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

Consolidated Actuarial Valuation Report
for the Year Beginning July 1, 2021

Municipal Pensions Oversight Board

Bolton

Submitted by:

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July 31, 2023

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, 2021

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. **This finalized report, which reflects the actual assets for Dunbar Fire, replaces our preliminary report dated November 2, 2022, which reflected estimated assets for Dunbar Fire.**

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 description of the requirements to receive the premium tax and COLA as well as the plans impacted by the solvency tests. Section V provides a description of the analysis provided in the individual reports regarding changes in funding policies. Sections VI provides information regarding plans that adopted a Deferred Retirement Option Plan (DROP). Section VII provides some conclusions and recommendations. Sections VIII through X provide a summary of the census data, plan provisions, actuarial methods, and assumptions. Section XI 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, 2023, 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, 2023
- The plan's eligibility to provide supplemental benefits for the plan year beginning July 1, 2023
- For plans that can change their funding policy, current and projected contribution requirements and funded status 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.

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

Respectfully submitted,

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

Jordan McClane, FSA, EA, FCA, MAAA

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Section I. Executive Summary

Background

Bolton has prepared a July 1, 2021 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.

Please note that results provided for valuation dates prior to July 1, 2018 and for contributions for fiscal years prior to 2020 were prepared by the prior actuary, Gabriel Roeder Smith & Company (GRS). Bolton does not assume the responsibility for the accuracy of GRS's results shown in this report.

Further 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 2019	FYE 2020	FYE 2021	FYE 2022	FYE 2023
Employee Contributions	$ 6.2	$ 6.3	$ 6.3	$ 5.9	$ 6.1
Net City Contributions	$ 50.1	$ 52.5	$ 52.7	$ 47.1	$ 47.7
Premium Tax Allocation	$ 18.5	$ 19.6	$ 20.0	$ 19.5	$ 18.0
Total Contribution	$ 74.8	$ 78.4	$ 79.0	$ 72.6	$ 71.8

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, 2017	July 1, 2018	July 1, 2019	July 1, 2020	July 1, 2021
Accrued Liability	$ 1,514.8	$ 1,572.8	$ 1,605.6	$ 1,550.9	$ 1,545.6
Actuarial Asset Value	$ 369.9	$ 407.2	$ 444.6	$ 476.9	$ 532.0
Unfunded Accrued Liability	$ 1,144.9	$ 1,165.5	$ 1,161.0	$ 1,074.1	$ 1,013.7
Funding Percentage	24%	26%	28%	31%	34%

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

($ in millions)	FYE 2019	FYE 2020	FYE 2021	FYE 2022	FYE 2023
1. Normal Cost with Interest	$ 37.4	$ 36.7	$ 35.3	$ 30.1	$ 29.0
2. Employee Contributions	$ 6.2	$ 6.3	$ 6.3	$ 5.9	$ 6.1
3. Net Normal Cost with Interest (1. - 2.)	$ 31.2	$ 30.3	$ 29.0	$ 24.1	$ 23.0
4. Net Normal Cost as a % of Payroll[1]	41%	38%	37%	32%	30%
5. Employer Contribution plus State Premium Tax	$ 68.6	$ 72.0	$ 72.7	$ 66.3	$ 65.5
6. Unfunded Liability	$ 1,144.9	$ 1,165.5	$ 1,161.0	$ 1,074.1	$ 1,013.7
7. Net Payment Toward Unfunded Liability (5. - 3.)	37.4	41.7	43.8	42.2	42.5
8. Percent of Unfunded Liability Expected to be Paid (7. / 6.)	3.3%	3.6%	3.8%	3.9%	4.2%

The following table presents the dollar-weighted average funded status since 2012 for the 53 plans by funding policy.

Funded Ratio	Standard Policy Plans		Optional Policy Plans from Standard		Optional Policy Plans from Alternative		Alternative Policy Plans		Conservation Policy Plans	
Year	No.	Average	No.	Average	No.	Average	No.	Average	No.	Average
2021	4	77%	11	102%	15	47%	18	32%	5	17%
2020	4	71%	11	94%	15	42%	18	29%	5	14%
2019	4	68%	11	84%	15	37%	18	27%	5	12%
2018	4	68%	11	80%	15	33%	18	26%	5	12%
2017	5	65%	10	75%	14	32%	20	24%	4	11%
2016	5	59%	10	69%	11	30%	25	21%	2	9%
2015	5	62%	10	67%	10	28%	26	22%	2	9%
2014	5	67%	10	71%	8	29%	28	26%	2	9%
2013	8	55%	7	70%	5	23%	31	25%	2	8%
2012	8	47%	7	63%	5	20%	31	23%	2	7%

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, 2014 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 or Optional 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		Alternative Policy Plans		Conservation Policy Plans	
FYE	No.	Average	No.	Average	No.	Average	No.	Average	No.	Average
2023	4	35%	11	29%	15	76%	18	36%	5	114%
2022	4	39%	11	32%	15	79%	18	35%	5	105%
2021	4	45%	11	48%	15	100%	18	33%	5	99%
2020	4	41%	11	55%	15	102%	18	32%	5	87%
2019	4	41%	10	60%	14	106%	20	31%	4	85%
2018	4	47%	10	71%	14	111%	20	31%	4	87%
2017	4	37%	10	63%	11	106%	25	37%	2	85%
2016	4	28%	10	49%	10	86%	26	35%	2	73%
2015	4	36%	10	43%	8	88%	28	34%	2	67%
2014	7	47%	7	44%	5	101%	31	36%	2	53%

Experience Analysis

The plans collectively experienced a net actuarial gain of $9.3 million, comprised of a loss on liabilities of $9.2 million (0.6% of liabilities) and a gain on assets of $18.4 million (3.6% of assets). The following were the primary causes of the gains and/or losses:

- The weighted average returns on the market value of assets and actuarial value of assets were 23.4% and 9.2%, respectively, compared to the weighted average (by BOY asset value) discount rate of 5.37%. Returns more than anticipated by the discount rate assumption resulted in a gain on assets.
- In aggregate, salary increases for returning actives were approximately 1.2% larger than expected based on the assumptions, which contributed to the loss on liabilities.

Offsetting the liability loss was a $47.5 million (3.0% of liabilities) decrease in liabilities due to changes in the discount rate. All of the 12 plans that had a change in discount rate had increases in their discount rate.

Commentary on Actuarial Health of Plans

The total funded status, using the actuarial value of assets, of all plans combined is 34%. The funded status for each individual plan ranges from 9% (Martinsburg Fire) to 132% (Welch Police). Plans that use the Conservation policy have the lowest funded ratio – a dollar-weighted average ratio of 17%. The second lowest funded ratios are for plans that use the Alternative funding policy – a dollar-weighted average funded ratio of 32%. Both of these 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 increase in the employer contribution over the next 10 years for municipalities that use the conservation policy is approximately 3% and the average annual increase for municipalities that use the alternative policy is 7%. 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 the Optional and Standard policies are better funded. The dollar-weighted average funded ratio, using the actuarial value of assets, for plans that use the Optional from Alternative policy is 47%. The dollar-weighted average funded ratio for plans that use the Optional from Standard policy or currently use the Standard policy is 102% and 77%, respectively. In addition, these plans 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. The primary challenge associated with the Alternative funding policy is that contributions will most likely increase at a much faster rate than payroll or municipality revenues. This will result in the pension plan encompassing a larger percentage of the city's budget each year and that percentage could grow to an unsustainable level. The catastrophic result will be that the municipalities may, at some point in the future, be unable to pay the benefits promised to plan members.

The primary goal of a funding method that adheres to actuarial principles is to fund benefits for members while they are active employees such that their benefits are fully funded by the time they 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 and the developed contribution could be comprised 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. Most actuarial guidance recommends that actuarially sound contribution policies stipulate that the contribution is equal to the sum of the annual normal cost and an amortization of the unfunded liability over a period of no more than 20 to 25 years.

The following table shows a distribution of the 18 plans that use the Alternative policy segregated by whether their contributions cover the normal cost, the normal cost plus interest on the unfunded actuarial liability (UAL), and 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 all assumptions were met.

Amount Covered by Current Contribution	Number of Plans
Less than the Normal Cost	2
More than the Normal Cost but does not cover the interest on the UAL	12
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	4

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.

Years	Percentage of Plans Projected to be 100% Funded by 16th Anniversary of Valuation Date*				
	Standard	Optional from Standard	Optional from Alternative	Alternative	Conservation
2021	100%	100%	20%	6%	0%
2020	100%	100%	20%	11%	0%
2019	100%	100%	7%	0%	0%
2018	100%	100%	7%	0%	0%
2017	100%	100%	7%	0%	0%
2016	100%	100%	0%	4%	0%
2015	100%	100%	0%	4%	0%
2014	100%	100%	13%	18%	0%
2013	100%	100%	0%	19%	0%
2012	100%	100%	0%	10%	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 and 2021 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 that 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, 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 2023 to meet either one of the solvency tests.

Changes in Funding Policy

Plans that use the Alternative funding policy may change to the Conservation or Optional 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 funding policy that show the impact of switching to the Conservation or Optional 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 method. The challenge with each of these funding policies is that 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***.

No plans made changes to their funding policies this past fiscal year.

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 Plans (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 Deferred Retirement Option Plan (i.e. retrospective DROP analysis).

One prospective DROP study was performed during this valuation cycle for the Firemen's Pension and Relief Fund for the City of Clarksburg. The open DROP (i.e. no sunset provision for entry into the DROP) was adopted effective March 11, 2022. Our analysis 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 design as of a July 1, 2020 valuation date:

DROP Impact (Gain)/Loss	Present Value 7/1/2020
Clarksburg Fire	(476,510)

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

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 12 plans that had a change in the valuation discount rate.

Finally, there was one plan that adopted an open DROP: Clarksburg Fire. Besides the adoption of the Clarksburg Fire DROP, there were no other changes in plan provisions reflected in this valuation.

Special Funding Situations

There are five funds for which the sponsoring cities approved the continued overpayment of miscalculated benefits. The five funds are Huntington Fire, Huntington Police, Morgantown Fire, Morgantown Police, and St. Albans Fire. For these five funds, we calculate the contribution under the relevant funding policy as if the payments were corrected and add to that contribution 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	61	1	102	Alternative	O		5.50%	23.84%	21,053,982	20,048,274	51%
Beckley Police	52	52	1	105	Alternative	O		6.25%	22.88%	26,609,005	9,569,198	74%
Belle Police	0	5	0	5	Optional		C	7.00%	29.00%	1,497,009	(147,244)	111%
Bluefield Fire	12	40	0	52	Alternative	O		5.00%	31.97%	4,670,419	12,123,911	28%
Bluefield Police	27	31	1	59	Alternative	O		6.25%	23.76%	7,895,045	5,371,333	60%
Charles Town Police	0	4	0	4	Standard		C	5.75%	10.47%	562,968	480,472	54%
Charleston Fire	80	254	3	337	Conservation		C	4.75%	24.18%	27,375,651	164,718,868	14%
Charleston Police	80	226	8	314	Conservation		C	5.25%	23.69%	30,034,620	137,049,349	18%
Chester Police	2	5	0	7	Optional		C	7.00%	30.37%	1,855,263	181,612	91%
Clarksburg Fire	40	56	0	96	Alternative	O		6.00%	22.81%	13,845,980	19,255,102	42%
Clarksburg Police	39	51	9	99	Alternative	O		6.00%	26.54%	13,428,595	13,134,428	51%
Dunbar Fire	10	24	1	35	Conservation		C	4.25%	11.54%	2,004,672	13,645,653	13%
Dunbar Police	5	14	1	20	Optional		C	6.00%	15.09%	6,941,764	1,396,134	83%
Elkins Fire	3	1	0	4	Optional		C	6.00%	19.86%	2,225,240	(417,024)	123%
Elkins Police	3	11	0	14	Optional		C	6.25%	23.93%	4,195,075	350,002	92%
Fairmont Fire	34	50	0	84	Conservation		C	4.25%	23.34%	6,047,674	41,268,574	13%
Fairmont Police	19	50	3	72	Conservation		C	5.50%	22.85%	9,199,578	17,710,042	34%
Grafton Fire	0	6	1	7	Optional		C	6.00%	16.20%	1,989,793	226,529	90%
Grafton Police	1	6	1	8	Optional		C	6.00%	13.21%	1,989,062	(283,265)	117%
Huntington Fire	51	167	6	224	Optional		C	5.50%	22.19%	36,637,272	66,044,838	36%
Huntington Police	44	148	1	193	Optional		C	5.75%	24.35%	47,443,373	55,920,224	46%
Logan Fire	8	1	0	9	Standard	O		6.50%	40.64%	1,395,653	772,496	64%
Logan Police	6	3	2	11	Standard	O		6.50%	38.67%	1,159,578	1,061,044	52%
Martinsburg Fire	34	36	13	83	Alternative	O		4.25%	30.91%	3,595,003	34,350,465	9%
Martinsburg Police	42	41	6	89	Alternative	O		4.25%	17.05%	10,252,950	34,740,481	23%
Morgantown Fire	59	60	0	119	Alternative	O		4.25%	22.36%	14,995,169	38,450,414	28%
Morgantown Police	65	70	3	138	Alternative	O		4.25%	22.96%	17,809,371	55,121,474	24%
Moundsville Fire	2	11	0	13	Optional		C	6.25%	38.52%	1,651,737	1,009,632	62%
Moundsville Police	5	18	0	23	Optional		C	6.50%	21.77%	5,876,418	2,555,106	70%
Nitro Fire	16	12	1	29	Alternative	O		4.25%	14.95%	2,667,544	9,711,345	22%
Nitro Police	17	13	2	32	Alternative	O		5.00%	21.56%	5,218,801	7,027,153	43%
Oak Hill Police	4	7	1	12	Optional		C	6.25%	18.55%	5,208,972	(1,029,913)	125%
Parkersburg Fire	42	93	2	137	Optional		C	5.75%	21.93%	24,283,441	33,020,180	42%
Parkersburg Police	47	85	7	139	Optional		C	5.75%	21.99%	22,856,371	29,326,040	44%
Point Pleasant Police	2	8	0	10	Optional		C	7.00%	19.62%	2,178,483	1,399,635	61%
Princeton Fire	12	18	4	34	Alternative	O		4.25%	22.24%	3,173,645	9,512,974	25%
Princeton Police	23	20	2	45	Alternative	O		5.00%	21.89%	5,060,817	8,044,398	39%
South Charleston Fire	53	46	4	103	Alternative	O		4.25%	19.79%	4,310,322	36,055,931	11%
South Charleston Police	45	39	1	85	Alternative	O		4.25%	22.17%	4,136,537	26,310,685	14%
St. Albans Fire	23	30	5	58	Alternative	O		4.25%	22.91%	2,674,240	17,826,088	13%
St. Albans Police	23	24	9	56	Alternative	O		5.50%	22.74%	8,229,519	8,602,744	49%
Star City Police	3	4	0	7	Optional		C	6.50%	22.12%	2,232,756	(529,791)	131%
Vienna Police	18	16	4	38	Standard	O		6.25%	23.55%	10,950,759	1,930,502	85%
Weirton Fire	19	21	0	40	Optional		C	6.50%	24.05%	13,796,289	3,941,448	78%
Weirton Police	29	49	0	78	Optional		C	5.50%	20.20%	10,881,100	22,949,848	32%
Welch Police	3	4	0	7	Optional		C	6.50%	23.81%	3,281,296	(799,815)	132%
Weston Fire	3	4	0	7	Optional		C	6.25%	18.42%	1,549,536	214,640	88%
Weston Police	3	3	0	6	Optional		C	6.25%	19.30%	1,730,740	(269,562)	118%
Westover Police	1	6	0	7	Optional		C	6.25%	22.84%	2,941,095	88,747	97%
Wheeling Fire	49	131	3	183	Optional		C	6.00%	26.87%	37,613,007	31,432,280	54%
Wheeling Police	32	103	5	140	Optional		C	6.00%	27.08%	29,408,645	20,601,898	59%
Williamson Fire	3	12	1	16	Optional		C	7.00%	31.33%	1,887,724	1,676,791	53%
Williamson Police	3	8	0	11	Optional		C	7.00%	29.37%	1,441,722	906,142	61%
Totals	**1,236**	**2,258**	**112**	**3,606**				**5.22%**[2]	**23.47%**[3]	**531,951,280**	**1,013,658,510**	**34%**

[2] Weighted average by liabilities on the valuation date.
The weighted-average discount rate using the discount rates and assets, both as of the prior valuation date, is 5.37%. This percentage may be useful for comparison to the weighted-average return on assets.

[3] Weighted average by BOY asset values.

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. 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 X. Actuarial Methods and Assumptions*. The following table provides the discount rate used for the July 1, 2021 valuation for each of the 53 pension plans.

Municipality	Plan	Discount Rate
Beckley	Fire	5.50%
Beckley	Police	6.25%
Belle	Police	7.00%
Bluefield	Fire	5.00%
Bluefield	Police	6.25%
Charles Town	Police	5.75%
Charleston	Fire	4.75%
Charleston	Police	5.25%
Chester	Police	7.00%
Clarksburg	Fire	6.00%
Clarksburg	Police	6.00%
Dunbar	Fire	4.25%
Dunbar	Police	6.00%
Elkins	Fire	6.00%
Elkins	Police	6.25%
Fairmont	Fire	4.25%
Fairmont	Police	5.50%
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	4.25%
Martinsburg	Police	4.25%
Morgantown	Fire	4.25%
Morgantown	Police	4.25%

Municipality	Plan	Discount Rate
Moundsville	Fire	6.25%
Moundsville	Police	6.50%
Nitro	Fire	4.25%
Nitro	Police	5.00%
Oak Hill	Police	6.25%
Parkersburg	Fire	5.75%
Parkersburg	Police	5.75%
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	4.25%
St. Albans	Police	5.50%
Star City	Police	6.50%
Vienna	Police	6.25%
Weirton	Fire	6.50%
Weirton	Police	5.50%
Welch	Police	6.50%
Weston	Fire	6.25%
Weston	Police	6.25%
Westover	Police	6.25%
Wheeling	Fire	6.00%
Wheeling	Police	6.00%
Williamson	Fire	7.00%
Williamson	Police	7.00%
Average[4]		5.22%

[4] Weighted average by liabilities on valuation date.

Changes in Discount Rate

The following table lists the plans that had a change in their discount rate from 2020 to 2021.

Plan Name	2020 Discount Rate	2021 Discount Rate
Beckley Fire	4.75%	5.50%
Beckley Police	5.50%	6.25%
Charleston Fire	4.25%	4.75%
Charleston Police	4.75%	5.25%
Clarksburg Fire	5.50%	6.00%
Fairmont Police	5.00%	5.50%
Huntington Fire	5.00%	5.50%
Moundsville Fire	5.50%	6.25%
Nitro Police	4.75%	5.00%
St. Albans Fire	4.00%	4.25%
St. Albans Police	5.00%	5.50%
Wheeling Fire	5.75%	6.00%

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, 2021.

	Standard	Opt. from Stan.	Opt. from Alt.	Alternative	Conservation	All Plans
Participating Plans/ Discount Rate	4	11	15	18	5	53
Plan Membership						
(a) Actives	32	22	337	622	223	1,236
(b) Retirees	14	44	571	430	398	1,457
(c) Survivors	5	14	220	173	121	533
(d) Disableds	5	4	77	97	85	268
(e) Deferred Vesteds	3	0	16	13	8	40
(f) Former Members Due Refunds	3	3	10	49	7	72
(g) Total	62	87	1,231	1,384	842	3,606
Payroll (Expected for FYE 2022)	1,691,668	1,233,126	20,743,775	36,063,677	15,733,824	75,466,070
Expected Benefit Payments	781,060	1,766,791	28,654,941	23,831,625	21,503,663	76,538,080
Actuarial Accrued Liabilities						
(a) Actives	7,966,266	6,822,337	146,760,506	191,170,020	134,260,188	486,979,317
(b) Retirees	6,571,928	18,168,308	293,817,195	266,254,585	242,417,561	827,229,577
(c) Survivors	1,199,248	2,108,131	36,837,049	31,068,095	24,044,649	95,257,172
(d) Disableds	1,641,836	1,208,744	28,847,722	36,433,662	41,716,227	109,848,191
(e) Deferred Vesteds	926,448	(0)	8,425,055	9,382,014	6,460,585	25,194,101
(f) Former Members Due Refunds	7,746	84,210	279,038	574,966	155,471	1,101,432
(g) Total Liabilities	18,313,472	28,391,730	514,966,565	534,883,342	449,054,681	1,545,609,790
Funded Levels						
Market Value of Assets	15,601,439	31,680,260	271,856,699	188,985,380	83,159,495	591,283,273
Actuarial Value of Assets	14,068,958	29,092,028	244,501,155	169,626,944	74,662,195	531,951,280
Unfunded Liability	4,244,514	(700,298)	270,465,410	365,256,398	374,392,486	1,013,658,510
Funded Ratio - MVA	85%	112%	53%	35%	19%	38%
Funded Ratio - AVA	77%	102%	47%	32%	17%	34%
Normal Cost						
Net Employer Normal Cost	313,673	250,922	5,227,288	11,612,615	5,266,052	22,670,550
(% of Payroll)	19%	21%	26%	34%	34%	31%
FYE 2023 Contributions						
Total Employer Contributions	598,936	353,174	15,785,206	13,080,819	17,928,417	47,746,552
(% of Payroll)	35%	29%	76%	36%	114%	63%
State Premium Tax Allocation	310,102	435,086	6,422,507	6,413,012	4,421,273	18,001,980
(% of Payroll)	18%	35%	31%	18%	28%	24%
Employee Contributions	141,261	91,113	1,423,302	3,211,213	1,196,147	6,063,036
(% of Payroll)	8%	7%	7%	9%	8%	8%
Total Contributions	1,050,299	879,373	23,631,015	22,705,044	23,545,837	71,811,568
Additional 2023 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, 2020.

	Standard	Optional from Standard	Optional From Alternative	Alternative	Conservation	All Plans
Participating Funds	4	11	15	18	5	53
Plan Membership						
(a) Actives	35	25	370	602	250	1,282
(b) Retirees	13	42	565	426	384	1,430
(c) Survivors	6	13	217	166	120	522
(d) Disableds	5	4	81	100	83	273
(e) Deferred Vesteds	1	1	14	7	12	35
(f) Former Members Due Refunds	2	2	14	49	7	74
(g) Total	62	87	1,261	1,350	856	3,616
Payroll (Expected for FYE 2021)	1,731,204	1,324,137	21,711,402	34,694,989	15,765,064	75,226,796
Expected Benefit Payments	741,212	1,648,799	28,882,666	23,152,696	20,439,362	74,864,735
Actuarial Accrued Liabilities						
(a) Actives	7,918,682	7,409,962	153,233,442	196,427,811	141,507,939	506,497,836
(b) Retirees	5,902,334	17,095,270	291,072,115	262,880,043	236,147,097	813,096,859
(c) Survivors	1,396,276	2,007,704	34,935,760	30,054,162	24,449,122	92,843,024
(d) Disableds	1,851,432	1,220,603	30,677,495	38,166,929	42,782,199	114,698,658
(e) Deferred Vesteds	427,633	451,084	7,504,009	4,341,106	9,867,513	22,591,345
(f) Former Members Due Refunds	462	37,667	399,126	586,549	183,059	1,206,863
(g) Total Liabilities	17,496,819	28,222,290	517,821,947	532,456,600	454,936,929	1,550,934,585
Funded Levels						
Market Value of Assets	12,007,079	26,154,608	216,153,550	151,706,087	63,345,169	469,366,493
Actuarial Value of Assets	12,367,918	26,666,377	219,518,450	153,799,193	64,506,942	476,858,880
Unfunded Liability	5,128,901	1,555,913	298,303,497	378,657,407	390,429,987	1,074,075,705
Funded Ratio - MVA	69%	93%	42%	28%	14%	30%
Funded Ratio - AVA	71%	94%	42%	29%	14%	31%
Normal Cost						
Net Employer Normal Cost	352,756	280,029	5,665,581	11,696,965	5,981,089	23,976,420
(% of Payroll)	21%	22%	27%	35%	39%	33%
FYE 2022 Contributions						
Total Employer Contributions	674,008	424,412	17,231,381	12,218,663	16,600,950	47,149,414
(% of Payroll)	39%	32%	79%	35%	105%	63%
State Premium Tax Allocation	336,719	547,816	6,913,237	6,887,061	4,785,324	19,470,157
(% of Payroll)	19%	41%	32%	20%	30%	26%
Employee Contributions	140,723	93,708	1,471,476	3,043,069	1,182,100	5,931,076
(% of Payroll)	8%	7%	7%	9%	7%	8%
Total Contributions	1,151,450	1,065,936	25,616,094	22,148,793	22,568,374	72,550,647
Additional 2022 Solvency Contribution						
To Receive State Allocation	-	-	-	-	-	-
To Provide COLA Benefits	-	-	-	-	-	-

B

Key Valuation Results by Municipality

Below is a summary of the key valuation results for each individual municipality as of July 1, 2021.

	Beckley Fire	Beckley Police	Belle Police	Bluefield Fire	Bluefield Police	Charles Town Police
Discount Rate	5.50%	6.25%	7.00%	5.00%	6.25%	5.75%
Plan Membership						
(a) Actives	40	52	0	12	27	0
(b) Retirees	40	29	3	25	17	1
(c) Survivors	16	13	2	8	11	3
(d) Disableds	5	10	0	7	3	0
(e) Deferred Vesteds	1	1	0	0	0	0
(f) Former Members Due Refunds	0	0	0	0	1	0
(g) Total	102	105	5	52	59	4
Payroll (Expected for FYE 2022)	2,779,350	2,925,004	0	546,005	1,165,303	0
Expected Benefit Payments	2,145,055	1,766,932	135,732	970,939	789,740	86,803
Actuarial Accrued Liabilities						
(a) Actives	11,377,493	13,414,045	0	1,551,235	2,966,490	0
(b) Retirees	25,006,341	16,410,081	1,040,715	11,469,573	7,980,201	347,055
(c) Survivors	2,326,815	2,570,042	309,050	1,225,695	1,529,523	696,385
(d) Disableds	1,773,174	3,251,290	0	2,547,827	786,657	0
(e) Deferred Vesteds	618,433	532,745	0	0	0	0
(f) Former Members Due Refunds	0	0	0	0	3,507	0
(g) Total Liabilities	41,102,256	36,178,203	1,349,765	16,794,330	13,266,378	1,043,440
Funded Levels						
Market Value of Assets	23,696,091	29,497,773	1,681,280	5,483,214	8,817,402	575,439
Actuarial Value of Assets	21,053,982	26,609,005	1,497,009	4,670,419	7,895,045	562,968
Unfunded Liability	20,048,274	9,569,198	-147,244	12,123,911	5,371,333	480,472
Funded Ratio - MVA	58%	82%	125%	33%	66%	55%
Funded Ratio - AVA	51%	74%	111%	28%	60%	54%
Normal Cost						
Net Employer Normal Cost	692,165	527,374	923	182,770	236,848	987
(% of Payroll)	32%	19%	N/A	34%	21%	N/A
FYE 2023 Contributions						
Total Employer Contributions	944,653	720,957	979	583,583	473,436	58,937
(% of Payroll)	34%	25%	N/A	107%	41%	N/A
State Premium Tax Allocation	477,578	543,977	0	205,878	269,170	9,832
(% of Payroll)	17%	19%	N/A	38%	23%	N/A
Employee Contributions	189,772	244,383	0	52,509	109,192	0
(% of Payroll)	7%	8%	N/A	10%	9%	N/A
Total Contributions	1,612,003	1,509,317	979	841,970	851,798	68,769
Additional 2023 Solvency Contribution						
To Receive State Allocation	-	-	-	-	-	-
To Provide COLA Benefits	-	-	-	-	-	-
MVA Return	23.84%	22.88%	29.00%	31.97%	23.76%	10.47%
Funding Policy	Alternative	Alternative	Optional	Alternative	Alternative	Standard

	Charleston Fire	Charleston Police	Chester Police	Clarksburg Fire	Clarksburg Police	Dunbar Fire
Discount Rate	4.75%	5.25%	7.00%	6.00%	6.00%	4.25%
Plan Membership						
(a) Actives	80	80	2	40	39	10
(b) Retirees	167	142	3	35	28	17
(c) Survivors	47	49	2	16	13	2
(d) Disableds	40	35	0	5	10	5
(e) Deferred Vesteds	2	7	0	0	1	0
(f) Former Members Due Refunds	1	1	0	0	8	1
(g) Total	337	314	7	96	99	35
Payroll (Expected for FYE 2022)	6,197,423	5,717,369	100,199	1,830,115	2,190,551	589,321
Expected Benefit Payments	9,060,235	8,261,155	144,986	1,757,511	1,617,242	711,814
Actuarial Accrued Liabilities						
(a) Actives	53,959,999	47,089,007	132,129	14,115,523	7,261,669	3,926,569
(b) Retirees	107,297,504	86,657,524	1,508,315	15,422,021	15,015,838	8,511,348
(c) Survivors	9,342,491	10,784,740	396,431	2,119,436	1,948,076	199,145
(d) Disableds	19,969,040	17,525,105	0	1,444,102	2,251,674	3,000,885
(e) Deferred Vesteds	1,453,633	5,006,952	0	0	0	0
(f) Former Members Due Refunds	71,852	20,641	0	0	85,766	12,378
(g) Total Liabilities	192,094,519	167,083,969	2,036,875	33,101,082	26,563,023	15,650,325
Funded Levels						
Market Value of Assets	30,623,784	33,412,868	2,103,398	15,192,901	15,490,483	2,097,378
Actuarial Value of Assets	27,375,651	30,034,620	1,855,263	13,845,980	13,428,595	2,004,672
Unfunded Liability	164,718,868	137,049,349	181,612	19,255,102	13,134,428	13,645,653
Funded Ratio - MVA	16%	20%	103%	46%	58%	13%
Funded Ratio - AVA	14%	18%	91%	42%	51%	13%
Normal Cost						
Net Employer Normal Cost	2,330,113	1,535,753	15,067	482,412	438,522	259,928
(% of Payroll)	38%	28%	16%	27%	21%	45%
FYE 2023 Contributions						
Total Employer Contributions	8,088,370	6,716,750	15,148	1,424,571	1,411,122	571,151
(% of Payroll)	131%	117%	15%	78%	64%	97%
State Premium Tax Allocation	1,710,555	1,730,831	49,760	438,312	432,614	155,831
(% of Payroll)	28%	30%	50%	24%	20%	26%
Employee Contributions	465,294	428,162	8,853	172,654	196,625	48,018
(% of Payroll)	8%	7%	9%	9%	9%	8%
Total Contributions	10,264,219	8,875,743	73,761	2,035,537	2,040,361	775,000
Additional 2023 Solvency Contribution						
To Receive State Allocation	-	-	-	-	-	-
To Provide COLA Benefits	-	-	-	-	-	-
MVA Return	24.18%	23.69%	30.37%	22.81%	26.54%	11.54%
Funding Policy	Conservation	Conservation	Optional	Alternative	Alternative	Conservation

	Dunbar Police	Elkins Fire	Elkins Police	Fairmont Fire	Fairmont Police	Grafton Fire
Discount Rate	6.00%	6.00%	6.25%	4.25%	5.50%	6.00%
Plan Membership						
(a) Actives	5	3	3	34	19	0
(b) Retirees	9	0	9	40	32	5
(c) Survivors	1	1	2	9	14	0
(d) Disableds	4	0	0	1	4	1
(e) Deferred Vesteds	0	0	0	0	0	0
(f) Former Members Due Refunds	1	0	0	0	3	1
(g) Total	20	4	14	84	72	7
Payroll (Expected for FYE 2022)	299,474	192,839	166,821	2,048,699	1,181,012	0
Expected Benefit Payments	483,414	31,361	363,584	1,899,982	1,570,477	185,664
Actuarial Accrued Liabilities						
(a) Actives	2,177,439	1,597,763	381,826	23,424,408	5,860,205	0
(b) Retirees	4,360,554	0	3,779,829	22,462,484	17,488,701	1,937,558
(c) Survivors	103,024	210,453	383,422	1,247,722	2,470,551	0
(d) Disableds	1,658,621	0	0	181,634	1,039,563	242,082
(e) Deferred Vesteds	0	0	0	0	0	0
(f) Former Members Due Refunds	38,260	0	0	0	50,600	36,682
(g) Total Liabilities	8,337,898	1,808,216	4,545,077	47,316,248	26,909,620	2,216,322
Funded Levels						
Market Value of Assets	7,413,735	2,425,041	4,694,723	6,765,072	10,260,393	2,122,699
Actuarial Value of Assets	6,941,764	2,225,240	4,195,075	6,047,674	9,199,578	1,989,793
Unfunded Liability	1,396,134	-417,024	350,002	41,268,574	17,710,042	226,529
Funded Ratio - MVA	89%	134%	103%	14%	38%	96%
Funded Ratio - AVA	83%	123%	92%	13%	34%	90%
Normal Cost						
Net Employer Normal Cost	95,952	57,723	23,412	903,813	236,445	1,195
(% of Payroll)	33%	31%	14%	45%	21%	N/A
FYE 2023 Contributions						
Total Employer Contributions	93,579	49,623	22,770	1,498,573	1,053,573	1,261
(% of Payroll)	31%	26%	14%	73%	89%	N/A
State Premium Tax Allocation	135,552	0	132,554	428,011	396,045	52,218
(% of Payroll)	45%	0%	79%	21%	34%	N/A
Employee Contributions	20,523	11,042	13,521	162,930	91,743	0
(% of Payroll)	7%	6%	8%	8%	8%	N/A
Total Contributions	249,654	60,665	168,845	2,089,514	1,541,361	53,479
Additional 2023 Solvency Contribution						
To Receive State Allocation	-	-	-	-	-	-
To Provide COLA Benefits	-	-	-	-	-	-
MVA Return	15.09%	19.86%	23.93%	23.34%	22.85%	16.20%
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%	4.25%
Plan Membership						
(a) Actives	1	51	44	8	6	34
(b) Retirees	0	102	105	1	3	24
(c) Survivors	4	47	29	0	0	7
(d) Disableds	2	18	14	0	0	5
(e) Deferred Vesteds	0	6	1	0	2	1
(f) Former Members Due Refunds	1	0	0	0	0	12
(g) Total	8	224	193	9	11	83
Payroll (Expected for FYE 2022)	61,851	3,094,186	3,240,023	378,964	241,496	2,272,406
Expected Benefit Payments	125,314	5,688,164	5,798,956	19,845	115,528	1,567,177
Actuarial Accrued Liabilities						
(a) Actives	636,410	25,452,686	29,336,121	2,047,643	560,795	14,144,688
(b) Retirees	0	57,163,182	62,648,182	120,506	1,188,665	19,335,622
(c) Survivors	476,386	9,248,829	5,617,503	0	0	1,641,501
(d) Disableds	546,458	7,609,368	5,198,142	0	0	1,557,512
(e) Deferred Vesteds	0	3,208,045	563,649	0	471,162	1,211,569
(f) Former Members Due Refunds	46,543	0	0	0	0	54,576
(g) Total Liabilities	1,705,797	102,682,110	103,363,597	2,168,149	2,220,622	37,945,468
Funded Levels						
Market Value of Assets	2,085,479	40,443,272	52,945,970	1,597,639	1,311,777	4,190,220
Actuarial Value of Assets	1,989,062	36,637,272	47,443,373	1,395,653	1,159,578	3,595,003
Unfunded Liability	-283,265	66,044,838	55,920,224	772,496	1,061,044	34,350,465
Funded Ratio - MVA	122%	39%	51%	74%	59%	11%
Funded Ratio - AVA	117%	36%	46%	64%	52%	9%
Normal Cost						
Net Employer Normal Cost	14,451	967,555	692,681	88,498	34,598	917,074
(% of Payroll)	24%	32%	22%	24%	15%	41%
FYE 2023 Contributions						
Total Employer Contributions	15,092	3,929,896	3,273,743	142,206	121,710	996,442
(% of Payroll)	24%	127%	101%	38%	50%	44%
State Premium Tax Allocation	0	999,476	1,041,819	62,410	60,462	354,944
(% of Payroll)	0%	32%	32%	16%	25%	16%
Employee Contributions	4,250	209,386	194,456	30,341	22,109	203,085
(% of Payroll)	7%	7%	6%	8%	9%	9%
Total Contributions	19,342	5,138,758	4,510,018	234,957	204,281	1,554,471
Additional 2023 Solvency Contribution						
To Receive State Allocation	-	-	-	-	-	-
To Provide COLA Benefits	-	-	-	-	-	-
MVA Return	13.21%	22.19%	24.35%	40.64%	38.67%	30.91%
Funding Policy	Optional	Optional	Optional	Standard	Standard	Alternative

	Martinsburg Police	Morgantown Fire	Morgantown Police	Moundsville Fire	Moundsville Police	Nitro Fire
Discount Rate	4.25%	4.25%	4.25%	6.25%	6.50%	4.25%
Plan Membership						
(a) Actives	42	59	65	2	5	16
(b) Retirees	25	45	49	3	10	8
(c) Survivors	8	14	13	7	8	2
(d) Disableds	8	1	8	1	0	2
(e) Deferred Vesteds	2	0	1	0	0	0
(f) Former Members Due Refunds	4	0	2	0	0	1
(g) Total	89	119	138	13	23	29
Payroll (Expected for FYE 2022)	2,898,765	3,724,403	4,261,421	111,753	306,714	1,001,915
Expected Benefit Payments	1,660,323	2,126,620	2,977,404	222,111	462,993	400,840
Actuarial Accrued Liabilities						
(a) Actives	17,867,280	20,729,827	28,215,304	589,522	2,472,521	5,656,007
(b) Retirees	20,545,726	30,219,316	37,625,930	824,523	4,929,033	4,901,902
(c) Survivors	1,384,548	2,146,360	2,713,715	1,016,962	1,029,970	388,951
(d) Disableds	3,311,439	350,080	3,314,440	230,362	0	1,427,235
(e) Deferred Vesteds	1,833,812	0	948,811	0	0	0
(f) Former Members Due Refunds	50,626	0	112,645	0	0	4,794
(g) Total Liabilities	44,993,431	53,445,583	72,930,845	2,661,369	8,431,524	12,378,889
Funded Levels						
Market Value of Assets	11,242,071	16,528,896	19,707,129	1,940,960	6,238,745	2,824,825
Actuarial Value of Assets	10,252,950	14,995,169	17,809,371	1,651,737	5,876,418	2,667,544
Unfunded Liability	34,740,481	38,450,414	55,121,474	1,009,632	2,555,106	9,711,345
Funded Ratio - MVA	25%	31%	27%	73%	74%	23%
Funded Ratio - AVA	23%	28%	24%	62%	70%	22%
Normal Cost						
Net Employer Normal Cost	1,010,991	1,637,905	1,388,635	32,382	65,287	403,008
(% of Payroll)	36%	45%	33%	30%	22%	41%
FYE 2023 Contributions						
Total Employer Contributions	821,499	1,046,841	1,314,699	33,325	94,060	232,385
(% of Payroll)	28%	28%	31%	30%	31%	23%
State Premium Tax Allocation	431,039	587,680	647,136	54,482	156,655	134,413
(% of Payroll)	15%	16%	15%	49%	51%	13%
Employee Contributions	258,145	330,279	410,131	7,736	18,352	88,858
(% of Payroll)	9%	9%	10%	7%	6%	9%
Total Contributions	1,510,683	1,964,800	2,371,966	95,543	269,067	455,656
Additional 2023 Solvency Contribution						
To Receive State Allocation	-	-	-	-	-	-
To Provide COLA Benefits	-	-	-	-	-	-
MVA Return	17.05%	22.36%	22.96%	38.52%	21.77%	14.95%
Funding Policy	Alternative	Alternative	Alternative	Optional	Optional	Alternative

	Nitro Police	Oak Hill Police	Parkersburg Fire	Parkersburg Police	Point Pleasant Police	Princeton Fire
Discount Rate	5.00%	6.25%	5.75%	5.75%	7.00%	4.25%
Plan Membership						
(a) Actives	17	4	42	47	2	12
(b) Retirees	6	6	63	54	6	11
(c) Survivors	4	1	19	21	1	4
(d) Disableds	3	0	11	10	1	3
(e) Deferred Vesteds	1	0	2	3	0	4
(f) Former Members Due Refunds	1	1	0	4	0	0
(g) Total	32	12	137	139	10	34
Payroll (Expected for FYE 2022)	1,057,644	238,409	2,369,341	2,648,703	87,446	596,673
Expected Benefit Payments	424,875	215,446	3,012,710	2,808,162	209,265	471,594
Actuarial Accrued Liabilities						
(a) Actives	5,737,616	1,279,171	18,217,241	15,120,999	793,124	2,444,480
(b) Retirees	3,479,577	2,738,362	31,168,154	28,179,637	2,249,119	5,143,451
(c) Survivors	886,670	160,541	2,595,331	3,060,275	115,671	702,834
(d) Disableds	1,312,803	0	3,972,601	4,367,369	420,204	1,699,050
(e) Deferred Vesteds	764,621	0	1,350,294	1,406,787	0	2,696,804
(f) Former Members Due Refunds	64,667	985	0	47,344	0	0
(g) Total Liabilities	12,245,954	4,179,059	57,303,621	52,182,411	3,578,118	12,686,619
Funded Levels						
Market Value of Assets	5,716,974	5,641,944	26,487,514	25,210,205	2,337,809	3,547,624
Actuarial Value of Assets	5,218,801	5,208,972	24,283,441	22,856,371	2,178,483	3,173,645
Unfunded Liability	7,027,153	-1,029,913	33,020,180	29,326,040	1,399,635	9,512,974
Funded Ratio - MVA	47%	135%	46%	48%	65%	28%
Funded Ratio - AVA	43%	125%	42%	44%	61%	25%
Normal Cost						
Net Employer Normal Cost	296,106	38,942	683,950	571,125	19,050	253,321
(% of Payroll)	29%	17%	30%	22%	23%	43%
FYE 2023 Contributions						
Total Employer Contributions	249,412	39,036	2,105,802	1,622,289	163,878	151,036
(% of Payroll)	24%	16%	89%	61%	187%	25%
State Premium Tax Allocation	174,925	0	657,465	719,021	77,143	132,329
(% of Payroll)	17%	0%	28%	27%	88%	22%
Employee Contributions	95,851	18,658	163,597	192,116	4,867	54,539
(% of Payroll)	9%	8%	7%	7%	6%	9%
Total Contributions	520,188	57,694	2,926,864	2,533,426	245,888	337,904
Additional 2023 Solvency Contribution						
To Receive State Allocation	-	-	-	-	-	-
To Provide COLA Benefits	-	-	-	-	-	-
MVA Return	21.56%	18.55%	21.93%	21.99%	19.62%	22.24%
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%	4.25%	5.50%	6.50%
Plan Membership						
(a) Actives	23	53	45	23	23	3
(b) Retirees	15	26	13	16	18	1
(c) Survivors	2	13	14	10	5	3
(d) Disableds	3	7	12	4	1	0
(e) Deferred Vesteds	0	1	0	0	0	0
(f) Former Members Due Refunds	2	3	1	5	9	0
(g) Total	45	103	85	58	56	7
Payroll (Expected for FYE 2022)	1,263,903	2,870,722	2,249,629	1,204,195	1,225,673	167,188
Expected Benefit Payments	657,338	1,549,390	1,160,104	864,664	923,877	72,270
Actuarial Accrued Liabilities						
(a) Actives	4,402,291	16,277,588	13,194,912	7,095,113	4,718,459	729,711
(b) Retirees	6,996,987	17,152,593	8,992,337	10,113,030	10,444,059	360,313
(c) Survivors	543,120	2,978,060	3,208,306	1,696,379	1,058,064	612,941
(d) Disableds	1,117,794	3,115,160	5,047,723	1,580,954	544,748	0
(e) Deferred Vesteds	0	775,220	0	0	0	0
(f) Former Members Due Refunds	45,023	67,632	3,944	14,852	66,933	0
(g) Total Liabilities	13,105,215	40,366,253	30,447,222	20,500,328	16,832,263	1,702,965
Funded Levels						
Market Value of Assets	5,598,427	4,691,265	4,609,372	3,026,697	9,124,016	2,435,077
Actuarial Value of Assets	5,060,817	4,310,322	4,136,537	2,674,240	8,229,519	2,232,756
Unfunded Liability	8,044,398	36,055,931	26,310,685	17,826,088	8,602,744	-529,791
Funded Ratio - MVA	43%	12%	15%	15%	54%	143%
Funded Ratio - AVA	39%	11%	14%	13%	49%	131%
Normal Cost						
Net Employer Normal Cost	314,858	1,248,068	787,478	504,177	290,903	33,523
(% of Payroll)	26%	44%	36%	43%	24%	21%
FYE 2023 Contributions						
Total Employer Contributions	298,153	1,034,940	575,745	376,097	425,248	0
(% of Payroll)	24%	36%	26%	31%	35%	0%
State Premium Tax Allocation	210,881	496,538	404,165	240,170	231,263	0
(% of Payroll)	17%	17%	18%	20%	19%	0%
Employee Contributions	117,292	250,938	196,703	120,087	120,170	12,270
(% of Payroll)	9%	9%	9%	10%	10%	7%
Total Contributions	626,326	1,782,416	1,176,613	736,354	776,681	12,270
Additional 2023 Solvency Contribution						
To Receive State Allocation	-	-	-	-	-	-
To Provide COLA Benefits	-	-	-	-	-	-
MVA Return	21.89%	19.79%	22.17%	22.91%	22.74%	22.12%
Funding Policy	Alternative	Alternative	Alternative	Alternative	Alternative	Optional

	Vienna Police	Weirton Fire	Weirton Police	Welch Police	Weston Fire	Weston Police
Discount Rate	6.25%	6.50%	5.50%	6.50%	6.25%	6.25%
Plan Membership						
(a) Actives	18	19	29	3	3	3
(b) Retirees	9	17	38	4	3	2
(c) Survivors	2	4	8	0	1	1
(d) Disableds	5	0	3	0	0	0
(e) Deferred Vesteds	1	0	0	0	0	0
(f) Former Members Due Refunds	3	0	0	0	0	0
(g) Total	38	40	78	7	7	6
Payroll (Expected for FYE 2022)	1,071,208	1,462,471	2,020,499	171,454	108,746	155,669
Expected Benefit Payments	558,884	860,284	1,764,306	108,829	90,805	67,316
Actuarial Accrued Liabilities						
(a) Actives	5,357,828	8,935,605	11,399,121	942,679	417,522	694,976
(b) Retirees	4,915,702	8,182,808	19,922,537	1,538,802	1,126,460	710,025
(c) Survivors	502,863	619,324	1,581,335	0	220,194	56,177
(d) Disableds	1,641,836	0	927,955	0	0	0
(e) Deferred Vesteds	455,286	0	0	0	0	0
(f) Former Members Due Refunds	7,746	0	0	0	0	0
(g) Total Liabilities	12,881,261	17,737,737	33,830,948	2,481,481	1,764,176	1,461,178
Funded Levels						
Market Value of Assets	12,116,584	15,440,432	11,989,642	3,580,624	1,632,417	1,831,239
Actuarial Value of Assets	10,950,759	13,796,289	10,881,100	3,281,296	1,549,536	1,730,740
Unfunded Liability	1,930,502	3,941,448	22,949,848	-799,815	214,640	-269,562
Funded Ratio - MVA	94%	87%	35%	144%	93%	125%
Funded Ratio - AVA	85%	78%	32%	132%	88%	118%
Normal Cost						
Net Employer Normal Cost	189,590	355,667	428,024	35,790	27,681	24,841
(% of Payroll)	18%	25%	22%	22%	26%	16%
FYE 2023 Contributions						
Total Employer Contributions	276,083	399,457	1,419,011	0	28,270	24,979
(% of Payroll)	26%	27%	70%	0%	26%	16%
State Premium Tax Allocation	177,398	256,248	397,123	0	47,302	0
(% of Payroll)	17%	18%	20%	0%	43%	0%
Employee Contributions	88,811	109,456	161,493	12,927	9,218	12,904
(% of Payroll)	8%	7%	8%	8%	8%	8%
Total Contributions	542,292	765,161	1,977,627	12,927	84,790	37,883
Additional 2023 Solvency Contribution						
To Receive State Allocation	-	-	-	-	-	-
To Provide COLA Benefits	-	-	-	-	-	-
MVA Return	23.55%	24.05%	20.20%	23.81%	18.42%	19.30%
Funding Policy	Standard	Optional	Optional	Optional	Optional	Optional

B

	Westover Police	Wheeling Fire	Wheeling Police	Williamson Fire	Williamson Police	Total
Discount Rate	6.25%	6.00%	6.00%	7.00%	7.00%	N/A
Plan Membership						
(a) Actives	1	49	32	3	3	1,236
(b) Retirees	6	88	69	6	3	1,457
(c) Survivors	0	37	26	4	5	533
(d) Disableds	0	6	8	2	0	268
(e) Deferred Vesteds	0	2	2	0	0	41
(f) Former Members Due Refunds	0	1	3	1	0	71
(g) Total	7	183	140	16	11	3,606
Payroll (Expected for FYE 2022)	58,438	2,891,790	1,782,784	109,195	130,908	75,466,070
Expected Benefit Payments	179,294	3,768,656	3,240,616	254,648	126,846	76,538,080
Actuarial Accrued Liabilities						
(a) Actives	364,259	20,147,930	10,612,964	462,407	688,717	486,979,317
(b) Retirees	2,665,583	40,649,206	31,528,421	1,765,044	1,009,141	827,229,577
(c) Survivors	0	5,895,234	3,841,579	744,542	650,006	95,257,172
(d) Disableds	0	1,484,537	2,824,205	574,562	0	109,848,191
(e) Deferred Vesteds	0	847,263	1,049,017	0	0	25,194,101
(f) Former Members Due Refunds	0	21,117	154,357	17,960	0	1,101,432
(g) Total Liabilities	3,029,842	69,045,287	50,010,543	3,564,515	2,347,864	1,545,609,790
Funded Levels						
Market Value of Assets	3,176,024	42,645,842	33,232,949	2,167,620	1,632,319	591,283,273
Actuarial Value of Assets	2,941,095	37,613,007	29,408,645	1,887,724	1,441,722	531,951,280
Unfunded Liability	88,747	31,432,280	20,601,898	1,676,791	906,142	1,013,658,510
Funded Ratio - MVA	105%	62%	66%	61%	70%	38%
Funded Ratio - AVA	97%	54%	59%	53%	61%	34%
Normal Cost						
Net Employer Normal Cost	19,528	833,133	400,414	19,392	20,522	22,670,550
(% of Payroll)	34%	32%	23%	18%	16%	31%
FYE 2023 Contributions						
Total Employer Contributions	20,408	1,772,420	934,655	52,835	25,864	47,746,552
(% of Payroll)	35%	61%	52%	48%	20%	63%
State Premium Tax Allocation	123,411	1,050,901	774,868	72,003	59,592	18,001,980
(% of Payroll)	211%	36%	43%	66%	46%	24%
Employee Contributions	4,091	177,971	128,601	8,189	9,938	6,063,036
(% of Payroll)	7%	6%	7%	7%	8%	8%
Total Contributions	147,910	3,001,292	1,838,124	133,027	95,394	71,811,568
Additional 2023 Solvency Contribution						
To Receive State Allocation	-	-	-	-	-	-
To Provide COLA Benefits	-	-	-	-	-	-
MVA Return	22.84%	26.87%	27.08%	31.33%	29.37%	
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, 2020 and June 30, 2021.

Assets Held by Category	June 30, 2020	June 30, 2021
Cash and Deposits	$ 35,527,285	$ 40,002,631
Receivables		
Contributions	$ 971,530	$ 549,943
Investment Income	460,541	586,671
Total Receivables	**$ 1,432,071**	**$ 1,136,614**
Investment		
Government Securities	$ 30,971,571	$ 36,530,385
Fixed Income	132,593,166	148,861,545
Equities	255,894,124	352,415,330
Alternative Investments	13,824,115	14,698,912
Other	0	0
Total Investments	**$ 433,282,976**	**$ 552,506,172**
Total Assets	**$ 470,242,332**	**$ 593,645,417**
Payables		
Investment Expense	$ 15,652	$ 78,292
Benefits and Withdrawals	742,468	2,234,683
Administrative Expense	117,719	49,169
Total Payables	**$ 875,839**	**$ 2,362,144**
Net Position	**$ 469,366,493**	**$ 591,283,273**

Reconciliation of Assets

Below is a reconciliation of assets (unaudited) from July 1, 2019 through June 30, 2021.

Plan Year Ending		June 30, 2020		June 30, 2021
1. Beginning of Year Market Value of Assets	$	444,616,513	$	469,366,493
Adjustments to Market Value of Assets		(1,836)		(95,293)
Beginning of Year Market Value of Assets	**$**	**444,614,677**	**$**	**469,271,200**
2. Additions				
a. Contributions				
(i) Local Government	$	54,986,840	$	58,482,246
(ii) State Government		18,514,967		19,670,605
(iii) Employee		6,574,719		6,490,096
(iv) Total		80,076,526		84,642,947
b. Receivable Contribution				
(i) Local Government	$	167,738	$	27,829
(ii) State Government		747,635		446,656
(iii) Employee Contributions		56,157		75,458
(iv) Total		971,530		549,943
c. Earnings on Investments				
(i) Net Appreciation/(Depreciation)	$	(1,122,392)	$	86,702,810
(ii) Net Realized Gain (Loss) on Sale/Exchange		4,139,218		14,595,396
(iii) Interest and Dividends		12,135,918		11,280,220
(iv) Other Income		269,639		372,081
(v) Investment Expense		(1,822,732)		(2,194,786)
(vi) Receivable Investment Income		460,541		586,671
(vii) Payable Investment Expenses		(15,652)		(78,292)
(viii) Net Investment Income		14,044,540		111,264,100
d. Other Revenue		9,086		18,354
e. Total Additions	**$**	**95,101,682**	**$**	**196,475,344**
3. Disbursements				
a. Benefit Payments	$	68,020,389	$	70,089,140
b. Withdrawals		1,118,877		1,949,313
c. Administrative Expenses				
(i) Municipal Fees		296,099		65,701
(ii) Other Expenses		54,314		75,265
(iii) Total Administrative Expenses		350,413		140,966
d. Payable Benefits and Withdrawals		742,468		2,234,683
e. Payable Administrative Expenses		117,719		49,169
f. Total Disbursements	**$**	**70,349,866**	**$**	**74,463,271**
4. Net Increase (2.e. – 3.f.)		24,751,816		122,012,073
5. Net Assets (1. + 4.)	**$**	**469,366,493**	**$**	**591,283,273**
6. Rate of Return Net of Investment Fees (2I / [A + B – I] Method[5])		3.1%		23.4%

[5] 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, 2021

MVA (Gain)/Loss for Plan Year Ended June 30, 2021			
Market Value of Assets (MVA)			
a.	MVA as of 7/1/2020	$	469,271,200
b.	Interest on a. to 6/30/2021		25,199,703
c.	Contributions with Interest to 6/30/2021		87,321,524
d.	Benefit Payments with Interest to 6/30/2021		76,084,453
e.	Administrative Expenses with Interest to 6/30/2021		193,923
f.	Expected MVA at 6/30/2021 (a. + b. + c. – d. – e.)		505,514,051
g.	Actual MVA at 6/30/2021		591,283,273
h.	MVA (Gain)/Loss (f. - g.)		(85,769,222)

Development of Actuarial Value of Assets

The actuarial asset value as of July 1, 2021 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, 2021
1.	Market Value of Assets				$	591,283,273
2.	Spreading of Investment (Gains)/Losses					
	Fiscal Year		(Gain)/Loss	% Deferred		Amount Deferred
	2021	$	(85,769,222)	75%	$	(64,326,923)
	2020		9,989,846	50%		4,994,930
	2019		0	25%		0
	a. Total Deferred					(59,331,993)
3.	Actuarial Value of Assets (1. + 2.a.)				$	531,951,280
4.	Rate of Return Net of Investment Fees (2I / [A + B – I] Method)					9.20%

Experience (Gain)/Loss for Plan Year Ended June 30, 2021

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, 2021		
1. Liabilities		
a. Actuarial Accrued Liability as of 7/1/2020	$	1,550,934,585
b. Normal Cost as of 7/1/2020		29,581,990
c. Interest on a. and b. to 6/30/2021		78,853,827
d. Benefit Payments with Interest to 6/30/2021		76,084,453
e. Effect of Plan Provision Changes		682,427
f. Effect of Assumption Changes		(47,546,990)
g. Expected Liability at 7/1/2021 (a. + b. + c. – d. + e. + f.)		1,536,421,386
h. Actual Liability at 7/1/2021		1,545,609,790
i. Liability (Gain)/Loss (h. - g.)		9,188,404
2. Actuarial Value of Assets (AVA)		
a. AVA as of 7/1/2020	$	476,858,880
b. Interest on a. to 6/30/2021		25,602,159
c. Contributions with Interest to 6/30/2021		87,321,524
d. Benefit Payments with Interest to 6/30/2021		76,084,453
e. Administrative Expenses with Interest to 6/30/2021		193,923
f. Expected AVA at 6/30/2021 (a. + b. + c. – d. – e.)		513,504,187
g. Actual AVA at 6/30/2021		531,951,280
h. AVA (Gain)/Loss (f. - g.)		(18,447,083)
3. Total (Gain)/Loss (1i. + 2h.)	$	(9,258,689)

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. 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 COLA, 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, or Conservation funding policies, by definition of the funding policy, will always be projected to be solvent in future years. 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 that 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, 2021 valuation, the 15-year period would end on June 30, 2036. 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 V. 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. The other funding policies available to plans using the Alternative funding policy are the Optional and Conservation 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 Conservation funding policy is defined in West Virginia Code §8-22-20(f)(1) and is available for plan years beginning after April 1, 2011.

The Alternative funding policy does 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 method 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 funding policy achieves this goal, but the Conservation funding policy does not. 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 Conservation funding policies in the next valuation year. The second scenario assumes the municipality switches to either the Optional or Conservation 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 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.

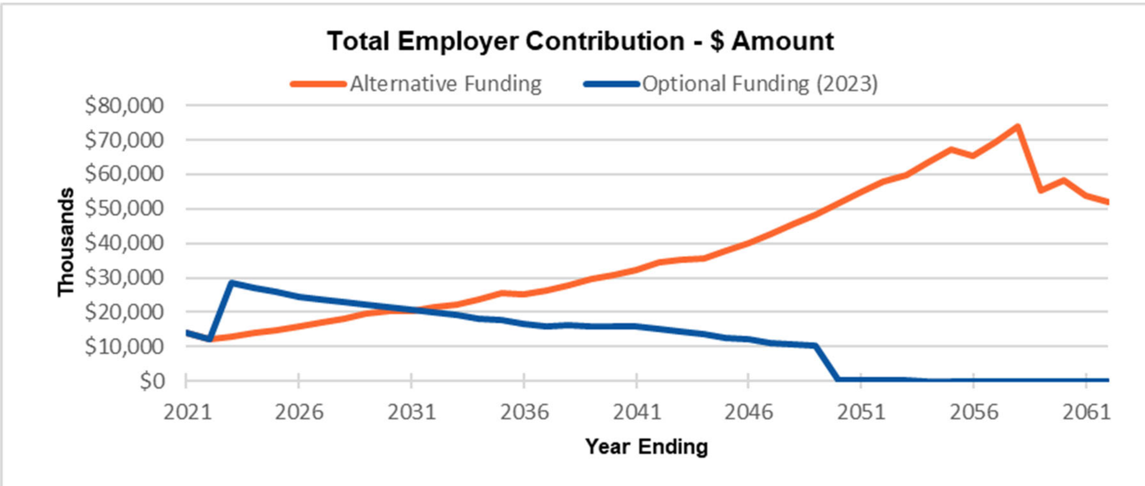
Optional Funding Policy

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

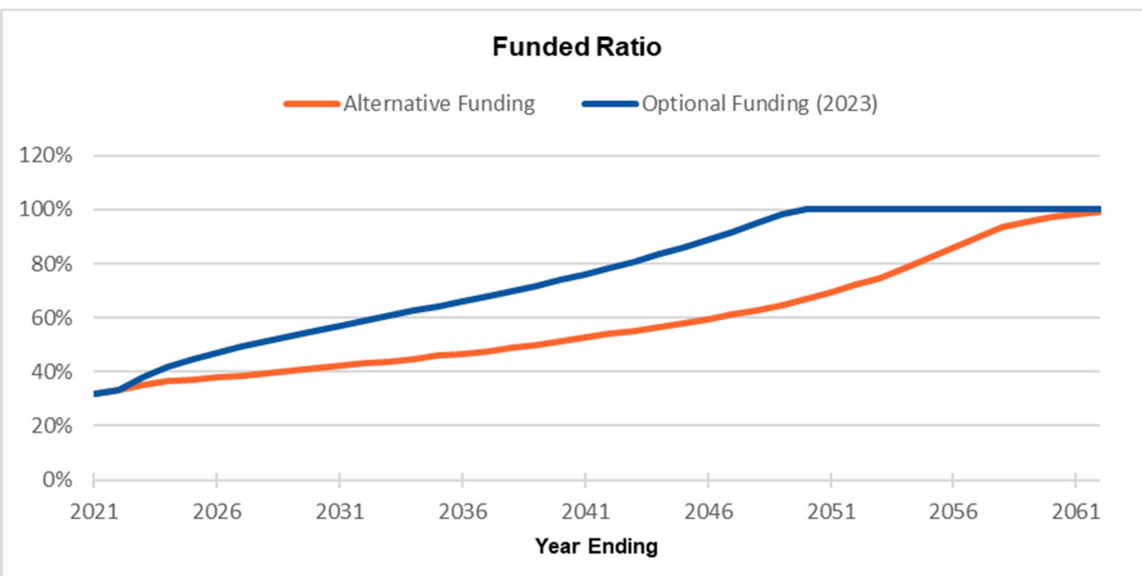
- The required total contribution to the plan, including the premium tax allocation and employee contributions, would equal the normal cost plus a layered amortization of the unfunded accrued liability.
- The pension and relief fund would close to newly-hired police officers or firefighters after the 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 rate 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 funding policy from the Alternative funding policy will likely experience a significant increase in their pension contributions immediately.

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 in 2022.



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 in 2022.



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. Contributing money to the plan sooner than later will likely reduce total contributions over time as the plan could earn more investment income which would reduce future contribution requirements.

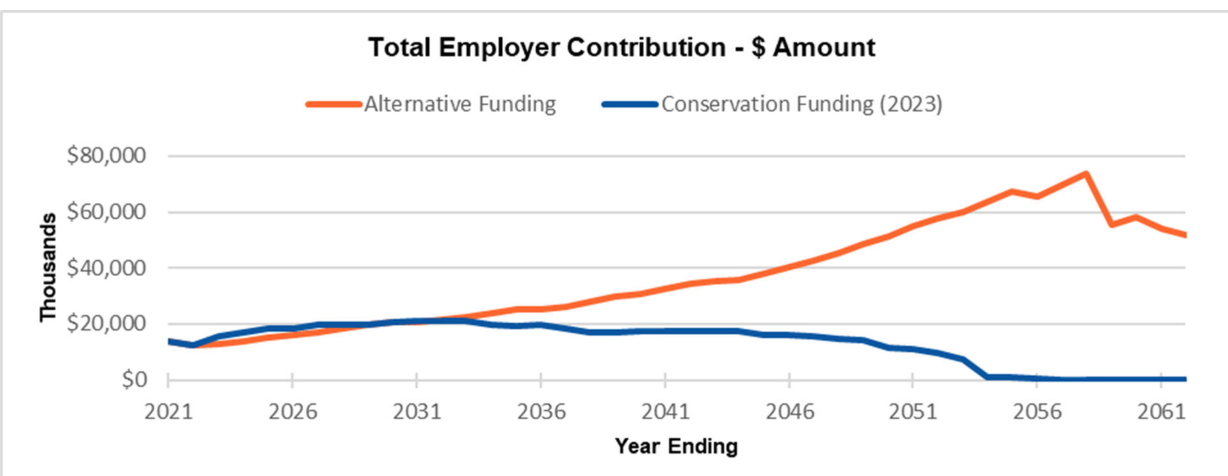
Conservation Funding Policy

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

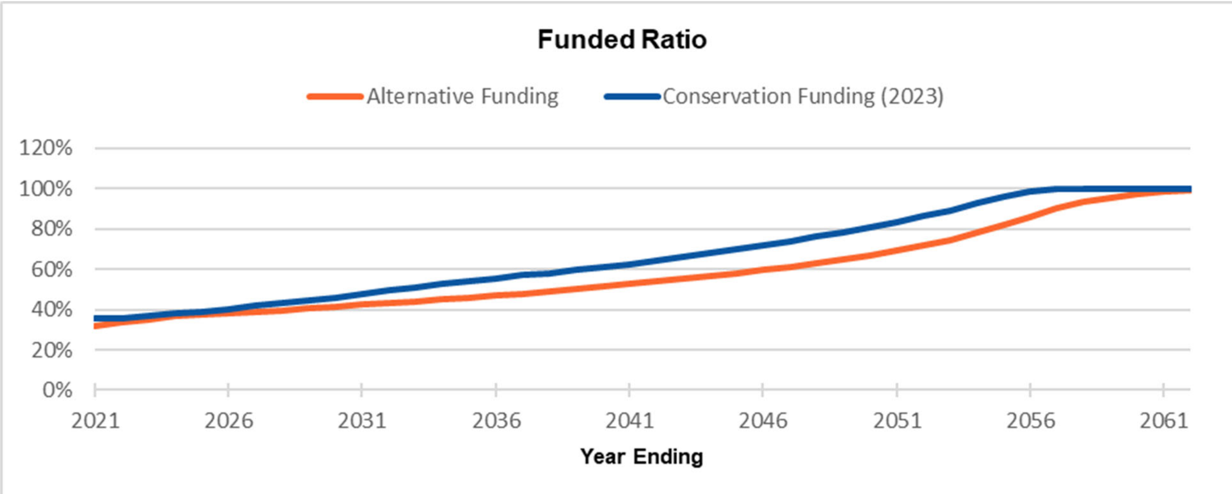
- The plan assets would be segregated into two accounts, an accumulation account and a benefit payment account; the accounts would be funded as follows:
    - Until the plan is 100% funded, 1.5% of employee contributions would be deposited into the accumulation account.
    - An actuarially determined portion of the state premium tax allocation would be deposited into the accumulation account equal to the amount needed to fully fund the pension plan liabilities from the accumulation account 35 years from the date the Conservation funding policy was effective for the plan.
    - The municipality would contribute to the benefit payment account the current year benefit payments and expenses minus the remaining employee contributions and minus any state premium tax not allocated to the accumulation account.
- 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 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 rate 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 Conservation funding policy will experience a similar contribution pattern as plans that use the Alternative funding policy but the plans will become fully funded quicker, primarily due to closing the plan to new hires upon switching to the Conservation funding policy.

The following graph shows the projected contributions for the next 40 years under the Alternative funding policy and under the Conservation funding policy if every municipality using the Alternative funding policy switched to the Conservation funding policy in 2022.



The following graph shows the projected funded status for the next 40 years under the Alternative funding policy and under the Conservation funding policy if every municipality using the Alternative funding policy switched to the Conservation funding policy in 2022.



The first graph shows a slight increase in contributions earlier and a decrease in later years. The second graph shows a steady increase in the funded ratio over time, reaching full funding earlier than under the Alternative funding policy. The main cause for the decrease in the contribution in later years under the Conservation funding policy is due to new hires going into MPFRS, which has the effect of limiting the rate at which the actuarial accrued liability increases on account of future service for active participants.

Section VI. 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 Plans (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 Deferred Retirement Option Plan (i.e. retrospective DROP analysis).

Prospective DROP Analysis

One prospective DROP study was performed during this valuation cycle for the Firemen's Pension and Relief Fund for the City of Clarksburg. This open DROP (i.e. no sunset provision for entry into the DROP) was adopted effective March 11, 2022.

The analysis examined whether adding the proposed DROP as designed would improve or worsen the long-term financial status of the fund. Using the most recently available valuation census data, which is as of July 1, 2020, and the assumptions as detailed in the DROP study, the estimated impact of adding the DROP as of the July 1, 2020 valuation date is as follows:

Impact of Proposed DROP Design (Gain)/Loss	Present Value as of July 1, 2020
(a) Payment Trade-off	61,679
(b) Delay in New Hire Total Normal Cost	(505,832)
(c) Extra Member Contributions Due to DROP	(181,041)
(d) Premium Tax Allocation	148,684
Total DROP Impact ((a) + (b) + (c) + (d))	**(476,510)**

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 Actuarially Determined Contribution (ADC) and the accrued liability. 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.*

Our analysis for DROPs for the WV policemen and firemen plans are based on our interpretation of the phrase "no negative impact on the …fund." We have two observations about this phrase. 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 analysis of the Clarksburg Fire DROP using these options is presented in the table below:

Impact of Proposed DROP Design	Present Value as of July 1, 2020
1. Liability Impact to Fund (a) + (b)	(444,153)
2. Contribution Impact to City (a) + (b) + (c) + (d)	(476,510)

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

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

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

  (2) The member will elect his retirement benefit immediately upon attaining retirement eligibility (i.e. does not elect DROP) versus electing the DROP immediately after attaining retirement eligibility.

  We value the first possible trade-off for members who are expected to work past their normal retirement date and the second trade-off for 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 loss.

  Other assumptions that have a significant impact on whether the payment trade-off results in a cost or savings are the discount rate and salary scale. 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. The gain is the result of the DROP granting interest credits up to only 3.5%, while the plan's investment return assumption is 5.5%. Thus, the DROP would create an expected excess return of 2.0% 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. Clarksburg Fire has fairly high retirement rates at age first eligible, a moderate discount rate and a fairly high salary scale at older ages. Therefore, the net trade-off resulted in an expected cost to the plan.

- **Delay in New Hire Total Normal Cost:** The fund is open to new entrants. If a member works longer because of DROP, the hiring of a new employee is theoretically delayed. In an open plan, such as Clarksburg 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.

- **Extra Member Contributions Due to DROP:** For pre-2010 hires, this is the value of the extra 2.5% (9.5% - 7.0%) of pay contributions going into the fund for the time between DROP entry and the date the member would have worked had there not been a DROP. For all members (not just pre-2010 hires), this component also includes, from the date the member would have worked had there not been a DROP to the DROP exit date, the value of larger employee contributions associated with the generally hirer payroll for DROP members than new hires. This provision will always result in a gain to the plan (and savings to the City).

- **Premium Tax Allocation:** This is the expected loss of premium allocation money 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 $2,800 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 this Fund.

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.

Section VII. Conclusions and Recommendations

Conclusions

The following are some key highlights of the results of the July 1, 2021 valuations:

- The AVA funded ratio improved from 31% as of July 1, 2020 to 34% as of July 1, 2021. The funded ratio for plans using the Optional from Standard policy is the highest, followed by the Standard policy, Optional from Alternative policy, and Alternative policy. Plans using the Conservation policy have the lowest funded ratio.
- The unfunded liability decreased by approximately $60 million from $1.074 billion to $1.014 billion, a decrease of 5.6%. The decrease in unfunded liability was largely attributable to the favorable rate of return on plan assets.
- Total recommended contributions including estimated employee contributions decreased approximately $0.7 million from $72.6 million to $71.8 million, a decrease of 1.0%.
- Net municipality recommended contributions increased $0.6 million from $47.1 million to $47.7 million, an increase of 1.3%.
- The State premium tax allocation decreased by approximately $1.5 million from $19.5 million to $18.0 million, a decrease of 7.5%.
- Liabilities decreased 0.3%. The increases in liability attributable to a year of benefit accruals and the liability experience loss of approximately 0.6% partially offset the 3.0% decrease in liability due to the changes in discount rates.
- The market value of assets (MVA) and actuarial value of assets (AVA) increased by 26.0% and 11.6%, respectively, with a total return on MVA and AVA of 23.4% and 9.2%, respectively. These returns exceeded the beginning of year liability-weighted average discount rate of 4.99%.
- The MVA return for the fiscal year ending June 30, 2021 for each plan ranged from 10.5% to 40.6%.
- The gross normal cost decreased 4.0% which is a result of (1) discount rate increases for all of the 12 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 1,282 to 1,236.
- The plans using the Standard and Optional funding policies are expected to have a more level contribution pattern in the future than funds using the Alternative and Conservation funding policies, resulting in a more sustainable plan. Municipalities funding under 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 funding requirement in the future for some municipalities.

Recommendations

The following are the actuaries' recommendations to the MPOB for changes to the pension plans. These recommendations are unchanged from those presented in the prior consolidated report.

1. In the preliminary 2021 consolidated report dated November 2, 2022, the first recommendation was to "[e]ncourage the legislature to change the State Code to allow municipalities that use the Conservation funding policy to switch to the Optional funding policy." Since the issuance of that preliminary report, House Bill 3148 (HB 3148) was adopted during the 2023 Legislative Session and is effective July 1, 2023. HB 3148 allows municipalities to switch from the Conservation funding policy to the Optional or Optional-II funding policies. Furthermore, the legislation removed the Conservation funding policy from among the available options to which to switch for municipalities using the Alternative funding policy, effectively closing access to the Conservation funding policy for municipalities not already using it.
2. Discourage the use of the Alternative and Conservation funding policies as these funding policies result in expected future contributions which are much higher than current contributions and are expected to create a larger burden in the future for municipalities that fund under these policies.
3. Review the feasibility of pooling investments for these plans to reduce investment expenses and increase investment returns.

Section VIII. 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, 2020	July 1, 2021
1. Actives		
a. Number	1,282	1,236
b. Average Age	40.1	39.8
c. Average Service	13.2	13.0
d. Average Salary	$ 61,256	$ 63,558
2. Retirees		
a. Number	1,430	1,457
b. Average Age	66.6	66.5
c. Total Annual Benefits	$ 54,639,916	$ 56,843,255
3. Survivors		
a. Number	522	533
b. Average Age	74.1	74.1
c. Total Annual Benefits	$ 8,402,122	$ 8,862,134
4. Disableds		
a. Number	273	268
b. Average Age	62.2	62.5
c. Total Annual Benefits	$ 6,999,789	$ 6,971,490
5. Deferred Vesteds		
a. Number	35	40
b. Average Age	47.1	47.3
c. Total Annual Benefits	$ 1,295,622	$ 1,497,669
6. Members Owed Refunds		
a. Number	74	72
b. Average Age	33.9	34.4
c. Total Refunds Owed	$ 1,206,863	$ 1,112,562

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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, 2021.

	0-4	5-9	10-14	15-19	20-24	25-29	30 & Up	Total
Under 25	68	1	-	-	-	-	-	**69**
	47,762	56,424	-	-	-	-	-	**47,887**
25 - 29	93	46	-	-	-	-	-	**139**
	52,199	57,012	-	-	-	-	-	**53,792**
30 - 34	52	63	36	1	-	-	-	**152**
	50,225	57,484	62,934	53,710	-	-	-	**56,266**
35 - 39	30	47	113	43	1	-	-	**234**
	54,104	58,178	61,672	66,769	162,747	-	-	**61,369**
40 - 44	7	22	83	115	20	-	-	**247**
	48,576	58,296	63,708	69,788	69,852	-	-	**66,126**
45 - 49	-	6	43	84	98	26	-	**257**
	-	59,940	65,691	71,472	72,947	77,698	-	**71,428**
50 - 54	-	1	1	47	43	20	2	**114**
	-	40,462	95,606	68,135	74,221	83,039	72,907	**73,127**
55 - 59	3	-	1	1	7	4	2	**18**
	73,077	-	68,838	80,463	69,094	84,688	73,778	**74,361**
60 - 64	-	-	-	1	1	2	2	**6**
	-	-	-	51,965	59,056	93,072	95,252	**81,278**
65 & Up	-	-	-	-	-	-	-	**-**
	-	-	-	-	-	-	-	**-**
Totals	**253**	**186**	**277**	**292**	**170**	**52**	**6**	**1,236**
	50,974	**57,621**	**63,219**	**69,482**	**73,193**	**80,881**	**80,645**	**63,558**

Averages

Age	39.8
Service	13.0

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Section IX. 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 or Conservation funding policies, only members hired prior to the date of the change to either one of these policies are eligible to participate in the Plan.

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

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

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

Employee Contributions
Participating employees hired before January 1, 2010: 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 municipality has elected to contribute the minimum employer contribution under the Alternative funding policy.

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

> Absence from service because of sickness or injury for a period of two years or less shall not be construed as time out of service.
>
> *Military Service* — Any current member who has been on qualified military service in the armed forces of the United States with an honorable discharge may, within six months

from his or her date of discharge, be given credit for continuous service in the paid police or fire department.

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

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

Normal Retirement Eligibility

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

Normal Retirement Benefit

The annual retirement benefit equals the sum of:

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

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

Termination Benefits

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

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

Disability Retirement Eligibility

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

Disability Retirement Benefit

The monthly disability benefit equals the sum of:

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

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

Ordinary (non line-of-duty) disability pensions are offset by $1 per every $3 of other income. There is no offset if total other income is $18,200 (as of 2021, indexed by state minimum wage for years after 2021) 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.

Normal Form

Life annuity with a 60% spouse's survivor benefit. The benefit payable to the spouse as of the member's date of death is determined by taking 60% of the member's benefit at the member's retirement date and indexing that amount to the date of death using the COLA methodology described in the Cost of Living Adjustment section below. No other optional forms are allowed.

Supplemental Benefit (Cost of Living Adjustment – COLA)

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

Deferred Retirement Option Plan (DROP)

For municipalities with a DROP, a member who is 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 WV code allows for interest to be credited to the DROP account if the DROP is designed as such. None of the DROPs currently in place as of the July 1, 2021 valuation date, except Clarksburg Fire, credit interest to the benefits in the DROP account. For Clarksburg Fire, 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 approved the continued overpayment of miscalculated benefits. The five funds are Huntington Fire, Huntington Police, Morgantown Fire, Morgantown Police, and St. Albans Fire. For these five funds, we calculate the contribution under the relevant funding policy as if the payments were corrected and add to that contribution 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

Clarksburg Fire adopted a deferred retirement option plan (DROP).

Section X. 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. Past service liability is allocated from the imputed date of hire, taking into account transferred and purchased service.

West Virginia Funding Policies

Under West Virginia Code §8-22-20(c)(1), there are four 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 (9.0 years remaining as of July 1, 2021). 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 <u>not consistent</u> 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 contribute to the plan on an actuarially determined basis. 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. The closed amortization period as of July 1, 2021 is 9.0 years for sponsors who previously used the Standard funding policy and 27.5 years for sponsors who previously used the Alternative funding policy. 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 to the Optional Funding policy on or after the July 1, 2020 valuation, the initial unfunded actuarial accrued liability prior to any assumption changes or plan changes that became effective during the year ending on the valuation date will be amortized over the maximum of 15 years and the remaining period described above (9.0 years for sponsors who previously used the Standard funding policy and 27.5 years for sponsors who previously used the Alternative funding policy).

  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.

- **Conservation Funding Policy:** Allows 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. 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 <u>not consistent</u> with generally accepted actuarial principles.

Amortization Method for GASB

Amortization Policies	
Standard and Optional 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 purpose.

Asset Method

Actuarial Value of Assets using four-year smoothing. Returns on the average 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 and Optional), valuation results are rolled forward one year to align the contribution calculation with the contribution year:

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

Projection Methods

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

- Compensation will increase and members will leave the active workforce according to the actuarial valuation assumptions.
- For 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) and the discount rate does not change over the projection period
- Non-vested members receive a refund of their accumulated employee contribution account balance during the year in which they terminate.
- For projections that illustrate a change from the Alternative funding policy to either the Optional funding policy or Conservation 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.
- In the years following the valuation year, projections using the Optional or Standard funding policies do not create amortization layers for contribution gains that are generated from employer contributions that are larger than anticipated by the policy. These "excess" contributions can occur if the premium tax allocation is more than the unfunded liability amortization.

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, 2022, includes a Base Allocation of $8,709,689, an Excess Allocation of $9,424,130, and an Expired Premium Tax Allocation of $313,175.

(5) For the plan year ending June 30, 2022, all Pension and Relief Funds reported a total of 1,729.51 eligible active members and 2,233.51 eligible retired members. All plans are eligible to receive a premium tax allocation for the fiscal year ending June 30, 2022 unless they are over 100% funded on July 1, 2021.

(6) The total premium tax allocation is assumed to increase by 2.50% in calendar years ending on and after 2023.

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 Bolton's 2020 *Experience Study Report*, which covered experience during the period from period July 1, 2014 through June 30, 2017. These assumptions are, in the opinion of the actuaries signing this report, reasonable for the intended purpose.

Discount Rate

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

Discount Rate Matrix for Plans Not Investing with the IMB				
Funded Ratio as of Valuation Date[6]	Equity Exposure[7]	Projected Funded Ratio after 15 Years[9]	Discount Rate – Standard and Optional Policies	Discount Rate – Alternative and Conservation Policies
30% or more	60% or more	70% or more	6.50%	6.25%
30% or more	50% or more	70% or more	6.25%	6.00%
30% or more	40% or more	60% or more	6.00%	5.50%
15% or more	30% or more	50% or more	5.75%	5.00%
15% or more	20% or more	40% or more	5.50%	4.75%
Less than 15%	Less than 20%	15% or more	5.00%	4.25%
Less than 15%	Less than 20%	Less than 15%	5.00%	4.00%

Discount Rate Matrix for Plans Investing with the IMB				
Funded Ratio as of Valuation Date[9]	Equity Exposure[10]	Projected Funded Ratio after 15 Years[9]	Discount Rate – Standard and Optional Policies[8]	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%

Inflation

2.50%, compounded annually.

Cost of Living Increase in Benefits

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

[6] Funded ratios based on a 6.0% investment return assumption for plans using an actuarially sound funding policy (Standard or Optional) and a 5.0% investment return assumption for other plans (Alternative or Conservation).
[7] Based on target allocation percentage outlined in the investment policy.
[8] Assumes the IMB maintains a current growth asset target above 70%. If this policy changes, the assumption should be reviewed.

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 estimate the impact of including unused accrued leave time (vacation and sick) in pensionable earnings used to compute the average annual compensation.

Mortality

Pre-Retirement

SOA PubS-2010(B) Employee[9] Mortality Table[10] with the 2010 base rates projected generationally from 2010 using the SOA Mortality Improvement **Scale MP-2019**.

Post Retirement

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-2019.**

For Disabled Retirees:

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

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

[9] 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.

[10] *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	73%	46%	38%	38%	38%	38%	38%	38%	38%	38%	38%
53	69%	39%	32%	36%	36%	36%	36%	36%	36%	36%	36%
54	69%	39%	32%	36%	32%	32%	32%	32%	32%	32%	32%
55	87%	82%	85%	94%	100%	100%	100%	100%	100%	100%	100%
56	84%	57%	49%	73%	100%	100%	100%	100%	100%	100%	100%
57	81%	48%	49%	73%	100%	100%	100%	100%	100%	100%	100%
58	81%	40%	35%	73%	100%	100%	100%	100%	100%	100%	100%
59	70%	40%	25%	40%	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	81%	27%	42%	42%	42%	42%	42%	42%	42%	42%	42%
53	86%	37%	54%	54%	54%	54%	54%	54%	54%	54%	54%
54	86%	37%	54%	54%	70%	70%	70%	70%	70%	70%	70%
55	88%	70%	83%	83%	90%	100%	100%	100%	100%	100%	100%
56	88%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
57	88%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
58	88%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
59	86%	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	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%
51	82%	62%	62%	62%	62%	62%	62%	62%	62%	62%	62%
52	82%	60%	52%	52%	52%	52%	52%	52%	52%	52%	52%
53	81%	59%	51%	64%	64%	64%	64%	64%	64%	64%	64%
54	80%	59%	49%	62%	66%	66%	66%	66%	66%	66%	66%
55	86%	77%	72%	86%	100%	100%	100%	100%	100%	100%	100%
56	87%	74%	66%	83%	100%	100%	100%	100%	100%	100%	100%
57	83%	62%	56%	77%	100%	100%	100%	100%	100%	100%	100%
58	83%	57%	49%	77%	100%	100%	100%	100%	100%	100%	100%
59	76%	57%	40%	57%	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	73%	73%	73%	73%	73%	73%	73%	73%	73%	73%	73%
51	80%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%
52	80%	12%	21%	21%	21%	21%	21%	21%	21%	21%	21%
53	80%	12%	21%	21%	21%	21%	21%	21%	21%	21%	21%
54	80%	12%	21%	21%	35%	35%	35%	35%	35%	35%	35%
55	77%	21%	35%	35%	52%	100%	100%	100%	100%	100%	100%
56	77%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
57	81%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
58	81%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
59	79%	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%	60%
51-52	35%	40%
53-54	25%	40%
55-56	25%	50%
57-59	25%	40%
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	15%	25%
25	7%	10%
30	5%	8%
35	2%	6%
40	2%	3.5%
45	1%	2%
50	0%	0%

Non-Vested Terminations

We value non-vested terminations based on the amount of their employee contribution account balance, which 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.

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.

Disability Rates

Sample disability rates are as follows:

Age	Rates[11]
30	0.33%
40	0.76%
50	1.18%

Marital Status

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

Form of Payment

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

Non-Spouse Beneficiaries

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

Administrative Expenses

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

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

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.

[11] 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.

Changes in Methods/Assumptions Since Prior Valuation

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

In conjunction with valuing the newly-adopted DROP, the retirement rates were updated to reflect DROP for Clarksburg Fire.

B

Section XI. Glossary

Actuarial Accrued Liability (AAL)

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

Actuarial Assumptions

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

Actuarial Cost Method

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

Actuarial Value of Assets (AVA)

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

Actuarially Determined Contribution (ADC)

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

Amortization Method

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

Experience Gain/Loss

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

Funded Ratio

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

Market Value of Assets (MVA)

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

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

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

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

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