

GASB 68 Actuarial Information for the Measurement Period Ending June 30, 2021



## Submitted by:

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November 5, 2021

Mr. Larry Richman Finance Director City of Grafton 1 W. Main Street Grafton, WV 26354 Chief Robert Beltner
Pension Board Secretary
City of Grafton
Policemen's Pension and Relief Fund

Re: City of Grafton Policemen's Pension and Relief Fund
GASB 68 Actuarial Information for the Measurement Period Ending June 30, 2021

Dear Larry,

The following report contains the GASB 67 and GASB 68 actuarial information for the City of Grafton Policemen's Pension and Relief Fund to be included in the City's financial statements for FY 2021. The GASB 67 information has been provided as of June 30, 2021 (the GASB 68 measurement date for FY 2021).

## 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, 2021 (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, 2020 actuarial valuation rolled forward to June 30, 2021. The methods, assumptions, and participant data used are detailed in the July 1, 2020 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 for the fiscal year ending June 30, 2021 is contained in the July 1, 2019 actuarial valuation report. The discount rate assumption may have changed if a blended rate was used for GASB purposes.

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) and is based on the funded status (current and projected), equity exposure, and funding policy.

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.

## Methodology, Reliance and Certification (cont.)

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. 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.

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 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.



Mr. Larry Richman November 5, 2021 Page 3

## Methodology, Reliance and Certification (cont.)

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, 2020 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



Actuarial Information to Include in the Financial Statements for the June 30, 2021 Measurement Date



Net Pension Liability of the Employer

The components of the net pension liability of the Employer at June 30, 2021, were as follows:

Total pension liability	\$ 2,173,962
Plan fiduciary net position	 (2,085,479)
Employer's net pension liability	\$ 88,483
Plan fiduciary net position as a percentage of the total pension liability	95.93%

Actuarial assumptions. The total pension liability was determined by an actuarial valuation as of July 1, 2020 rolled forward to June 30, 2021 using the following actuarial assumptions, applied to all periods included in the measurement:

Inflation 2.50 percent

Salary increases Rates vary by years of service

Single discount rate (BOY) 6.00% Single discount rate (EOY) 6.00%

Investment rate of return (BOY) 6.00%, net of pension plan investment expense, including inflation Investment rate of return (EOY) 6.00%, net of pension plan investment expense, including inflation

Long-term municpal bond rate (BOY) 2.45% Long-term municpal bond rate (EOY) 1.92%

Mortality SOA PubS-2010(B) with generational projection using Scale MP-2019

Year Fund is projected to be fully funded 2025 Year assets are expected to be depleted N/A

for a closed plan

The above is a summary of key actuarial assumptions. Full descriptions of the actuarial assumptions are available in the July 1, 2020 actuarial valuation report.

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

		(	Current		
	Decrease 5.00%	Disc	19	% Increase 7.00%	
Employer's net pension liability	\$ 385,176	\$	88,483	\$	(153,882)

## City of Grafton, West Virginia Policemen's Pension and Relief Fund Actuarial Information to Include in the Financial Statements for the June 30, 2021 Measurement Date



Changes in the Net Pension Liability

	I al Pension Liability (a)	Pla	nse (Decrease In Fiduciary et Position (b)	Ne I	et Pension Liability (a) - (b)
Balances at 6/30/20	\$ 2,150,291	\$	1,808,426	\$	341,865
Changes for the year:					
Service cost	43,776				43,776
Interest	126,663				126,663
Changes of benefit terms	-				-
Differences between expected and actual experience	(1,984)				(1,984)
Changes of assumptions	(66,332)				(66,332)
Contributions - employer (including Premium Tax Allocation)			111,798		(111,798)
Contributions - member			6,126		(6,126)
Net investment income			241,181		(241,181)
Benefit payments, including refunds of member contributions	(78,452)		(78,452)		-
Administrative expense			(3,600)		3,600
Other	 		-		-
Net Changes	 23,671		277,053		(253,382)
Balances at 6/30/21	\$ 2,173,962	\$	2,085,479	\$	88,483
Return on Investments			13.2%		





Components of Employer's Pension Expense for the Fiscal Year Ended June 30, 2021

Note	Description	Amount
Α	Service cost	\$ 43,776
В	Interest on the total pension liability	126,663
Α	Changes of benefit terms	-
С	Differences between expected and actual experience	(1,984)
С	Changes of assumptions	(66,332)
Α	Employee contributions	(6,126)
D	Projected earnings on pension plan investments	(109,582)
С	Differences between expected and actual earnings on plan investments	(10,376)
Α	Pension plan administrative expense	3,600
Α	Other changes in fiduciary net position	-
	Total Pension Expense	\$ (20,361)

## Notes:

A Provided in the Changes in Net Pension Liability exhibit.

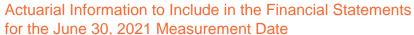
B Based on the following calculation:

	Α	mount for Period (a)	Portion of Period (b)	Interest Rate (c)	E	rojected arnings x (b) x (c)
Beginning total pension liability	\$	2,150,291	100%	6.00%	\$	129,017
Service cost (End of Year)		43,776	0%	6.00%		-
Benefit payments, including refunds of employee contributions		(78,452)	50%	6.00%		(2,354)
Total interest on the total pension liability					\$	126,663

C Provided in the Schedules of Deferrals.

D Based on the following calculation:

	A	Amount for Period	Portion of Period	Projected Rate of Return	E	rojected arnings
		(a)	(b)	(c)	(a)	x (b) x (c)
Beginning plan fiduciary net position	\$	1,808,426	100%	6.00%	\$	108,506
Employer contributions		111,798	50%	6.00%		3,354
Employee contributions		6,126	50%	6.00%		184
Benefit payments, including refunds of employee contributions		(78,452)	50%	6.00%		(2,354)
Administrative expense and other		(3,600)	50%	6.00%		(108)
Total Projected Earnings					\$	109,582





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

At June 30, 2021, the Employer reported deferred outflows of resources and deferred inflows of resources related to pensions from the following sources:

	Outflows ources	erred Inflows Resources
Differences between expected and actual experience	\$ -	\$ -
Changes of assumptions	-	-
Net difference between projected and actual earnings	-	
on pension plan investments		89,562
Total	\$ -	\$ 89,562

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:	
2022	\$ (14,003)
2023	(23,837)
2024	(25,403)
2025	(26,319)
2026	-
Thereafter	-

Actuarial Information to Include in the Financial Statements for the June 30, 2021 Measurement Date

B

Changes in the Employer's Net Pension Liability and Related Ratios Last 10 Fiscal Years

		2021		2020		2019		2018		2017		2016		2015		2014		2013		2012
Service cost	\$	43,776	\$	42,867	\$	41,651	\$	60,571	\$	61,339	\$	78,908	\$	85,318	\$	80,806	\$		\$	
Interest		126,663		126,041		122,709		119,452		118,527		111,610		101,854		100,639				
Changes of benefit terms		-		-		-		-		-		-		-		-		-		
Differences between expected and actual experience		(1,984)		(69,702)		(54,748)		(70,608)		(31,582)		42,686		(65,773)		-		-		
Changes of assumptions		(66,332)		-		(151,273)		-		-		221,553		-		-		-		
Benefit payments, including refunds of member contributions		(78,452)		(99,194)		(78,278)		(102,757)		(81,344)		(72,315)		(55,795)		(58,768)		-		
Net change in total pension liability		23,671		12		(119,939)		6,658		66,940		382,442		65,604		122,677		-		
Total pension liability - beginning		2,150,291		2,150,279		2,270,218		2,263,560		2,196,620		1,814,178		1,748,574		1,625,897		-		
Total pension liability - ending (a)	\$	2,173,962	\$	2,150,291	\$	2,150,279	\$	2,270,218	\$	2,263,560	\$	2,196,620	\$	1,814,178	\$	1,748,574	\$	-	\$	
Plan fiduciary net position		2021		2020		2019		2018		2017		2016		2015		2014		2013		2012
Contributions - employer (including Premium Tax Allocation)	\$	111,798	\$	109,711	\$	110,952	\$	124,762	\$	150,135	\$	125,013	\$	125,833	\$	141,754	s		\$	
Contributions - member	7	6,126	-	7.895	-	7,792	_	8,170	•	10,603	7	14.885	7	17.640	-	17,926	•	-	_	
Net investment income		241,181		97.613		87.592		34,619		59.589		47.665		27.091		73,237		-		
Benefit payments, including refunds of member contributions		(78,452)		(99,194)		(78,278)		(102,757)		(81,344)		(72,315)		(55,795)		(58,768)		-		
Administrative expense		(3,600)		(3,670)		(3,600)		(3,726)		(3,600)		(2,700)		(2,400)		(2,398)		-		
Other		-		-		-		-		-		-		-		-				
Net change in plan fiduciary net position	\$	277,053	\$	112,355	\$	124,458	\$	61,068	\$	135,383	\$	112,548	\$	112,369	\$	171,751	\$	-	\$	
Plan fiduciary net position - beginning		1,808,426		1,696,071		1,571,613		1,510,545		1,375,162		1,262,614		1,150,245		978,494		-		
Plan fiduciary net position - ending (b)	\$	2,085,479	\$	1,808,426	\$	1,696,071	\$	1,571,613	\$	1,510,545	\$	1,375,162	\$	1,262,614	\$	1,150,245	\$	-	\$	
imployer's net pension liability - ending (a)-(b)	\$	88,483	\$	341,865	\$	454,208	\$	698,605	\$	753,015	\$	821,458	\$	551,564	\$	598,329	\$		\$	
lan fiduciary net position as a percentage of the otal pension liability		95.93%		84.10%		78.88%		69.23%		66.73%		62.60%		69.60%		65.78%		0.00%		0.00
	\$	116,508	\$	116,045	\$	116,270	\$	139,689	\$	144,260	\$	217,646	\$	231,257	\$	225,206	\$	-	\$	
overed payroll																				
overed payroll  mployer's net pension liability as a percentage of overed payroll		75.95%		294.60%		390.65%		500.11%		521.99%		377.43%		238.51%		265.68%		0.00%		0.0

Notes to Schedule: Benefit changes:

There were no changes for FY2021.

Changes of assumptions: Changes were made to salary scale assumptions, pay spiking assumptions, inflation, cost-of-living increases, mortality rates, retirement rates, termination rates, disability rates, marital status, and non-spouse beneficiary loads.

Actuarial Information to Include in the Financial Statements for the June 30, 2021 Measurement Date

Schedule of Employer Contributions

Last 10 Fiscal Years



	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
Actuarially determined contribution	\$ 112,695	\$ 102,595	\$ 119,693	\$ 127,165	\$ 158,027	\$ 119,557	\$ 124,137	\$ 138,320	\$ 113,866	\$ -
Contributions in relation to the actuarially determined contribution										
Employer provided	33,200	40,000	41,600	62,989	92,188	70,895	73,704	90,179	74,800	-
State provided	 78,598	69,711	 69,352	 61,773	 57,947	54,118	52,129	51,575	66,372	 -
Contribution deficiency (excess)	\$ 897	\$ (7,116)	\$ 8,741	\$ 2,403	\$ 7,892	\$ (5,456)	\$ (1,696)	\$ (3,434)	\$ (27,306)	\$ -
Covered payroll	\$ 116,508	\$ 116,045	\$ 116,270	\$ 139,689	\$ 144,260	\$ 217,646	\$ 231,257	\$ 225,206	\$ 215,028	\$ -
Contributions as a percentage of covered employee payroll	95.96%	94.54%	95.43%	89.31%	104.07%	57.44%	54.41%	62.94%	65.65%	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 12 years
Asset valuation method Market Value
Inflation 2.75 percent

Salary increases Rates vary by years of service

Investment rate of return 6.00%, 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



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.

Year	and Actual Earnings on Pension Plan Investments		between Projected and Actual Earnings on Pension Plan Investments		between Projected and Actual Earnings on Pension Plan Investments		between Projected and Actual Earnings on Pension Plan Investments		between Projected and Actual Earnings on Pension Plan		between Projected and Actual Earnings on Pension Plan Investments		between Projected and Actual Earnings on Pension Plan Investments		Recognition Period (Years)	2017	2018	2019	sing f	2020	2021	2022	2023	2024	2025
2017	\$	18,129	5	\$ 3,626	3,626	3,626		3,626	3,625																
2018		49,188	5		\$ 9,838	9,838		9,838	9,838	9,836															
2019		7,812	5			\$ 1,562		1,562	1,562	1,562	1,564														
2020		4,593	5				\$	919	919	919	919	917													
2021		(131,599)	5						\$ (26,320)	(26,320)	(26,320)	(26,320)	(26,319)												
Net increa	se (decr	ease) in pension	expense						\$ (10,376)	\$ (14,003)	\$ (23,837)	\$ (25,403)	\$ (26,319)												

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

						Balan June 3		
Year	Investment Earnings Less than Projected (a)		Investment Earnings Greater Than Projected (b)	Amounts Recognized in Pension Expense Through June 30, 2021 (c)	O R	Deferred utflows of esources (a) - (c)	- 1	Deferred Inflows of Resources (b) - (c)
2017	\$	18,129	\$ -	\$ 18,129	\$	-	\$	-
2018		49,188	-	39,352		9,836		-
2019		7,812	-	4,686		3,126		-
2020		4,593	-	1,838		2,755		-
2021		-	131,599	26,320		-		105,279
					\$	15,717	\$	105,279

for the June 30, 2021 Measurement Date



Schedule of Differences between Expected and Actual Experience

In conformity with paragraph 33 a 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.

	Actual	Period							Pension Expens		n the R										
Year	Experience	(Years)	Prior	2012	2013	2014	2015	2016	2017	2018		2019	2020	2021	2022	- 1	2023	2024	2025	2026	Thereafter
Prior	-	-																-		-	
2012	-	-																			
2013	-	-																			
2014	-	-																			
2015	(65,773)	5.614289					\$ (11,715)	(11,715)	(11,715)	(11,71	5)	(11,715)	(7,198)								
2016	42,686	4.614616						\$ 9,250	9,250	9,25	0	9,250	5,686								
2017	(31,582)	3.000570							\$ (10,525)	(10,52	5)	(10,525)	(7)								
2018	(70,608)	2.757112								\$ (25,60	9)	(25,609)	(19,390)								
2019	(54,748)	2.000000									\$	(27,374)	(27,374)								
2020	(69,702)	1.000000											\$ (69,702)								
2021	(1,984)	1.000000												\$ (1,984)							
Net increas	se (decrease) in per	nsion expense												\$ (1,984)	\$	- \$	-	\$ -	\$	- \$	- \$ -

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, 2021 (c)		inces at 30, 2021 Deferred Inflows of Resources (b) - (c)
Prior	\$	- \$	-	\$ -	\$ -	\$ -
2012		-	-	-	-	-
2013		-	-	-	-	-
2014		-	-	-		-
2015		-	65,773	65,773	-	-
2016	42,686	3		42,686		-
2017		-	31,582	31,582	-	-
2018			70,608	70,608	-	-
2019		-	54,748	54,748	-	-
2020			69,702	69,702	-	-
2021		-	1,984	1,984	-	-
					\$ -	\$ -

Actuarial Information to Include in the Financial Statements

for the June 30, 2021 Measurement Date

## B

### 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.

		Recognition						Increase	e (Decrease) in P	ension Expens	e Arising from th	ne Effects of Ch	anges of Assum	otions					
Year	Changes of Assumptions	Period (Years)	Prior	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	1
Prior	\$ -																		
2012	-	-																	
2013	-	-																	
2014	-	-																	
2015	-	5.614289																	
2016	221,553	4.614616						\$ 48,011	48,011	48,011	48,011	29,509							
2017	-	3.000570																	
2018	-	2.757112																	
2019	(151,273)	2.000000									\$ (75,637)	(75,636)							
2020	-	1.000000										\$ -							
2021	(66,332)	1.000000											\$ (66,332)						
	e (decrease) in pen												\$ (66,332)	\$ -	\$	- \$	- \$ -	\$	- \$

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

				ices at 80, 2021			
Year	Increases in the Total Pension Liability (a)	Decreases in the Total Pension Liability (b)	Amounts Recognized in Pension Expense Through June 30, 2021 (c)	Deferred Outflows of Resources (a) - (c)	Deferred Inflows of Resources (b) - (c)		
Prior	\$ -	\$ -	\$ -	\$ -	\$ -		
2012	-	-	-	-	-		
2013	-	-	-	-	-		
2014			-	-			
2015	-	-	-	-	-		
2016	221,553		221,553	-	-		
2017	-	-	-	-	-		
2018	-	-	-	-	-		
2019	-	151,273	151,273	-	-		
2020	-	-	-	-	-		
2021	-	66,332	66,332	-	-		
			·	\$ -	\$ -		