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

Actuarial Valuation Report for the Year Beginning July 1, 2017

September 20, 2018

Mr. Mark Spickler
Finance Director
232 North Queen Street
Martinsburg, WV 25401

Firefighter Michael Kelly Bowers
Pension Board Secretary
City of Martinsburg Firemen's Pension and Relief Fund

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

Dear Mr. Spickler and Firefighter Bowers:

Upon the request of the Municipal Pensions Oversight Board, we have performed an actuarial valuation as of July 1, 2017, for the City of Martinsburg, 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, based on the selected funding policy, i.e. the Alternative funding policy as defined in West Virginia Code §8-22-20(c)(1)
- 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 also provides illustrative projections under two other funding policies available to the sponsor – the Optional funding policy as defined in West Virginia Code §8-22-20(e), and the Conservation funding policy as defined in West Virginia Code §8-22-20(f).

West Virginia Code §8-22-20 (c)(4), requires (1) a review of the actuarial assumptions and methods at least once every five years and (2) 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 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 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 a list of assets held as of June 30, 2017, by investment category, were provided by the Fund.

Plan Provisions – A summary of the key plan provisions valued are set forth in Section VII 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 VI of the report: Actuarial Assumptions and Methods.

Actuarial Assumptions – The actuarial assumptions used include a discount rate of 4.00%. The actuarial assumptions used in the actuarial valuation are set forth in Section VI 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

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

Lance J. Weiss

Lance J. Weiss, EA, MAAA, FCA
Senior Consultant

Contents

SECTION I

ACTUARIAL VALUATION RESULTS AS OF JULY 1, 2017

Executive Summary

Upon the request of the Municipal Pensions Oversight Board (MPOB), we have performed an actuarial valuation as of July 1, 2017, for the City of Martinsburg, 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 Alternative funding policy as defined in West Virginia Code §8-22-20 (c)(1).

The key features of the Alternative funding policy, effective as of June 30, 1991, are summarized below:

- The sponsor's initial Alternative contribution effective for plan year 1991 is the greater of 107% of the amount contributed for the plan year ended June 30, 1990, or the highest five-year average of contributions made since 1984.

- Sponsor contributions made in subsequent years cannot be less than 107% of the contribution made in the prior fiscal year.

- The actuary must certify in writing that the Fund is projected to be solvent under the Alternative funding policy for the next consecutive 15-year period. A plan is deemed to be solvent if projected assets are greater than zero over the 15-year projection period.

- Beginning September 1, 2003, any municipality which elected the Alternative funding policy has the option of reverting to the Standard funding policy if the plan's funded ratio is greater than 80%. In this case, the Standard minimum contribution equals the normal cost plus the amortization of the unfunded liability over a period of not more than 40 years commencing from July 1, 1991, less the allocable portion of the state premium tax fund for municipal pension and relief funds.

- Plan members hired before January 1, 2010, contribute 7.0% of pay; however, if elected by the Board of Trustees of the Plan, member contributions may be increased up to 9.5% of pay. The Board elected to increase member contributions to 8.0% of pay. Employees hired on or after January 1, 2010, contribute 9.5% of pay.

- The Plan also receives premium tax allocation assigned to the Fund for the plan year.

This report also provides illustrative projections under two other funding policies available to the sponsor – the Optional funding policy as defined in West Virginia Code §8-22-20(e), and the Conservation funding policy as defined in West Virginia Code §8-22-20(f).

The sponsor made a contribution of $738,972 for the fiscal year end June 30, 2017. The sponsor's minimum statutory contribution for fiscal year 2017 was $663,971, based on the Alternative funding contribution in the July 1, 2016 valuation report. The additional contributions in excess of the statutory minimum slightly improved the funded status of the pension fund.

The following table provides the Plan's funded status:

Funded Status as of:	July 1, 2017
Assets	$2,734,963
Actuarial Accrued Liability	$36,293,902
Unfunded Actuarial Accrued Liability	$33,558,939
Funded Ratio	7.54%

The following table provides the employer contributions for the fiscal year ended June 30, 2018, under the Alternative funding policy:

Employer Contributions for FYE:	June 30, 2018
FYE 06/30/2017 Alternative Contribution	$663,971
7% Increase in Alternative Contribution	$46,478
FYE 06/30/2018 Alternative Contribution	$710,449
Additional Contribution	$0
Final FYE 06/30/2018 Alternative Contribution	$710,449

The following table provides the estimated employer contributions for the fiscal year ending June 30, 2019, under the Alternative funding policy:

Estimated Employer Contributions for FYE:	June 30, 2019
FYE 06/30/2018 Alternative Contribution	$710,449
7% Increase in Alternative Contribution	$49,731
FYE 06/30/2019 Alternative Contribution	$760,180
Additional Contribution to satisfy 15-year Solvency Test on an Open Group Basis (to receive 100% of the State Premium Tax Allocation)	$0
Estimated Employer Contribution for FYE 06/30/2019 to receive 100% of the State Premium Tax Allocation	$760,180
Additional Contribution to satisfy 15-year Solvency Test on a Closed Group Basis (to grant Supplemental Benefits; i.e. COLA increases)	$0
Estimated Employer Contribution for FYE 06/30/2019 to receive 100% of the State Premium Tax Allocation and to grant Supplemental Benefits; i.e. COLA increases	$760,180

A sponsor using the Alternative funding policy must satisfy the solvency test, as referenced in West Virginia Code section §8-22-20 (c)(1) in order to receive 100% of the State premium tax allocation, or grant Supplemental Benefits to plan members. We understand that the minimum requirement to satisfy the statutory solvency test includes a demonstration that the assets are projected to be greater than zero over a 15-year period. The statutes also require that an actuary perform the projection and certify the solvency test. However, the statutes provide little guidance on the parameters used to perform the solvency projections.

Under the current minimum statutory requirements, a sponsor of a poorly funded plan could provide Supplement Benefits to members, effectively deplete assets over a 15-year period, and have no available assets reserved to pay the benefits of current or future retirees after the 15-year period. For this reason, we recommend performing projections that include a margin for conservatism and satisfy the minimum statutory requirement for solvency. For this purpose we recommend performing projections that assume contributions for members hired after the actuarial valuation date will not be used to finance the unfunded liabilities of current members as of the actuarial valuation date. That is, assets and liabilities associated with new plan members are excluded from the solvency projections used to certify the solvency test for purposes of providing Supplemental Benefits. In this report projections that exclude new members are called “Closed Group Projections.”

The statutes also require that the Plan satisfy the solvency test in order to receive the State premium tax allocation. For this purpose we recommend using less conservatism in the projections in order to ensure that the Plan receives the greatest allowable State premium tax allocation. A projection that includes assets and liabilities for members hired after the actuarial valuation would be less conservative. In this report projections that include new members are called “Open Group Projections.”

The sponsor is projected to satisfy the 15-year solvency test without making additional annual contributions in excess of the minimum alternative contribution. **However, given that the funded ratio as of June 30, 2017, is only 7.54%, and that the ratio of assets to expected benefits for the year is only 1.97, we strongly recommend that the sponsor make additional contributions in excess of the statutory minimum.**

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 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, including any additional amounts needed to satisfy the 15-year solvency test on an open group projection basis, 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.*

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 actuarial assumptions are fully disclosed in Section VI of the report.
- The interest rate used to discount liabilities remained the same for the July 1, 2016 and July 1, 2017 actuarial valuations.
    - 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 VI of the report. As of July 1, 2017, the Plan's funded ratio of 9% (using a testing interest rate of 5.50% for all plans using the Alternative funding policy), ratio of assets to benefits of 1.97, equity allocation of 63%, and 15-year projected funded ratio of 15%, resulted in a recommended discount rate assumption of 4.00%.
- The Fund experienced an approximate annualized return of 11.03% on the market value of assets during the plan year ended June 30, 2017, which compares to the expected annualized return of 4.00%. The difference in actual versus expected return produced an asset (gain)/loss of ($186,763).
- 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 ($510,057) due to these events.

Alternative Funding

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

Based on the open group projections shown in Table 2, page II-2 and assuming that the sponsor makes the statutory required contributions, if all actuarial assumptions are realized in the future, including an investment return of 4.00%:

- The funded ratio is projected to decrease from 8% at June 30, 2017, to 6% at June 30, 2021, and then increase slowly to 10% at June 30, 2031, and then increase slowly to 76% at June 30, 2057.
- Employer contributions are expected to increase from $710,449 (or 35% of pay) for the fiscal year end June 30, 2018, to $9,942,606 (or 115% of pay) for fiscal year end June 30, 2057.

Please note that a funded ratio of only 8% at June 30, 2017, which declines to 6% at June 30, 2021, means that the plan is severely underfunded and is effectively operating on a pay-as-you-go basis.

Executive Summary (Continued)

<u>The Alternative funding policy is not consistent with generally accepted actuarial principles because it does not recognize emerging gains or losses.</u>

A funding policy consistent with generally accepted actuarial principles is typically based on the sponsor contributing the normal cost net of employee contributions plus an amortization of the unfunded actuarial accrued liability. The annual amortization amount is generally 6% to 7% of the unfunded actuarial accrued liability. Under state statute, the annual premium tax allocation can only be used to finance the amortization of the unfunded actuarial accrued liability. For fiscal year end 2019, the Alternative funding policy contribution of $760,180 is sufficient to finance only 74% of the net employer normal cost of $1,020,983. The state premium tax allocation of $358,686 is sufficient to finance only 1.1% of the unfunded actuarial accrued liability of $33,558,939.

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 funded is heavily dependent on the City contributing the minimum employer contribution calculated under the Alternative 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 Fund.

Please understand that minimum employer contribution calculated under the Alternative funding policy as defined in West Virginia Code 8-22-20 (c)(1) is just that – the minimum that needs to be contributed each and every year. Because this is a severely underfunded plan, we continue to 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 Alternative funding policy) are not made or investment return is less than the assumption of 4.00%, the funded ratio will be lower and the cash flow strain could be higher. If another significant market downtown occurs while the plan's funded ratio is declining, the plan may need to liquidate assets in order to pay benefits which could have a further adverse effect on the funded status of the System.

Under the Alternative funding policy, City contributions increase by seven percent and do not change as a result of emerging actuarial experience. However, emerging experience gains and losses could impact the Plan's funded ratio as follows:

- If the actual return on assets is *less* than the assumed return of 4.00%, then the funded ratio will *decrease*. Conversely, if the actual return on assets is *greater* than the assumed return of 4.00% then the funded ratio will *increase*.
- If salaries *increase* by more than assumed, the funded ratio could *decrease*. If salaries *decrease* by more than assumed, the funded ratio could *increase.*
- If active members retire *sooner* than expected, the funded ratio will generally *decrease.* If active members retire *later* than expected, the funded ratio will generally *increase*.
- If active members become disabled during the year, the funded ratio could *decrease*.
- If retired members die *later* than expected, the funded ratio will *decrease*. If retired members die *sooner* than expected, the funded ratio will *increase*.

- If the general inflation is *greater* than assumed, supplemental benefits will be greater than assumed and the funded ratio will *decrease*. Conversely, if general inflation is *lower* than assumed, the funded ratio will *increase*.

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		4.00%		4.00%
Cost-of-Living Adjustment		2.75%		2.75%
Wage Inflation		3.75%		3.75%
Expected Payroll		$1,962,902		$2,039,496
Average Pay		$54,525		$56,653
Expected Benefit Payments		$1,323,695		$1,391,243
1. Actuarial Accrued Liability	No.		No.	
(a) Actives	36	$12,964,993	36	$12,641,850
(b) Retirees	22	$18,289,588	23	$19,260,589
(c) Survivors	5	$1,420,445	4	$1,252,149
(d) Disabled Members	9	$2,969,626	9	$3,139,314
(e) Deferred Vested Members	0	$0	0	$0
(f) Total	72	$35,644,652	72	$36,293,902
2. Present Value of Future Normal Costs		$14,070,468		$14,909,804
3. Present Value of Benefits (1(f) + 2)		$49,715,120		$51,203,706
4. Market Value of Assets		$2,564,464		$2,734,963
5. Unfunded Actuarial Accrued Liability (1(f) - 4)		$33,080,188		$33,558,939
6. Funded Ratio (4 / 1(f))		7.19%		7.54%
7. Net Employer Normal Cost				
(a) Normal Cost		$1,138,698		$1,182,646
(b) Administrative Expenses		$8,238		$8,577
(c) Gross Normal Cost (a + b)		$1,146,936		$1,191,223
(d) Employee Contribution Rate [a]		8.28%		8.35%
(e) Expected Employee Contributions		$162,567		$170,240
(f) Net Employer Normal Cost (c - e)		$984,369		$1,020,983
(% of Compensation)		50.15%		50.06%
		FYE 2018		**FYE 2019**
8. Estimated Minimum Employer Contribution [b]				
(a) Prior Year Alternative Contribution		$663,971		$710,449
(b) Increase in Alternative Contribution		7.00%		7.00%
(c) Current Year Alternative Contribution		$710,449		$760,180
(d) Additional Contribution		$0		$0
(e) Alternative Contribution (c + d)		$710,449		$760,180

[a] Blended rate reflecting 8.0% for members hired before January 1, 2010, and 9.5% for members hired after January 1, 2010.

[b] Estimated Minimum Employer Contribution is based on Alternative funding policy and is assumed to be made in plan year ending June 30, 2019.

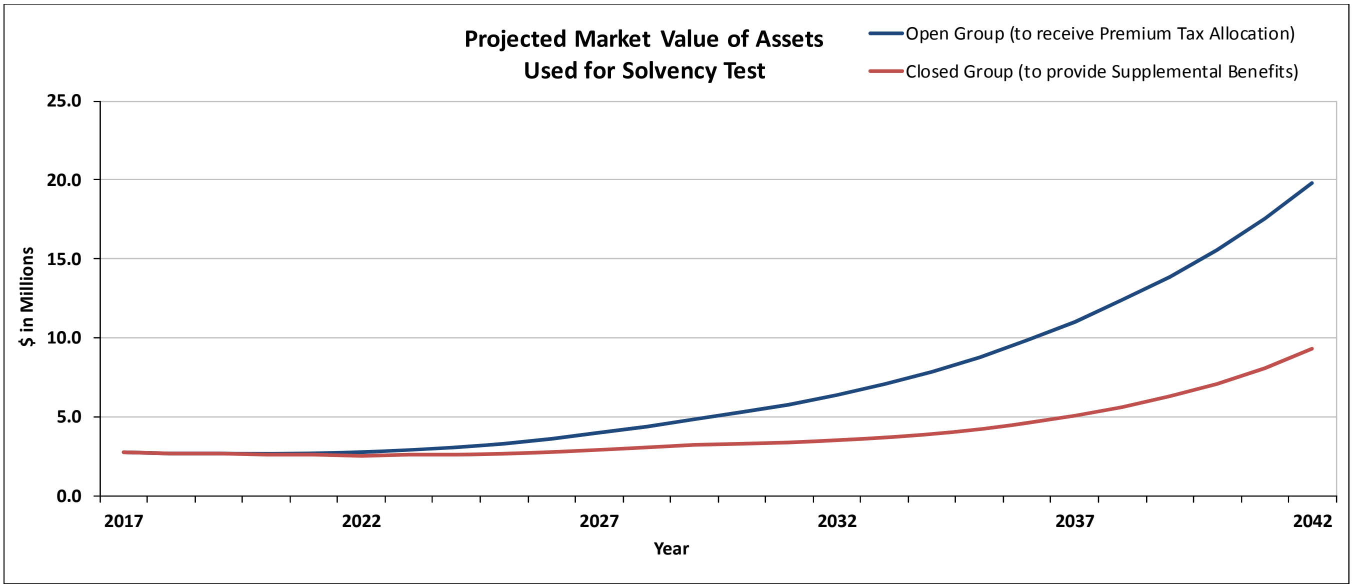
Schedule B: (Gain)/Loss Analysis

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

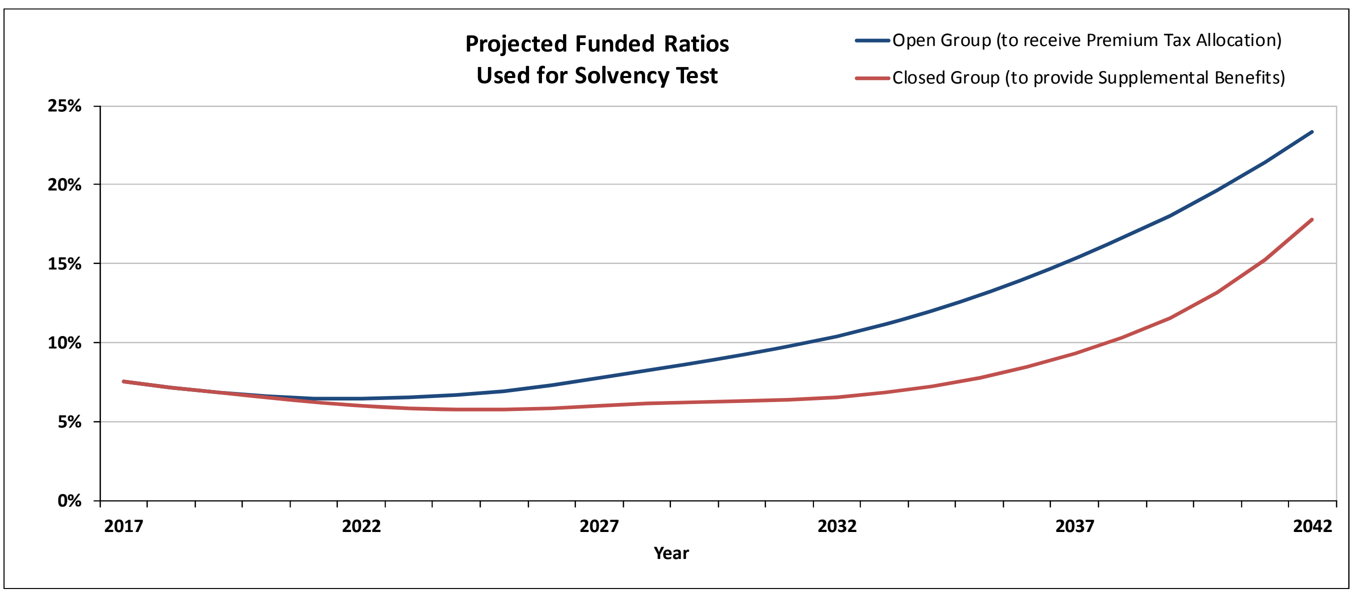
1.	(a) Actuarial Accrued Liability as of 7/1/2016	$35,644,652
	(b) Normal Cost due 7/1/2016	$1,138,698
	(c) Interest on (a) and (b) to 6/30/2017	$1,448,560
	(d) Benefit Payments with interest to 6/30/2017	$1,427,951
	(e) Effect of Assumption Changes	$0
	(f) Expected Liability at 7/1/2017 [(a) + (b) + (c) - (d) + (e)]	$36,803,959
	(g) Actual Liability at 7/1/2017	$36,293,902
	(h) Liability (Gain)/Loss [(g) - (f)]	**($510,057)**
2.	(a) Market Value of Assets as of 7/1/2016	$2,564,464
	(b) Interest on (a) to 6/30/2017	$102,927
	(c) Contributions with interest to 6/30/2017	$1,308,760
	(d) Benefit Payments with interest to 6/30/2017	$1,427,951
	(e) Expected Assets at 6/30/2017 [(a) + (b) + (c) - (d)]	$2,548,200
	(f) Actual Assets at 7/1/2017	$2,734,963
	(g) Asset (Gain)/Loss [(e) - (f)]	**($186,763)**
3.	Total (Gain)/Loss [1(h) + 2(g)]	**($696,820)**

Graphs 1A and 1B: Solvency Projections

Graph 1A



Graph 1B



SECTION II

ACTUARIAL PROJECTIONS

ALTERNATIVE FUNDING POLICY

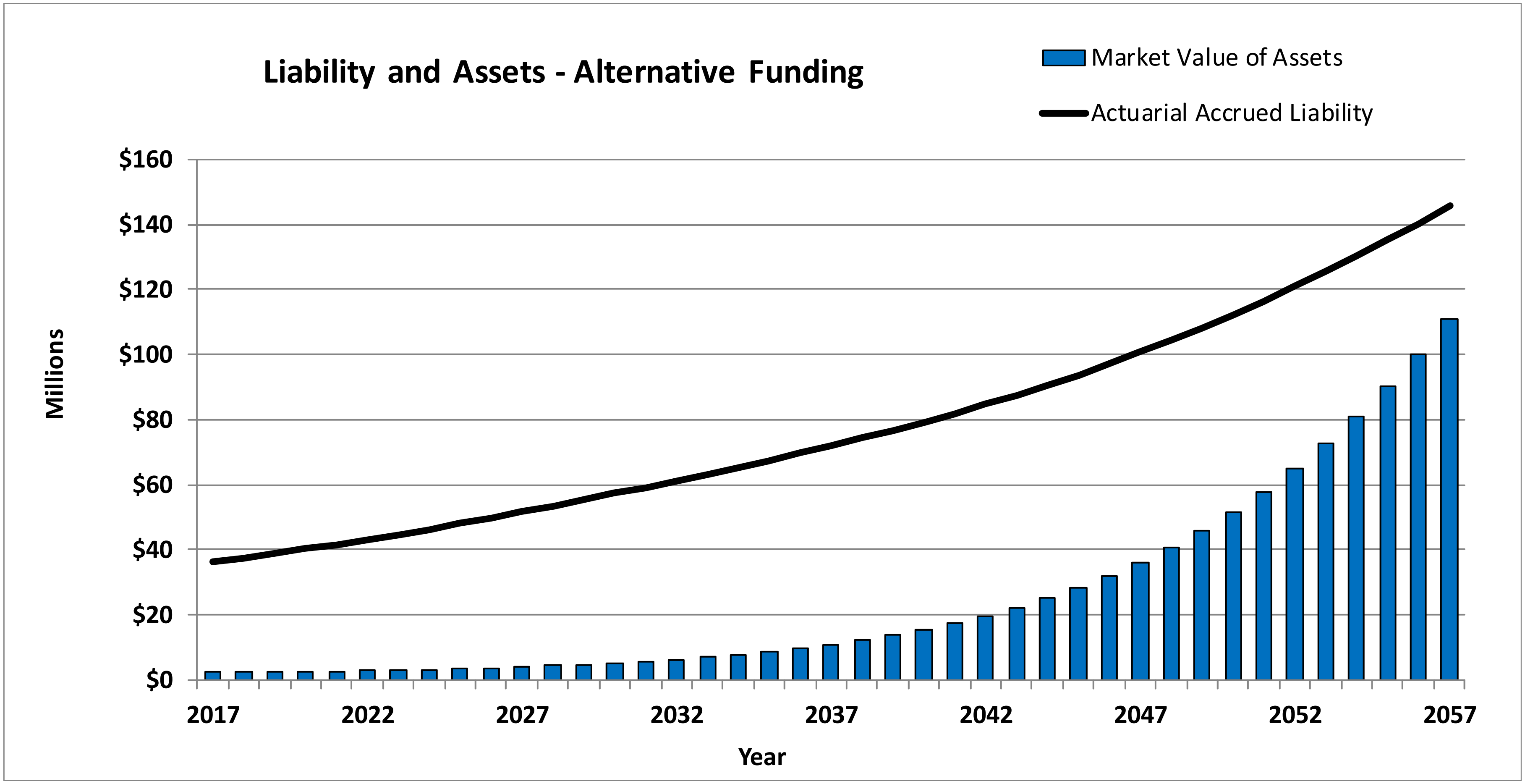
Alternative Funding on a Closed Group Basis, Table 1

Valuation				Total Assets										
Plan	Number								Premium Tax			Actuarial		
Year End		Pay	Total	Assets	Benefit		Employer	Member	Allocation	Investment	Assets	Accrued	Unfunded	Funded
30-Jun	Active	Status	Payroll	(boy)	Payments	Expenses	Contributions	Contributions	Contributions	Income	(eoy)	Liability	Liability	Ratio
2017	36	36	$1,962,902	$2,573,184	$1,400,171	$1,000	$738,972	$193,583	$350,495	$279,900	$2,734,963	$36,293,902	$33,558,939	8%
2018	34	36	2,039,496	2,734,963	1,391,243	8,577	710,449	170,240	359,039	106,228	2,681,099	37,533,193	34,852,094	7%
2019	32	37	2,041,737	2,681,099	1,414,252	8,635	760,180	170,495	358,686	104,600	2,652,172	38,798,427	36,146,255	7%
2020	30	38	2,022,272	2,652,172	1,462,667	8,709	813,393	168,958	343,025	103,196	2,609,368	40,050,648	37,441,280	7%
2021	29	38	2,014,646	2,609,368	1,502,235	8,792	870,331	168,372	337,651	101,708	2,576,402	41,305,514	38,729,112	6%
2022	27	39	2,008,771	2,576,402	1,538,924	8,884	931,254	167,956	334,523	100,797	2,563,124	42,567,331	40,004,207	6%
2023	26	39	2,007,086	2,563,124	1,576,519	8,989	996,442	167,914	330,881	100,737	2,573,590	43,837,900	41,264,310	6%
2024	25	39	2,007,460	2,573,590	1,620,271	9,102	1,066,193	168,069	329,572	101,646	2,609,698	45,114,851	42,505,153	6%
2025	24	39	2,006,342	2,609,698	1,665,415	9,217	1,140,827	168,126	327,629	103,634	2,675,282	46,396,936	43,721,654	6%
2026	22	40	2,012,667	2,675,282	1,697,522	9,333	1,220,685	168,798	326,870	107,200	2,791,980	47,700,772	44,908,792	6%
2027	21	40	1,988,749	2,791,980	1,757,663	9,460	1,306,133	167,067	325,829	112,311	2,936,197	48,979,915	46,043,718	6%
2028	19	42	1,904,769	2,936,197	1,849,414	9,585	1,397,562	160,546	323,519	117,896	3,076,721	50,163,886	47,087,165	6%
2029	17	43	1,786,024	3,076,721	1,963,358	9,719	1,495,391	151,265	318,263	122,907	3,191,470	51,203,435	48,011,965	6%
2030	15	44	1,655,874	3,191,470	2,078,796	9,850	1,600,068	141,087	313,741	126,990	3,284,710	52,083,718	48,799,008	6%
2031	13	45	1,552,942	3,284,710	2,172,035	9,977	1,712,073	133,094	308,349	130,825	3,387,039	52,837,656	49,450,617	6%
2032	11	46	1,454,152	3,387,039	2,260,401	10,097	1,831,918	125,441	306,800	135,356	3,516,057	53,469,120	49,953,063	7%
2033	10	46	1,356,967	3,516,057	2,346,356	10,211	1,960,152	117,927	303,380	141,135	3,682,084	53,977,007	50,294,923	7%
2034	9	46	1,276,647	3,682,084	2,419,387	10,315	2,097,363	111,768	302,883	148,914	3,913,311	54,381,130	50,467,819	7%
2035	8	46	1,202,719	3,913,311	2,479,867	10,408	2,244,178	106,138	302,063	159,743	4,235,158	54,694,403	50,459,245	8%
2036	7	46	1,095,954	4,235,158	2,565,952	10,497	2,401,270	97,378	303,033	173,867	4,634,258	54,869,546	50,235,288	8%
2037	6	46	944,499	4,634,258	2,674,037	10,577	2,569,359	84,370	301,334	190,726	5,095,433	54,852,445	49,757,012	9%
2038	4	47	800,636	5,095,433	2,772,686	10,649	2,749,214	72,067	300,524	210,520	5,644,423	54,651,716	49,007,293	10%
2039	3	46	640,557	5,644,423	2,886,154	10,711	2,941,659	58,238	300,409	233,767	6,281,632	54,239,530	47,957,898	12%
2040	3	46	514,614	6,281,632	2,962,640	10,764	3,147,575	47,065	300,549	261,599	7,065,016	53,663,754	46,598,738	13%
2041	2	45	439,380	7,065,016	2,993,216	10,808	3,367,905	40,467	301,747	296,584	8,067,695	52,992,086	44,924,391	15%
2042	1	45	344,799	8,067,695	3,041,379	10,844	3,603,658	31,879	303,736	340,275	9,295,020	52,193,116	42,898,096	18%
2043	1	44	249,273	9,295,020	3,085,850	10,874	3,855,914	23,093	304,723	393,328	10,775,354	51,265,281	40,489,927	21%
2044	1	43	195,600	10,775,354	3,090,826	10,899	4,125,828	18,196	306,652	457,728	12,582,033	50,266,227	37,684,194	25%
2045	1	42	154,945	12,582,033	3,084,235	10,920	4,414,636	14,480	308,735	535,813	14,760,543	49,211,849	34,451,306	30%
2046	0	42	110,293	14,760,543	3,081,545	10,938	4,723,661	10,337	311,096	629,091	17,342,245	48,094,473	30,752,228	36%
2047	0	41	70,364	17,342,245	3,073,441	10,955	5,054,317	6,610	313,507	739,041	20,371,324	46,919,995	26,548,671	43%
2048	0	40	47,853	20,371,324	3,048,469	10,971	5,408,119	4,516	316,201	867,718	23,908,437	45,712,425	21,803,988	52%
2049	0	39	30,746	23,908,437	3,018,578	10,988	5,786,687	2,921	318,959	1,017,314	28,004,751	44,478,279	16,473,528	63%
2050	0	38	20,192	28,004,751	2,983,166	11,006	6,191,755	1,918	321,876	1,189,927	32,716,055	43,225,455	10,509,400	76%
2051	0	37	14,248	32,716,055	2,943,866	11,025	6,625,178	1,354	324,928	1,387,790	38,100,413	41,959,560	3,859,147	91%
2052	0	36	8,451	38,100,413	2,903,958	11,046	3,621,949	803	328,051	1,544,529	40,680,741	40,680,741	0	100%
2053	0	35	4,214	40,680,741	2,862,467	11,069	12,710	400	0	1,570,582	39,390,897	39,390,897	0	100%
2054	0	34	2,829	39,390,897	2,818,583	11,093	12,200	269	0	1,519,844	38,093,534	38,093,534	0	100%
2055	0	33	1,898	38,093,534	2,773,963	11,118	11,856	180	0	1,468,824	36,789,314	36,789,314	0	100%
2056	0	33	768	36,789,314	2,728,975	11,143	11,442	73	0	1,417,536	35,478,247	35,478,247	0	100%
2057	0	32	0	35,478,247	2,683,070	11,167	11,166	0	0	1,365,995	34,161,171	34,161,171	0	100%

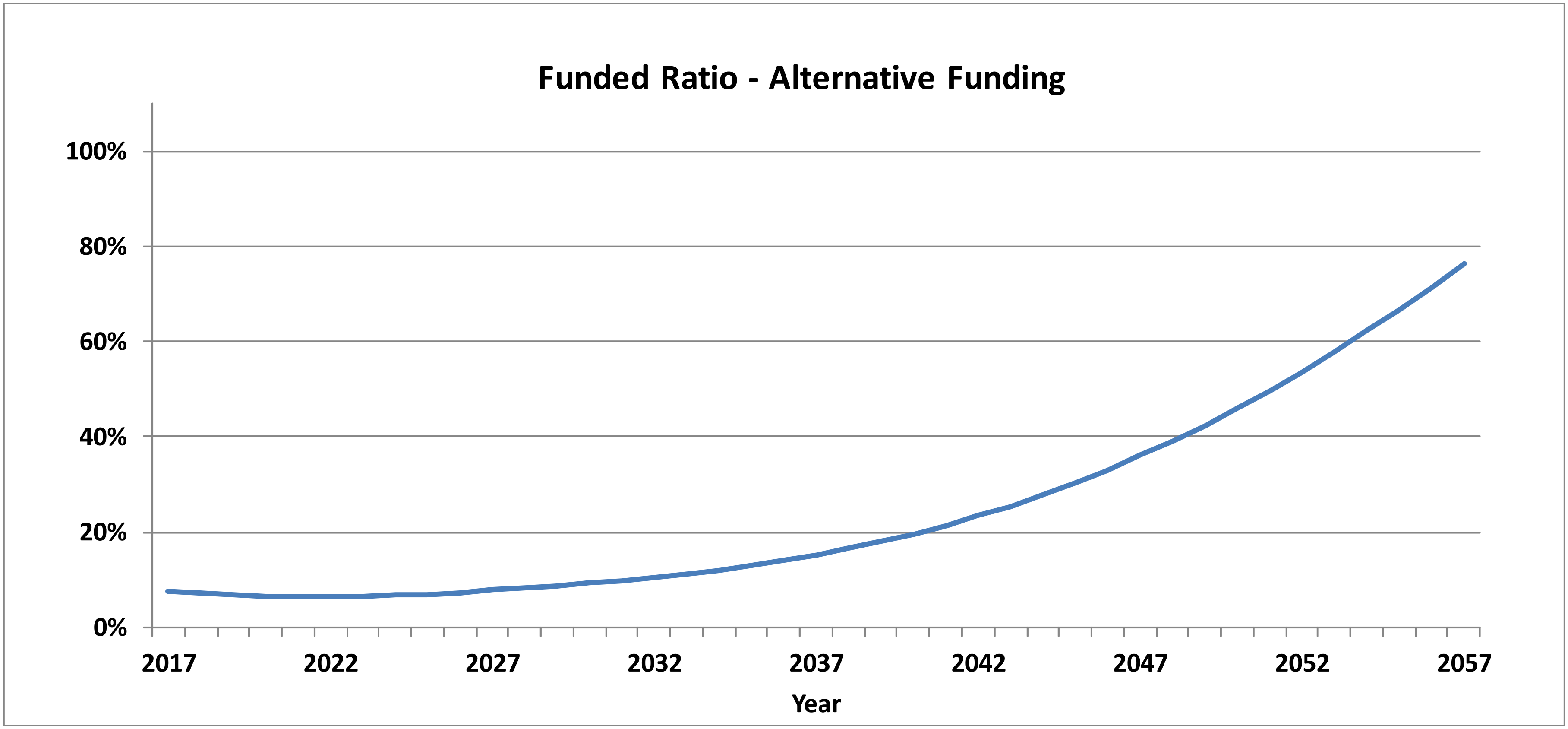
Alternative Funding on an Open Group Basis, Table 2

Valuation Plan Year End 30-Jun	Number Active	Number Pay Status	Total Payroll	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	36	36	$1,962,902	$2,573,184	$1,400,171	$1,000	$738,972	$193,583	$350,495	$279,900	$2,734,963	$36,293,902	$33,558,939	8%
2018	36	36	2,039,496	2,734,963	1,391,243	8,577	710,449	170,240	359,039	106,228	2,681,099	37,533,196	34,852,097	7%
2019	36	37	2,118,335	2,681,099	1,414,252	8,864	760,180	178,293	358,686	104,750	2,659,892	38,842,035	36,182,143	7%
2020	36	38	2,195,673	2,659,892	1,462,979	9,194	813,393	186,130	372,004	104,402	2,663,648	40,194,296	37,530,648	7%
2021	36	38	2,293,704	2,663,648	1,503,469	9,538	870,331	195,638	381,667	105,252	2,703,529	41,612,517	38,908,988	6%
2022	36	39	2,382,636	2,703,529	1,541,654	9,843	931,254	204,159	390,490	107,634	2,785,569	43,096,943	40,311,374	6%
2023	36	39	2,489,449	2,785,569	1,581,201	10,195	996,442	214,543	400,390	111,818	2,917,366	44,659,292	41,741,926	7%
2024	36	39	2,586,797	2,917,366	1,627,272	10,506	1,066,193	223,918	409,740	117,924	3,097,363	46,293,101	43,195,738	7%
2025	36	40	2,699,072	3,097,363	1,675,084	10,860	1,140,827	234,971	420,073	126,071	3,333,362	48,008,856	44,675,494	7%
2026	36	40	2,811,626	3,333,362	1,710,170	11,179	1,220,685	245,856	429,738	136,799	3,645,090	49,821,904	46,176,814	7%
2027	36	41	2,908,960	3,645,090	1,773,604	11,542	1,306,133	255,919	440,656	150,112	4,012,764	51,697,211	47,684,447	8%
2028	36	42	2,976,212	4,012,764	1,868,942	11,971	1,397,562	264,169	453,441	165,150	4,412,172	53,584,589	49,172,417	8%
2029	36	43	3,061,285	4,412,172	1,986,921	12,530	1,495,391	274,839	469,479	181,245	4,833,674	55,468,624	50,634,950	9%
2030	36	45	3,140,019	4,833,674	2,107,136	13,065	1,600,068	284,807	484,897	198,290	5,281,534	57,342,292	52,060,758	9%
2031	36	45	3,276,448	5,281,534	2,206,061	13,655	1,712,073	300,030	501,927	217,090	5,792,937	59,261,203	53,468,266	10%
2032	36	46	3,376,931	5,792,937	2,301,003	14,103	1,831,918	311,366	515,934	238,533	6,375,581	61,212,518	54,836,937	10%
2033	36	46	3,528,733	6,375,581	2,394,298	14,669	1,960,152	328,193	533,401	263,198	7,051,557	63,229,151	56,177,594	11%
2034	36	47	3,660,646	7,051,557	2,475,429	15,099	2,097,363	342,409	547,709	291,904	7,840,414	65,316,710	57,476,296	12%
2035	36	46	3,830,103	7,840,414	2,544,823	15,589	2,244,178	360,574	564,511	325,674	8,774,938	67,512,193	58,737,255	13%
2036	36	47	3,941,672	8,774,938	2,640,637	15,987	2,401,270	372,933	579,187	364,796	9,836,501	69,761,148	59,924,647	14%
2037	36	47	4,081,945	9,836,501	2,759,307	16,550	2,569,359	388,337	598,133	408,907	11,025,380	72,058,285	61,032,905	15%
2038	36	47	4,217,964	11,025,380	2,869,511	17,046	2,749,214	402,392	616,236	458,468	12,365,134	74,414,026	62,048,892	17%
2039	36	48	4,352,197	12,365,134	2,995,525	17,571	2,941,659	416,223	635,219	514,013	13,859,153	76,812,612	62,953,459	18%
2040	36	47	4,524,304	13,859,153	3,090,003	18,100	3,147,575	432,813	654,633	576,684	15,562,755	79,306,234	63,743,479	20%
2041	36	47	4,717,298	15,562,755	3,145,989	18,560	3,367,905	450,598	672,378	648,776	17,537,864	81,945,477	64,407,613	21%
2042	36	47	4,874,998	17,537,864	3,229,291	19,004	3,603,658	465,023	689,908	731,424	19,779,582	84,687,018	64,907,436	23%
2043	36	47	5,076,579	19,779,582	3,320,570	19,576	3,855,914	484,055	710,735	825,059	22,315,199	87,550,889	65,235,690	25%
2044	36	47	5,289,172	22,315,199	3,384,946	20,076	4,125,828	503,531	729,892	931,310	25,200,738	90,575,250	65,374,512	28%
2045	36	47	5,510,254	25,200,738	3,449,178	20,587	4,414,636	523,965	749,127	1,051,954	28,470,655	93,769,812	65,299,157	30%
2046	36	47	5,724,649	28,470,655	3,529,821	21,107	4,723,661	543,530	768,806	1,188,040	32,143,763	97,122,869	64,979,106	33%
2047	36	47	5,953,659	32,143,763	3,616,315	21,674	5,054,317	564,175	789,842	1,340,614	36,254,723	100,642,320	64,387,597	36%
2048	36	47	6,188,931	36,254,723	3,698,418	22,244	5,408,119	585,236	811,221	1,511,263	40,849,900	104,340,295	63,490,395	39%
2049	36	47	6,430,661	40,849,900	3,789,933	22,853	5,786,687	606,985	833,793	1,701,620	45,966,199	108,216,915	62,250,716	42%
2050	36	47	6,678,515	45,966,199	3,891,058	23,495	6,191,755	629,259	857,517	1,913,190	51,643,367	112,273,897	60,630,530	46%
2051	36	47	6,933,210	51,643,367	4,001,933	24,176	6,625,178	652,169	882,546	2,147,600	57,924,752	116,509,293	58,584,541	50%
2052	36	47	7,190,691	57,924,752	4,128,400	24,896	7,088,940	675,477	908,915	2,406,504	64,851,293	120,918,186	56,066,893	54%
2053	36	48	7,458,644	64,851,293	4,266,977	25,665	7,585,166	700,000	936,987	2,691,675	72,472,479	125,498,890	53,026,411	58%
2054	36	48	7,733,664	72,472,479	4,418,871	26,466	8,116,128	725,383	966,212	3,005,095	80,839,961	130,251,859	49,411,898	62%
2055	36	48	8,019,930	80,839,961	4,582,615	27,308	8,684,257	751,728	997,045	3,348,918	90,011,987	135,178,370	45,166,383	67%
2056	36	49	8,311,465	90,011,987	4,758,734	28,180	9,292,155	778,444	1,029,107	3,725,498	100,050,278	140,277,988	40,227,710	71%
2057	36	49	8,614,328	100,050,278	4,944,808	29,097	9,942,606	806,454	1,062,876	4,137,431	111,025,740	145,551,157	34,525,417	76%

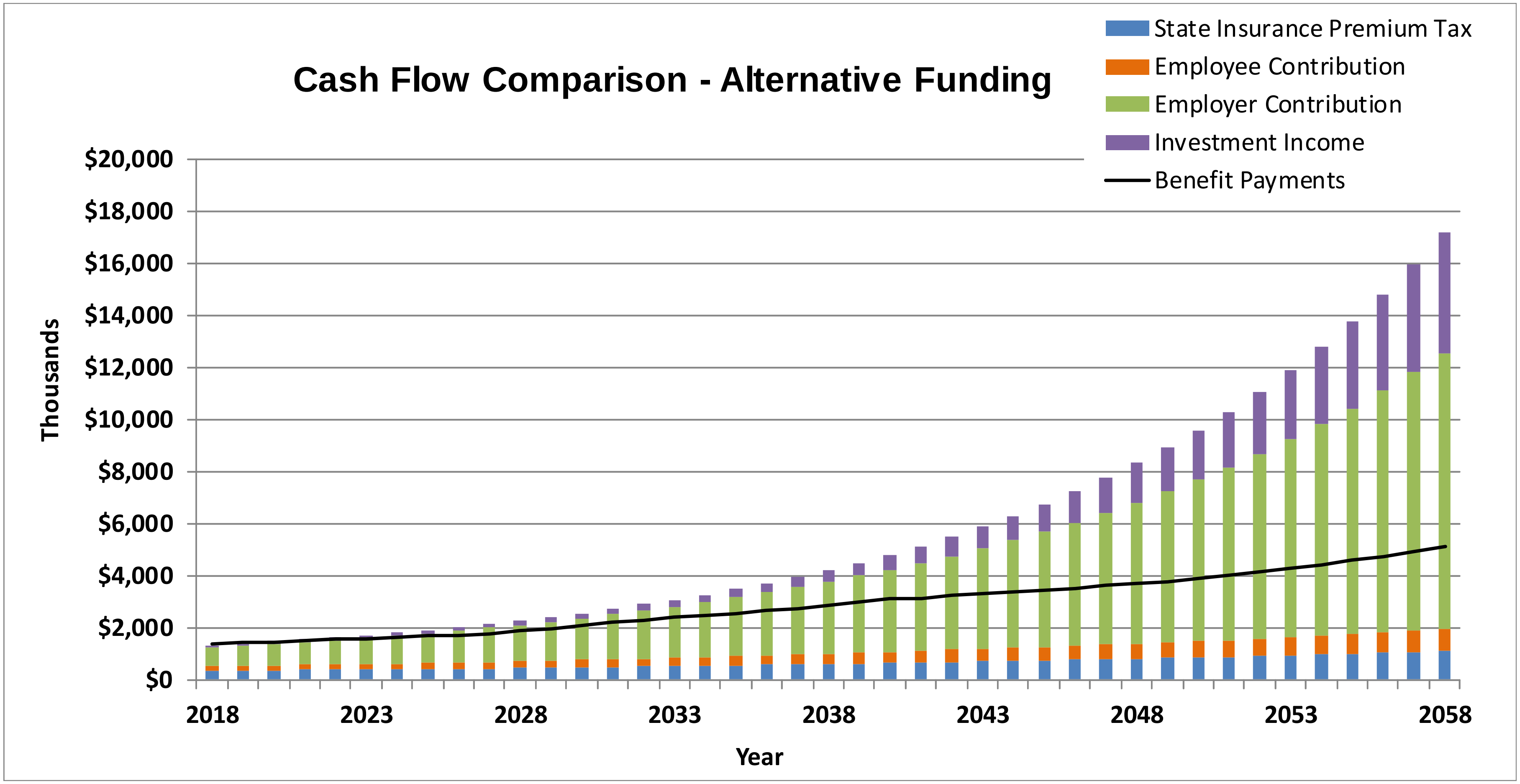
Open Group Actuarial Projections – Alternative Funding, Graph 2



Open Group Actuarial Projections – Alternative Funding, Graph 3



Open Group Actuarial Projections – Alternative Funding, Graph 4



SECTION III

FUNDING POLICY CHOICES

Actuarial Projections –Alternative/Optional/Conservation Funding

<u>Funding Policy Choices</u>

West Virginia Code §8-22-20 allows a municipality's governing body (City Council) the choice of changing from the Alternative funding policy to <u>either</u> the Optional funding policy or the Conservation funding policy. The Optional funding policy is defined in West Virginia Code §8-22-20(e)(1), and is effective for plan years beginning after January 1, 2010. The Conservation funding policy is defined in West Virginia Code §8-22-20(f)(1), and is effective for plan years beginning after April 1, 2011.

If the City Council elects either the Optional funding policy or the Conservation funding policy, the existing local Plan is closed, and new employees are covered in the multiple employer statewide plan - *Municipal Police Officers and Firefighters Retirement System.* Contributions to the statewide plan include:

- Employer contributions from 8.5% to 10.5% of pay. Currently, Employers contribute 8.5% of pay.

- Employee contributions of 8.5% of pay.

If the City Council elects the Optional funding policy, contributions to the closed local Plan include:

- 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.

- Employee contributions of 7% of pay if hired before January 1, 2010, which may be increased by up to 2.5% of pay if elected by the Board of trustees of the Plan. Employees hired after January 1, 2010, contribute 9.50% of pay.

- The premium tax allocation assigned to the Fund for the plan year.

If the City Council elects the Conservation funding policy, contributions to the closed local Plan are made to two asset accounts as follows:

- The first asset account (Benefit Payment Account) is used to finance benefits and expenses for the fiscal year on a pay-as-you-go basis. Sources to pay current year benefits and expenses include active member employee contributions in excess of 1.5% of pay, a portion of the premium tax allocation not assigned to the accumulation account as defined below, and employer contributions.

- The second account (Accumulation Account) cannot be used to pay benefits and expenses until assets exceed actuarial accrued liabilities. Contributions to the accumulation account include employee contributions of 1.5% of pay and a percentage of the premium tax allocation. The percentage of premium tax allocation is based on the amounts needed to produce 100% funding of liabilities in 35 years, from adoption, considering assets from both the benefit payment account and the accumulation account. This account also includes the Fund's assets prior to the adoption of Conservation funding policy.

Actuarial Projections –Alternative/Optional/Conservation Funding (Continued)

For purposes of evaluating the implication of selecting either the Optional funding policy or the Conservation funding policy, we have generated actuarial projections under the following two illustrative scenarios.

- Scenario I – The sponsor elects either the Optional funding policy or Conservation funding policy during fiscal year end June 30, 2019, and makes the newly elected contribution in fiscal year end June 30, 2019.
- Scenario II – The sponsor elects either the Optional funding policy or the Conservation funding policy at some future date when/if contributions are projected to be less than under the current Alternative funding policy.

It is important to note that the plan sponsor can make only one election to either the Optional funding policy or the Conservation funding policy, and that the election is irrevocable. The projections assume employer contributions of 10.5% of pay for future members covered under the statewide plan.

Given that the funded ratio as of June 30, 2017 is only 7.5% and that the ratio of assets to expected benefits for the year is only 1.97, we strongly recommend that the sponsor make additional contributions in excess of the statutory minimum under both the Alternative and Conservation funding policies.

<u>Scenario I – Sponsor Immediately Elects either the Optional or Conservation Funding Policy</u>

The following table shows the employer contribution for the fiscal year end June 30, 2019, if the sponsor elects either the Optional or Conservation funding policy in fiscal year end June 30, 2019:

Total Employer Contributions for FYE June 30, 2019				
	Local Plan		Statewide Plan	
Funding Method	**Amount**	**Percent of Pay**	**Amount**	**Percent of Pay**
Alternative	$760,180	35.9%	NA	NA
Optional	$2,489,265	121.9%	$8,043	10.5%
Conservation	$1,198,747	58.7%	$8,043	10.5%

Graphs I(1), I(2), and I(3) on the following pages show the projected contribution and funded ratio pattern of the three separate funding policies. If the sponsor continues to make contributions under the Alternative policy, employer contributions are projected to increase from $710,449 in fiscal year end 2018 to $9,942,606 in fiscal year end 2057. In fiscal year end 2057, the plan is projected to be 76% funded.

If the Optional funding policy is selected in fiscal year end 2019, employer contributions to the local plan for fiscal year end 2019 are projected to increase from $760,180 to $2,489,265. However, over the 40-year projection period, total employer contributions to both the local plan and the statewide plan are projected to decrease from $2,497,308 in fiscal year end 2019 to $1,669,857 in fiscal year end 2049, and the Plan is projected to be fully funded in 2050.

Actuarial Projections –Alternative/Optional/Conservation Funding (Continued)

If the Conservation funding policy is selected in fiscal year end 2019, employer contributions to the local plan for fiscal year end 2019 are projected to increase from $760,180 to $1,198,747. During the 35-year projection period, total employer contributions to both the local plan and the statewide plan are projected to increase from $1,206,790 in fiscal year end 2019 to $3,472,894 in fiscal year end 2051 and the Plan is projected to be fully funded in 2052.

The Optional funding policy is consistent with actuarial standards of practice and produces a relatively stable dollar contribution pattern and reasonable growth in the funded ratio.

The Conservation funding policy produces a less stable contribution pattern and slower growth in the funded ratio when compared to the Optional funding policy. The projections of employer contributions under the Conservation funding policy are dependent on the expected number of retirements, disabilities, and resulting benefit payments. Actual experience could produce a significantly higher number of retirements, disabilities, and benefit payments, which would increase the employer's required contribution under the Conservation funding policy. Unlike the Optional funding policy, the Conservation funding policy does not have a built-in feature to smooth out emerging gains and losses.

The Alternative funding policy produces a lower funded ratio when compared to either the Optional funding policy or the Conservation funding policy, and the 7% annual increases in employer contributions may eventually be cost prohibitive.

The details of the Optional and Conservation funding policy projections can be found in the Appendix. The details of the Alternative funding policy projection were presented in Section II.

<u>Scenario II – Sponsor Elects Optional or Conservation Policy if/when Contributions are Lower</u>

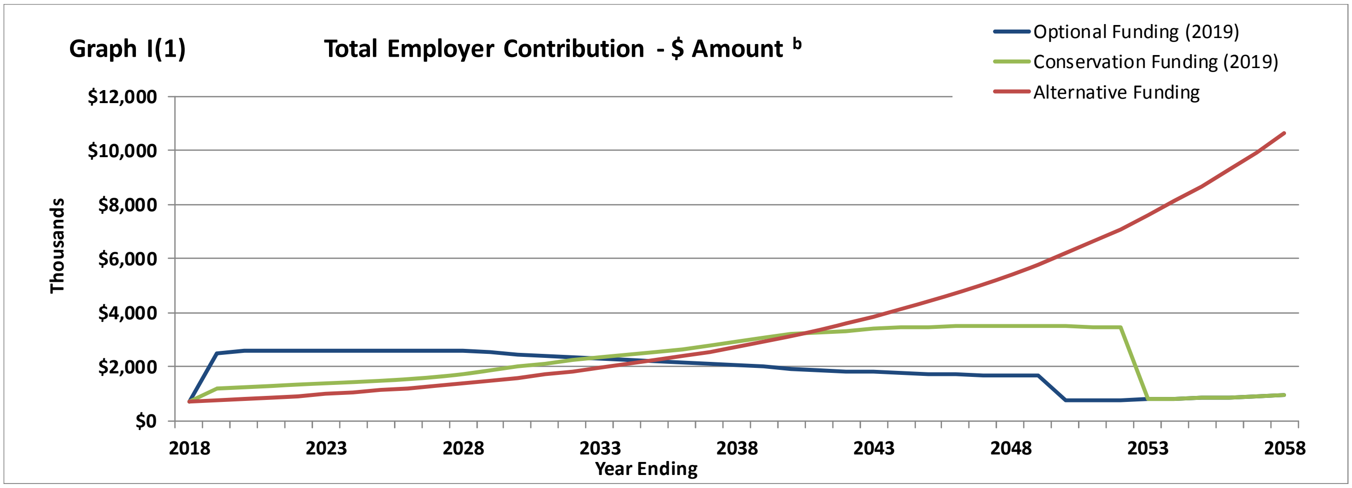
Under Scenario II, the plan sponsor is assumed to make contributions under the Alternative funding policy in future years, until the first year that either the Optional or Conservation policy produces a lower contribution. Under this assumption, the employer contributions under the Optional funding policy are not projected to be lower than contributions under the Alternative funding policy. In plan year end 2034, the employer contributions under the Conservation funding policy of $2,023,511 are projected to be lower than contributions under the Alternative funding policy of $2,097,363.

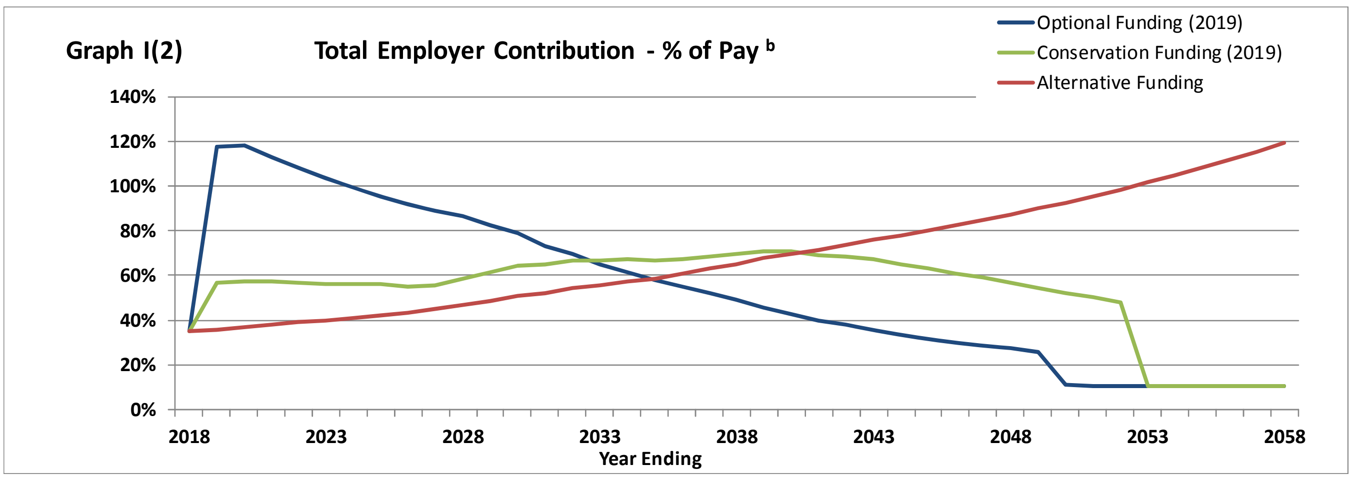
Graphs II(1), II(2), and III(3) show the projected contribution pattern and funded ratio. Based on these projections, the Conservation funding policy has lower projected employer contributions than the Alternative funding policy beginning in 2034. After 2034, the funded ratio under the Conservation funding policy increases at a lower rate than the Alternative funding policy. As stated above, however, the Conservation funding policy is dependent on expected benefits payments when considering the *<u>expected number of retirement and disabilities.</u>* The ultimate employer contributions depend on the *<u>actual number of retirement and disabilities</u>*, which could result in a more volatile contribution pattern when compared to the Optional funding policy.

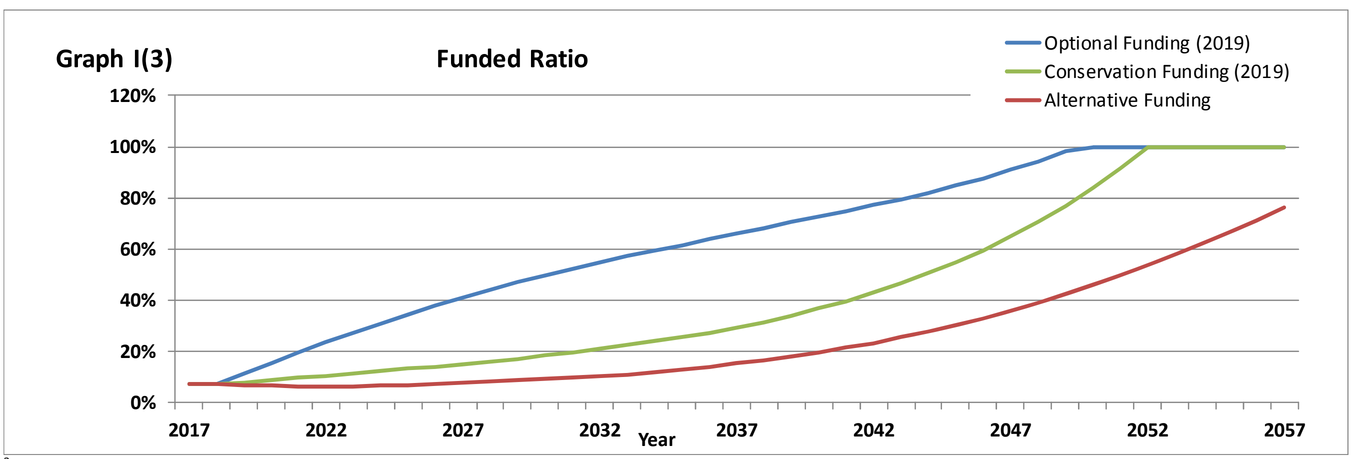
The details of the Scenario II projections can be found in the Appendix.

Actuarial Projections –Alternative/Optional/Conservation Funding [a] (Continued)

Scenario I



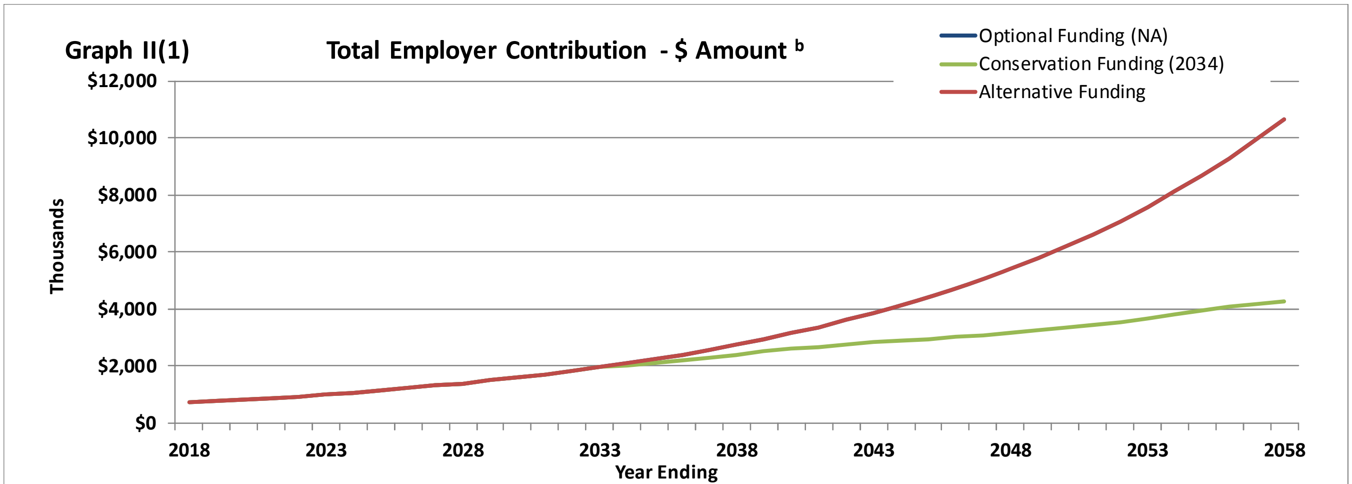


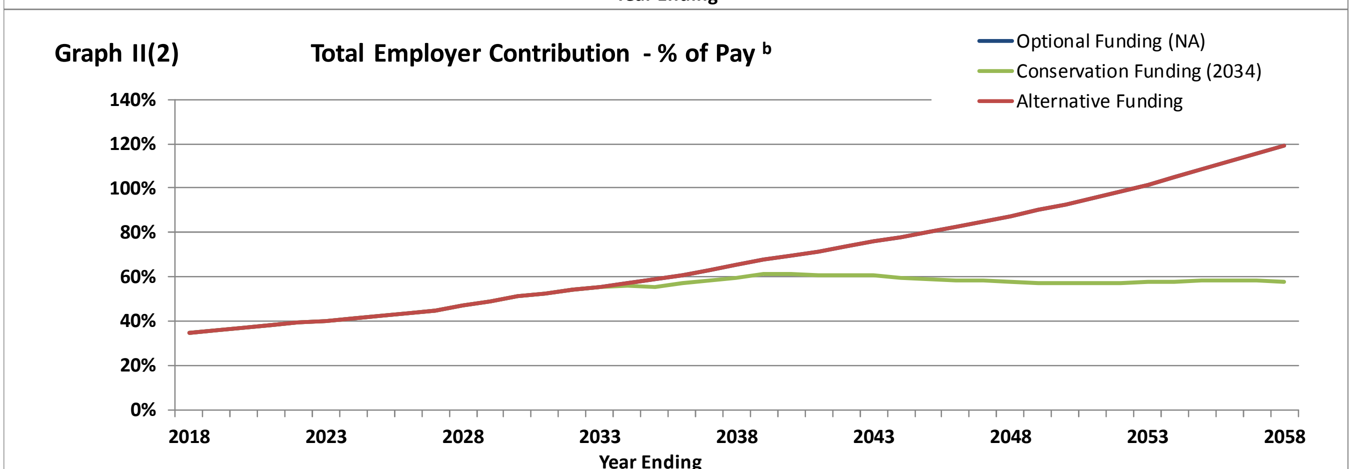


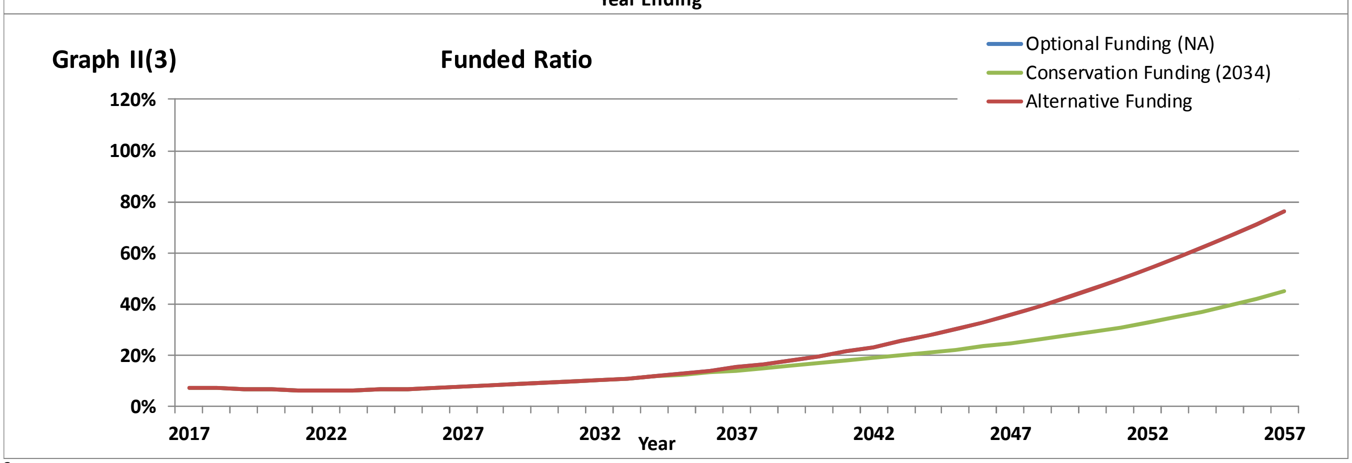
[a] *Assumes Sponsor elects either the Optional funding policy or Conservation funding policy in fiscal year end June 30, 2019, and makes the newly elected contribution in fiscal year end June 30, 2019.*
[b] *Based on total pay and includes contributions for future members projected to participate in the statewide plan.*

Actuarial Projections –Alternative/Optional/Conservation Funding [a] (Continued)

Scenario II







[a] *Assumes Sponsor elects either the Optional funding policy or Conservation funding policy in the first year that contributions are lower than under the Alternative funding policy.*
[b] *Based on total pay and includes contributions for future members projected to participate in the statewide plan.*

SECTION IV

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	4.00%	4.00%
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	\$2,564,464	\$2,734,963
2. Actuarial Accrued Liability	\$35,644,652	\$36,293,902
3. Unfunded Actuarial Accrued Liability (2 - 1)	\$33,080,188	\$33,558,939
4. Funded Ratio (1/2)	7%	8%
5. Expected Payroll	\$1,962,902	\$2,039,496
6. UAAL as Percentage of Covered Payroll (3/5)	1,685%	1,645%
Schedule of Employer Contributions [c]	**FYE 2017**	**FYE 2018**
1. Actuarially Determined Contribution		
(a) Employer Normal Cost	\$984,369	\$1,020,983
(b) Amortization of Unfunded Actuarial Accrued Liability	\$1,416,826	\$1,498,037
(c) Actuarially Determined Contribution (ADC) (a + b)	\$2,401,195	\$2,519,020
2. Employer Contribution [b]	\$738,972	\$710,449
3. Premium Tax Allocation	\$350,495	\$359,039
4. Percentage of ADC Contributed [(2 + 3)/1(c)]	45%	42%

[a] *Suggested amortization policy to comply with GASB Statement Nos. 67 and 68 Standards.*
[b] *Estimated employer contribution for fiscal year end June 30, 2018.*
[c] *The Alternative minimum contribution plus the premium tax allocation does not satisfy the Actuarially Determined Contribution as defined by GASB Statement Nos. 67 and 68.*

SECTION V

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 End of Prior Year	$2,693,373	$2,564,464
Adjustment to Market Value of Assets at Beginning of Year	$0	$8,720
Market Value of Assets Beginning of Year	$2,693,373	$2,573,184
1. Revenue During Fiscal Year		
(a) Employee Contribution	$163,644	$193,583
(b) Governmental Contribution		
(i) From Local Government	$695,534	$738,972
(ii) From State Government	$331,954	$350,495
(iii) Reallocation from State Government	$0	$0
(iv) Total	$1,027,488	$1,089,467
(c) Earnings on Investments		
(i) Net Appreciation/(Depreciation)	($179,874)	$187,930
(ii) Bond Interest	$4,712	$6,576
(iii) Dividends	$166,768	$102,831
(iv) Net Realized Gain (Loss) on Sale/Exchange	$0	$0
(v) Other	$0	$0
(vi) Less Investment Expense	($16,396)	($17,437)
(vii) Total	($24,790)	$279,900
(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))	$1,166,342	$1,562,950
2. Expenditures During Fiscal Year		
(a) Benefits Paid	$1,252,530	$1,338,716
(b) Withdrawals	$33,001	$50,291
(c) Administrative Expenses	$1,000	$1,000
(d) Payable Benefits and Withdrawals	$8,720	$11,164
(e) Payable Administrative Expenses	$0	$0
(f) Total Expenditures (sum of (a) through (e))	$1,295,251	$1,401,171
B. Market Value of Assets End of Year [A + 1(g) - 2(f)]	$2,564,464	$2,734,963
C. Approximate Return on Assets	(0.97)%	11.03%

[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	$365,849	14%	$263,663	10%
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	$0		$0	
(c) US Mutual Fund Shares (Bonds)	$676,565		$592,652	
(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))	$676,565	27%	$592,652	21%
4. Corporate Equity				
(a) US Equity	$474,855		$532,740	
(b) US Mutual Fund Shares (Equity)	$893,177		$1,182,209	
(c) US Exchange Traded Funds (Equity)	$0		$0	
(d) International Equity	$0		$0	
(e) International Mutual Fund Shares (Equity)	$0		$0	
(f) International Exchange Traded Funds (Equity)	$0		$0	
(g) Total Corporate Equity (sum of (a) through (f))	$1,368,032	53%	$1,714,949	63%
5. Alternative Investments				
(a) Real Estate Investment Trust	$162,738		$174,863	
(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))	$162,738	6%	$174,863	6%
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	($8,720)		($11,164)	
(c) Total	($8,720)	0%	($11,164)	0%
Market Value of Assets End of Year [sum of (1) through (8)]	**$2,564,464**		**$2,734,963**	

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:	**36**	**22**	**9**	**0**	**5**	**72**
New Actives:	3					**3**
Returned to Actives Status:	1					**1**
Data Corrections/Other Changes:						**0**
Vested Terminations:						**0**
Non-Vested Terminations:	(2)					**(2)**
Disabled:						**0**
Retirements:	(2)	2				**0**
Deaths with Beneficiary:						**0**
Deaths w/o Beneficiary:		(1)			(1)	**(2)**
Expired Annuity or Stop Payment:						**0**
Net Changes:	0	1	0	0	(1)	**0**
Total Participants June 30, 2017:	**36**	**23**	**9**	**0**	**4**	**72**

Actuarial Valuation Data as of July 1, 2017
Schedule G: Distribution of Active Employees by Age and Length of Service

Attained	Years of Service to Valuation Date										Valuation
Age	Less than 1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	Over 35	Totals	Payroll[a]
Under 20											$ 0
20-24	1									1	$ 45,520
25-29	1	1	5							7	$ 342,120
30-34	1	2	4	1						8	$ 408,488
35-39			3	7	1					11	$ 595,760
40-44			1	1	2	1				5	$ 320,049
45-49					2	1				3	$ 237,674
50-54						1				1	$ 78,953
55-59											$ 0
60-64											$ 0
65-69											$ 0
Over 70											$ 0
Totals	3	3	13	9	5	3	0	0	0	36	$ 2,028,563

Averages

Age:	35.8	years
Service:	9.8	years
Annual Pay:	$56,349	[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	36	36
Total Annual Pay	$1,968,906	$2,028,563
Average Age	36.4	35.8
Average Service	10.5	9.8

Inactive Participants	July 1, 2016		July 1, 2017	
Type	No.	Annual Benefit	No.	Annual Benefit
Retirees	22	$981,682	23	$1,058,020
Survivors	5	$92,716	4	$75,153
Disabled Members	9	$199,027	9	$201,601
Deferred Vested Members	0	$0	0	$0

[a]Data provided includes 3 non-vested members with accumulated contributions balances of $15,283.

SECTION VI

ACTUARIAL ASSUMPTIONS AND METHODS

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	$2,734,963
Liabilities using a 5.50% discount rate	$29,171,022
Funded Ratio	9%
Expected Benefit Payments	$1,391,243
Liquidity Ratio	1.97
Equity Exposure	63%
Projected Funded Ratio after 15 years	15%

Discount Rate [a]	4.00%

[a] Recommended discount rate of 4.00% due to low funded ratio and liquidity ratio as of June 30, 2017.

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 Martinsburg Firemen's Pension and Relief Fund reported 36 eligible active members and 35 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 $358,686 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)

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

Administrative Expenses	Administrative expenses used are equal to 0.25% of expected pay plus 0.25% of expected benefits. 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	Open group projections assume: (i) Salaries will increase and members will decrement as specified in the actuarial assumption section. (ii) Active members who retire, become disabled, die or terminate during the year are replaced with new entrants such that the number of active members remains stable during the projection period. Pay for new entrants in future years is increased by the wage inflation assumption. The average age of a new entrant is based on observed experience over the last five years. (iii) Assets grow at the assumed rate of return. (iv) The sponsor makes the statutory required contribution on a monthly basis. (v) Non-vested members with accumulated plan balances as of July 1, 2017, will receive a refund during plan year end June 30, 2018. Closed group projections are the same as the open group projections except active members who retire, become disabled, die, or terminate are <u>not</u> replaced with new entrants.
Decrement Timing	Mid-Year

SECTION VII

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 are eligible to participate in the 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 8.0% of compensation. Participating employees hired on or after January 1, 2010 contribute 9.5% of compensation. The municipality has elected to contribute the minimum employer contribution under the Alternative 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, 20 percent of the participant's benefit until the child attains eighteen 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 fifty dollars per month (but a total not to exceed $100 per month) until such individual attains the age of eighteen 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. Any member who receives such a refund and subsequently wishes to reenter the department must repay to the pension fund all sums refunded with interest at the rate of eight percent annual.

SECTION VIII

APPENDIX – PROJECTION DATA

Actuarial Projections – Optional Funding in 2019

Table A-1

Valuation Plan Year End 30-Jun	Number Active	Number Pay Status	Total Assets: Assets (boy)	Total Assets: Benefit Payments	Total Assets: Expenses	Total Assets: Employer Contribs.	Total Assets: Member Contribs.	Total Assets: Premium Tax Allocation Contribs.	Total Assets: Investment Income	Total Assets: Assets (eoy)	Actuarial Accrued Liability	Unfunded Liability	Funded Ratio
2017	36	36	$2,573,184	$1,400,171	$1,000	$738,972	$193,583	$350,495	$279,900	$2,734,963	$36,293,902	$33,558,939	8%
2018	34	36	2,734,963	1,391,243	8,577	710,449	170,240	359,039	106,228	2,681,099	37,533,193	34,852,094	7%
2019	32	37	2,681,099	1,414,252	8,635	2,489,265	170,495	358,686	138,843	4,415,500	38,798,427	34,382,927	11%
2020	30	38	4,415,500	1,462,667	8,709	2,575,990	168,958	372,004	209,209	6,270,285	40,050,648	33,780,363	16%
2021	29	38	6,270,285	1,502,235	8,792	2,559,839	168,372	381,667	282,475	8,151,610	41,305,514	33,153,904	20%
2022	27	39	8,151,610	1,538,924	8,884	2,544,431	167,956	390,490	356,861	10,063,540	42,567,331	32,503,791	24%
2023	26	39	10,063,540	1,576,519	8,989	2,528,914	167,914	400,390	432,479	12,007,728	43,837,900	31,830,172	27%
2024	25	39	12,007,728	1,620,271	9,102	2,516,007	168,069	409,740	509,311	13,981,482	45,114,851	31,133,369	31%
2025	24	39	13,981,482	1,665,415	9,217	2,505,679	168,126	420,073	587,365	15,988,094	46,396,936	30,408,842	34%
2026	22	40	15,988,094	1,697,522	9,333	2,496,143	168,798	429,738	667,008	18,042,926	47,700,772	29,657,846	38%
2027	21	40	18,042,926	1,757,663	9,460	2,487,743	167,067	440,656	748,023	20,119,293	48,979,915	28,860,622	41%
2028	19	42	20,119,293	1,849,414	9,585	2,461,930	160,546	453,441	828,871	22,165,082	50,163,886	27,998,804	44%
2029	17	43	22,165,082	1,963,358	9,719	2,399,678	151,265	469,479	907,345	24,119,771	51,203,435	27,083,664	47%
2030	15	44	24,119,771	2,078,796	9,850	2,316,385	141,087	484,897	981,698	25,955,192	52,083,718	26,128,526	50%
2031	13	45	25,955,192	2,172,035	9,977	2,223,231	133,094	501,927	1,051,600	27,683,032	52,837,656	25,154,624	52%
2032	11	46	27,683,032	2,260,401	10,097	2,146,522	125,441	515,934	1,117,568	29,317,999	53,469,120	24,151,121	55%
2033	10	46	29,317,999	2,346,356	10,211	2,070,656	117,927	533,401	1,179,956	30,863,372	53,977,007	23,113,635	57%
2034	9	46	30,863,372	2,419,387	10,315	1,999,349	111,768	547,709	1,239,072	32,331,569	54,381,130	22,049,561	59%
2035	8	46	32,331,569	2,479,867	10,408	1,935,276	106,138	564,511	1,295,553	33,742,772	54,694,403	20,951,631	62%
2036	7	46	33,742,772	2,565,952	10,497	1,877,764	97,378	579,187	1,349,273	35,069,926	54,869,546	19,799,620	64%
2037	6	46	35,069,926	2,674,037	10,577	1,802,042	84,370	598,133	1,398,835	36,268,692	54,852,445	18,583,753	66%
2038	4	47	36,268,692	2,772,686	10,649	1,704,224	72,067	616,236	1,443,008	37,320,892	54,651,716	17,330,824	68%
2039	3	46	37,320,892	2,886,154	10,711	1,608,626	58,238	635,219	1,481,057	38,207,168	54,239,530	16,032,362	70%
2040	3	46	38,207,168	2,962,640	10,764	1,508,689	47,065	654,633	1,513,176	38,957,327	53,663,754	14,706,427	73%
2041	2	45	38,957,327	2,993,216	10,808	1,424,817	40,467	672,378	1,541,136	39,632,101	52,992,086	13,359,985	75%
2042	1	45	39,632,101	3,041,379	10,844	1,364,624	31,879	689,908	1,566,157	40,232,446	52,193,116	11,960,670	77%
2043	1	44	40,232,446	3,085,850	10,874	1,296,034	23,093	710,735	1,588,170	40,753,754	51,265,281	10,511,527	79%
2044	1	43	40,753,754	3,090,826	10,899	1,227,648	18,196	729,892	1,607,851	41,235,616	50,266,227	9,030,611	82%
2045	1	42	41,235,616	3,084,235	10,920	1,176,124	14,480	749,127	1,626,543	41,706,735	49,211,849	7,505,114	85%
2046	0	42	41,706,735	3,081,545	10,938	1,131,871	10,337	768,806	1,644,872	42,170,137	48,094,473	5,924,336	88%
2047	0	41	42,170,137	3,073,441	10,955	1,085,795	6,610	789,842	1,662,998	42,630,986	46,919,995	4,289,009	91%
2048	0	40	42,630,986	3,048,469	10,971	1,040,102	4,516	811,221	1,681,403	43,108,788	45,712,425	2,603,637	94%
2049	0	39	43,108,788	3,018,578	10,988	997,866	2,921	833,793	1,700,686	43,614,488	44,478,279	863,791	98%
2050	0	38	43,614,488	2,983,166	11,006	42,558	1,918	857,517	1,703,146	43,225,455	43,225,455	0	100%
2051	0	37	43,225,455	2,943,866	11,025	16,784	1,354	0	1,670,859	41,959,560	41,959,560	0	100%
2052	0	36	41,959,560	2,903,958	11,046	14,427	803	0	1,620,956	40,680,741	40,680,741	0	100%
2053	0	35	40,680,741	2,862,467	11,069	12,710	400	0	1,570,582	39,390,897	39,390,897	0	100%
2054	0	34	39,390,897	2,818,583	11,093	12,200	269	0	1,519,844	38,093,534	38,093,534	0	100%
2055	0	33	38,093,534	2,773,963	11,118	11,856	180	0	1,468,824	36,789,314	36,789,314	0	100%
2056	0	33	36,789,314	2,728,975	11,143	11,442	73	0	1,417,536	35,478,246	35,478,247	0	100%
2057	0	32	35,478,246	2,683,070	11,167	11,166	0	0	1,365,995	34,161,170	34,161,171	0	100%

Actuarial Projections – Optional Funding in 2019
Table A-2

Employer Contributions

Valuation Plan Year End 30-Jun[a]	Closed Group Payroll	New Entrant Payroll	Total Payroll	Employee Contributions	Gross Normal Cost	Net Employer Normal Cost	Amortization of UAAL	Premium Tax Allocation Contributions	Net Employer Amortization	Expenses	Optional Employer Contribution	Statewide Employer Contribution
2018	$2,039,496	$0	$2,039,496	$170,240	$1,182,646	$1,012,406	$1,826,968	$358,686	$1,468,282	$8,577	$2,489,265	$0
2019	2,041,737	76,599	2,118,335	170,495	1,182,576	1,012,081	1,927,277	372,004	1,555,273	8,635	2,575,990	8,043
2020	2,022,272	173,402	2,195,673	168,958	1,168,731	999,773	1,933,023	381,667	1,551,356	8,709	2,559,839	18,207
2021	2,014,646	279,058	2,293,704	168,372	1,161,855	993,483	1,932,646	390,490	1,542,156	8,792	2,544,431	29,301
2022	2,008,771	373,864	2,382,636	167,956	1,156,123	988,167	1,932,253	400,390	1,531,863	8,884	2,528,914	39,256
2023	2,007,086	482,364	2,489,449	167,914	1,152,760	984,846	1,931,911	409,740	1,522,171	8,989	2,516,007	50,648
2024	2,007,460	579,337	2,586,797	168,069	1,153,028	984,959	1,931,692	420,073	1,511,619	9,102	2,505,679	60,830
2025	2,006,342	692,730	2,699,072	168,126	1,153,101	984,975	1,931,689	429,738	1,501,951	9,217	2,496,143	72,737
2026	2,012,667	798,959	2,811,626	168,798	1,156,170	987,372	1,931,694	440,656	1,491,038	9,333	2,487,743	83,891
2027	1,988,749	920,211	2,908,960	167,067	1,141,115	974,048	1,931,863	453,441	1,478,422	9,460	2,461,930	96,622
2028	1,904,769	1,071,443	2,976,212	160,546	1,089,151	928,605	1,930,966	469,479	1,461,487	9,585	2,399,678	112,502
2029	1,786,024	1,275,261	3,061,285	151,265	1,015,101	863,836	1,927,727	484,897	1,442,830	9,719	2,316,385	133,902
2030	1,655,874	1,484,145	3,140,019	141,087	933,580	792,493	1,922,815	501,927	1,420,888	9,850	2,223,231	155,835
2031	1,552,942	1,723,507	3,276,448	133,094	868,451	735,357	1,917,122	515,934	1,401,188	9,977	2,146,522	180,968
2032	1,454,152	1,922,779	3,376,931	125,441	807,141	681,700	1,912,260	533,401	1,378,859	10,097	2,070,656	201,892
2033	1,356,967	2,171,766	3,528,733	117,927	747,218	629,291	1,907,556	547,709	1,359,847	10,211	1,999,349	228,035
2034	1,276,647	2,383,999	3,660,646	111,768	698,476	586,708	1,902,765	564,511	1,338,254	10,315	1,935,276	250,320
2035	1,202,719	2,627,384	3,830,103	106,138	654,064	547,926	1,898,617	579,187	1,319,430	10,408	1,877,764	275,875
2036	1,095,954	2,845,718	3,941,672	97,378	592,391	495,013	1,894,666	598,133	1,296,533	10,497	1,802,042	298,800
2037	944,499	3,137,446	4,081,945	84,370	505,111	420,741	1,889,142	616,236	1,272,906	10,577	1,704,224	329,432
2038	800,636	3,417,328	4,217,964	72,067	424,350	352,283	1,880,914	635,219	1,245,695	10,649	1,608,626	358,819
2039	640,557	3,711,640	4,352,197	58,238	338,376	280,138	1,872,474	654,633	1,217,841	10,711	1,508,689	389,722
2040	514,614	4,009,690	4,524,304	47,065	270,566	223,501	1,862,930	672,378	1,190,552	10,764	1,424,817	421,017
2041	439,380	4,277,918	4,717,298	40,467	229,761	189,294	1,854,430	689,908	1,164,522	10,808	1,364,624	449,181
2042	344,799	4,530,199	4,874,998	31,879	179,398	147,519	1,848,406	710,735	1,137,671	10,844	1,296,034	475,671
2043	249,273	4,827,306	5,076,579	23,093	128,849	105,756	1,840,910	729,892	1,111,018	10,874	1,227,648	506,867
2044	195,600	5,093,572	5,289,172	18,196	100,389	82,193	1,832,159	749,127	1,083,032	10,899	1,176,124	534,825
2045	154,945	5,355,309	5,510,254	14,480	78,735	64,255	1,825,502	768,806	1,056,696	10,920	1,131,871	562,307
2046	110,293	5,614,356	5,724,649	10,337	55,610	45,273	1,819,425	789,842	1,029,583	10,938	1,085,795	589,507
2047	70,364	5,883,295	5,953,659	6,610	35,359	28,749	1,811,619	811,221	1,000,398	10,955	1,040,102	617,746
2048	47,853	6,141,079	6,188,931	4,516	24,001	19,485	1,801,203	833,793	967,410	10,971	997,866	644,813
2049	30,746	6,399,915	6,430,661	2,921	15,411	12,490	1,787,431	857,517	929,914	10,988	42,558 [b]	671,991
2050	20,192	6,658,323	6,678,515	1,918	10,090	8,172	0	0	0	11,006	16,784 [b]	699,124
2051	14,248	6,918,962	6,933,210	1,354	7,112	5,758	0	0	0	11,025	14,427 [b]	726,491
2052	8,451	7,182,240	7,190,691	803	4,181	3,378	0	0	0	11,046	12,710 [b]	754,135
2053	4,214	7,454,430	7,458,644	400	2,046	1,646	0	0	0	11,069	12,200 [b]	782,715
2054	2,829	7,730,835	7,733,664	269	1,374	1,105	0	0	0	11,093	11,856 [b]	811,738
2055	1,898	8,018,032	8,019,930	180	921	741	0	0	0	11,118	11,442 [b]	841,893
2056	768	8,310,697	8,311,465	73	372	299	0	0	0	11,143	11,166 [b]	872,623
2057	0	8,614,328	8,614,328	0	0	0	0	0	0	11,167	11,167 [b]	904,504

[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 – Conservation Funding in 2019
Table A-3

Valuation Plan Year End 30-Jun	Number Active	Number Pay Status	Total Assets: Assets (boy)	Benefit Payments	Expenses	Employer Contribs.	Member Contribs.	Premium Tax Allocation Contribs.	Investment Income	Assets (eoy)	Actuarial Accrued Liability	Unfunded Liability	Funded Ratio
2017	36	36	$2,573,184	$1,400,171	$1,000	$738,972	$193,583	$350,495	$279,900	$2,734,963	$36,293,902	$33,558,939	8%
2018	34	36	2,734,963	1,391,243	8,577	710,449	170,240	359,039	106,228	2,681,099	37,533,193	34,852,093	7%
2019	32	37	2,681,099	1,414,252	8,635	1,198,747	170,495	358,686	113,285	3,099,425	38,798,427	35,699,002	8%
2020	30	38	3,099,425	1,462,667	8,709	1,245,352	168,958	372,004	130,214	3,544,578	40,050,648	36,506,070	9%
2021	29	38	3,544,578	1,502,235	8,792	1,283,205	168,372	381,667	148,164	4,014,958	41,305,514	37,290,556	10%
2022	27	39	4,014,958	1,538,924	8,884	1,318,241	167,956	390,490	167,111	4,510,948	42,567,331	38,056,383	11%
2023	26	39	4,510,948	1,576,519	8,989	1,353,631	167,914	400,390	187,100	5,034,475	43,837,900	38,803,424	11%
2024	25	39	5,034,475	1,620,271	9,102	1,395,150	168,069	409,740	208,183	5,586,245	45,114,851	39,528,606	12%
2025	24	39	5,586,245	1,665,415	9,217	1,437,908	168,126	420,073	230,410	6,168,130	46,396,936	40,228,807	13%
2026	22	40	6,168,130	1,697,522	9,333	1,467,283	168,798	429,738	253,834	6,780,927	47,700,772	40,919,844	14%
2027	21	40	6,780,927	1,757,663	9,460	1,526,358	167,067	440,656	278,504	7,426,390	48,979,915	41,553,526	15%
2028	19	42	7,426,390	1,849,414	9,585	1,620,492	160,546	453,441	304,492	8,106,362	50,163,886	42,057,524	16%
2029	17	43	8,106,362	1,963,358	9,719	1,738,301	151,265	469,479	331,898	8,824,228	51,203,435	42,379,208	17%
2030	15	44	8,824,228	2,078,796	9,850	1,858,474	141,087	484,897	360,808	9,580,847	52,083,718	42,502,871	18%
2031	13	45	9,580,847	2,172,035	9,977	1,954,288	133,094	501,927	391,300	10,379,444	52,837,656	42,458,213	20%
2032	11	46	10,379,444	2,260,401	10,097	2,045,654	125,441	515,934	423,427	11,219,401	53,469,120	42,249,719	21%
2033	10	46	11,219,401	2,346,356	10,211	2,133,675	117,927	533,401	457,261	12,105,098	53,977,007	41,871,909	22%
2034	9	46	12,105,098	2,419,387	10,315	2,208,404	111,768	547,709	492,882	13,036,159	54,381,130	41,344,971	24%
2035	8	46	13,036,159	2,479,867	10,408	2,269,550	106,138	564,511	530,357	14,016,440	54,694,403	40,677,964	26%
2036	7	46	14,016,440	2,565,952	10,497	2,359,434	97,378	579,187	569,758	15,045,748	54,869,546	39,823,798	27%
2037	6	46	15,045,748	2,674,037	10,577	2,473,884	84,370	598,133	611,173	16,128,694	54,852,445	38,723,751	29%
2038	4	47	16,128,694	2,772,686	10,649	2,578,498	72,067	616,236	654,722	17,266,881	54,651,716	37,384,834	32%
2039	3	46	17,266,881	2,886,154	10,711	2,698,995	58,238	635,219	700,490	18,462,958	54,239,530	35,776,572	34%
2040	3	46	18,462,958	2,962,640	10,764	2,780,257	47,065	654,633	748,590	19,720,099	53,663,754	33,943,655	37%
2041	2	45	19,720,099	2,993,216	10,808	2,812,177	40,467	672,378	799,122	21,040,219	52,992,086	31,951,867	40%
2042	1	45	21,040,219	3,041,379	10,844	2,863,427	31,879	689,908	852,164	22,425,375	52,193,116	29,767,742	43%
2043	1	44	22,425,375	3,085,850	10,874	2,910,388	23,093	710,735	907,857	23,880,724	51,265,281	27,384,557	47%
2044	1	43	23,880,724	3,090,826	10,899	2,914,980	18,196	729,892	966,346	25,408,413	50,266,227	24,857,814	51%
2045	1	42	25,408,413	3,084,235	10,920	2,906,997	14,480	749,127	1,027,733	27,011,595	49,211,849	22,200,254	55%
2046	0	42	27,011,595	3,081,545	10,938	2,903,174	10,337	768,806	1,092,145	28,693,574	48,094,473	19,400,899	60%
2047	0	41	28,693,574	3,073,441	10,955	2,893,273	6,610	789,842	1,159,731	30,458,634	46,919,995	16,461,361	65%
2048	0	40	30,458,634	3,048,469	10,971	2,865,051	4,516	811,221	1,230,650	32,310,632	45,712,425	13,401,793	71%
2049	0	39	32,310,632	3,018,578	10,988	2,831,212	2,921	833,793	1,305,067	34,254,060	44,478,279	10,224,220	77%
2050	0	38	34,254,060	2,983,166	11,006	2,791,089	1,918	857,517	1,383,161	36,293,573	43,225,455	6,931,883	84%
2051	0	37	36,293,573	2,943,866	11,025	2,746,403	1,354	882,546	1,465,119	38,434,104	41,959,560	3,525,456	92%
2052	0	36	38,434,104	2,903,958	11,046	2,700,785	803	908,915	1,551,138	40,680,741	40,680,741	0	100%
2053	0	35	40,680,741	2,862,467	11,069	12,711	400	0	1,570,582	39,390,898	39,390,897	0	100%
2054	0	34	39,390,898	2,818,583	11,093	12,200	269	0	1,519,844	38,093,534	38,093,534	0	100%
2055	0	33	38,093,534	2,773,963	11,118	11,856	180	0	1,468,824	36,789,313	36,789,314	0	100%
2056	0	33	36,789,313	2,728,975	11,143	11,443	73	0	1,417,536	35,478,247	35,478,247	0	100%
2057	0	32	35,478,247	2,683,070	11,167	11,166	0	0	1,365,995	34,161,171	34,161,171	0	100%

Actuarial Projections – Conservation Funding in 2019
Table A-4

	Benefit Payment Account [a]							Accumulation Account [b]						
Plan Year End 30-Jun	Assets (boy)	Net Benefit Pmts and Expenses	Employer Contribs.	6.85%[d] of Pay Member Contribs.	23.49% of Premium Tax Allocation	Investment Income	Transfer (To)/From Accumulation Account	Assets (boy)[c]	Net Benefit Pmts and Expenses	Employer Contribs.	1.50% of Pay Member Contribs.	76.51% of Premium Tax Allocation	Investment Income	Statewide Employer Contribution
2018	$2,734,963	$1,399,820	$710,449	$170,240	$359,039	$106,228	$0	$0	$0	$0	$0	$0	$0	$0
2019	2,681,099	1,422,887	1,198,747	139,869	84,271	107,244	(2,788,343)	2,788,343	0	0	30,626	274,415	6,041	8,043
2020	0	1,471,376	1,245,352	138,624	87,400	0	0	3,099,425	0	0	30,334	284,604	130,214	18,207
2021	0	1,511,027	1,283,205	138,152	89,670	0	0	3,544,577	0	0	30,220	291,997	148,164	29,301
2022	0	1,547,808	1,318,241	137,824	91,743	0	0	4,014,958	0	0	30,132	298,747	167,111	39,256
2023	0	1,585,508	1,353,631	137,808	94,069	0	0	4,510,948	0	0	30,106	306,321	187,100	50,648
2024	0	1,629,373	1,395,150	137,957	96,266	0	0	5,034,475	0	0	30,112	313,474	208,183	60,830
2025	0	1,674,632	1,437,908	138,031	98,693	0	0	5,586,244	0	0	30,095	321,380	230,410	72,737
2026	0	1,706,855	1,467,283	138,608	100,964	0	0	6,168,129	0	0	30,190	328,774	253,834	83,891
2027	0	1,767,123	1,526,358	137,236	103,529	0	0	6,780,927	0	0	29,831	337,127	278,504	96,622
2028	0	1,858,999	1,620,492	131,974	106,533	0	0	7,426,390	0	0	28,572	346,908	304,492	112,502
2029	0	1,973,077	1,738,301	124,475	110,301	0	0	8,106,362	0	0	26,790	359,178	331,898	133,902
2030	0	2,088,646	1,858,474	116,249	113,923	0	0	8,824,227	0	0	24,838	370,974	360,808	155,835
2031	0	2,182,012	1,954,288	109,800	117,924	0	0	9,580,847	0	0	23,294	384,002	391,300	180,968
2032	0	2,270,498	2,045,654	103,629	121,215	0	0	10,379,443	0	0	21,812	394,719	423,427	201,892
2033	0	2,356,567	2,133,675	97,573	125,319	0	0	11,219,401	0	0	20,354	408,082	457,261	228,035
2034	0	2,429,702	2,208,404	92,618	128,680	0	0	12,105,098	0	0	19,150	419,029	492,882	250,320
2035	0	2,490,275	2,269,550	88,097	132,628	0	0	13,036,158	0	0	18,041	431,883	530,357	275,875
2036	0	2,576,449	2,359,434	80,939	136,076	0	0	14,016,439	0	0	16,439	443,111	569,758	298,800
2037	0	2,684,614	2,473,884	70,203	140,527	0	0	15,045,748	0	0	14,167	457,606	611,173	329,432
2038	0	2,783,335	2,578,498	60,057	144,780	0	0	16,128,694	0	0	12,010	471,456	654,722	358,819
2039	0	2,896,865	2,698,995	48,630	149,240	0	0	17,266,881	0	0	9,608	485,979	700,490	389,722
2040	0	2,973,404	2,780,257	39,346	153,801	0	0	18,462,958	0	0	7,719	500,832	748,590	421,017
2041	0	3,004,024	2,812,177	33,876	157,971	0	0	19,720,099	0	0	6,591	514,407	799,122	449,181
2042	0	3,052,223	2,863,427	26,707	162,089	0	0	21,040,219	0	0	5,172	527,819	852,164	475,671
2043	0	3,096,724	2,910,388	19,354	166,982	0	0	22,425,374	0	0	3,739	543,753	907,857	506,867
2044	0	3,101,725	2,914,980	15,262	171,483	0	0	23,880,723	0	0	2,934	558,409	966,346	534,825
2045	0	3,095,155	2,906,997	12,156	176,002	0	0	25,408,413	0	0	2,324	573,125	1,027,733	562,307
2046	0	3,092,483	2,903,174	8,683	180,626	0	0	27,011,595	0	0	1,654	588,180	1,092,145	589,507
2047	0	3,084,396	2,893,273	5,555	185,568	0	0	28,693,574	0	0	1,055	604,274	1,159,731	617,746
2048	0	3,059,440	2,865,051	3,798	190,591	0	0	30,458,634	0	0	718	620,630	1,230,650	644,813
2049	0	3,029,566	2,831,212	2,460	195,894	0	0	32,310,632	0	0	461	637,899	1,305,067	671,991
2050	0	2,994,172	2,791,089	1,615	201,468	0	0	34,254,059	0	0	303	656,049	1,383,161	699,124
2051	0	2,954,891	2,746,403	1,140	207,348	0	0	36,293,572	0	0	214	675,198	1,465,119	726,491
2052	0	2,915,004	2,700,785	676	213,543	0	0	38,434,104	0	0	127	695,372	1,551,138	754,135
2053	0	0	0	0	0	0	0	40,680,741	2,873,536	12,711	400	0	1,570,582	782,715
2054	0	0	0	0	0	0	0	39,390,898	2,829,676	12,200	269	0	1,519,844	811,738
2055	0	0	0	0	0	0	0	38,093,535	2,785,081	11,856	180	0	1,468,824	841,893
2056	0	0	0	0	0	0	0	36,789,314	2,740,118	11,443	73	0	1,417,536	872,623
2057	0	0	0	0	0	0	0	35,478,248	2,694,237	11,166	0	0	1,365,995	904,504

[a] *Employer contributions paid from the City's General Fund are used to finance benefits not covered by the applicable employee contributions or premium tax allocation.*

[b] *Assets accumulate in the Pension and Relief Fund.*

[c] *Includes transfer from Benefit Payment Account to Accumulation Account in Plan Year End June 30, 2034.*

[d] *Blended employee contribution rate of 8.35% of pay less 1.50% of pay going into the Accumulation Account.*

Actuarial Projections – Optional Funding in (N/A)
Table A-5

Valuation Plan Year End 30-Jun	Number Active	Number Pay Status	Total Assets: Assets (boy)	Benefit Payments	Expenses	Employer Contribs.	Member Contribs.	Premium Tax Allocation Contribs.	Investment Income	Assets (eoy)	Actuarial Accrued Liability	Unfunded Liability	Funded Ratio
2017	36	36	$2,573,184	$1,400,171	$1,000	$738,972	$193,583	$350,495	$279,900	$2,734,963	$36,293,902	$33,558,939	8%
2018	36	36	2,734,963	1,391,243	8,577	710,449	170,240	359,039	106,228	2,681,099	37,533,196	34,852,097	7%
2019	36	37	2,681,099	1,414,252	8,864	760,180	178,293	358,686	104,750	2,659,892	38,842,035	36,182,143	7%
2020	36	38	2,659,892	1,462,979	9,194	813,393	186,130	372,004	104,402	2,663,648	40,194,296	37,530,648	7%
2021	36	38	2,663,648	1,503,469	9,538	870,331	195,638	381,667	105,252	2,703,529	41,612,517	38,908,988	6%
2022	36	39	2,703,529	1,541,654	9,843	931,254	204,159	390,490	107,634	2,785,569	43,096,943	40,311,374	6%
2023	36	39	2,785,569	1,581,201	10,195	996,442	214,543	400,390	111,818	2,917,366	44,659,292	41,741,926	7%
2024	36	39	2,917,366	1,627,272	10,506	1,066,193	223,918	409,740	117,924	3,097,363	46,293,101	43,195,738	7%
2025	36	40	3,097,363	1,675,084	10,860	1,140,827	234,971	420,073	126,071	3,333,362	48,008,856	44,675,494	7%
2026	36	40	3,333,362	1,710,170	11,179	1,220,685	245,856	429,738	136,799	3,645,090	49,821,904	46,176,814	7%
2027	36	41	3,645,090	1,773,604	11,542	1,306,133	255,919	440,656	150,112	4,012,764	51,697,211	47,684,447	8%
2028	36	42	4,012,764	1,868,942	11,971	1,397,562	264,169	453,441	165,150	4,412,172	53,584,589	49,172,417	8%
2029	36	43	4,412,172	1,986,921	12,530	1,495,391	274,839	469,479	181,245	4,833,674	55,468,624	50,634,950	9%
2030	36	45	4,833,674	2,107,136	13,065	1,600,068	284,807	484,897	198,290	5,281,534	57,342,292	52,060,758	9%
2031	36	45	5,281,534	2,206,061	13,655	1,712,073	300,030	501,927	217,090	5,792,937	59,261,203	53,468,266	10%
2032	36	46	5,792,937	2,301,003	14,103	1,831,918	311,366	515,934	238,533	6,375,581	61,212,518	54,836,937	10%
2033	36	46	6,375,581	2,394,298	14,669	1,960,152	328,193	533,401	263,198	7,051,557	63,229,151	56,177,594	11%
2034	36	47	7,051,557	2,475,429	15,099	2,097,363	342,409	547,709	291,904	7,840,414	65,316,710	57,476,296	12%
2035	36	46	7,840,414	2,544,823	15,589	2,244,178	360,574	564,511	325,674	8,774,938	67,512,193	58,737,255	13%
2036	36	47	8,774,938	2,640,637	15,987	2,401,270	372,933	579,187	364,796	9,836,501	69,761,148	59,924,647	14%
2037	36	47	9,836,501	2,759,307	16,550	2,569,359	388,337	598,133	408,907	11,025,380	72,058,285	61,032,905	15%
2038	36	47	11,025,380	2,869,511	17,046	2,749,214	402,392	616,236	458,468	12,365,134	74,414,026	62,048,892	17%
2039	36	48	12,365,134	2,995,525	17,571	2,941,659	416,223	635,219	514,013	13,859,153	76,812,612	62,953,459	18%
2040	36	47	13,859,153	3,090,003	18,100	3,147,575	432,813	654,633	576,684	15,562,755	79,306,234	63,743,479	20%
2041	36	47	15,562,755	3,145,989	18,560	3,367,905	450,598	672,378	648,776	17,537,864	81,945,477	64,407,613	21%
2042	36	47	17,537,864	3,229,291	19,004	3,603,658	465,023	689,908	731,424	19,779,582	84,687,018	64,907,436	23%
2043	36	47	19,779,582	3,320,570	19,576	3,855,914	484,055	710,735	825,059	22,315,199	87,550,889	65,235,690	25%
2044	36	47	22,315,199	3,384,946	20,076	4,125,828	503,531	729,892	931,310	25,200,738	90,575,250	65,374,512	28%
2045	36	47	25,200,738	3,449,178	20,587	4,414,636	523,965	749,127	1,051,954	28,470,655	93,769,812	65,299,157	30%
2046	36	47	28,470,655	3,529,821	21,107	4,723,661	543,530	768,806	1,188,040	32,143,763	97,122,869	64,979,106	33%
2047	36	47	32,143,763	3,616,315	21,674	5,054,317	564,175	789,842	1,340,614	36,254,723	100,642,320	64,387,597	36%
2048	36	47	36,254,723	3,698,418	22,244	5,408,119	585,236	811,221	1,511,263	40,849,900	104,340,295	63,490,395	39%
2049	36	47	40,849,900	3,789,933	22,853	5,786,687	606,985	833,793	1,701,620	45,966,199	108,216,915	62,250,716	42%
2050	36	47	45,966,199	3,891,058	23,495	6,191,755	629,259	857,517	1,913,190	51,643,367	112,273,897	60,630,530	46%
2051	36	47	51,643,367	4,001,933	24,176	6,625,178	652,169	882,546	2,147,600	57,924,752	116,509,293	58,584,541	50%
2052	36	47	57,924,752	4,128,400	24,896	7,088,940	675,477	908,915	2,406,504	64,851,293	120,918,186	56,066,893	54%
2053	36	48	64,851,293	4,266,977	25,665	7,585,166	700,000	936,987	2,691,675	72,472,479	125,498,890	53,026,411	58%
2054	36	48	72,472,479	4,418,871	26,466	8,116,128	725,383	966,212	3,005,095	80,839,961	130,251,859	49,411,898	62%
2055	36	48	80,839,961	4,582,615	27,308	8,684,257	751,728	997,045	3,348,918	90,011,987	135,178,370	45,166,383	67%
2056	36	49	90,011,987	4,758,734	28,180	9,292,155	778,444	1,029,107	3,725,498	100,050,278	140,277,988	40,227,710	71%
2057	36	49	100,050,278	4,944,808	29,097	9,942,606	806,454	1,062,876	4,137,431	111,025,739	145,551,157	34,525,418	76%

Actuarial Projections – Optional Funding in (N/A)
Table A-6

	Employer Contributions								Minimum Payment			
Valuation Plan Year End 30-Jun [a,b]	Total Payroll	Employee Contributions	Gross Normal Cost	Net Employer Normal Cost	Amortization of UAAL	Premium Tax Allocation Contributions	Net Employer Amortization	Expenses	Optional Employer Contribution	Alternative Employer Contribution	Minimum Employer Contribution	Statewide Employer Contribution
2018	$2,039,496	$170,240	$1,182,646	$1,012,406	$1,826,968	$358,686	$1,468,282	$8,577	$2,489,265	$760,180	$760,180	$0
2019	2,118,335	178,293	1,225,647	1,047,354	1,927,277	372,004	1,555,273	8,864	2,611,491	813,393	813,393	0
2020	2,195,673	186,130	1,266,357	1,080,227	2,034,175	381,667	1,652,508	9,194	2,741,929	870,331	870,331	0
2021	2,293,704	195,638	1,319,131	1,123,493	2,147,208	390,490	1,756,718	9,538	2,889,749	931,254	931,254	0
2022	2,382,636	204,159	1,367,051	1,162,892	2,267,667	400,390	1,867,277	9,843	3,040,013	996,442	996,442	0
2023	2,489,449	214,543	1,425,108	1,210,564	2,395,966	409,740	1,986,226	10,195	3,206,985	1,066,193	1,066,193	0
2024	2,586,797	223,918	1,480,398	1,256,480	2,533,212	420,073	2,113,139	10,506	3,380,124	1,140,827	1,140,827	0
2025	2,699,072	234,971	1,544,778	1,309,807	2,680,106	429,738	2,250,368	10,860	3,571,035	1,220,685	1,220,685	0
2026	2,811,626	245,856	1,608,208	1,362,352	2,837,970	440,656	2,397,314	11,179	3,770,845	1,306,133	1,306,133	0
2027	2,908,960	255,919	1,662,026	1,406,107	3,007,882	453,441	2,554,441	11,542	3,972,091	1,397,562	1,397,562	0
2028	2,976,212	264,169	1,695,884	1,431,715	3,190,403	469,479	2,720,924	11,971	4,164,611	1,495,391	1,495,391	0
2029	3,061,285	274,839	1,737,358	1,462,519	3,385,537	484,897	2,900,640	12,530	4,375,690	1,600,068	1,600,068	0
2030	3,140,019	284,807	1,774,407	1,489,600	3,594,847	501,927	3,092,920	13,065	4,595,586	1,712,073	1,712,073	0
2031	3,276,448	300,030	1,845,150	1,545,120	3,819,841	515,934	3,303,907	13,655	4,862,683	1,831,918	1,831,918	0
2032	3,376,931	311,366	1,897,355	1,585,989	4,064,669	533,401	3,531,268	14,103	5,131,361	1,960,152	1,960,152	0
2033	3,528,733	328,193	1,978,982	1,650,789	4,331,250	547,709	3,783,541	14,669	5,448,999	2,097,363	2,097,363	0
2034	3,660,646	342,409	2,051,275	1,708,866	4,624,663	564,511	4,060,152	15,099	5,784,117	2,244,178	2,244,178	0
2035	3,830,103	360,574	2,145,475	1,784,901	4,949,100	579,187	4,369,913	15,589	6,170,403	2,401,270	2,401,270	0
2036	3,941,672	372,933	2,208,442	1,835,509	5,311,637	598,133	4,713,504	15,987	6,564,999	2,569,359	2,569,359	0
2037	4,081,945	388,337	2,287,141	1,898,804	5,717,594	616,236	5,101,358	16,550	7,016,712	2,749,214	2,749,214	0
2038	4,217,964	402,392	2,365,677	1,963,284	6,177,313	635,219	5,542,094	17,046	7,522,424	2,941,659	2,941,659	0
2039	4,352,197	416,223	2,446,782	2,030,559	6,703,949	654,633	6,049,316	17,571	8,097,446	3,147,575	3,147,575	0
2040	4,524,304	432,813	2,547,747	2,114,934	7,315,072	672,378	6,642,694	18,100	8,775,728	3,367,905	3,367,905	0
2041	4,717,298	450,598	2,658,506	2,207,907	8,037,835	689,908	7,347,927	18,560	9,574,394	3,603,658	3,603,658	0
2042	4,874,998	465,023	2,750,224	2,285,201	8,911,043	710,735	8,200,308	19,004	10,504,513	3,855,914	3,855,914	0
2043	5,076,579	484,055	2,866,526	2,382,471	9,990,137	729,892	9,260,245	19,576	11,662,292	4,125,828	4,125,828	0
2044	5,289,172	503,531	2,987,380	2,483,849	11,370,582	749,127	10,621,455	20,076	13,125,380	4,414,636	4,414,636	0
2045	5,510,254	523,965	3,112,378	2,588,413	13,215,195	768,806	12,446,389	20,587	15,055,389	4,723,661	4,723,661	0
2046	5,724,649	543,530	3,234,408	2,690,878	15,830,125	789,842	15,040,283	21,107	17,752,269	5,054,317	5,054,317	0
2047	5,953,659	564,175	3,365,031	2,800,855	19,870,138	811,221	19,058,917	21,674	21,881,446	5,408,119	5,408,119	0
2048	6,188,931	585,236	3,498,466	2,913,230	27,040,070	833,793	26,206,277	22,244	29,141,751	5,786,687	5,786,687	0
2049	6,430,661	606,985	3,635,249	3,028,264	43,587,001	857,517	42,729,484	22,853	45,780,602	6,191,755	6,191,755	0
2050	6,678,515	629,259	3,774,813	3,145,554	63,483,502	882,546	62,600,956	23,495	64,072,047	6,625,178	6,625,178	0
2051	6,933,210	652,169	3,917,705	3,265,535	61,831,230	908,915	60,922,315	24,176	62,067,051	7,088,940	7,088,940	0
2052	7,190,691	675,477	4,061,874	3,386,397	59,744,724	936,987	58,807,737	24,896	59,581,840	7,585,166	7,585,166	0
2053	7,458,644	700,000	4,211,702	3,511,702	57,177,217	966,212	56,211,005	25,665	56,568,480	8,116,128	8,116,128	0
2054	7,733,664	725,383	4,365,433	3,640,049	54,076,523	997,045	53,079,478	26,466	52,973,539	8,684,257	8,684,257	0
2055	8,019,930	751,728	4,525,667	3,773,939	50,390,429	1,029,107	49,361,322	27,308	48,738,670	9,292,155	9,292,155	0
2056	8,311,465	778,444	4,689,165	3,910,721	46,060,838	1,062,876	44,997,962	28,180	43,797,564	9,942,606	9,942,606	0
2057	8,614,328	806,454	4,859,351	4,052,897	41,024,362	1,098,001	39,926,361	29,097	38,082,976	10,638,588	10,638,588	0

[a] *Assumes sponsor selects Optional funding policy if contributions are lower.*

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

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

Actuarial Projections – Conservation Funding in 2034
Table A-7

Valuation Plan Year End 30-Jun	Number Active	Number Pay Status	Total Assets: Assets (boy)	Benefit Payments	Expenses	Employer Contribs.	Member Contribs.	Premium Tax Allocation Contribs.	Investment Income	Assets (eoy)	Actuarial Accrued Liability	Unfunded Liability	Funded Ratio
2017	36	36	$2,573,184	$1,400,171	$1,000	$738,972	$193,583	$350,495	$279,900	$2,734,963	$36,293,902	$33,558,939	8%
2018	36	36	2,734,963	1,391,243	8,577	710,449	170,240	359,039	106,228	2,681,099	37,533,196	34,852,097	7%
2019	36	37	2,681,099	1,414,252	8,864	760,180	178,293	358,686	104,750	2,659,892	38,842,035	36,182,143	7%
2020	36	38	2,659,892	1,462,979	9,194	813,393	186,130	372,004	104,402	2,663,648	40,194,296	37,530,648	7%
2021	36	38	2,663,648	1,503,469	9,538	870,331	195,638	381,667	105,251	2,703,528	41,612,517	38,908,989	6%
2022	36	39	2,703,528	1,541,654	9,843	931,254	204,159	390,490	107,634	2,785,568	43,096,943	40,311,375	6%
2023	36	39	2,785,568	1,581,201	10,195	996,442	214,543	400,390	111,818	2,917,365	44,659,292	41,741,927	7%
2024	36	39	2,917,365	1,627,272	10,506	1,066,193	223,918	409,740	117,924	3,097,362	46,293,101	43,195,739	7%
2025	36	40	3,097,362	1,675,084	10,860	1,140,827	234,971	420,073	126,071	3,333,360	48,008,856	44,675,496	7%
2026	36	40	3,333,360	1,710,170	11,179	1,220,685	245,856	429,738	136,799	3,645,089	49,821,904	46,176,815	7%
2027	36	41	3,645,089	1,773,604	11,542	1,306,133	255,919	440,656	150,112	4,012,763	51,697,211	47,684,448	8%
2028	36	42	4,012,763	1,868,942	11,971	1,397,562	264,169	453,441	165,150	4,412,172	53,584,589	49,172,417	8%
2029	36	43	4,412,172	1,986,921	12,530	1,495,391	274,839	469,479	181,245	4,833,675	55,468,624	50,634,949	9%
2030	36	45	4,833,675	2,107,136	13,065	1,600,068	284,807	484,897	198,289	5,281,535	57,342,292	52,060,757	9%
2031	36	45	5,281,535	2,206,061	13,655	1,712,073	300,030	501,927	217,090	5,792,939	59,261,203	53,468,264	10%
2032	36	46	5,792,939	2,301,003	14,103	1,831,918	311,366	515,934	238,532	6,375,583	61,212,518	54,836,935	10%
2033	34	46	6,375,583	2,394,298	14,669	1,960,152	328,193	533,401	263,198	7,051,560	63,229,144	56,177,584	11%
2034	31	47	7,051,560	2,475,429	14,658	2,023,511	325,033	547,709	290,106	7,747,832	65,219,548	57,471,716	12%
2035	29	46	7,747,832	2,544,129	14,665	2,087,961	322,706	564,511	318,159	8,482,375	67,194,331	58,711,956	13%
2036	27	47	8,482,375	2,637,903	14,690	2,180,363	317,828	579,187	347,707	9,254,867	69,111,096	59,856,229	13%
2037	25	47	9,254,867	2,753,478	14,724	2,296,477	308,957	598,133	378,817	10,069,049	70,922,437	60,853,388	14%
2038	23	47	10,069,049	2,859,550	14,766	2,403,087	300,548	616,236	411,586	10,926,191	72,641,744	61,715,553	15%
2039	21	48	10,926,191	2,980,429	14,815	2,526,007	290,049	635,219	446,079	11,828,302	74,238,165	62,409,863	16%
2040	20	47	11,828,302	3,068,885	14,870	2,615,002	281,330	654,633	482,385	12,777,897	75,752,486	62,974,589	17%
2041	19	47	12,777,897	3,117,970	14,930	2,662,573	275,881	672,378	520,581	13,776,410	77,240,493	63,464,083	18%
2042	17	47	13,776,410	3,193,722	14,995	2,739,706	267,122	689,908	560,721	14,825,150	78,653,625	63,828,475	19%
2043	16	47	14,825,150	3,276,913	15,065	2,824,335	256,921	710,735	602,908	15,928,071	79,971,781	64,043,710	20%
2044	15	47	15,928,071	3,332,503	15,139	2,879,843	249,266	729,892	647,250	17,086,681	81,235,190	64,148,509	21%
2045	14	47	17,086,681	3,387,072	15,219	2,934,439	241,465	749,127	693,820	18,303,241	82,440,181	64,136,940	22%
2046	12	46	18,303,241	3,457,160	15,304	3,006,157	231,639	768,806	742,708	19,580,087	83,560,151	63,980,064	23%
2047	11	46	19,580,087	3,532,255	15,396	3,083,853	220,187	789,842	794,021	20,920,339	84,578,773	63,658,434	25%
2048	10	46	20,920,339	3,601,911	15,497	3,156,454	208,216	811,221	847,874	22,326,697	85,492,644	63,165,947	26%
2049	9	46	22,326,697	3,679,718	15,608	3,238,231	194,551	833,793	904,381	23,802,327	86,278,192	62,475,865	28%
2050	8	46	23,802,327	3,765,812	15,731	3,329,328	179,209	857,517	963,669	25,350,506	86,913,468	61,562,962	29%
2051	7	46	25,350,506	3,859,916	15,865	3,429,607	161,954	882,546	1,025,869	26,974,701	87,369,993	60,395,292	31%
2052	6	46	26,974,701	3,967,820	16,011	3,544,344	143,210	908,915	1,091,121	28,678,460	87,614,587	58,936,127	33%
2053	5	47	28,678,460	4,085,962	16,169	3,668,733	124,248	936,987	1,159,572	30,465,868	87,617,892	57,152,024	35%
2054	4	47	30,465,868	4,215,814	16,333	3,804,005	105,694	966,212	1,231,384	32,341,016	87,371,985	55,030,969	37%
2055	3	47	32,341,016	4,345,832	16,500	3,938,158	87,889	997,045	1,306,726	34,308,502	86,872,934	52,564,432	39%
2056	3	47	34,308,502	4,472,425	16,672	4,067,062	71,584	1,029,107	1,385,780	36,372,939	86,123,951	49,751,012	42%
2057	2	46	36,372,939	4,590,844	16,846	4,185,805	56,911	1,062,876	1,468,739	38,539,580	85,140,917	46,601,337	45%

Actuarial Projections – Conservation Funding in 2034
Table A-8

	Benefit Payment Account [a]						Accumulation Account [b]						Minimum Payment			
Plan Year End 30-Jun	Assets (boy)	Net Benefit Pmts and Expenses	Employer Contribs.	6.85%[d] of Pay Member Contribs.	35.40% of Premium Tax Allocation	Investment Income	Assets (boy)[c]	Net Benefit Pmts and Expenses	Employer Contribs.	1.50% of Pay Member Contribs.	64.60% of Premium Tax Allocation	Investment Income	Conservation Employer Cont.	Alternative Employer Cont.	Minimum Alt /Cons Cont.	Statewide Employer Contribution
2018	$2,734,963	$1,399,820	$710,449	$170,240	$359,039	$106,228	$0	$0	$0	$0	$0	$0	NA	$710,449	$710,449	$0
2019	2,681,099	1,423,116	760,180	178,293	358,686	104,750	0	0	0	0	0	0	NA	760,180	760,180	0
2020	2,659,892	1,472,173	813,393	186,130	372,004	104,402	0	0	0	0	0	0	NA	813,393	813,393	0
2021	2,663,648	1,513,007	870,331	195,638	381,667	105,251	0	0	0	0	0	0	NA	870,331	870,331	0
2022	2,703,528	1,551,497	931,254	204,159	390,490	107,634	0	0	0	0	0	0	NA	931,254	931,254	0
2023	2,785,568	1,591,396	996,442	214,543	400,390	111,818	0	0	0	0	0	0	NA	996,442	996,442	0
2024	2,917,364	1,637,778	1,066,193	223,918	409,740	117,924	0	0	0	0	0	0	NA	1,066,193	1,066,193	0
2025	3,097,361	1,685,944	1,140,827	234,971	420,073	126,071	0	0	0	0	0	0	NA	1,140,827	1,140,827	0
2026	3,333,360	1,721,349	1,220,685	245,856	429,738	136,799	0	0	0	0	0	0	NA	1,220,685	1,220,685	0
2027	3,645,088	1,785,146	1,306,133	255,919	440,656	150,112	0	0	0	0	0	0	NA	1,306,133	1,306,133	0
2028	4,012,763	1,880,913	1,397,562	264,169	453,441	165,150	0	0	0	0	0	0	NA	1,397,562	1,397,562	0
2029	4,412,171	1,999,451	1,495,391	274,839	469,479	181,245	0	0	0	0	0	0	NA	1,495,391	1,495,391	0
2030	4,833,674	2,120,201	1,600,068	284,807	484,897	198,289	0	0	0	0	0	0	NA	1,600,068	1,600,068	0
2031	5,281,534	2,219,716	1,712,073	300,030	501,927	217,090	0	0	0	0	0	0	NA	1,712,073	1,712,073	0
2032	5,792,937	2,315,106	1,831,918	311,366	515,934	238,532	0	0	0	0	0	0	NA	1,831,918	1,831,918	0
2033	6,375,581	2,408,967	1,960,152	328,193	533,401	263,198	0	0	0	0	0	0	NA	1,960,152	1,960,152	0
2034	7,051,557	2,490,087	2,023,511	272,683	193,893	282,062	7,333,622	0	0	52,350	353,816	8,044	2,023,511	2,097,363	2,023,511	17,920
2035	0	2,558,794	2,087,961	270,992	199,841	0	7,747,833	0	0	51,714	364,670	318,159	2,087,961	2,244,178	2,087,961	40,162
2036	0	2,652,593	2,180,363	267,194	205,036	0	8,482,376	0	0	50,634	374,151	347,707	2,180,363	2,401,270	2,180,363	59,436
2037	0	2,768,202	2,296,477	259,982	211,743	0	9,254,868	0	0	48,975	386,390	378,817	2,296,477	2,569,359	2,296,477	85,777
2038	0	2,874,316	2,403,087	253,077	218,152	0	10,069,051	0	0	47,471	398,085	411,586	2,403,087	2,749,214	2,403,087	110,591
2039	0	2,995,244	2,526,007	244,365	224,872	0	10,926,192	0	0	45,684	410,348	446,079	2,526,007	2,941,659	2,526,007	137,190
2040	0	3,083,755	2,615,002	237,009	231,744	0	11,828,303	0	0	44,321	422,889	482,385	2,615,002	3,147,575	2,615,002	164,805
2041	0	3,132,900	2,662,573	232,301	238,026	0	12,777,897	0	0	43,580	434,352	520,581	2,662,573	3,367,905	2,662,573	190,257
2042	0	3,208,717	2,739,706	224,779	244,232	0	13,776,410	0	0	42,343	445,676	560,721	2,739,706	3,603,658	2,739,706	215,476
2043	0	3,291,978	2,824,335	216,038	251,605	0	14,825,150	0	0	40,883	459,130	602,908	2,824,335	3,855,914	2,824,335	246,862
2044	0	3,347,642	2,879,843	209,412	258,387	0	15,928,072	0	0	39,854	471,506	647,250	2,879,843	4,125,828	2,879,843	276,384
2045	0	3,402,291	2,934,439	202,656	265,196	0	17,086,681	0	0	38,809	483,931	693,820	2,934,439	4,414,636	2,934,439	306,914
2046	0	3,472,464	3,006,157	194,145	272,162	0	18,303,242	0	0	37,494	496,644	742,708	3,006,157	4,723,661	3,006,157	338,630
2047	0	3,547,651	3,083,853	184,189	279,609	0	19,580,087	0	0	35,998	510,233	794,021	3,083,853	5,054,317	3,083,853	373,149
2048	0	3,617,408	3,156,454	173,776	287,178	0	20,920,339	0	0	34,440	524,044	847,874	3,156,454	5,408,119	3,156,454	408,755
2049	0	3,695,326	3,238,231	161,927	295,168	0	22,326,697	0	0	32,624	538,625	904,381	3,238,231	5,786,687	3,238,231	446,849
2050	0	3,781,543	3,329,328	148,649	303,566	0	23,802,327	0	0	30,560	553,950	963,669	3,329,328	6,191,755	3,329,328	487,322
2051	0	3,875,781	3,429,607	133,747	312,427	0	25,350,506	0	0	28,207	570,119	1,025,869	3,429,607	6,625,178	3,429,607	530,538
2052	0	3,983,831	3,544,344	117,725	321,762	0	26,974,701	0	0	25,485	587,153	1,091,121	3,544,344	7,088,940	3,544,344	576,629
2053	0	4,102,131	3,668,733	101,699	331,699	0	28,678,460	0	0	22,549	605,287	1,159,572	3,668,733	7,585,166	3,668,733	625,318
2054	0	4,232,147	3,804,005	86,097	342,045	0	30,465,869	0	0	19,597	624,167	1,231,384	3,804,005	8,116,128	3,804,005	674,854
2055	0	4,362,332	3,938,158	71,214	352,960	0	32,341,016	0	0	16,675	644,085	1,306,726	3,938,158	8,684,257	3,938,158	725,371
2056	0	4,489,097	4,067,062	57,724	364,311	0	34,308,502	0	0	13,860	664,797	1,385,780	4,067,062	9,292,155	4,067,062	775,682
2057	0	4,607,690	4,185,805	45,620	376,265	0	36,372,938	0	0	11,291	686,611	1,468,739	4,185,805	9,942,606	4,185,805	825,465

[a] *Employer contributions paid from the City's General Fund are used to finance benefits not covered by the applicable employee contributions or premium tax allocation.*

[b] *Assets accumulate in the Pension and Relief Fund.*

[c] *Includes transfer from Benefit Payment Account to Accumulation Account in Plan Year End June 30, 2034.*

[d] *Blended employee contribution rate of 8.35% of pay less 1.50% of pay going into the Accumulation Account.*