City Of Clarksburg, West Virginia Policemen's Pension and Relief Fund

Actuarial Valuation Report for the Year Beginning July 1, 2017

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September 10, 2018

Ms. Kimberly A. Karakiozis
Finance Director
222 West Main Street
Clarksburg, WV 26301

Sgt. Richard A. White
Pension Board Secretary
City of Clarksburg Policemen's Pension and Relief Fund

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

Dear Ms. Karakiozis and Sgt. White:

Upon the request of the Municipal Pensions Oversight Board, we have performed an actuarial valuation as of July 1, 2017, for the City of Clarksburg, West Virginia Policemen'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 5.00%. 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, FSA, EA, MAAA, FCA	Lance J. Weiss, EA, MAAA, FCA
Senior Consultant	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 Clarksburg, West Virginia Policemen'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. 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 $1,337,055 for the fiscal year end June 30, 2017. The sponsor's minimum statutory contribution for fiscal year 2017 was $940,290, 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	$6,888,363
Actuarial Accrued Liability	$28,735,254
Unfunded Actuarial Accrued Liability	$21,846,891
Funded Ratio	23.97%

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	$940,290
7% Increase in Alternative Contribution	$65,820
FYE 06/30/2018 Alternative Contribution	$1,006,110
Additional Contribution	$0
Final FYE 06/30/2018 Alternative Contribution	$1,006,110

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	$1,006,110
7% Increase in Alternative Contribution	$70,428
FYE 06/30/2019 Alternative Contribution	$1,076,538
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	$1,076,538
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	$1,076,538

Executive Summary (Continued)

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.

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 26% (using a testing interest rate of 5.50% for all plans using the Alternative funding policy), ratio of assets to benefits of 5.68, equity allocation of 61%, and 15-year projected funded ratio of 66%, resulted in a discount rate assumption of 5.00%.
- The Fund experienced an approximate annualized return of 11.31% on the market value of assets during the plan year ended June 30, 2017, which compares to the expected annualized return of 5.00%. The difference in actual versus expected return produced an asset (gain)/loss of ($369,076).
- 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 ($630,123) 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 5.00%:

- The funded ratio is projected to increase from 24% at June 30, 2017, to 36% at June 30, 2024, to 62% at June 30, 2033, and 100% at June 30, 2042
- Employer contributions are expected to increase from $1,006,110 (or 47% of pay) for the fiscal year end June 30, 2018, to $4,769,497 (or 91% of pay) for fiscal year end June 30, 2041.

Please note that a funded ratio of only 24% at June 30, 2017, means that the plan is underfunded.

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 $1,076,538 is sufficient to finance 100% of the net employer normal cost of $798,496 and only 1.3% of the unfunded liability of $21,846,891. The state premium tax allocation of $446,236 is sufficient to finance only 2.0% of the unfunded actuarial accrued liability of $21,846,891.

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 underfunded plan, we recommend that the plan sponsor consider making additional contributions (in excess of the minimum requirement) to ensure that there are sufficient assets available in the fund in all years to pay the promised benefits.

If the minimum employer contributions (calculated under the Alternative funding policy) are not made or investment return is less than the assumption of 5.00%, 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 5.00%, then contributions will generally *increase*. Conversely, if the actual return is *greater* than the assumed return, contributions will generally *decrease*.
- If salaries *increase* by more than assumed, contributions could *increase*. If salaries *decrease* by more than assumed, contributions could *decrease.*
- If active members retire *sooner* than expected, contributions will generally *increase.* If active members retire *later* than expected, contributions will generally *decrease*.
- If active members become disabled during the year, contributions could increase.

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

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

Schedule A: Summary of Key Valuation Results

	No.	July 1, 2016	No.	July 1, 2017
Valuation Date		**July 1, 2016**		**July 1, 2017**
Valuation Interest Rate		5.00%		5.00%
Cost-of-Living Adjustment		2.75%		2.75%
Wage Inflation		3.75%		3.75%
Expected Payroll		$2,085,929		$2,118,610
Average Pay		$47,407		$48,150
Expected Benefit Payments		$1,194,883		$1,212,049
1. Actuarial Accrued Liability	No.		No.	
(a) Actives	44	$9,680,804	44	$9,119,758
(b) Retirees	22	$12,140,653	22	$11,990,107
(c) Survivors	14	$2,279,379	13	$2,155,904
(d) Disabled Members	11	$3,090,408	11	$3,043,381
(e) Deferred Vested Members	2	$1,022,021	4	$2,426,104
(f) Total	93	$28,213,265	94	$28,735,254
2. Present Value of Future Normal Costs		$11,093,081		$11,713,835
3. Present Value of Benefits (1(f) + 2)		$39,306,346		$40,449,089
4. Market Value of Assets		$5,491,795		$6,888,363
5. Unfunded Actuarial Accrued Liability (1(f) - 4)		$22,721,470		$21,846,891
6. Funded Ratio (4 / 1(f))		19.47%		23.97%
7. Net Employer Normal Cost				
(a) Normal Cost		$940,194		$964,909
(b) Administrative Expenses		$7,963		$7,706
(c) Gross Normal Cost (a + b)		$948,157		$972,615
(d) Employee Contribution Rate [a]		7.97%		8.22%
(e) Expected Employee Contributions		$166,262		$174,119
(f) Net Employer Normal Cost (c - e)		$781,895		$798,496
(% of Compensation)		37.48%		37.69%
		FYE 2018		**FYE 2019**
8. Estimated Minimum Employer Contribution [b]				
(a) Prior Year Alternative Contribution		$940,290		$1,006,110
(b) Increase in Alternative Contribution		7.00%		7.00%
(c) Current Year Alternative Contribution		$1,006,110		$1,076,538
(d) Additional Contribution		$0		$0
(e) Alternative Contribution (c + d)		$1,006,110		$1,076,538

[a] Blended rate reflecting 7.0% 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.

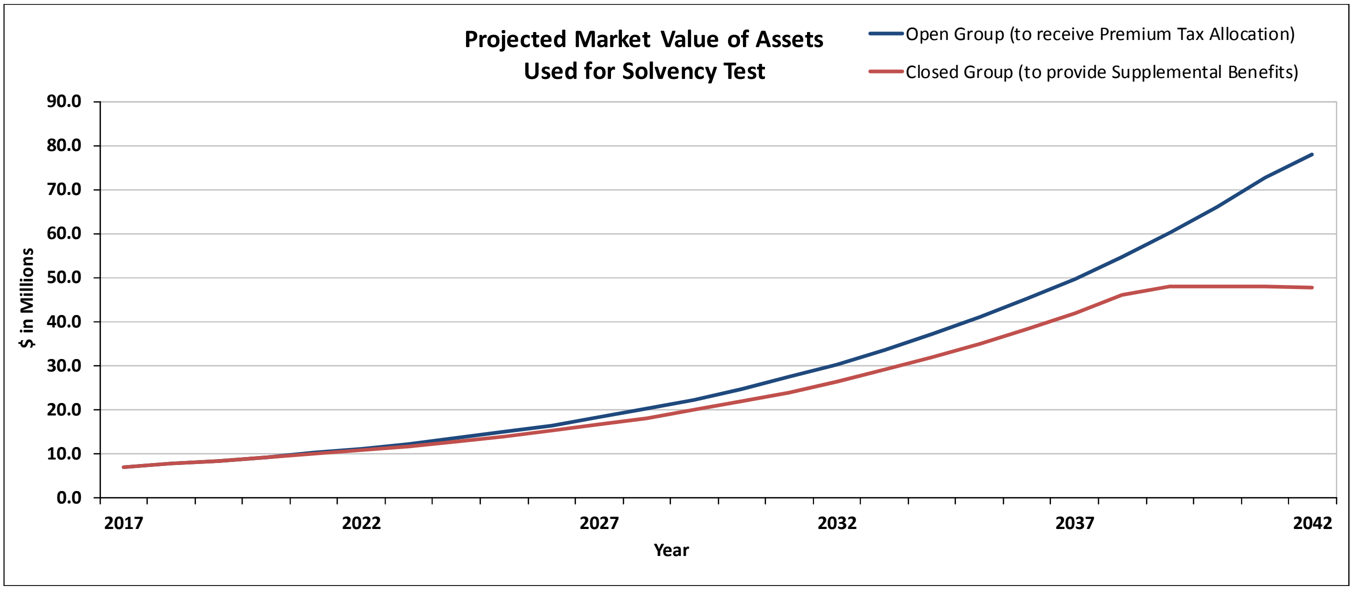
Schedule B: (Gain)/Loss Analysis

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

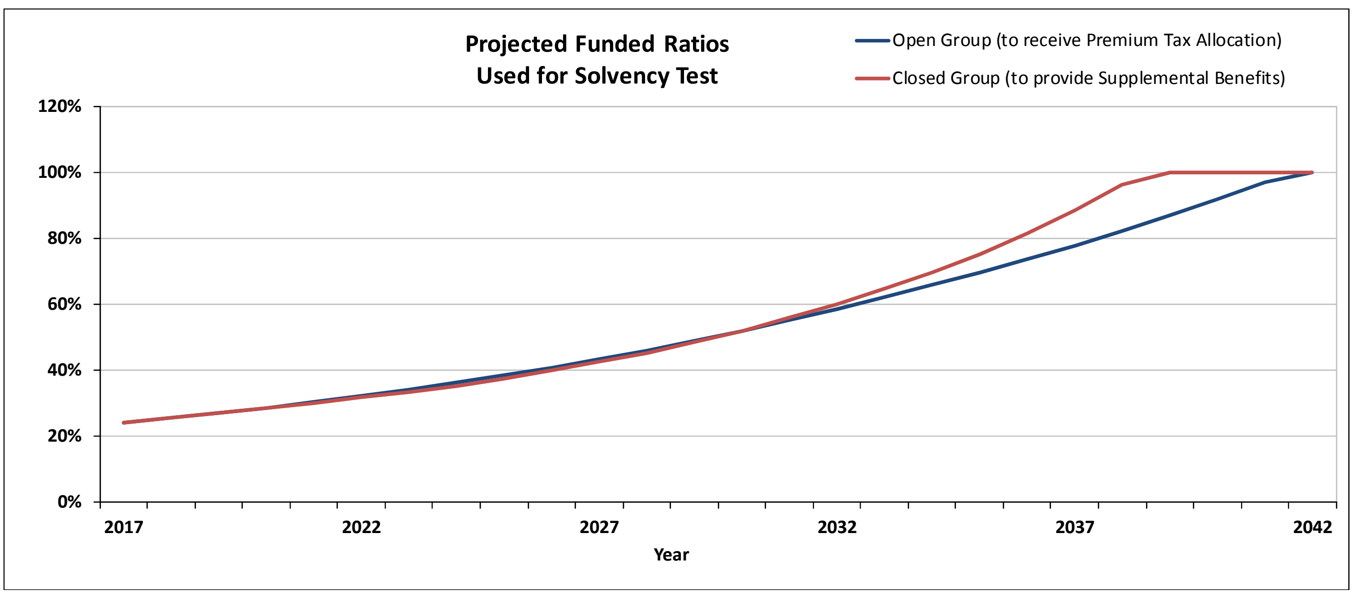
1.	(a) Actuarial Accrued Liability as of 7/1/2016	$28,213,265
	(b) Normal Cost due 7/1/2016	$940,194
	(c) Interest on (a) and (b) to 6/30/2017	$1,434,168
	(d) Benefit Payments with interest to 6/30/2017	$1,222,250
	(e) Effect of Assumption Changes	$0
	(f) Expected Liability at 7/1/2017 [(a) + (b) + (c) - (d) + (e)]	$29,365,377
	(g) Actual Liability at 7/1/2017	$28,735,254
	(h) Liability (Gain)/Loss [(g) - (f)]	**($630,123)**
2.	(a) Market Value of Assets as of 7/1/2016	$5,491,795
	(b) Interest on (a) to 6/30/2017	$274,590
	(c) Contributions with interest to 6/30/2017	$1,975,152
	(d) Benefit Payments with interest to 6/30/2017	$1,222,250
	(e) Expected Assets at 6/30/2017 [(a) + (b) + (c) - (d)]	$6,519,287
	(f) Actual Assets at 7/1/2017	$6,888,363
	(g) Asset (Gain)/Loss [(e) - (f)]	**($369,076)**
3.	Total (Gain)/Loss [1(h) + 2(g)]	**($999,199)**

Graphs 1A and 1B: Solvency Projections

Graph 1A



Graph 1B



SECTION II

ACTUARIAL PROJECTIONS

ALTERNATIVE FUNDING POLICY

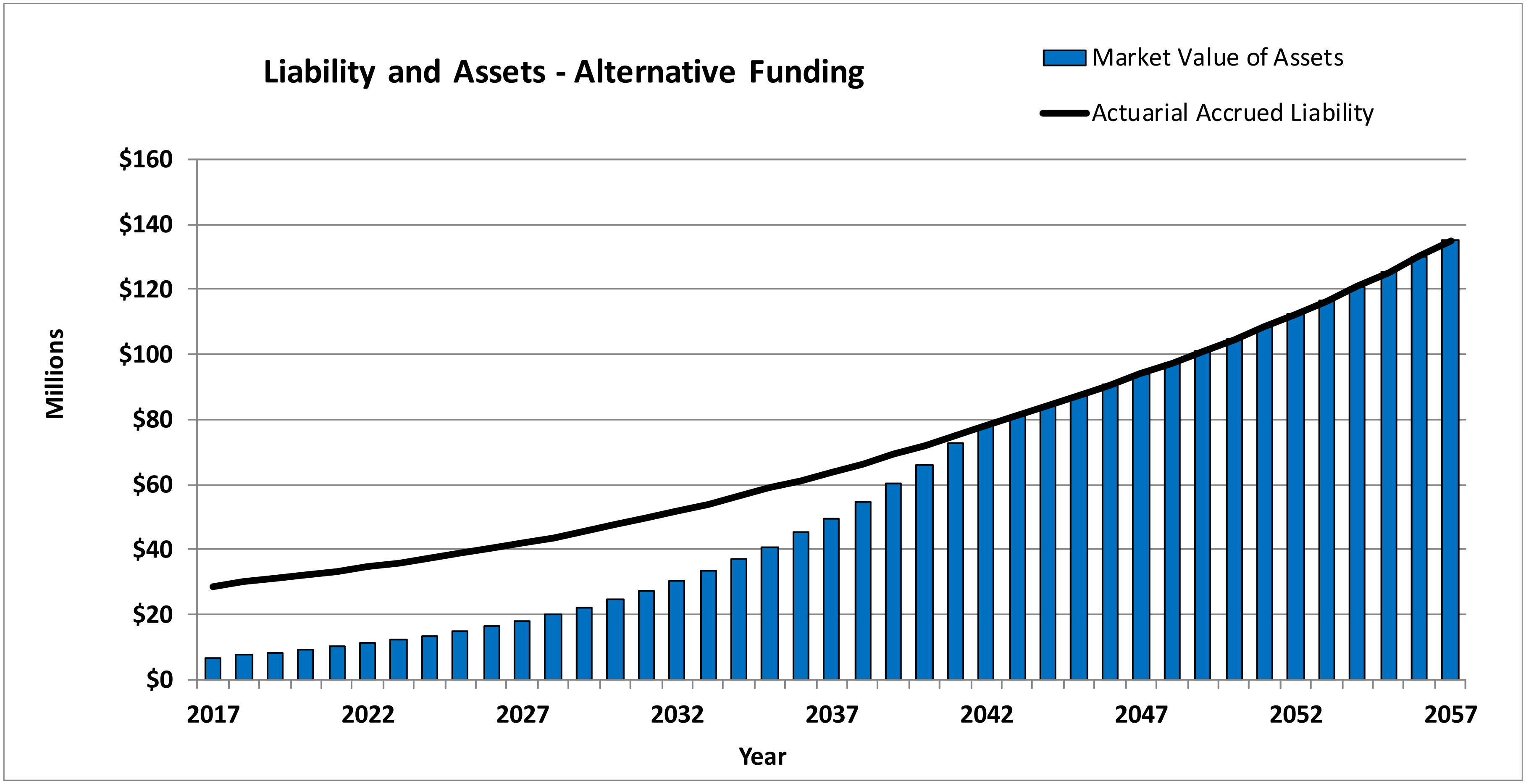
Alternative Funding on a Closed Group Basis, Table 1

Valuation Plan Year End 30-Jun	Number Active	Number Pay Status	Total Payroll	Total Assets: Assets (boy)	Benefit Payments	Expenses	Employer Contributions	Employee Contributions	Premium Tax Allocation Contributions	Investment Income	Assets (eoy)	Actuarial Accrued Liability	Unfunded Liability	Funded Ratio
2017	44	50	$2,085,929	$5,491,795	$1,192,439	$7,500	$1,337,055	$168,474	$421,449	$669,529	$6,888,363	$28,735,254	$21,846,891	24%
2018	41	51	2,118,610	6,888,363	1,212,049	7,706	1,006,110	174,119	437,291	354,241	7,640,369	29,918,676	22,278,307	26%
2019	38	51	2,099,367	7,640,369	1,315,158	7,708	1,076,538	173,115	446,236	391,230	8,404,622	31,045,357	22,640,735	27%
2020	35	52	2,056,643	8,404,622	1,415,480	7,724	1,151,896	170,273	418,274	428,065	9,149,926	32,102,991	22,953,065	29%
2021	32	53	2,009,255	9,149,926	1,485,770	7,762	1,232,529	167,170	407,896	465,252	9,929,241	33,118,133	23,188,892	30%
2022	30	53	1,972,307	9,929,241	1,540,046	7,807	1,318,806	164,873	400,181	504,760	10,770,009	34,109,669	23,339,660	32%
2023	29	53	1,953,839	10,770,009	1,584,002	7,857	1,411,122	163,950	393,476	547,803	11,694,501	35,095,423	23,400,922	33%
2024	27	53	1,955,829	11,694,501	1,614,767	7,909	1,509,901	164,528	389,671	595,626	12,731,552	36,098,872	23,367,320	35%
2025	25	53	1,942,648	12,731,552	1,657,077	7,962	1,615,594	164,088	386,943	648,964	13,882,102	37,101,842	23,219,740	37%
2026	24	53	1,913,923	13,882,102	1,711,562	8,016	1,728,686	162,594	382,475	707,791	15,144,070	38,084,294	22,940,224	40%
2027	22	53	1,905,217	15,144,070	1,748,335	8,067	1,849,694	162,562	379,324	772,889	16,552,137	39,073,640	22,521,503	42%
2028	21	53	1,893,405	16,552,137	1,782,952	8,120	1,979,173	162,402	378,214	845,602	18,126,456	40,069,764	21,943,308	45%
2029	19	53	1,858,345	18,126,456	1,837,009	8,179	2,117,715	160,694	375,414	926,292	19,861,383	41,041,678	21,180,295	48%
2030	18	53	1,836,195	19,861,383	1,880,018	8,237	2,265,955	160,002	372,711	1,015,552	21,787,348	42,005,917	20,218,569	52%
2031	17	53	1,826,058	21,787,348	1,913,549	8,299	2,424,572	160,259	371,949	1,114,925	23,937,205	42,976,861	19,039,656	56%
2032	16	52	1,809,661	23,937,205	1,950,714	8,362	2,594,292	159,745	370,991	1,225,654	26,328,811	43,947,848	17,619,037	60%
2033	15	52	1,774,802	26,328,811	2,006,029	8,427	2,775,892	157,853	370,848	1,348,301	28,967,249	44,892,518	15,925,269	65%
2034	13	53	1,657,894	28,967,249	2,117,590	8,490	2,970,204	149,300	370,192	1,482,037	31,812,903	45,713,745	13,900,842	70%
2035	11	53	1,517,195	31,812,903	2,229,305	8,551	3,178,118	138,096	366,633	1,626,329	34,884,223	46,392,650	11,508,427	75%
2036	10	54	1,408,680	34,884,223	2,314,996	8,616	3,400,586	129,357	365,484	1,783,028	38,239,065	46,963,990	8,724,925	81%
2037	8	54	1,273,450	38,239,065	2,414,392	8,682	3,638,627	117,900	364,198	1,953,877	41,890,593	47,394,710	5,504,117	88%
2038	7	54	1,144,247	41,890,593	2,504,650	8,746	3,893,331	106,505	362,706	2,140,194	45,879,934	47,689,388	1,809,454	96%
2039	6	53	1,044,212	45,879,934	2,576,921	8,807	1,833,898	97,662	363,062	2,286,808	47,875,636	47,875,636	0	100%
2040	5	53	949,441	47,875,636	2,644,422	8,864	306,562	89,127	0	2,338,030	47,956,070	47,956,070	0	100%
2041	4	53	835,502	47,956,070	2,726,672	8,916	265,487	78,643	0	2,338,746	47,903,358	47,903,358	0	100%
2042	4	52	721,610	47,903,358	2,807,843	8,965	227,167	68,065	0	2,332,897	47,714,680	47,714,680	0	100%
2043	3	52	601,261	47,714,680	2,890,907	9,009	188,240	56,824	0	2,320,172	47,380,000	47,380,000	0	100%
2044	2	51	468,671	47,380,000	2,979,329	9,049	146,545	44,392	0	2,299,917	46,882,476	46,882,476	0	100%
2045	1	51	350,193	46,882,476	3,052,566	9,084	110,785	33,213	0	2,272,072	46,236,896	46,236,896	0	100%
2046	1	50	256,205	46,236,896	3,099,980	9,115	82,802	24,317	0	2,237,711	45,472,631	45,472,631	0	100%
2047	1	49	186,275	45,472,631	3,124,579	9,142	62,418	17,696	0	2,198,223	44,617,247	44,617,247	0	100%
2048	0	48	128,499	44,617,247	3,137,551	9,165	45,937	12,207	0	2,154,590	43,683,266	43,683,266	0	100%
2049	0	47	90,265	43,683,266	3,131,377	9,183	34,920	8,575	0	2,107,681	42,693,882	42,693,882	0	100%
2050	0	46	62,339	42,693,882	3,115,499	9,197	26,869	5,922	0	2,058,339	41,660,317	41,660,317	0	100%
2051	0	45	40,868	41,660,317	3,092,843	9,206	20,667	3,883	0	2,007,017	40,589,834	40,589,834	0	100%
2052	0	43	25,603	40,589,834	3,063,766	9,210	16,317	2,432	0	1,954,067	39,489,674	39,489,674	0	100%
2053	0	42	15,302	39,489,674	3,029,451	9,209	13,428	1,454	0	1,899,811	38,365,706	38,365,706	0	100%
2054	0	41	7,802	38,365,706	2,991,465	9,203	11,283	741	0	1,844,480	37,221,542	37,221,542	0	100%
2055	0	40	3,365	37,221,542	2,949,673	9,191	10,054	320	0	1,788,264	36,061,316	36,061,316	0	100%
2056	0	39	1,270	36,061,316	2,904,557	9,172	9,466	121	0	1,731,348	34,888,521	34,888,521	0	100%
2057	0	38	515	34,888,521	2,856,804	9,146	9,267	49	0	1,673,881	33,705,768	33,705,768	0	100%

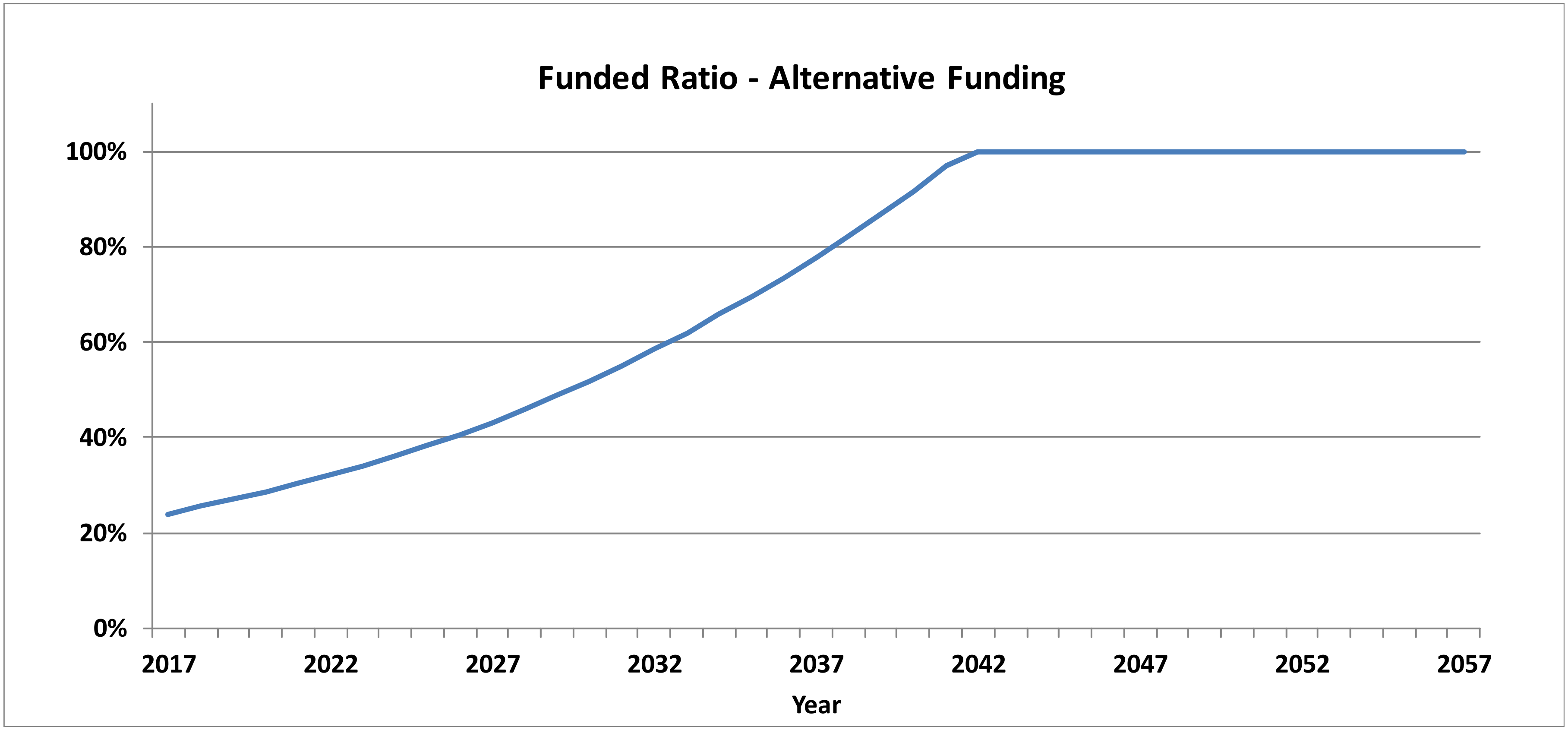
Alternative Funding on an Open Group Basis, Table 2

Valuation Plan Year End 30-Jun	Number Active	Number Pay Status	Total Payroll	Total Assets: Assets (boy)	Benefit Payments	Expenses	Employer Contributions	Employee Contributions	Premium Tax Allocation Contributions	Investment Income	Assets (eoy)	Actuarial Accrued Liability	Unfunded Liability	Funded Ratio
2017	44	50	$2,085,929	$5,491,795	$1,192,439	$7,500	$1,337,055	$168,474	$421,449	$669,529	$6,888,363	$28,735,254	$21,846,891	24%
2018	44	51	2,118,610	6,888,363	1,212,049	7,706	1,006,110	174,119	437,291	354,241	7,640,369	29,918,676	22,278,307	26%
2019	44	51	2,213,071	7,640,369	1,315,158	7,972	1,076,538	184,748	446,236	391,511	8,416,272	31,096,382	22,680,110	27%
2020	44	52	2,298,859	8,416,272	1,415,914	8,250	1,151,896	194,315	463,084	430,325	9,231,727	32,264,645	23,032,918	29%
2021	44	53	2,397,311	9,231,727	1,487,471	8,569	1,232,529	205,228	475,825	471,898	10,121,166	33,460,305	23,339,139	30%
2022	44	53	2,499,137	10,121,166	1,543,748	8,862	1,318,806	216,132	487,739	517,667	11,108,899	34,702,107	23,593,208	32%
2023	44	53	2,620,456	11,108,899	1,590,308	9,153	1,411,122	228,592	499,703	568,779	12,217,634	36,011,495	23,793,861	34%
2024	44	53	2,748,638	12,217,634	1,624,141	9,403	1,509,901	241,213	510,833	626,400	13,472,437	37,409,135	23,936,698	36%
2025	44	54	2,858,438	13,472,437	1,669,954	9,643	1,615,594	252,620	521,662	691,162	14,873,877	38,878,693	24,004,816	38%
2026	44	54	2,980,531	14,873,877	1,728,277	9,937	1,728,686	265,886	534,247	763,218	16,427,701	40,415,925	23,988,224	41%
2027	44	53	3,124,519	16,427,701	1,769,377	10,215	1,849,694	280,629	546,732	843,548	18,168,712	42,053,021	23,884,309	43%
2028	44	53	3,253,539	18,168,712	1,808,919	10,459	1,979,173	293,998	558,506	933,435	20,114,446	43,788,783	23,674,337	46%
2029	44	54	3,388,256	20,114,446	1,868,386	10,763	2,117,715	308,894	572,523	1,033,380	22,267,809	45,609,492	23,341,683	49%
2030	44	53	3,548,087	22,267,809	1,917,301	11,078	2,265,955	325,925	586,652	1,144,263	24,662,225	47,542,256	22,880,031	52%
2031	44	53	3,707,751	24,662,225	1,957,284	11,356	2,424,572	342,613	599,868	1,267,645	27,328,283	49,601,627	22,273,344	55%
2032	44	53	3,873,934	27,328,283	2,001,321	11,653	2,594,292	359,962	613,995	1,404,822	30,288,381	51,792,351	21,503,970	58%
2033	44	53	4,028,437	30,288,381	2,063,977	11,952	2,775,892	376,604	628,895	1,556,535	33,550,378	54,097,255	20,546,877	62%
2034	44	54	4,125,222	33,550,378	2,183,403	12,286	2,970,204	389,053	645,038	1,722,183	37,081,166	56,436,613	19,355,447	66%
2035	44	54	4,267,795	37,081,166	2,303,727	12,740	3,178,118	405,828	666,554	1,901,819	40,917,018	58,829,839	17,912,821	70%
2036	44	55	4,419,657	40,917,018	2,399,243	13,120	3,400,586	422,283	685,701	2,097,617	45,110,842	61,309,937	16,199,095	74%
2037	44	55	4,566,058	45,110,842	2,509,901	13,530	3,638,627	437,413	706,094	2,311,321	49,680,866	63,862,030	14,181,164	78%
2038	44	55	4,730,231	49,680,866	2,612,757	13,959	3,893,331	452,784	728,182	2,544,486	54,672,933	66,502,460	11,829,527	82%
2039	44	55	4,905,516	54,672,933	2,701,243	14,371	4,165,864	468,885	749,782	2,799,556	60,141,406	69,248,371	9,106,965	87%
2040	44	56	5,081,553	60,141,406	2,797,045	14,795	4,457,474	484,927	772,201	3,078,754	66,122,922	72,097,963	5,975,041	92%
2041	44	56	5,241,816	66,122,922	2,919,339	15,244	4,769,497	499,584	795,774	3,383,449	72,636,642	75,021,666	2,385,024	97%
2042	44	57	5,423,516	72,636,642	3,053,593	15,747	3,443,938	516,464	821,671	3,674,128	78,023,502	78,023,502	0	100%
2043	44	57	5,587,487	78,023,502	3,201,980	16,234	1,868,766	531,099	0	3,880,965	81,086,119	81,086,119	0	100%
2044	44	58	5,762,169	81,086,119	3,368,065	16,779	1,918,675	546,572	0	4,031,597	84,198,119	84,198,119	0	100%
2045	44	58	5,942,185	84,198,119	3,533,961	17,324	1,969,659	562,163	0	4,184,730	87,363,386	87,363,386	0	100%
2046	44	58	6,145,855	87,363,386	3,691,448	17,892	2,026,694	580,476	0	4,340,952	90,602,167	90,602,167	0	100%
2047	44	59	6,357,763	90,602,167	3,844,951	18,446	2,089,546	599,703	0	4,501,113	93,929,132	93,929,132	0	100%
2048	44	59	6,585,917	93,929,132	4,002,500	19,020	2,161,774	620,649	0	4,665,857	97,355,892	97,355,892	0	100%
2049	44	59	6,828,751	97,355,892	4,152,938	19,595	2,238,416	643,408	0	4,835,920	100,901,103	100,901,103	0	100%
2050	44	60	7,086,830	100,901,103	4,304,966	20,182	2,322,475	667,858	0	5,012,092	104,578,380	104,578,380	0	100%
2051	44	60	7,356,566	104,578,380	4,458,883	20,777	2,412,327	693,421	0	5,194,990	108,399,458	108,399,458	0	100%
2052	44	60	7,641,570	108,399,458	4,613,205	21,386	2,507,092	720,523	0	5,385,227	112,377,709	112,377,709	0	100%
2053	44	60	7,938,935	112,377,709	4,769,342	22,005	2,607,547	748,165	0	5,583,432	116,525,506	116,525,506	0	100%
2054	44	60	8,244,364	116,525,506	4,927,974	22,642	2,707,682	776,430	0	5,790,060	120,849,062	120,849,062	0	100%
2055	44	60	8,562,844	120,849,062	5,091,707	23,308	2,807,648	806,400	0	6,005,387	125,353,482	125,353,482	0	100%
2056	44	61	8,894,807	125,353,482	5,264,770	23,994	2,915,824	837,476	0	6,229,755	130,047,773	130,047,773	0	100%
2057	44	61	9,237,331	130,047,773	5,444,254	24,700	3,025,963	869,677	0	6,463,536	134,937,996	134,937,995	0	100%

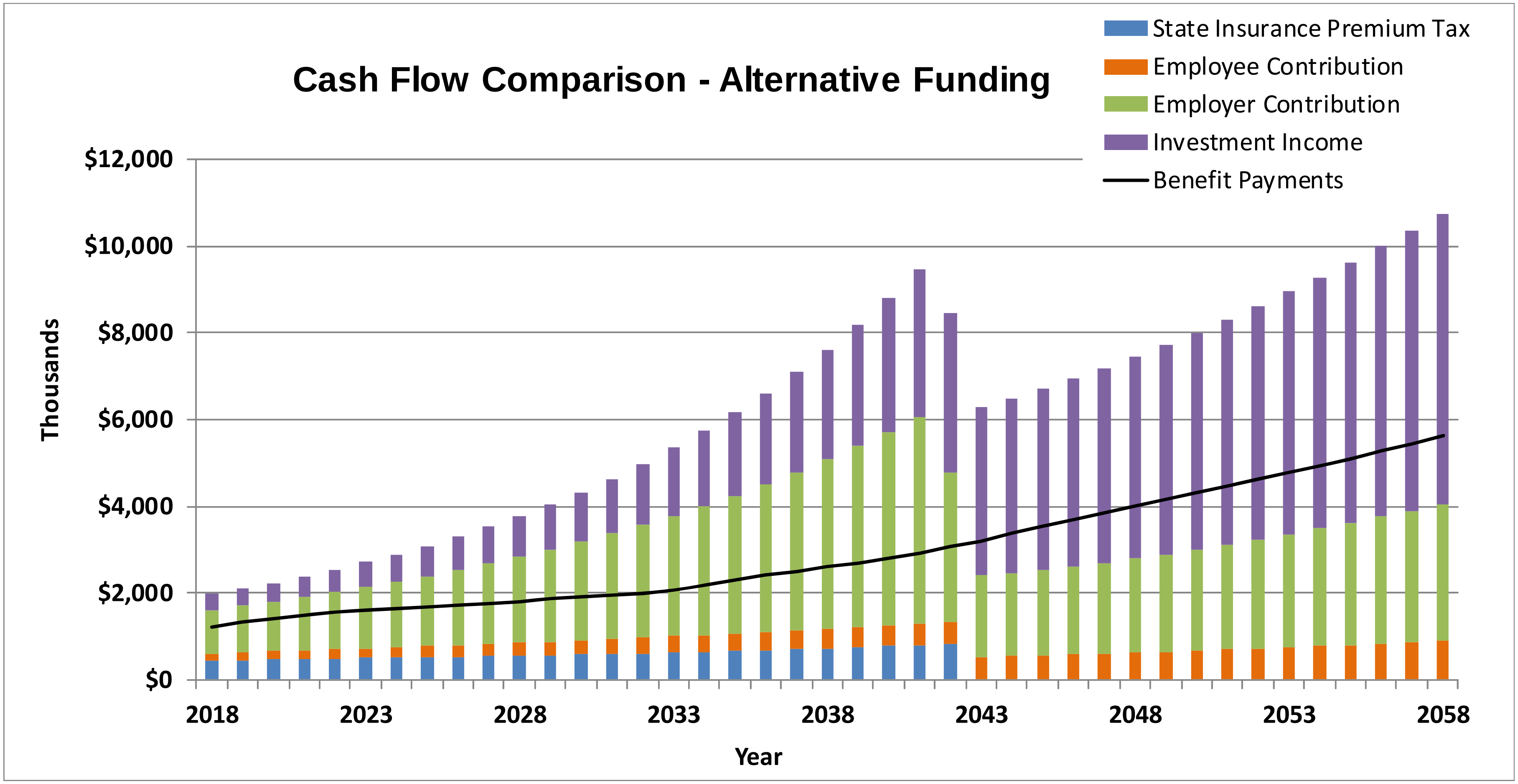
Open Group Actuarial Projections – Alternative Funding, Graph 2



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

Funding Policy Choices

West Virginia Code §8-22-20 allows a municipality's governing body (City Council) the choice of changing from the Alternative funding policy to either 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 of in excess of 1.50% 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 1.50% 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 24% and that the ratio of assets to expected benefits for the year is only 5.68, 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	$1,076,538	48.6%	NA	NA
Optional	$1,692,842	80.6%	$11,939	10.5%
Conservation	$735,006	35.0%	$11,939	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 $1,006,110 in fiscal year end 2018 to $4,769,497 in fiscal year end 2041. In fiscal year end 2042, the plan is projected to be 100% 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 $1,076,538 to $1,692,842. However, over the 40-year projection period, total employer contributions to both the local plan and the statewide plan are projected to decrease from $1,704,781 in fiscal year end 2019 to $772,482 in fiscal year end 2050, 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 decrease from $1,076,538 to $735,006. During the 35-year projection period, total employer contributions to both the local plan and the statewide plan are projected to increase from $746,945 in fiscal year end 2019 to $2,785,642 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 over the next 20 years when compared to the Optional funding policy. The Alternative funding policy produces a higher funded ratio when compared to the Conservation funding policy. However, 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.

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

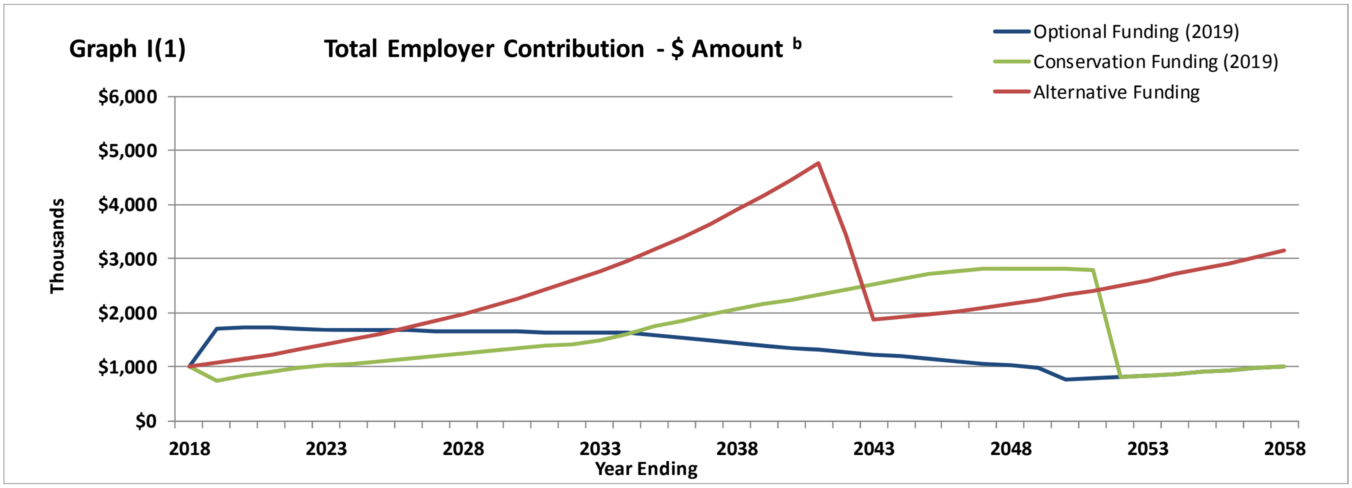
Under Scenario II, the plan sponsor is assumed to make contributions under the Alternative funding policy in future years, until the first year that either the Optional or Conservation policy produces a lower contribution. Under this assumption, in plan year end 2032, the employer contributions under the Optional funding policy of $2,527,733 are projected to be lower than contributions under the Alternative funding policy of $2,594,292. Similarly, in plan year end 2019, the employer contributions under the Conservation funding policy of $735,006 are projected to be lower than contributions under the Alternative funding policy of $1,076,538.

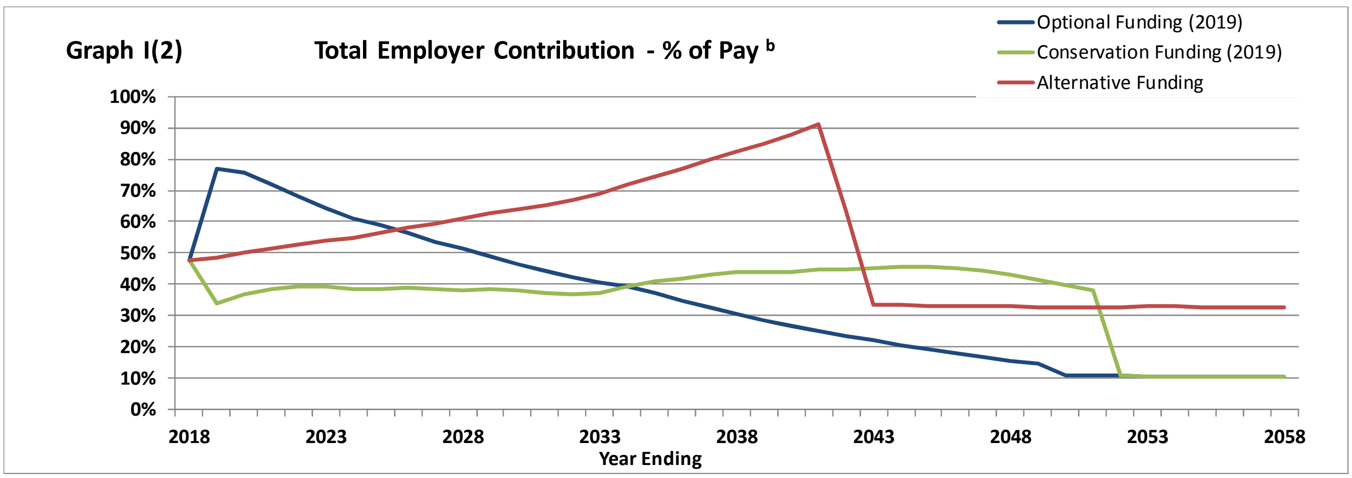
Graphs II(1), II(2), and III(3) show the projected contribution pattern and funded ratio. Based on these projections, electing the Optional funding policy in 2032 appears to produce a relatively stable and actuarially sound contribution pattern as compared to either the Alternative funding policy or the Conservation funding policy. The Conservation funding policy has lower projected employer contributions than the Alternative funding policy beginning in 2019. After 2019, 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 *expected number of retirement and disabilities.* The ultimate employer contributions depend on the *actual number of retirement and disabilities*, which could result in a more volatile contribution pattern when compared to the Optional funding policy.

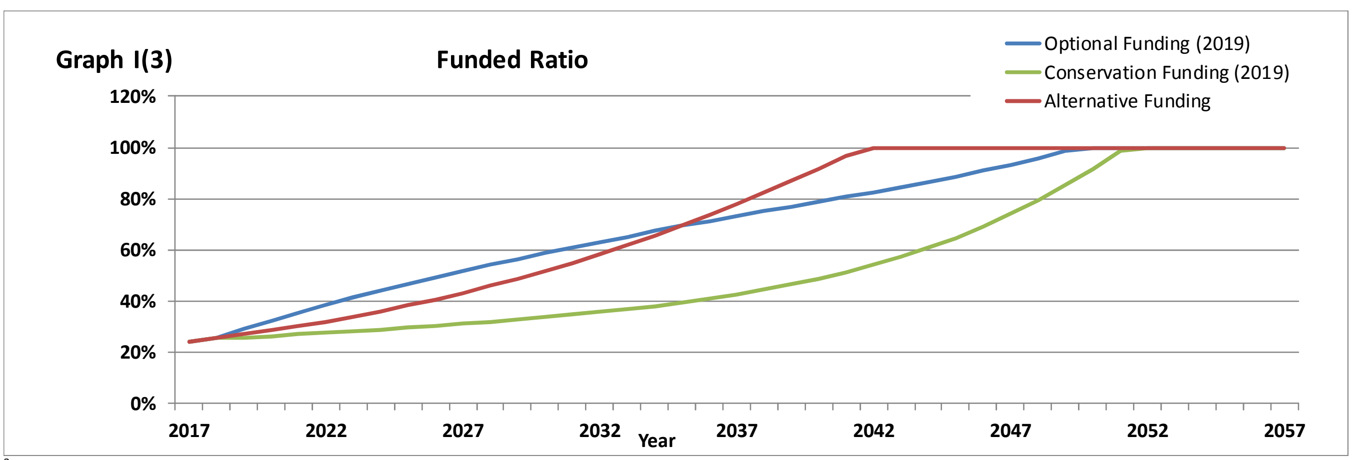
The details of the Scenario II projections can be found in the Appendix.

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

Scenario I





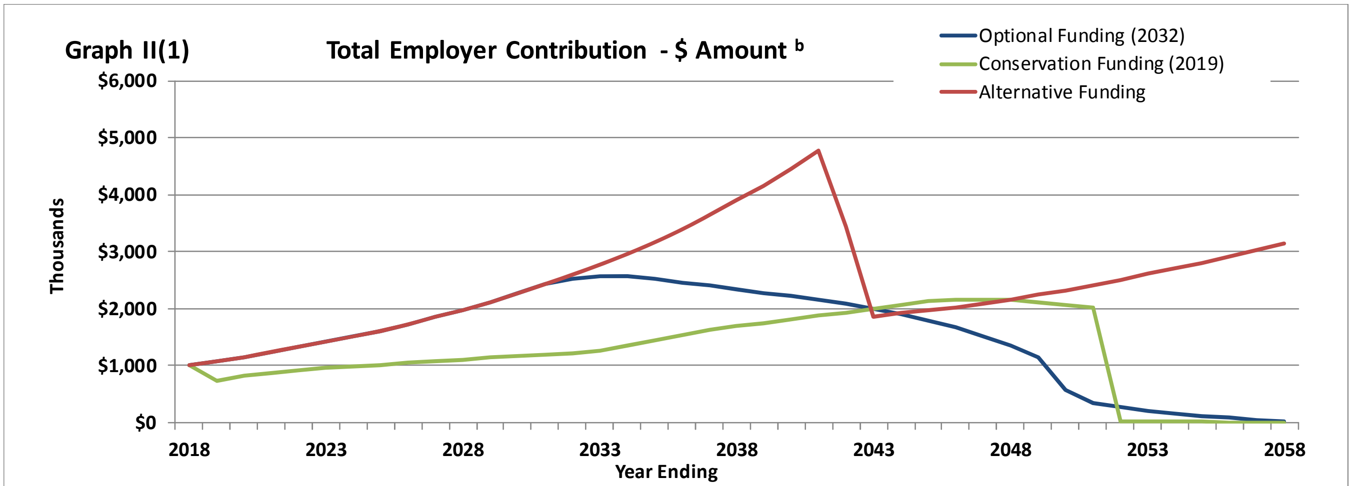


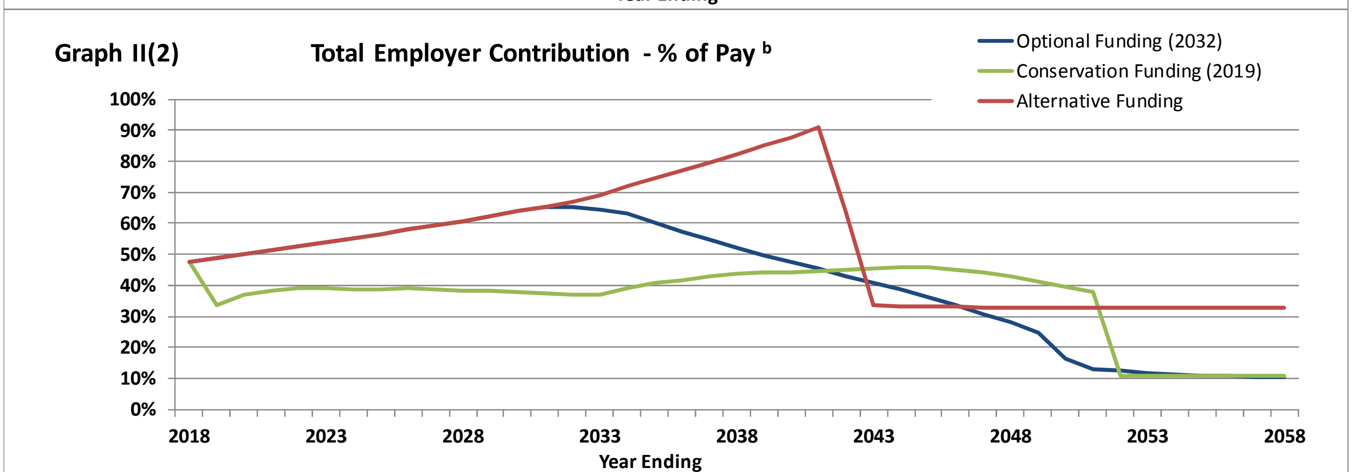
[a] *Assumes Sponsor elects either the Optional funding policy or Conservation funding policy in fiscal year end June 30, 2019, and makes the newly elected contribution in fiscal year end June 30, 2019.*

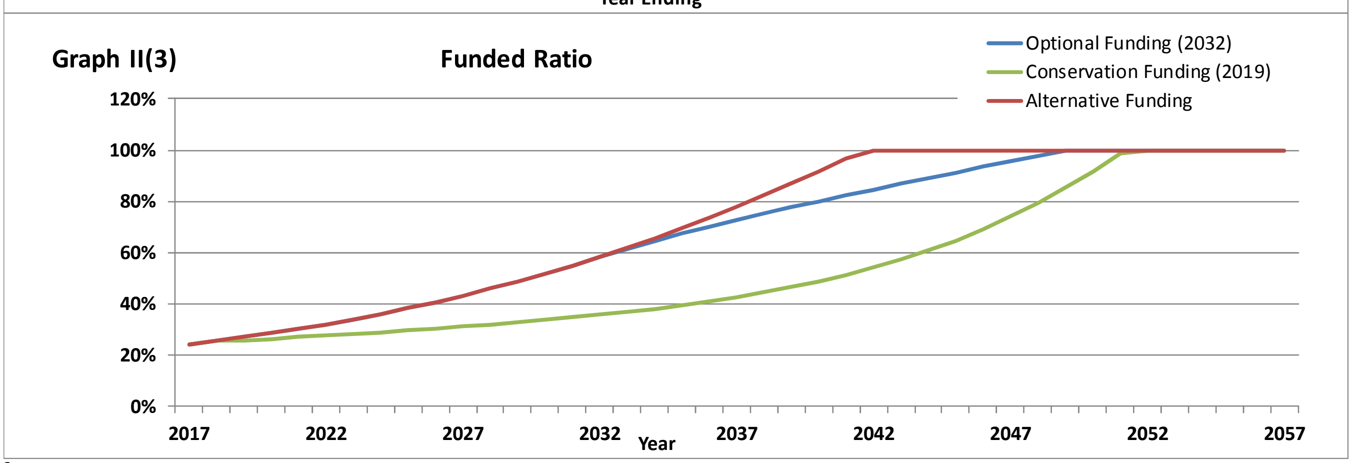
[b] *Based on total pay and includes contributions for future members projected to participate in the statewide plan.*

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	5.00%	5.00%
Cost-of-Living Adjustment	2.75%	2.75%
Wage Inflation	3.75%	3.75%
Actuarial Value of Assets	Market	Market
Actuarial Cost Method	Entry Age Normal	Entry Age Normal
Remaining Amortization Period [a]	24 Years, Level % of Pay	23 Years, Level % of Pay
Schedule of Funding Progress		
Actuarial Valuation Date	**July 1, 2016**	**July 1, 2017**
1. Market Value of Assets	$5,491,795	$6,888,363
2. Actuarial Accrued Liability	$28,213,265	$28,735,254
3. Unfunded Actuarial Accrued Liability (2 - 1)	$22,721,470	$21,846,891
4. Funded Ratio (1/2)	19%	24%
5. Expected Payroll	$2,085,929	$2,118,610
6. UAAL as Percentage of Covered Payroll (3/5)	1,089%	1,031%
Schedule of Employer Contributions [c]	**FYE 2017**	**FYE 2018**
1. Actuarially Determined Contribution		
(a) Employer Normal Cost	$781,895	$798,496
(b) Amortization of Unfunded Actuarial Accrued Liability	$1,082,798	$1,080,203
(c) Actuarially Determined Contribution (ADC) (a + b)	$1,864,693	$1,878,699
2. Employer Contribution [b]	$1,337,055	$1,006,110
3. Premium Tax Allocation	$421,449	$437,291
4. Percentage of ADC Contributed [(2 + 3)/1(c)]	94%	77%

[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 Beginning of Year	$5,238,465	$5,491,795
Adjustment to Market Value of Assets at Beginning of Year	$0	$0
Market Value of Assets Beginning of Year	$5,238,465	$5,491,795
1. Revenue During Fiscal Year		
(a) Employee Contribution	$157,241	$168,474
(b) Governmental Contribution		
(i) From Local Government	$929,217	$1,337,055
(ii) From State Government	$404,273	$421,449
(iii) Reallocation from State Government	$0	$0
(iv) Total	$1,333,490	$1,758,504
(c) Earnings on Investments		
(i) Net Appreciation/(Depreciation)	($231,212)	$593,692
(ii) Bond Interest	$343	$484
(iii) Dividends	$58,763	$58,708
(iv) Net Realized Gain (Loss) on Sale/Exchange	$189,242	$59,563
(v) Other	$48	$368
(vi) Less Investment Expense	($38,419)	($43,286)
(vii) Total	($21,235)	$669,529
(d) Other Revenue	$0	$0
(e) Net Receivable Investment Income	$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))	$1,469,496	$2,596,507
2. Expenditures During Fiscal Year		
(a) Benefits Paid	$1,160,463	$1,149,829
(b) Withdrawals	$47,953	$42,610
(c) Administrative Expenses	$7,750	$7,500
(d) Payable Benefits and Withdrawals	$0	$0
(e) Payable Administrative Expenses	$0	$0
(f) Total Expenditures (sum of (a) through (e))	$1,216,166	$1,199,939
B. Market Value of Assets End of Year [A + 1(g) - 2(f)]	$5,491,795	$6,888,363
C. Approximate Return on Assets	(0.54)%	11.31%

[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	$311,516	6%	$104,569	2%
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)	$2,063,608		$2,074,697	
(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))	$2,063,608	37%	$2,074,697	30%
4. Corporate Equity				
(a) US Equity	$0		$0	
(b) US Mutual Fund Shares (Equity)	$3,116,671		$4,192,058	
(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))	$3,116,671	57%	$4,192,058	61%
5. Alternative Investments				
(a) Real Estate Investment Trust	$0		$0	
(b) Private Equity Fund	$0		$0	
(c) Hedge Funds	$0		$0	
(d) Other Alternative Investments	$0		$517,039	
(e) Total Alternative Investments (sum of (a) through (d))	$0	0%	$517,039	7%
6. Other	$0	0%	$0	0%
7. Receivable Contributions	$0			
(a) From Employee Contributions	$0		$0	
(b) From Local Government	$0		$0	
(c) From State Government	$0		$0	
(d) Total Receivable Contributions (sum of (a) through (c))	$0	0%	$0	0%
8. Accruals				
(a) Receivable (other than State and Local Contributions)	$0		$0	
(b) Less Payable	$0		$0	
(c) Total	$0	0%	$0	0%
Market Value of Assets End of Year [sum of (1) through (8)]	**$5,491,795**		**$6,888,363**	

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:	**44**	**22**	**11**	**2**	**14**	**93**
New Actives:	3					**3**
Returned to Actives Status:	1					**1**
Data Corrections/Other Changes:						**0**
Vested Terminations:	(2)			2		**0**
Non-Vested Terminations:	(2)					**(2)**
Disabled:						**0**
Retirements:						**0**
Deaths with Beneficiary:						**0**
Deaths w/o Beneficiary:					(1)	**(1)**
Expired Annuity or Stop Payment:						**0**
Net Changes:	0	0	0	2	(1)	**1**
Total Participants June 30, 2017:	**44**	**22**	**11**	**4**	**13**	**94**

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

Attained Age	Years of Service to Valuation Date: Less than 1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	Over 35	Totals	Valuation Payroll[a]
Under 20											$ 0
20-24	2	6								**8**	**$ 326,673**
25-29		5	2							**7**	**$ 315,917**
30-34	1	1	5	1						**8**	**$ 421,815**
35-39		3	3	1	1					**8**	**$ 358,943**
40-44		1	1	1	2					**5**	**$ 244,760**
45-49					2	2				**4**	**$ 218,098**
50-54					1		2			**3**	**$ 186,631**
55-59						1				**1**	**$ 48,586**
60-64											**$ 0**
65-69											**$ 0**
Over 70											**$ 0**
Totals	**3**	**16**	**11**	**3**	**6**	**3**	**2**	**0**	**0**	**44**	**$ 2,121,423**

Averages

Age:	35.3	years
Service:	8.4	years
Annual Pay:	$48,214	[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	44	44
Total Annual Pay	$2,085,039	$2,121,423
Average Age	35.5	35.3
Average Service	8.7	8.4

Inactive Participants	July 1, 2016		July 1, 2017[a]	
Type	No.	Annual Benefit	No.	Annual Benefit
Retirees	22	$732,874	22	$737,720
Survivors	14	$210,233	13	$197,225
Disabled Members	11	$209,302	11	$211,868
Deferred Vested Members	2	$53,181	4	$126,162

[a]Data provided includes 1 non-vested member with an accumulated contributions balance of $85.

SECTION VI

ACTUARIAL ASSUMPTIONS AND METHODS

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

Discount Rate

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

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

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

As of June 30, 2017	
Assets	$6,888,363
Liabilities using a 5.50% discount rate	$26,837,633
Funded Ratio	26%
Expected Benefit Payments	$1,212,049
Liquidity Ratio	5.68
Equity Exposure	61%
Projected Funded Ratio after 15 years	66%

Discount Rate	5.00%

The premium tax allocation is projected using the following methodology:

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

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

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

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

(5) For the plan year ending June 30, 2018, all Pension and Relief Funds reported a total of 1,717 eligible active members and 2,165 eligible retired members. The City of Clarksburg Policemen’s Pension and Relief Fund reported 43 eligible active members and 48 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 $446,236 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.

General Inflation	2.75%
Expected Salary Increase	General Inflation: 2.75% *plus* Wage Inflation Increment: 1.00% *plus*
Service-based Increase:	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

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

Administrative Expenses	Plan year end June 30, 2018, expense based on plan year end June 30, 2017 expense increased by general inflation assumption. Future expenses assumed to increase by the general inflation assumption.
Refunds Paid	Assumes non-vested inactive members as of July 1, 2017, with accumulated member contribution balances will receive a refund of their contributions during plan year end June 30, 2018.
Data Adjustments and Assumptions	Annualized pay for one active member who did not work the entire year based on Compensation for plan year end June 30, 2017 and dates provided.
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 Police Department are eligible to participate in the Policemen's Pension and Relief Fund.

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

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

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

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

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

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

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

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

Contributions — Participating employees contribute 7.0% of compensation. Participating employees hired on or after January 1, 2010 contribute 9.5% of 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.

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)	Benefit Payments	Expenses	Employer Contribs.	Employee Contribs.	Premium Tax Allocation Contribs.	Investment Income	Assets (eoy)	Actuarial Accrued Liability	Unfunded Liability	Funded Ratio
2017	44	50	$5,491,795	$1,192,439	$7,500	$1,337,055	$168,474	$421,449	$669,529	$6,888,363	$28,735,254	$21,846,891	24%
2018	41	51	6,888,363	1,212,049	7,706	1,006,110	174,119	437,291	354,241	7,640,369	29,918,676	22,278,307	26%
2019	38	51	7,640,369	1,315,158	7,708	1,692,842	173,115	446,236	406,450	9,036,146	31,045,357	22,009,211	29%
2020	35	52	9,036,146	1,415,480	7,724	1,711,114	170,273	463,084	474,558	10,431,970	32,102,991	21,671,021	32%
2021	32	53	10,431,970	1,485,770	7,762	1,681,716	167,170	475,825	542,125	11,805,273	33,118,133	21,312,860	36%
2022	30	53	11,805,273	1,540,046	7,807	1,648,842	164,873	487,739	608,874	13,167,748	34,109,669	20,941,921	39%
2023	29	53	13,167,748	1,584,002	7,857	1,619,565	163,950	499,703	675,460	14,534,568	35,095,423	20,560,855	41%
2024	27	53	14,534,568	1,614,767	7,909	1,598,155	164,528	510,833	742,801	15,928,210	36,098,872	20,170,662	44%
2025	25	53	15,928,210	1,657,077	7,962	1,586,118	164,088	521,662	811,396	17,346,434	37,101,842	19,755,408	47%
2026	24	53	17,346,434	1,711,562	8,016	1,566,634	162,594	534,247	880,753	18,771,084	38,084,294	19,313,210	49%
2027	22	53	18,771,084	1,748,335	8,067	1,540,925	162,562	546,732	950,749	20,215,651	39,073,640	18,857,989	52%
2028	21	53	20,215,651	1,782,952	8,120	1,523,742	162,402	558,506	1,021,983	21,691,212	40,069,764	18,378,552	54%
2029	19	53	21,691,212	1,837,009	8,179	1,502,499	160,694	572,523	1,094,204	23,175,945	41,041,678	17,865,733	56%
2030	18	53	23,175,945	1,880,018	8,237	1,471,418	160,002	586,652	1,166,942	24,672,704	42,005,917	17,333,213	59%
2031	17	53	24,672,704	1,913,549	8,299	1,445,680	160,259	599,868	1,240,648	26,197,310	42,976,861	16,779,551	61%
2032	16	52	26,197,310	1,950,714	8,362	1,423,416	159,745	613,995	1,315,745	27,751,135	43,947,848	16,196,713	63%
2033	15	52	27,751,135	2,006,029	8,427	1,398,211	157,853	628,895	1,391,768	29,313,406	44,892,518	15,579,112	65%
2034	13	53	29,313,406	2,117,590	8,490	1,365,326	149,300	645,038	1,466,500	30,813,490	45,713,745	14,900,255	67%
2035	11	53	30,813,490	2,229,305	8,551	1,295,939	138,096	666,554	1,537,285	32,213,508	46,392,650	14,179,142	69%
2036	10	54	32,213,508	2,314,996	8,616	1,216,382	129,357	685,701	1,603,460	33,524,796	46,963,990	13,439,194	71%
2037	8	54	33,524,796	2,414,392	8,682	1,146,330	117,900	706,094	1,665,059	34,737,104	47,394,710	12,657,606	73%
2038	7	54	34,737,104	2,504,650	8,746	1,064,940	106,505	728,182	1,721,698	35,845,033	47,689,388	11,844,355	75%
2039	6	53	35,845,033	2,576,921	8,807	984,803	97,662	749,782	1,773,645	36,865,197	47,875,636	11,010,439	77%
2040	5	53	36,865,197	2,644,422	8,864	916,524	89,127	772,201	1,821,641	37,811,405	47,956,070	10,144,665	79%
2041	4	53	37,811,405	2,726,672	8,916	850,966	78,643	795,774	1,865,623	38,666,823	47,903,358	9,236,535	81%
2042	4	52	38,666,823	2,807,843	8,965	778,323	68,065	821,671	1,904,973	39,423,047	47,714,680	8,291,633	83%
2043	3	52	39,423,047	2,890,907	9,009	707,925	56,824	846,886	1,939,338	40,074,104	47,380,000	7,305,896	85%
2044	2	51	40,074,104	2,979,329	9,049	633,760	44,392	874,754	1,968,256	40,606,888	46,882,476	6,275,588	87%
2045	1	51	40,606,888	3,052,566	9,084	555,806	33,213	902,480	1,991,569	41,028,307	46,236,896	5,208,589	89%
2046	1	50	41,028,307	3,099,980	9,115	480,491	24,317	931,369	2,010,102	41,365,491	45,472,631	4,107,140	91%
2047	1	49	41,365,491	3,124,579	9,142	412,225	17,696	959,883	2,025,208	41,646,783	44,617,247	2,970,464	93%
2048	0	48	41,646,783	3,137,551	9,165	349,511	12,207	989,544	2,038,000	41,889,330	43,683,266	1,793,936	96%
2049	0	47	41,889,330	3,131,377	9,183	288,755	8,575	1,019,424	2,049,428	42,114,952	42,693,882	578,930	99%
2050	0	46	42,114,952	3,115,499	9,197	34,910	5,922	585,186	2,044,042	41,660,317	41,660,317	0	100%
2051	0	45	41,660,317	3,092,843	9,206	20,667	3,883	0	2,007,017	40,589,834	40,589,834	0	100%
2052	0	43	40,589,834	3,063,766	9,210	16,317	2,432	0	1,954,067	39,489,675	39,489,674	0	100%
2053	0	42	39,489,675	3,029,451	9,209	13,428	1,454	0	1,899,811	38,365,707	38,365,706	0	100%
2054	0	41	38,365,707	2,991,465	9,203	11,283	741	0	1,844,480	37,221,544	37,221,542	0	100%
2055	0	40	37,221,544	2,949,673	9,191	10,054	320	0	1,788,264	36,061,317	36,061,316	0	100%
2056	0	39	36,061,317	2,904,557	9,172	9,466	121	0	1,731,348	34,888,522	34,888,521	0	100%
2057	0	38	34,888,522	2,856,804	9,146	9,267	49	0	1,673,881	33,705,769	33,705,768	0	100%

Actuarial Projections – Optional Funding in 2019

Table A-2

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
					Employer Contributions							
2018	$2,118,610	$0	$2,118,610	$174,119	$964,909	$790,790	$1,340,582	$446,236	$894,346	$7,706	$1,692,842	$0
2019	2,099,367	113,703	2,213,071	173,115	954,716	781,601	1,384,889	463,084	921,805	7,708	1,711,114	11,939
2020	2,056,643	242,216	2,298,859	170,273	932,926	762,653	1,387,163	475,825	911,338	7,724	1,681,716	25,433
2021	2,009,255	388,057	2,397,311	167,170	909,928	742,758	1,386,060	487,739	898,321	7,762	1,648,842	40,746
2022	1,972,307	526,830	2,499,137	164,873	891,666	726,793	1,384,669	499,703	884,966	7,807	1,619,565	55,317
2023	1,953,839	666,617	2,620,456	163,950	881,583	717,633	1,383,498	510,833	872,665	7,857	1,598,155	69,995
2024	1,955,829	792,809	2,748,638	164,528	881,607	717,079	1,382,792	521,662	861,130	7,909	1,586,118	83,245
2025	1,942,648	915,790	2,858,438	164,088	874,303	710,215	1,382,703	534,247	848,456	7,962	1,566,634	96,158
2026	1,913,923	1,066,608	2,980,531	162,594	860,017	697,423	1,382,218	546,732	835,486	8,016	1,540,925	111,994
2027	1,905,217	1,219,302	3,124,519	162,562	855,499	692,937	1,381,244	558,506	822,738	8,067	1,523,742	128,027
2028	1,893,405	1,360,134	3,253,539	162,402	848,465	686,063	1,380,839	572,523	808,316	8,120	1,502,499	142,814
2029	1,858,345	1,529,911	3,388,256	160,694	830,302	669,608	1,380,284	586,652	793,632	8,179	1,471,418	160,641
2030	1,836,195	1,711,893	3,548,087	160,002	818,371	658,369	1,378,942	599,868	779,074	8,237	1,445,680	179,749
2031	1,826,058	1,881,694	3,707,751	160,259	811,447	651,188	1,377,924	613,995	763,929	8,299	1,423,416	197,578
2032	1,809,661	2,064,273	3,873,934	159,745	801,252	641,507	1,377,237	628,895	748,342	8,362	1,398,211	216,749
2033	1,774,802	2,253,635	4,028,437	157,853	783,451	625,598	1,376,339	645,038	731,301	8,427	1,365,326	236,632
2034	1,657,894	2,467,328	4,125,222	149,300	728,475	579,175	1,374,829	666,554	708,275	8,490	1,295,939	259,069
2035	1,517,195	2,750,600	4,267,795	138,096	661,308	523,212	1,370,320	685,701	684,619	8,551	1,216,382	288,813
2036	1,408,680	3,010,977	4,419,657	129,357	608,807	479,450	1,364,357	706,094	658,263	8,616	1,146,330	316,153
2037	1,273,450	3,292,608	4,566,058	117,900	543,126	425,226	1,359,214	728,182	631,032	8,682	1,064,940	345,724
2038	1,144,247	3,585,984	4,730,231	106,505	479,624	373,119	1,352,720	749,782	602,938	8,746	984,803	376,528
2039	1,044,212	3,861,304	4,905,516	97,662	431,679	334,017	1,345,901	772,201	573,700	8,807	916,524	405,437
2040	949,441	4,132,111	5,081,553	89,127	386,822	297,695	1,340,181	795,774	544,407	8,864	850,966	433,872
2041	835,502	4,406,315	5,241,816	78,643	335,199	256,556	1,334,522	821,671	512,851	8,916	778,323	462,663
2042	721,610	4,701,905	5,423,516	68,065	286,273	218,208	1,327,639	846,886	480,753	8,965	707,925	493,700
2043	601,261	4,986,226	5,587,487	56,824	236,063	179,239	1,320,266	874,754	445,512	9,009	633,760	523,554
2044	468,671	5,293,498	5,762,169	44,392	181,882	137,490	1,311,747	902,480	409,267	9,049	555,806	555,817
2045	350,193	5,591,993	5,942,185	33,213	134,912	101,699	1,301,077	931,369	369,708	9,084	480,491	587,159
2046	256,205	5,889,650	6,145,855	24,317	98,009	73,692	1,289,302	959,883	329,419	9,115	412,225	618,413
2047	186,275	6,171,488	6,357,763	17,696	70,970	53,274	1,276,639	989,544	287,095	9,142	349,511	648,006
2048	128,499	6,457,418	6,585,917	12,207	48,974	36,767	1,262,248	1,019,424	242,824	9,165	288,755	678,029
2049	90,265	6,738,486	6,828,751	8,575	34,302	25,727	1,240,378	585,186	190,291	9,183	34,910 [b]	707,541
2050	62,339	7,024,491	7,086,830	5,922	23,600	17,678	0	0	0	9,197	20,667 [b]	737,572
2051	40,868	7,315,697	7,356,566	3,883	15,350	11,467	0	0	0	9,206	16,317 [b]	768,148
2052	25,603	7,615,967	7,641,570	2,432	9,543	7,111	0	0	0	9,210	13,428 [b]	799,677
2053	15,302	7,923,634	7,938,935	1,454	5,665	4,211	0	0	0	9,209	11,283 [b]	831,982
2054	7,802	8,236,562	8,244,364	741	2,822	2,081	0	0	0	9,203	10,054 [b]	864,839
2055	3,365	8,559,479	8,562,844	320	1,179	859	0	0	0	9,191	9,466 [b]	898,745
2056	1,270	8,893,537	8,894,807	121	417	296	0	0	0	9,172	9,267 [b]	933,821
2057	515	9,236,817	9,237,331	49	170	121	0	0	0	9,146	9,111 [b]	969,866

[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)	Total Assets: Benefit Payments	Total Assets: Expenses	Total Assets: Employer Contribs.	Total Assets: Employee Contribs.	Total Assets: Premium Tax Allocation Contribs.	Total Assets: Investment Income	Total Assets: Assets (eoy)	Actuarial Accrued Liability	Unfunded Liability	Funded Ratio
2017	44	50	$5,491,795	$1,192,439	$7,500	$1,337,055	$168,474	$421,449	$669,529	$6,888,363	$28,735,254	$21,846,891	24%
2018	41	51	6,888,363	1,212,049	7,706	1,006,110	174,119	437,291	354,241	7,640,369	29,918,676	22,278,307	26%
2019	38	51	7,640,369	1,315,158	7,708	735,006	173,115	446,236	382,796	8,054,656	31,045,357	22,990,701	26%
2020	35	52	8,054,656	1,415,480	7,724	820,697	170,273	463,084	403,495	8,489,001	32,102,991	23,613,990	26%
2021	32	53	8,489,001	1,485,770	7,762	880,676	167,170	475,825	425,194	8,944,334	33,118,133	24,173,799	27%
2022	30	53	8,944,334	1,540,046	7,807	924,826	164,873	487,739	447,947	9,421,866	34,109,669	24,687,803	28%
2023	29	53	9,421,866	1,584,002	7,857	957,514	163,950	499,703	471,817	9,922,991	35,095,423	25,172,432	28%
2024	27	53	9,922,991	1,614,767	7,909	976,652	164,528	510,833	496,874	10,449,202	36,098,872	25,649,670	29%
2025	25	53	10,449,202	1,657,077	7,962	1,008,429	164,088	521,662	523,180	11,001,522	37,101,842	26,100,320	30%
2026	24	53	11,001,522	1,711,562	8,016	1,051,446	162,594	534,247	550,785	11,581,016	38,084,294	26,503,278	30%
2027	22	53	11,581,016	1,748,335	8,067	1,075,686	162,562	546,732	579,757	12,189,351	39,073,640	26,884,289	31%
2028	21	53	12,189,351	1,782,952	8,120	1,098,565	162,402	558,506	610,169	12,827,921	40,069,764	27,241,843	32%
2029	19	53	12,827,921	1,837,009	8,179	1,139,846	160,694	572,523	642,084	13,497,880	41,041,678	27,543,798	33%
2030	18	53	13,497,880	1,880,018	8,237	1,169,144	160,002	586,652	675,574	14,200,997	42,005,917	27,804,920	34%
2031	17	53	14,200,997	1,913,549	8,299	1,189,112	160,259	599,868	710,726	14,939,114	42,976,861	28,037,747	35%
2032	16	52	14,939,114	1,950,714	8,362	1,212,481	159,745	613,995	747,626	15,713,885	43,947,848	28,233,963	36%
2033	15	52	15,713,885	2,006,029	8,427	1,254,330	157,853	628,895	786,352	16,526,859	44,892,518	28,365,659	37%
2034	13	53	16,526,859	2,117,590	8,490	1,356,610	149,300	645,038	826,957	17,378,684	45,713,745	28,335,061	38%
2035	11	53	17,378,684	2,229,305	8,551	1,455,964	138,096	666,554	869,496	18,270,938	46,392,650	28,121,712	39%
2036	10	54	18,270,938	2,314,996	8,616	1,529,684	129,357	685,701	914,069	19,206,137	46,963,990	27,757,853	41%
2037	8	54	19,206,137	2,414,392	8,682	1,618,182	117,900	706,094	960,779	20,186,018	47,394,710	27,208,692	43%
2038	7	54	20,186,018	2,504,650	8,746	1,695,873	106,505	728,182	1,009,725	21,212,907	47,689,388	26,476,481	44%
2039	6	53	21,212,907	2,576,921	8,807	1,753,947	97,662	749,782	1,061,032	22,289,602	47,875,636	25,586,034	47%
2040	5	53	22,289,602	2,644,422	8,864	1,806,200	89,127	772,201	1,114,832	23,418,676	47,956,070	24,537,394	49%
2041	4	53	23,418,676	2,726,672	8,916	1,873,704	78,643	795,774	1,171,243	24,602,452	47,903,358	23,300,906	51%
2042	4	52	24,602,452	2,807,843	8,965	1,937,896	68,065	821,671	1,230,390	25,843,666	47,714,680	21,871,014	54%
2043	3	52	25,843,666	2,890,907	9,009	2,005,225	56,824	846,886	1,292,406	27,145,091	47,380,000	20,234,909	57%
2044	2	51	27,145,091	2,979,329	9,049	2,076,262	44,392	874,754	1,357,428	28,509,549	46,882,476	18,372,927	61%
2045	1	51	28,509,549	3,052,566	9,084	2,131,210	33,213	902,480	1,425,607	29,940,409	46,236,896	16,296,487	65%
2046	1	50	29,940,409	3,099,980	9,115	2,157,252	24,317	931,369	1,497,115	31,441,367	45,472,631	14,031,264	69%
2047	1	49	31,441,367	3,124,579	9,142	2,158,936	17,696	959,883	1,572,137	33,016,298	44,617,247	11,600,949	74%
2048	0	48	33,016,298	3,137,551	9,165	2,146,892	12,207	989,544	1,650,862	34,669,087	43,683,266	9,014,179	79%
2049	0	47	34,669,087	3,131,377	9,183	2,113,915	8,575	1,019,424	1,733,488	36,403,929	42,693,882	6,289,953	85%
2050	0	46	36,403,929	3,115,499	9,197	2,069,622	5,922	1,050,087	1,820,220	38,225,084	41,660,317	3,435,233	92%
2051	0	45	38,225,084	3,092,843	9,206	2,017,494	3,883	1,081,285	1,911,269	40,136,966	40,589,834	452,868	99%
2052	0	43	40,136,966	3,063,766	9,210	24,556	2,432	455,813	1,942,884	39,489,675	39,489,674	0	100%
2053	0	42	39,489,675	3,029,451	9,209	13,426	1,454	0	1,899,811	38,365,706	38,365,706	0	100%
2054	0	41	38,365,706	2,991,465	9,203	11,282	741	0	1,844,480	37,221,541	37,221,542	0	100%
2055	0	40	37,221,541	2,949,673	9,191	10,055	320	0	1,788,264	36,061,316	36,061,316	0	100%
2056	0	39	36,061,316	2,904,557	9,172	9,465	121	0	1,731,348	34,888,521	34,888,521	0	100%
2057	0	38	34,888,521	2,856,804	9,146	9,267	49	0	1,673,881	33,705,768	33,705,768	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.	6.72%[d] of Pay Employee Contribs.	100.00% 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 Employee Contribs.	0.00% of Premium Tax Allocation	Investment Income	Statewide Employer Contribution
2018	$6,888,363	$1,219,755	$1,006,110	$174,119	$437,291	$354,241	$0	$0	$0	$0	$0	$0	$0	$0
2019	7,640,369	1,322,866	735,006	141,624	446,236	382,018	(8,022,387)	8,022,387	0	0	31,491	0	778	11,939
2020	0	1,423,204	820,697	139,423	463,084	0	0	8,054,656	0	0	30,850	0	403,495	25,433
2021	0	1,493,532	880,676	137,031	475,825	0	0	8,489,001	0	0	30,139	0	425,194	40,746
2022	0	1,547,853	924,826	135,288	487,739	0	0	8,944,334	0	0	29,585	0	447,947	55,317
2023	0	1,591,859	957,514	134,642	499,703	0	0	9,421,866	0	0	29,308	0	471,817	69,995
2024	0	1,622,676	976,652	135,191	510,833	0	0	9,922,991	0	0	29,337	0	496,874	83,245
2025	0	1,665,039	1,008,429	134,948	521,662	0	0	10,449,202	0	0	29,140	0	523,180	96,158
2026	0	1,719,578	1,051,446	133,885	534,247	0	0	11,001,522	0	0	28,709	0	550,785	111,994
2027	0	1,756,402	1,075,686	133,984	546,732	0	0	11,581,016	0	0	28,578	0	579,757	128,027
2028	0	1,791,072	1,098,565	134,001	558,506	0	0	12,189,351	0	0	28,401	0	610,169	142,814
2029	0	1,845,188	1,139,846	132,819	572,523	0	0	12,827,921	0	0	27,875	0	642,084	160,641
2030	0	1,888,255	1,169,144	132,459	586,652	0	0	13,497,880	0	0	27,543	0	675,574	179,749
2031	0	1,921,848	1,189,112	132,868	599,868	0	0	14,200,997	0	0	27,391	0	710,726	197,578
2032	0	1,959,076	1,212,481	132,600	613,995	0	0	14,939,114	0	0	27,145	0	747,626	216,749
2033	0	2,014,456	1,254,330	131,231	628,895	0	0	15,713,885	0	0	26,622	0	786,352	236,632
2034	0	2,126,080	1,356,610	124,432	645,038	0	0	16,526,859	0	0	24,868	0	826,957	259,069
2035	0	2,237,856	1,455,964	115,338	666,554	0	0	17,378,684	0	0	22,758	0	869,496	288,813
2036	0	2,323,612	1,529,684	108,227	685,701	0	0	18,270,938	0	0	21,130	0	914,069	316,153
2037	0	2,423,074	1,618,182	98,798	706,094	0	0	19,206,137	0	0	19,102	0	960,779	345,724
2038	0	2,513,396	1,695,873	89,341	728,182	0	0	20,186,018	0	0	17,164	0	1,009,725	376,528
2039	0	2,585,728	1,753,947	81,999	749,782	0	0	21,212,907	0	0	15,663	0	1,061,032	405,437
2040	0	2,653,286	1,806,200	74,885	772,201	0	0	22,289,602	0	0	14,242	0	1,114,832	433,872
2041	0	2,735,588	1,873,704	66,110	795,774	0	0	23,418,676	0	0	12,533	0	1,171,243	462,663
2042	0	2,816,808	1,937,896	57,241	821,671	0	0	24,602,452	0	0	10,824	0	1,230,390	493,700
2043	0	2,899,916	2,005,225	47,805	846,886	0	0	25,843,666	0	0	9,019	0	1,292,406	523,554
2044	0	2,988,378	2,076,262	37,362	874,754	0	0	27,145,091	0	0	7,030	0	1,357,428	555,817
2045	0	3,061,650	2,131,210	27,960	902,480	0	0	28,509,549	0	0	5,253	0	1,425,607	587,159
2046	0	3,109,095	2,157,252	20,474	931,369	0	0	29,940,409	0	0	3,843	0	1,497,115	618,413
2047	0	3,133,721	2,158,936	14,902	959,883	0	0	31,441,367	0	0	2,794	0	1,572,137	648,006
2048	0	3,146,716	2,146,892	10,280	989,544	0	0	33,016,298	0	0	1,927	0	1,650,862	678,029
2049	0	3,140,560	2,113,915	7,221	1,019,424	0	0	34,669,087	0	0	1,354	0	1,733,488	707,541
2050	0	3,124,696	2,069,622	4,987	1,050,087	0	0	36,403,929	0	0	935	0	1,820,220	737,572
2051	0	3,102,049	2,017,494	3,270	1,081,285	0	0	38,225,084	0	0	613	0	1,911,269	768,148
2052	0	482,416	24,556	2,048	455,813	0	0	40,136,966	2,590,560	0	384	0	1,942,884	799,677
2053	0	0	0	0	0	0	0	39,489,674	3,038,660	13,426	1,454	0	1,899,811	831,982
2054	0	0	0	0	0	0	0	38,365,705	3,000,668	11,282	741	0	1,844,480	864,839
2055	0	0	0	0	0	0	0	37,221,540	2,958,864	10,055	320	0	1,788,264	898,745
2056	0	0	0	0	0	0	0	36,061,315	2,913,729	9,465	121	0	1,731,348	933,821
2057	0	0	0	0	0	0	0	34,888,520	2,865,950	9,267	49	0	1,673,881	969,866

[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, 2019.*

[d] *Blended employee contribution rate of 7.51% of pay less 1.50% of pay going into the Accumulation Account.*

Actuarial Projections – Optional Funding in 2032
Table A-5

Valuation Plan Year End 30-Jun	Number		Total Assets								Actuarial		
	Active	Pay Status	Assets (boy)	Benefit Payments	Expenses	Employer Contribs.	Employee Contribs.	Premium Tax Allocation Contribs.	Investment Income	Assets (eoy)	Actuarial Accrued Liability	Unfunded Liability	Funded Ratio
2017	44	50	$5,491,795	$1,192,439	$7,500	$1,337,055	$168,474	$421,449	$669,529	$6,888,363	$28,735,254	$21,846,891	24%
2018	44	51	6,888,363	1,212,049	7,706	1,006,110	174,119	437,291	354,241	7,640,369	29,918,676	22,278,307	26%
2019	44	51	7,640,369	1,315,158	7,972	1,076,538	184,748	446,236	391,511	8,416,272	31,096,382	22,680,110	27%
2020	44	52	8,416,272	1,415,914	8,250	1,151,896	194,315	463,084	430,325	9,231,727	32,264,645	23,032,918	29%
2021	44	53	9,231,727	1,487,471	8,569	1,232,529	205,228	475,825	471,898	10,121,166	33,460,305	23,339,139	30%
2022	44	53	10,121,166	1,543,748	8,862	1,318,806	216,132	487,739	517,667	11,108,899	34,702,107	23,593,208	32%
2023	44	53	11,108,899	1,590,308	9,153	1,411,122	228,592	499,703	568,779	12,217,634	36,011,495	23,793,861	34%
2024	44	53	12,217,634	1,624,141	9,403	1,509,901	241,213	510,833	626,400	13,472,437	37,409,135	23,936,698	36%
2025	44	54	13,472,437	1,669,954	9,643	1,615,594	252,620	521,662	691,162	14,873,877	38,878,693	24,004,816	38%
2026	44	54	14,873,877	1,728,277	9,937	1,728,686	265,886	534,247	763,218	16,427,701	40,415,925	23,988,224	41%
2027	44	53	16,427,701	1,769,377	10,215	1,849,694	280,629	546,732	843,548	18,168,712	42,053,021	23,884,309	43%
2028	44	53	18,168,712	1,808,919	10,459	1,979,173	293,998	558,506	933,435	20,114,446	43,788,783	23,674,337	46%
2029	44	54	20,114,446	1,868,386	10,763	2,117,715	308,894	572,523	1,033,380	22,267,809	45,609,492	23,341,683	49%
2030	44	53	22,267,809	1,917,301	11,078	2,265,955	325,925	586,652	1,144,263	24,662,225	47,542,256	22,880,031	52%
2031	44	53	24,662,225	1,957,284	11,356	2,424,572	342,613	599,868	1,267,645	27,328,283	49,601,627	22,273,344	55%
2032	42	53	27,328,283	2,001,321	11,653	2,527,733	359,962	613,995	1,403,178	30,220,178	51,792,351	21,572,173	58%
2033	39	53	30,220,178	2,063,977	11,656	2,577,235	361,658	628,895	1,547,858	33,260,191	54,031,698	20,771,507	62%
2034	36	54	33,260,191	2,182,845	11,675	2,567,509	357,058	645,038	1,696,967	36,332,243	56,224,067	19,891,824	65%
2035	34	54	36,332,243	2,301,500	11,707	2,513,928	350,339	666,554	1,846,682	39,396,539	58,355,962	18,959,423	68%
2036	32	55	39,396,539	2,394,163	11,755	2,450,645	346,627	685,701	1,996,425	42,470,020	60,468,333	17,998,313	70%
2037	29	55	42,470,020	2,500,919	11,814	2,398,837	339,797	706,094	2,146,517	45,548,531	62,534,499	16,985,968	73%
2038	27	55	45,548,531	2,599,095	11,880	2,338,806	331,572	728,182	2,296,876	48,632,991	64,558,361	15,925,370	75%
2039	26	55	48,632,991	2,682,012	11,953	2,279,295	324,396	749,782	2,447,936	51,740,435	66,552,379	14,811,944	78%
2040	24	55	51,740,435	2,771,409	12,032	2,224,747	315,935	772,201	2,600,097	54,869,974	68,503,586	13,633,612	80%
2041	22	56	54,869,974	2,886,404	12,116	2,164,140	304,076	795,774	2,752,524	57,987,968	70,366,720	12,378,752	82%
2042	20	56	57,987,968	3,012,409	12,205	2,086,683	290,807	821,671	2,903,709	61,066,224	72,122,005	11,055,781	85%
2043	18	57	61,066,224	3,151,436	12,298	2,001,628	275,229	846,886	3,052,324	64,078,557	73,742,535	9,663,978	87%
2044	16	57	64,078,557	3,307,028	12,395	1,903,599	256,324	874,754	3,196,896	66,990,708	75,189,697	8,198,989	89%
2045	14	58	66,990,708	3,461,370	12,494	1,790,864	236,297	902,480	3,336,096	69,782,582	76,450,882	6,668,300	91%
2046	13	58	69,782,582	3,606,229	12,596	1,665,396	216,544	931,369	3,469,237	72,446,303	77,524,352	5,078,049	93%
2047	11	58	72,446,303	3,745,916	12,700	1,525,301	197,227	959,883	3,595,738	74,965,837	78,410,278	3,444,441	96%
2048	10	58	74,965,837	3,888,449	12,805	1,361,605	177,195	989,544	3,714,388	77,307,314	79,097,015	1,789,701	98%
2049	8	58	77,307,314	4,022,486	12,912	1,152,650	157,564	1,019,424	3,823,241	79,424,795	79,583,083	158,288	100%
2050	7	58	79,424,795	4,156,452	13,021	579,730	137,606	0	3,885,989	79,858,647	79,858,647	0	100%
2051	6	59	79,858,647	4,290,357	13,131	340,450	118,076	0	3,897,981	79,911,665	79,911,665	0	100%
2052	5	58	79,911,665	4,422,494	13,242	266,617	100,321	0	3,895,104	79,737,970	79,737,971	0	100%
2053	4	58	79,737,970	4,551,351	13,351	212,382	83,989	0	3,881,492	79,351,131	79,351,131	0	100%
2054	3	58	79,351,131	4,666,486	13,457	162,187	68,889	0	3,857,691	78,759,955	78,759,955	0	100%
2055	2	57	78,759,955	4,769,220	13,560	118,107	55,094	0	3,824,164	77,974,539	77,974,539	0	100%
2056	2	57	77,974,539	4,859,430	13,659	79,894	42,569	0	3,781,410	77,005,323	77,005,323	0	100%
2057	1	56	77,005,323	4,937,216	13,754	46,868	31,877	0	3,729,946	75,863,044	75,863,044	0	100%

Actuarial Projections – Optional Funding in 2032
Table A-6

Valuation Plan Year End 30-Jun[a,b]	Employer Contributions: Total Payroll	Employee Contributions	Gross Normal Cost	Net Employer Normal Cost	Amortization of UAAL	Premium Tax Allocation Contributions	Net Employer Amortization	Expenses	Minimum Payment: Optional Employer Contribution	Alternative Employer Contribution	Minimum Employer Contribution	Statewide Employer Contribution
2018	$2,118,610	$174,119	$964,909	$790,790	$1,340,582	$446,236	$894,346	$7,706	$1,692,842	$1,076,538	$1,076,538	$0
2019	2,213,071	184,748	1,004,937	820,189	1,384,889	463,084	921,805	7,972	1,749,967	1,151,896	1,151,896	0
2020	2,298,859	194,315	1,040,105	845,790	1,429,447	475,825	953,622	8,250	1,807,663	1,232,529	1,232,529	0
2021	2,397,311	205,228	1,081,910	876,682	1,473,166	487,739	985,427	8,569	1,870,679	1,318,806	1,318,806	0
2022	2,499,137	216,132	1,125,514	909,382	1,516,313	499,703	1,016,610	8,862	1,934,854	1,411,122	1,411,122	0
2023	2,620,456	228,592	1,177,885	949,293	1,558,652	510,833	1,047,819	9,153	2,006,265	1,509,901	1,509,901	0
2024	2,748,638	241,213	1,234,481	993,268	1,600,223	521,662	1,078,561	9,403	2,081,233	1,615,594	1,615,594	0
2025	2,858,438	252,620	1,282,422	1,029,802	1,640,866	534,247	1,106,619	9,643	2,146,065	1,728,686	1,728,686	0
2026	2,980,531	265,886	1,335,761	1,069,875	1,679,534	546,732	1,132,802	9,937	2,212,613	1,849,694	1,849,694	0
2027	3,124,519	280,629	1,399,830	1,119,202	1,715,592	558,506	1,157,086	10,215	2,286,503	1,979,173	1,979,173	0
2028	3,253,539	293,998	1,456,272	1,162,274	1,748,882	572,523	1,176,359	10,459	2,349,092	2,117,715	2,117,715	0
2029	3,388,256	308,894	1,514,462	1,205,568	1,778,013	586,652	1,191,361	10,763	2,407,692	2,265,955	2,265,955	0
2030	3,548,087	325,925	1,584,406	1,258,482	1,801,596	599,868	1,201,728	11,078	2,471,287	2,424,572	2,424,572	0
2031	3,707,751	342,613	1,654,111	1,311,498	1,818,875	613,995	1,204,880	11,356	2,527,733	2,594,292	2,527,733	0
2032	3,873,934	359,962	1,726,282	1,366,320	1,828,158	628,895	1,199,263	11,653	2,577,235	2,775,892	2,577,235	0
2033	4,028,437	361,658	1,729,422	1,367,764	1,833,126	645,038	1,188,088	11,656	2,567,509	2,970,204	2,567,509	15,339
2034	4,125,222	357,058	1,692,817	1,335,759	1,833,049	666,554	1,166,495	11,675	2,513,928	3,178,118	2,513,928	33,811
2035	4,267,795	350,339	1,645,603	1,295,264	1,829,375	685,701	1,143,674	11,707	2,450,645	3,400,586	2,450,645	59,187
2036	4,419,657	346,627	1,615,473	1,268,845	1,824,330	706,094	1,118,236	11,755	2,398,837	3,638,627	2,398,837	81,568
2037	4,566,058	339,797	1,574,657	1,234,860	1,820,314	728,182	1,092,132	11,814	2,338,806	3,893,331	2,338,806	105,583
2038	4,730,231	331,572	1,533,476	1,201,904	1,815,292	749,782	1,065,510	11,880	2,279,295	4,165,864	2,279,295	131,274
2039	4,905,516	324,396	1,499,755	1,175,359	1,809,636	772,201	1,037,435	11,953	2,224,747	4,457,474	2,224,747	156,680
2040	5,081,553	315,935	1,460,921	1,144,985	1,802,897	795,774	1,007,123	12,032	2,164,140	4,769,497	2,164,140	183,271
2041	5,241,816	304,076	1,406,824	1,102,748	1,793,490	821,671	971,819	12,116	2,086,683	5,103,362	2,086,683	211,981
2042	5,423,516	290,807	1,347,823	1,057,016	1,779,294	846,886	932,408	12,205	2,001,628	5,460,597	2,001,628	244,538
2043	5,587,487	275,229	1,280,886	1,005,657	1,760,398	874,754	885,644	12,298	1,903,599	5,842,839	1,903,599	277,365
2044	5,762,169	256,324	1,202,143	945,819	1,735,131	902,480	832,651	12,395	1,790,864	6,251,838	1,790,864	314,422
2045	5,942,185	236,297	1,120,724	884,427	1,699,844	931,369	768,475	12,494	1,665,396	6,621,065	1,665,396	352,918
2046	6,145,855	216,544	1,038,503	821,959	1,650,630	959,883	690,747	12,596	1,525,301	4,886,731	1,525,301	393,952
2047	6,357,763	197,227	957,246	760,018	1,578,431	989,544	588,887	12,700	1,361,605	3,108,174	1,361,605	435,545
2048	6,585,917	177,195	872,806	695,612	1,463,657	1,019,424	444,233	12,805	1,152,650	1,307,123	1,152,650	479,600
2049	6,828,751	157,564	787,127	629,563	1,237,449	0	187,362	12,912	579,730	579,730	579,730	525,187
2050	7,086,830	137,606	698,689	561,083	0	0	0	13,021	340,450 [c]	340,450	340,450	572,900
2051	7,356,566	118,076	606,615	488,539	0	0	0	13,131	266,617 [c]	266,617	266,617	622,603
2052	7,641,570	100,321	516,867	416,546	0	0	0	13,242	212,382 [c]	212,382	212,382	673,463
2053	7,938,935	83,989	436,129	352,140	0	0	0	13,351	162,187 [c]	162,187	162,187	723,789
2054	8,244,364	68,889	362,144	293,255	0	0	0	13,457	118,107 [c]	118,107	118,107	773,616
2055	8,562,844	55,094	294,964	239,870	0	0	0	13,560	79,894 [c]	79,894	79,894	823,424
2056	8,894,807	42,569	234,347	191,778	0	0	0	13,659	46,868 [c]	46,868	46,868	873,282
2057	9,237,331	31,877	179,805	147,928	0	0	0	13,754	25,846 [c]	25,846	25,846	922,949

[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 2019
Table A-7

Valuation	Number		Total Assets										
Plan Year End 30-Jun	Active	Pay Status	Assets (boy)	Benefit Payments	Expenses	Employer Contribs.	Employee Contribs.	Premium Tax Allocation Contribs.	Investment Income	Assets (eoy)	Actuarial Accrued Liability	Unfunded Liability	Funded Ratio
2017	44	50	$5,491,795	$1,192,439	$7,500	$1,337,055	$168,474	$421,449	$669,529	$6,888,363	$28,735,254	$21,846,891	24%
2018	41	51	6,888,363	1,212,049	7,706	1,006,110	174,119	437,291	354,241	7,640,369	29,918,676	22,278,307	26%
2019	38	51	7,640,369	1,315,158	7,708	735,006	173,115	446,236	382,796	8,054,656	31,045,357	22,990,701	26%
2020	35	52	8,054,656	1,415,480	7,724	820,697	170,273	463,084	403,495	8,489,001	32,102,991	23,613,990	26%
2021	32	53	8,489,001	1,485,770	7,762	880,676	167,170	475,825	425,194	8,944,334	33,118,133	24,173,799	27%
2022	30	53	8,944,334	1,540,046	7,807	924,826	164,873	487,739	447,947	9,421,866	34,109,669	24,687,803	28%
2023	29	53	9,421,866	1,584,002	7,857	957,514	163,950	499,703	471,817	9,922,991	35,095,423	25,172,432	28%
2024	27	53	9,922,991	1,614,767	7,909	976,652	164,528	510,833	496,874	10,449,202	36,098,872	25,649,670	29%
2025	25	53	10,449,202	1,657,077	7,962	1,008,429	164,088	521,662	523,180	11,001,522	37,101,842	26,100,320	30%
2026	24	53	11,001,522	1,711,562	8,016	1,051,446	162,594	534,247	550,785	11,581,016	38,084,294	26,503,278	30%
2027	22	53	11,581,016	1,748,335	8,067	1,075,686	162,562	546,732	579,757	12,189,351	39,073,640	26,884,289	31%
2028	21	53	12,189,351	1,782,952	8,120	1,098,565	162,402	558,506	610,169	12,827,921	40,069,764	27,241,843	32%
2029	19	53	12,827,921	1,837,009	8,179	1,139,846	160,694	572,523	642,084	13,497,880	41,041,678	27,543,798	33%
2030	18	53	13,497,880	1,880,018	8,237	1,169,144	160,002	586,652	675,574	14,200,997	42,005,917	27,804,920	34%
2031	17	53	14,200,997	1,913,549	8,299	1,189,112	160,259	599,868	710,726	14,939,114	42,976,861	28,037,747	35%
2032	16	52	14,939,114	1,950,714	8,362	1,212,481	159,745	613,995	747,626	15,713,885	43,947,848	28,233,963	36%
2033	15	52	15,713,885	2,006,029	8,427	1,254,330	157,853	628,895	786,352	16,526,859	44,892,518	28,365,659	37%
2034	13	53	16,526,859	2,117,590	8,490	1,356,610	149,300	645,038	826,957	17,378,684	45,713,745	28,335,061	38%
2035	11	53	17,378,684	2,229,305	8,551	1,455,964	138,096	666,554	869,496	18,270,938	46,392,650	28,121,712	39%
2036	10	54	18,270,938	2,314,996	8,616	1,529,684	129,357	685,701	914,069	19,206,137	46,963,990	27,757,853	41%
2037	8	54	19,206,137	2,414,392	8,682	1,618,182	117,900	706,094	960,779	20,186,018	47,394,710	27,208,692	43%
2038	7	54	20,186,018	2,504,650	8,746	1,695,873	106,505	728,182	1,009,725	21,212,907	47,689,388	26,476,481	44%
2039	6	53	21,212,907	2,576,921	8,807	1,753,947	97,662	749,782	1,061,032	22,289,602	47,875,636	25,586,034	47%
2040	5	53	22,289,602	2,644,422	8,864	1,806,200	89,127	772,201	1,114,832	23,418,676	47,956,070	24,537,394	49%
2041	4	53	23,418,676	2,726,672	8,916	1,873,704	78,643	795,774	1,171,243	24,602,452	47,903,358	23,300,906	51%
2042	4	52	24,602,452	2,807,843	8,965	1,937,896	68,065	821,671	1,230,390	25,843,666	47,714,680	21,871,014	54%
2043	3	52	25,843,666	2,890,907	9,009	2,005,225	56,824	846,886	1,292,406	27,145,091	47,380,000	20,234,909	57%
2044	2	51	27,145,091	2,979,329	9,049	2,076,262	44,392	874,754	1,357,428	28,509,549	46,882,476	18,372,927	61%
2045	1	51	28,509,549	3,052,566	9,084	2,131,210	33,213	902,480	1,425,607	29,940,409	46,236,896	16,296,487	65%
2046	1	50	29,940,409	3,099,980	9,115	2,157,252	24,317	931,369	1,497,115	31,441,367	45,472,631	14,031,264	69%
2047	1	49	31,441,367	3,124,579	9,142	2,158,936	17,696	959,883	1,572,137	33,016,298	44,617,247	11,600,949	74%
2048	0	48	33,016,298	3,137,551	9,165	2,146,892	12,207	989,544	1,650,862	34,669,087	43,683,266	9,014,179	79%
2049	0	47	34,669,087	3,131,377	9,183	2,113,915	8,575	1,019,424	1,733,488	36,403,929	42,693,882	6,289,953	85%
2050	0	46	36,403,929	3,115,499	9,197	2,069,622	5,922	1,050,087	1,820,220	38,225,084	41,660,317	3,435,233	92%
2051	0	45	38,225,084	3,092,843	9,206	2,017,494	3,883	1,081,285	1,911,269	40,136,966	40,589,834	452,868	99%
2052	0	43	40,136,966	3,063,766	9,210	24,556	2,432	455,813	1,942,884	39,489,675	39,489,674	0	100%
2053	0	42	39,489,675	3,029,451	9,209	13,426	1,454	0	1,899,811	38,365,706	38,365,706	0	100%
2054	0	41	38,365,706	2,991,465	9,203	11,282	741	0	1,844,480	37,221,541	37,221,542	0	100%
2055	0	40	37,221,541	2,949,673	9,191	10,055	320	0	1,788,264	36,061,316	36,061,316	0	100%
2056	0	39	36,061,316	2,904,557	9,172	9,465	121	0	1,731,348	34,888,521	34,888,521	0	100%
2057	0	38	34,888,521	2,856,804	9,146	9,267	49	0	1,673,881	33,705,768	33,705,768	0	100%

Actuarial Projections – Conservation Funding in 2019
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.	6.72%[d] of Pay Employee Contribs.	100.00% of Premium Tax Allocation	Investment Income	Assets (boy)[c]	Net Benefit Pmts and Expenses	Employer Contribs.	1.50% of Pay Employee Contribs.	0.00% of Premium Tax Allocation	Investment Income	Conservation Employer Cont.	Alternative Employer Cont.	Minimum Alt /Cons Cont.	Statewide Employer Contribution
2018	$6,888,363	$1,219,755	$1,006,110	$174,119	$437,291	$354,241	$0	$0	$0	$0	$0	$0	NA	$1,006,110	$1,006,110	$0
2019	7,640,369	1,322,866	735,006	141,624	446,236	382,018	8,022,387	0	0	31,491	0	778	735,006	1,076,538	735,006	11,939
2020	0	1,423,204	820,697	139,423	463,084	0	8,054,656	0	0	30,850	0	403,495	820,697	1,151,896	820,697	25,433
2021	0	1,493,532	880,676	137,031	475,825	0	8,489,001	0	0	30,139	0	425,194	880,676	1,232,529	880,676	40,746
2022	0	1,547,853	924,826	135,288	487,739	0	8,944,334	0	0	29,585	0	447,947	924,826	1,318,806	924,826	55,317
2023	0	1,591,859	957,514	134,642	499,703	0	9,421,866	0	0	29,308	0	471,817	957,514	1,411,122	957,514	69,995
2024	0	1,622,676	976,652	135,191	510,833	0	9,922,991	0	0	29,337	0	496,874	976,652	1,509,901	976,652	83,245
2025	0	1,665,039	1,008,429	134,948	521,662	0	10,449,202	0	0	29,140	0	523,180	1,008,429	1,615,594	1,008,429	96,158
2026	0	1,719,578	1,051,446	133,885	534,247	0	11,001,522	0	0	28,709	0	550,785	1,051,446	1,728,686	1,051,446	111,994
2027	0	1,756,402	1,075,686	133,984	546,732	0	11,581,016	0	0	28,578	0	579,757	1,075,686	1,849,694	1,075,686	128,027
2028	0	1,791,072	1,098,565	134,001	558,506	0	12,189,351	0	0	28,401	0	610,169	1,098,565	1,979,173	1,098,565	142,814
2029	0	1,845,188	1,139,846	132,819	572,523	0	12,827,921	0	0	27,875	0	642,084	1,139,846	2,117,715	1,139,846	160,641
2030	0	1,888,255	1,169,144	132,459	586,652	0	13,497,880	0	0	27,543	0	675,574	1,169,144	2,265,955	1,169,144	179,749
2031	0	1,921,848	1,189,112	132,868	599,868	0	14,200,997	0	0	27,391	0	710,726	1,189,112	2,424,572	1,189,112	197,578
2032	0	1,959,076	1,212,481	132,600	613,995	0	14,939,114	0	0	27,145	0	747,626	1,212,481	2,594,292	1,212,481	216,749
2033	0	2,014,456	1,254,330	131,231	628,895	0	15,713,885	0	0	26,622	0	786,352	1,254,330	2,775,892	1,254,330	236,632
2034	0	2,126,080	1,356,610	124,432	645,038	0	16,526,859	0	0	24,868	0	826,957	1,356,610	2,970,204	1,356,610	259,069
2035	0	2,237,856	1,455,964	115,338	666,554	0	17,378,684	0	0	22,758	0	869,496	1,455,964	3,178,118	1,455,964	288,813
2036	0	2,323,612	1,529,684	108,227	685,701	0	18,270,938	0	0	21,130	0	914,069	1,529,684	3,400,586	1,529,684	316,153
2037	0	2,423,074	1,618,182	98,798	706,094	0	19,206,137	0	0	19,102	0	960,779	1,618,182	3,638,627	1,618,182	345,724
2038	0	2,513,396	1,695,873	89,341	728,182	0	20,186,018	0	0	17,164	0	1,009,725	1,695,873	3,893,331	1,695,873	376,528
2039	0	2,585,728	1,753,947	81,999	749,782	0	21,212,907	0	0	15,663	0	1,061,032	1,753,947	4,165,864	1,753,947	405,437
2040	0	2,653,286	1,806,200	74,885	772,201	0	22,289,602	0	0	14,242	0	1,114,832	1,806,200	4,457,474	1,806,200	433,872
2041	0	2,735,588	1,873,704	66,110	795,774	0	23,418,676	0	0	12,533	0	1,171,243	1,873,704	4,769,497	1,873,704	462,663
2042	0	2,816,808	1,937,896	57,241	821,671	0	24,602,452	0	0	10,824	0	1,230,390	1,937,896	5,103,362	1,937,896	493,700
2043	0	2,899,916	2,005,225	47,805	846,886	0	25,843,666	0	0	9,019	0	1,292,406	2,005,225	5,460,597	2,005,225	523,554
2044	0	2,988,378	2,076,262	37,362	874,754	0	27,145,091	0	0	7,030	0	1,357,428	2,076,262	5,842,839	2,076,262	555,817
2045	0	3,061,650	2,131,210	27,960	902,480	0	28,509,549	0	0	5,253	0	1,425,607	2,131,210	6,251,838	2,131,210	587,159
2046	0	3,109,095	2,157,252	20,474	931,369	0	29,940,409	0	0	3,843	0	1,497,115	2,157,252	6,689,467	2,157,252	618,413
2047	0	3,133,721	2,158,936	14,902	959,883	0	31,441,367	0	0	2,794	0	1,572,137	2,158,936	7,157,730	2,158,936	648,006
2048	0	3,146,716	2,146,892	10,280	989,544	0	33,016,298	0	0	1,927	0	1,650,862	2,146,892	7,658,771	2,146,892	678,029
2049	0	3,140,560	2,113,915	7,221	1,019,424	0	34,669,087	0	0	1,354	0	1,733,488	2,113,915	8,194,885	2,113,915	707,541
2050	0	3,124,696	2,069,622	4,987	1,050,087	0	36,403,929	0	0	935	0	1,820,220	2,069,622	5,524,002	2,069,622	737,572
2051	0	3,102,049	2,017,494	3,270	1,081,285	0	38,225,084	0	0	613	0	1,911,269	2,017,494	2,487,319	2,017,494	768,148
2052	0	482,416	24,556	2,048	455,813	0	40,136,966	2,590,560	0	384	0	1,942,884	24,556	16,724	24,556	799,677
2053	0	0	0	0	0	0	39,489,674	3,038,660	13,426	1,454	0	1,899,811	13,426	13,751	13,426	831,982
2054	0	0	0	0	0	0	38,365,706	3,000,668	11,282	741	0	1,844,480	11,282	11,563	11,282	864,839
2055	0	0	0	0	0	0	37,221,541	2,958,864	10,055	320	0	1,788,264	10,055	10,298	10,055	898,745
2056	0	0	0	0	0	0	36,061,316	2,913,729	9,465	121	0	1,731,348	9,465	9,702	9,465	933,821
2057	0	0	0	0	0	0	34,888,521	2,865,950	9,267	49	0	1,673,881	9,267	9,496	9,267	969,866

[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, 2019.*

[d] *Blended employee contribution rate of 7.51% of pay less 1.50% of pay going into the Accumulation Account.*