,397	1,048,891	627,422
(d) Disableds	2,779,539	0	3,860,470	231,295	0	1,503,926
(e) Deferred Vesteds	1,038,292	0	2,761,482	0	0	0
(f) Former Members Due Refunds	155,446	0	102,679	0	0	26,509
(g) Total Liabilities	35,613,013	62,962,323	83,401,930	2,730,804	8,797,816	13,034,695
Funded Levels						
Market Value of Assets	10,107,355	14,284,625	16,967,721	1,656,999	5,929,862	2,817,900
Actuarial Value of Assets	10,741,241	14,992,929	17,722,134	1,689,292	6,056,965	2,915,382
Unfunded Liability	24,871,772	47,969,394	65,679,796	1,041,512	2,740,851	10,119,313
Funded Ratio - MVA	28%	23%	20%	61%	67%	22%
Funded Ratio - AVA	30%	24%	21%	62%	69%	22%
Normal Cost						
Net Employer Normal Cost	400,487	1,917,473	1,479,420	41,548	55,418	374,916
(% of Payroll)	13%	42%	31%	33%	23%	38%
FYE 2025 Contributions						
Total Employer Contributions	1,719,672	1,192,520	1,494,147	44,122	67,469	266,058
(% of Payroll)	54%	26%	31%	34%	27%	27%
State Premium Tax Allocation	540,177	807,974	839,937	86,904	190,454	182,959
(% of Payroll)	17%	17%	17%	67%	77%	18%
Employee Contributions	268,745	413,896	470,280	9,309	11,808	88,336
(% of Payroll)	8%	9%	10%	7%	5%	9%
Total Contributions	2,528,594	2,414,390	2,804,364	140,335	269,731	537,353
Additional 2025 Solvency Contribution						
To Receive State Allocation	-	-	-	-	-	-
To Provide COLA Benefits	-	-	-	-	-	-
MVA Return	4.89%	6.91%	7.46%	9.03%	4.39%	5.87%
Funding Policy	Optional II	Alternative	Alternative	Optional	Optional	Alternative

	Nitro Police	Oak Hill Police	Parkersburg Fire	Parkersburg Police	Point Pleasant Police	Princeton Fire
Discount Rate	4.75%	6.25%	5.75%	6.00%	7.00%	4.25%
Plan Membership						
(a) Actives	19	4	34	36	2	14
(b) Retirees	9	5	68	59	6	12
(c) Survivors	4	2	21	18	1	4
(d) Disableds	4	0	10	10	1	2
(e) Deferred Vesteds	0	0	2	4	0	3
(f) Former Members Due Refunds	2	1	0	3	0	1
(g) Total	38	12	135	130	10	36
Payroll (Expected for FYE 2024)	1,269,413	285,172	2,091,829	2,293,727	86,997	788,417
Expected Benefit Payments	617,373	220,049	3,434,139	3,221,236	243,044	520,890
Actuarial Accrued Liabilities						
(a) Actives	6,215,333	1,801,541	16,022,421	12,120,779	1,058,664	3,390,478
(b) Retirees	6,253,841	2,458,713	36,653,847	33,479,649	2,344,386	5,781,409
(c) Survivors	950,550	387,898	3,078,660	2,880,001	112,459	720,416
(d) Disableds	2,246,258	0	3,845,812	4,419,882	444,734	1,073,914
(e) Deferred Vesteds	0	0	1,099,025	2,017,340	0	2,206,001
(f) Former Members Due Refunds	65,500	985	0	25,765	0	1,100
(g) Total Liabilities	15,731,482	4,649,137	60,699,765	54,943,416	3,960,243	13,173,318
Funded Levels						
Market Value of Assets	5,677,444	4,803,094	26,404,745	25,446,465	2,830,469	3,050,477
Actuarial Value of Assets	5,830,080	5,227,681	27,463,939	26,444,580	2,979,031	3,125,420
Unfunded Liability	9,901,402	-578,544	33,235,826	28,498,836	981,212	10,047,898
Funded Ratio - MVA	36%	103%	44%	46%	71%	23%
Funded Ratio - AVA	37%	112%	45%	48%	75%	24%
Normal Cost						
Net Employer Normal Cost	359,497	43,910	568,175	400,415	17,107	325,089
(% of Payroll)	29%	16%	28%	18%	20%	42%
FYE 2025 Contributions						
Total Employer Contributions	285,552	45,157	1,844,698	1,280,662	104,065	172,922
(% of Payroll)	22%	16%	88%	56%	120%	22%
State Premium Tax Allocation	242,028	0	904,593	931,307	116,052	193,533
(% of Payroll)	19%	0%	43%	41%	133%	25%
Employee Contributions	118,706	23,224	155,360	177,926	2,788	71,589
(% of Payroll)	9%	8%	7%	8%	3%	9%
Total Contributions	646,286	68,381	2,904,651	2,389,895	222,905	438,044
Additional 2025 Solvency Contribution						
To Receive State Allocation	-	-	-	-	-	-
To Provide COLA Benefits	-	-	-	-	-	-
MVA Return	7.89%	6.76%	10.39%	11.14%	9.49%	10.63%
Funding Policy	Alternative	Optional	Optional	Optional	Optional	Alternative

	Princeton Police	South Charleston Fire	South Charleston Police	St. Albans Fire	St. Albans Police	Star City Police
Discount Rate	5.00%	4.25%	4.25%	4.00%	5.50%	6.50%
Plan Membership						
(a) Actives	19	52	46	22	24	2
(b) Retirees	13	28	15	15	19	1
(c) Survivors	3	13	15	10	5	3
(d) Disableds	3	7	11	4	1	0
(e) Deferred Vesteds	0	0	0	1	0	1
(f) Former Members Due Refunds	2	4	2	6	9	0
(g) Total	40	104	89	58	58	7
Payroll (Expected for FYE 2024)	1,327,434	3,231,272	2,820,362	1,274,942	1,414,045	113,184
Expected Benefit Payments	669,298	1,741,696	1,383,646	947,898	964,482	123,154
Actuarial Accrued Liabilities						
(a) Actives	6,290,574	19,962,206	14,434,150	8,772,453	4,609,874	292,727
(b) Retirees	6,200,750	20,005,279	12,576,347	10,124,085	11,787,066	373,084
(c) Survivors	965,000	3,028,751	3,618,708	2,047,121	1,362,593	653,205
(d) Disableds	1,161,304	3,217,270	4,599,934	1,670,163	566,811	0
(e) Deferred Vesteds	0	0	0	1,047,694	0	701,036
(f) Former Members Due Refunds	45,023	39,220	16,999	26,897	30,155	0
(g) Total Liabilities	14,662,651	46,252,726	35,246,138	23,688,413	18,356,499	2,020,052
Funded Levels						
Market Value of Assets	5,257,828	4,917,544	4,443,937	2,699,797	8,084,182	2,186,277
Actuarial Value of Assets	5,433,387	5,044,976	4,468,532	2,799,183	8,616,159	2,334,906
Unfunded Liability	9,229,264	41,207,750	30,777,606	20,889,230	9,740,340	-314,854
Funded Ratio - MVA	36%	11%	13%	11%	44%	108%
Funded Ratio - AVA	37%	11%	13%	12%	47%	116%
Normal Cost						
Net Employer Normal Cost	313,749	1,370,899	902,586	536,150	324,767	19,646
(% of Payroll)	24%	43%	33%	43%	24%	18%
FYE 2025 Contributions						
Total Employer Contributions	341,356	1,184,903	659,170	427,961	486,866	20,116
(% of Payroll)	26%	37%	23%	34%	34%	18%
State Premium Tax Allocation	265,833	673,889	626,847	328,512	315,149	0
(% of Payroll)	20%	21%	22%	26%	22%	0%
Employee Contributions	120,737	287,490	254,653	124,676	139,997	10,637
(% of Payroll)	9%	9%	9%	10%	10%	9%
Total Contributions	727,926	2,146,282	1,540,670	881,149	942,012	30,753
Additional 2025 Solvency Contribution						
To Receive State Allocation	-	-	-	-	-	-
To Provide COLA Benefits	-	-	-	-	-	-
MVA Return	10.72%	6.05%	9.35%	7.98%	6.69%	8.14%
Funding Policy	Alternative	Alternative	Alternative	Alternative	Alternative	Optional

	Vienna Police	Weirton Fire	Weirton Police	Welch Police	Weston Fire	Weston Police
Discount Rate	6.50%	6.50%	5.75%	6.50%	6.25%	6.25%
Plan Membership						
(a) Actives	19	15	26	2	3	1
(b) Retirees	11	17	37	3	3	2
(c) Survivors	3	5	14	0	1	1
(d) Disableds	5	0	3	0	0	0
(e) Deferred Vesteds	1	0	0	0	0	1
(f) Former Members Due Refunds	2	0	0	0	0	0
(g) Total	41	37	80	5	7	5
Payroll (Expected for FYE 2024)	1,318,922	1,178,382	1,807,494	128,202	128,540	60,079
Expected Benefit Payments	671,242	914,163	2,007,993	72,844	98,381	69,290
Actuarial Accrued Liabilities						
(a) Actives	5,904,637	7,011,126	11,067,286	828,293	606,078	176,601
(b) Retirees	6,100,734	9,365,647	20,078,627	1,057,883	1,173,616	735,576
(c) Survivors	567,500	918,592	2,825,837	0	240,709	56,017
(d) Disableds	1,465,565	0	816,594	0	0	0
(e) Deferred Vesteds	484,750	0	0	0	0	317,576
(f) Former Members Due Refunds	462	0	0	0	0	0
(g) Total Liabilities	14,523,648	17,295,365	34,788,344	1,886,176	2,020,403	1,285,770
Funded Levels						
Market Value of Assets	11,773,361	14,706,201	12,056,724	3,631,723	1,546,707	1,685,904
Actuarial Value of Assets	12,238,398	15,382,885	12,535,666	3,600,699	1,641,527	1,761,410
Unfunded Liability	2,285,250	1,912,480	22,252,678	-1,714,523	378,876	-475,640
Funded Ratio - MVA	81%	85%	35%	193%	77%	131%
Funded Ratio - AVA	84%	89%	36%	191%	81%	137%
Normal Cost						
Net Employer Normal Cost	193,409	274,780	308,808	20,749	31,114	6,489
(% of Payroll)	15%	24%	18%	17%	25%	11%
FYE 2025 Contributions						
Total Employer Contributions	275,636	277,300	1,171,053	0	32,924	0
(% of Payroll)	21%	24%	65%	0%	26%	0%
State Premium Tax Allocation	259,958	345,693	570,692	0	62,620	0
(% of Payroll)	20%	29%	32%	0%	49%	0%
Employee Contributions	100,571	93,982	156,489	10,813	11,339	5,554
(% of Payroll)	8%	8%	9%	8%	9%	9%
Total Contributions	636,165	716,975	1,898,234	10,813	106,883	5,554
Additional 2025 Solvency Contribution						
To Receive State Allocation	-	-	-	-	-	-
To Provide COLA Benefits	-	-	-	-	-	-
MVA Return	9.76%	9.03%	8.56%	8.32%	7.38%	7.43%
Funding Policy	Optional	Optional	Optional	Optional	Optional	Optional

	Westover Police	Wheeling Fire	Wheeling Police	Williamson Fire	Williamson Police	Total
Discount Rate	6.50%	7.00%	7.00%	7.00%	7.00%	N/A
Plan Membership						
(a) Actives	1	46	27	3	2	1,141
(b) Retirees	5	90	68	5	3	1,491
(c) Survivors	1	30	21	4	5	519
(d) Disableds	0	5	8	2	0	252
(e) Deferred Vesteds	0	2	5	0	0	41
(f) Former Members Due Refunds	0	1	1	1	1	78
(g) Total	7	174	130	15	11	3,522
Payroll (Expected for FYE 2024)	83,284	3,208,706	1,898,336	120,274	91,210	80,040,509
Expected Benefit Payments	180,376	4,274,217	3,223,722	242,705	173,769	85,174,228
Actuarial Accrued Liabilities						
(a) Actives	563,744	21,890,921	10,102,503	603,508	682,789	477,251,044
(b) Retirees	2,273,491	39,310,743	29,647,260	1,589,733	1,083,274	845,347,901
(c) Survivors	238,384	5,261,083	3,557,335	721,163	688,128	100,337,176
(d) Disableds	0	1,252,609	2,675,111	605,921	0	101,482,369
(e) Deferred Vesteds	0	818,218	2,174,280	0	0	24,288,820
(f) Former Members Due Refunds	0	21,117	38,002	17,960	35,069	1,011,503
(g) Total Liabilities	3,075,619	68,554,691	48,194,491	3,538,285	2,489,260	1,549,718,813
Funded Levels						
Market Value of Assets	2,813,445	70,366,048	49,566,653	2,261,850	1,704,710	661,471,235
Actuarial Value of Assets	3,023,797	66,820,955	47,103,612	2,272,247	1,704,427	669,619,313
Unfunded Liability	51,822	1,733,736	1,090,879	1,266,038	784,833	880,099,500
Funded Ratio - MVA	91%	103%	103%	64%	68%	43%
Funded Ratio - AVA	98%	97%	98%	64%	68%	43%
Normal Cost						
Net Employer Normal Cost	25,372	595,266	260,463	19,803	15,379	19,125,587
(% of Payroll)	31%	21%	14%	17%	17%	25%
FYE 2025 Contributions						
Total Employer Contributions	27,347	564,369	377,673	20,936	16,382	45,136,072
(% of Payroll)	33%	18%	20%	17%	18%	56%
State Premium Tax Allocation	170,469	0	0	104,453	80,315	22,315,036
(% of Payroll)	205%	0%	0%	87%	88%	28%
Employee Contributions	6,107	192,775	141,844	9,402	6,541	6,489,720
(% of Payroll)	7%	6%	7%	8%	7%	8%
Total Contributions	203,923	757,144	519,517	134,791	103,238	73,940,828
Additional 2025 Solvency Contribution						
To Receive State Allocation	-	-	-	-	-	-
To Provide COLA Benefits	-	-	-	-	-	-
MVA Return	7.15%	21.23%	20.94%	8.14%	9.24%	10.29%
Funding Policy	Optional	Optional	Optional	Optional	Optional	

Asset Allocation

The table below shows the amount of funds invested in each account as of June 30, 2022 and June 30, 2023.

Assets Held by Category		June 30, 2022		June 30, 2023
Cash and Deposits	$	26,205,214	$	23,164,581
Receivables				
Contributions	$	546,316	$	38,727,573
Investment Income		531,854		7,078,683
Total Receivables	**$**	**1,078,170**	**$**	**45,806,256**
Investment				
Government Securities	$	40,757,977	$	27,751,302
Fixed Income		134,719,726		151,719,200
Equities		275,921,448		297,246,950
Alternative Investments		53,469,475		116,726,314
Other		0		0
Total Investments	**$**	**504,868,626**	**$**	**593,443,766**
Total Assets	**$**	**532,152,010**	**$**	**662,414,603**
Payables				
Investment Expense	$	53,126	$	0
Benefits and Withdrawals		914,279		934,216
Administrative Expense		141,986		9,152
Total Payables	**$**	**1,109,391**	**$**	**943,368**
Net Position	**$**	**531,042,619**	**$**	**661,471,235**

Reconciliation of Assets

Below is a reconciliation of assets (unaudited) for the years ending June 30, 2022 and June 30, 2022.

Plan Year Ending		June 30, 2022		June 30, 2022
1. Beginning of Year Market Value of Assets	$	591,283,273	$	531,042,619
Adjustments to Market Value of Assets		0		(5,397)
Beginning of Year Market Value of Assets	**$**	**591,283,273**	**$**	**531,037,222**
2. Additions				
a. Contributions				
(i) Local Government	$	53,284,166	$	89,361,301
(ii) State Government		19,196,751		16,018,430
(iii) Employee		6,783,360		6,861,839
(iv) Total		79,264,277		112,241,570
b. Receivable Contribution				
(i) Local Government	$	18,645	$	38,554,007
(ii) State Government		464,088		10,614
(iii) Employee Contributions		63,583		162,952
(iv) Total		546,316		38,727,573
c. Earnings on Investments				
(i) Net Appreciation/(Depreciation)	$	(84,295,005)	$	36,029,304
(ii) Net Realized Gain (Loss) on Sale/Exchange		9,738,121		7,385,625
(iii) Interest and Dividends		11,474,099		9,660,595
(iv) Other Income		272,631		100,679
(v) Investment Expense		(2,500,628)		(1,946,379)
(vi) Receivable Investment Income		531,854		7,078,683
(vii) Payable Investment Expenses		(53,126)		0
(viii) Net Investment Income		(64,832,054)		58,308,507
d. Other Revenue		0		40,598
e. Total Additions	**$**	**14,978,539**	**$**	**209,318,248**
3. Disbursements				
a. Benefit Payments	$	73,008,073	$	76,919,636
b. Withdrawals		877,283		887,950
c. Administrative Expenses				
(i) Municipal Fees		188,486		45,973
(ii) Other Expenses		89,086		87,308
(iii) Total Administrative Expenses		277,572		133,281
d. Payable Benefits and Withdrawals		914,279		934,216
e. Payable Administrative Expenses		141,986		9,152
f. Total Disbursements	**$**	**75,219,193**	**$**	**78,884,235**
4. Net Increase (2.e. – 3.f.)		(60,240,654)		130,434,013
5. Net Assets (1. + 4.)	**$**	**531,042,619**	**$**	**661,471,235**
6. Rate of Return Net of Investment Fees (2I / [A + B – I] Method[3])		-10.9%		10.3%

[3] 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, 2023

MVA (Gain)/Loss for Plan Year Ended June 30, 2023		
Market Value of Assets (MVA)		
a. MVA as of 7/1/2022	$	531,037,222
b. Interest on a. to 6/30/2023		31,299,378
c. Contributions with Interest to 6/30/2023		154,424,707
d. Benefit Payments with Interest to 6/30/2023		80,980,624
e. Administrative Expenses with Interest to 6/30/2023		146,414
f. Expected MVA at 6/30/2023 (a. + b. + c. – d. – e.)		635,634,269
g. Actual MVA at 6/30/2023		661,471,235
h. MVA (Gain)/Loss (f. - g.)		(25,836,966)

Development of Actuarial Value of Assets

The actuarial asset value as of July 1, 2023 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, 2023
1.	Market Value of Assets		$	661,471,235
2.	Spreading of Investment (Gains)/Losses			
	Fiscal Year	(Gain)/Loss	% Deferred	Amount Deferred
	2023	$ (25,836,966)	75%	$ (19,377,733)
	2022	97,936,217	50%	48,968,121
	2021	(85,769,222)	25%	(21,442,310)
	2020	9,989,846	0%	0
	a. Total Deferred			8,148,078
3.	Actuarial Value of Assets (1. + 2.a.)		$	669,619,313
4.	Rate of Return Net of Investment Fees (2I / [A + B – I] Method)			5.57%

Experience (Gain)/Loss for Plan Year Ended June 30, 2023

The following is a determination of the gains and losses on the collective liabilities and assets for all the plans.

Experience (Gain)/Loss for Plan Year Ended June 30, 2023		
1. Liabilities		
a. Actuarial Accrued Liability as of 7/1/2022	$	1,511,662,451
b. Normal Cost as of 7/1/2022		27,036,127
c. Interest on a. and b. to 6/30/2023		87,082,263
d. Benefit Payments with Interest to 6/30/2023		80,980,624
e. Effect of Plan Provision Changes		659,286
f. Effect of Assumption Changes		(50,739,735)
g. Expected Liability at 7/1/2023 (a. + b. + c. – d. + e. + f.)		1,494,719,768
h. Actual Liability at 7/1/2023		1,549,718,813
i. Liability (Gain)/Loss (h. - g.)		54,999,045
2. Actuarial Value of Assets (AVA)		
a. AVA as of 7/1/2022	$	564,107,635
b. Interest on a. to 6/30/2023		33,203,328
c. Contributions with Interest to 6/30/2023		154,424,707
d. Benefit Payments with Interest to 6/30/2023		80,980,624
e. Administrative Expenses with Interest to 6/30/2023		146,414
f. Expected AVA at 6/30/2023 (a. + b. + c. – d. – e.)		670,608,632
g. Actual AVA at 6/30/2023		669,619,313
h. AVA (Gain)/Loss (f. - g.)		989,319
3. Total (Gain)/Loss (1i. + 2h.)	$	55,988,364

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 IV. Risk Discussion

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.

The purpose of this section is to provide the reader with a basic understanding of the fundamentals of pension financing and the associated risks, including implications of the plan’s funding policy on future plan funding, how future experience may differ from the assumptions used, and the potential volatility of future measurements resulting from these differences.

Elements of Pension Plan Finiancing

The following equation lays out the fundamental elements of pension plan financing:

Contributions + Investment Returns = Benefit Payments + Expenses

Employers and employees **contribute** to a plan based on the statutory requirements, plan terms, and plan sponsor funding policy. The plan invests these contributions and earns a **return** on that investment. Together, these contributions and investment returns are the sole sources of income to the plan. **Benefits** are paid to participants who have met the eligibility and vesting requirements defined by the plan. Plans also pay administrative, investment, auditing, legal, and other **expenses** for maintaining the plan. **Over time, contributions and investment earnings must equal benefits and expenses.**

From this equation, it is evident that funding, investment, and benefit policies must be developed together. Once the benefit terms are established, each plan sponsor must determine the desired balance of contributions versus investment returns needed to finance benefits accrued to participants. It is important to remember that the plan sponsor’s investment and funding policies, along with the selected actuarial assumptions, determine the assumed balance between contributions and investment returns. **The actual cost of a plan is based on the actual experience of the plan and may result in a different balance than is assumed.** Ultimately, the expected return does not impact the long-term relationship between the contributions required and the benefit level that can be supported by such contributions. Using a higher expected return assumption may give a false sense of benefit security if the plan does not realize that level of actual returns over time.

The development of integrated benefit, funding, and investment policies generally requires consideration of many factors such as:

- Balancing benefit security and intergenerational equity;
- Risk appetite and ability to absorb short-term volatility in plan contributions;
- Current plan funded status;
- Timing and expected duration of benefit payments; and
- Nature and frequency of past and anticipated future plan amendments.

Significant Risks Affecting Pension Plans

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.
- Contribution risk: 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 the value of liabilities are not matched by changes in asset values.
- Cash flow risks: The potential that contributions to the plan will not cover benefit payments and expenses.

Investment risk is often the single most significant risk for defined benefit plans. Plans that seek a higher investment return are typically forced to accept a higher level of volatility that can change the plan's funded status drastically year-to-year. Use of an asset smoothing method that phases in investment gains and losses over a period of years can give the perception of less volatility in the funded status from year to year.

Contribution risk most commonly results from either large contribution increases that are difficult for the plan sponsor to meet, or from a material decrease in the number of covered employees and/or covered payroll.

Assumptions regarding mortality and other demographic factors related to participant behavior bring the risk that future experience will diverge from the reasonable assumptions utilized within the actuarial valuation model. For example, participants living longer than expected will increase plan costs, while people terminating sooner than expected will generally decrease plan costs. Additionally, what is considered a reasonable assumption may change over time and lead to an increase or decrease in future contributions. Actual life expectancies may be longer or shorter than what is reflected in the valuation and benefit payment projections and will increase or decrease the cost of the plan as actual experience emerges.

Asset/liability mismatch risk is also another major risk for many pension plans. To the extent that the duration of plan assets is not matched to the duration of plan liabilities the change in discount rates could have a significant impact on the plan's funded status. For most public

pension plans, changes in asset values and interest rates do not directly affect the measurement of the plan's liability. Liability-driven investment approaches (where the liability is immunized by investments in fixed income whose cash inflows are matched to the benefit payment outflows, or the asset and liability durations are brought into close alignment) will reduce this risk; however, it is difficult to invest in a manner that hedges all risks.

As plans mature, they become more reliant on investment returns to pay benefits and expenses. When plans have negative cash flows, they must spend interest and dividends, or may be forced to sell assets at inopportune times, to meet those obligations. Plans with DROP or other lump sum payment features are particularly exposed to this risk.

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, along with long-term capital market expectations. Together these may lead to a change in the interest rate used to value plan liabilities which will increase or decrease the measurement of plan liabilities and the actuarially determined contribution.

Quantifying Investment and Funded Status Risk

Although cash and money market funds have the lowest absolute investment risk, they are typically not the lowest risk investment for a pension plan. With respect to interest rate risk, a pension plan liability behaves like the price of a bond because both equal the discounted value of a series of future cash flows. The present value will change in the opposite direction to a change in interest rates. Therefore, a bond portfolio with the timing of expected income cash flows matched to the expected benefit payment outflows is typically the lowest risk investment approach for a pension plan.

Corporate, Treasury, and municipal bonds, often considered lower risk investment classes, can still have a high level of interest rate risk in their present values. If the duration (timing and pattern of income payments) of the fixed income assets are misaligned with the duration of the plan's liability, there can be significant funded status volatility as interest rates change. The way to mitigate this volatility is minimizing the asset/liability (or duration) mismatch risk.

One means of quantifying the expected cost of assuming future investment and asset/liability mismatch risk is to compare the Plan's current assets to a liability calculated assuming very low default risk. One such measure is called a **Low Default-Risk Obligation Measure** (LDROM). An example of an LDROM is the Plan's Funding Liability determined using a discount rate based on the yields on high quality municipal bonds, similar to what is referenced under GASB statement 68.

	Liability Measure	Assumed Return
Actuarial Liability – Funding Policy Return	$ 1,549,718,813	5.87%[4]
Actuarial Liability – Municipal Bond Yield (LDROM)	$ 2,023,763,903	3.86%
Market Value of Assets	$ 661,471,235	5.87%[4]

The difference between the LDROM and the Actuarial Liability used to determine funding contributions can be viewed in several ways, and certain views of this measure may be more relevant for some plan sponsors:

- The expected long-term contribution savings to be achieved by investing in asset classes with higher expected risk and returns than bonds.
- The cost of investing in an all-bond portfolio and significantly lowering expected long-term investment returns in exchange for protecting the Plan's current funded status.
- A measure of the Plan's non-diversifiable investment risk.

Investors expect to be compensated for assuming risk when they make an investment. The risk premium of an investment is the return an asset is expected to generate in excess of the risk-free rate of return. The more risk assumed by the investor, the greater the return they expect to achieve in exchange for accepting that risk.

For plans whose assumed long-term rate of return on plan assets is greater than the municipal bond yield used for the LDROM calculation, the expected cost to the plan sponsor of funding the plan will be lower because of the greater level of investment risk accepted. This in turn leads to greater volatility in the plan's funded status because the actual return on plan investments is expected to vary considerably year-to-year. Conversely, if a plan has taken steps to reduce asset/liability mismatch risk, the expected cost of contributions to fund the plan will be greater (if the plan is not already fully funded) and the volatility in the plan's funded status will be reduced.

Selecting the right level of investment risk (and associated asset/liability mismatch risk) for a plan requires complex analysis that goes beyond the scope of these basic disclosures. Included in any such analysis must be an evaluation of the plan sponsor's funding policy.

Risk Considerations in Assessing a Funding Policy

When assessing a plan's funding policy, two primary considerations are:

- Whether the contributions are determined using reasonable and appropriate actuarial cost, amortization, and asset valuation methods (i.e., is the contribution an Actuarially Determined Contribution (ADC)), and
- The projected period until any Unfunded Actuarial Accrued Liability (UAAL) is fully amortized.

[4] Weighted average by liabilities on the valuation date.

Some examples of changes from year to year that will shorten or lengthen the period until the UAAL is fully amortized include:

%

Factors that Shorten the Amortization Period	Factors that Lengthen the Amortization Period
Contributing more than the ADC	Contributing less than the ADC
Investment and demographic gains	Investment and demographic losses
Increasing interest rates	Decreasing interest rates
Shorter life expectancies	Longer life expectancies
Reducing or eliminating future benefit accruals	Increasing benefit accruals (past and/or future)

Historical Plan Risk and Maturity Measures

While historical plan experience is no guaranteed predictor of the future, it can be informative in assessing the degree of risk and variability in the annual valuation results year-to-year, and in understanding how certain factors influence future outcomes.

There are several plan maturity measures that can be significant to understanding the risks associated with the plan and how they change over time. 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, 2021	July 1, 2022	July 1, 2023
Inactive AAL Percent of Total AAL	67.3%	68.9%	69.2%
Assets (MVA) to Payroll	6.2	6.9	8.3
Liabilities to Payroll	20.6	19.5	19.4
Benefit Payments to Contributions	0.9	0.9	0.5

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 8.3 indicates that a 1% asset gain/loss is about 8.3% 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 19.4 indicates that a 1% change in liability is about 19.4% of the annual payroll.

As the plan approaches a 100% funded level, the AVR will converge to the LVR.

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, some of the plans are closed to new entrants, and thus, the payroll figure used in these metrics may not align with revenue. Each of these measures is 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. When risks are identified and discussed early, Plan Sponsors may have more options available to them to address those risks. As plans mature, however, certain tools become less effective for addressing potential future funding shortfalls.

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 V. Solvency Tests for Premium Tax and COLA

Premium Tax Eligibility

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 MPOB. The MPOB allocates funds from the Municipal Pensions Security Fund to each eligible municipality's police and fire fund 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 fund 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 employees and retirees participate in the municipality's pension fund or the West Virginia state MPFRS).

West Virginia Code §8-22-19 requires a municipality to deposit into the pension plan 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.

Supplemental Benefit (COLA) 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 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. The related solvency test is discussed below.

Solvency Tests

There are two solvency tests. The first solvency test is used to determine whether the State premium tax may be allocated to the pension plan for the fiscal year. West Virginia Code §8-22-20 has been historically interpreted to require plans that use the Alternative funding policy to be projected to be solvent in the next 15 years in order to receive the State premium tax allocation. Plans that use the Standard, Optional, Optional II, or Conservation funding policies are expected to be solvent after 15 years as long as the municipality is contributing the entire contribution calculated under the funding policy each year. If a plan is not projected to be solvent in the next 15 years, the municipality or employees must make additional contributions in the current fiscal year in order to receive the State premium tax allocation.

The second test is used to determine whether the COLA is payable under West Virginia Code §8-22-26a, which requires the actuary to certify whether the minimum funding for actuarial soundness will be preserved after the COLA is granted for the year. The test used to determine if the minimum funding for actuarial soundness will be preserved is a 15-year projection on a closed group basis. For the July 1, 2023 valuation, the 15-year period would end on June 30, 2038. If the assets are greater than $0 for the first 15 years of the projection, the COLA must be granted. **Please note that the Alternative funding policy is not consistent with generally accepted actuarial principles for funding and continued use of this policy may reduce future solvency levels, even if the current projections do not forecast insolvency.**

Plans Impacted by Solvency Tests

No plans are required to make an additional contribution to meet the solvency test for receiving the State premium tax or for providing a COLA.

Section VI. Funding Policy Choices

Background

For plans using the Alternative funding policy, West Virginia Code §8-22-20 requires the actuarial valuation report to provide an evaluation of the plan and to assess advantages of switching to other funding policies. Plans using the Conservation funding policy also have the ability to switch to other funding policies. The other funding policies available to plans using the Alternative or Conservation funding policies are the Optional and Optional II funding policies. The Optional funding policy is defined in West Virginia Code §8-22-20(e)(1) and is available for plan years beginning after January 1, 2010. The Optional II funding policy is defined in West Virginia Code §8-22-20(g)(2) and is effective for plan years beginning on or after July 1, 2023.

The Alternative or Conservation funding policies do not adhere to actuarial principles generally considered necessary to be classified as a reasonable funding method. One of the primary goals of a reasonable funding policy is to contribute annually to the plan the cost of the additional benefits earned by the employees for that year (i.e., the normal cost) plus a level dollar or level percentage of pay amortization of the unfunded accrued liability. The Optional and Optional II funding policies achieve this goal. To help each municipality understand the impact of switching, we calculated the projected contributions, liabilities, and assets over a 40-year period under two different scenarios in the individual actuarial valuation reports. The first scenario assumes the municipality switches to either the Optional or Optional II funding policy in the next valuation year. The second scenario assumes the municipality switches to either the Optional or Optional II funding policy in the year that the contribution for that funding policy is projected to be the same or less than the contribution under the Alternative or Conservation funding policy.

Plans using the Standard funding policy are allowed under West Virginia Code §8-22-20 to switch to the Optional funding policy. Plans that switch from the Standard funding policy to the Optional funding policy continue to amortize the unfunded liability over the same timeframe. However, upon switching, the municipality must close their plan to new hires. The only difference between the Standard funding policy and the Optional from Standard funding policy is that the Optional from Standard funding policy does not allow members hired after the switch to enter the plan.

Optional and Optional II Funding Policy

If the municipality were to choose to switch to the Optional or Optional II funding policy in lieu of the Alternative or Conservation funding policy, then the following conditions would apply to the plan:

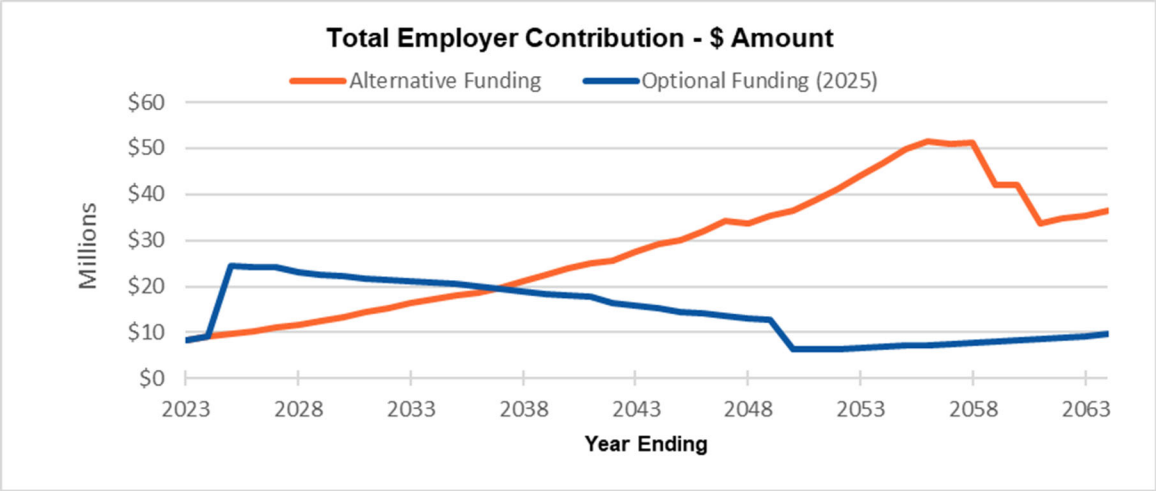
- The required total contribution to the plan, including the premium tax allocation and employee contributions, would equal the normal cost plus a layered amortization of the unfunded accrued liability.
- The initial unfunded liability upon switching to the policy must be amortized over a period of no more than:
    - **Optional**: 40 years beginning January 1, 2010 (25.5 years remaining for contributions developed for the fiscal year ending June 30, 2025).
    - **Optional II**: 40 years beginning July 1, 2023 (39.0 years remaining for contributions developed for the fiscal year ending June 30, 2025).
    - For more information about these funding policies please see *West Virginia Funding Policies* within *Section XI. Actuarial Methods and Assumptions*.
- For plans currently using the Alternative funding policy, the pension and relief fund would close to newly-hired police officers or firefighters after the date of the change and new hires would join the statewide plan - Municipal Police Officers and Firefighters Retirement System (MPFRS).
    - Employer contributions for MPFRS currently equal 8.5% of pay
    - Employee contributions for MPFRS currently equal 8.5% of pay
    - The West Virginia Consolidated Public Retirement Board can change the employer contribution and employee contribution rates to a percentage of pay between 8.5% and 10.5% as needed to maintain an actuarially sound pension plan.

Plans that switch to the Optional or Optional II funding policies from the Alternative or Conservation funding policies will likely experience a significant increase in their pension contributions immediately.

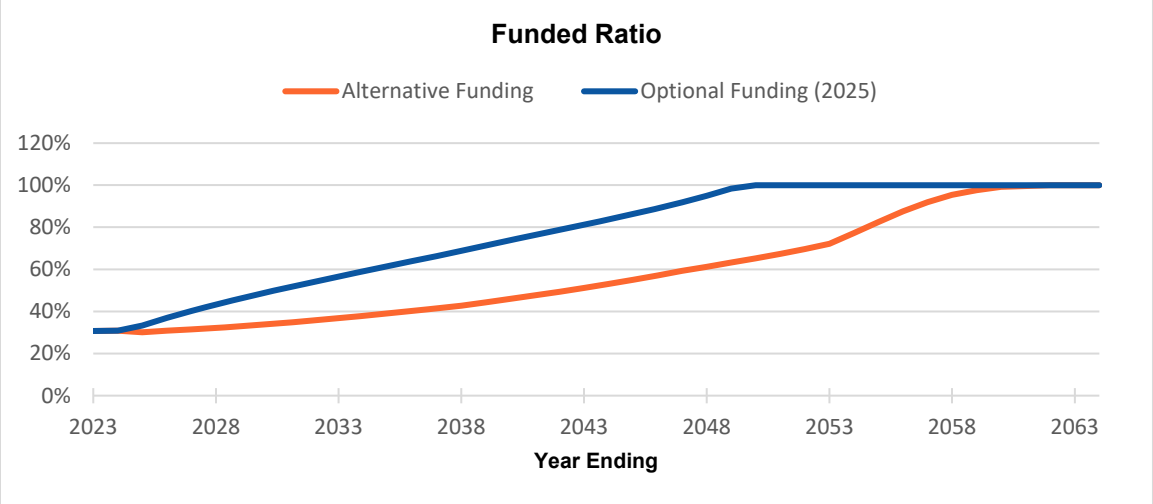
Switch to Optional

Alternative Plans Switch to Optional

The following graph shows the projected contributions for the next 40 years under the Alternative funding policy and under the Optional funding policy if every municipality using the Alternative funding policy switched to the Optional funding policy for the FY 2025 contribution. These projections were performed on an open-group basis since plans using the Alternative funding policy are open to new entrants. Thus, the blue Optional Funding line below also includes the 8.5% of pay for new hires that enter MPFRS.



The following graph shows the projected funded status for the next 40 years under the Alternative funding policy and under the Optional funding policy if every municipality using the Alternative funding policy switched to the Optional funding policy for the FY 2025 contribution.

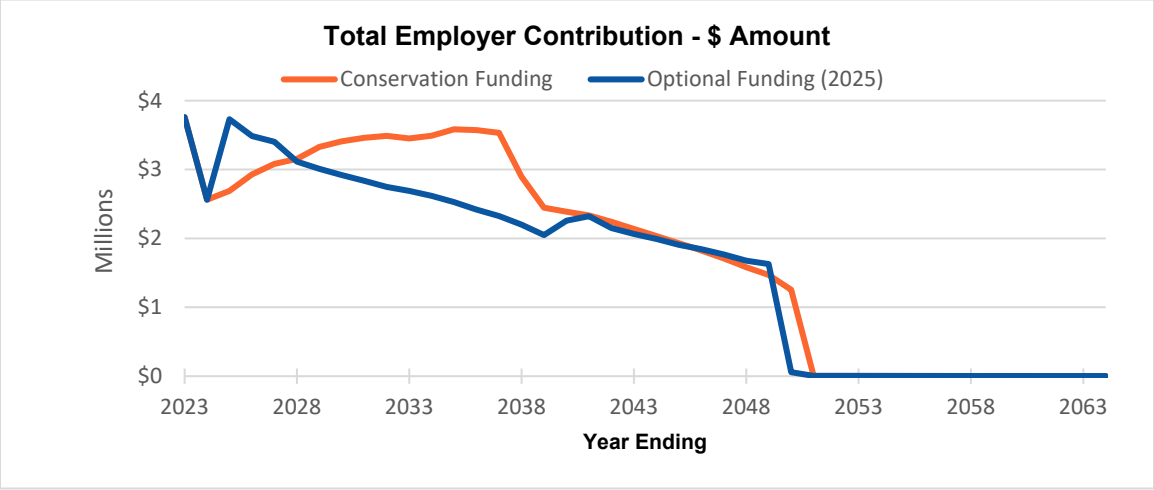


The first graph shows a significant increase in the contributions initially under the Optional funding policy, but a gradually decreasing contribution pattern over the 40 years. The second graph shows an immediate increase in the funded status of the plans as a result of the increased contributions, with a quicker attainment of 100% funded. Making larger contributions

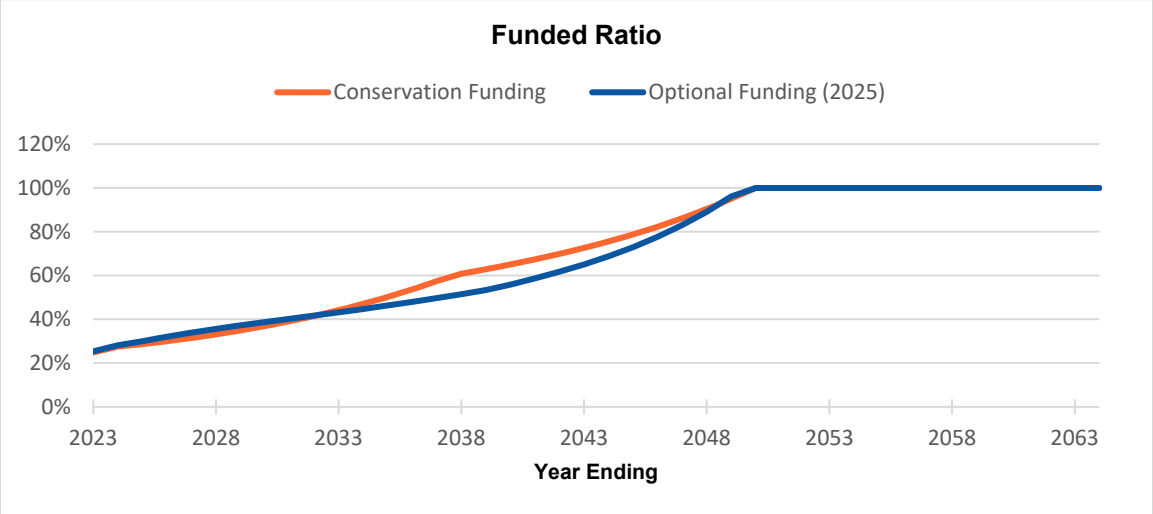
to the plans in the near term (such as under the Optional funding policy in comparison to the Alternative funding policy) will likely reduce total contributions over time as the plans could earn more investment income which would reduce future contribution requirements.

Conservation Plans Switch to Optional

The following graph shows the projected contributions for the next 40 years under the Conservation funding policy and under the Optional funding policy if every municipality using the Conservation funding policy switched to the Optional funding policy for the FY 2025 contribution. These projections were performed on a closed-group basis since plans using the Conservation funding policy are closed to new entrants. Thus, the lines below do not include any contributions to MPFRS.



The following graph shows the projected funded status for the next 40 years under the Conservation funding policy and under the Optional funding policy if every municipality using the Conservation funding policy switched to the Optional funding policy for the FY 2025 contribution.



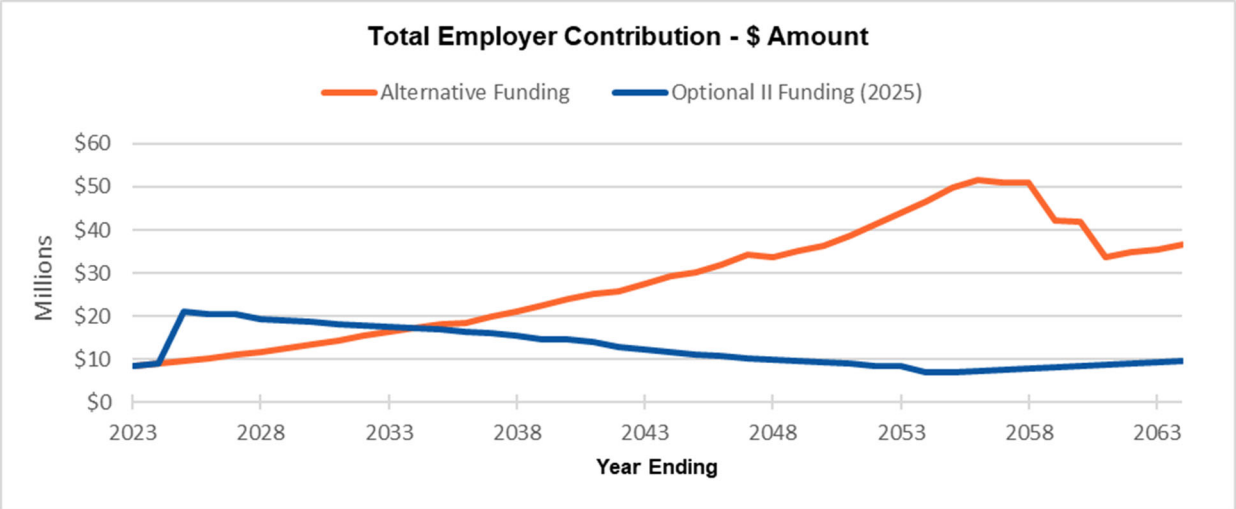
The first graph shows a significant increase in the contributions initially under the Optional funding policy, but a gradually decreasing contribution pattern for several years. The second

graph shows a slight increase in the funded status of the plans as a result of the increased contributions, with a similar attainment of 100% funded. Making larger contributions to the plans in the near term (such as under the Optional funding policy in comparison to the Conservation funding policy) will likely reduce total contributions over time as the plans could earn more investment income which would reduce future contribution requirements.

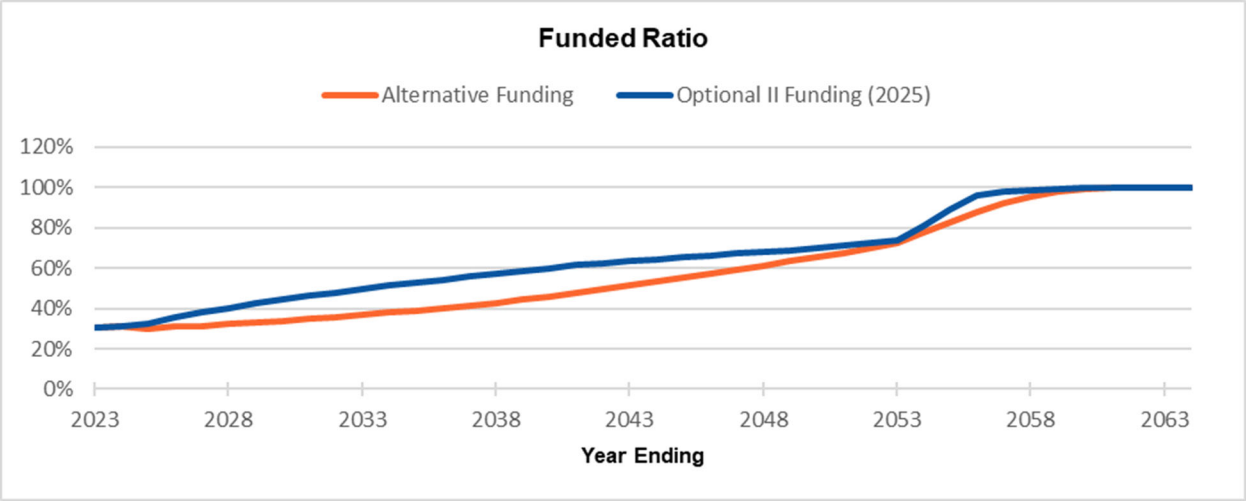
Switch to Optional II

Alternative Plans Switch to Optional II

The following graph shows the projected contributions for the next 40 years under the Alternative funding policy and under the Optional II funding policy if every municipality using the Alternative funding policy switched to the Optional II funding policy for the FY 2025 contribution. These projections were performed on an open-group basis since plans using the Alternative funding policy are open to new entrants. Thus, the blue Optional II Funding line below also includes the 8.5% of pay for new hires that enter MPFRS.



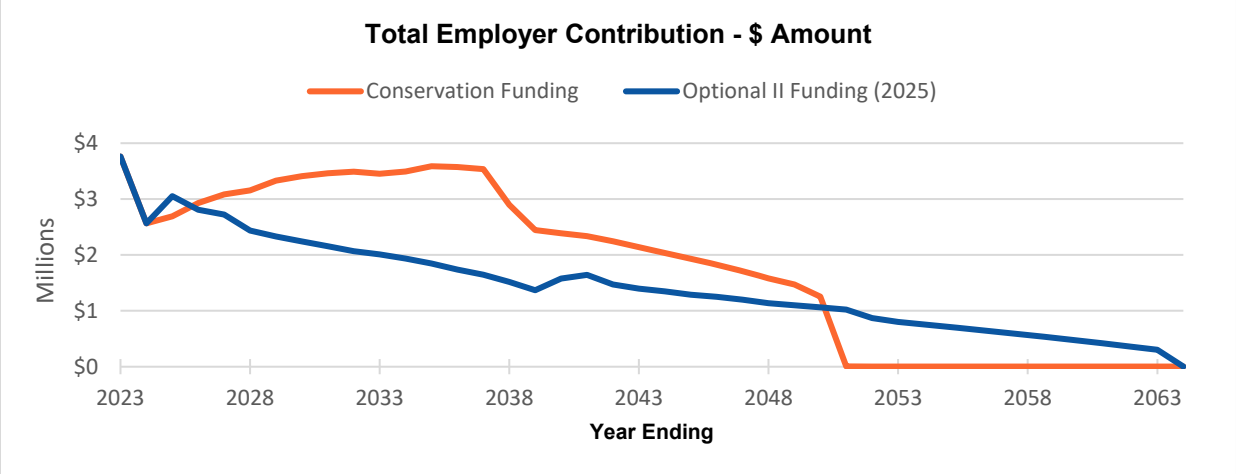
The following graph shows the projected funded status for the next 40 years under the Alternative funding policy and under the Optional II funding policy if every municipality using the Alternative funding policy switched to the Optional II funding policy for the FY 2025 contribution.



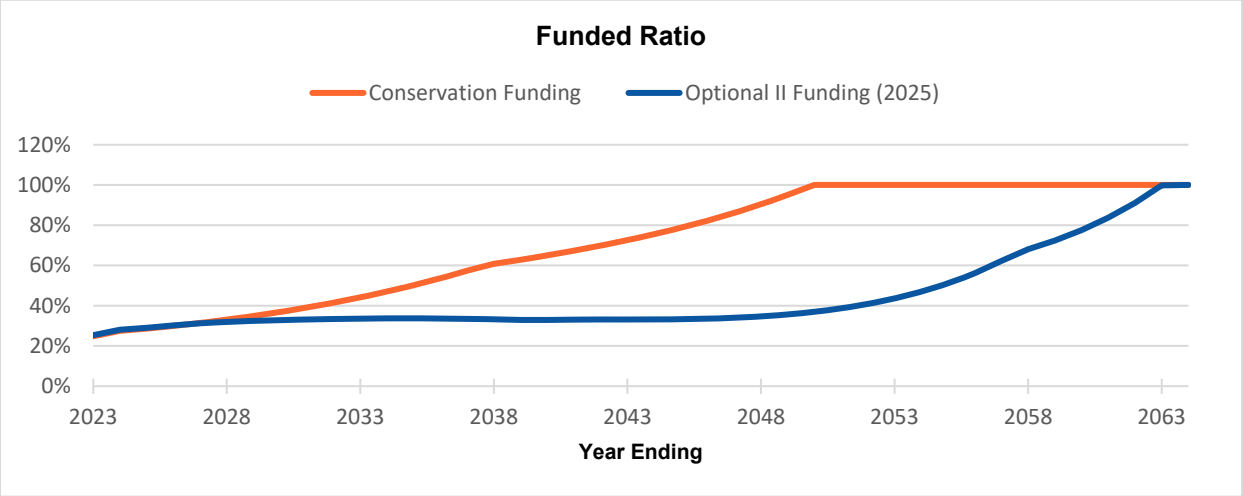
Similar to the switch to the Optional funding policy, the first graph shows a significant (but not as significant as the switch to Optional) increase in the contributions initially under the Optional II funding policy, but a gradually decreasing contribution pattern over the 40 years. The initial contributions are lower in comparison to the Optional funding policy contributions since the initial unfunded liabilities are amortized over a longer period. The second graph shows a slight increase in the funded status of the plans as a result of the increased contributions, with a quicker attainment of 100% funded. Making larger contributions to the plans in the near term (such as under the Optional II funding policy in comparison to the Alternative funding policy) will likely reduce total contributions over time as the plans could earn more investment income which would reduce future contribution requirements.

Conservation Plans Switch to Optional II

The following graph shows the projected contributions for the next 40 years under the Conservation funding policy and under the Optional II funding policy if every municipality using the Conservation funding policy switched to the Optional II funding policy for the FY 2025 contribution. These projections were performed on a closed-group basis since plans using the Conservation funding policy are closed to new entrants. Thus, the lines below do not include any contributions to MPFRS.



The following graph shows the projected funded status for the next 40 years under the Conservation funding policy and under the Optional II funding policy if every municipality using the Conservation funding policy switched to the Optional II funding policy for the FY 2025 contribution.



The initial contributions are lower in comparison to the Optional funding policy contributions since the initial unfunded liabilities are amortized over a longer period under the Optional II funding policy. The second graph shows that smaller contributions under Optional II in comparison to Conservation result in slower attainment of 100% funded.

Section VII. Deferred Retirement Option Plans (DROPs)

Background

West Virginia Code Section §8-22-25a(e) requires the MPOB to (1) annually report to the Legislature's Joint Committee on Pensions and Retirement the status of any Deferred Retirement Option Programs (DROPs) submitted to the MPOB for approval (i.e. prospective DROP analysis) and to (2) provide a report once every five years to the Legislature's Joint Committee on Pensions and Retirement on the status of each active DROP (i.e. retrospective DROP analysis).

Prospective DROP Analysis

Two prospective DROP studies were performed during this valuation cycle for the Firemen's Pension and Relief Fund for the City of South Charleston and for the Policemen's Pension and Relief Fund for the City of Vienna. The DROP for South Charleston Fire and the DROP for Vienna Police were adopted effective June 13, 2024, and March 21, 2024, respectively.

The analyses examined whether adding the proposed DROP as designed would improve or worsen the long-term financial status of the funds. Using the most recently available valuation census data, which was as of July 1, 2022, and the assumptions as detailed in the DROP study, the estimated impact of adding the DROPs as of the July 1, 2022 valuation date are as follows:

Cost/(Savings) DROP Design (Gain)/Loss as of July 1, 2022	South Charleston Fire	Vienna Police
(a) Payment Trade-off	(732,353)	(31,501)
(b) Delay in New Hire Total Normal Cost	(1,429,181)	N/A
(c) Impact on Member Contributions Due to DROP	(235,961)	33,186
(d) Premium Tax Allocation	273,710	57,816
(e) City's Normal Cost Contribution	N/A	(257,588)
Total DROP Impact ((a) + (b) + (c) + (d) + (e))	**(2,123,785)**	**(198,087)**

Often DROP cost studies conducted by actuaries focus on the financial impact that the DROP would have on the *employer* by measuring the estimated change to the plan's liability and Actuarially Determined Contribution (ADC). However, WV Code §8-22-25a specifies that:

> *The board shall seek to approve only those DROP plans which, in the best judgement of the actuary, are designed to have no negative impact on the member's pension and relief fund.*

We have two observations about this sentence. First, the language focuses on the impact on the *fund*, not the employer. Second, the Code does not define or provide guidance as to what constitutes a "negative impact", and thus the terminology is subject to interpretation. We have provided two options for interpreting "negative impact." These options for valuing the DROP were presented to the Board at the September 17, 2020 meeting and our letter dated September 3, 2020 provides details on the options.

The analyses of the South Charleston Fire and Vienna Police DROPs using these options are presented in the table below:

Impact of Proposed DROP Design as of July 1, 2022	South Charleston Fire	Vienna Police
1. Liability Impact to Fund (a) + (b)	(2,161,534)	(31,501)
2. Contribution Impact to City (a) + (b) + (c) + (d)	(2,123,785)	59,501
3. Net "Plan" Impact Reflecting City NC Contributions for DROP Participants (a) + (b) + (c) + (d) + (e)	(2,123,785)	(198,087)

The individual cost components used for this analysis are described below:

(a) Payment Trade-off: One of two trade-offs will occur when a member decides whether to elect a DROP:

(1) The member will elect either (1) a lower benefit sooner which would result in a longer payment period, some of which may be paid in the DROP lump sum or (2) a higher benefit later which would result in a shorter payment period.

(2) Immediately upon attaining retirement eligibility, the member will elect to either (1) commence payments or (2) enter DROP.

We value the first possible trade-off for members (or, perhaps more appropriately, portions of members) who are expected to work past their normal retirement date and the second trade-off for members (similarly, portions of members) who are expected to retire on their normal retirement date if the DROP did not exist.

For members not assumed to retire immediately upon first eligibility based on the plan's actuarial assumptions (trade-off (1) above), the trade-off is whether a larger benefit paid later for a shorter period of time is more valuable than a smaller benefit paid earlier for a longer period of time. Whether the trade-off results in a savings or a cost varies by individual, demonstrating that the expected timing of when a member would retire without the DROP has a significant impact on whether the DROP creates a savings or a cost.

The discount rate and salary scale also have a significant impact on whether the payment trade-off results in a savings or cost. A lower discount rate and/or a higher salary scale results in the extra accruals being more valuable than the extra payments to the member compared to using a higher discount rate and/or lower salary scale.

For the members expected to retire at the DROP entry date had no DROP been available to encourage them to keep working (trade-off (2) above), the DROP is expected to create a gain. For South Charleston Fire, the gain is the result of the DROP granting no interest credits, while the plan's investment return assumption is 4.25%. Thus, the DROP account would create an expected annual return of 4.25% that would not have existed

had the member retired and received payments directly, rather than the payments accumulating in the trust. For Vienna Police, the gain is the result of investment return leverage. The proposed DROP grants interest credits on benefit payment deposits up to 3.5%, while the plan's investment return assumption is 6.5%. Thus, the DROP would create an expected excess return of 3.0% that would not have existed had the member retired and received payments directly, rather than the payments accumulating in the trust.

If the plan has high retirement rates at the age members are first eligible to retire, the second trade-off will occur more often, resulting in a gain. If retirement rates are low without a DROP option, there could be losses.

South Charleston Fire has fairly high retirement rates at age first eligible, a low discount rate and a fairly high salary scale at longer terms of service . Therefore, the net trade-off resulted in an expected savings to the Plan.

Vienna Police has fairly high retirement rates at age first eligible, a high discount rate and fairly high salary increases at longer terms of service. Therefore, the net trade-off resulted in an expected savings to the Plan.

(b) Delay in New Hire Total Normal Cost: If a member works longer because of DROP, the hiring of a new employee is theoretically delayed. In an open plan, such as South Charleston Fire, such a scenario would result in normal cost savings associated with the delay in hiring a new employee. Although the normal cost does not directly impact the contribution developed using the Alternative Funding Policy, it does impact the liability. For Vienna Police, given that the plan is closed, all new hires are required to join the State plan, which is the plan where such savings would be expected to occur. Therefore, there is no impact of the DROP on Vienna Police for the delay in hiring new employees.

(c) Impact on Member Contributions Due to DROP: For South Charleston Fire, this component includes, from the date the member would have worked had there not been a DROP to the DROP exit date, the value of employee contributions associated with the generally higher payroll for DROP members than new hires. Such a provision will always result in a gain to the plan (and savings to the City). Since DROP members in Vienna Police are not required to make employee contributions while in DROP, this provision results in a cost to the City. The cost is equal to the value of contributions not going into the Fund for the time between DROP entry and the date the member would have worked had there not been a DROP.

(d) Premium Tax Allocation: This is the expected loss of premium tax money allocated to the plan for the period between the date a member would be expected to retire if there were no DROP and the date that the member actually retires with the DROP (i.e. the DROP exit date). A loss may occur during this period because, if the member were not in the DROP, the member may have been expected to retire before the end of the DROP period and, as a result, a new member would have been

expected to be hired. As such, the newly hired active employee and the retired member both would be included in the premium tax allocation headcounts during this period in the no-DROP scenario compared to the inclusion of only an active employee participating in the DROP in the DROP scenario. The loss generated by this cost impact component is due to the absence of a retiree being included in the premium tax allocation headcounts during this period (approximately $3,300 per year, with expected increases). While the DROP increases the premium tax allocation available to the other plans covered by the MPOB, it decreases the premium tax allocation available to these two funds.

(e) City's Normal Cost Contribution: West Virginia Code Section §8-22-25a requires the City to pay the normal cost rate on the payroll for members in DROP[5]. Since the value of benefits is already considered in the Payment Trade-off component and the funding method assumes that normal cost ends at DROP entry[6], this is an immediate benefit to the Vienna Police Fund (even though it is an added cost to the City). Although this requirement increases contributions to the Fund in the short-term, the larger employer contribution in the earlier years will reduce the contributions required in the later years due to the mechanics of the funding policy. This component does not apply to South Charleston Fire given that it uses the Alternative funding policy.

Retrospective DROP Analysis

This valuation cycle was not on the five-year interval for performing retrospective DROP studies and, as such, no retrospective studies were performed.

[5] Based on average normal cost rate of other active members since members do not otherwise have any normal cost while in DROP under the Optional funding policy.
[6] GASB requires normal cost to end at DROP entry. We have used this same methodology for developing the contribution under the Optional funding policy.

Section VIII. Conclusions and Recommendations

Conclusions

The following are some key highlights of the results of the July 1, 2023 valuations:

- The AVA funded ratio improved from 37% as of July 1, 2022 to 43% as of July 1, 2023. The funded ratios for plans using the Optional from Standard funding policy are generally the highest, followed by the Standard funding policy, Optional from Alternative funding policy, Optional from Conservation funding policy, Alternative funding policy, and the Conservation funding policy. The plans using the Optional II funding policy just switched to the policy this valuation year and have the lowest funded ratios.
- The unfunded liability decreased by approximately $67 million from $948 million to $880 million, a decrease of 7.1%. The decrease in unfunded liability was largely attributable to the reduction in liabilities for twelve plans that experienced an increase in their discount rate as well the large contributions made to the Wheeling Fire and Wheeling Police plans from the issuance of pension obligation bonds.
- Total required contributions including estimated employee contributions increased approximately $5.0 million from $68.9 million to $73.9 million, an increase of 7.2%.
- Net municipality required contributions increased $1.7 million from $43.5 million to $45.1 million, an increase of 3.9%.
- The State premium tax allocation for funds that are less than 100% funded and haven't issued POBs increased by approximately $3.1 million from $19.2 million to $22.3 million, an increase of 16.4%.
- Liabilities increased 2.5%. The net decrease in liability ($44.8 million) due to the changes in discount rates were completely offset by the increases in liability attributable to (1) a year of benefit accruals and (2) the liability experience loss of approximately 3.7%. The liability experience loss was largely attributable to salary increases and COLAs that were greater than anticipated by the actuarial assumptions.
- Assumption changes (excluding discount rate changes) pursuant to the implementation of the assumptions recommended in the 2023 Experience Study Report decreased liabilities by approximately $6.0 million.
- The market value of assets (MVA) increased by 24.6%, while the actuarial value of assets (AVA) increased 18.7%. The weighted average returns on MVA and AVA were 10.3% and 5.6%, respectively. These returns exceeded or were approximately the same as the beginning of year liability-weighted average discount rate of 5.7%.
- The MVA return for the fiscal year ending June 30, 2023 for each plan ranged from 3.3% to 21.2%.
- The gross normal cost decreased 6.5% which is a result of (1) discount rate increases for 12 of the 14 plans that had discount rate changes and (2) the declining normal cost (in dollars) for some of the plans closed to new entrants.
- The number of active employees covered by all the plans decreased 3.6% from 1,183 to 1,141.
- The plans using the Standard, Optional, and Optional II funding policies are expected to have a more level future contribution pattern than plans using the Alternative and Conservation funding policies, resulting in more sustainable plans. Municipalities using the Alternative and Conservation funding policies will most likely experience contribution requirements that are a larger percentage of their annual revenues each year, which could result in an unsustainable future funding requirements.

Recommendations

The following are the actuaries' recommendations to the MPOB for changes to the pension plans.

1. Review the compensation definition to make the plan easier to administer without materially changing the benefits.
2. Review opportunities to help plans under the alternative method to adopt an actuarial sound funding policy.

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, 2022	July 1, 2023
1. Actives		
a. Number	1,183	1,141
b. Average Age	39.8	39.8
c. Average Service	13.0	13.2
d. Average Salary	$ 68,239	$ 73,314
2. Retirees		
a. Number	1,483	1,491
b. Average Age	66.6	66.7
c. Total Annual Benefits	$ 59,677,133	$ 63,088,565
3. Survivors		
a. Number	513	519
b. Average Age	74.2	73.7
c. Total Annual Benefits	$ 9,016,939	$ 9,773,008
4. Disableds		
a. Number	259	252
b. Average Age	63.1	63.1
c. Total Annual Benefits	$ 6,933,658	$ 7,200,710
5. Deferred Vesteds		
a. Number	42	41
b. Average Age	47.5	47.7
c. Total Annual Benefits	$ 1,546,714	$ 1,612,555
6. Members Owed Refunds		
a. Number	78	78
b. Average Age	34.7	34.2
c. Total Refunds Owed	$ 1,189,273	$ 1,011,503

Active Age/Service Distribution Including Compensation

Shown below is the age and service distribution for all active members who currently participate in a local pension plan. The compensation shown is the average projected pay for the plan year beginning July 1, 2023.

Credited Service as of July 1, 2023

	0-4	5-9	10-14	15-19	20-24	25-29	30 & Up	Total
Under 25	74	3	-	-	-	-	-	**77**
	54,047	53,004	-	-	-	-	-	**54,007**
25 - 29	74	40	-	-	-	-	-	**114**
	60,916	62,730	-	-	-	-	-	**61,552**
30 - 34	52	75	33	-	-	-	-	**160**
	58,916	68,583	71,975	-	-	-	-	**66,141**
35 - 39	30	40	76	54	1	-	-	**201**
	65,772	64,836	70,980	76,402	85,409	-	-	**70,508**
40 - 44	2	22	54	122	25	1	-	**226**
	55,519	64,019	72,822	80,115	84,794	66,264	-	**77,044**
45 - 49	-	3	28	75	87	22	-	**215**
	-	70,664	73,481	80,393	87,497	97,882	-	**84,021**
50 - 54	-	1	7	42	55	23	-	**128**
	-	68,729	71,124	78,595	81,902	89,584	-	**81,505**
55 - 59	1	-	-	2	7	-	4	**14**
	97,965	-	-	76,982	91,313	-	107,584	**94,390**
60 - 64	-	1	-	1	2	-	2	**6**
	-	70,117	-	57,507	84,606	-	96,631	**81,683**
65 & Up	-	-	-	-	-	-	-	**-**
	-	-	-	-	-	-	-	**-**
Totals	**233**	**185**	**198**	**296**	**177**	**46**	**6**	**1,141**
	59,026	**65,755**	**72,007**	**79,195**	**85,483**	**93,045**	**103,933**	**73,314**

Averages

Age	39.8
Service	13.2

Participant Reconciliation

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

	Actives	Retirees	DROP	Survivors	Disableds	Deferred Vesteds	Due Refund	Total
Participants as of 7/1/2022	1,183	1,471	12	513	259	42	78	3,558
New	60	-	-	-	-	-	-	60
Rehired	3	-	-	-	-	-	(3)	-
Terminated - Vested	(8)	-	-	-	-	8	-	-
Terminated - Nonvested	(16)	-	-	-	-	-	16	-
Disabled	(5)	-	-	-	6	(1)	-	-
Retired	(42)	50	-	-	-	(8)	-	-
Paid Refund	(31)	-	-	-	-	-	(13)	(44)
Payments Expired	-	-	-	(3)	-	-	-	(3)
Deceased - No Survivor	-	(28)	-	(34)	(7)	-	-	(69)
Deceased - With Survivor	(1)	(17)	-	-	(7)	-	-	(25)
New Beneficiary	-	-	-	32	-	-	-	32
New QDRO	-	-	-	11	-	-	-	11
Entered DROP	(2)	-	2	-	-	-	-	-
Exited DROP	-	2	(2)	-	-	-	-	-
Corrections	-	1	-	-	1	-	-	2
Participants as of 7/1/2023	**1,141**	**1,479**	**12**	**519**	**252**	**41**	**78**	**3,522**

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 immediately preceding the twelve-consecutive-month period used to determine benefits.

Employee Contributions
Participating employees hired before January 1, 2010: between 7.00% and 9.50% of compensation, depending on the plan.
Participating employees hired on or after January 1, 2010: 9.50% of compensation.

Employer Contributions
The municipalities contribute at least the minimum employer contribution under their respective funding policies.

Credited Service
The number of years the member has contributed to the employees' pension and relief 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% of average annual compensation for each year of service between 20 and 25 years
- 1% of average annual compensation 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 2023, indexed by state minimum wage for years after 2023) or less.

Death Benefit Eligibilty

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 dies without leaving a spouse or dependents, the excess of (a) the member's contributions with 6% per annum interest over (b) the retirement or disability benefits already received shall be refunded to the member's named beneficiary or estate.

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 death benefits payable as described in the *Death Benefit* section on the previous page. 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. Although the percentages of the member's benefit payable to other categories of surviving dependents differ from the 60% payable to the surviving spouse, the same benefit indexing methodology applies. 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 *Premium Tax and Supplemental Benefit (COLA) 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. 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 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.

Deferred Retirement Option Plan (DROP)

For municipalities with a DROP, generally members who are at least age 50 and with at least 20 years of completed service may enter DROP six months after becoming eligible for regular retirement.

An eligible member who makes the election to participate in the DROP will:

- Receive a retirement benefit based on service and average annual compensation as of the DROP participation (entry) date.
- Accumulate benefits during the DROP period in the member's DROP account equal to the monthly benefits as of the DROP entry date.
- Participate in the DROP for a period that may span from one year to five years provided that the member completes DROP by the age of 65. Members can leave before one year if they provide sixty days advance notice.
- Be required to continue making employee contributions during the DROP period. The employee contributions are not added to the DROP account.

The WV code allows for interest to be credited to the DROP account if the DROP is designed as such. Of the DROPs currently in place as of the July 1, 2023 valuation date, only Clarksburg Fire and Vienna Police credit interest on the benefits in the DROP account. For these two plans, benefits in the DROP account accumulate with interest up to 3.5%, with interest in excess of 3.5% reverting back to the general pension fund.

Special Funding Situations

There are five funds for which the sponsoring cities have approved the continued overpayment of miscalculated benefits. The five funds are:

- Huntington Fire
- Huntington Police
- Morgantown Fire
- Morgantown Police
- St. Albans Fire

For these five funds, the required contribution is calculated as the sum of (1) the contribution under the relevant funding policy as if the payments were corrected and (2) the expected overpayments for the contribution year on a pay-as-you-go basis pursuant to West Virginia Code 8-22-27a(d).

Changes in Plan Provisions Since Prior Valuation

The South Charleston Fire and Vienna Police plans both adopted a deferred retirement option program (DROP). For more information, see section *Deferred Retirement Option Program* (DROP).

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 (7.0 years remaining for contributions developed for the fiscal year ending June 30, 2025). 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, 2025 is 7.0 years for sponsors who previously used the Standard funding policy and 25.5 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 policies 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 (25.5 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, 2025 is 39 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 (39 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.

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

  Generally, contributions produced using the Standard, Optional, or Optional II funding policies satisfy the conditions of a reasonable actuarially determined contribution as defined in *Actuarial Standard of Practice (ASOP) 4: Measuring Pension Obligations and Determining Pension Plan Costs or Contributions*.

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 statuses, 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 the open group projections, each active member leaving the workforce will be replaced with a new entrant so that the total number of active members remains the same throughout the projection period. The assumption made regarding the demographic makeup of new entrants is described in the *Open Group Projection New Hire Profile* section below.
- 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.
- For projections that illustrate a change from the Alternative funding policy to either the Optional funding policy or Optional II funding policy, new hires that replace active members who, after the change in funding policy, retire, terminate, die or become disabled are assumed to enter the statewide pension plan – The Municipal Police Officers and Firefighters Retirement System (MPFRS). For the MPFRS, employer contributions are currently equal to 8.5% of pay but can range from 8.5% - 10.5% of pay. For these projections, MPFRS employer contributions are assumed to be 8.5% of pay throughout the projection period.

Open Group Projection New Hire Profile

The active population is projected to be stable throughout the open group projections meaning that active exits are replaced by new hires. The profile for new hires contains four separate records corresponding to a different age-at-hire band (under 24, 24-27, 28-31, 32 and above). Each record contains the average (for the associated age-at-hire band) date of birth, compensation, and percentage male of all actives who have two years of service or less within the 53 plans covered by the MPOB. The four records are created using compensation for the fiscal year ending on the valuation date. The beginning salary for new entrants hired after the current plan year is equal to the new entrant profile salary increased by the general wage inflation assumption of 3.50% for each year between the new entrant's assumed date of hire and the valuation date.

Premium Tax Allocation

The premium tax allocation is projected using the following methodology:

(1) 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 to the total eligible members for all municipalities remains constant throughout the projection period.

(2) 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.

(3) 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.

(4) 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 $16,117,280, and an Expired Premium Tax Allocation of $445,012.

(5) For the plan year ending June 30, 2023, all Pension and Relief Funds reported a total of 1,735.50 eligible active members and 2,238.64 eligible retired members.

(6) The total premium tax allocation is assumed to increase by 2.50% in calendar years ending on and after 2025.

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 2023 covering the period July 1, 2017 through July 1, 2020. 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[7]				
Funded Ratio as of Valuation Date[8]	Equity Exposure[9]	Projected Funded Ratio after 15 Years[8]	Discount Rate – Standard, Optional, and Optional II 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, Optional, and Optional II 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%

[7] West Virginia Investment Management Board has been abbreviated IMB.
[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

2.45% 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) Employee[11] Mortality Table[12] with the 2010 base rates projected generationally from 2010 using the SOA Mortality Improvement **Scale MP-2021**.

Post Decrement

For 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-2021.**

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-2021.**

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

For Plans with Open DROPs - Fire

For fire plans with open DROPs, the retirement rates below reflect retirement at DROP entry:

	Years of Service										
Age	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
50	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%
51	73%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%
52	71%	42%	31%	31%	31%	31%	31%	31%	31%	31%	31%
53	64%	32%	24%	27%	27%	27%	27%	27%	27%	27%	27%
54	62%	31%	24%	26%	21%	21%	21%	21%	21%	21%	21%
55	89%	88%	90%	95%	100%	100%	100%	100%	100%	100%	100%
56	87%	67%	61%	82%	100%	100%	100%	100%	100%	100%	100%
57	80%	36%	45%	70%	100%	100%	100%	100%	100%	100%	100%
58	80%	26%	23%	70%	100%	100%	100%	100%	100%	100%	100%
59	66%	26%	15%	26%	100%	100%	100%	100%	100%	100%	100%
60	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

For fire plans with open DROPs, the percentage of members electing DROP at each retirement age is presented below:

	Years of Service										
Age	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
50	73%	73%	73%	73%	73%	73%	73%	73%	73%	73%	73%
51	81%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%
52	80%	18%	31%	31%	31%	31%	31%	31%	31%	31%	31%
53	84%	29%	45%	45%	45%	45%	45%	45%	45%	45%	45%
54	84%	31%	48%	48%	65%	65%	65%	65%	65%	65%	65%
55	89%	78%	87%	87%	93%	100%	100%	100%	100%	100%	100%
56	89%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
57	93%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
58	93%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
59	91%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
60	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

For Plans with Open DROPs - Police

For police plans with open DROPs, the retirement rates below reflect retirement at DROP entry:

	Years of Service										
Age	20	21	22	23	24	25	26	27	28	29	30
50	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%
51	82%	62%	62%	62%	62%	62%	62%	62%	62%	62%	62%
52	82%	62%	54%	54%	54%	54%	54%	54%	54%	54%	54%
53	82%	61%	54%	69%	69%	69%	69%	69%	69%	69%	69%
54	81%	61%	51%	67%	76%	76%	76%	76%	76%	76%	76%
55	86%	74%	68%	84%	100%	100%	100%	100%	100%	100%	100%
56	86%	71%	62%	80%	100%	100%	100%	100%	100%	100%	100%
57	85%	70%	62%	80%	100%	100%	100%	100%	100%	100%	100%
58	85%	67%	57%	80%	100%	100%	100%	100%	100%	100%	100%
59	80%	67%	50%	67%	100%	100%	100%	100%	100%	100%	100%
60	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

For police plans with open DROPs, the percentage of members electing DROP at each retirement age is presented below:

	Years of Service										
Age	20	21	22	23	24	25	26	27	28	29	30
50	69%	69%	69%	69%	69%	69%	69%	69%	69%	69%	69%
51	80%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%
52	81%	14%	25%	25%	25%	25%	25%	25%	25%	25%	25%
53	81%	12%	22%	22%	22%	22%	22%	22%	22%	22%	22%
54	80%	10%	19%	19%	32%	32%	32%	32%	32%	32%	32%
55	77%	14%	24%	24%	38%	100%	100%	100%	100%	100%	100%
56	77%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
57	76%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
58	76%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
59	75%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
60	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

For Plans without Open DROPs

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 for plans without open DROPs:

Age	Fire	Police
50	55%	70%
51-52	35%	40%
53-54	25%	40%
55-56	25%	50%
57-59	15%	50%
60	100%	100%

For All Plans

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	20%	25%
25	10%	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	0.25%
40	0.57%
50	0.89%

[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.

Valuation of Members with DROP

For municipalities with open DROPs, the DROP is available to active members who are retirement eligible. Members currently in DROP as of the valuation date are assumed to exit DROP upon the earlier of attaining 5 years of DROP participation and attaining age 60. If a member is at least age 60 on the valuation date but has fewer than 5 years of DROP service, the member is assumed to exit DROP in one year. Upon DROP exit, a member is assumed to receive the DROP account balance as a lump sum and start receiving annuity payments. For active members who are not currently in DROP as of the valuation date, the same methodology is applied.

DROP members are considered retired members for purposes of supplemental benefits (COLA).

DROP members are considered active members for purposes of the premium tax allocation.

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.

Data Corrections

We understand that the MPOB conducts compliance audits throughout the year. From time to time, the MPOB identifies potential calculation errors and notifies us of these errors as they discover them. We do not reflect the corrections of these errors until the MPOB conducts a thorough review of the error and directs a correction method to the plan. We use the data that was submitted to us by the plans' representatives. We do not audit the data but we do conduct several reasonableness tests and ask questions accordingly. We do not make any adjustments for identified errors until instructed to do so by the MPOB. If a correction is made subsequent to the issuance of the actuarial valuations, the corrections are reflected in the following year's valuation.

Changes in Methods/Assumptions Since Prior Valuation

Pursuant to the *2023 Experience Study Report*, the WV MPOB adopted the following assumption changes:

- **COLA**: decreased rate from 2.50% to 2.45%
- **Mortality improvement projection scale**: scale updated from SOA Scale MP-2019 to SOA Scale MP-2021
- **Retirement rates**:
  - Fire: decreased rates at ages 57-59
  - Police: increased rates at ages 50 and 57-59
- **Termination rates**:
  - Fire: increased all rates below age 30
  - Police: increased rates at ages 21-24 and 27-28
- **Disability rates**: decreased all rates by 25%.

Additionally, fourteen plans had a change in their discount rate, but the method for selecting the discount rate did not change.

Furthermore, to reflect the adoption of the DROPs for South Charleston Fire and Vienna Police:

- Retirement rates were updated
- DROP election rates were added
- The assumed length of the DROP period was set

There were no changes to the actuarial methods reflected in this valuation.

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 or projections 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. Assumptions of a long-term nature are representative of average expectations (i.e., they will not be exactly realized in every year, however over an extended period are a reasonable projection of future outcomes).

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 or Experience Gain or Loss
A measure of the difference between actual 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. Such gains or losses are not actual economic gains or losses immediately incurred by a plan, as experience in future years could offset the effect of experience in a single year due to the typically long-term average nature of actuarial assumptions.

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).

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

Low-Default-Risk Obligation Measure (LDROM)
The present value of benefits accrued at the valuation date using actuarial assumptions that are generally the same as those used in determining the plan's funding liability, with the discount rate changed to reflect the expected return on a low-default-risk investment portfolio. For plans using a funding method that does not quantify gains and losses annually (but rather spreads them over future years through the changes in the normal cost), the actuarial cost method is also changed to reflect a different pattern of allocating costs to historical periods than is used to determine the ADC.

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).