



**Municipal Pensions
Oversight Board**

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

GASB68 Actuarial Information for the
Measurement Period Ending
06/30/2019

Bolton

Submitted by:

James Ritchie, ASA, EA, FCA, MAA

Senior Consulting Actuary

443.573.3924

jritchie@boltonusa.com

Jordan McClane, FSA, EA

Actuary

667.218.6935

jmcclane@boltonusa.com

October 29, 2019

Mark Spickler
Finance Director
City of Martinsburg
200 N. Raleigh Street
Martinsburg, WV 25401

Mr. Michael Bowers
Pension Board Secretary
City of Martinsburg, West Virginia
Firemen's Pension and Relief Fund

Re: City of Martinsburg, West Virginia Firemen's Pension and Relief Fund - GASB68 Actuarial Information for the Measurement Period Ending June 30, 2019

Dear Mark,

The following report contains the GASB 67 and GASB 68 actuarial information for the City of Martinsburg Firemen's Pension and Relief Fund to be included in the City's financial statements for FY2019. The GASB67 information has been provided as of the June 30, 2019 (the GASB 68 measurement date for FY2019).

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, 2019 (the City's fiscal year end date) as required by GASB68. 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, 2018 actuarial valuation rolled forward to June 30, 2019. The methods, assumptions, and participant data used are detailed in the July 1, 2018 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 GASB67. The calculation of the Actuarially Determined Contribution for the fiscal year ended June 30, 2019 is contained in the July 1, 2018 actuarial valuation report.

The included calculations are based on a blended discount rate of 3.86%. The plan's expected gross rate of investment return of 4.5% has been blended with the 3.13% 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, 2019. The development of the blended discount rate is included within this report.

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.

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.) The long-term nominal expected rate of return is based on the fund's current funding ratio, liquidity ratio, equity exposure and expected funded status in 15 years.

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 those assumptions; these differences may be significant or material because these 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 oversight 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. This 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.



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 GASB68. 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.

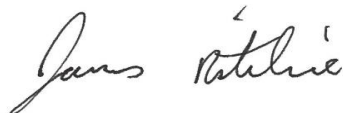
The calculation of actuarial liabilities for valuation purposes is based on a current estimate of future benefit payments. The calculation includes a computation of the "present value" of those estimated future benefit payments using an assumed discount rate; the higher the discount rate assumption, 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, 2018 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, MAAA



City of Martinsburg, West Virginia Firemen's Pension and Relief Fund
 Actuarial Information to Include in the Financial Statements
 for the June 30, 2019 Measurement Date



Net Pension Liability of the Employer

The components of the net pension liability of the Employer at June 30, 2019, were as follows:

Total pension liability	\$ 40,336,431
Plan fiduciary net position	(3,096,167)
Employer's net pension liability	<u>\$ 37,240,264</u>
Plan fiduciary net position as a percentage of the total pension liability	7.68%

Actuarial assumptions. The total pension liability was determined by an actuarial valuation as of July 1, 2018 rolled forward to June 30, 2019 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)	3.7608%
Single discount rate (EOY)	3.8600%
Investment rate of return	4.50 percent, net of pension plan investment expense, including inflation
Long-term municipal bond rate (BOY)	3.62%
Long-term municipal bond rate (EOY)	3.13%
Mortality	RP-2014 Blue Collar Mortality Table with generational projection using Scale MP-2014
Year Fund is projected to be fully funded	2059
Year assets are expected to be depleted for a closed plan	2032

The above is a summary of key actuarial assumptions. Full descriptions of the actuarial assumptions are available in the July 1, 2018 actuarial valuation report.

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

	1% Decrease 2.86%	Current Discount Rate 3.86%	1% Increase 4.86%
Employer's net pension liability	\$ 44,616,585	\$ 37,240,264	\$ 31,492,643

City of Martinsburg, West Virginia Firemen's Pension and Relief Fund
 Actuarial Information to Include in the Financial Statements
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Changes in the Net Pension Liability

	Total Pension Liability (a)	Increase (Decrease) Plan Fiduciary Net Position (b)	Net Pension Liability (a) - (b)
Balances at 6/30/18	\$ 39,042,910	\$ 2,975,500	\$ 36,067,410
Changes for the year:			
Service cost	1,288,466		1,288,466
Interest	1,443,011		1,443,011
Changes of benefit terms	-		-
Differences between expected and actual experience	562,259		562,259
Changes of assumptions	(653,935)		(653,935)
Contributions - employer (including Premium Tax Allocation)		1,193,866	(1,193,866)
Contributions - member		176,173	(176,173)
Net investment income		100,158	(100,158)
Benefit payments, including refunds of member contributions	(1,346,280)	(1,346,280)	-
Administrative expense		(2,000)	2,000
Other		(1,250)	1,250
Net Changes	<u>1,293,521</u>	<u>120,667</u>	<u>1,172,854</u>
Balances at 6/30/19	<u>\$ 40,336,431</u>	<u>\$ 3,096,167</u>	<u>\$ 37,240,264</u>
Return on Investments		3.4%	

City of Martinsburg, West Virginia Firemen's Pension and Relief Fund
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Components of Employer's Pension Expense for the Fiscal Year Ended June 30, 2019

Note	Description	Amount
A	Service Cost	\$ 1,288,466
B	Interest on the total pension liability	1,443,011
A	Changes of benefit terms	-
C	Differences between expected and actual experience	(29,025)
C	Changes of assumptions	968,688
A	Employee contributions	(176,173)
D	Projected earnings on pension plan investments	(134,360)
C	Differences between expected and actual earnings on plan investments	(10,388)
A	Pension plan administrative expense	2,000
A	Other changes in fiduciary net position	1,250
Total Pension Expense		\$ 3,353,469

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)	Projected Rate of Return (c)	Projected Earnings (a) x (b) x (c)
Beginning total pension liability	\$ 39,042,910	100%	3.76%	\$ 1,468,326
Service Cost (End of Year)	1,288,466	0%	3.76%	-
Benefit payments, including refunds of employee contributions	(1,346,280)	50%	3.76%	(25,315)
Total interest on the total pension liability				\$ 1,443,011

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	\$ 2,975,500	100%	4.50%	\$ 133,898
Employer contributions	1,193,866	50%	4.50%	26,862
Employee contributions	176,173	50%	4.50%	3,964
Benefit payments, including refunds of employee contributions	(1,346,280)	50%	4.50%	(30,291)
Administrative expense and other	(3,250)	50%	4.50%	(73)
Total Projected Earnings				\$ 134,360

City of Martinsburg, West Virginia Firemen’s Pension and Relief Fund
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 for the June 30, 2019 Measurement Date



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

At June 30, 2019, 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	\$ 664,354	\$ 436,883
Changes of assumptions	2,655,719	2,264,170
Net difference between projected and actual earnings on pension plan investments	-	91,227
Total	\$ 3,320,073	\$ 2,792,280

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:	
2020	\$ 896,609
2021	311,525
2022	(526,064)
2023	(138,996)
2024	(15,281)
Thereafter	-

City of Martinsburg, 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	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Service cost	\$ 1,288,466	\$ 1,285,344	\$ 1,419,431	\$ 783,440	\$ 775,244	\$ 733,383	\$ -	\$ -	\$ -	\$ -
Interest	1,443,011	1,407,678	1,300,640	1,324,370	1,308,568	1,326,380	-	-	-	-
Changes of benefit terms	-	-	-	-	-	-	-	-	-	-
Differences between expected and actual experience	562,259	(549,358)	412,930	(79,277)	(487,090)	-	-	-	-	-
Changes of assumptions	(653,935)	(367,921)	(3,115,954)	8,776,101	763,505	946,799	-	-	-	-
Benefit payments, including refunds of member contributions	(1,346,280)	(1,318,338)	(1,380,286)	(1,285,531)	(1,154,037)	(1,131,681)	-	-	-	-
Net change in total pension liability	1,293,521	457,405	(1,363,239)	9,519,103	1,206,190	1,874,881	-	-	-	-
Total pension liability - beginning	39,042,910	38,585,505	39,948,744	30,429,641	29,223,451	27,348,570	-	-	-	-
Total pension liability - ending (a)	\$ 40,336,431	\$ 39,042,910	\$ 38,585,505	\$ 39,948,744	\$ 30,429,641	\$ 29,223,451	\$ -	\$ -	\$ -	\$ -
Plan fiduciary net position	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Contributions - employer (including Premium Tax Allocation)	\$ 1,193,866	\$ 1,144,488	\$ 1,089,467	\$ 1,027,488	\$ 983,274	\$ 995,355	\$ -	\$ -	\$ -	\$ -
Contributions - member	176,173	173,464	193,583	163,644	156,408	152,184	-	-	-	-
Net investment income	100,158	232,309	279,899	(24,790)	65,233	286,465	-	-	-	-
Benefit payments, including refunds of member contributions	(1,346,280)	(1,318,338)	(1,380,286)	(1,285,531)	(1,154,037)	(1,131,681)	-	-	-	-
Administrative expense	(2,000)	(2,550)	(1,000)	(1,000)	(1,000)	(1,000)	-	-	-	-
Other	(1,250)	-	-	-	-	-	-	-	-	-
Net change in plan fiduciary net position	\$ 120,667	\$ 229,373	\$ 181,663	\$ (120,189)	\$ 49,878	\$ 301,323	\$ -	\$ -	\$ -	\$ -
Plan fiduciary net position - beginning	2,975,500	2,746,127	2,564,464	2,693,372	2,643,494	2,342,171	-	-	-	-
Plan fiduciary net position - ending (b)	\$ 3,096,167	\$ 2,975,500	\$ 2,746,127	\$ 2,573,183	\$ 2,693,372	\$ 2,643,494	\$ -	\$ -	\$ -	\$ -
Employer's net pension liability - ending (a)-(b)	<u>\$ 37,240,264</u>	<u>\$ 36,067,410</u>	<u>\$ 35,839,378</u>	<u>\$ 37,375,561</u>	<u>\$ 27,736,269</u>	<u>\$ 26,579,957</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>
Plan fiduciary net position as a percentage of the total pension liability	7.68%	7.62%	7.12%	6.44%	8.85%	9.05%	0.00%	0.00%	0.00%	0.00%
Covered payroll	\$ 2,137,952	\$ 2,039,496	\$ 1,962,902	\$ 1,825,463	\$ 1,863,130	\$ 1,880,224	\$ -	\$ -	\$ -	\$ -
Employer's net pension liability as a percentage of covered payroll	1741.87%	1768.45%	1825.84%	2047.46%	1488.69%	1413.66%	0.00%	0.00%	0.00%	0.00%
Expected average remaining service years of all participants	6.00	5.83	5.71	5.66	5.61	-	-	-	-	-

Notes to Schedule:

Benefit changes: There were no changes for FY2019.

Changes of assumptions: The discount rate changed from 3.7608% to 3.8600%.

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

	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Actuarially determined contribution	\$ 2,847,951	\$ 2,519,020	\$ 2,401,195	\$ 2,184,720	\$ 1,606,308	\$ 1,568,205	\$ 1,482,830	\$ -	\$ -	\$ -
Contributions in relation to the actuarially determined contribution										
Employer provided	835,180	785,449	738,972	695,534	654,938	680,168	600,590	-	-	-
State provided	358,686	359,039	350,495	331,954	328,336	315,187	558,796	-	-	-
Contribution deficiency (excess)	<u>\$ 1,654,085</u>	<u>\$ 1,374,532</u>	<u>\$ 1,311,728</u>	<u>\$ 1,157,232</u>	<u>\$ 623,034</u>	<u>\$ 572,850</u>	<u>\$ 323,444</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>
Covered payroll	\$ 2,137,952	\$ 2,039,496	\$ 1,962,902	\$ 1,825,463	\$ 1,863,130	\$ 1,880,224	\$ 1,844,289	\$ -	\$ -	\$ -
Contributions as a percentage of covered employee payroll	55.84%	56.00%	56.00%	56.00%	53.00%	53.00%	63.00%	0.00%	0.00%	0.00%

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	32.5 years
Asset valuation method	Market Value
Inflation	2.75 percent
Salary increases	Rates vary by years of service
Investment rate of return	4.50 percent, 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 Martinsburg, 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)	2015	2016	2017	2018	2019	2020	2021	2022	2023
2015	\$ 66,558	5	\$ 13,312	13,312	13,312	13,312	13,310				
2016	157,074	5		\$ 31,415	31,415	31,415	31,415	31,414			
2017	(179,285)	5			\$ (35,857)	(35,857)	(35,857)	(35,857)	(35,857)		
2018	(130,481)	5				\$ (26,096)	(26,096)	(26,096)	(26,096)	(26,097)	
2019	34,202	5					\$ 6,840	6,840	6,840	6,840	6,842
Net increase (decrease) in pension expense							\$ (10,388)	\$ (23,699)	\$ (55,113)	\$ (19,257)	\$ 6,842

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, 2019 (c)	Balances at June 30, 2019	
				Deferred Outflows of Resources (a) - (c)	Deferred Inflows of Resources (b) - (c)
2015	\$ 66,558	\$ -	\$ 66,558	\$ -	\$ -
2016	157,074	-	125,660	31,414	-
2017	-	179,285	107,571	-	71,714
2018	-	130,481	52,192	-	78,289
2019	34,202	-	6,840	27,362	-
				\$ 58,776	\$ 150,003

City of Martinsburg, West Virginia Firemen's Pension and Relief Fund
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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	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Thereafter
Prior	\$ -		\$ -												
2015	(487,090)	5.607269			(86,868)	(86,868)	(86,868)	(86,868)	(86,868)	(52,750)					
2016	(79,277)	5.659196				(14,009)	(14,009)	(14,009)	(14,009)	(14,009)	(9,232)				
2017	412,930	5.705384					72,375	72,375	72,375	72,375	72,375	51,055			
2018	(549,358)	5.829777						(94,233)	(94,233)	(94,233)	(94,233)	(94,233)	(78,193)		
2019	562,259	6							93,710	93,710	93,710	93,710	93,710	93,709	
Net increase (decrease) in pension expense									(29,025)	5,093	62,620	50,532	15,517	93,709	

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, 2019 (c)	Balances at June 30, 2019	
				Deferred Outflows of Resources (a) - (c)	Deferred Inflows of Resources (b) - (c)
Prior	\$ -	\$ -	\$ -	\$ -	\$ -
2015	-	487,090	434,340	-	52,750
2016	-	79,277	56,036	-	23,241
2017	412,930	-	217,125	195,805	-
2018	-	549,358	188,466	-	360,892
2019	562,259	-	93,710	468,549	-
				\$ 664,354	\$ 436,883

City of Martinsburg, 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	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Thereafter
Prior	\$ -		\$ -	-	-	-	-	-	-	-	-	-	-	-	-
2015	763,505	5.607269			\$ 136,163	136,163	136,163	136,163	136,163	82,690					
2016	8,776,101	5.659196				\$ 1,550,768	1,550,768	1,550,768	1,550,768	1,550,768	1,022,261				
2017	(3,115,954)	5.705384					\$ (546,143)	(546,143)	(546,143)	(546,143)	(546,143)	(385,239)			
2018	(367,921)	5.82977						\$ (63,111)	(63,111)	(63,111)	(63,111)	(63,111)	(52,366)		
2019	(653,935)	6							\$ (108,989)	(108,989)	(108,989)	(108,989)	(108,989)	\$ (108,990)	-
Net increase (decrease) in pension expense									\$ 968,688	\$ 915,215	\$ 304,018	\$ (557,339)	\$ (161,355)	\$ (108,990)	\$ -

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, 2019 (c)	Balances at June 30, 2019	
				Deferred Outflows of Resources (a) - (c)	Deferred Inflows of Resources (b) - (c)
Prior	\$ -	\$ -	\$ -	\$ -	\$ -
2015	763,505	-	680,815	82,690	-
2016	8,776,101	-	6,203,072	2,573,029	-
2017	-	3,115,954	1,638,429	-	1,477,525
2018	-	367,921	126,222	-	241,699
2019	-	653,935	108,989	-	544,946
				\$ 2,655,719	\$ 2,264,170

City of Martinsburg, West Virginia Firemen's Pension and Relief Fund
 Actuarial Information to Include in the Financial Statements
 for the June 30, 2019 Measurement Date



Projection of Pension Plan's Fiduciary Net Position (Dollar amounts in thousands)

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
2019	\$ 35,206,075	\$ -	\$ 35,206,075	\$ 3,096,167	8.79%	\$ 178,606	\$ 1,118,866	\$ 1,367,719	\$ 8,577	\$ 137,573
2020	\$ 36,481,808	\$ -	\$ 36,481,808	\$ 3,154,916	8.65%	\$ 176,618	\$ 1,152,466	\$ 1,422,788	\$ 9,055	\$ 139,685
2021	\$ 37,740,136	\$ 48,239	\$ 37,788,375	\$ 3,191,842	8.46%	\$ 175,456	\$ 1,172,252	\$ 1,468,950	\$ 9,171	\$ 140,731
2022	\$ 38,997,971	\$ 155,537	\$ 39,153,508	\$ 3,202,160	8.21%	\$ 174,476	\$ 1,200,514	\$ 1,515,925	\$ 9,150	\$ 140,757
2023	\$ 40,255,533	\$ 319,806	\$ 40,575,339	\$ 3,192,832	7.93%	\$ 173,876	\$ 1,228,288	\$ 1,557,809	\$ 9,261	\$ 140,008
2024	\$ 41,520,332	\$ 549,460	\$ 42,069,792	\$ 3,167,933	7.63%	\$ 173,863	\$ 1,266,039	\$ 1,606,329	\$ 9,516	\$ 138,642
2025	\$ 42,791,609	\$ 840,619	\$ 43,632,228	\$ 3,130,633	7.32%	\$ 173,407	\$ 1,307,783	\$ 1,656,512	\$ 9,630	\$ 136,763
2026	\$ 44,065,322	\$ 1,202,754	\$ 45,268,076	\$ 3,082,444	7.00%	\$ 174,360	\$ 1,353,120	\$ 1,691,424	\$ 9,743	\$ 134,845
2027	\$ 45,365,570	\$ 1,635,226	\$ 47,000,796	\$ 3,043,602	6.71%	\$ 172,560	\$ 1,398,862	\$ 1,755,740	\$ 9,855	\$ 132,641
2028	\$ 46,644,984	\$ 2,148,002	\$ 48,792,986	\$ 2,982,070	6.39%	\$ 166,850	\$ 1,438,715	\$ 1,852,657	\$ 10,126	\$ 128,469
2029	\$ 47,843,111	\$ 2,759,942	\$ 50,603,053	\$ 2,853,321	5.96%	\$ 159,286	\$ 1,469,817	\$ 1,947,067	\$ 10,239	\$ 121,096
2030	\$ 48,945,591	\$ 3,496,464	\$ 52,442,055	\$ 2,646,214	5.41%	\$ 151,586	\$ 1,504,608	\$ 2,049,898	\$ 10,351	\$ 110,088
2031	\$ 49,937,660	\$ 4,365,122	\$ 54,302,782	\$ 2,352,247	4.71%	\$ 143,200	\$ 1,538,624	\$ 2,151,018	\$ 10,461	\$ 95,178
2032	\$ 50,811,091	\$ 5,381,520	\$ 56,192,611	\$ 1,967,770	3.87%	\$ 135,622	\$ 1,575,635	\$ 2,247,821	\$ 10,570	\$ 76,375
2033	\$ 51,571,028	\$ 6,557,717	\$ 58,128,745	\$ 1,497,010	2.90%	\$ 128,320	\$ 1,624,428	\$ 2,338,321	\$ 10,861	\$ 54,093
2034	\$ 52,221,374	\$ 7,896,357	\$ 60,117,731	\$ 954,670	1.83%	\$ 120,615	\$ 1,691,461	\$ 2,427,919	\$ 10,971	\$ 29,012
2035	\$ 52,755,266	\$ 9,414,344	\$ 62,169,610	\$ 356,868	0.68%	\$ 114,529	\$ 1,753,098	\$ 2,501,437	\$ 11,078	\$ 1,709
2036	\$ 53,194,894	\$ 11,116,388	\$ 64,311,282	\$ -	0.00%	\$ 107,324	\$ 1,825,237	\$ 2,589,159	\$ 11,183	\$ -
2037	\$ 53,516,695	\$ 13,010,322	\$ 66,527,017	\$ -	0.00%	\$ 94,844	\$ 1,898,882	\$ 2,701,044	\$ 11,285	\$ -
2038	\$ 53,662,538	\$ 15,115,967	\$ 68,778,505	\$ -	0.00%	\$ 80,846	\$ 1,965,697	\$ 2,814,167	\$ 11,385	\$ -
2039	\$ 53,617,226	\$ 17,465,910	\$ 71,083,136	\$ -	0.00%	\$ 66,216	\$ 2,055,586	\$ 2,944,266	\$ 11,481	\$ -
2040	\$ 53,355,525	\$ 20,066,359	\$ 73,421,884	\$ -	0.00%	\$ 52,714	\$ 2,138,326	\$ 3,036,255	\$ 11,574	\$ -
2041	\$ 52,915,277	\$ 22,948,472	\$ 75,863,749	\$ -	0.00%	\$ 44,893	\$ 2,252,284	\$ 3,080,803	\$ 11,664	\$ -
2042	\$ 52,366,303	\$ 26,097,043	\$ 78,463,346	\$ -	0.00%	\$ 37,812	\$ 2,395,233	\$ 3,119,957	\$ 11,515	\$ -
2043	\$ 51,714,383	\$ 29,484,880	\$ 81,199,263	\$ -	0.00%	\$ 29,739	\$ 2,577,637	\$ 3,165,098	\$ 11,832	\$ -
2044	\$ 50,946,033	\$ 33,086,043	\$ 84,032,076	\$ -	0.00%	\$ 23,523	\$ 2,759,835	\$ 3,183,161	\$ 11,661	\$ -
2045	\$ 50,094,576	\$ 36,887,605	\$ 86,982,181	\$ -	0.00%	\$ 19,260	\$ 2,965,556	\$ 3,183,463	\$ 11,727	\$ -
2046	\$ 49,182,868	\$ 40,880,834	\$ 90,063,702	\$ -	0.00%	\$ 15,319	\$ 3,191,761	\$ 3,182,155	\$ 11,788	\$ 292
2047	\$ 48,211,899	\$ 45,063,695	\$ 93,275,594	\$ 13,429	0.03%	\$ 10,839	\$ 3,490,326	\$ 3,184,947	\$ 11,843	\$ 7,377
2048	\$ 47,173,635	\$ 49,444,663	\$ 96,618,298	\$ 325,182	0.69%	\$ 7,108	\$ 3,754,686	\$ 3,188,570	\$ 11,892	\$ 27,124
2049	\$ 46,068,391	\$ 54,028,976	\$ 100,097,367	\$ 913,638	1.98%	\$ 4,609	\$ 4,046,217	\$ 3,165,865	\$ 11,935	\$ 60,541
2050	\$ 44,925,340	\$ 58,815,199	\$ 103,740,539	\$ 1,847,205	4.11%	\$ 3,278	\$ 4,366,815	\$ 3,132,988	\$ 11,971	\$ 110,386
2051	\$ 43,758,635	\$ 63,794,129	\$ 107,552,764	\$ 3,182,725	7.27%	\$ 2,333	\$ 5,151,702	\$ 3,096,308	\$ 12,000	\$ 188,745
2052	\$ 42,572,787	\$ 68,948,323	\$ 111,521,110	\$ 5,417,197	12.72%	\$ 1,505	\$ 5,548,355	\$ 3,057,917	\$ 12,022	\$ 298,958
2053	\$ 41,369,114	\$ 74,263,012	\$ 115,632,126	\$ 8,196,076	19.81%	\$ 894	\$ 5,976,092	\$ 3,017,173	\$ 12,036	\$ 434,419
2054	\$ 40,150,327	\$ 79,730,175	\$ 119,880,502	\$ 11,578,271	28.84%	\$ 600	\$ 6,435,918	\$ 2,973,604	\$ 12,042	\$ 597,812
2055	\$ 38,919,947	\$ 85,347,450	\$ 124,267,397	\$ 15,626,956	40.15%	\$ 403	\$ 6,929,647	\$ 2,928,711	\$ 12,039	\$ 791,985
2056	\$ 37,679,228	\$ 91,115,644	\$ 128,794,872	\$ 20,408,241	54.16%	\$ 184	\$ 9,654,961	\$ 2,883,439	\$ 12,026	\$ 1,068,790
2057	\$ 36,427,961	\$ 97,039,370	\$ 133,467,331	\$ 28,236,711	77.51%	\$ -	\$ 10,284,137	\$ 2,837,318	\$ 12,357	\$ 1,436,087
2058	\$ 35,166,764	\$ 103,126,539	\$ 138,293,303	\$ 37,107,260	105.52%	\$ -	\$ 10,955,202	\$ 2,789,126	\$ 12,334	\$ 1,851,267
2059	\$ 33,898,078	\$ 109,389,465	\$ 143,287,543	\$ 47,112,269	138.98%	\$ -	\$ 3,279,463	\$ 2,740,082	\$ 12,300	\$ 2,131,781

City of Martinsburg, West Virginia Firemen's Pension and Relief Fund
 Actuarial Information to Include in the Financial Statements
 for the June 30, 2019 Measurement Date



Projection of Pension Plan's Fiduciary Net Position (Dollar amounts in thousands)

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
2019	\$ 1,367,719	\$ -	\$ 1,337,946	\$ -	\$ 1,342,079
2020	\$ 1,422,788	\$ -	\$ 1,331,882	\$ -	\$ 1,344,261
2021	\$ 1,468,950	\$ -	\$ 1,315,880	\$ -	\$ 1,336,327
2022	\$ 1,515,925	\$ -	\$ 1,299,483	\$ -	\$ 1,327,840
2023	\$ 1,557,809	\$ -	\$ 1,277,882	\$ -	\$ 1,313,846
2024	\$ 1,606,329	\$ -	\$ 1,260,941	\$ -	\$ 1,304,449
2025	\$ 1,656,512	\$ -	\$ 1,244,339	\$ -	\$ 1,295,237
2026	\$ 1,691,424	\$ -	\$ 1,215,851	\$ -	\$ 1,273,414
2027	\$ 1,755,740	\$ -	\$ 1,207,735	\$ -	\$ 1,272,739
2028	\$ 1,852,657	\$ -	\$ 1,219,524	\$ -	\$ 1,293,113
2029	\$ 1,947,067	\$ -	\$ 1,226,478	\$ -	\$ 1,308,533
2030	\$ 2,049,898	\$ -	\$ 1,235,648	\$ -	\$ 1,326,473
2031	\$ 2,151,018	\$ -	\$ 1,240,768	\$ -	\$ 1,340,209
2032	\$ -	\$ 2,247,821	\$ -	\$ 1,482,737	\$ 1,348,504
2033	\$ -	\$ 2,338,321	\$ -	\$ 1,495,620	\$ 1,350,694
2034	\$ -	\$ 2,427,919	\$ -	\$ 1,505,797	\$ 1,350,359
2035	\$ -	\$ 2,501,437	\$ -	\$ 1,504,308	\$ 1,339,575
2036	\$ -	\$ 2,589,159	\$ -	\$ 1,509,805	\$ 1,335,053
2037	\$ -	\$ 2,701,044	\$ -	\$ 1,527,245	\$ 1,341,015
2038	\$ -	\$ 2,814,167	\$ -	\$ 1,542,915	\$ 1,345,284
2039	\$ -	\$ 2,944,266	\$ -	\$ 1,565,252	\$ 1,355,200
2040	\$ -	\$ 3,036,255	\$ -	\$ 1,565,166	\$ 1,345,634
2041	\$ -	\$ 3,080,803	\$ -	\$ 1,539,930	\$ 1,314,665
2042	\$ -	\$ 3,119,957	\$ -	\$ 1,512,170	\$ 1,281,923
2043	\$ -	\$ 3,165,098	\$ -	\$ 1,487,491	\$ 1,252,168
2044	\$ -	\$ 3,183,161	\$ -	\$ 1,450,577	\$ 1,212,541
2045	\$ -	\$ 3,183,463	\$ -	\$ 1,406,685	\$ 1,167,616
2046	\$ -	\$ 3,182,155	\$ -	\$ 1,363,432	\$ 1,123,786
2047	\$ -	\$ 3,184,947	\$ -	\$ 1,323,211	\$ 1,082,996
2048	\$ -	\$ 3,188,570	\$ -	\$ 1,284,511	\$ 1,043,958
2049	\$ -	\$ 3,165,865	\$ -	\$ 1,236,657	\$ 998,025
2050	\$ -	\$ 3,132,988	\$ -	\$ 1,186,672	\$ 950,977
2051	\$ 3,096,308	\$ -	\$ 740,568	\$ -	\$ 904,936
2052	\$ 3,057,917	\$ -	\$ 699,890	\$ -	\$ 860,521
2053	\$ 3,017,173	\$ -	\$ 660,828	\$ -	\$ 817,520
2054	\$ 2,973,604	\$ -	\$ 623,239	\$ -	\$ 775,789
2055	\$ 2,928,711	\$ -	\$ 587,397	\$ -	\$ 735,698
2056	\$ 2,883,439	\$ -	\$ 553,414	\$ -	\$ 697,422
2057	\$ 2,837,318	\$ -	\$ 521,112	\$ -	\$ 660,778
2058	\$ 2,789,126	\$ -	\$ 490,202	\$ -	\$ 625,429
2059	\$ 2,740,082	\$ -	\$ 460,844	\$ -	\$ 591,610