



**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, 2022

**Bolton**

Submitted by:

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November 28, 2022

Mr. Kevin Tennant  
Finance Director  
City of Morgantown  
389 Spruce Street  
Morgantown, WV 26505

Firefighter Tanner Dalton  
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, 2022

Dear Kevin,

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 2022. The GASB 67 information has been provided as of June 30, 2022 (the GASB 68 measurement date for FY 2022).

### 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, 2022 (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, 2021 actuarial valuation rolled forward to June 30, 2022. The methods, assumptions, and participant data used are detailed in the July 1, 2021 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, 2022 is contained in the July 1, 2020 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 4.02%. The plan's expected gross rate of investment return of 4.25% has been blended with the 3.69% 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, 2022. 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 funded status (current and projected), equity exposure, and funding policy.

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. 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.

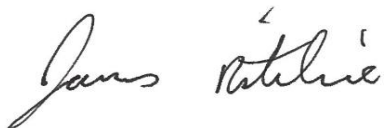
The calculation of actuarial liabilities for valuation purposes is based on a current estimate of future benefit payments. The calculation includes a computation of the "present value" of those estimated future benefit payments using an assumed discount rate; the higher the discount rate assumption, 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, 2021 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, 2022 Measurement Date



Net Pension Liability of the Employer

The components of the net pension liability of the Employer at June 30, 2022, were as follows:

|  |                      |
|--|----------------------|
| Total pension liability  | \$ 57,325,328        |
| Plan fiduciary net position  | (13,709,149)         |
| Employer's net pension liability   | <u>\$ 43,616,179</u> |
| Plan fiduciary net position as a percentage of the total pension liability | 23.91%               |

Actuarial assumptions. The total pension liability was determined by an actuarial valuation as of July 1, 2021 rolled forward to June 30, 2022 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)                                | 3.11%  |
| Single discount rate (EOY)                                | 4.02%  |
| Investment rate of return (BOY)                           | 4.25%, net of pension plan investment expense, including inflation |
| Investment rate of return (EOY)                           | 4.25%, net of pension plan investment expense, including inflation |
| Long-term municipal bond rate (BOY)                       | 1.92%  |
| Long-term municipal bond rate (EOY)                       | 3.69%  |
| Mortality   | SOA PubS-2010(B) with generational projection using Scale MP-2019  |
| Year Fund is projected to be fully funded                 | 2060   |
| Year assets are expected to be depleted for a closed plan | 2038   |

The above is a summary of key actuarial assumptions. Full descriptions of the actuarial assumptions are available in the July 1, 2021 actuarial valuation report.

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

|                                  | 1% Decrease<br>3.02% | Current<br>Discount Rate<br>4.02% | 1% Increase<br>5.02% |
|----------------------------------|----------------------|-----------------------------------|----------------------|
| Employer's net pension liability | \$ 53,169,522        | \$ 43,616,179                     | \$ 36,040,288        |

City of Morgantown, West Virginia Firemen's Pension and Relief Fund  
 Actuarial Information to Include in the Financial Statements  
 for the June 30, 2022 Measurement Date



Changes in the Net Pension Liability

|   | Total Pension<br>Liability<br>(a) | Increase (Decrease)<br>Plan Fiduciary<br>Net Position<br>(b) | Net Pension<br>Liability<br>(a) - (b) |
|---|-----------------------------------|--|---------------------------------------|
| <b>Balances at 6/30/21</b>                                  | \$ 65,789,931                     | \$ 16,528,896  | \$ 49,261,035                         |
| <b>Changes for the year:</b>                                |                                   |  |                                       |
| Service cost  | 2,713,424                         |  | 2,713,424                             |
| Interest  | 2,010,784                         |  | 2,010,784                             |
| Changes of benefit terms                                    | -                                 |  | -                                     |
| Differences between expected and actual experience          | (2,323,539)                       |  | (2,323,539)                           |
| Changes of assumptions                                      | (8,596,267)                       |  | (8,596,267)                           |
| Contributions - employer (including Premium Tax Allocation) |                                   | 1,610,847  | (1,610,847)                           |
| Contributions - member                                      |                                   | 329,817  | (329,817)                             |
| Net investment income                                       |                                   | (2,488,555)  | 2,488,555                             |
| Benefit payments, including refunds of member contributions | (2,269,005)                       | (2,269,005)  | -                                     |
| Administrative expense                                      |                                   | (2,851)  | 2,851                                 |
| Other   |                                   | -  | -                                     |
| <b>Net Changes</b>  | <u>(8,464,603)</u>                | <u>(2,819,747)</u>   | <u>(5,644,856)</u>                    |
| <b>Balances at 6/30/22</b>                                  | <u>\$ 57,325,328</u>              | <u>\$ 13,709,149</u>   | <u>\$ 43,616,179</u>                  |
| Return on Investments                                       |                                   | (15.2%)  |                                       |

City of Morgantown, West Virginia Firemen's Pension and Relief Fund  
 Actuarial Information to Include in the Financial Statements  
 for the June 30, 2022 Measurement Date



Components of Employer's Pension Expense for the Fiscal Year Ended June 30, 2022

| Note                         | Description  | Amount              |
|------------------------------|--|---------------------|
| A                            | Service cost   | \$ 2,713,424        |
| B                            | Interest on the total pension liability                              | 2,010,784           |
| A                            | Changes of benefit terms   | -                   |
| C                            | Differences between expected and actual experience                   | 39,920              |
| C                            | Changes of assumptions   | (775,407)           |
| A                            | Employee contributions   | (329,817)           |
| D                            | Projected earnings on pension plan investments                       | (695,440)           |
| C                            | Differences between expected and actual earnings on plan investments | 270,897             |
| A                            | Pension plan administrative expense                                  | 2,851               |
| A                            | Other changes in fiduciary net position                              | -                   |
| <b>Total Pension Expense</b> |  | <b>\$ 3,237,212</b> |

Notes:

A Provided in the Changes in Net Pension Liability exhibit.

B Based on the following calculation:

|   | Amount for<br>Period<br>(a) | Portion of<br>Period<br>(b) | Interest<br>Rate<br>(c) | Projected<br>Earnings<br>(a) x (b) x (c) |
|---|-----------------------------|-----------------------------|-------------------------|--|
| Beginning total pension liability                             | \$ 65,789,931               | 100%                        | 3.11%                   | \$ 2,046,067                             |
| Service cost (End of Year)                                    | 2,713,424                   | 0%                          | 3.11%                   | -  |
| Benefit payments, including refunds of employee contributions | (2,269,005)                 | 50%                         | 3.11%                   | (35,283)                                 |
| <b>Total interest on the total pension liability</b>          |                             |                             |                         | <b>\$ 2,010,784</b>                      |

C Provided in the Schedules of Deferrals.

D Based on the following calculation:

|   | Amount for<br>Period<br>(a) | Portion of<br>Period<br>(b) | Projected<br>Rate of Return<br>(c) | Projected<br>Earnings<br>(a) x (b) x (c) |
|---|-----------------------------|-----------------------------|------------------------------------|--|
| Beginning plan fiduciary net position                         | \$ 16,528,896               | 100%                        | 4.25%                              | \$ 702,478                               |
| Employer contributions  | 1,610,847                   | 50%                         | 4.25%                              | 34,230                                   |
| Employee contributions  | 329,817                     | 50%                         | 4.25%                              | 7,009                                    |
| Benefit payments, including refunds of employee contributions | (2,269,005)                 | 50%                         | 4.25%                              | (48,216)                                 |
| Administrative expense and other                              | (2,851)                     | 50%                         | 4.25%                              | (61)                                     |
| <b>Total Projected Earnings</b>                               |                             |                             |                                    | <b>\$ 695,440</b>                        |

City of Morgantown, West Virginia Firemen’s Pension and Relief Fund  
 Actuarial Information to Include in the Financial Statements  
 for the June 30, 2022 Measurement Date



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

At June 30, 2022, the Employer reported deferred outflows of resources and deferred inflows of resources related to pensions from the following sources:

|   | Deferred Outflows<br>of Resources | Deferred Inflows<br>of Resources |
|---|-----------------------------------|----------------------------------|
| Differences between expected and actual experience                                  | \$ 538,804                        | \$ 1,936,282                     |
| Changes of assumptions  | 1,893,594                         | 8,299,340                        |
| Net difference between projected and actual earnings<br>on pension plan investments | 1,312,473                         | -                                |
| <b>Total</b>  | <b>\$ 3,744,871</b>               | <b>\$ 10,235,622</b>             |

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: |              |
|---------------------|--------------|
| 2023                | \$ (425,397) |
| 2024                | (1,032,931)  |
| 2025                | (2,029,288)  |
| 2026                | (1,183,169)  |
| 2027                | (1,819,966)  |
| Thereafter          | -            |



City of Morgantown, West Virginia Firemen's Pension and Relief Fund  
 Actuarial Information to Include in the Financial Statements  
 for the June 30, 2022 Measurement Date



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

| Total pension liability  | 2022                 | 2021                 | 2020                 | 2019                 | 2018                 | 2017                 | 2016                 | 2015                 | 2014                 | 2013        |
|--|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|-------------|
| Service cost   | \$ 2,713,424         | \$ 2,535,031         | \$ 2,373,186         | \$ 2,311,877         | \$ 1,731,483         | \$ 1,925,405         | \$ 1,160,928         | \$ 1,084,316         | \$ 1,008,137         | \$ -        |
| Interest   | 2,010,784            | 2,147,157            | 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                         | (2,323,539)          | 81,136               | 317,635              | 1,815,332            | (218,647)            | (454,836)            | (113,977)            | (1,590,303)          | -                    | -           |
| Changes of assumptions   | (8,596,267)          | (1,892,974)          | 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                | (2,269,005)          | (1,967,798)          | (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                                      | (8,464,603)          | 902,552              | 7,054,980            | 5,836,755            | 1,173,018            | (3,003,438)          | 12,701,578           | 435,295              | 2,741,486            | -           |
| Total pension liability - beginning  | 65,789,931           | 64,887,379           | 57,832,399           | 51,995,644           | 50,822,626           | 53,826,064           | 41,124,486           | 40,689,191           | 37,947,705           | -           |
| <b>Total pension liability - ending (a)</b>                                | <b>\$ 57,325,328</b> | <b>\$ 65,789,931</b> | <b>\$ 64,887,379</b> | <b>\$ 57,832,399</b> | <b>\$ 51,995,644</b> | <b>\$ 50,822,626</b> | <b>\$ 53,826,064</b> | <b>\$ 41,124,486</b> | <b>\$ 40,689,191</b> | <b>\$ -</b> |
| <b>Plan fiduciary net position</b>   | <b>2022</b>          | <b>2021</b>          | <b>2020</b>          | <b>2019</b>          | <b>2018</b>          | <b>2017</b>          | <b>2016</b>          | <b>2015</b>          | <b>2014</b>          | <b>2013</b> |
| Contributions - employer (including Premium Tax Allocation)                | \$ 1,610,847         | \$ 1,559,202         | \$ 1,564,867         | \$ 1,457,107         | \$ 1,494,676         | \$ 1,356,285         | \$ 1,188,366         | \$ 1,070,305         | \$ 1,013,374         | \$ -        |
| Contributions - member   | 329,817              | 321,450              | 318,125              | 307,067              | 258,246              | 218,900              | 202,830              | 191,330              | 183,544              | -           |
| Net investment income  | (2,488,555)          | 3,028,300            | (1,618)              | 716,195              | 351,940              | 1,054,659            | (250,341)            | 300,409              | 1,162,709            | -           |
| Benefit payments, including refunds of member contributions                | (2,269,005)          | (1,967,798)          | (1,828,040)          | (1,656,429)          | (1,617,352)          | (1,533,401)          | (1,509,425)          | (1,496,332)          | (1,456,136)          | -           |
| Administrative expense   | (2,851)              | (2,410)              | (3,138)              | -                    | (2,469)              | (2,158)              | (3,042)              | (1,943)              | (1,725)              | -           |
| Other  | -                    | -                    | -                    | (2,132)              | -                    | 170                  | -                    | -                    | -                    | -           |
| Net change in plan fiduciary net position                                  | \$ (2,819,747)       | \$ 2,938,744         | \$ 50,196            | \$ 821,808           | \$ 485,041           | \$ 1,094,455         | \$ (371,612)         | \$ 63,769            | \$ 901,766           | \$ -        |
| Plan fiduciary net position - beginning                                    | 16,528,896           | 13,590,152           | 13,539,956           | 12,718,148           | 12,233,107           | 11,138,652           | 11,510,264           | 11,482,554           | 10,580,788           | -           |
| <b>Plan fiduciary net position - ending (b)</b>                            | <b>\$ 13,709,149</b> | <b>\$ 16,528,896</b> | <b>\$ 13,590,152</b> | <b>\$ 13,539,956</b> | <b>\$ 12,718,148</b> | <b>\$ 12,233,107</b> | <b>\$ 11,138,652</b> | <b>\$ 11,546,323</b> | <b>\$ 11,482,554</b> | <b>\$ -</b> |
| Employer's net pension liability - ending (a)-(b)                          | \$ 43,616,179        | \$ 49,261,035        | \$ 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 | 23.91%               | 25.12%               | 20.94%               | 23.41%               | 24.46%               | 24.07%               | 20.69%               | 28.08%               | 28.22%               | N/A         |
| Covered payroll  | \$ 3,724,403         | \$ 3,580,333         | \$ 3,736,884         | \$ 3,636,132         | \$ 2,716,646         | \$ 2,590,922         | \$ 2,534,252         | \$ 2,441,567         | \$ 2,453,297         | N/A         |
| Employer's net pension liability as a percentage of covered payroll        | 1171.09%             | 1375.88%             | 1372.73%             | 1218.12%             | 1445.81%             | 1489.41%             | 1684.42%             | 1211.44%             | 1190.51%             | N/A         |
| Expected average remaining service years of all participants               | 6.00                 | 5.00                 | 5.00                 | 5.00                 | 4.31                 | 4.32                 | 4.71                 | 4.42                 | N/A                  | N/A         |

**Notes to Schedule:**

Benefit changes: There were no changes for FY2022.

Changes of assumptions: The discount rate changed from 3.11% to 4.02%.

\*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  
 Actuarial Information to Include in the Financial Statements  
 for the June 30, 2022 Measurement Date



Schedule of Employer Contributions  
 Last 10 Fiscal Years

|  | 2022                | 2021                | 2020                | 2019                | 2018                | 2017                | 2016                | 2015              | 2014              | 2013              |
|--|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|-------------------|-------------------|-------------------|
| Actuarially determined contribution                                  | \$ 4,073,755        | \$ 3,897,505        | \$ 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  | 981,069             | 920,455             | 933,095             | 909,000             | 986,830             | 870,926             | 728,343             | 618,813           | 578,330           | 540,495           |
| State provided   | 629,778             | 638,747             | 631,772             | 548,107             | 507,846             | 485,359             | 460,023             | 451,492           | 435,044           | 464,202           |
| Contribution deficiency (excess)                                     | <u>\$ 2,462,908</u> | <u>\$ 2,338,303</u> | <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> |
| Covered payroll  | \$ 3,724,403        | \$ 3,580,333        | \$ 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            | 43.25%              | 43.55%              | 41.88%              | 40.07%              | 55.02%              | 52.35%              | 46.89%              | 43.84%            | 41.31%            | 41.05%            |

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. The assumption shown below are those used in the 7/1/2020 actuarial valuation to calculate the FY2022 ADC. Assumptions used to determine all contributions in the past would not have been the same.

Methods and assumptions used to determine contribution rates:

|                               |  |
|-------------------------------|--|
| Actuarial cost method         | Entry Age Normal   |
| Amortization method           | Level Dollar   |
| Remaining amortization period | 15 to 28.5 years   |
| Asset valuation method        | Market Value   |
| Inflation                     | 2.50 percent   |
| Salary increases              | Rates vary by years of service                                     |
| Investment rate of return     | 4.25%, net of pension plan investment expense, including inflation |
| Retirement age                | Rates vary by age  |
| Mortality                     | SOA PubS-2010(B) with generational projection using Scale MP-2019  |

City of Morgantown, West Virginia Firemen's Pension and Relief Fund  
 Actuarial Information to Include in the Financial Statements  
 for the June 30, 2022 Measurement Date



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) | 2018      | 2019        | 2020       | 2021         | 2022       | 2023       | 2024       | 2025       | 2026       |
| 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    |            |            |
| 2021   | (2,418,757)   | 5                          |           |             |            | \$ (483,751) | (483,751)  | (483,751)  | (483,751)  | (483,753)  |            |
| 2022   | 3,183,995   | 5                          |           |             |            |              | \$ 636,799 | 636,799    | 636,799    | 636,799    | 636,799    |
| Net increase (decrease) in pension expense   |   |                            |           |             |            |              | \$ 270,897 | \$ 247,162 | \$ 275,466 | \$ 153,046 | \$ 636,799 |

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, 2022 (c) | Balances at June 30, 2022                |   |
|------|---|--|---|--|---|
|      |   |  |   | Deferred Outflows of Resources (a) - (c) | Deferred Inflows of Resources (b) - (c) |
| 2018 | \$ 118,657                                  | \$ -   | \$ 118,657  | \$ -                                     | \$ -                                    |
| 2019 | -   | 141,502  | 113,200   | -  | 28,302                                  |
| 2020 | 612,082                                     | -  | 367,248   | 244,834                                  | -                                       |
| 2021 | -   | 2,418,757                                      | 967,502   | -  | 1,451,255                               |
| 2022 | 3,183,995                                   | -  | 636,799   | 2,547,196                                | -                                       |
|      |   |  |   | \$ 2,792,030                             | \$ 1,479,557                            |

City of Morgantown, West Virginia Firemen's Pension and Relief Fund  
 Actuarial Information to Include in the Financial Statements  
 for the June 30, 2022 Measurement Date



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 | 2013 | 2014 | 2015         | 2016        | 2017         | 2018        | 2019       | 2020      | 2021      | 2022         | 2023      | 2024         | 2025         | 2026         | 2027         | Thereafter |
| Prior   | -  | -                          |       |      |      |              |             |              |             |            |           |           |              |           |              |              |              |              | -          |
| 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)   | (17,261)  |           |              |           |              |              |              |              | -          |
| 2017  | (454,836)  | 4.318426                   |       |      |      |              |             | \$ (105,324) | (105,324)   | (105,324)  | (105,324) | (33,540)  |              |           |              |              |              |              | -          |
| 2018  | (218,647)  | 4.308268                   |       |      |      |              |             |              | \$ (50,751) | (50,751)   | (50,751)  | (50,751)  | (15,643)     |           |              |              |              |              | -          |
| 2019  | 1,815,332  | 5.000000                   |       |      |      |              |             |              |             | \$ 363,066 | 363,066   | 363,066   | 363,066      | 363,068   |              |              |              |              | -          |
| 2020  | 317,635  | 5.000000                   |       |      |      |              |             |              |             |            | \$ 63,527 | 63,527    | 63,527       | 63,527    | 63,527       |              |              |              | -          |
| 2021  | 81,136   | 5.000000                   |       |      |      |              |             |              |             |            |           | \$ 16,227 | 16,227       | 16,227    | 16,227       | 16,227       |              | 16,228       | -          |
| 2022  | (2,323,539)  | 6.000000                   |       |      |      |              |             |              |             |            |           |           | \$ (387,257) | (387,257) | (387,257)    | (387,257)    | (387,257)    | (387,254)    | -          |
| Net increase (decrease) in pension expense  |  |                            |       |      |      |              |             |              |             |            |           |           | \$ 39,920    | \$ 55,565 | \$ (307,503) | \$ (371,029) | \$ (387,257) | \$ (387,254) | \$ -       |

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, 2022 (c) | Balances at June 30, 2022                |   |
|-------|-----------------------|----------------------|---|--|---|
|       |                       |                      |   | Deferred Outflows of Resources (a) - (c) | Deferred Inflows of Resources (b) - (c) |
| Prior | \$ -                  | \$ -                 | \$ -  | \$ -                                     | \$ -                                    |
| 2013  | -                     | -                    | -   | -  | -                                       |
| 2014  | -                     | -                    | -   | -  | -                                       |
| 2015  | -                     | 1,590,303            | 1,590,303   | -  | -                                       |
| 2016  | -                     | 113,977              | 113,977   | -  | -                                       |
| 2017  | -                     | 454,836              | 454,836   | -  | -                                       |
| 2018  | -                     | 218,647              | 218,647   | -  | -                                       |
| 2019  | 1,815,332             | -                    | 1,452,264   | 363,068                                  | -                                       |
| 2020  | 317,635               | -                    | 190,581   | 127,054                                  | -                                       |
| 2021  | 81,136                | -                    | 32,454  | 48,682                                   | -                                       |
| 2022  | -                     | 2,323,539            | 387,257   | -  | 1,936,282                               |
|       |                       |                      |   | \$ 538,804                               | \$ 1,936,282                            |



City of Morgantown, West Virginia Firemen's Pension and Relief Fund  
 Actuarial Information to Include in the Financial Statements  
 for the June 30, 2022 Measurement Date



Projection of Pension Plan's Fiduciary Net Position

| Fiscal Year | Gross Normal Cost (BOY) |                |              | Employee Contributions (BOY) |                |              | Employer Normal Cost (BOY) |                |              | Expenses (MOY)  |                |          | Employer Contributions (MOY) |                |               | Premium Tax Allocation (MOY) |                |              |
|-------------|-------------------------|----------------|--------------|------------------------------|----------------|--------------|----------------------------|----------------|--------------|-----------------|----------------|----------|------------------------------|----------------|---------------|------------------------------|----------------|--------------|
|             | Current Members         | Future Members | Total        | Current Members              | Future Members | Total        | Current Members            | Future Members | Total        | Current Members | Future Members | Total    | Current Members              | Future Members | Total         | Current Members              | Future Members | Total        |
| 2022        | \$ 1,945,826            | \$ -           | \$ 1,945,826 | \$ 329,817                   | \$ -           | \$ 329,817   | \$ 1,616,009               | \$ -           | \$ 1,616,009 | \$ 2,252        | \$ -           | \$ 2,252 | \$ 981,069                   | \$ -           | \$ 981,069    | \$ 629,778                   | \$ -           | \$ 629,778   |
| 2023        | \$ 1,890,692            | \$ 118,432     | \$ 2,009,124 | \$ 301,177                   | \$ 22,300      | \$ 323,477   | \$ 1,589,515               | \$ 96,132      | \$ 1,685,647 | \$ 2,270        | \$ 644         | \$ 2,914 | \$ 948,043                   | \$ 98,798      | \$ 1,046,841  | \$ 587,680                   | \$ -           | \$ 587,680   |
| 2024        | \$ 1,825,571            | \$ 262,938     | \$ 2,088,509 | \$ 289,963                   | \$ 49,073      | \$ 339,036   | \$ 1,535,608               | \$ 213,865     | \$ 1,749,473 | \$ 2,267        | \$ 720         | \$ 2,987 | \$ 898,135                   | \$ 219,082     | \$ 1,117,217  | \$ 591,788                   | \$ -           | \$ 591,788   |
| 2025        | \$ 1,786,052            | \$ 392,093     | \$ 2,178,145 | \$ 282,120                   | \$ 73,175      | \$ 355,295   | \$ 1,503,932               | \$ 318,918     | \$ 1,822,850 | \$ 2,263        | \$ 799         | \$ 3,062 | \$ 865,972                   | \$ 326,423     | \$ 1,192,395  | \$ 621,005                   | \$ -           | \$ 621,005   |
| 2026        | \$ 1,724,508            | \$ 511,011     | \$ 2,235,519 | \$ 271,670                   | \$ 95,682      | \$ 367,352   | \$ 1,452,838               | \$ 415,329     | \$ 1,868,167 | \$ 2,257        | \$ 855         | \$ 3,112 | \$ 847,843                   | \$ 424,918     | \$ 1,272,761  | \$ 635,673                   | \$ -           | \$ 635,673   |
| 2027        | \$ 1,610,401            | \$ 655,857     | \$ 2,266,258 | \$ 255,081                   | \$ 122,731     | \$ 377,812   | \$ 1,355,320               | \$ 533,126     | \$ 1,888,446 | \$ 2,292        | \$ 951         | \$ 3,243 | \$ 813,438                   | \$ 545,288     | \$ 1,358,726  | \$ 655,190                   | \$ -           | \$ 655,190   |
| 2028        | \$ 1,464,500            | \$ 819,087     | \$ 2,283,587 | \$ 233,033                   | \$ 152,773     | \$ 385,806   | \$ 1,231,467               | \$ 666,314     | \$ 1,897,781 | \$ 2,305        | \$ 1,074       | \$ 3,379 | \$ 769,242                   | \$ 681,400     | \$ 1,450,642  | \$ 679,575                   | \$ -           | \$ 679,575   |
| 2029        | \$ 1,366,618            | \$ 1,015,769   | \$ 2,382,387 | \$ 218,757                   | \$ 188,925     | \$ 407,682   | \$ 1,147,861               | \$ 826,844     | \$ 1,974,705 | \$ 2,340        | \$ 1,208       | \$ 3,548 | \$ 703,452                   | \$ 845,440     | \$ 1,548,892  | \$ 704,569                   | \$ -           | \$ 704,569   |
| 2030        | \$ 1,296,200            | \$ 1,170,989   | \$ 2,467,189 | \$ 207,956                   | \$ 217,868     | \$ 425,824   | \$ 1,088,244               | \$ 953,121     | \$ 2,041,365 | \$ 2,352        | \$ 1,314       | \$ 3,666 | \$ 679,489                   | \$ 974,478     | \$ 1,653,967  | \$ 721,229                   | \$ -           | \$ 721,229   |
| 2031        | \$ 1,215,325            | \$ 1,327,504   | \$ 2,542,829 | \$ 195,739                   | \$ 246,885     | \$ 442,624   | \$ 1,019,586               | \$ 1,080,619   | \$ 2,100,205 | \$ 2,387        | \$ 1,400       | \$ 3,787 | \$ 661,609                   | \$ 1,104,743   | \$ 1,766,352  | \$ 738,307                   | \$ -           | \$ 738,307   |
| 2032        | \$ 1,139,149            | \$ 1,485,494   | \$ 2,624,643 | \$ 183,888                   | \$ 276,257     | \$ 460,145   | \$ 955,261                 | \$ 1,209,237   | \$ 2,164,498 | \$ 2,398        | \$ 1,514       | \$ 3,912 | \$ 650,302                   | \$ 1,236,180   | \$ 1,886,482  | \$ 755,811                   | \$ -           | \$ 755,811   |
| 2033        | \$ 1,059,295            | \$ 1,643,826   | \$ 2,703,121 | \$ 171,467                   | \$ 305,341     | \$ 476,808   | \$ 887,828                 | \$ 1,338,485   | \$ 2,226,313 | \$ 2,433        | \$ 1,608       | \$ 4,041 | \$ 646,753                   | \$ 1,368,240   | \$ 2,014,993  | \$ 785,979                   | \$ -           | \$ 785,979   |
| 2034        | \$ 999,787              | \$ 1,814,260   | \$ 2,814,047 | \$ 161,672                   | \$ 336,551     | \$ 498,223   | \$ 838,115                 | \$ 1,477,709   | \$ 2,315,824 | \$ 2,468        | \$ 1,738       | \$ 4,206 | \$ 641,914                   | \$ 1,510,522   | \$ 2,152,436  | \$ 828,854                   | \$ -           | \$ 828,854   |
| 2035        | \$ 958,776              | \$ 1,967,967   | \$ 2,926,743 | \$ 154,788                   | \$ 364,832     | \$ 519,620   | \$ 803,988                 | \$ 1,603,135   | \$ 2,407,123 | \$ 2,478        | \$ 1,833       | \$ 4,311 | \$ 660,765                   | \$ 1,638,680   | \$ 2,299,445  | \$ 848,533                   | \$ -           | \$ 848,533   |
| 2036        | \$ 897,546              | \$ 2,112,441   | \$ 3,009,987 | \$ 144,781                   | \$ 390,853     | \$ 535,634   | \$ 752,765                 | \$ 1,721,588   | \$ 2,474,353 | \$ 2,486        | \$ 1,933       | \$ 4,419 | \$ 696,974                   | \$ 1,759,724   | \$ 2,456,698  | \$ 912,686                   | \$ -           | \$ 912,686   |
| 2037        | \$ 846,921              | \$ 2,284,053   | \$ 3,130,974 | \$ 136,031                   | \$ 421,922     | \$ 557,953   | \$ 710,890                 | \$ 1,862,131   | \$ 2,573,021 | \$ 2,521        | \$ 2,043       | \$ 4,564 | \$ 721,589                   | \$ 1,903,333   | \$ 2,624,922  | \$ 949,311                   | \$ -           | \$ 949,311   |
| 2038        | \$ 802,930              | \$ 2,442,978   | \$ 3,245,908 | \$ 128,544                   | \$ 450,916     | \$ 579,460   | \$ 674,386                 | \$ 1,992,062   | \$ 2,666,448 | \$ 2,556        | \$ 2,122       | \$ 4,678 | \$ 768,859                   | \$ 2,036,075   | \$ 2,804,934  | \$ 971,821                   | \$ -           | \$ 971,821   |
| 2039        | \$ 747,285              | \$ 2,600,688   | \$ 3,347,973 | \$ 118,957                   | \$ 479,698     | \$ 598,655   | \$ 628,328                 | \$ 2,120,990   | \$ 2,749,318 | \$ 2,591        | \$ 2,204       | \$ 4,795 | \$ 829,770                   | \$ 2,167,796   | \$ 2,997,566  | \$ 1,023,642                 | \$ -           | \$ 1,023,642 |
| 2040        | \$ 661,306              | \$ 2,760,556   | \$ 3,421,862 | \$ 105,052                   | \$ 508,174     | \$ 613,226   | \$ 556,254                 | \$ 2,252,382   | \$ 2,808,636 | \$ 2,597        | \$ 2,355       | \$ 4,952 | \$ 901,564                   | \$ 2,302,102   | \$ 3,203,666  | \$ 1,047,971                 | \$ -           | \$ 1,047,971 |
| 2041        | \$ 584,340              | \$ 2,950,853   | \$ 3,535,193 | \$ 92,120                    | \$ 542,346     | \$ 634,466   | \$ 492,220                 | \$ 2,408,507   | \$ 2,900,727 | \$ 2,632        | \$ 2,520       | \$ 5,152 | \$ 962,592                   | \$ 2,461,675   | \$ 3,424,267  | \$ 1,072,907                 | \$ -           | \$ 1,072,907 |
| 2042        | \$ 479,897              | \$ 3,114,429   | \$ 3,594,326 | \$ 74,889                    | \$ 570,732     | \$ 645,621   | \$ 405,008                 | \$ 2,543,697   | \$ 2,948,705 | \$ 2,636        | \$ 2,645       | \$ 5,281 | \$ 1,060,555                 | \$ 2,599,833   | \$ 3,660,388  | \$ 1,107,181                 | \$ -           | \$ 1,107,181 |
| 2043        | \$ 371,419              | \$ 3,324,337   | \$ 3,695,756 | \$ 57,280                    | \$ 606,810     | \$ 664,090   | \$ 314,139                 | \$ 2,717,527   | \$ 3,031,666 | \$ 2,670        | \$ 2,862       | \$ 5,532 | \$ 1,135,582                 | \$ 2,777,536   | \$ 3,913,118  | \$ 1,133,610                 | \$ -           | \$ 1,133,610 |
| 2044        | \$ 269,523              | \$ 3,492,630   | \$ 3,762,153 | \$ 41,614                    | \$ 635,700     | \$ 677,314   | \$ 227,909                 | \$ 2,856,930   | \$ 3,084,839 | \$ 2,672        | \$ 3,039       | \$ 5,711 | \$ 1,263,617                 | \$ 2,920,047   | \$ 4,183,664  | \$ 1,190,551                 | \$ -           | \$ 1,190,551 |
| 2045        | \$ 195,892              | \$ 3,689,249   | \$ 3,885,141 | \$ 30,156                    | \$ 669,782     | \$ 699,938   | \$ 165,736                 | \$ 3,019,467   | \$ 3,185,203 | \$ 2,672        | \$ 3,224       | \$ 5,896 | \$ 1,387,087                 | \$ 3,086,187   | \$ 4,473,274  | \$ 1,252,895                 | \$ -           | \$ 1,252,895 |
| 2046        | \$ 139,841              | \$ 3,884,470   | \$ 4,024,311 | \$ 21,567                    | \$ 703,902     | \$ 725,469   | \$ 118,274                 | \$ 3,180,568   | \$ 3,298,842 | \$ 2,670        | \$ 3,416       | \$ 6,086 | \$ 1,532,414                 | \$ 3,250,868   | \$ 4,783,282  | \$ 1,303,392                 | \$ -           | \$ 1,303,392 |
| 2047        | \$ 105,619              | \$ 4,055,441   | \$ 4,161,060 | \$ 16,274                    | \$ 734,276     | \$ 750,550   | \$ 89,345                  | \$ 3,321,165   | \$ 3,410,510 | \$ 2,667        | \$ 3,615       | \$ 6,282 | \$ 1,720,579                 | \$ 3,394,620   | \$ 5,115,199  | \$ 1,380,657                 | \$ -           | \$ 1,380,657 |
| 2048        | \$ 75,724               | \$ 4,224,719   | \$ 4,300,443 | \$ 11,572                    | \$ 764,325     | \$ 775,897   | \$ 64,152                  | \$ 3,460,394   | \$ 3,524,546 | \$ 2,698        | \$ 3,786       | \$ 6,484 | \$ 1,933,562                 | \$ 3,536,948   | \$ 5,470,510  | \$ 1,413,773                 | \$ -           | \$ 1,413,773 |
| 2049        | \$ 49,961               | \$ 4,390,480   | \$ 4,440,441 | \$ 7,716                     | \$ 794,128     | \$ 801,844   | \$ 42,245                  | \$ 3,596,352   | \$ 3,638,597 | \$ 2,692        | \$ 3,954       | \$ 6,646 | \$ 2,174,918                 | \$ 3,675,933   | \$ 5,850,851  | \$ 1,447,716                 | \$ -           | \$ 1,447,716 |
| 2050        | \$ 31,851               | \$ 4,556,942   | \$ 4,588,793 | \$ 4,938                     | \$ 824,180     | \$ 829,118   | \$ 26,913                  | \$ 3,732,762   | \$ 3,759,675 | \$ 2,722        | \$ 4,137       | \$ 6,859 | \$ 2,442,660                 | \$ 3,815,395   | \$ 6,258,055  | \$ 2,010,463                 | \$ -           | \$ 2,010,463 |
| 2051        | \$ 21,496               | \$ 4,725,619   | \$ 4,747,115 | \$ 3,155                     | \$ 854,714     | \$ 857,869   | \$ 18,341                  | \$ 3,870,905   | \$ 3,889,246 | \$ 2,713        | \$ 4,366       | \$ 7,079 | \$ 2,737,279                 | \$ 3,956,672   | \$ 6,693,951  | \$ 2,059,136                 | \$ -           | \$ 2,059,136 |
| 2052        | \$ 12,607               | \$ 4,883,295   | \$ 4,895,902 | \$ 1,857                     | \$ 883,249     | \$ 885,106   | \$ 10,750                  | \$ 4,000,046   | \$ 4,010,796 | \$ 2,701        | \$ 4,605       | \$ 7,306 | \$ 3,071,816                 | \$ 4,088,768   | \$ 7,160,584  | \$ 2,288,041                 | \$ -           | \$ 2,288,041 |
| 2053        | \$ 8,892                | \$ 5,063,024   | \$ 5,071,916 | \$ 1,275                     | \$ 915,850     | \$ 917,125   | \$ 7,617                   | \$ 4,147,174   | \$ 4,154,791 | \$ 2,728        | \$ 4,812       | \$ 7,540 | \$ 3,420,900                 | \$ 4,239,196   | \$ 7,660,096  | \$ 2,643,742                 | \$ -           | \$ 2,643,742 |
| 2054        | \$ 6,254                | \$ 5,244,165   | \$ 5,250,419 | \$ 879                       | \$ 948,828     | \$ 949,707   | \$ 5,375                   | \$ 4,295,337   | \$ 4,300,712 | \$ 2,713        | \$ 5,016       | \$ 7,729 | \$ 3,804,058                 | \$ 4,390,679   | \$ 8,194,737  | \$ 5,217,154                 | \$ -           | \$ 5,217,154 |
| 2055        | \$ 2,976                | \$ 5,432,191   | \$ 5,435,167 | \$ 442                       | \$ 982,871     | \$ 983,313   | \$ 2,534                   | \$ 4,449,320   | \$ 4,451,854 | \$ 2,738        | \$ 5,238       | \$ 7,976 | \$ 4,218,883                 | \$ 4,548,122   | \$ 8,767,005  | \$ 5,347,734                 | \$ -           | \$ 5,347,734 |
| 2056        | \$ 2,308                | \$ 5,630,125   | \$ 5,632,433 | \$ 331                       | \$ 1,018,607   | \$ 1,018,938 | \$ 1,977                   | \$ 4,611,518   | \$ 4,613,495 | \$ 2,719        | \$ 5,511       | \$ 8,230 | \$ 4,665,519                 | \$ 4,714,004   | \$ 9,379,523  | \$ 5,991,898                 | \$ -           | \$ 5,991,898 |
| 2057        | \$ 1,333                | \$ 5,825,604   | \$ 5,826,937 | \$ 190                       | \$ 1,053,656   | \$ 1,053,846 | \$ 1,143                   | \$ 4,771,948   | \$ 4,773,091 | \$ 2,697        | \$ 5,739       | \$ 8,436 | \$ 5,157,022                 | \$ 4,878,036   | \$ 10,035,058 | \$ 6,898,244                 | \$ -           | \$ 6,898,244 |
| 2058        | \$ 511                  | \$ 6,043,315   | \$ 6,043,826 | \$ 80                        | \$ 1,092,560   | \$ 1,092,640 | \$ 431                     | \$ 4,950,755   | \$ 4,951,186 | \$ 2,718        | \$ 5,987       | \$ 8,705 | \$ 5,675,808                 | \$ 5,060,851   | \$ 10,736,659 | \$ 7,422,303                 | \$ -           | \$ 7,422,303 |
| 2059        | \$ 396                  | \$ 6,270,404   | \$ 6,270,800 | \$ 60                        | \$ 1,133,226   | \$ 1,133,286 | \$ 336                     | \$ 5,137,178   | \$ 5,137,514 | \$ 2,692        | \$ 6,290       | \$ 8,982 | \$ 6,236,043                 | \$ 5,251,497   | \$ 11,487,540 | \$ 8,488,844                 | \$ -           | \$ 8,488,844 |
| 2060        | \$ -                    | \$ 6,497,809   | \$ 6,497,809 | \$ -                         | \$ 1,173,972   | \$ 1,173,972 | \$ -                       | \$ 5,323,837   | \$ 5,323,837 | \$ 2,662        | \$ 6,545       | \$ 9,207 | \$ 6,848,722                 | \$ 5,442,336   | \$ 12,291,058 | \$ 8,701,937                 | \$ -           | \$ 8,701,937 |
| 2061        | \$ -                    | \$ 6,733,200   | \$ 6,733,200 | \$ -                         | \$ 1,216,208   | \$ 1,216,208 | \$ -                       | \$ 5,516,992   | \$ 5,516,992 | \$ 2,679        | \$ 6,820       | \$ 9,499 | \$ 7,511,111                 | \$ 5,639,828   | \$ 13,150,939 | \$ 3,441,329                 | \$ -           | \$ 3,441,329 |
| 2062        | \$ -                    | \$ 6,975,288   | \$ 6,975,288 | \$ -                         | \$ 1,259,705   | \$ 1,259,705 | \$ -                       | \$ 5,715,583   | \$ 5,715,583 | \$ 2,644        | \$ 7,092       | \$ 9,736 | \$ 2,645                     | \$ 5,842,867   | \$ 5,845,512  | \$ -                         | \$ -           | \$ -         |

City of Morgantown, West Virginia Firemen's Pension and Relief Fund  
 Actuarial Information to Include in the Financial Statements  
 for the June 30, 2022 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 |
| 2022        | \$ 53,445,583                     | \$ -           | \$ 53,445,583  | \$ 16,528,896                 | 30.93%             | \$ 329,817                        | \$ 1,610,846                             | \$ 2,269,005       | \$ 2,252                       | \$ (2,488,555)                |
| 2023        | \$ 55,428,824                     | \$ -           | \$ 55,428,824  | \$ 13,709,747                 | 24.73%             | \$ 307,510                        | \$ 1,535,723                             | \$ 2,209,750       | \$ 2,270                       | \$ 574,909                    |
| 2024        | \$ 57,499,377                     | \$ 122,236     | \$ 57,621,613  | \$ 13,915,869                 | 24.20%             | \$ 296,061                        | \$ 1,489,923                             | \$ 2,290,937       | \$ 2,267                       | \$ 580,758                    |
| 2025        | \$ 59,507,145                     | \$ 397,061     | \$ 59,904,206  | \$ 13,989,407                 | 23.51%             | \$ 288,053                        | \$ 1,486,977                             | \$ 2,333,134       | \$ 2,263                       | \$ 582,766                    |
| 2026        | \$ 61,515,961                     | \$ 812,968     | \$ 62,328,929  | \$ 14,011,806                 | 22.78%             | \$ 277,383                        | \$ 1,483,516                             | \$ 2,406,475       | \$ 2,257                       | \$ 581,879                    |
| 2027        | \$ 63,471,108                     | \$ 1,359,591   | \$ 64,830,699  | \$ 13,945,852                 | 21.97%             | \$ 260,445                        | \$ 1,468,628                             | \$ 2,548,183       | \$ 2,292                       | \$ 575,426                    |
| 2028        | \$ 65,245,705                     | \$ 2,058,399   | \$ 67,304,104  | \$ 13,699,876                 | 21.00%             | \$ 237,933                        | \$ 1,448,817                             | \$ 2,715,819       | \$ 2,305                       | \$ 560,556                    |
| 2029        | \$ 66,772,459                     | \$ 2,925,028   | \$ 69,697,487  | \$ 13,229,058                 | 19.81%             | \$ 223,357                        | \$ 1,408,021                             | \$ 2,835,491       | \$ 2,340                       | \$ 536,865                    |
| 2030        | \$ 68,139,870                     | \$ 4,002,022   | \$ 72,141,892  | \$ 12,559,470                 | 18.43%             | \$ 212,329                        | \$ 1,400,718                             | \$ 2,927,369       | \$ 2,352                       | \$ 506,089                    |
| 2031        | \$ 69,398,175                     | \$ 5,253,815   | \$ 74,651,990  | \$ 11,748,885                 | 16.93%             | \$ 199,855                        | \$ 1,399,916                             | \$ 3,022,945       | \$ 2,387                       | \$ 469,350                    |
| 2032        | \$ 70,528,060                     | \$ 6,681,209   | \$ 77,209,269  | \$ 10,792,674                 | 15.30%             | \$ 187,755                        | \$ 1,406,113                             | \$ 3,108,612       | \$ 2,398                       | \$ 426,785                    |
| 2033        | \$ 71,539,083                     | \$ 8,291,279   | \$ 79,830,362  | \$ 9,702,317                  | 13.56%             | \$ 175,073                        | \$ 1,432,732                             | \$ 3,189,696       | \$ 2,433                       | \$ 379,032                    |
| 2034        | \$ 72,427,037                     | \$ 10,086,500  | \$ 82,513,537  | \$ 8,497,025                  | 11.73%             | \$ 165,072                        | \$ 1,470,768                             | \$ 3,244,987       | \$ 2,468                       | \$ 327,233                    |
| 2035        | \$ 73,234,239                     | \$ 12,091,512  | \$ 85,325,751  | \$ 7,212,644                  | 9.85%              | \$ 158,043                        | \$ 1,509,298                             | \$ 3,274,178       | \$ 2,478                       | \$ 272,695                    |
| 2036        | \$ 74,003,188                     | \$ 14,301,428  | \$ 88,304,616  | \$ 5,876,023                  | 7.94%              | \$ 147,826                        | \$ 1,609,660                             | \$ 3,329,784       | \$ 2,486                       | \$ 216,615                    |
| 2037        | \$ 74,684,210                     | \$ 16,697,871  | \$ 91,382,081  | \$ 4,517,854                  | 6.05%              | \$ 138,892                        | \$ 1,670,900                             | \$ 3,366,793       | \$ 2,521                       | \$ 159,214                    |
| 2038        | \$ 75,303,611                     | \$ 19,320,268  | \$ 94,623,879  | \$ 3,117,547                  | 4.14%              | \$ 131,247                        | \$ 1,740,680                             | \$ 3,385,396       | \$ 2,556                       | \$ 100,615                    |
| 2039        | \$ 75,884,482                     | \$ 22,166,761  | \$ 98,051,243  | \$ 1,702,137                  | 2.24%              | \$ 121,459                        | \$ 1,853,412                             | \$ 3,420,892       | \$ 2,591                       | \$ 41,878                     |
| 2040        | \$ 76,395,788                     | \$ 25,229,441  | \$ 101,625,229 | \$ 295,403                    | 0.39%              | \$ 107,261                        | \$ 1,949,535                             | \$ 3,485,876       | \$ 2,597                       | \$ -                          |
| 2041        | \$ 76,772,840                     | \$ 28,488,627  | \$ 105,261,467 | \$ -                          | 0.00%              | \$ 94,057                         | \$ 2,035,499                             | \$ 3,542,514       | \$ 2,632                       | \$ -                          |
| 2042        | \$ 77,027,851                     | \$ 31,982,633  | \$ 109,010,484 | \$ -                          | 0.00%              | \$ 76,464                         | \$ 2,167,736                             | \$ 3,636,771       | \$ 2,636                       | \$ -                          |
| 2043        | \$ 77,088,579                     | \$ 35,652,499  | \$ 112,741,078 | \$ -                          | 0.00%              | \$ 58,485                         | \$ 2,269,192                             | \$ 3,725,789       | \$ 2,670                       | \$ -                          |
| 2044        | \$ 76,947,910                     | \$ 39,535,485  | \$ 116,483,395 | \$ -                          | 0.00%              | \$ 42,489                         | \$ 2,454,168                             | \$ 3,798,912       | \$ 2,672                       | \$ -                          |
| 2045        | \$ 76,620,375                     | \$ 43,578,340  | \$ 120,198,715 | \$ -                          | 0.00%              | \$ 30,790                         | \$ 2,639,982                             | \$ 3,844,121       | \$ 2,672                       | \$ -                          |
| 2046        | \$ 76,156,000                     | \$ 47,821,165  | \$ 123,977,165 | \$ -                          | 0.00%              | \$ 22,021                         | \$ 2,835,806                             | \$ 3,861,507       | \$ 2,670                       | \$ -                          |
| 2047        | \$ 75,595,704                     | \$ 52,270,646  | \$ 127,866,350 | \$ -                          | 0.00%              | \$ 16,616                         | \$ 3,101,236                             | \$ 3,855,078       | \$ 2,667                       | \$ -                          |
| 2048        | \$ 74,982,483                     | \$ 56,907,617  | \$ 131,890,100 | \$ -                          | 0.00%              | \$ 11,815                         | \$ 3,347,335                             | \$ 3,840,370       | \$ 2,698                       | \$ -                          |
| 2049        | \$ 74,327,052                     | \$ 61,714,660  | \$ 136,041,712 | \$ -                          | 0.00%              | \$ 7,878                          | \$ 3,622,634                             | \$ 3,815,202       | \$ 2,692                       | \$ -                          |
| 2050        | \$ 73,642,605                     | \$ 66,679,121  | \$ 140,321,726 | \$ -                          | 0.00%              | \$ 5,042                          | \$ 4,453,123                             | \$ 3,783,627       | \$ 2,722                       | \$ 14,128                     |
| 2051        | \$ 72,942,428                     | \$ 71,794,912  | \$ 144,737,340 | \$ 685,944                    | 0.94%              | \$ 3,221                          | \$ 4,796,415                             | \$ 3,738,266       | \$ 2,713                       | \$ 51,415                     |
| 2052        | \$ 72,248,013                     | \$ 77,058,811  | \$ 149,306,824 | \$ 1,796,016                  | 2.49%              | \$ 1,896                          | \$ 5,359,857                             | \$ 3,686,674       | \$ 2,701                       | \$ 111,499                    |
| 2053        | \$ 71,567,496                     | \$ 82,431,339  | \$ 153,998,835 | \$ 3,579,894                  | 5.00%              | \$ 1,302                          | \$ 6,064,642                             | \$ 3,626,617       | \$ 2,728                       | \$ 203,384                    |
| 2054        | \$ 70,915,504                     | \$ 87,939,992  | \$ 158,855,496 | \$ 6,219,876                  | 8.77%              | \$ 897                            | \$ 9,021,212                             | \$ 3,562,564       | \$ 2,713                       | \$ 379,096                    |
| 2055        | \$ 70,298,452                     | \$ 93,585,551  | \$ 163,884,003 | \$ 12,055,804                 | 17.15%             | \$ 451                            | \$ 9,566,617                             | \$ 3,496,360       | \$ 2,738                       | \$ 639,974                    |
| 2056        | \$ 69,719,354                     | \$ 99,374,600  | \$ 169,093,954 | \$ 18,763,748                 | 26.91%             | \$ 338                            | \$ 10,657,417                            | \$ 3,424,700       | \$ 2,719                       | \$ 949,505                    |
| 2057        | \$ 69,188,115                     | \$ 105,318,125 | \$ 174,506,240 | \$ 26,943,589                 | 38.94%             | \$ 194                            | \$ 12,055,266                            | \$ 3,350,735       | \$ 2,697                       | \$ 1,328,097                  |
| 2058        | \$ 68,708,802                     | \$ 111,396,615 | \$ 180,105,417 | \$ 36,973,714                 | 53.81%             | \$ 82                             | \$ 13,098,111                            | \$ 3,273,688       | \$ 2,718                       | \$ 1,777,924                  |
| 2059        | \$ 68,286,929                     | \$ 117,640,946 | \$ 185,927,875 | \$ 48,573,425                 | 71.13%             | \$ 61                             | \$ 14,724,887                            | \$ 3,193,156       | \$ 2,692                       | \$ 2,306,815                  |
| 2060        | \$ 67,929,232                     | \$ 124,074,113 | \$ 192,003,345 | \$ 62,409,340                 | 91.87%             | \$ -                              | \$ 15,550,659                            | \$ 3,110,345       | \$ 2,662                       | \$ 2,913,947                  |
| 2061        | \$ 67,640,472                     | \$ 130,693,947 | \$ 198,334,419 | \$ 77,760,938                 | 114.96%            | \$ -                              | \$ 10,952,440                            | \$ 3,024,401       | \$ 2,679                       | \$ 3,471,501                  |
| 2062        | \$ 67,427,191                     | \$ 137,505,496 | \$ 204,932,687 | \$ 89,157,799                 | 132.23%            | \$ -                              | \$ 2,645                                 | \$ 2,936,050       | \$ 2,644                       | \$ 3,727,465                  |

City of Morgantown, West Virginia Firemen's Pension and Relief Fund  
 Actuarial Information to Include in the Financial Statements  
 for the June 30, 2022 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 |  |  |  |  |
| 2022                                  | \$ 2,269,005           | \$ -                     | \$ 2,222,273      | \$ -                | \$ 2,224,773               |  |  |  |  |
| 2023                                  | \$ 2,209,750           | \$ -                     | \$ 2,076,008      | \$ -                | \$ 2,083,022               |  |  |  |  |
| 2024                                  | \$ 2,290,937           | \$ -                     | \$ 2,064,539      | \$ -                | \$ 2,076,178               |  |  |  |  |
| 2025                                  | \$ 2,333,134           | \$ -                     | \$ 2,016,849      | \$ -                | \$ 2,032,786               |  |  |  |  |
| 2026                                  | \$ 2,406,475           | \$ -                     | \$ 1,995,442      | \$ -                | \$ 2,015,737               |  |  |  |  |
| 2027                                  | \$ 2,548,183           | \$ -                     | \$ 2,026,806      | \$ -                | \$ 2,052,029               |  |  |  |  |
| 2028                                  | \$ 2,715,819           | \$ -                     | \$ 2,072,079      | \$ -                | \$ 2,102,589               |  |  |  |  |
| 2029                                  | \$ 2,835,491           | \$ -                     | \$ 2,075,190      | \$ -                | \$ 2,110,485               |  |  |  |  |
| 2030                                  | \$ 2,927,369           | \$ -                     | \$ 2,055,090      | \$ -                | \$ 2,094,749               |  |  |  |  |
| 2031                                  | \$ 3,022,945           | \$ -                     | \$ 2,035,671      | \$ -                | \$ 2,079,627               |  |  |  |  |
| 2032                                  | \$ 3,108,612           | \$ -                     | \$ 2,008,019      | \$ -                | \$ 2,055,996               |  |  |  |  |
| 2033                                  | \$ 3,189,696           | \$ -                     | \$ 1,976,399      | \$ -                | \$ 2,028,175               |  |  |  |  |
| 2034                                  | \$ 3,244,987           | \$ -                     | \$ 1,928,689      | \$ -                | \$ 1,983,671               |  |  |  |  |
| 2035                                  | \$ 3,274,178           | \$ -                     | \$ 1,866,704      | \$ -                | \$ 1,924,242               |  |  |  |  |
| 2036                                  | \$ 3,329,784           | \$ -                     | \$ 1,821,013      | \$ -                | \$ 1,881,369               |  |  |  |  |
| 2037                                  | \$ 3,366,793           | \$ -                     | \$ 1,766,190      | \$ -                | \$ 1,828,836               |  |  |  |  |
| 2038                                  | \$ -                   | \$ 3,385,396             | \$ -              | \$ 1,861,877        | \$ 1,767,944               |  |  |  |  |
| 2039                                  | \$ -                   | \$ 3,420,892             | \$ -              | \$ 1,814,446        | \$ 1,717,508               |  |  |  |  |
| 2040                                  | \$ -                   | \$ 3,485,876             | \$ -              | \$ 1,783,117        | \$ 1,682,565               |  |  |  |  |
| 2041                                  | \$ -                   | \$ 3,542,514             | \$ -              | \$ 1,747,602        | \$ 1,643,888               |  |  |  |  |
| 2042                                  | \$ -                   | \$ 3,636,771             | \$ -              | \$ 1,730,255        | \$ 1,622,471               |  |  |  |  |
| 2043                                  | \$ -                   | \$ 3,725,789             | \$ -              | \$ 1,709,525        | \$ 1,598,011               |  |  |  |  |
| 2044                                  | \$ -                   | \$ 3,798,912             | \$ -              | \$ 1,681,046        | \$ 1,566,468               |  |  |  |  |
| 2045                                  | \$ -                   | \$ 3,844,121             | \$ -              | \$ 1,640,516        | \$ 1,523,912               |  |  |  |  |
| 2046                                  | \$ -                   | \$ 3,861,507             | \$ -              | \$ 1,589,291        | \$ 1,471,703               |  |  |  |  |
| 2047                                  | \$ -                   | \$ 3,855,078             | \$ -              | \$ 1,530,181        | \$ 1,412,528               |  |  |  |  |
| 2048                                  | \$ -                   | \$ 3,840,370             | \$ -              | \$ 1,470,097        | \$ 1,352,812               |  |  |  |  |
| 2049                                  | \$ -                   | \$ 3,815,202             | \$ -              | \$ 1,408,489        | \$ 1,292,059               |  |  |  |  |
| 2050                                  | \$ -                   | \$ 3,783,627             | \$ -              | \$ 1,347,123        | \$ 1,231,895               |  |  |  |  |
| 2051                                  | \$ -                   | \$ 3,738,266             | \$ -              | \$ 1,283,608        | \$ 1,170,135               |  |  |  |  |
| 2052                                  | \$ -                   | \$ 3,686,674             | \$ -              | \$ 1,220,844        | \$ 1,109,433               |  |  |  |  |
| 2053                                  | \$ -                   | \$ 3,626,617             | \$ -              | \$ 1,158,218        | \$ 1,049,225               |  |  |  |  |
| 2054                                  | \$ 3,562,564           | \$ -                     | \$ 921,066        | \$ -                | \$ 990,901                 |  |  |  |  |
| 2055                                  | \$ 3,496,360           | \$ -                     | \$ 867,098        | \$ -                | \$ 934,941                 |  |  |  |  |
| 2056                                  | \$ 3,424,700           | \$ -                     | \$ 814,701        | \$ -                | \$ 880,423                 |  |  |  |  |
| 2057                                  | \$ 3,350,735           | \$ -                     | \$ 764,610        | \$ -                | \$ 828,151                 |  |  |  |  |
| 2058                                  | \$ 3,273,688           | \$ -                     | \$ 716,574        | \$ -                | \$ 777,870                 |  |  |  |  |
| 2059                                  | \$ 3,193,156           | \$ -                     | \$ 670,452        | \$ -                | \$ 729,441                 |  |  |  |  |
| 2060                                  | \$ 3,110,345           | \$ -                     | \$ 626,441        | \$ -                | \$ 683,092                 |  |  |  |  |
| 2061                                  | \$ 3,024,401           | \$ -                     | \$ 584,299        | \$ -                | \$ 638,573                 |  |  |  |  |
| 2062                                  | \$ 2,936,050           | \$ -                     | \$ 544,105        | \$ -                | \$ 595,985                 |  |  |  |  |