



**Municipal Pensions
Oversight Board**

**City of Morgantown
West Virginia
Firemen's Pension and Relief Fund**

GASB 68 Actuarial Information for the
Measurement Period Ending
June 30, 2020

Bolton

Submitted by:

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Employee Benefits, Actuarial & Investment Consulting

October 30, 2020

Mr. James Goff
Finance Director
City of Morgantown
389 Spruce Street
Morgantown, WV 26505

Captain Gary Freshour
Pension Board Secretary
City of Morgantown
Firemen's Pension and Relief Fund

Re: City of Morgantown Firemen's Pension and Relief Fund
GASB 68 Actuarial Information for the Measurement Period Ending June 30, 2020

Dear James,

The following report contains the GASB 67 and GASB 68 actuarial information for the City of Morgantown Firemen's Pension and Relief Fund to be included in the City's financial statements for FY 2020. The GASB 67 information has been provided as of June 30, 2020 (the GASB 68 measurement date for FY 2020).

Methodology, Reliance and Certification

This report is prepared for the City. The report contains the actuarial information to be included with the City's financial statements for the year ending June 30, 2020 (the City's fiscal year end date) as required by GASB 68. This information has been prepared for use in the financial statements of the City. This information is not intended for, nor should it be used for, any additional purposes.

The total pension liability is based on the July 1, 2019 actuarial valuation rolled forward to June 30, 2020. The methods, assumptions, and participant data used are detailed in the July 1, 2019 actuarial valuation report with the exception of the actuarial cost method. These calculations are based on the Entry Age Normal cost method as required by GASB 67. The calculation of the Actuarially Determined Contribution (ADC) for the fiscal year ending June 30, 2020 is contained in the July 1, 2018 actuarial valuation report. The discount rate assumption may have changed if a blended rate was used for GASB purposes.

The included calculations are based on a blended discount rate of 3.36%. The plan's expected gross rate of investment return of 4.50% has been blended with the 2.45% yield corresponding to the 20-year maturity on a municipal general obligation AA bond yield curve published on Fidelity's Fixed Income Market Data webpage as of June 30, 2020. The development of the blended discount rate is included within this report.

The long-term nominal expected rate of return on pension plan investments was determined using a methodology approved by the Municipal Pensions Oversight Board (MPOB) and is based on the fund's current funding ratio, liquidity ratio, equity exposure and expected funded status in 15 years.

The included calculations assume that the members and the City will continue to make all required contributions in accordance with the City's funding policy.

Methodology, Reliance and Certification (cont.)

These calculations and comparisons with assets are applicable for the valuation date only. The future is uncertain, and the plan may become better funded or more poorly funded in the future. This valuation does not provide any guarantee that the plan will be able to provide the promised benefits in the future.

This is a deterministic valuation in that it is based on a single set of assumptions. This set of assumptions is one possible basis for our calculations. Other assumptions may be equally valid. The future is uncertain and the plan's actual experience will differ from the assumptions; the differences may be significant or material because the results are very sensitive to the assumptions made and, in some cases, to the interaction between the assumptions. We may consider that some factors are not material to the valuation of the plan and may not provide a specific assumption for those factors. We may have used other assumptions in the past. We will likely consider changes in assumptions at a future date.

The City is responsible for selecting the plan's funding policy based on four methods allowed for under state law. The actuarial valuation methods are chosen by the actuary in accordance with actuarial standards of practice promulgated by the Actuarial Standards Board of the American Academy of Actuaries and as required by GASB 67 & 68. The MPOB selects the asset valuation methods and assumptions; these selections are reviewed by a qualified actuary no less than every five years. The actuary shall provide a report to the Board with recommendations on any changes to the actuarial process. The policies, methods and assumptions used in this valuation are those that have been so prescribed and are described in this report. The City and MPOB are solely responsible for communicating to Bolton Partners, Inc. any changes required thereto.

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

The cost of this plan is determined by the benefits promised by the plan, the plan's participant population, the investment experience of the plan and many other factors. An actuarial valuation is a budgeting tool for the City or, in this case, a measure of accounting expense. It does not affect the cost of the plan. As the experience of the plan evolves, it is normal for the level of contributions and expense of the plan to change.

We make every effort to ensure that our calculations are accurately performed. These calculations are complex. Despite our best efforts, we may make a mistake. We reserve the right to correct any potential errors by amending the results of this report or by including the corrections in a future valuation report.

Because modeling all aspects of a situation is not possible or practical, we may use summary information, estimates, or simplifications of calculations to facilitate the modeling of future events in an efficient and cost-effective manner. We may also exclude factors or data that are immaterial in our judgment. Use of such simplifying techniques does not, in our judgment, affect the reasonableness of valuation results for the plan.

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



Methodology, Reliance and Certification (cont.)

This report is based on plan provisions, census data, and asset data submitted by the City. We have relied on this information for purposes of preparing this report, but have not performed an audit. The accuracy of the results presented in this report is dependent upon the accuracy and completeness of the underlying information. The plan sponsor is solely responsible for the validity and completeness of this information.

The City is solely responsible for selecting the plan's investment policies, asset allocations and individual investments. Bolton Partners, Inc.'s actuaries have not provided any investment advice to the City.

The information in this report was prepared for the internal use of the City, the plan and their auditors in connection with our actuarial valuations of the pension plan as required by GASB 68. This report may not be used for any other purpose; Bolton Partners, Inc. is not responsible for the consequences of any unauthorized use or the reliance on this information by any other party.

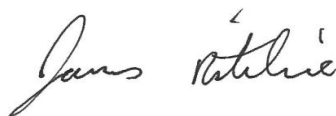
The calculation of actuarial liabilities for valuation purposes is based on a current estimate of future benefit payments. The calculation includes a computation of the "present value" of those estimated future benefit payments using an assumed discount rate; the higher the discount rate assumption, the lower the estimated liability will be. For purposes of estimating the liabilities (future and accrued) in this report, an assumption based on the expected long-term rate of return on plan investments is used. If the plan is expected to become insolvent, the return assumption is blended with a long-term municipal bond rate. Using a lower discount rate assumption, such as a rate solely based on long-term bond yields, could substantially increase the estimated present value of future and accrued liabilities.

This report provides certain financial calculations for use by the auditor. These values have been computed in accordance with our understanding of generally accepted actuarial principles and practices and fairly reflect the actuarial position of the plan. The various actuarial assumptions and methods which have been used are, in our opinion, appropriate for the purposes of this report.

The report is conditioned on the assumption of an ongoing plan and is not meant to present the actuarial position of the plan in the case of plan termination. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions, changes in economic or demographic assumptions, increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status), and changes in plan provisions or applicable law.

The undersigned enrolled actuaries meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein. The July 1, 2019 actuarial valuation report contains information that is integral to the results contained herein and a copy may be provided upon request.

Sincerely,



James Ritchie, ASA, EA, FCA, MAAA



Jordan McClane, FSA, EA, FCA, MAAA



City of Morgantown, West Virginia Firemen's Pension and Relief Fund
 Actuarial Information to Include in the Financial Statements
 for the June 30, 2020 Measurement Date



Net Pension Liability of the Employer

The components of the net pension liability of the Employer at June 30, 2020, were as follows:

Total pension liability	\$ 64,887,379
Plan fiduciary net position	(13,590,152)
Employer's net pension liability	<u>\$ 51,297,227</u>
Plan fiduciary net position as a percentage of the total pension liability	20.94%

Actuarial assumptions. The total pension liability was determined by an actuarial valuation as of July 1, 2019 rolled forward to June 30, 2020 using the following actuarial assumptions, applied to all periods included in the measurement:

Inflation	2.75 percent
Salary increases	Rates vary by years of service
Single discount rate (BOY)	3.76%
Single discount rate (EOY)	3.36%
Investment rate of return (BOY)	4.50%, net of pension plan investment expense, including inflation
Investment rate of return (EOY)	4.50%, net of pension plan investment expense, including inflation
Long-term municipal bond rate (BOY)	3.13%
Long-term municipal bond rate (EOY)	2.45%
Mortality	RP-2014 Blue Collar Mortality Table with generational projection using Scale MP-2014
Year Fund is projected to be fully funded	2065
Year assets are expected to be depleted for a closed plan	2036

The above is a summary of key actuarial assumptions. Full descriptions of the actuarial assumptions are available in the July 1, 2019 actuarial valuation report.

Sensitivity of the net pension liability to changes in the discount rate

	1% Decrease 2.36%	Current Discount Rate 3.36%	1% Increase 4.36%
Employer's net pension liability	\$ 63,427,765	\$ 51,297,227	\$ 41,862,006

City of Morgantown, West Virginia Firemen's Pension and Relief Fund
 Actuarial Information to Include in the Financial Statements
 for the June 30, 2020 Measurement Date



Changes in the Net Pension Liability

	Total Pension Liability (a)	Increase (Decrease) Plan Fiduciary Net Position (b)	Net Pension Liability (a) - (b)
Balances at 6/30/19	\$ 57,832,399	\$ 13,539,956	\$ 44,292,443
Changes for the year:			
Service cost	2,373,186		2,373,186
Interest	2,140,131		2,140,131
Changes of benefit terms	-		-
Differences between expected and actual experience	317,635		317,635
Changes of assumptions	4,052,068		4,052,068
Contributions - employer (including Premium Tax Allocation)		1,564,867	(1,564,867)
Contributions - member		318,125	(318,125)
Net investment income		(1,618)	1,618
Benefit payments, including refunds of member contributions	(1,828,040)	(1,828,040)	-
Administrative expense		(3,138)	3,138
Other		-	-
Net Changes	<u>7,054,980</u>	<u>50,196</u>	<u>7,004,784</u>
Balances at 6/30/20	<u>\$ 64,887,379</u>	<u>\$ 13,590,152</u>	<u>\$ 51,297,227</u>
Return on Investments		0.0%	

City of Morgantown, West Virginia Firemen's Pension and Relief Fund
 Actuarial Information to Include in the Financial Statements
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Components of Employer's Pension Expense for the Fiscal Year Ended June 30, 2020

Note	Description	Amount
A	Service cost	\$ 2,373,186
B	Interest on the total pension liability	2,140,131
A	Changes of benefit terms	-
C	Differences between expected and actual experience	253,257
C	Changes of assumptions	1,562,182
A	Employee contributions	(318,125)
D	Projected earnings on pension plan investments	(610,464)
C	Differences between expected and actual earnings on plan investments	171,908
A	Pension plan administrative expense	3,138
A	Other changes in fiduciary net position	-
Total Pension Expense		\$ 5,575,213

Notes:

A Provided in the Changes in Net Pension Liability exhibit.

B Based on the following calculation:

	Amount for Period (a)	Portion of Period (b)	Interest Rate (c)	Projected Earnings (a) x (b) x (c)
Beginning total pension liability	\$ 57,832,399	100%	3.76%	\$ 2,174,498
Service cost (End of Year)	2,373,186	0%	3.76%	-
Benefit payments, including refunds of employee contributions	(1,828,040)	50%	3.76%	(34,367)
Total interest on the total pension liability				\$ 2,140,131

C Provided in the Schedules of Deferrals.

D Based on the following calculation:

	Amount for Period (a)	Portion of Period (b)	Projected Rate of Return (c)	Projected Earnings (a) x (b) x (c)
Beginning plan fiduciary net position	\$ 13,539,956	100%	4.50%	\$ 609,298
Employer contributions	1,564,867	50%	4.50%	35,210
Employee contributions	318,125	50%	4.50%	7,158
Benefit payments, including refunds of employee contributions	(1,828,040)	50%	4.50%	(41,131)
Administrative expense and other	(3,138)	50%	4.50%	(71)
Total Projected Earnings				\$ 610,464

City of Morgantown, West Virginia Firemen's Pension and Relief Fund
 Actuarial Information to Include in the Financial Statements
 for the June 30, 2020 Measurement Date



Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pensions

At June 30, 2020, the Employer reported deferred outflows of resources and deferred inflows of resources related to pensions from the following sources:

	Deferred Outflows of Resources	Deferred Inflows of Resources
Differences between expected and actual experience	\$ 1,343,308	\$ 99,934
Changes of assumptions	4,059,960	546,502
Net difference between projected and actual earnings on pension plan investments	341,724	-
Total	\$ 5,744,992	\$ 646,436

Amounts reported as deferred outflows of resources and deferred inflows of resources related to pensions will be recognized in pension expense as follows:

Year ended June 30:	
2021	\$ 933,610
2022	1,564,698
2023	1,603,891
2024	996,357
2025	-
Thereafter	-

City of Morgantown, West Virginia Firemen's Pension and Relief Fund
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Changes in the Employer's Net Pension Liability and Related Ratios
 Last 10 Fiscal Years

Total pension liability	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Service cost	\$ 2,373,186	\$ 2,311,877	\$ 1,731,483	\$ 1,925,405	\$ 1,160,928	\$ 1,084,316	\$ 1,008,137	\$ -	\$ -	\$ -
Interest	2,140,131	2,002,131	1,938,342	1,749,559	1,817,826	1,775,489	1,840,353	-	-	-
Changes of benefit terms	-	-	-	-	-	-	-	-	-	-
Differences between expected and actual experience	317,635	1,815,332	(218,647)	(454,836)	(113,977)	(1,590,303)	-	-	-	-
Changes of assumptions	4,052,068	1,363,844	(660,808)	(4,690,165)	11,346,226	662,125	1,349,132	-	-	-
Benefit payments, including refunds of member contributions	(1,828,040)	(1,656,429)	(1,617,352)	(1,533,401)	(1,509,425)	(1,496,332)	(1,456,136)	-	-	-
Net change in total pension liability	7,054,980	5,836,755	1,173,018	(3,003,438)	12,701,578	435,295	2,741,486	-	-	-
Total pension liability - beginning	57,832,399	51,995,644	50,822,626	53,826,064	41,124,486	40,689,191	37,947,705	-	-	-
Total pension liability - ending (a)	\$ 64,887,379	\$ 57,832,399	\$ 51,995,644	\$ 50,822,626	\$ 53,826,064	\$ 41,124,486	\$ 40,689,191	\$ -	\$ -	\$ -
Plan fiduciary net position	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Contributions - employer (including Premium Tax Allocation)	\$ 1,564,867	\$ 1,457,107	\$ 1,494,676	\$ 1,356,285	\$ 1,188,366	\$ 1,070,305	\$ 1,013,374	\$ -	\$ -	\$ -
Contributions - member	318,125	307,067	258,246	218,900	202,830	191,330	183,544	-	-	-
Net investment income	(1,618)	716,195	351,940	1,054,659	(250,341)	300,409	1,162,709	-	-	-
Benefit payments, including refunds of member contributions	(1,828,040)	(1,656,429)	(1,617,352)	(1,533,401)	(1,509,425)	(1,496,332)	(1,456,136)	-	-	-
Administrative expense	(3,138)	-	(2,469)	(2,158)	(3,042)	(1,943)	(1,725)	-	-	-
Other	-	(2,132)	-	170	-	-	-	-	-	-
Net change in plan fiduciary net position	\$ 50,196	\$ 821,808	\$ 485,041	\$ 1,094,455	\$ (371,612)	\$ 63,769	\$ 901,766	\$ -	\$ -	\$ -
Plan fiduciary net position - beginning	13,539,956	12,718,148	12,233,107	11,138,652	11,510,264	11,482,554	10,580,788	-	-	-
Plan fiduciary net position - ending (b)	\$ 13,590,152	\$ 13,539,956	\$ 12,718,148	\$ 12,233,107	\$ 11,138,652	\$ 11,546,323	\$ 11,482,554	\$ -	\$ -	\$ -
Employer's net pension liability - ending (a)-(b)	\$ 51,297,227	\$ 44,292,443	\$ 39,277,496	\$ 38,589,519	\$ 42,687,412	\$ 29,578,163	\$ 29,206,637	\$ -	\$ -	\$ -
Plan fiduciary net position as a percentage of the total pension liability	20.94%	23.41%	24.46%	24.07%	20.69%	28.08%	28.22%	0.00%	0.00%	0.00%
Covered payroll	\$ 3,736,884	\$ 3,636,132	\$ 2,716,646	\$ 2,590,922	\$ 2,534,252	\$ 2,441,567	\$ 2,453,297	\$ -	\$ -	\$ -
Employer's net pension liability as a percentage of covered payroll	1372.73%	1218.12%	1445.81%	1489.41%	1684.42%	1211.44%	1190.51%	0.00%	0.00%	0.00%
Expected average remaining service years of all participants	5.00	5.00	4.31	4.32	4.71	4.42	-	-	-	-

Notes to Schedule:

Benefit changes: There were no changes for FY2020.

Changes of assumptions: The discount rate changed from 3.76% to 3.36%.

*Market value of assets as of July 1, 2015, excludes \$36,059 included in the market value of assets as of June 30, 2015, used for the actuarial valuation report for the fiscal year end June 30, 2015.

City of Morgantown, West Virginia Firemen's Pension and Relief Fund
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Schedule of Employer Contributions
 Last 10 Fiscal Years

	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Actuarially determined contribution	\$ 3,716,017	\$ 3,177,129	\$ 2,813,357	\$ 2,670,559	\$ 2,514,255	\$ 1,890,064	\$ 1,885,133	\$ 1,841,042	\$ -	\$ -
Contributions in relation to the actuarially determined contribution										
Employer provided	933,095	909,000	986,830	870,926	728,343	618,813	578,330	540,495	-	-
State provided	631,772	548,107	507,846	485,359	460,023	451,492	435,044	464,202	-	-
Contribution deficiency (excess)	<u>\$ 2,151,150</u>	<u>\$ 1,720,022</u>	<u>\$ 1,318,681</u>	<u>\$ 1,314,274</u>	<u>\$ 1,325,889</u>	<u>\$ 819,759</u>	<u>\$ 871,759</u>	<u>\$ 836,345</u>	<u>\$ -</u>	<u>\$ -</u>
Covered payroll	\$ 3,736,884	\$ 3,636,132	\$ 2,716,646	\$ 2,590,922	\$ 2,534,252	\$ 2,441,567	\$ 2,453,297	\$ 2,447,766	\$ -	\$ -
Contributions as a percentage of covered employee payroll	41.88%	40.07%	55.02%	52.35%	46.89%	43.84%	41.31%	41.05%	N/A	N/A

Notes to Schedule

Valuation date:

Actuarially determined contribution amounts are calculated as of the beginning of the fiscal year (July 1) for the year immediately following the fiscal year. Actuarial valuations are performed every year.

Methods and assumptions used to determine contribution rates:

Actuarial cost method	Entry Age Normal
Amortization method	Level Dollar
Remaining amortization period	31.5 years
Asset valuation method	Market Value
Inflation	2.75 percent
Salary increases	Rates vary by years of service
Investment rate of return	4.50%, net of pension plan investment expense, including inflation
Retirement age	Rates vary by age
Mortality	RP-2014 Blue Collar Mortality Table with generational projection using Scale MP-2014

City of Morgantown, West Virginia Firemen's Pension and Relief Fund
 Actuarial Information to Include in the Financial Statements
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Schedule of Differences between Projected and Actual Earnings on Pension Plan Investments

In conformity with paragraph 33b of Statement 68, the effects of differences between projected and actual earnings on pension plan investments are recognized in pension expense using a systematic and rational method over a closed five-year period, beginning in the current reporting period. The following table illustrates the application of this requirement.

Increase (Decrease) in Pension Expense Arising from the Recognition of Differences between Projected and Actual Earnings on Plan Investments											
Year	Differences between Projected and Actual Earnings on Pension Plan Investments	Recognition Period (Years)	2016	2017	2018	2019	2020	2021	2022	2023	2024
2016	\$ 822,822	5	\$ 164,564	164,564	164,564	164,564	164,566				
2017	(552,524)	5		\$ (110,505)	(110,505)	(110,505)	(110,505)	(110,504)			
2018	118,657	5			\$ 23,731	23,731	23,731	23,731	23,733		
2019	(141,502)	5				\$ (28,300)	(28,300)	(28,300)	(28,300)	(28,302)	
2020	612,082	5					\$ 122,416	122,416	122,416	122,416	122,418
Net increase (decrease) in pension expense							\$ 171,908	\$ 7,343	\$ 117,849	\$ 94,114	\$ 122,418

Deferred Outflows of Resources and Deferred Inflows of Resources Arising from Differences between Projected and Actual Earnings on Pension Plan Investments

Year	Investment Earnings Less than Projected (a)	Investment Earnings Greater Than Projected (b)	Amounts Recognized in Pension Expense Through June 30, 2020 (c)	Balances at June 30, 2020	
				Deferred Outflows of Resources (a) - (c)	Deferred Inflows of Resources (b) - (c)
2016	\$ 822,822	\$ -	\$ 822,822	\$ -	\$ -
2017	-	552,524	442,020	-	110,504
2018	118,657	-	71,193	47,464	-
2019	-	141,502	56,600	-	84,902
2020	612,082	-	122,416	489,666	-
				\$ 537,130	\$ 195,406

City of Morgantown, West Virginia Firemen's Pension and Relief Fund
 Actuarial Information to Include in the Financial Statements
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Schedule of Differences between Expected and Actual Experience

In conformity with paragraph 33a of Statement 68, the effects of differences between expected and actual experience are recognized in pension expense, beginning in the current reporting period, using a systematic and rational method over a closed period equal to the average of the remaining service lives of all employees that are provided with pensions through the pension plan (active and inactive employees), determined as of the beginning of the measurement period. The following table illustrates the application of this requirement.

Increase (Decrease) in Pension Expense Arising from the Recognition of Differences between Expected and Actual Experience																			
Year	Differences between Expected and Actual Experience	Recognition Period (Years)	Prior	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Thereafter
Prior	-	-																	
2011	-	-																	
2012	-	-																	
2013	-	-																	
2014	-	-																	
2015	(1,590,303)	4.416308						\$ (360,098)	(360,098)	(360,098)	(360,098)	(149,911)							
2016	(113,977)	4.713961						\$ (24,179)	(24,179)	(24,179)	(24,179)	(24,179)	(17,261)						
2017	(454,836)	4.318426							\$ (105,324)	(105,324)	(105,324)	(105,324)	(105,324)	(33,540)					
2018	(218,647)	4.308268								\$ (50,751)	(50,751)	(50,751)	(50,751)	(50,751)	(15,643)				
2019	1,815,332	5.000000									\$ 363,066	363,066	363,066	363,066	363,066	363,068			
2020	317,635	5.000000										\$ 63,527	63,527	63,527	63,527	63,527	63,527		
Net increase (decrease) in pension expense													\$ 253,257	\$ 342,302	\$ 410,950	\$ 426,595	\$ 63,527	\$ -	\$ -

Deferred Outflows of Resources and Deferred Inflows of Resources Arising from Differences between Expected and Actual Experience

Year	Experience Losses (a)	Experience Gains (b)	Amounts Recognized in Pension Expense Through June 30, 2020 (c)	Balances at June 30, 2020	
				Deferred Outflows of Resources (a) - (c)	Deferred Inflows of Resources (b) - (c)
Prior	\$ -	\$ -	\$ -	\$ -	\$ -
2011	-	-	-	-	-
2012	-	-	-	-	-
2013	-	-	-	-	-
2014	-	-	-	-	-
2015	-	1,590,303	1,590,303	-	-
2016	-	113,977	113,977	-	-
2017	-	454,836	421,296	-	33,540
2018	-	218,647	152,253	-	66,394
2019	1,815,332	-	726,132	1,089,200	-
2020	317,635	-	63,527	254,108	-
				\$ 1,343,308	\$ 99,934

City of Morgantown, West Virginia Firemen's Pension and Relief Fund
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Schedule of Changes of Assumptions

In conformity with paragraph 33a of Statement 68, the effects of changes of assumptions should be recognized in pension expense, beginning in the current reporting period, using a systematic and rational method over a closed period equal to the average of the remaining service lives of all employees that are provided with pensions through the pension plan (active and inactive employees), determined as of the beginning of the measurement period. The following table illustrates the application of this requirement.

Increase (Decrease) in Pension Expense Arising from the Effects of Changes of Assumptions																			
Year	Changes of Assumptions	Recognition Period (Years)	Prior	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Thereafter
Prior	\$ -	-																	-
2011	-	-																	-
2012	-	-																	-
2013	-	-																	-
2014	-	-																	-
2015	662,125	4.416308						\$ 149,927	149,927	149,927	149,927	62,417							
2016	11,346,226	4.713961						\$ 2,406,941	2,406,941	2,406,941	2,406,941	2,406,941	1,718,462						
2017	(4,690,165)	4.318426								\$ (1,086,082)	(1,086,082)	(1,086,082)	(1,086,082)	(345,837)					
2018	(660,808)	4.308268									\$ (153,381)	(153,381)	(153,381)	(153,381)	(47,284)				
2019	1,363,844	5.000000										\$ 272,769	272,769	272,769	272,769	272,768			
2020	4,052,068	5.000000											\$ 810,414	810,414	810,414	810,414	810,412		
Net increase (decrease) in pension expense													\$ 1,562,182	\$ 583,965	\$ 1,035,899	\$ 1,083,182	\$ 810,412	\$ -	\$ -

Deferred Outflows of Resources and Deferred Inflows of Resources Arising from Changes of Assumptions

Year	Increases in the Total Pension Liability (a)	Decreases in the Total Pension Liability (b)	Amounts Recognized in Pension Expense Through June 30, 2020 (c)	Balances at June 30, 2020	
				Deferred Outflows of Resources (a) - (c)	Deferred Inflows of Resources (b) - (c)
Prior	\$ -	\$ -	\$ -	\$ -	\$ -
2011	-	-	-	-	-
2012	-	-	-	-	-
2013	-	-	-	-	-
2014	-	-	-	-	-
2015	662,125	-	662,125	-	-
2016	11,346,226	-	11,346,226	-	-
2017	-	4,690,165	4,344,328	-	345,837
2018	-	660,808	460,143	-	200,665
2019	1,363,844	-	545,538	818,306	-
2020	4,052,068	-	810,414	3,241,654	-
				\$ 4,059,960	\$ 546,502

City of Morgantown, West Virginia Firemen's Pension and Relief Fund
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 for the June 30, 2020 Measurement Date



Projection of Pension Plan's Fiduciary Net Position

Fiscal Year	Actuarial Accrued Liability (BOY)			Closed Group Asset Projection						
	Current Members	Future Members	Total	Fiduciary Net Position (BOY)	Funded Ratio (BOY)	Projected EEC Contributions (MOY)	Projected ER Contrib + Premium Tax (MOY)	Projected BP (MOY)	Projected Admin Expenses (MOY)	Projected Investment Earnings
2020	\$ 51,879,109	\$ -	\$ 51,879,109	\$ 13,539,956	26.10%	\$ 305,059	\$ 1,575,998	\$ 1,820,206	\$ 2,342	\$ 610,600
2021	\$ 54,323,376	\$ -	\$ 54,323,376	\$ 14,209,065	26.16%	\$ 298,090	\$ 1,460,251	\$ 1,969,824	\$ 2,406	\$ 634,648
2022	\$ 56,649,431	\$ 123,141	\$ 56,772,572	\$ 14,629,824	25.83%	\$ 290,369	\$ 1,427,387	\$ 2,106,872	\$ 2,407	\$ 649,630
2023	\$ 58,873,305	\$ 387,036	\$ 59,260,341	\$ 14,887,931	25.29%	\$ 280,653	\$ 1,407,302	\$ 2,277,199	\$ 2,429	\$ 656,791
2024	\$ 60,942,424	\$ 787,719	\$ 61,730,143	\$ 14,953,048	24.54%	\$ 277,496	\$ 1,382,757	\$ 2,377,612	\$ 2,427	\$ 656,870
2025	\$ 62,972,237	\$ 1,342,041	\$ 64,314,278	\$ 14,890,132	23.65%	\$ 277,486	\$ 1,384,083	\$ 2,450,486	\$ 2,447	\$ 652,446
2026	\$ 65,010,793	\$ 2,029,887	\$ 67,040,680	\$ 14,751,214	22.69%	\$ 276,555	\$ 1,396,669	\$ 2,541,523	\$ 2,466	\$ 644,428
2027	\$ 67,032,336	\$ 2,849,225	\$ 69,881,561	\$ 14,524,877	21.67%	\$ 270,003	\$ 1,408,179	\$ 2,693,655	\$ 2,509	\$ 630,967
2028	\$ 68,929,926	\$ 3,826,548	\$ 72,756,474	\$ 14,137,862	20.51%	\$ 252,777	\$ 1,396,209	\$ 2,892,948	\$ 2,527	\$ 608,466
2029	\$ 70,584,651	\$ 4,992,823	\$ 75,577,474	\$ 13,499,839	19.13%	\$ 245,462	\$ 1,360,260	\$ 3,030,522	\$ 2,570	\$ 575,730
2030	\$ 72,111,076	\$ 6,394,265	\$ 78,505,341	\$ 12,648,199	17.54%	\$ 240,847	\$ 1,359,205	\$ 3,160,301	\$ 2,614	\$ 534,391
2031	\$ 73,529,748	\$ 8,006,073	\$ 81,535,821	\$ 11,619,727	15.80%	\$ 233,819	\$ 1,359,257	\$ 3,295,157	\$ 2,658	\$ 484,953
2032	\$ 74,815,545	\$ 9,845,359	\$ 84,660,904	\$ 10,399,942	13.90%	\$ 225,212	\$ 1,357,940	\$ 3,432,721	\$ 2,703	\$ 426,780
2033	\$ 75,951,563	\$ 11,932,142	\$ 87,883,705	\$ 8,974,450	11.82%	\$ 215,007	\$ 1,370,075	\$ 3,562,938	\$ 2,690	\$ 359,778
2034	\$ 76,932,128	\$ 14,283,890	\$ 91,216,018	\$ 7,353,682	9.56%	\$ 207,369	\$ 1,372,038	\$ 3,666,647	\$ 2,734	\$ 284,409
2035	\$ 77,796,909	\$ 16,921,308	\$ 94,718,217	\$ 5,548,116	7.13%	\$ 201,433	\$ 1,395,583	\$ 3,753,178	\$ 2,778	\$ 201,624
2036	\$ 78,568,874	\$ 19,841,366	\$ 98,410,240	\$ 3,590,801	4.57%	\$ 190,543	\$ 1,419,453	\$ 3,871,496	\$ 2,854	\$ 111,199
2037	\$ 79,185,397	\$ 23,069,488	\$ 102,254,885	\$ 1,437,645	1.82%	\$ 181,522	\$ 1,442,030	\$ 3,962,981	\$ 2,867	\$ 12,572
2038	\$ 79,680,757	\$ 26,635,123	\$ 106,315,880	\$ -	0.00%	\$ 172,697	\$ 1,483,611	\$ 4,029,671	\$ 2,912	\$ -
2039	\$ 80,074,686	\$ 30,544,600	\$ 110,619,286	\$ -	0.00%	\$ 157,968	\$ 1,522,461	\$ 4,141,295	\$ 2,923	\$ -
2040	\$ 80,284,385	\$ 34,831,593	\$ 115,115,978	\$ -	0.00%	\$ 136,992	\$ 1,608,221	\$ 4,290,132	\$ 2,968	\$ -
2041	\$ 80,229,354	\$ 39,532,785	\$ 119,762,139	\$ -	0.00%	\$ 119,489	\$ 1,646,666	\$ 4,406,316	\$ 2,977	\$ -
2042	\$ 79,953,653	\$ 44,692,561	\$ 124,646,214	\$ -	0.00%	\$ 98,161	\$ 1,715,823	\$ 4,567,726	\$ 3,022	\$ -
2043	\$ 79,384,058	\$ 50,296,743	\$ 129,680,801	\$ -	0.00%	\$ 75,056	\$ 1,830,806	\$ 4,712,351	\$ 3,028	\$ -
2044	\$ 78,518,433	\$ 56,354,247	\$ 134,872,680	\$ -	0.00%	\$ 59,197	\$ 1,957,031	\$ 4,803,731	\$ 3,033	\$ -
2045	\$ 77,436,072	\$ 62,764,868	\$ 140,200,940	\$ -	0.00%	\$ 45,013	\$ 2,114,882	\$ 4,878,330	\$ 3,076	\$ -
2046	\$ 76,154,085	\$ 69,459,558	\$ 145,613,643	\$ -	0.00%	\$ 33,440	\$ 2,291,757	\$ 4,922,091	\$ 3,119	\$ -
2047	\$ 74,708,839	\$ 76,424,364	\$ 151,133,203	\$ -	0.00%	\$ 25,080	\$ 2,553,663	\$ 4,945,564	\$ 3,077	\$ -
2048	\$ 73,131,727	\$ 83,647,336	\$ 156,779,063	\$ -	0.00%	\$ 17,921	\$ 2,775,030	\$ 4,947,957	\$ 3,118	\$ -
2049	\$ 71,445,463	\$ 91,141,493	\$ 162,586,956	\$ -	0.00%	\$ 14,169	\$ 3,022,810	\$ 4,922,061	\$ 3,159	\$ -
2050	\$ 69,691,359	\$ 98,913,968	\$ 168,605,327	\$ -	0.00%	\$ 10,050	\$ 3,305,269	\$ 4,903,069	\$ 3,107	\$ -
2051	\$ 67,858,747	\$ 106,939,690	\$ 174,798,437	\$ -	0.00%	\$ 6,520	\$ 4,501,371	\$ 4,868,911	\$ 3,145	\$ -
2052	\$ 65,963,331	\$ 115,203,137	\$ 181,166,468	\$ -	0.00%	\$ 3,734	\$ 4,868,478	\$ 4,825,826	\$ 3,134	\$ 962
2053	\$ 64,013,896	\$ 123,681,529	\$ 187,695,425	\$ 44,214	0.07%	\$ 2,456	\$ 5,257,046	\$ 4,768,251	\$ 3,170	\$ 12,851
2054	\$ 62,030,119	\$ 132,393,602	\$ 194,423,721	\$ 545,146	0.88%	\$ 1,547	\$ 5,677,497	\$ 4,704,900	\$ 3,154	\$ 46,138
2055	\$ 60,017,979	\$ 141,351,720	\$ 201,369,699	\$ 1,562,274	2.60%	\$ 936	\$ 6,129,579	\$ 4,636,341	\$ 3,134	\$ 103,482
2056	\$ 57,982,833	\$ 150,565,307	\$ 208,548,140	\$ 3,156,795	5.44%	\$ 649	\$ 10,646,823	\$ 4,562,137	\$ 3,166	\$ 277,399
2057	\$ 55,930,865	\$ 160,051,582	\$ 215,982,447	\$ 9,516,364	17.01%	\$ 313	\$ 11,279,102	\$ 4,485,126	\$ 3,141	\$ 579,356
2058	\$ 53,863,940	\$ 169,827,681	\$ 223,691,621	\$ 16,886,867	31.35%	\$ 210	\$ 11,948,949	\$ 4,402,724	\$ 3,112	\$ 927,766
2059	\$ 51,787,872	\$ 179,921,854	\$ 231,709,726	\$ 25,357,956	48.97%	\$ 141	\$ 12,663,546	\$ 4,316,497	\$ 3,138	\$ 1,326,783
2060	\$ 49,706,279	\$ 190,358,263	\$ 240,064,542	\$ 35,028,791	70.47%	\$ -	\$ 15,288,981	\$ 4,227,125	\$ 3,103	\$ 1,822,380

City of Morgantown, West Virginia Firemen's Pension and Relief Fund
 Actuarial Information to Include in the Financial Statements
 for the June 30, 2020 Measurement Date



Projection of Pension Plan's Fiduciary Net Position

Calculation of Single Equivalent Rate						
Fiscal Year	"Funded" Portion of BP	"Unfunded" Portion of BP	PV of "Funded" BP	PV of "Unfunded" BP	PV of BP Using a Single DR	
2020	\$ 1,820,206	\$ -	\$ 1,780,584	\$ -	\$ 1,790,395	
2021	\$ 1,969,824	\$ -	\$ 1,843,966	\$ -	\$ 1,874,618	
2022	\$ 2,106,872	\$ -	\$ 1,887,328	\$ -	\$ 1,939,904	
2023	\$ 2,277,199	\$ -	\$ 1,952,064	\$ -	\$ 2,028,617	
2024	\$ 2,377,612	\$ -	\$ 1,950,373	\$ -	\$ 2,049,259	
2025	\$ 2,450,486	\$ -	\$ 1,923,591	\$ -	\$ 2,043,454	
2026	\$ 2,541,523	\$ -	\$ 1,909,142	\$ -	\$ 2,050,518	
2027	\$ 2,693,655	\$ -	\$ 1,936,287	\$ -	\$ 2,102,657	
2028	\$ 2,892,948	\$ -	\$ 1,989,996	\$ -	\$ 2,184,861	
2029	\$ 3,030,522	\$ -	\$ 1,994,861	\$ -	\$ 2,214,407	
2030	\$ 3,160,301	\$ -	\$ 1,990,707	\$ -	\$ 2,234,217	
2031	\$ 3,295,157	\$ -	\$ 1,986,272	\$ -	\$ 2,253,875	
2032	\$ 3,432,721	\$ -	\$ 1,980,090	\$ -	\$ 2,271,690	
2033	\$ 3,562,938	\$ -	\$ 1,966,701	\$ -	\$ 2,281,265	
2034	\$ 3,666,647	\$ -	\$ 1,936,792	\$ -	\$ 2,271,399	
2035	\$ 3,753,178	\$ -	\$ 1,897,128	\$ -	\$ 2,249,471	
2036	\$ -	\$ 3,871,496	\$ -	\$ 2,596,758	\$ 2,245,003	
2037	\$ -	\$ 3,962,981	\$ -	\$ 2,594,554	\$ 2,223,396	
2038	\$ -	\$ 4,029,671	\$ -	\$ 2,575,125	\$ 2,187,365	
2039	\$ -	\$ 4,141,295	\$ -	\$ 2,583,169	\$ 2,174,927	
2040	\$ -	\$ 4,290,132	\$ -	\$ 2,612,014	\$ 2,179,898	
2041	\$ -	\$ 4,406,316	\$ -	\$ 2,618,596	\$ 2,166,197	
2042	\$ -	\$ 4,567,726	\$ -	\$ 2,649,603	\$ 2,172,597	
2043	\$ -	\$ 4,712,351	\$ -	\$ 2,668,127	\$ 2,168,571	
2044	\$ -	\$ 4,803,731	\$ -	\$ 2,654,823	\$ 2,138,807	
2045	\$ -	\$ 4,878,330	\$ -	\$ 2,631,577	\$ 2,101,459	
2046	\$ -	\$ 4,922,091	\$ -	\$ 2,591,687	\$ 2,051,428	
2047	\$ -	\$ 4,945,564	\$ -	\$ 2,541,774	\$ 1,994,248	
2048	\$ -	\$ 4,947,957	\$ -	\$ 2,482,190	\$ 1,930,395	
2049	\$ -	\$ 4,922,061	\$ -	\$ 2,410,150	\$ 1,857,908	
2050	\$ -	\$ 4,903,069	\$ -	\$ 2,343,436	\$ 1,790,614	
2051	\$ -	\$ 4,868,911	\$ -	\$ 2,271,460	\$ 1,720,373	
2052	\$ -	\$ 4,825,826	\$ -	\$ 2,197,520	\$ 1,649,754	
2053	\$ -	\$ 4,768,251	\$ -	\$ 2,119,378	\$ 1,577,116	
2054	\$ -	\$ 4,704,900	\$ -	\$ 2,041,210	\$ 1,505,607	
2055	\$ -	\$ 4,636,341	\$ -	\$ 1,963,363	\$ 1,435,468	
2056	\$ -	\$ 4,562,137	\$ -	\$ 1,885,739	\$ 1,366,606	
2057	\$ 4,485,126	\$ -	\$ 860,823	\$ -	\$ 1,299,890	
2058	\$ 4,402,724	\$ -	\$ 808,620	\$ -	\$ 1,234,554	
2059	\$ 4,316,497	\$ -	\$ 758,644	\$ -	\$ 1,171,054	
2060	\$ 4,227,125	\$ -	\$ 710,944	\$ -	\$ 1,109,552	