Municipal Pensions Oversight Board

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

Consolidated Actuarial Valuation Report for the Year Beginning July 1, 2020

Bolton

Submitted by:

James E. Ritchie, ASA, EA, FCA, MAAA
President Bolton Retirement
443.573.3924
jritchie@boltonusa.com

Jordan McClane, FSA, EA, FCA, MAAA
Actuary
667.218.6935
jmcclane@boltonusa.com

October 29, 2021

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, 2020

Dear Mr. Taylor:

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

Section I provides an executive summary of the key results of the 53 actuarial valuations. Section II provides background on the discount rate used to value liabilities and the rate used by each plan. Section III provides details of the valuation results for each plan and for all plans by funding policy, the development of the total gains and losses on liabilities and plan assets, and a summary of the combined assets for all the plans. Section IV provides a 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 purposes 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, 2022, 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, 2022
- The plan's eligibility to provide supplemental benefits for the plan year beginning July 1, 2022
- 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.

Bolton
Employee Benefits, Actuarial & Investment Consulting

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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Table of Contents

Section I. Executive Summary

Background

Bolton has prepared a July 1, 2020 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.

Additionally, please 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 2018	FYE 2019	FYE 2020	FYE 2021	FYE 2022
Employee Contributions	$ 6.2	$ 6.2	$ 6.3	$ 6.3	$ 5.9
Net City Contributions	$ 51.9	$ 50.1	$ 52.5	$ 52.7	$ 47.1
Premium Tax Allocation	$ 18.2	$ 18.5	$ 19.6	$ 20.0	$ 19.5
Total Contribution	$ 76.3	$ 74.8	$ 78.4	$ 79.0	$ 72.6

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, 2016	July 1, 2017	July 1, 2018	July 1, 2019	July 1, 2020
Accrued Liability	$ 1,503.8	$ 1,514.8	$ 1,572.8	$ 1,605.6	$ 1,550.9
Actuarial Asset Value	$ 329.4	$ 369.9	$ 407.2	$ 444.6	$ 476.9
Unfunded Accrued Liability	$ 1,174.4	$ 1,144.9	$ 1,165.5	$ 1,161.0	$ 1,074.1
Funding Percentage	22%	24%	26%	28%	31%

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 2018	FYE 2019	FYE 2020	FYE 2021	FYE 2022
1. Normal Cost with Interest	$ 37.7	$ 37.4	$ 36.7	$ 35.3	$ 30.1
2. Employee Contributions	$ 6.2	$ 6.2	$ 6.3	$ 6.3	$ 5.9
3. Net Normal Cost with Interest (1. - 2.)	$ 31.5	$ 31.2	$ 30.3	$ 29.0	$ 24.1
4. Net Normal Cost as a % of Payroll[1]	41%	41%	38%	37%	32%
5. Employer Contribution plus State Premium Tax	$ 70.1	$ 68.6	$ 72.0	$ 72.7	$ 66.3
6. Unfunded Liability	$ 1,174.4	$ 1,144.9	$ 1,165.5	$ 1,161.0	$ 1,074.1
7. Net Payment Toward Unfunded Liability (5. - 3.)	38.6	37.4	41.7	43.8	42.2
8. Percent of Unfunded Liability Expected to be Paid (7. / 6.)	3.2%	3.3%	3.6%	3.8%	3.9%

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
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 2012 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
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%
2013	7	42%	7	36%	5	95%	31	33%	2	50%

Experience Analysis

The plans collectively experienced a net actuarial loss of $3.2 million which comprises a loss on liabilities of $0.7 million (0.05% of liabilities) and a loss on assets of $2.5 million (0.5% of assets). The following were the primary causes of the gains and/or losses:

- Demographic changes contributed to the gains and losses on liabilities
- The weighted average returns on the market value of assets and actuarial value of assets were 3.12% and 4.79%, respectively, compared to the weighted average (by BOY asset value) discount rate of 5.37%. Returns lower than anticipated by the discount rate assumption resulted in a loss on assets.

Offsetting the loss was a $100.8 million (6.1% of liabilities) decrease in liabilities due to changes in the discount rate and many actuarial assumptions pursuant to the *2020 Experience Study Report*. Of the 36 plans that had a change in discount rate, 21 of them had decreases in their discount rate, while the remaining 15 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 31%. The funded status for each individual plan ranges from 9% (South Charleston Fire) to 125% (Oak Hill Police). Plans that use the Conservation policy have the lowest funded ratio – a dollar-weighted average ratio of 14%. The second lowest funded ratios are for plans that use the Alternative funding policy – a dollar-weighted average funded ratio of 29%. 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 will eventually become insolvent, meaning that benefits may potentially 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 42%. The dollar-weighted average funded ratio for plans that use the Optional from Standard policy or currently use the Standard policy is 94% and 71%, 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 is generally the sum of two components. The first component, the normal cost, represents the cost of the member earning an additional year of benefit accrual. The second component, the amortization of the unfunded liability, funds any shortfall in assets compared to plan liabilities over a specified number of years. If an employer is not funding at least the sum of the normal cost and the interest on the unfunded liability, then the unfunded liability will continue to grow and the plan could become insolvent in the future. 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	14
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	2

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.

	Percentage of Plans Projected to be 100% Funded by 16th Anniversary of Valuation Date*				
Years	Standard	Optional from Standard	Optional from Alternative	Alternative	Conservation
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%
2011	100%	100%	20%	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 row, the table shows the percentage of plans that are projected to be 100% funded by 2036.

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 in 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 in 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 2021 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 Plans (DROPs)

West Virginia Code Section §8-22-25a(e) requires the MPOB to annually report to the Legislature's Joint Committee on Pensions and Retirement the status of any DROP that has been approved, including any experience impact on an affected pension and relief fund. Bolton provided a letter to the MPOB on August 2, 2021 with the results of this analysis.

An open DROP for the Firemen's Pension and Relief Fund for the City of Beckley was adopted on September 19, 2019. Seven members entered the DROP after the effective date and prior to the June 30, 2020 evaluation date used for the retrospective analysis.

The final member in the St. Albans Fire DROP exited DROP during fiscal year 2020 and, since the St. Albans Fire DROP is closed, members are no longer permitted to enter DROP. The member was one of only three, out of the total five members who were eligible for DROP, that elected to participate in the DROP prior to the DROP entry expiration date of June 30, 2016.

Wheeling Fire also has a closed DROP. Of the 16 members who were eligible to participate in the DROP prior to the DROP entry expiration date of June 30, 2016, nine elected to enter DROP, and of those nine, six were still in the DROP as of June 30, 2020. Although the City of Wheeling has adopted an open DROP with the same provisions as the closed DROP (except that it has no entry expiration, or sunset, date), no members had entered the open DROP as of June 30, 2020. Thus, the retrospective DROP analysis for Wheeling Fire considers only the original nine members who entered DROP.

Although a DROP for the Policemen's Pension and Relief Fund for the City of Beckley was approved on June 18, 2020, no members had entered the DROP prior to the June 30, 2020 evaluation date used for the retrospective analyses. The other 49 plans did not have an active DROP as of June 30, 2020.

The following table summarizes the results for the three plans that had members in DROP prior to the July 1, 2020 valuation date:

DROP Impact (Gain)/Loss	Present Value 7/1/2020
Beckley Fire	(486,110)
St. Albans Fire	123,149
Wheeling Fire	(897,154)

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

While the Beckley Fire and Wheeling Fire DROPs are expected to produce a net gain, the St. Albans Fire DROP is expected to produce a net loss. The expected loss is primarily due to the value of effectively commencing payment earlier due to participation in the DROP exceeding the value of the assumed increases in the accrued benefit for expected employment beyond the DROP entry date.

The main focus for the retrospective DROP studies was to determine, as of July 1, 2020, whether adding the DROP as designed has improved or worsened the long-term financial status of the funds. Our estimates do not consider certain potential impacts to the plan sponsor, such as the impact to compensation or fringe benefits.

Changes in Methods, Assumptions, and Plan Amendments

Pursuant to the 2020 *Actuarial Methods Recommendations Report*, the WV MPOB adopted changes to the following methods:

- Amortization method: for the Standard and Optional funding policies, the method was changed from a single, closed amortization base to a layered amortization approach.
- Asset method: the method was changed from the market value of assets to a four-year smoothed actuarial value of assets.
- Roll-forward method: for the Standard and Optional funding policies, the method was changed from developing contributions for the valuation year to rolling valuation results forward one year to better align the contribution calculation with the expected timing of the contribution.

Additionally, there were changes to several assumptions. These changes are described in detail in *Section X. Actuarial Methods and Assumptions*. All of the significant demographic assumptions were changed as well as the method used to determine the discount rate. 36 plans had a change in the valuation discount rate.

Finally, there were three plans who adopted an open DROP: Beckley Fire, Beckley Police, and Wheeling Fire. Other than those DROPs, there were no other changes in the Plan provisions reflected in this valuation.

Special Funding Situations

There are four plans for which the sponsoring cities approved the continued overpayment of miscalculated benefits. These four plans are Huntington Fire, Huntington Police, Morgantown Fire, and Morgantown Police. For these four plans, 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 MVA	AVA	Unfunded Accrued Liability	Funded Ratio
Beckley Fire	36	63	1	100	Alternative	O		4.75%	3.73%	19,690,974	25,932,485	43%
Beckley Police	46	49	1	96	Alternative	O		5.50%	3.84%	24,611,181	13,514,007	65%
Belle Police	0	5	0	5	Optional		C	7.00%	2.14%	1,406,329	44,498	97%
Bluefield Fire	12	40	3	55	Alternative	O		5.00%	2.88%	4,428,983	12,953,100	25%
Bluefield Police	26	31	2	59	Alternative	O		6.25%	5.61%	7,123,576	5,952,499	54%
Charles Town Police	0	4	0	4	Standard		C	5.75%	2.58%	531,806	532,469	50%
Charleston Fire	94	245	3	342	Conservation		C	4.25%	1.41%	24,185,663	173,534,124	12%
Charleston Police	89	219	10	318	Conservation		C	4.75%	1.35%	26,597,487	142,469,264	16%
Chester Police	2	5	0	7	Optional		C	7.00%	2.18%	1,730,208	287,235	86%
Clarksburg Fire	42	52	1	95	Alternative	O		5.50%	1.26%	11,590,173	21,791,252	35%
Clarksburg Police	40	51	8	99	Alternative	O		6.00%	10.33%	10,972,662	14,896,554	42%
Dunbar Fire	13	22	1	36	Conservation		C	4.25%	4.42%	1,546,145	12,895,410	11%
Dunbar Police	6	14	0	20	Optional		C	6.00%	6.85%	6,594,290	1,670,449	80%
Elkins Fire	3	1	0	4	Optional		C	6.00%	5.38%	1,928,141	(189,919)	111%
Elkins Police	3	11	0	14	Optional		C	6.25%	6.01%	3,907,275	660,744	86%
Fairmont Fire	35	50	0	85	Conservation		C	4.25%	4.25%	4,507,476	40,534,455	10%
Fairmont Police	19	51	5	75	Conservation		C	5.00%	4.57%	7,670,171	20,996,734	27%
Grafton Fire	0	6	1	7	Optional		C	6.00%	5.08%	1,888,000	358,130	84%
Grafton Police	2	6	0	8	Optional		C	6.00%	5.73%	1,811,867	281,123	87%
Huntington Fire	52	169	7	228	Optional		C	5.00%	2.41%	32,558,287	77,655,918	30%
Huntington Police	46	146	1	193	Optional		C	5.75%	3.44%	42,914,388	58,069,600	43%
Logan Fire	8	1	0	9	Standard	O		6.50%	-7.71%	1,043,568	700,334	60%
Logan Police	8	3	0	11	Standard	O		6.50%	-8.29%	954,970	1,243,626	43%
Martinsburg Fire	33	36	9	78	Alternative	O		4.25%	1.63%	3,270,166	32,906,601	9%
Martinsburg Police	43	41	4	88	Alternative	O		4.25%	5.92%	9,561,797	32,367,696	23%
Morgantown Fire	57	60	0	117	Alternative	O		4.25%	-0.01%	14,049,019	39,160,871	26%
Morgantown Police	65	71	1	137	Alternative	O		4.25%	-0.04%	16,957,759	55,758,682	23%
Moundsville Fire	2	12	1	15	Optional		C	5.50%	-3.04%	1,520,895	1,474,585	51%
Moundsville Police	5	18	1	24	Optional		C	6.50%	-2.07%	5,790,391	2,088,147	74%
Nitro Fire	15	12	2	29	Alternative	O		4.25%	1.65%	2,245,331	8,976,137	20%
Nitro Police	19	14	2	35	Alternative	O		4.75%	1.11%	4,702,373	7,802,319	38%
Oak Hill Police	5	6	1	12	Optional		C	6.25%	6.08%	4,860,514	(961,919)	125%
Parkersburg Fire	46	94	1	141	Optional		C	5.75%	1.69%	21,217,957	34,469,494	38%
Parkersburg Police	55	83	6	144	Optional		C	5.75%	4.49%	19,431,768	32,205,749	38%
Point Pleasant Police	3	7	0	10	Optional		C	7.00%	3.37%	1,713,843	1,742,126	50%
Princeton Fire	12	16	3	31	Alternative	O		4.25%	2.72%	3,015,928	8,953,773	25%
Princeton Police	21	21	2	44	Alternative	O		5.00%	2.73%	4,656,713	8,207,209	36%
South Charleston Fire	43	45	2	90	Alternative	O		4.25%	1.81%	3,320,681	34,945,695	9%
South Charleston Police	48	37	1	86	Alternative	O		4.25%	3.65%	3,458,468	25,913,898	12%
St. Albans Fire	22	29	5	56	Alternative	O		4.00%	4.17%	2,476,664	18,685,652	12%
St. Albans Police	22	24	9	55	Alternative	O		5.00%	2.79%	7,666,745	9,938,977	44%
Star City Police	3	5	0	8	Optional		C	6.50%	3.43%	1,979,584	(181,371)	110%
Vienna Police	19	16	3	38	Standard	O		6.25%	4.34%	9,837,574	2,652,472	79%
Weirton Fire	20	21	0	41	Optional		C	6.50%	6.56%	12,478,513	3,666,034	77%
Weirton Police	32	48	0	80	Optional		C	5.50%	6.47%	8,904,117	23,393,631	28%
Welch Police	3	4	0	7	Optional		C	6.50%	1.12%	3,057,964	(590,558)	124%
Weston Fire	3	4	0	7	Optional		C	6.25%	0.12%	1,411,865	414,422	77%
Weston Police	3	3	0	6	Optional		C	6.25%	0.09%	1,601,480	(294,390)	123%
Westover Police	1	5	1	7	Optional		C	6.25%	-0.24%	2,760,756	218,843	93%
Wheeling Fire	59	122	4	185	Optional		C	5.75%	3.70%	34,420,590	37,502,494	48%
Wheeling Police	35	107	6	148	Optional		C	6.00%	3.33%	27,289,742	23,264,210	54%
Williamson Fire	3	12	1	16	Optional		C	7.00%	2.74%	1,703,500	1,640,845	51%
Williamson Police	3	8	0	11	Optional		C	7.00%	3.40%	1,302,563	969,290	57%
Totals	**1,282**	**2,225**	**109**	**3,616**				**4.99%**[2]	**3.15%**[3]	**476,858,880**	**1,074,075,705**	**31%**

[2] Weighted average by liabilities on the valuation date. The discount rate weighed by BOY asset values is 5.37%.

[3] Weighted average by asset size.

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, 2020 valuation for each of the 53 pension plans.

Municipality	Plan	Discount Rate
Beckley	Fire	4.75%
Beckley	Police	5.50%
Belle	Police	7.00%
Bluefield	Fire	5.00%
Bluefield	Police	6.25%
Charles Town	Police	5.75%
Charleston	Fire	4.25%
Charleston	Police	4.75%
Chester	Police	7.00%
Clarksburg	Fire	5.50%
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	5.00%
Grafton	Fire	6.00%
Grafton	Police	6.00%
Huntington	Fire	5.00%
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	5.50%
Moundsville	Police	6.50%
Nitro	Fire	4.25%
Nitro	Police	4.75%
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	4.00%
St. Albans	Police	5.00%
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	5.75%
Wheeling	Police	6.00%
Williamson	Fire	7.00%
Williamson	Police	7.00%
Average[4]		**4.99%**

[4] Weighted average by liabilities on the valuation date

Changes in Discount Rate

The following table lists the plans that had a change in their discount rate from 2019 to 2020.

Plan Name	2019 Discount Rate	2020 Discount Rate
Beckley Fire	5.00%	4.75%
Beckley Police	6.00%	5.50%
Bluefield Police	6.00%	6.25%
Charles Town Police	5.00%	5.75%
Charleston Fire	4.50%	4.25%
Charleston Police	4.50%	4.75%
Clarksburg Fire	5.00%	5.50%
Clarksburg Police	5.50%	6.00%
Dunbar Fire	4.50%	4.25%
Elkins Police	6.50%	6.25%
Fairmont Fire	4.50%	4.25%
Huntington Police	5.50%	5.75%
Logan Fire	6.00%	6.50%
Logan Police	6.00%	6.50%
Martinsburg Fire	4.50%	4.25%
Martinsburg Police	4.50%	4.25%
Morgantown Fire	4.50%	4.25%
Morgantown Police	4.50%	4.25%
Moundsville Fire	5.00%	5.50%
Nitro Fire	4.50%	4.25%
Nitro Police	5.00%	4.75%
Oak Hill Police	6.50%	6.25%
Parkersburg Fire	5.50%	5.75%
Parkersburg Police	5.50%	5.75%
Point Pleasant Police	5.50%	7.00%
Princeton Fire	4.50%	4.25%
South Charleston Fire	4.50%	4.25%
South Charleston Police	4.50%	4.25%
St. Albans Police	5.50%	5.00%
Vienna Police	6.50%	6.25%
Weirton Police	5.00%	5.50%
Weston Fire	6.50%	6.25%
Weston Police	6.50%	6.25%
Westover Police	6.50%	6.25%
Wheeling Fire	5.50%	5.75%
Williamson Fire	5.50%	7.00%

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, 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	-	-	-	-	-	-

Below is a summary of the key valuation results by funding policy as of July 1, 2019.

	Standard	Optional from Standard	Optional From Alternative	Alternative	Conservation	All Plans
Participating Funds	4	11	15	18	5	53
Plan Membership						
(a) Actives	33	26	413	631	273	1,376
(b) Retirees	12	43	570	405	369	1,399
(c) Survivors	6	13	215	164	127	525
(d) Disableds	5	4	77	102	84	272
(e) Deferred Vesteds	1	1	9	8	12	31
(f) Former Members Due Refunds	2	4	14	23	7	50
(g) Total	59	91	1,298	1,333	872	3,653
Payroll (Expected for FYE 2020)	1,594,846	1,365,390	23,796,542	35,097,116	16,433,885	78,287,779
Expected Benefit Payments	676,586	1,659,136	28,386,768	21,767,808	19,341,283	71,831,581
Actuarial Accrued Liabilities						
(a) Actives	7,455,971	7,521,340	160,515,682	199,939,165	141,951,762	517,383,920
(b) Retirees	5,787,000	18,717,545	317,192,766	256,627,674	242,782,120	841,107,105
(c) Survivors	1,409,579	1,968,487	37,637,625	30,754,958	26,649,128	98,419,777
(d) Disableds	2,029,348	1,473,148	31,692,752	43,531,519	48,472,950	127,199,717
(e) Deferred Vesteds	408,370	410,458	4,754,688	4,343,213	10,636,108	20,552,837
(f) Former Members Due Refunds	462	91,247	357,139	295,640	176,904	921,392
(g) Total Liabilities	17,090,730	30,182,225	552,150,652	535,492,169	470,668,972	1,605,584,748
Funded Levels						
Market Value of Assets	11,591,492	25,409,290	202,706,302	146,308,215	58,601,214	444,616,513
Actuarial Value of Assets	11,591,492	25,409,290	202,706,302	146,308,215	58,601,214	444,616,513
Unfunded Liability	5,499,238	4,772,935	349,444,350	389,183,954	412,067,758	1,160,968,235
Funded Ratio - MVA	68%	84%	37%	27%	12%	28%
Funded Ratio - AVA	68%	84%	37%	27%	12%	28%
Normal Cost						
Net Employer Normal Cost	395,514	351,738	7,330,006	13,012,043	6,971,871	28,061,172
(% of Payroll)	26%	27%	32%	38%	43%	37%
FYE 2021 Contributions						
Total Employer Contributions	713,335	654,285	23,680,254	11,428,413	16,239,347	52,715,634
(% of Payroll)	45%	48%	100%	33%	99%	67%
State Premium Tax Allocation	334,401	565,433	7,093,372	7,069,885	4,958,733	20,021,824
(% of Payroll)	21%	41%	30%	20%	30%	26%
Employee Contributions	126,359	106,620	1,759,396	2,988,523	1,335,155	6,316,053
(% of Payroll)	8%	8%	7%	9%	8%	8%
Total Contributions	1,174,095	1,326,338	32,533,022	21,486,821	22,533,235	79,053,511
Additional 2021 Solvency Contribution						
To Receive State Allocation	-	-	-	-	-	-
To Provide COLA Benefits	-	-	-	-	-	-

Key Valuation Results by Municipality

Below is a summary of the key valuation results for each individual municipality as of July 1, 2020.

	Beckley Fire	Beckley Police	Belle Police	Bluefield Fire	Bluefield Police	Charles Town Police
Discount Rate	4.75%	5.50%	7.00%	5.00%	6.25%	5.75%
Plan Membership						
(a) Actives	36	46	0	12	26	0
(b) Retirees	41	27	4	26	19	1
(c) Survivors	15	12	1	7	9	3
(d) Disableds	7	10	0	7	3	0
(e) Deferred Vesteds	1	1	0	0	0	0
(f) Former Members Due Refunds	0	0	0	3	2	0
(g) Total	100	96	5	55	59	4
Payroll (Expected for FYE 2021)	2,640,634	2,532,581	0	594,906	1,142,704	0
Expected Benefit Payments	2,118,840	1,669,526	146,891	979,713	819,517	85,922
Actuarial Accrued Liabilities						
(a) Actives	12,302,170	15,596,518	0	1,894,933	2,331,274	0
(b) Retirees	27,345,452	15,859,201	1,273,411	11,817,004	8,873,507	355,344
(c) Survivors	2,542,799	2,545,557	177,416	1,116,953	1,064,522	708,931
(d) Disableds	2,772,993	3,581,513	0	2,541,678	798,244	0
(e) Deferred Vesteds	660,045	542,399	0	0	0	0
(f) Former Members Due Refunds	0	0	0	11,515	8,528	0
(g) Total Liabilities	45,623,459	38,125,188	1,450,827	17,382,083	13,076,075	1,064,275
Funded Levels						
Market Value of Assets	19,509,772	24,230,044	1,354,655	4,360,332	7,104,226	522,819
Actuarial Value of Assets	19,690,974	24,611,181	1,406,329	4,428,983	7,123,576	531,806
Unfunded Liability	25,932,485	13,514,007	44,498	12,953,100	5,952,499	532,469
Funded Ratio - MVA	43%	64%	93%	25%	54%	49%
Funded Ratio - AVA	43%	65%	97%	25%	54%	50%
Normal Cost						
Net Employer Normal Cost	819,813	626,757	728	200,957	223,740	1,100
(% of Payroll)	40%	25%	N/A	35%	20%	N/A
FYE 2022 Contributions						
Total Employer Contributions	882,853	673,792	772	545,405	442,464	57,558
(% of Payroll)	33%	27%	N/A	92%	39%	N/A
State Premium Tax Allocation	520,888	541,053	37,834	212,545	285,513	11,327
(% of Payroll)	20%	21%	N/A	36%	25%	N/A
Employee Contributions	177,469	210,595	0	55,190	109,458	0
(% of Payroll)	7%	8%	N/A	9%	10%	N/A
Total Contributions	1,581,210	1,425,440	38,606	813,140	837,435	68,885
Additional 2022 Solvency Contribution						
To Receive State Allocation	-	-	-	-	-	-
To Provide COLA Benefits	-	-	-	-	-	-
MVA Return	3.73%	3.84%	2.14%	2.88%	5.61%	2.58%
Funding Policy	Alternative	Alternative	Optional	Alternative	Alternative	Standard

	Charleston Fire	Charleston Police	Chester Police	Clarksburg Fire	Clarksburg Police	Dunbar Fire
Discount Rate	4.25%	4.75%	7.00%	5.50%	6.00%	4.25%
Plan Membership						
(a) Actives	94	89	2	42	40	13
(b) Retirees	160	136	3	30	28	17
(c) Survivors	46	47	2	17	13	2
(d) Disableds	39	36	0	5	10	3
(e) Deferred Vesteds	2	9	0	0	0	0
(f) Former Members Due Refunds	1	1	0	1	8	1
(g) Total	342	318	7	95	99	36
Payroll (Expected for FYE 2021)	6,246,122	5,656,443	91,384	2,056,574	2,221,226	724,033
Expected Benefit Payments	8,569,370	7,813,169	143,215	1,533,032	1,604,069	643,976
Actuarial Accrued Liabilities						
(a) Actives	61,247,821	48,516,101	97,151	17,255,049	6,297,061	4,232,049
(b) Retirees	104,544,568	82,939,057	1,517,937	12,289,592	15,190,275	8,672,151
(c) Survivors	9,502,739	10,782,240	402,355	2,287,350	2,003,000	208,287
(d) Disableds	20,840,402	19,315,487	0	1,543,409	2,295,793	1,316,690
(e) Deferred Vesteds	1,512,405	7,493,225	0	0	0	0
(f) Former Members Due Refunds	71,852	20,641	0	6,025	83,087	12,378
(g) Total Liabilities	197,719,787	169,066,751	2,017,443	33,381,425	25,869,216	14,441,555
Funded Levels						
Market Value of Assets	23,647,016	26,003,721	1,670,893	11,294,578	11,329,558	1,547,018
Actuarial Value of Assets	24,185,663	26,597,487	1,730,208	11,590,173	10,972,662	1,546,145
Unfunded Liability	173,534,124	142,469,264	287,235	21,791,252	14,896,554	12,895,410
Funded Ratio - MVA	12%	15%	83%	34%	44%	11%
Funded Ratio - AVA	12%	16%	86%	35%	42%	11%
Normal Cost						
Net Employer Normal Cost	2,789,792	1,719,729	12,990	616,724	437,120	311,811
(% of Payroll)	46%	31%	15%	31%	20%	44%
FYE 2022 Contributions						
Total Employer Contributions	7,496,214	6,170,806	12,966	1,331,375	1,318,806	484,120
(% of Payroll)	120%	109%	14%	65%	59%	67%
State Premium Tax Allocation	1,861,484	1,866,884	45,725	474,095	464,032	172,856
(% of Payroll)	30%	33%	50%	23%	21%	24%
Employee Contributions	460,480	416,586	8,034	179,084	203,178	61,291
(% of Payroll)	7%	7%	9%	9%	9%	8%
Total Contributions	9,818,178	8,454,276	66,725	1,984,554	1,986,016	718,267
Additional 2022 Solvency Contribution						
To Receive State Allocation	-	-	-	-	-	-
To Provide COLA Benefits	-	-	-	-	-	-
MVA Return	1.41%	1.35%	2.18%	1.26%	10.33%	4.42%
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%	5.00%	6.00%
Plan Membership						
(a) Actives	6	3	3	35	19	0
(b) Retirees	9	0	9	39	32	5
(c) Survivors	1	1	2	10	15	0
(d) Disableds	4	0	0	1	4	1
(e) Deferred Vesteds	0	0	0	0	1	0
(f) Former Members Due Refunds	0	0	0	0	4	1
(g) Total	20	4	14	85	75	7
Payroll (Expected for FYE 2021)	337,697	188,194	168,436	1,962,217	1,176,249	0
Expected Benefit Payments	435,490	33,060	360,144	1,818,683	1,594,164	184,642
Actuarial Accrued Liabilities						
(a) Actives	2,063,619	1,530,874	325,766	21,651,344	5,860,624	0
(b) Retirees	4,421,471	0	3,848,625	21,871,867	18,119,454	1,961,294
(c) Survivors	105,302	207,348	393,628	1,330,717	2,625,139	0
(d) Disableds	1,674,347	0	0	188,003	1,121,617	248,154
(e) Deferred Vesteds	0	0	0	0	861,883	0
(f) Former Members Due Refunds	0	0	0	0	78,188	36,682
(g) Total Liabilities	8,264,739	1,738,222	4,568,019	45,041,931	28,666,905	2,246,130
Funded Levels						
Market Value of Assets	6,634,153	1,919,756	3,893,791	4,500,159	7,647,255	1,875,223
Actuarial Value of Assets	6,594,290	1,928,141	3,907,275	4,507,476	7,670,171	1,888,000
Unfunded Liability	1,670,449	-189,919	660,744	40,534,455	20,996,734	358,130
Funded Ratio - MVA	80%	110%	85%	10%	27%	83%
Funded Ratio - AVA	80%	111%	86%	10%	27%	84%
Normal Cost						
Net Employer Normal Cost	112,502	58,404	27,812	878,871	280,886	1,195
(% of Payroll)	34%	32%	17%	46%	24%	N/A
FYE 2022 Contributions						
Total Employer Contributions	112,079	55,579	27,336	1,395,937	1,053,873	1,261
(% of Payroll)	33%	30%	16%	71%	90%	N/A
State Premium Tax Allocation	142,464	0	129,164	464,031	420,069	49,899
(% of Payroll)	42%	0%	77%	24%	36%	N/A
Employee Contributions	22,183	11,783	13,592	153,807	89,936	0
(% of Payroll)	7%	6%	8%	8%	8%	N/A
Total Contributions	276,726	67,362	170,092	2,013,775	1,563,878	51,160
Additional 2022 Solvency Contribution						
To Receive State Allocation	-	-	-	-	-	-
To Provide COLA Benefits	-	-	-	-	-	-
MVA Return	6.85%	5.38%	6.01%	4.25%	4.57%	5.08%
Funding Policy	Optional	Optional	Optional	Conservation	Conservation	Optional

	Grafton Police	Huntington Fire	Huntington Police	Logan Fire	Logan Police	Martinsburg Fire
Discount Rate	6.00%	5.00%	5.75%	6.50%	6.50%	4.25%
Plan Membership						
(a) Actives	2	52	46	8	8	33
(b) Retirees	0	107	102	1	3	24
(c) Survivors	4	42	30	0	0	7
(d) Disableds	2	20	14	0	0	5
(e) Deferred Vesteds	0	7	1	0	0	0
(f) Former Members Due Refunds	0	0	0	0	0	9
(g) Total	8	228	193	9	11	78
Payroll (Expected for FYE 2021)	116,508	3,054,751	3,303,872	342,161	315,373	2,054,670
Expected Benefit Payments	79,193	5,798,437	5,557,808	19,545	85,699	1,576,296
Actuarial Accrued Liabilities						
(a) Actives	1,053,527	26,153,129	28,557,418	1,617,969	993,325	13,184,440
(b) Retirees	0	63,246,844	60,836,718	125,933	1,205,271	19,566,450
(c) Survivors	485,095	7,860,396	5,794,110	0	0	1,690,503
(d) Disableds	554,368	8,697,453	5,263,905	0	0	1,629,924
(e) Deferred Vesteds	0	4,256,383	531,837	0	0	0
(f) Former Members Due Refunds	0	0	0	0	0	105,450
(g) Total Liabilities	2,092,990	110,214,205	100,983,988	1,743,902	2,198,596	36,176,767
Funded Levels						
Market Value of Assets	1,808,426	31,965,282	42,286,861	941,205	854,707	3,202,766
Actuarial Value of Assets	1,811,867	32,558,287	42,914,388	1,043,568	954,970	3,270,166
Unfunded Liability	281,123	77,655,918	58,069,600	700,334	1,243,626	32,906,601
Funded Ratio - MVA	86%	29%	42%	54%	39%	9%
Funded Ratio - AVA	87%	30%	43%	60%	43%	9%
Normal Cost						
Net Employer Normal Cost	29,845	1,110,614	705,587	78,778	60,546	849,178
(% of Payroll)	26%	37%	22%	24%	20%	42%
FYE 2022 Contributions						
Total Employer Contributions	31,058	4,632,216	3,269,124	109,755	158,100	931,254
(% of Payroll)	27%	152%	99%	32%	50%	45%
State Premium Tax Allocation	75,547	1,131,758	1,121,406	65,966	61,569	377,521
(% of Payroll)	65%	37%	34%	19%	20%	18%
Employee Contributions	8,046	206,278	205,212	25,409	23,296	180,629
(% of Payroll)	7%	7%	6%	7%	7%	9%
Total Contributions	114,651	5,970,252	4,595,742	201,130	242,965	1,489,404
Additional 2022 Solvency Contribution						
To Receive State Allocation	-	-	-	-	-	-
To Provide COLA Benefits	-	-	-	-	-	-
MVA Return	5.73%	2.41%	3.44%	-7.71%	-8.29%	1.63%
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%	5.50%	6.50%	4.25%
Plan Membership						
(a) Actives	43	57	65	2	5	15
(b) Retirees	25	43	49	4	10	8
(c) Survivors	8	15	14	7	8	2
(d) Disableds	8	2	8	1	0	2
(e) Deferred Vesteds	0	0	0	0	0	0
(f) Former Members Due Refunds	4	0	1	1	1	2
(g) Total	88	117	137	15	24	29
Payroll (Expected for FYE 2021)	2,689,434	3,580,333	4,446,616	111,806	311,808	842,641
Expected Benefit Payments	1,610,974	2,035,029	2,924,802	245,336	457,739	429,004
Actuarial Accrued Liabilities						
(a) Actives	17,056,404	23,635,499	28,487,956	612,295	2,160,726	4,251,256
(b) Retirees	20,891,095	26,567,127	37,787,291	1,020,312	4,710,547	5,058,703
(c) Survivors	1,188,401	2,219,920	3,047,317	1,102,540	972,787	411,195
(d) Disableds	2,758,437	787,344	3,340,247	249,512	0	1,471,329
(e) Deferred Vesteds	0	0	0	0	0	0
(f) Former Members Due Refunds	35,156	0	53,630	10,821	34,478	28,985
(g) Total Liabilities	41,929,493	53,209,890	72,716,441	2,995,480	7,878,538	11,221,468
Funded Levels						
Market Value of Assets	9,658,746	13,590,152	16,395,710	1,429,824	5,430,039	2,199,783
Actuarial Value of Assets	9,561,797	14,049,019	16,957,759	1,520,895	5,790,391	2,245,331
Unfunded Liability	32,367,696	39,160,871	55,758,682	1,474,585	2,088,147	8,976,137
Funded Ratio - MVA	23%	26%	23%	48%	69%	20%
Funded Ratio - AVA	23%	26%	23%	51%	74%	20%
Normal Cost						
Net Employer Normal Cost	953,235	1,572,039	1,439,780	40,369	61,901	356,001
(% of Payroll)	36%	45%	33%	37%	20%	43%
FYE 2022 Contributions						
Total Employer Contributions	767,756	981,069	1,233,680	41,288	61,120	217,182
(% of Payroll)	29%	27%	28%	37%	20%	26%
State Premium Tax Allocation	446,995	629,777	711,889	71,466	169,978	143,123
(% of Payroll)	17%	18%	16%	64%	55%	17%
Employee Contributions	240,055	312,173	431,825	7,724	20,287	62,969
(% of Payroll)	9%	9%	10%	7%	7%	7%
Total Contributions	1,454,806	1,923,019	2,377,394	120,478	251,385	423,274
Additional 2022 Solvency Contribution						
To Receive State Allocation	-	-	-	-	-	-
To Provide COLA Benefits	-	-	-	-	-	-
MVA Return	5.92%	-0.01%	-0.04%	-3.04%	-2.07%	1.65%
Funding Policy	Alternative	Alternative	Alternative	Optional	Optional	Alternative

	Nitro Police	Oak Hill Police	Parkersburg Fire	Parkersburg Police	Point Pleasant Police	Princeton Fire
Discount Rate	4.75%	6.25%	5.75%	5.75%	7.00%	4.25%
Plan Membership						
(a) Actives	19	5	46	55	3	12
(b) Retirees	7	5	62	50	5	10
(c) Survivors	4	1	20	23	1	3
(d) Disableds	3	0	12	10	1	3
(e) Deferred Vesteds	0	0	1	1	0	3
(f) Former Members Due Refunds	2	1	0	5	0	0
(g) Total	35	12	141	144	10	31
Payroll (Expected for FYE 2021)	1,122,187	268,645	2,418,603	3,021,986	127,306	630,043
Expected Benefit Payments	445,625	186,463	2,932,534	2,708,148	176,350	419,281
Actuarial Accrued Liabilities						
(a) Actives	6,087,264	1,513,962	18,033,157	17,674,905	1,136,846	3,837,351
(b) Retirees	4,042,151	2,219,429	30,095,725	25,524,923	1,782,021	4,275,806
(c) Survivors	930,100	164,219	2,799,220	3,521,724	119,021	437,605
(d) Disableds	1,379,051	0	4,259,265	4,424,468	418,081	1,719,394
(e) Deferred Vesteds	0	0	500,084	392,754	0	1,699,545
(f) Former Members Due Refunds	66,126	985	0	98,743	0	0
(g) Total Liabilities	12,504,692	3,898,595	55,687,451	51,637,517	3,455,969	11,969,701
Funded Levels						
Market Value of Assets	4,571,366	4,845,866	20,655,959	19,298,944	1,692,181	2,979,023
Actuarial Value of Assets	4,702,373	4,860,514	21,217,957	19,431,768	1,713,843	3,015,928
Unfunded Liability	7,802,319	-961,919	34,469,494	32,205,749	1,742,126	8,953,773
Funded Ratio - MVA	37%	124%	37%	37%	49%	25%
Funded Ratio - AVA	38%	125%	38%	38%	50%	25%
Normal Cost						
Net Employer Normal Cost	349,704	45,287	698,990	661,006	26,810	257,650
(% of Payroll)	32%	17%	30%	22%	22%	42%
FYE 2022 Contributions						
Total Employer Contributions	233,095	41,181	2,120,916	1,877,421	175,082	141,155
(% of Payroll)	21%	15%	88%	62%	138%	22%
State Premium Tax Allocation	191,890	0	708,237	733,446	84,219	145,067
(% of Payroll)	17%	0%	29%	24%	66%	23%
Employee Contributions	101,444	19,313	165,562	217,555	7,073	54,859
(% of Payroll)	9%	7%	7%	7%	6%	9%
Total Contributions	526,429	60,494	2,994,715	2,828,422	266,374	341,081
Additional 2022 Solvency Contribution						
To Receive State Allocation	-	-	-	-	-	-
To Provide COLA Benefits	-	-	-	-	-	-
MVA Return	1.11%	6.08%	1.69%	4.49%	3.37%	2.72%
Funding Policy	Alternative	Optional	Optional	Optional	Optional	Alternative

	Princeton Police	South Charleston Fire	South Charleston Police	St. Albans Fire	St. Albans Police	Star City Police
Discount Rate	5.00%	4.25%	4.25%	4.00%	5.00%	6.50%
Plan Membership						
(a) Actives	21	43	48	22	22	3
(b) Retirees	17	25	13	16	18	1
(c) Survivors	1	13	12	9	5	4
(d) Disableds	3	7	12	4	1	0
(e) Deferred Vesteds	0	1	0	1	0	0
(f) Former Members Due Refunds	2	1	1	4	9	0
(g) Total	44	90	86	56	55	8
Payroll (Expected for FYE 2021)	1,227,240	2,363,206	2,280,309	1,121,112	1,148,573	177,956
Expected Benefit Payments	668,227	1,407,504	1,105,400	875,827	930,030	86,159
Actuarial Accrued Liabilities						
(a) Actives	3,837,480	16,216,335	12,937,267	6,643,207	4,576,347	645,054
(b) Retirees	7,593,416	14,997,851	8,654,878	10,860,891	11,209,353	364,416
(c) Survivors	253,342	3,079,176	2,597,049	1,503,262	1,136,111	788,743
(d) Disableds	1,134,661	3,194,432	5,179,228	1,451,298	587,954	0
(e) Deferred Vesteds	0	742,320	0	696,797	0	0
(f) Former Members Due Refunds	45,023	36,262	3,944	6,861	95,957	0
(g) Total Liabilities	12,863,922	38,266,376	29,372,366	21,162,316	17,605,722	1,798,213
Funded Levels						
Market Value of Assets	4,584,765	3,260,487	3,437,294	2,479,918	7,517,567	1,937,045
Actuarial Value of Assets	4,656,713	3,320,681	3,458,468	2,476,664	7,666,745	1,979,584
Unfunded Liability	8,207,209	34,945,695	25,913,898	18,685,652	9,938,977	-181,371
Funded Ratio - MVA	36%	9%	12%	12%	43%	108%
Funded Ratio - AVA	36%	9%	12%	12%	44%	110%
Normal Cost						
Net Employer Normal Cost	307,642	1,052,879	795,983	509,165	328,598	32,996
(% of Payroll)	26%	45%	36%	46%	29%	19%
FYE 2022 Contributions						
Total Employer Contributions	278,648	967,234	538,079	337,388	397,428	33,183
(% of Payroll)	23%	41%	24%	30%	35%	19%
State Premium Tax Allocation	239,257	515,492	477,883	259,683	250,358	0
(% of Payroll)	19%	22%	21%	23%	22%	0%
Employee Contributions	110,677	192,143	197,568	112,214	111,539	14,492
(% of Payroll)	9%	8%	9%	10%	10%	8%
Total Contributions	628,582	1,674,869	1,213,530	709,285	759,325	47,675
Additional 2022 Solvency Contribution						
To Receive State Allocation	-	-	-	-	-	-
To Provide COLA Benefits	-	-	-	-	-	-
MVA Return	2.73%	1.81%	3.65%	4.17%	2.79%	3.43%
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	19	20	32	3	3	3
(b) Retirees	8	18	36	4	4	2
(c) Survivors	3	3	9	0	0	1
(d) Disableds	5	0	3	0	0	0
(e) Deferred Vesteds	1	0	0	0	0	0
(f) Former Members Due Refunds	2	0	0	0	0	0
(g) Total	38	41	80	7	7	6
Payroll (Expected for FYE 2021)	1,073,670	1,254,930	2,061,163	175,963	100,485	131,981
Expected Benefit Payments	550,046	836,218	1,650,962	108,018	98,743	68,163
Actuarial Accrued Liabilities						
(a) Actives	5,307,388	7,128,937	11,757,889	912,627	344,335	531,601
(b) Retirees	4,215,786	8,510,189	18,327,051	1,554,779	1,481,952	716,867
(c) Survivors	687,345	505,421	1,271,708	0	0	58,622
(d) Disableds	1,851,432	0	941,100	0	0	0
(e) Deferred Vesteds	427,633	0	0	0	0	0
(f) Former Members Due Refunds	462	0	0	0	0	0
(g) Total Liabilities	12,490,046	16,144,547	32,297,748	2,467,406	1,826,287	1,307,090
Funded Levels						
Market Value of Assets	9,688,348	12,483,870	8,990,783	2,939,683	1,348,579	1,527,033
Actuarial Value of Assets	9,837,574	12,478,513	8,904,117	3,057,964	1,411,865	1,601,480
Unfunded Liability	2,652,472	3,666,034	23,393,631	-590,558	414,422	-294,390
Funded Ratio - MVA	78%	77%	28%	119%	74%	117%
Funded Ratio - AVA	79%	77%	28%	124%	77%	123%
Normal Cost						
Net Employer Normal Cost	212,332	312,466	448,333	36,036	27,273	23,757
(% of Payroll)	20%	26%	22%	21%	28%	19%
FYE 2022 Contributions						
Total Employer Contributions	348,595	323,345	1,390,454	37,662	27,747	23,577
(% of Payroll)	32%	26%	67%	21%	28%	18%
State Premium Tax Allocation	197,857	255,721	421,139	0	50,154	0
(% of Payroll)	18%	20%	20%	0%	50%	0%
Employee Contributions	92,018	94,588	168,610	13,196	6,877	8,768
(% of Payroll)	9%	8%	8%	7%	7%	7%
Total Contributions	638,470	673,654	1,980,203	50,858	84,778	32,345
Additional 2022 Solvency Contribution						
To Receive State Allocation	-	-	-	-	-	-
To Provide COLA Benefits	-	-	-	-	-	-
MVA Return	4.34%	6.56%	6.47%	1.12%	0.12%	0.09%
Funding Policy	Standard	Optional	Optional	Optional	Optional	Optional

	Westover Police	Wheeling Fire	Wheeling Police	Williamson Fire	Williamson Police	Total
Discount Rate	6.25%	5.75%	6.00%	7.00%	7.00%	N/A
Plan Membership						
(a) Actives	1	59	35	3	3	1,282
(b) Retirees	5	82	71	6	3	1,430
(c) Survivors	0	34	28	4	4	522
(d) Disableds	0	6	8	2	1	273
(e) Deferred Vesteds	1	3	1	0	0	35
(f) Former Members Due Refunds	0	1	5	1	0	74
(g) Total	7	185	148	16	11	3,616
Payroll (Expected for FYE 2021)	55,720	3,406,609	1,920,174	103,869	125,693	75,226,796
Expected Benefit Payments	162,660	4,360,457	3,336,617	243,958	134,060	74,864,735
Actuarial Accrued Liabilities						
(a) Actives	307,608	25,787,315	11,361,121	375,278	578,264	506,497,836
(b) Retirees	2,220,907	37,808,984	31,928,464	1,782,923	1,011,596	813,096,859
(c) Survivors	0	5,391,704	3,726,850	592,557	502,698	92,843,024
(d) Disableds	0	1,546,420	2,866,103	575,627	179,295	114,698,658
(e) Deferred Vesteds	451,084	1,367,544	455,407	0	0	22,591,345
(f) Former Members Due Refunds	0	21,117	216,007	17,960	0	1,206,863
(g) Total Liabilities	2,979,599	71,923,084	50,553,952	3,344,345	2,271,853	1,550,934,585
Funded Levels						
Market Value of Assets	2,627,101	33,985,924	26,766,846	1,669,415	1,270,026	469,366,493
Actuarial Value of Assets	2,760,756	34,420,590	27,289,742	1,703,500	1,302,563	476,858,880
Unfunded Liability	218,843	37,502,494	23,264,210	1,640,845	969,290	1,074,075,705
Funded Ratio - MVA	88%	47%	53%	50%	56%	30%
Funded Ratio - AVA	93%	48%	54%	51%	57%	31%
Normal Cost						
Net Employer Normal Cost	17,165	983,301	433,450	18,029	18,764	23,976,420
(% of Payroll)	32%	34%	23%	18%	15%	33%
FYE 2022 Contributions						
Total Employer Contributions	17,938	2,192,451	1,099,770	28,585	21,682	47,149,414
(% of Payroll)	32%	64%	57%	28%	17%	63%
State Premium Tax Allocation	125,428	1,119,489	844,536	78,499	64,944	19,470,157
(% of Payroll)	225%	33%	44%	76%	52%	26%
Employee Contributions	3,903	191,354	135,115	7,120	8,519	5,931,076
(% of Payroll)	7%	6%	7%	7%	7%	8%
Total Contributions	147,269	3,503,294	2,079,421	114,204	95,145	72,550,647
Additional 2022 Solvency Contribution						
To Receive State Allocation	-	-	-	-	-	-
To Provide COLA Benefits	-	-	-	-	-	-
MVA Return	-0.24%	3.70%	3.33%	2.74%	3.40%	3.12%
Funding Policy	Optional	Optional	Optional	Optional	Optional	N/A

Asset Allocation

The table below shows the amount of funds invested in each account as of June 30, 2019 and June 30, 2020.

Assets Held by Category	June 30, 2019	June 30, 2020
Cash and Deposits	$ 32,190,794	$ 35,527,285
Receivables		
Contributions	$ 71,612	$ 971,530
Investment Income	299,210	460,541
Total Receivables	**$ 370,822**	**$ 1,432,071**
Investment		
Government Securities	$ 44,006,934	$ 30,971,571
Fixed Income	109,363,990	132,593,166
Equities	244,582,076	255,894,124
Alternative Investments	14,862,683	13,824,115
Other	0	0
Total Investments	**$ 412,815,683**	**$ 433,282,976**
Total Assets	**$ 445,377,299**	**$ 470,242,332**
Payables		
Investment Expense	$ 0	$ 15,652
Benefits and Withdrawals	753,319	742,468
Administrative Expense	7,467	117,719
Total Payables	**$ 760,786**	**$ 875,839**
Net Position	**$ 444,616,513**	**$ 469,366,493**

Reconciliation of Assets

Below is a reconciliation of assets (unaudited) from July 1, 2018 through June 30, 2020.

Plan Year Ending		June 30, 2019		June 30, 2020
1. Beginning of Year Market Value of Assets	$	407,247,335	$	444,616,513
Adjustments to Market Value of Assets		(124,946)		(1,836)
Beginning of Year Market Value of Assets	**$**	**407,122,389**	**$**	**444,614,677**
2. Additions				
a. Contributions				
(i) Local Government	$	54,554,463	$	54,986,840
(ii) State Government		17,993,584		18,514,967
(iii) Employee		6,424,920		6,574,719
(iv) Total		78,972,967		80,076,526
b. Receivable Contribution				
(i) Local Government	$	136,054	$	167,738
(ii) State Government		7,041		747,635
(iii) Employee Contributions		49,998		56,157
(iv) Total		193,093		971,530
c. Earnings on Investments				
(i) Net Appreciation/(Depreciation)	$	12,055,857	$	(1,122,392)
(ii) Net Realized Gain (Loss) on Sale/Exchange		2,750,900		4,139,218
(iii) Interest and Dividends		11,117,848		12,135,918
(iv) Other Income		123,271		269,639
(v) Investment Expense		(1,744,473)		(1,822,732)
(vi) Receivable Investment Income		177,729		460,541
(vii) Payable Investment Expenses		0		(15,652)
(viii) Net Investment Income		24,481,132		14,044,540
d. Other Revenue		4,541		9,086
e. Total Additions	**$**	**103,651,733**	**$**	**95,101,682**
3. Disbursements				
a. Benefit Payments	$	64,360,734	$	68,020,389
b. Withdrawals		821,225		1,118,877
c. Administrative Expenses				
(i) Municipal Fees		157,377		296,099
(ii) Other Expenses		57,487		54,314
(iii) Total Administrative Expenses		214,864		350,413
d. Payable Benefits and Withdrawals		753,319		742,468
e. Payable Administrative Expenses		7,467		117,719
f. Total Disbursements	**$**	**66,157,609**	**$**	**70,349,866**
4. Net Increase (2.e. – 3.f.)		37,494,124		24,751,816
5. Net Assets (1. + 4.)	**$**	**444,616,513**	**$**	**469,366,493**
6. Rate of Return Net of Investment Fees (2I / [A + B – I] Method[5])		5.9%		3.1%

[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, 2020

MVA (Gain)/Loss for Plan Year Ended June 30, 2020			
Market Value of Assets (MVA)			
a.	MVA as of 7/1/2019	$	444,614,677
b.	Interest on a. to 6/30/2020		23,782,856
c.	Contributions with Interest to 6/30/2020		83,048,011
d.	Benefit Payments with Interest to 6/30/2020		71,611,504
e.	Administrative Expenses with Interest to 6/30/2020		477,701
f.	Expected MVA at 6/30/2020 (a. + b. + c. – d. – e.)		479,356,339
g.	Actual MVA at 6/30/2020		469,366,493
h.	MVA (Gain)/Loss (f. - g.)		9,989,846

Development of Actuarial Value of Assets

The actuarial asset value as of July 1, 2020 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, 2020
1.	Market Value of Assets				$	469,366,493
2.	Spreading of Investment (Gains)/Losses					
	Fiscal Year		(Gain)/Loss	% Deferred		Amount Deferred
	2020	$	9,989,846	75%	$	7,492,387
	2019		0	50%		0
	2018		0	25%		0
	a. Total Deferred					7,492,387
3.	Actuarial Value of Assets (1. + 2.a.)				$	476,858,880
4.	Rate of Return Net of Investment Fees (2I / [A + B – I] Method)					4.79%

Experience (Gain)/Loss for Plan Year Ended June 30, 2020

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, 2020			
1.	Liabilities		
	a. Actuarial Accrued Liability as of 7/1/2019	$	1,605,584,748
	b. Normal Cost as of 7/1/2019		33,952,279
	c. Interest on a. and b. to 6/30/2020		82,024,444
	d. Benefit Payments with Interest to 6/30/2020		71,611,504
	e. Effect of Plan Provision Changes		1,081,282
	f. Effect of Assumption Changes		(100,843,906)
	g. Expected Liability at 7/1/2019 (a. + b. + c. – d. + e. + f.)		1,550,187,343
	h. Actual Liability at 7/1/2020		1,550,934,585
	i. Liability (Gain)/Loss (h. - g.)		747,242
2.	Actuarial Value of Assets (AVA)		
	a. AVA as of 7/1/2019	$	444,614,677
	b. Interest on a. to 6/30/2020		23,782,856
	c. Contributions with Interest to 6/30/2020		83,048,011
	d. Benefit Payments with Interest to 6/30/2020		71,611,504
	e. Administrative Expenses with Interest to 6/30/2020		477,701
	f. Expected AVA at 6/30/2020 (a. + b. + c. – d. – e.)		479,356,339
	g. Actual AVA at 6/30/2020		476,858,880
	h. AVA (Gain)/Loss (f. - g.)		2,497,459
3.	Total (Gain)/Loss (1i. + 2h.)	$	3,244,701

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, 2020 valuation, the 15-year period would end on June 30, 2035. 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.

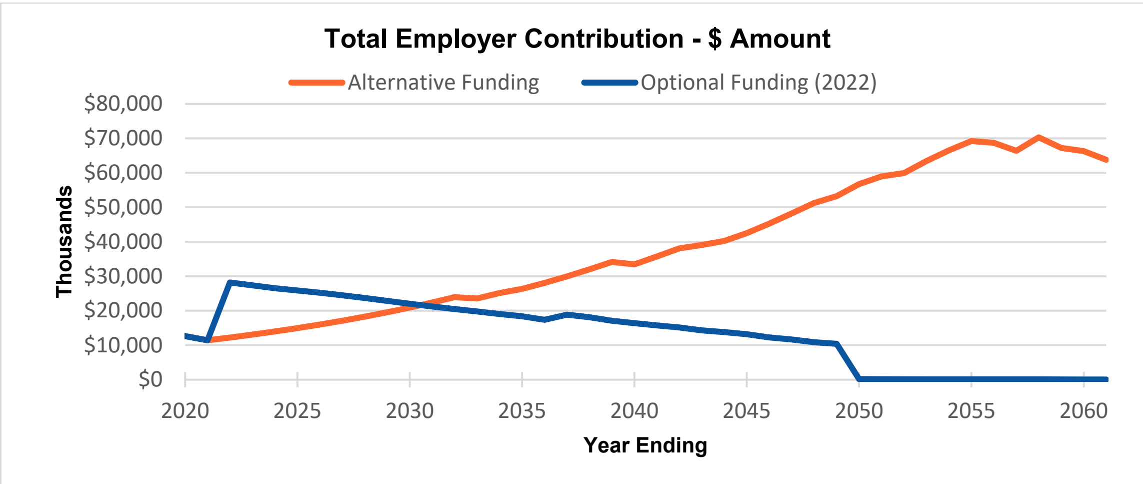
Optional Funding Policy

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:

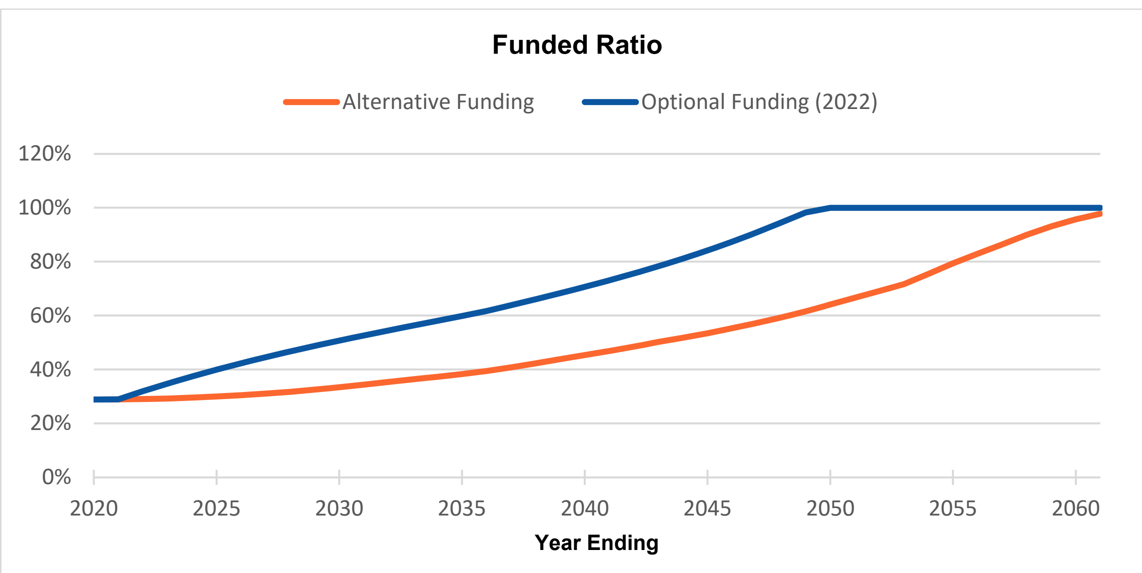
- The required total contribution to the plan, including the premium tax allocation and employee contributions, would equal the normal cost plus a layered amortization of the unfunded accrued liability.
- The pension and relief fund would close to newly-hired police officers or firefighters after the 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. Despite the higher contributions that result under the Alternative funding policy after 2033, the Alternative funding policy does not quite achieve 100% funding within the 40-year projection period. 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.

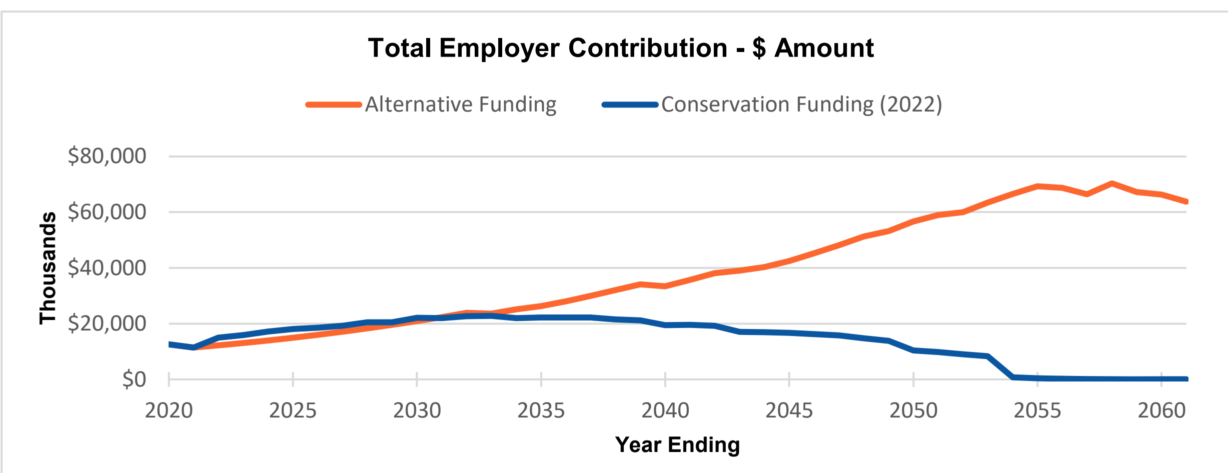
Conservation Funding Policy

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:

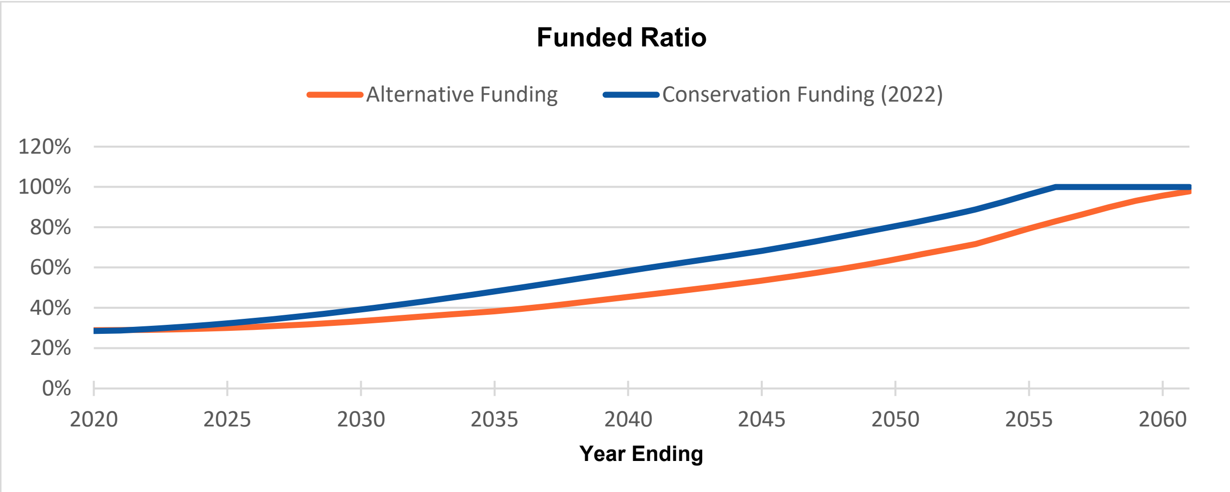
- The plan assets would be segregated into two accounts, an accumulation account and a benefit payment account; the accounts would be funded as follows:
    - Until the plan is 100% funded, 1.5% of employee contributions would be deposited into the accumulation account.
    - An actuarially determined 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. As with the Optional funding policy, the Conservation funding policy is projected to achieve 100% funding at some point in the future, while the Alternative funding policy does not quite achieve 100% funding within the projection period.

Section VI. Deferred Retirement Option Plans (DROPS)

Retrospective DROP Analysis

West Virginia Code Section §8-22-25a(e) requires the MPOB to annually report to the Legislature's Joint Committee on Pensions and Retirement the status of any DROP that has been approved, including any experienced impact on an affected pension and relief fund. Bolton provided MPOB with a post-implementation retrospective DROP analysis for Beckley Fire, St. Albans Fire, and Wheeling Fire as of July 1, 2020.

The main focus of these analyses is to determine whether adding the DROP, as designed, including the additional normal cost payments, as applicable, has improved or worsened the financial status of the plan. The total impact of a DROP cannot be determined until all DROP members actually retire (stop working) and therefore exit DROP. While previous DROPs (such as the previous St. Albans Fire and Wheeling Fire DROPs) had sunset provisions such that no new members could enter DROP after the expiration of the window period, all new DROPs are open and do not have sunset provisions. In fact, Wheeling Fire, as well as Beckley Fire and Beckley Police (for Police, no members had entered DROP prior to the July 1, 2020 valuation date), have since adopted open DROPs. Since all current DROPs do not have a sunset provision, the total impact of these DROPs is unknown at this time and may be difficult to capture over the long term due to changing economic and financial factors such as asset returns and the time value of money. Instead, the retrospective analyses are performed on a rolling basis considering only the members who elected to enter DROP.

The components of the DROP impact for the three retrospective analyses performed as of July 1, 2020 are displayed below:

DROP Impact (Gain)/Loss as of July 1, 2020	Beckley Fire	St. Albans Fire	Wheeling Fire
(a) Payment Trade-off	(14,547)	184,879	(38,203)
(b) Delay in New Hire Normal Cost	(381,061)	(98,749)	N/A
(c) DROP Member Contributions	(158,138)	(32,114)	(147,534)
(d) Premium Tax Allocation	67,636	69,133	237,237
(e) City's Normal Cost Contribution	N/A	N/A	(948,654)
Total DROP Impact ((a) + (b) + (c) + (d) + (e))	**(486,110)**	**123,149**	**(897,154)**

Generally, actuarial cost studies estimate the financial impact of DROP by measuring the change to key actuarial metrics, such as the Actuarially Determined Contribution (ADC), liability, normal cost, and funded status. However, WV Code §8-22-25a specifies that:

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

We have two observations about this 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. Based on this language, we have provided three options for interpreting "negative impact." These three options for valuing the DROP were presented to the Board at the September 17, 2020 meeting. Our letter dated September 3, 2020 provided details on the three options. The results using each of those three options for the three retrospective analyses is presented in the table below:

DROP Impact (Gain)/Loss	Beckley Fire	St. Albans Fire	Wheeling Fire
1. Liability Impact to Fund (a) + (b)	(395,608)	86,130	(38,203)
2. Contribution Impact to City (a) + (b) + (c) + (d)	(486,110)	123,149	51,500
3. Net “Plan” Impact Reflecting City NC Contributions for DROP Participants (a) + (b) + (c) + (d) + (e)	(486,110)	123,149	(897,154)

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 or not to elect a DROP:

  (1) The member will (A) retire earlier resulting in a longer payment period but will receive a smaller benefit (some of which will be paid as a lump sum), versus (B) retire later resulting in a shorter payment period but will receive a larger benefit.

  (2) Immediately after attaining retirement eligibility, the member will (A) retire without DROP versus (B) elect to enter DROP.

  We value the first possible trade-off for members who are expected to work past their normal retirement dates 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 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. For this analysis, the payment trade-off is valued as the change in the present value of future benefits.

  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, the DROP creates a gain because the DROP account does not grant interest credits and the plan saves on the investment return that would have been lost if those payments were no longer 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.

- **Delay in New Hire Normal Cost:** If a member works longer because of DROP, the hiring of a new employee is theoretically delayed. For open plans, such a scenario would result in normal cost savings associated with the delay in hiring. For closed plans, this component has no impact since all new hires are required to join the State plan which is the plan where such savings are expected to occur in the future.

- **DROP Member Contributions:** This is the value of the extra employee contributions going into the Fund for the years during which the member would have already been retired had there not been a DROP. 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 retiree 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 MPOB, it decreases the premium tax allocation available to this Fund. The potential losses are shifted one year based on plan procedures.

- **City's Normal Cost Contribution:** The DROP provisions for plans using the Standard or Optional funding policies require the City to pay the normal cost rate on the payroll for members in DROP[6]. Since the value of benefits is already considered in the Payment Trade-off component and the funding method assumes that normal cost ends at DROP entry[7], this is an immediate benefit to the Fund (even though it is an added cost to the City). Although this requirement increases contributions to the Fund in the short-term, the larger employer contribution in the earlier years will reduce the contributions required in the later years due to the mechanics of the funding policy.

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[6] Based on average normal cost rate of other active members since members do not otherwise have any normal cost while in DROP under the Standard and Optional funding policies.

[7] GASB requires normal cost to end at DROP entry. We have used this same methodology for developing the contribution under the Standard and Optional funding policies.

Section VII. Conclusions and Recommendations

Conclusions

The following are some key highlights of the results of the July 1, 2020 valuations:

- The AVA funded ratio improved from 28% as of July 1, 2019 to 31% as of July 1, 2020. 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 having the lowest funded ratio.
- The unfunded liability decreased by approximately $87 million from $1.161 billion to $1.074 billion, a decrease of 7.5%. The decrease in unfunded liability was largely attributable to the adoption of updated actuarial assumptions and methods pursuant to the *2020 Experience Study Report* and the *2020 Actuarial Methods Recommendations Report*.
- Total recommended contributions including estimated employee contributions decreased approximately $6.5 million from $79.0 million to $72.6 million, a decrease of 8.2%.
- Net municipality recommended contributions decreased $5.6 million from $52.7 million to $47.1 million, a decrease of 10.5%.
- The State premium tax allocation decreased by approximately $0.5 million from $20.0 million to $19.5 million, a decrease of 2.8%.
- Liabilities decreased 3.4%. The increases in liability attributable to a year of benefit accruals and the liability experience loss of approximately 0.05% partially offset the 6.1% decrease in liability due to the assumption and method changes.
- The market value of assets (MVA) and actuarial value of assets (AVA) increased by 5.6% and 7.3, respectively, with a total return on MVA and AVA of 3.1% and 4.8%, respectively. There returns fell short of the beginning of year liability-weighted average discount rate of 5.00%.
- The MVA return for the fiscal year ending June 30, 2020 for each plan ranged from (8.3%) to 10.3%.
- The gross normal cost decreased 12.7% which is a result of (1) discount rate increases for 15 of the 36 plans that experienced discount rate changes (2) the declining normal cost (in dollars) for some of the plans closed to new entrants and (3) the change in the actuarial assumptions.
- The number of active employees covered by all the plans decreased 6.8% from 1,376 to 1,282.
- 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:

1. Encourage the legislature to change the State Code to allow municipalities that use the Conservation funding policy to switch to the Optional funding policy. Currently, municipalities using the Conservation funding policy cannot change to a funding policy that is consistent with standard actuarial principles.
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.

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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, 2019	July 1, 2020
1. Actives		
a. Number	1,376	1,282
b. Average Age	39.9	40.1
c. Average Service	13.0	13.2
d. Average Salary	$ 59,057	$ 61,256
2. Retirees		
a. Number	1,399	1,430
b. Average Age	66.8	66.6
c. Total Annual Benefits	$ 52,168,598	$ 54,639,916
3. Survivors		
a. Number	525	522
b. Average Age	73.5	74.1
c. Total Annual Benefits	$ 8,130,684	$ 8,402,122
4. Disableds		
a. Number	272	273
b. Average Age	61.7	62.2
c. Total Annual Benefits	$ 6,832,995	$ 6,999,789
5. Deferred Vesteds		
a. Number	31	35
b. Average Age	47.1	47.1
c. Total Annual Benefits	$ 1,135,198	$ 1,295,622
6. Members Owed Refunds		
a. Number	50	74
b. Average Age	35.3	33.9
c. Total Refunds Owed	$ 921,392	$ 1,206,863

Active Age/Service Distribution Including Compensation

Shown below is the age and service distribution of active participants 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, 2020.

	0-4	5-9	10-14	15-19	20-24	25-29	30 & Up	Total
Under 25	54	-	-	-	-	-	-	54
	50,279	-	-	-	-	-	-	50,279
25 - 29	97	43	1	-	-	-	-	141
	52,276	54,359	58,584	-	-	-	-	52,956
30 - 34	54	68	52	1	-	-	-	175
	50,501	56,694	60,856	53,162	-	-	-	56,000
35 - 39	25	50	117	39	-	-	-	231
	52,347	54,742	60,133	65,515	-	-	-	59,032
40 - 44	9	18	98	102	31	-	-	258
	49,691	56,981	60,638	66,835	70,245	-	-	63,605
45 - 49	4	5	44	86	112	27	-	278
	52,592	60,323	59,384	65,142	70,054	77,144	-	67,108
50 - 54	-	1	5	47	39	21	4	117
	-	38,604	65,713	62,381	69,806	73,746	64,923	66,922
55 - 59	3	-	1	2	8	6	1	21
	76,236	-	71,803	62,588	62,654	73,852	108,247	70,394
60 - 64	-	-	-	-	-	1	6	7
	-	-	-	-	-	70,303	77,956	76,862
65 & Up	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
Totals	246	185	318	277	190	55	11	1,282
	51,658	55,652	60,423	65,288	69,723	75,363	75,970	61,256

Averages

Age	40.1
Service	13.2

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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.

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%.

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: range from 7.00% to 9.50% of compensation depending on the municipality.

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

Employer Contributions

The minimum employer contribution under the municipality's selected funding policy.

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.

Normal Form

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

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 2020, indexed by state minimum wage for years after 2020) or less.

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.

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.

Supplemental Benefit (Cost of Living Adjustment – COLA)

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

Deferred Retirement Option Program (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 but none of the DROPs currently in place as of the July 1, 2020 valuation date credit interest to the benefits in the DROP account.

Special Funding Situations

There are four funds for which the cities approved the continued overpayment of miscalculated benefits. These four funds are Huntington Fire, Huntington Police, Morgantown Fire and Morgantown Police. For these four funds, we calculate the contribution under the relevant funding policy as if the payments were corrected and add an additional contribution for the expected overpayments for the current plan year on a pay-as-you-go basis pursuant to West Virginia Code 8-22-27a(d).

Changes in Plan Provisions Since Prior Valuation

Beckley Fire, Beckley Police, and Wheeling Fire adopted an open (no sunset) 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 equal the net employer normal cost, plus an amortization of the unfunded actuarial liability, less the State premium tax allocation applicable to the plan year. 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 (10.0 years remaining as of July 1, 2020). 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

  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, 2020 is 10.0 years for sponsors who previously used the Standard funding policy and 28.5 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.

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 (10.0 years for sponsors who previously used the Standard funding policy and 28.5 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.

Each municipality has elected to contribute the minimum under their selected funding policy.

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 actuaries signing this report, 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).
- 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.

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, 2021, includes a Base Allocation of $8,709,689, an Excess Allocation of $10,792,704, and an Expired Premium Tax Allocation of $325,849.

(5) For the plan year ending June 30, 2021, all Pension and Relief Funds reported a total of 1,721.23 eligible active members and 2,207.00 eligible retired members. All plans are eligible to receive a premium tax allocation for the fiscal year ending on June 30, 2022 unless they are over 100% funded on July 1, 2020.

(6) The total premium tax allocation is assumed to increase by 2.50% in calendar years ending on and after 2022.

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:

Funded Ratio as of Valuation Date[8]	Equity Exposure[9]	Projected Funded Ratio after 15 Years[13]	Discount Rate – Standard and Optional Policies	Discount Rate – Alternative and Conservation Policies
Discount Rate Matrix for Plans Not Investing with the IMB				
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%

Funded Ratio as of Valuation Date[13]	Equity Exposure[14]	Projected Funded Ratio after 15 Years[13]	Discount Rate – Standard and Optional Policies[10]	Discount Rate – Alternative and Conservation Policies
Discount Rate Matrix for Plans Investing with the IMB				
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%

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%

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8 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).
9 Based on target allocation percentage outlined in the investment policy.
10 Assumes the IMB maintains a current growth asset target above 70%. If this policy changes, the assumption should be reviewed.

Pay Spiking
For municipalities that have indicated that unused accrued leave time (vacation and sick) is included in pensionable earnings used to compute the average annual compensation, a load of 6% is applied to active retirement and active termination pension benefits.

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.

Mortality
Pre-Retirement
SOA PubS-2010(B) Employee[11] Mortality Table[12] with the 2010 base rates projected generationally from 2010 using the SOA Mortality Improvement **Scale MP-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.

[11] Table name abbreviations from *Society of Actuaries Pub-2010 Public Retirement Plans Mortality Tables Report* published in January 2019. For example, *PubS-2010(B) Employee* translates to the Amount-Weighted Public Safety 2010 Below Median Employee Mortality Table.
[12] *Assumes 10% of deaths are duty-related and 90% are non-duty related.*

B

Retirement Rates

For Plans with Open DROPs - Fire

For fire plans with open DROPs, the retirement rates below take into account 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 take into account 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%

Disability Rates

Sample disability rates are as follows:

Age	Rates[13]
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.

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

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

Form of Payment

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

Non-Spouse Beneficiaries

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

Administrative Expenses

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

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

Data Corrections

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

Changes in Methods/Assumptions Since Prior Valuation

Pursuant to the 2020 *Actuarial Methods Recommendations Report*, the WV MPOB adopted changes to the following methods:

- Amortization method: for the Standard and Optional funding policies, the method was changed from a single, closed amortization base to a layered amortization approach.
- Asset method: the method was changed from the market value of assets to a four-year smoothed actuarial value of assets.
- Roll-forward method: for the Standard and Optional funding policies, the method was changed from developing contributions for the valuation year to rolling valuation results forward one year to better align the contribution calculation with the expected timing of the contribution.

Pursuant to the 2020 *Experience Study Report*, the WV MPOB adopted changes to the following assumptions:

- Discount rate development and rates
- Salary increases
- Added a pay spiking assumption
- Inflation (and premium tax increase rate)
- Cost-of-living increases
- Mortality rates (tables and improvement scales)
- Retirement rates (now with separate rates for police officers and firefighters)
- Termination rates (now with separate rates for police officers and firefighters)
- Disability rates
- Marital status
- Load for non-spouse beneficiaries
- Administrative expenses

Section XI. Glossary

Actuarial Accrued Liability (AAL)

The difference between the Actuarial Present Value of Future Benefits and the Actuarial 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 Asset Valuation Method

The method of determining the value of the assets as of a given date, used by the actuary for valuation purposes. This may be the market or fair value of plan assets or a smoothed value that recognizes investment gains and losses over a given period of time (rather than immediately) in order to reduce the year-to-year volatility of calculated results, such as the funded ratio and the actuarially determined contribution (ADC).

Actuarial Cost Method

A procedure for allocating the Actuarial Present Value of Future Benefits and the Actuarial Present Value of Future Normal costs and the Actuarial Accrued Liability. Also known as the “funding method”. Examples of actuarial cost methods include Aggregate, Entry Age Normal, Projected Unit Credit, and Pay-As-You-Go.

Actuarial Present Value of Future Benefits

The actuarial present value of amounts which are expected to be paid at various future times to active members, retired members, beneficiaries receiving benefits, and inactive, nonretired members entitled to either a refund of member contributions or a future retirement benefit. 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.

Aggregate Cost Method

An actuarial cost method that spreads the cost of all future benefits in excess of plan assets as a level percentage of future salary or service. The Actuarial Accrued Liability is set to the value of assets in this method.

Annual Determined Contributions of the Employer(s) (ADC)

The employer’s target or recommended periodic contribution to a pension plan, calculated in accordance with assumptions and methods that conform with the Actuarial Standards of Practice. The ADC replaced the annual required contribution (ARC)when GASB 27 was replaced by GASB 68.

Cost-of-Living-Adjustment (COLA)

A periodic increase in the amounts calculated using the plan’s basic benefit formula to account for the future effects of inflation which reduce the purchasing power of the calculated benefits.

Covered Group

Plan members included in actuarial valuation.

Demographic Assumptions
Assumptions regarding the future population of pension participants, including retirement, termination, disability and mortality assumptions. Demographic assumptions also include those relating to merit pay increases, marital status, and new hires.

Economic Assumptions
Assumptions regarding future economic factors, including inflation, investment returns, COLA, salary improvement, change in average wages, and changes in Social Security benefits.

Employer's Contributions
Contributions made in relation to the ADC. An employer has made a contribution in relation to the ADC if the employer has (a) made payments of benefits directly to or on behalf of a retiree or beneficiary, (b) made premium payments to an insurer, or (c) irrevocably transferred assets to a trust, or an equivalent arrangement, in which plan assets are dedicated to providing benefits to retirees and their beneficiaries in accordance with the terms of the plan and are legally protected from creditors of the employer(s) or plan administrator.

Entry Age Normal (EAN) Cost Method
An actuarial cost method that spreads the cost for each individual's expected benefits over their career, either as a level percentage of pay or service. The Actuarial Accrued Liability is the accumulated value of all past normal costs, and the unfunded accrued liability (surplus) is the excess of the Actuarial Accrued Liability over the value of assets.

Expenses
Plan expenses paid from the plan's assets (rather than directly by the employer) are divided into administrative and investment-related expenses.

Funded Ratio
The actuarial value of assets expressed as a percentage of the plan's Actuarial Accrued Liability.

GASB
Government Accounting Standards Board.

GASB No. 67 and GASB No. 68
These are the government accounting standards that set the accounting rules for public retirement systems and the employers that sponsor or contribute to them. Statement No. 68 sets the accounting rules for the employers that sponsor or contribute to public retirement systems while Statement No. 67 sets the rules for the systems themselves.

Investment Return Assumption or Investment Rate of Return (Discount Rate)
The assumed rate of future investment earnings on the plan's assets, reflecting the current investment policy and expected future economic conditions. This rate is used to adjust, or discount, a series of future payments to reflect the time value of money and show future amounts in today's dollars.

Level Dollar Amortization Method
Amortization payments are calculated so that they are a level dollar amount over a given number of years.

B

Level Percentage of Projected Payroll Amortization Method
Amortization payments are calculated so that they are a constant percentage of the projected payroll of active plan members over a given number of years. The dollar amount of the payments generally will increase over time as payroll increases due to inflation. In dollars adjusted for inflation, the payments can be expected to remain level (disregarding changes due to future actuarial experience differing from expectations).

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

Payroll Growth Rate
An actuarial assumption with respect to future increases in total covered payroll attributable to inflation; used in applying the level percentage of projected payroll amortization method.

Plan Members
The individuals covered by the terms of a pension plan. The plan membership generally includes employees in active service, terminated employees who have accumulated benefits but are not yet receiving them, and retired employees and beneficiaries currently receiving benefits.

Post-Employment
The period between termination of employment and retirement as well as the period after retirement.

Salary Improvement
An actuarial assumption regarding the increase in employees' salaries, reflecting cost-of-living, merit and longevity increases.

Supplemental Benefits
Benefits that accumulate after a member's retirement based on an annual COLA increase in the amount of a retired participant's benefit intended to adjust the benefit for inflation.

Unfunded Actuarial Accrued Liabilities
The excess of the Actuarial Present Value of Future Benefits as of the date of a pension plan valuation, over the sum of (1) the actuarial value of the assets of the plan and (2) the Actuarial Present Value of Future Normal Costs determined by any of several actuarial cost methods. For plans that explicitly define an Actuarial Accrued Liability, this amount equals the excess of the Actuarial Accrued Liability over the actuarial value of assets.

Vested Plan Benefits
All benefits to which current participants have a vested right based on pay and service through the valuation date. A participant has a vested right to a benefit if he/she would still be eligible to receive that benefit if employment terminated on the valuation date.