City Of Moundsville, West Virginia Firemen's Pension and Relief Fund

Actuarial Valuation Report for the Year Beginning July 1, 2017

September 25, 2018

Ms. Karen L. Ankrom
City Treasurer
800 6th Street. P.O. Box E
Moundsville, WV 26041

Firefighter Kevin Kimple
Pension Board Secretary
City of Moundsville Firemen's Pension and Relief Fund

Subject: City of Moundsville Firemen's Pension and Relief Fund
Actuarial Valuation Report for the Year Beginning July 1, 2017

Dear Ms. Ankrom and Firefighter Kimple:

Upon the request of the Municipal Pensions Oversight Board, we have performed an actuarial valuation as of July 1, 2017, for the City of Moundsville, West Virginia Firemen's Pension and Relief Fund ("Fund" or "Plan"). This actuarial valuation has been performed in accordance with the West Virginia Code Chapter 8, Article 22, Sections 16 through 28, inclusive.

In accordance with West Virginia Code §8-22-20, this actuarial valuation report provides information on:

- The sponsor's funding requirements for the fiscal year ending June 30, 2019
- The Fund's eligibility to receive an allocation of the premium tax for the fiscal year ending June 30, 2019
- The Fund's eligibility to provide supplemental benefits for the plan year beginning July 1, 2019

West Virginia Code §8-22-20(c)(4) requires a review of the actuarial assumptions and methods at least once every five years and that the Actuary shall provide a report to the oversight board with recommendations on any changes to the actuarial process. Consequently, an experience review was performed for the period July 1, 2009, through June 30, 2014. The actuarial assumptions and methods were recommended by the actuary, in the report *2016 Experience Review for the Years July 1, 2009, to July 1, 2014*, approved by the Municipal Pensions Oversight Board, and became effective for the actuarial valuation as of July 1, 2015.

This report is based on the sponsor's election to finance benefit obligations using the Optional funding policy as defined in West Virginia Code §8-22-20 (e)(1).

This actuarial valuation is based upon:

Plan Member Data – Data for active members and persons receiving benefits from the Fund as of June 30, 2017, was provided by the Fund's staff. We have tested this data for reasonableness.

Asset Values – A reconciliation of market value of assets during the plan year ended June 30, 2017, and assets held as of June 30, 2017, by investment category, was provided by the Fund.

Plan Provisions – A summary of the key plan provisions valued are set forth in Section VI of the report: Summary of Principal Plan Provisions.

Actuarial Methods – Fund liabilities were measured using the Entry-Age Normal Actuarial Cost Method. The actuarial valuation was based on the market value of assets. The actuarial methods used in the actuarial valuation are set forth in Section V of the report: Actuarial Assumptions and Methods.

Actuarial Assumptions – The actuarial assumptions used include a discount rate of 5.00%. The actuarial assumptions used in the actuarial valuation are set forth in Section V of the report: Actuarial Assumptions and Methods.

The actuarial valuation results disclosed in this report are based on the data and actuarial assumptions and methods described above, and upon the provisions of the Plan as of the actuarial valuation date. Based on these items, we certify these results to be true and correct.

To the best of our knowledge, this actuarial statement is complete and accurate, and has been prepared in accordance with generally accepted actuarial principles and practices.

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.

This report should not be relied on for any purpose other than the purpose stated.

The signing actuaries are independent of the plan sponsor.

Alex Rivera and Lance J. Weiss are members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein.

Sincerely,

Alex Rivera   Lance J. Weiss

Alex Rivera, FSA, EA, MAAA, FCA	Lance Weiss, EA, MAAA, FCA
Senior Consultant	Senior Consultant

Contents

SECTION I

ACTUARIAL VALUATION RESULTS AS OF JULY 1, 2017

Executive Summary of Valuation Results as of July 1, 2017

Upon the request of the Municipal Pensions Oversight Board, we have performed an actuarial valuation as of July 1, 2017, for the City of Moundsville, West Virginia Firemen's Pension and Relief Fund ("Fund" or "Plan").

In accordance with West Virginia Code §8-22-20, this actuarial valuation report provides information on:

- The sponsor's funding requirements for the fiscal year ending June 30, 2019
- The Fund's eligibility to receive an allocation of the premium tax for the fiscal year ending June 30, 2019
- The Fund's eligibility to provide supplemental benefits for the plan year beginning July 1, 2019

This report is based on the sponsor's election to finance benefit obligations using the Optional funding policy as defined in West Virginia Code §8-22-20 (e)(1). The sponsor changed the funding policy used to determine contributions from the Alternative funding policy to the Optional funding policy, effective March 16, 2010.

The key features of the Optional funding policy, effective for plan years beginning after January 1, 2010, are summarized below:

- The current local Plan is closed to new employees
- New employees are covered in the multiple employer statewide plan – *Municipal Police Officers and Firefighters Retirement System*
- Benefits and expenses in the closed local Plan are financed by contributions made from the following sources:
    - Employee contributions of 7.0% of pay for members hired before January 1, 2010, increased by up to 2.5% of pay if elected by the Board of Trustees of the Plan. Employees hired on or after January 1, 2010, contribute 9.5% of pay;
    - The premium tax allocation assigned to the Fund for the plan year; and
    - Employer contributions equal to the normal cost, net of employee contributions, plus a 40-year closed period amortization from January 1, 2010, on a level dollar basis, of the unfunded actuarial accrued liability net of premium tax allocation applicable to the plan year.

Executive Summary of Valuation Results as of July 1, 2017 (Continued)

The following table provides the Plan's funded status:

Funded Status as of:	July 1, 2017
Assets	$1,362,829
Actuarial Accrued Liability	$5,102,394
Unfunded Actuarial Accrued Liability	$3,739,565
Funded Ratio	26.71%

The following table provides the estimated employer contributions for the fiscal year ended June 30, 2018, under the Optional funding policy, based on the July 1, 2016 actuarial valuation produced by GRS:

Employer Contributions for FYE:	June 30, 2018
Estimated Payroll for PYE 06/30/2017	$160,821
Employer Normal Cost for PYE 06/30/2017	$86,103
Employer Normal Cost Rate for PYE 06/30/2017	53.5%
Amortization of Unfunded Actuarial Liability for PYE 06/30/2017	$236,586
State Insurance Premium Tax Allocation for FYE 06/30/2018	$73,146
Estimated Employer Contribution for FYE 06/30/2018	$249,543

The following table provides the estimated employer contributions for the fiscal year ended June 30, 2019, under the Optional funding policy, based on the July 1, 2017 actuarial valuation produced by GRS:

Estimated Employer Contributions for FYE:	June 30, 2019
Estimated Payroll for PYE 06/30/2018	$169,799
Employer Normal Cost for Active Members for PYE 06/30/2018	$78,417
Employer Normal Cost Rate for PYE 06/30/2018	46.2%
Amortization of Unfunded Actuarial Liability for PYE 06/30/2018	$229,469
State Insurance Premium Tax Allocation for FYE 06/30/2019	$68,290
Estimated Employer Contribution for FYE 06/30/2019 [c]	$239,596

[a] *The Employer Contribution cannot be less than the Employer Normal Cost.*

The actual minimum employer contribution for fiscal year ending June 30, 2019, will be based on the actual payroll for the plan year ended June 30, 2018.

Executive Summary of Valuation Results as of July 1, 2017 (Continued)

Commentary on Premium Tax Allocation

Under §8-22-19 of the West Virginia Code, the plan sponsor is required to deposit the statutory contribution on a monthly basis at a rate of one-twelfth of the annual requirement, in order to receive the premium tax allocation from the Municipal Pensions Security Fund. Revenues which are specifically collected for the Fund, including employee payroll contributions, must be deposited within five days of receipt.

Based upon discussions with the Municipal Pensions Oversight Board (MPOB), we understand the annual premium tax allocation is determined by September 1st each year. Municipalities can begin invoicing the MPOB for their share of the premium tax allocation after receiving their state provided actuarial study and after the municipality has made employer contributions to the local Plan. Each municipal treasurer shall use the invoice template provided by the MPOB to begin drawing down the state allocation for the municipal pension plan. This July 1, 2017, Actuarial Report from GRS is to be used by municipal pension plans to draw down the September 1, 2018, State Premium Tax Allocation which is allocated in Fiscal Year 2019. *The actuarial valuation and projection results assume the sponsor will make the statutory contributions on a monthly basis in accordance with statutes, and will be eligible to receive the premium tax allocation.*

Commentary on Solvency Projections and Supplemental Benefits

Under § 8-22-26a of the West Virginia Code, all retirees, surviving spouses and disabled pensioners are eligible for Supplemental Benefits that include automatic cost-of-living benefits commencing on the first day of July following two years of retirement. The benefit equals the percentage increase in the Consumer Price Index, limited to 4.0 percent (2.0 percent for certain disabled pensioners), multiplied by the sum of the allowable amount (first $15,000 of initial benefits paid) and the accumulated supplemental pensions paid in prior years.

The Court of Appeals decision requires that Supplemental Benefits be provided on "the allowable amount of the first $15,000 of the total annual pension paid in addition to the accumulated supplemental pension from the previous years." The decision implies that compound cost-of-living increases should be applied to both the allowable amount of $15,000 and the accumulated supplemental pension amounts for prior years. Additional Supplemental Benefits are payable only if the Plan satisfies the minimum standard for actuarial soundness as defined in West Virginia Code § 8-22-20. This minimum standard requires that the fund remain "solvent" over the next 15-year projection period. Based on discussions with the West Virginia Municipal Pensions Oversight Board, and our understanding of the administrative practices of other local police and fire pension funds in West Virginia, the "solvency" requirement generally means that the fund's market value of assets is projected to be greater than zero for all plan years prior to the end of the 15-year projection period. The projection is based on the most recent actuarial valuation and assumes the plan sponsor will make contributions according to the funding policy elected by the sponsor as defined by West Virginia Code, including any additional amounts needed to satisfy the 15-year solvency test on a closed group projection basis. *Although the 15-year solvency test may satisfy the minimum standard for actuarial soundness under the statutes, it is not necessarily consistent with generally accepted actuarial principles.*

Executive Summary of Valuation Results as of July 1, 2017 (Continued)

The City of Moundsville has elected to fund benefits using the Optional funding policy as defined in West Virginia Code §8-22-20 (e)(1). Under this funding methodology, the fund's market value of assets is projected to be greater than zero for all plan years prior to the end of the 15-year projection period. Accordingly, this contribution methodology satisfies the minimum standard for actuarial soundness.

The Supplemental benefits for plan year beginning July 1, 2019, will be based on the Consumer Price Index for calendar year 2018, and the projected results of the July 1, 2017, actuarial valuation.

Additional Remarks on the Actuarial Valuation Results

Following are additional remarks on the actuarial valuation results as of July 1, 2017:

- The actuarial assumptions and methods were recommended by the actuary, in the report *2016 Experience Review for the Years July 1, 2009, to July 1, 2014*, and approved by the Municipal Pensions Oversight Board and became effective beginning with the actuarial valuation as of July 1, 2015. The key assumptions are fully disclosed in Section V of the report.

- The interest rate used to discount liabilities changed from 4.50% for the July 1, 2016 actuarial valuation to 5.00% for the July 1, 2017 actuarial valuation.
  - The interest rate assumption was developed by reviewing the Plan's current funded ratio, the 15-year projected funded ratio, the ratio of assets to benefits, the percentage of assets allocated to equities and the funding policy selected. The details of the methodology used to select the discount rate are presented in Section V of the report. As of July 1, 2017, the Plan's funded ratio of 30% (using a testing interest rate of 6.00% for all plans using the Optional funding policy), ratio of assets to benefits of 4.14, equity allocation of 64%, and 15-year projected funded ratio of 41%, resulted in a discount rate assumption of 5.00%.
  - The change in interest rate used to discount liabilities from 4.50% as of July 1, 2016, to 5.00% as of July 1, 2017, decreased liabilities by $285,702.

- The Fund experienced an approximate annualized return of 10.76% on the market value of assets during the plan year ended June 30, 2017, which compares to the expected annualized return of 4.50%. The difference in actual versus expected return produced an asset (gain)/loss of ($76,865).

- An actuarial valuation is based on the expectation of certain events such as salary increases, retirement, disability, mortality, termination and cost of living increases. Demographic or liability experience (gains)/losses are generated when the actual occurrence of such events differs from the expectation. During the plan year ended June 30, 2017, the fund experienced a net liability (gain)/loss of $10,959 due to these events.

Optional Funding

Following are additional remarks on the actuarial valuation projections under the current funding policy:

Based on the closed group projections shown in Table 1, page II-1 and assuming that the sponsor makes the statutory required contributions, if all actuarial assumptions are realized in the future, including an investment return of 5.00%:

- The funded ratio is projected to increase from 27% at June 30, 2017, to 38% at June 30, 2028, to 47% at June 30, 2039, and to 100% at June 30, 2050.
- Employer contributions are expected to decrease steadily from $239,596 for the fiscal year end June 30, 2019, to $114,172 for fiscal year end June 30, 2049.

Please note that a funded ratio of only 27% at June 30, 2017, means that the Plan is underfunded. Although the Plan is projected to be 100% funded by 2050, the funded ratio is only projected to reach 50% in 2041 and 70% in 2046.

This actuarial valuation assumes that the City will be able to make future contributions on a timely basis. The ability of the Plan to become fully funded is heavily dependent on the City contributing the minimum employer contribution calculated under the Optional funding policy for each and every future year. We did not perform an analysis of the ability of the City to make future contributions. Such an analysis is not within the scope of our assignment or within our analytical skill set. Failure to receive City contributions on a timely basis could jeopardize the sustainability of the Plan.

Please understand that the minimum employer contribution calculated under the Optional funding policy as defined in West Virginia Code §8-22-20 (e)(1) is just that – the minimum that needs to be contributed each and every year. Because this is an underfunded Plan, we recommend that the plan sponsor consider making additional contributions (in excess of the minimum requirement) to ensure that there are sufficient assets available in the fund in all years to pay the promised benefits.

If the minimum employer contributions (calculated under the Optional funding policy) are not made or the investment return is less than the assumption of 5.00%, the funded ratio will be lower and the cash flow strain will be higher. If another significant market downtown occurs while the plan's funded ratio is low, the plan may need to liquidate a large amount of assets in order to pay benefits which could have a further adverse effect on the funded status of the Plan.

Under the Optional funding policy, the following experience could cause City contributions to change during the year:

- If the actual return on assets is *less* than the assumed return of 5.00%, then contributions will generally *increase*. Conversely, if the actual return is *greater* than the assumed return, contributions will generally *decrease*.
- If salaries *increase* by more than assumed, contributions could *increase*. If salaries *decrease* by more than assumed, contributions could *decrease.*
- If active members retire *sooner* than expected, contributions will generally *increase.* If active members retire *later* than expected, contributions will generally *decrease*.
- If active members become disabled during the year, contributions could *increase*.

Executive Summary of Valuation Results as of July 1, 2017 (Continued)

- If retired members die *later* than expected, contributions will *increase*. If retired members die *sooner* than expected, contributions will *decrease*.
- If the general inflation is *greater* than assumed, supplemental benefits will be greater than assumed and contributions will *increase*. Conversely, if general inflation is *lower* than assumed, contributions will *decrease*.

At least once every five years, GRS performs an experience review analysis and updates the actuarial valuation assumptions. For example, if salary increases were consistently lower than assumed during the experience period, then the salary increase rate would likely be lowered. Or if more members retired than assumed, then the retirement rates would likely be increased. Any change in actuarial assumption will also impact the City's funded ratio. The objective of a change in assumptions is to reduce the level of experience gains and losses in future actuarial valuations.

Schedule A: Summary of Key Valuation Results

	No.	July 1, 2016	No.	July 1, 2017
Valuation Date		**July 1, 2016**		**July 1, 2017**
Valuation Interest Rate		4.50%		5.00%
Cost-of-Living Adjustment		2.75%		2.75%
Wage Inflation		3.75%		3.75%
Expected Payroll		$160,821		$169,799
Average Pay		$40,205		$42,450
Expected Benefit Payments		$328,961		$329,301
1. Actuarial Accrued Liability	No.		No.	
(a) Actives	4	$1,103,521	4	$1,180,235
(b) Retirees	10	$3,190,154	10	$2,979,797
(c) Survivors	3	$516,072	2	$419,778
(d) Disabled Members	2	$559,373	2	$522,584
(e) Deferred Vested Members	0	$0	0	$0
(f) Total	19	$5,369,120	18	$5,102,394
2. Present Value of Future Normal Costs		$838,608		$748,580
3. Present Value of Benefits (1(f) + 2)		$6,207,728		$5,850,974
4. Market Value of Assets		$1,224,758		$1,362,829
5. Unfunded Actuarial Accrued Liability (1(f) - 4)		$4,144,362		$3,739,565
6. Funded Ratio (4 / 1(f))		22.81%		26.71%
7. Net Employer Normal Cost				
(a) Normal Cost		$96,740		$89,892
(b) Administrative Expenses		$620		$411
(c) Gross Normal Cost (a + b)		$97,360		$90,303
(d) Employee Contribution Rate [a]		7.00%		7.00%
(e) Expected Employee Contributions		$11,257		$11,886
(f) Net Employer Normal Cost (c - e)		$86,103		$78,417
(% of Compensation)		53.54%		46.18%
8. Estimated Minimum Employer Contribution [b]		**FYE 2018**		**FYE 2019**
(a) Expected Payroll		$160,821		$169,799
(b) Estimated Employer Normal Cost		$86,103		$78,417
(c) Employer Normal Cost Rate		53.54%		46.18%
(d) Amortization of Unfunded Actuarial Liability		$236,586		$229,469
(e) State Insurance Premium Tax Allocation		$73,146		$68,290
(f) Estimated Employer Contribution[c] (b + d - e)		**$249,543**		**$239,596**

[a] *Blended rate reflecting 7.0% for members hired before January 1, 2010.*

[b] *Estimated Minimum Employer Contribution is based on Optional funding policy and is assumed to be made in plan year ending June 30, 2019. The actual Minimum Employer Contribution will be based on actual payroll for plan year ended June 30, 2018.*

[c] *The Employer Contribution cannot be less than the Employer Normal Cost.*

Schedule B: (Gain)/Loss Analysis

Experience (Gain)/Loss for Plan Year Ended June 30, 2017

1.	(a) Actuarial Accrued Liability as of 7/1/2016	$5,369,120
	(b) Normal Cost due 7/1/2016	$96,740
	(c) Interest on (a) and (b) to 6/30/2017	$243,787
	(d) Benefit Payments with interest to 6/30/2017	$332,510
	(e) Effect of Assumption Changes	($285,702)
	(f) Expected Liability at 7/1/2017 [(a) + (b) + (c) - (d) + (e)]	$5,091,435
	(g) Actual Liability at 7/1/2017	$5,102,394
	(h) Liability (Gain)/Loss [(g) - (f)]	**$10,959**
2.	(a) Market Value of Assets as of 7/1/2016	$1,224,758
	(b) Interest on (a) to 6/30/2017	$55,114
	(c) Contributions with interest to 6/30/2017	$338,602
	(d) Benefit Payments with interest to 6/30/2017	$332,510
	(e) Expected Assets at 6/30/2017 [(a) + (b) + (c) - (d)]	$1,285,964
	(f) Actual Assets at 7/1/2017	$1,362,829
	(g) Asset (Gain)/Loss [(e) - (f)]	**($76,865)**
3.	Total (Gain)/Loss [1(h) + 2(g)]	**($65,906)**

SECTION II

ACTUARIAL PROJECTIONS

Actuarial Projections, Table 1

Valuation Plan Year End 30-Jun	Number Active	Number Pay Status	Total Assets: Assets (boy)	Benefit Payments	Expenses	Employer Contributions	Member Contributions	Premium Tax Allocation Contributions	Investment Income	Assets (eoy)	Actuarial Accrued Liability	Unfunded Liability	Funded Ratio
2017	4	14	$1,224,758	$325,193	$400	$246,178	$12,243	$72,730	$132,513	$1,362,829	$5,102,394	$3,739,565	27%
2018	3	14	1,362,829	329,301	411	249,543	11,886	73,146	68,262	1,435,954	5,112,197	3,676,243	28%
2019	3	14	1,435,954	339,110	419	239,596	11,171	68,290	71,292	1,486,774	5,106,462	3,619,688	29%
2020	3	14	1,486,774	343,733	427	229,548	10,998	72,282	73,565	1,529,007	5,094,127	3,565,120	30%
2021	3	14	1,529,007	346,524	433	225,806	10,950	74,287	75,563	1,568,656	5,077,769	3,509,113	31%
2022	3	14	1,568,656	347,647	439	223,411	10,995	76,098	77,505	1,608,579	5,059,671	3,451,092	32%
2023	3	14	1,608,579	347,163	444	221,889	11,111	77,752	79,519	1,651,243	5,041,953	3,390,710	33%
2024	3	14	1,651,243	344,297	447	221,014	11,267	79,297	81,743	1,699,820	5,027,413	3,327,593	34%
2025	2	14	1,699,820	348,107	450	220,567	10,622	80,732	84,086	1,747,270	5,003,281	3,256,011	35%
2026	2	14	1,747,270	352,222	451	214,015	9,699	83,161	86,233	1,787,705	4,966,688	3,178,983	36%
2027	2	13	1,787,705	350,588	451	206,234	9,435	84,703	88,134	1,825,172	4,927,912	3,102,740	37%
2028	1	13	1,825,172	358,222	450	202,793	7,743	85,981	89,723	1,852,741	4,866,451	3,013,710	38%
2029	1	13	1,852,741	371,143	447	188,477	5,284	89,209	90,449	1,854,570	4,769,895	2,915,325	39%
2030	1	13	1,854,570	374,354	442	169,884	3,856	91,063	90,012	1,834,589	4,654,279	2,819,690	39%
2031	0	12	1,834,589	373,454	436	157,959	2,810	92,421	88,749	1,802,638	4,525,809	2,723,171	40%
2032	0	12	1,802,638	369,655	429	149,372	2,013	93,384	87,037	1,764,360	4,388,708	2,624,348	40%
2033	0	11	1,764,360	363,424	420	142,817	1,415	94,134	85,119	1,724,001	4,246,559	2,522,558	41%
2034	0	11	1,724,001	355,160	410	138,017	985	94,553	83,187	1,685,172	4,102,489	2,417,317	41%
2035	0	10	1,685,172	345,748	399	134,482	640	94,903	81,391	1,650,442	3,958,222	2,307,780	42%
2036	0	10	1,650,442	335,876	387	131,763	320	95,084	79,828	1,621,176	3,814,412	2,193,236	43%
2037	0	9	1,621,176	324,632	374	129,358	133	95,157	78,580	1,599,398	3,673,491	2,074,093	44%
2038	0	9	1,599,398	312,477	361	127,949	54	95,094	77,753	1,587,411	3,537,383	1,949,972	45%
2039	0	8	1,587,411	300,324	347	126,875	0	95,492	77,437	1,586,543	3,406,512	1,819,969	47%
2040	0	8	1,586,543	288,003	334	125,917	0	96,010	77,688	1,597,821	3,281,723	1,683,902	49%
2041	0	7	1,597,821	276,147	321	125,298	0	96,560	78,543	1,621,755	3,162,843	1,541,088	51%
2042	0	7	1,621,755	264,838	307	124,647	0	97,189	80,018	1,658,464	3,049,606	1,391,142	54%
2043	0	6	1,658,464	254,148	295	123,949	0	97,872	82,117	1,707,959	2,941,663	1,233,704	58%
2044	0	6	1,707,959	244,132	283	123,123	0	98,682	84,839	1,770,188	2,838,585	1,068,397	62%
2045	0	5	1,770,188	234,830	272	122,201	0	99,589	88,181	1,845,057	2,739,886	894,829	67%
2046	0	5	1,845,057	226,261	262	120,696	0	101,081	92,136	1,932,446	2,645,032	712,586	73%
2047	0	5	1,932,446	218,433	253	118,925	0	102,837	96,698	2,032,220	2,553,456	521,236	80%
2048	0	5	2,032,220	211,342	245	117,013	0	104,736	101,862	2,144,244	2,464,568	320,324	87%
2049	0	4	2,144,244	204,956	238	114,172	0	107,563	107,621	2,268,406	2,377,779	109,373	95%
2050	0	4	2,268,406	199,235	233	1,454	0	110,853	111,268	2,292,513	2,292,513	0	100%
2051	0	4	2,292,513	194,122	228	228	0	0	109,832	2,208,223	2,208,223	0	100%
2052	0	4	2,208,223	189,549	224	224	0	0	105,730	2,124,404	2,124,404	0	100%
2053	0	4	2,124,404	185,445	222	222	0	0	101,641	2,040,600	2,040,600	0	100%
2054	0	4	2,040,600	181,722	220	220	0	0	97,542	1,956,420	1,956,420	0	100%
2055	0	3	1,956,420	178,283	218	219	0	0	93,418	1,871,556	1,871,556	0	100%
2056	0	3	1,871,556	175,024	218	218	0	0	89,256	1,785,788	1,785,788	0	100%
2057	0	3	1,785,788	171,845	217	217	0	0	85,046	1,698,989	1,698,989	0	100%
2058	0	3	1,698,989	168,639	217	217	0	0	80,785	1,611,135	1,611,135	0	100%

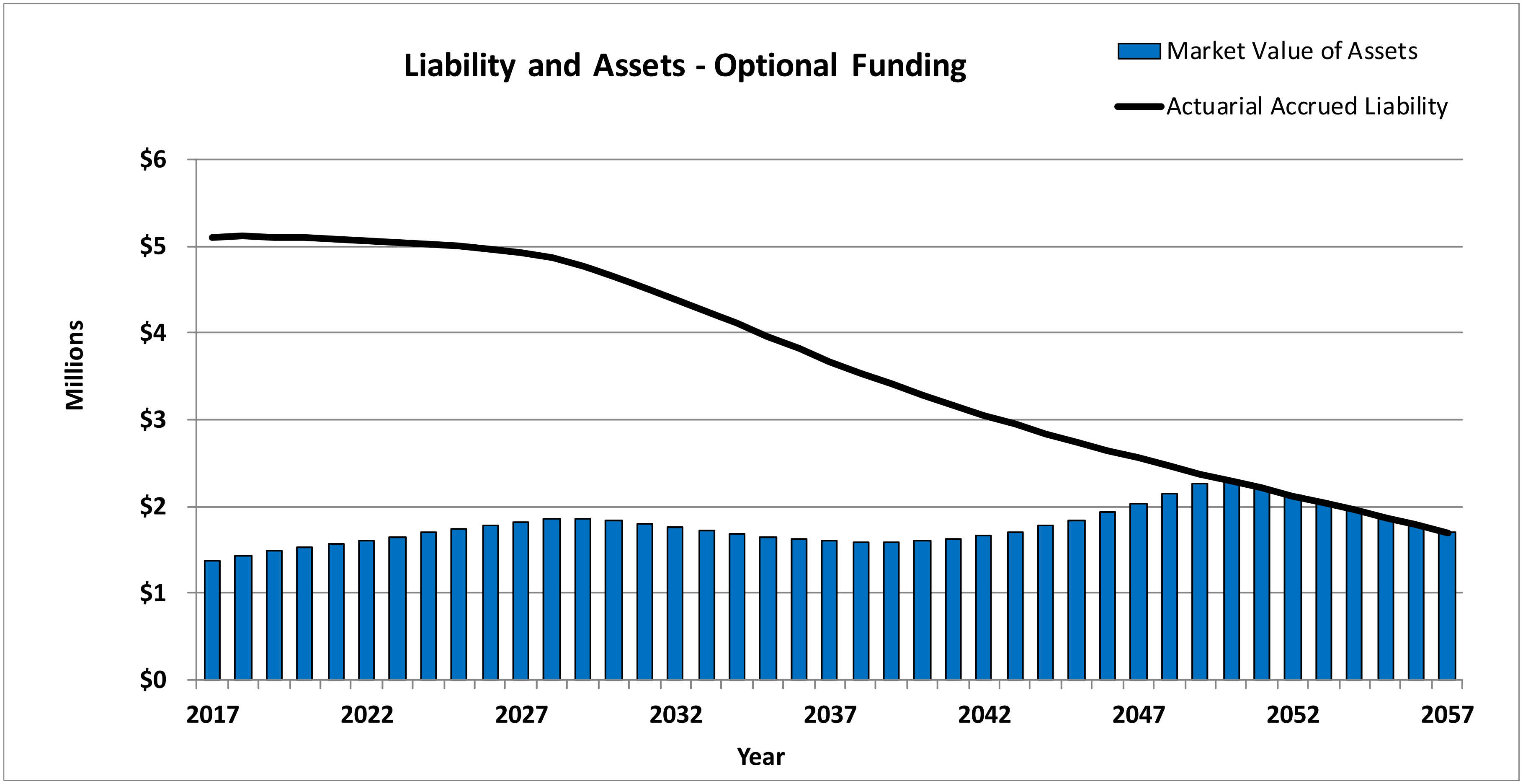
Actuarial Projections, Table 2

						Employer Contributions				
Valuation Plan Year End 30-Jun [a]	Closed Group Payroll	Active Employee Contributions	Gross Normal Cost	Net Employer Normal Cost	Amortization of UAAL	Premium Tax Allocation Contributions	Net Employer Amortization	Expenses	Employer Contribution Closed Plan	
2018	$169,799	$11,886	89,892	78,006	$229,469	$68,290	$161,179	$411	239,596	
2019	159,588	11,171	84,055	72,884	228,527	72,282	156,245	419	229,548	
2020	157,111	10,998	82,528	71,530	228,136	74,287	153,849	427	225,806	
2021	156,432	10,950	82,004	71,054	228,022	76,098	151,924	433	223,411	
2022	157,076	10,995	82,215	71,220	227,982	77,752	150,230	439	221,889	
2023	158,727	11,111	82,987	71,876	227,991	79,297	148,694	444	221,014	
2024	160,962	11,267	84,081	72,814	228,038	80,732	147,306	447	220,567	
2025	151,736	10,622	79,241	68,619	228,107	83,161	144,946	450	214,015	
2026	138,563	9,699	72,373	62,674	227,812	84,703	143,109	451	206,234	
2027	134,784	9,435	70,403	60,968	227,355	85,981	141,374	451	202,793	
2028	110,616	7,743	57,787	50,044	227,192	89,209	137,983	450	188,477	
2029	75,491	5,284	39,446	34,162	226,339	91,063	135,276	447	169,884	
2030	55,083	3,856	28,779	24,923	225,015	92,421	132,594	442	157,959	
2031	40,142	2,810	20,975	18,165	224,155	93,384	130,771	436	149,372	
2032	28,751	2,013	15,022	13,009	223,513	94,134	129,379	429	142,817	
2033	20,209	1,415	10,556	9,141	223,008	94,553	128,455	420	138,017	
2034	14,068	985	7,349	6,364	222,611	94,903	127,708	410	134,482	
2035	9,148	640	4,778	4,138	222,311	95,084	127,227	399	131,763	
2036	4,578	320	2,387	2,067	222,061	95,157	126,904	387	129,358	
2037	1,900	133	982	849	221,820	95,094	126,726	374	127,949	
2038	778	54	401	347	221,659	95,492	126,167	361	126,875	
2039	0	0	0	0	221,580	96,010	125,570	347	125,917	
2040	0	0	0	0	221,525	96,560	124,965	334	125,298	
2041	0	0	0	0	221,516	97,189	124,327	321	124,647	
2042	0	0	0	0	221,513	97,872	123,641	307	123,949	
2043	0	0	0	0	221,510	98,682	122,828	295	123,123	
2044	0	0	0	0	221,507	99,589	121,918	283	122,201	
2045	0	0	0	0	221,504	101,081	120,423	272	120,696	
2046	0	0	0	0	221,500	102,837	118,663	262	118,925	
2047	0	0	0	0	221,496	104,736	116,760	253	117,013	
2048	0	0	0	0	221,490	107,563	113,927	245	114,172	
2049	0	0	0	0	221,481	110,853	110,628	238	1,454	[b]
2050	0	0	0	0	0	0	0	233	228	[b]
2051	0	0	0	0	0	0	0	228	224	[b]
2052	0	0	0	0	0	0	0	224	222	[b]
2053	0	0	0	0	0	0	0	222	220	[b]
2054	0	0	0	0	0	0	0	220	219	[b]
2055	0	0	0	0	0	0	0	218	218	[b]
2056	0	0	0	0	0	0	0	218	217	[b]
2057	0	0	0	0	0	0	0	217	217	[b]

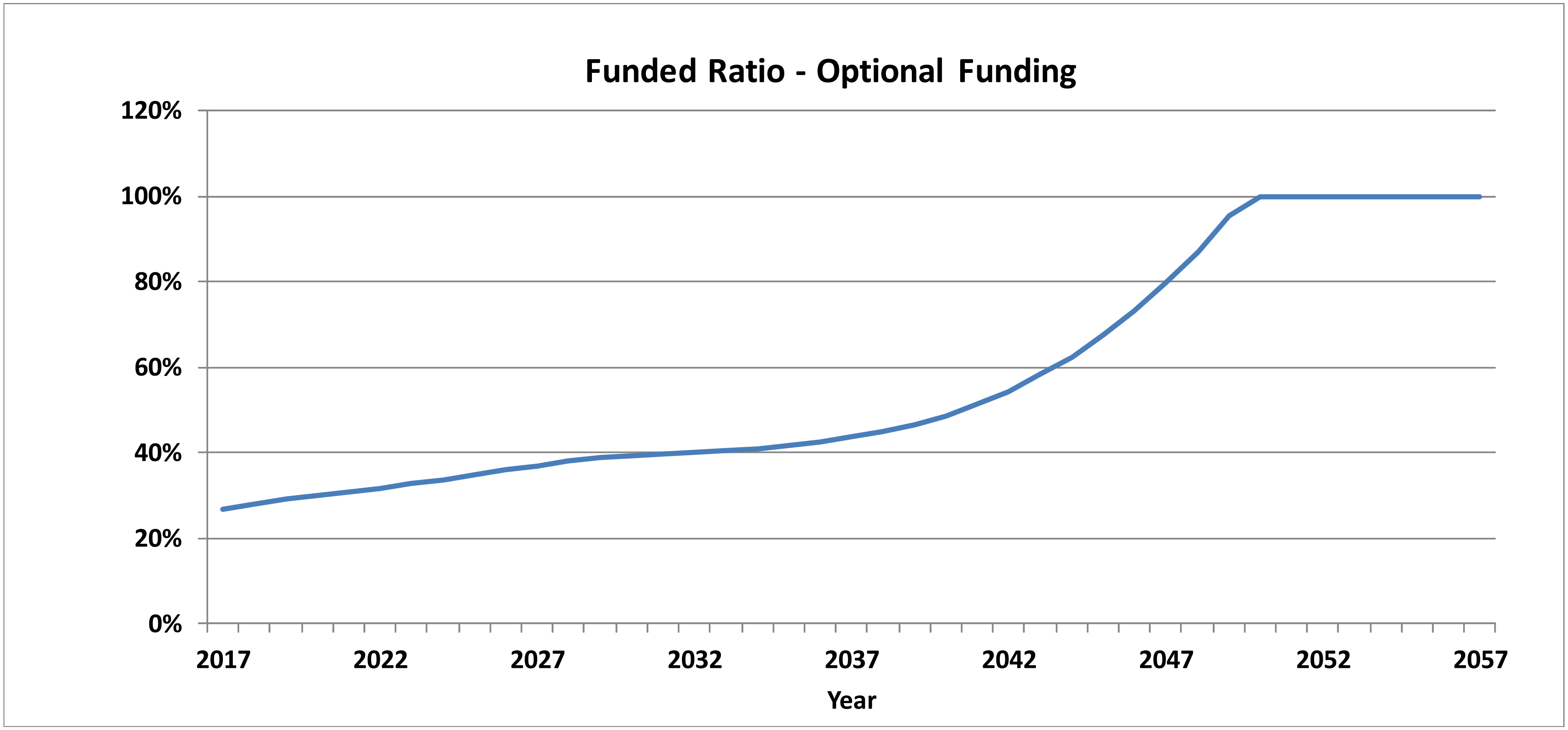
[a] *Assumes employer makes contributions for the applicable valuation plan year in the following fiscal year.*

[b] *Amount required to remain at 100% funded.*

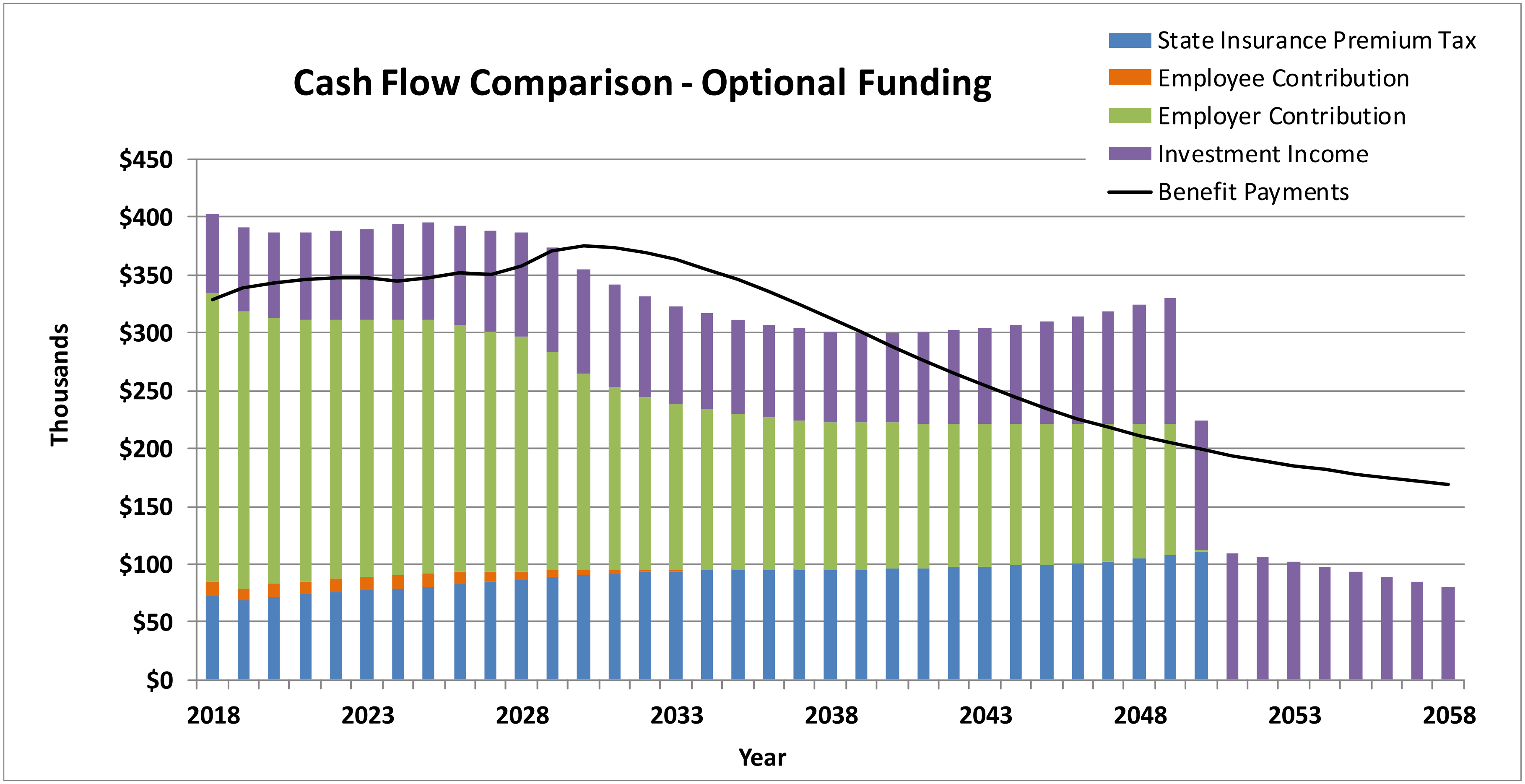
Actuarial Projections, Graph 1



Actuarial Projections, Graph 2



Actuarial Projections, Graph 3



SECTION III

ACTUARIALLY DETERMINED CONTRIBUTION FOR GASB STATEMENT NOS. 67 AND 68 REPORTING

Actuarially Determined Contribution for
GASB Statement Nos. 67 and 68 Reporting
Schedule C: Funding Progress and Employer Contributions

Valuation Date	**July 1, 2016**	**July 1, 2017**
Valuation Interest Rate	4.50%	5.00%
Cost-of-Living Adjustment	2.75%	2.75%
Wage Inflation	3.75%	3.75%
Actuarial Value of Assets	Market	Market
Actuarial Cost Method	Entry Age Normal	Entry Age Normal
Remaining Amortization Period [a]	24 Years, Level % of Pay	23 Years, Level % of Pay
Schedule of Funding Progress		
Actuarial Valuation Date	**July 1, 2016**	**July 1, 2017**
1. Market Value of Assets	$1,224,758	$1,362,829
2. Actuarial Accrued Liability	$5,369,120	$5,102,394
3. Unfunded Actuarial Accrued Liability (2 - 1)	$4,144,362	$3,739,565
4. Funded Ratio (1/2)	23%	27%
5. Expected Payroll	$160,821	$169,799
6. UAAL as Percentage of Covered Payroll (3/5)	2,577%	2,202%
Schedule of Employer Contributions [c]	**FYE 2017**	**FYE 2018**
1. Actuarially Determined Contribution		
(a) Employer Normal Cost	$86,103	$78,417
(b) Amortization of Unfunded Actuarial Accrued Liability	$187,362	$184,900
(c) Actuarially Determined Contribution (ADC) (a + b)	$273,465	$263,317
2. Employer Contribution [b]	$246,178	$249,543
3. Premium Tax Allocation	$72,730	$73,146
4. Percentage of ADC Contributed [(2 + 3)/1(c)]	117%	123%

[a] *Suggested amortization policy to comply with GASB Statement Nos. 67 and 68 Standards.*
[b] *Estimated employer contribution for fiscal year ended June 30, 2018.*
[c] *Satisfies the Actuarially Determined Contribution as defined by GASB Statement Nos. 67 and 68.*

SECTION IV

ACTUARIAL VALUATION DATA AS OF JULY 1, 2017

Actuarial Valuation Data as of July 1, 2017
Schedule D: Reconciliation of Assets

Plan Year Ending	June 30, 2016	June 30, 2017
A. Market Value of Assets Beginning of Year	$1,274,365	$1,224,758
Adjustment to Market Value of Assets at Beginning of Year	$0	$0
Market Value of Assets Beginning of Year	$1,274,365	$1,224,758
1. Revenue During Fiscal Year		
(a) Employee Contribution	$10,856	$12,243
(b) Governmental Contribution		
(i) From Local Government	$224,370	$246,178
(ii) From State Government	$60,938	$72,730
(iii) Reallocation from State Government	$0	$0
(iv) Total	$285,308	$318,908
(c) Earnings on Investments		
(i) Net Appreciation/(Depreciation)	($67,238)	$101,067
(ii) Bond Interest	$0	$6
(iii) Dividends	$12,120	$12,142
(iv) Net Realized Gain (Loss) on Sale/Exchange	$49,333	$29,683
(v) Other	$6	$0
(vi) Less Investment Expense	($10,056)	($10,385)
(vii) Total	($15,835)	$132,513
(d) Other Revenue	$0	$0
(e) Receivable Investment Income/(Expense)	$0	$0
(f) Receivable Contribution [a]		
(i) From Employee Contributions	$0	$0
(ii) From Local Government	$0	$0
(iii) From State Government	$0	$0
(iv) Total	$0	$0
(g) Total Revenue (sum of (a) through (f))	$280,329	$463,664
2. Expenditures During Fiscal Year		
(a) Benefits Paid	$329,316	$325,193
(b) Withdrawals	$0	$0
(c) Administrative Expenses	$620	$400
(d) Payable Benefits and Withdrawals	$0	$0
(e) Payable Administrative Expenses	$0	$0
(f) Total Expenditures (sum of (a) through (e))	$329,936	$325,593
B. Market Value of Assets End of Year [A + 1(g) - 2(f)]	$1,224,758	$1,362,829
C. Approximate Return on Assets	(1.31)%	10.76%

[a] *Receivable contributions for each respective plan year ending.*

Actuarial Valuation Data as of July 1, 2017
Schedule E: Assets Held by Category

Plan Year Ending	June 30, 2016		June 30, 2017	
1. Cash and Short-term Investments	$140,819	11%	$253,586	19%
2. Government Securities				
(a) US Treasury Bills, Notes and Bonds	$0		$0	
(b) US State and Local Governmental Debt Securities	$0		$0	
(c) Foreign Governmental Debt Securities	$0		$0	
(d) Other	$0		$0	
(e) Total Government Securities (sum of (a) through (d))	$0	0%	$0	0%
3. Corporate Fixed Income				
(a) US Bonds	$0		$0	
(b) US Mortgage or other Asset Backed Securities	$116,956		$0	
(c) US Mutual Fund Shares (Bonds)	$237,005		$238,312	
(d) US Exchange Traded Funds (Bonds)	$0		$0	
(e) International Bonds	$0		$0	
(f) International Mutual Fund Shares (Bonds)	$0		$0	
(g) International Exchange Traded Funds (Bonds)	$0		$0	
(h) Total Corporate Fixed Income (sum of (a) through (g))	$353,961	29%	$238,312	17%
4. Corporate Equity				
(a) US Equity	$0		$0	
(b) US Mutual Fund Shares (Equity)	$585,769		$701,134	
(c) US Exchange Traded Funds (Equity)	$0		$0	
(d) International Equity	$0		$0	
(e) International Mutual Fund Shares (Equity)	$144,209		$169,797	
(f) International Exchange Traded Funds (Equity)	$0		$0	
(g) Total Corporate Equity (sum of (a) through (f))	$729,978	60%	$870,931	64%
5. Alternative Investments				
(a) Real Estate Investment Trust	$0		$0	
(b) Private Equity Fund	$0		$0	
(c) Hedge Funds	$0		$0	
(d) Other Alternative Investments	$0		$0	
(e) Total Alternative Investments (sum of (a) through (d))	$0	0%	$0	0%
6. Other	$0	0%	$0	0%
7. Receivable Contributions				
(a) From Employee Contributions	$0		$0	
(b) From Local Government	$0		$0	
(c) From State Government	$0		$0	
(d) Total Receivable Contributions (sum of (a) through (c))	$0	0%	$0	0%
8. Accruals				
(a) Receivable (other than State and Local Contributions)	$0		$0	
(b) Less Payable	$0		$0	
(c) Total	$0	0%	$0	0%
Market Value of Assets End of Year [sum of (1) through (8)]	**$1,224,758**		**$1,362,829**	

Actuarial Valuation Data as of July 1, 2017
Schedule F: Summary of Participant Activity

	Actives	Retirees	Disabled	Deferred Vested	Spouses and Beneficiaries	Totals
Total Participants July 1, 2016:	**4**	**10**	**2**	**0**	**3**	**19**
New Actives:						**0**
Returned to Actives Status:						**0**
Data Corrections/Other Changes:						**0**
Vested Terminations:						**0**
Non-Vested Terminations:						**0**
Disabled:						**0**
Retirements:						**0**
Deaths with Beneficiary:						**0**
Deaths w/o Beneficiary:					(1)	**(1)**
Expired Annuity or Stop Payment:						**0**
Net Changes:	0	0	0	0	(1)	**(1)**
Total Participants June 30, 2017:	**4**	**10**	**2**	**0**	**2**	**18**

Actuarial Valuation Data as of July 1, 2017

Schedule G: Distribution of Active Employees by Age and Length of Service

Attained Age	Less than 1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	Over 35	Totals	Valuation Payroll[a]
					Years of Service to Valuation Date						
Under 20											$ 0
20-24											$ 0
25-29											$ 0
30-34											$ 0
35-39			1							1	$ 44,628
40-44			1	1						2	$ 85,313
45-49					1					1	$ 48,082
50-54											$ 0
55-59											$ 0
60-64											$ 0
65-69											$ 0
Over 70											$ 0
Totals	0	0	2	1	1	0	0	0	0	4	$ 178,023

Averages

Age:	43.1	years
Service:	12.5	years
Annual Pay:	$44,506	[a]

[a] *Based on payroll at beginning of plan year.*

Actuarial Valuation Data as of July 1, 2017
Schedule H: Participants Summary

Active Participants	July 1, 2016	July 1, 2017
Number of Actives	4	4
Total Annual Pay	$158,339	$178,023
Average Age	42.1	43.1
Average Service	11.5	12.5

Inactive Participants	July 1, 2016		July 1, 2017	
Type	No.	Annual Benefit	No.	Annual Benefit
Retirees	10	$245,687	10	$248,517
Survivors	3	$41,962	2	$33,544
Disabled Members	2	$41,968	2	$42,508
Deferred Vested Members	0	$0	0	$0

SECTION V

ACTUARIAL ASSUMPTIONS AND METHODS

Actuarial Assumptions and Methods
Used in the Valuation as of July 1, 2017

Discount Rate

The following table outlines the factors used to determine the discount rate:

Funded Ratio as of Valuation Date [1]	Liquidity Ratio [2]	Equity Exposure [3]	Projected Funded Ratio after 15 Years [1]	Discount Rate
60% or more	10	50% or more	70% or more	6.5%
40% or more	8	40% or more	60% or more	6.0%
30% or more	6	30% or more	50% or more	5.5%
15% or more	4	n/a	40% or more	5.0%
Less than 15%	n/a	n/a	15% or more	4.5%
Less than 15%	n/a	n/a	Less than 15%	4.0%

[1]Funded ratios based on a 6.0% investment return assumption for plans using an actuarially sound policy (standard or optional) and a 5.5% investment return assumption for other plans (alternative or conservation).
[2]Liquidity ratio equals assets as of the actuarial valuation date divided by expected benefit payments for the year.
[3]Based on investment policy.

As of June 30, 2017	
Assets	$1,362,829
Liabilities using a 6.00% Discount Rate	$4,604,488
Funded Ratio	30%
Expected Benefit Payments	$329,301
Liquidity Ratio	4.14
Equity Exposure	64%
Projected Funded Ratio after 15 years	41%

Discount Rate	5.00%

The premium tax allocation is projected using the following methodology:

(1) The Base Allocation for all Pension and Relief Funds is a fixed amount equal to \$8,709,689 in all future years. This amount is allocated to each individual Pension and Relief Fund in proportion to the number of eligible members, which includes active members covered in either the Pension and Relief Fund or the statewide plan, Municipal Police Officers and Firefighters Retirement System ("MPFRS").

(2) The Excess Allocation is equal to the excess of the current year premium tax assigned to all Pension and Relief Funds over the total Base Allocation. This amount is allocated to each individual Pension and Relief Fund in proportion to the number of eligible active and retired members covered in either the Pension and Relief Fund or the MPFRS.

(3) We have assumed all Pension and Relief Funds will make the minimum statutory contribution requirement and will receive 100% of both the Base Allocation and the Excess Allocation assigned to the individual plan. Consequently, the projections do not include any reallocation of Expired Premium Tax Allocation for plan years beginning on and after July 1, 2019.

(4) The total available premium tax allocation, net of expenses, as of September 1, 2018, includes a Base Allocation of \$8,709,689, an Excess Allocation of \$9,570,473, and an Expired Premium Tax Allocation of \$237,031.

(5) For the plan year ending June 30, 2018, all Pension and Relief Funds reported a total of 1,717 eligible active members and 2,165 eligible retired members. The City of Moundsville Firemen's Pension and Relief Fund reported 4 eligible active members and 14 eligible retired members, based on the average number of plan participants for the 12-month period ending June 30, 2018. The Fund is eligible to receive a premium tax allocation of \$68,290 for the fiscal year ending June 30, 2019.

(6) The total premium tax allocation was assumed to increase by 2.75% in calendar years ending on and after 2019.

Actuarial Assumptions and Methods
Used in the Valuation as of July 1, 2017 (Continued)

General Inflation	2.75%
Expected Salary Increase Service-based Increase:	General Inflation: 2.75% *plus* Wage Inflation Increment: 1.00% *plus* Years of Service / Increase 1 — 20.00% 2 — 6.50% 3 — 3.50% 4 — 2.75% 5-9 — 2.50% 10-29 — 2.00% 30-34 — 1.25% after 34 years of service — 0.00%
Post-retirement COLA	2.75% on first $15,000 of Annual Benefit and on the accumulated supplemental pension amounts for prior years. Assumed to be payable to all members receiving payments.
Increase in State Insurance Premium Tax Allocation	2.75% on and after year 1
Cost Method	Entry-Age-Normal, Level-Percentage-of-Pay
Amortization Policies:	
Alternative Plans and former Alternative Plans that selected the Conservation Policy	For GASB 67/68 Accounting: 30 – Year Closed Level-Percentage-of-Pay Amortization (from July 1, 2010 – 23 years remaining as of July 1, 2017).
Standard Plans and former Standard Plans that selected the Optional Policy	For funding and GASB 67/68 Accounting: 40-Year Closed Level-Dollar Amortization (from July 1, 1991 – 14 years remaining as of July 1, 2017)
Former Alternative Plans that selected the Optional Policy	For funding: 40-Year Closed Level-Dollar Amortization (from January 1, 2010 – 32.5 years remaining as of July 1, 2017). For GASB 67/68 Accounting: 30-Year Closed Level-Percentage-of-Pay Amortization (from July 1, 2010 – 23 years remaining as of July 1, 2017)

Actuarial Assumptions and Methods
Used in the Valuation as of July 1, 2017 (Continued)

Asset Method	Market Value
Turnover	Sample Rates – Age / Rates 25 / 9% 35 / 4% 45 / 2% 50 / 0%
Retirement	Age / Rates[a] 50 / 45% 51-55 / 30% 56-59 / 35% 60 / 100% [a]*Terminated vested participants are assumed to retire at age 50.*
Mortality	Active: RP-2014 Blue Collar Healthy Employee[b] Post-Retirement: RP-2014 Blue Collar Healthy Annuitant Disabled: RP-2014 Blue Collar Healthy Annuitant set forward four years Tables above incorporate generational mortality improvement using MP-2014 2-dimensional mortality improvement scales [b]*Assumes 10% of deaths are duty-related and 90% are non-duty related.*
Disability	Sample Rates – Age / Rates[c] 30 / 0.22% 40 / 0.50% 50 / 0.79% [c] *Assumes 60% duty related and 40% non-duty related.Also assumes 10% of non-duty disabled members receive a 20% reduction in benefits due to gainful employment.*
Percent Married	90%
Spouse Age	Females 3 years younger than males

Actuarial Assumptions and Methods
Used in the Valuation as of July 1, 2017 (Continued)

Administrative Expenses	Plan year end June 30, 2018, expense based on plan year end June 30, 2017 expense increased by general inflation assumption. Future expenses assumed to increase by the general inflation assumption.
Refunds Paid	Assumes non-vested inactive members as of July 1, 2017, with accumulated member contribution balances will receive a refund of their contributions during plan year end June 30, 2018.
Data Adjustments and Assumptions	None
Child Beneficiaries	Future survivor widow benefits are loaded by 12% to estimate impact of benefits provided to survivor children. The load assumes 90% of members are married with two children at time of death, and benefits for each child are paid for approximately 8 years.
General Projection Methodology	Closed group projections assume: (i) Salaries will increase and members will decrement as specified in the actuarial assumption section. (ii) Assets grow at the assumed rate of return. (iii) The sponsor makes the statutory required contribution on a timely bases. (iv) Non-vested members with accumulated plan balances as of July 1, 2017, will receive a refund during plan year end June 30, 2018.
Decrement Timing	Mid-Year

SECTION VI

SUMMARY OF PRINCIPAL PLAN PROVISIONS

Summary of Principal Plan Provisions
Actuarial Valuation as of July 1, 2017

Employee Eligibility — All compensated employees of the Fire Department hired before March 16, 2010 are eligible to participate in the City of Moundsville Firemen's Pension and Relief Fund.

Average Annual Compensation — The average of any three twelve-consecutive-month periods of employment which produces the highest average annual compensation.

Each twelve-consecutive-month annual compensation is limited to 120% of the *Average Adjusted Salary* received by the member in the two consecutive twelve-consecutive-month periods immediately preceding the twelve-consecutive-month period used in determining benefits.

The *Average Adjusted Salary* is base salary (exclusive of all overtime and other pay) of the year used in determining benefits multiplied by the ratio of total salary (includes all overtime and other pay) to base salary from the respective preceding twelve-consecutive-month period.

Determining Years of Service Credit (Credited Service**)** — The number of years that the member has contributed to the employees retirement and benefit fund.

Prior Military Service — A city may provide that members who have been honorably discharged from the military shall receive up to two years prior service credit for military service prior to their employment with the city.

Current Military Service — Any current member who has been on qualified military service in the armed forces of the United States with an honorable discharge may, within six months from his or her date of discharge, be given credit for continuous service in the paid police or fire department.

Any member who has served in active duty with the armed forces of the United States, whether prior to or subsequent to becoming a member of a paid police or fire department, shall receive one additional percent for each year so served in active military duty, up to a maximum of four additional percent.

Absence from the service because of sickness or injury for a period of two years or less shall not be construed as time out of service.

Contributions — Participating employees contribute 7.0% of compensation. Participating employees hired on or after January 1, 2010 contribute 9.5% of pay. The municipality has elected to contribute the minimum employer contribution under the Optional funding policy.

Normal Retirement — Members are eligible at the earlier of age 50 with 20 years of credited service or age 65.

Benefit Commencement — Annual retirement pension benefits commence upon retirement or upon the member attaining age fifty, whichever is later, payable in twelve monthly installments.

Summary of Principal Plan Provisions
Actuarial Valuation as of July 1, 2017 (Continued)

Accrued Benefit — The annual retirement benefit equals 60% of average annual compensation, not less than $6,000, plus an additional percentage of average annual compensation for service over 20 years equal to 2% for each year of service between 20 and 25 and 1% for each year of service between 25 and 30 years. Employees serving in the military are eligible for an additional 1% of average annual compensation for each year of military service up to four years. The maximum benefit is limited to 75% of average annual compensation. Benefits continue for life.

Disability Retirement — Members are eligible after earning five years of service. No service requirement if disability is service related.

The monthly disability benefit equals the greater of 60% of monthly salary at disability or $500. Employees serving in the military are eligible for an additional benefit of 1% of monthly salary at disability for each year of military service up to four years. Disability benefits, when aggregated with monthly state workers compensation benefits, shall not exceed 100% of the member's monthly compensation at the time of disability. Benefits continue for life or until recovery.

Death Benefits — Members are eligible after earning five years of service. No service requirement if death is service related. Retirees and terminated vested participants are also eligible.

The benefit is equal to 60% of the participant's benefit, but not less than $300 per month, payable to the spouse until death or remarriage. Other dependents (children, parents, brothers and sisters) are also eligible for death benefits. To each dependent child, twenty percent of the participant's benefit until the child attains 18 or marries; to each dependent orphaned child, 25 percent of the participant's benefit until the child attains 18 or marries; to each dependent parent, 10 percent of the participant's benefit for life, and to each dependent brother or sister, the sum of 50 dollars per month (but a total not to exceed $100 per month) until such individual attains the age of 18 years or marries.

In no case shall the payments to the surviving spouse and children be reduced below 65 percent of the total amount paid to all dependents.

Supplemental Pension Benefits — All retirees, surviving beneficiaries and disability pensioners are eligible for automatic cost-of-living benefits commencing on the first day of July following two years of retirement. The benefits equal the percentage increase in the Consumer Price Index, limited to 4% (2% for some disability retirees), multiplied by the sum of the allowable amount which is the first $15,000 of the total annual benefits paid and the accumulated supplemental pension amounts for prior years.

Termination Benefits — Any member who terminates employment prior to retirement will be entitled to a refund of contributions without interest.

Refunds — Any member who terminates from their department without receiving a retirement pension shall be refunded all deductions made from his salary, without interest.