

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

**Actuarial Valuation Report  
for the Year Beginning July 1, 2017**



September 24, 2018

Ms. Hannah Parsons  
City Treasurer  
238 Fourth Avenue  
So. Charleston, WV 25303

Captain Troy B. Painter  
Pension Board Secretary  
City of South Charleston Firemen's Pension and Relief Fund

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

Dear Ms. Parsons and Captain Painter:

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

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

- The sponsor's funding requirements for the fiscal year ending June 30, 2019, based on the selected funding policy, i.e. the Alternative funding policy as defined in West Virginia Code §8-22-20(c)(1)
- The Fund's eligibility to receive an allocation of the premium tax for the fiscal year ending June 30, 2019
- The Fund's eligibility to provide supplemental benefits for the plan year beginning July 1, 2019

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

West Virginia Code §8-22-20 (c)(4), requires (1) a review of the actuarial assumptions and methods at least once every five years and (2) that the Actuary shall provide a report to the oversight board with recommendations on any changes to the actuarial process. Consequently, an experience review was performed for the period July 1, 2009, through June 30, 2014. The assumptions and methods were recommended by the actuary, in the report *2016 Experience Review for the Years July 1, 2009, to July 1, 2014*, approved by the Municipal Pensions Oversight Board, and became effective for the actuarial valuation as of July 1, 2015.

This actuarial valuation is based upon:

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

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

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

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

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

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

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

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law.

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



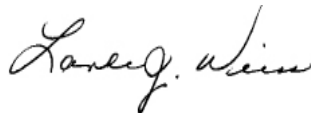
The signing actuaries are independent of the plan sponsor.

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

Sincerely,



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



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

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## **SECTION I**

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# **ACTUARIAL VALUATION RESULTS AS OF JULY 1, 2017**

# Executive Summary

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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 South Charleston, West Virginia Firemen's Pension and Relief Fund ("Fund" or "Plan").

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

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

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

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

- The sponsor's initial Alternative contribution effective for plan year 1991 is the greater of 107% of the amount contributed for the plan year ended June 30, 1990, or the highest five-year average of contributions made since 1984.
- Sponsor contributions made in subsequent years cannot be less than 107% of the contribution made in the prior fiscal year.
- The actuary must certify in writing that the Fund is projected to be solvent under the Alternative funding policy for the next consecutive 15-year period. A plan is deemed to be solvent if projected assets are greater than zero over the 15-year projection period.
- Beginning September 1, 2003, any municipality which elected the Alternative funding policy has the option of reverting to the Standard funding policy if the plan's funded ratio is greater than 80%. In this case, the Standard minimum contribution equals the normal cost plus the amortization of the unfunded liability over a period of not more than 40 years commencing from July 1, 1991, less the allocable portion of the state premium tax fund for municipal pension and relief funds.
- Plan members hired before January 1, 2010, contribute 7.0% of pay; however, if elected by the Board of Trustees of the Plan, member contributions may be increased up to 9.5% of pay. 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).

## Executive Summary (Continued)

The following table provides the Plan's funded status:

<b>Funded Status as of:</b>	<b>July 1, 2017</b>
Assets	\$2,306,918
Actuarial Accrued Liability	\$37,985,998
Unfunded Actuarial Accrued Liability	\$35,679,080
Funded Ratio	6.07%

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

<b>Employer Contributions for FYE:</b>	<b>June 30, 2018</b>
FYE 06/30/2017 Alternative Contribution	\$689,624
7% Increase in Alternative Contribution	\$48,274
FYE 06/30/2018 Alternative Contribution	\$737,898
Additional Contribution	\$0
Final FYE 06/30/2018 Alternative Contribution	\$737,898

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

<b>Estimated Employer Contributions for FYE:</b>	<b>June 30, 2019</b>
FYE 06/30/2018 Alternative Contribution	\$737,898
7% Increase in Alternative Contribution	\$51,653
FYE 06/30/2019 Alternative Contribution	\$789,551
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	\$789,551
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	\$789,551



## Executive Summary (Continued)

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

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

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

The sponsor is projected to satisfy the 15-year solvency test without making additional annual contributions in excess of the minimum alternative contribution. **However, given that the funded ratio as of June 30, 2017, is only 6.1% and is expected to grow to 7.7% by June 30, 2026, and that the ratio of assets to expected benefits for the year is only 1.87, we strongly recommend that the sponsor make additional contributions in excess of the statutory minimum.**

## Executive Summary (Continued)

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### 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 1<sup>st</sup> 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.

## Executive Summary (Continued)

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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 8% (using a testing interest rate of 5.50% for all plans using the Alternative funding policy), ratio of assets to benefits of 1.87, equity allocation of 52%, and 15-year projected funded ratio of 14.8%, resulted in a discount rate assumption of 4.00%.
- The Fund experienced an approximate annualized return of 9.01% on the market value of assets during the plan year ended June 30, 2017, which compares to the expected annualized return of 4.00%. The difference in actual versus expected return produced an asset (gain)/loss of (\$104,239).
- 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 \$454,590 due to these events.

### Alternative Funding

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

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

- The funded ratio is projected to increase from 6% at June 30, 2017, to 8% at June 30, 2025, to 11% at June 30, 2033, and then increase to 70% at June 30, 2057.
- Employer contributions are expected to increase from \$737,898 (or 32% of pay) for the fiscal year end June 30, 2018, to 10,326,749 (or 107% of pay) for fiscal year end June 30, 2057.

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

## Executive Summary (Continued)

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

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 \$789,551 is sufficient to finance only 65% of the net employer normal cost of \$1,218,949. The state premium tax allocation of \$439,511 is sufficient to finance only 1.2% of the unfunded actuarial accrued liability of \$35,679,080.

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

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

If the minimum employer contributions (calculated under the Alternative funding policy) are not made or investment return is less than the assumption of 4.00%, the funded ratio will be lower and the cash flow strain could be higher. If another significant market downturn occurs while the plan's funded ratio is declining, the plan may need to liquidate assets in order to pay benefits which could have a further adverse effect on the funded status of the System.

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

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

## Executive Summary (Continued)

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

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

## Schedule A: Summary of Key Valuation Results

Valuation Date	<b>July 1, 2016</b>	<b>July 1, 2017</b>
Valuation Interest Rate	4.00%	4.00%
Cost-of-Living Adjustment	2.75%	2.75%
Wage Inflation	3.75%	3.75%
Expected Payroll	\$1,914,061	\$2,288,223
Average Pay	\$51,731	\$53,214
Expected Benefit Payments	\$1,216,090	\$1,236,810
<b>1. Actuarial Accrued Liability</b>	<u>No.</u>	<u>No.</u>
(a) Actives	37	43
(b) Retirees	23	24
(c) Survivors	10	10
(d) Disabled Members	8	6
(e) Deferred Vested Members	0	1
(f) Total	78	84
2. Present Value of Future Normal Costs	\$11,671,461	\$15,225,660
3. Present Value of Benefits (1(f) + 2)	\$47,774,966	\$53,211,658
4. Market Value of Assets	\$2,033,787	\$2,306,918
5. Unfunded Actuarial Accrued Liability (1(f) - 4)	\$34,069,718	\$35,679,080
6. Funded Ratio (4 / 1(f))	5.63%	6.07%
<b>7. Net Employer Normal Cost</b>		
(a) Normal Cost	\$1,170,618	\$1,389,036
(b) Administrative Expenses	\$7,825	\$8,813
(c) Gross Normal Cost (a + b)	\$1,178,443	\$1,397,849
(d) Employee Contribution Rate <sup>a</sup>	7.58%	7.82%
(e) Expected Employee Contributions	\$145,097	\$178,900
(f) Net Employer Normal Cost (c - e)	\$1,033,346	\$1,218,949
( % of Compensation)	53.99%	53.27%
	<b>FYE 2018</b>	<b>FYE 2019</b>
<b>8. Estimated Minimum Employer Contribution <sup>b</sup></b>		
(a) Prior Year Alternative Contribution	\$689,624	\$737,898
(b) Increase in Alternative Contribution	7.00%	7.00%
(c) Current Year Alternative Contribution	\$737,898	\$789,551
(d) Additional Contribution	\$0	\$0
(e) Alternative Contribution ( c + d )	\$737,898	\$789,551

<sup>a</sup> Blended rate reflecting 7.0% for members hired before January 1, 2010, and 9.5% for members hired after January 1, 2010.

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

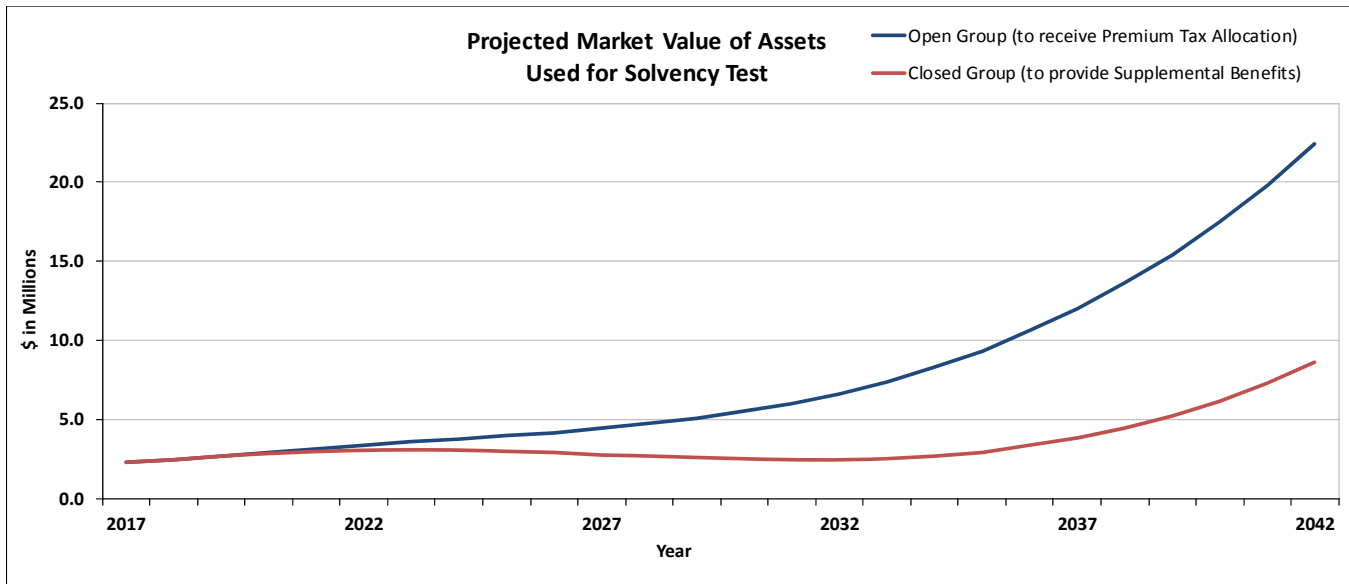
## Schedule B: (Gain)/Loss Analysis

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

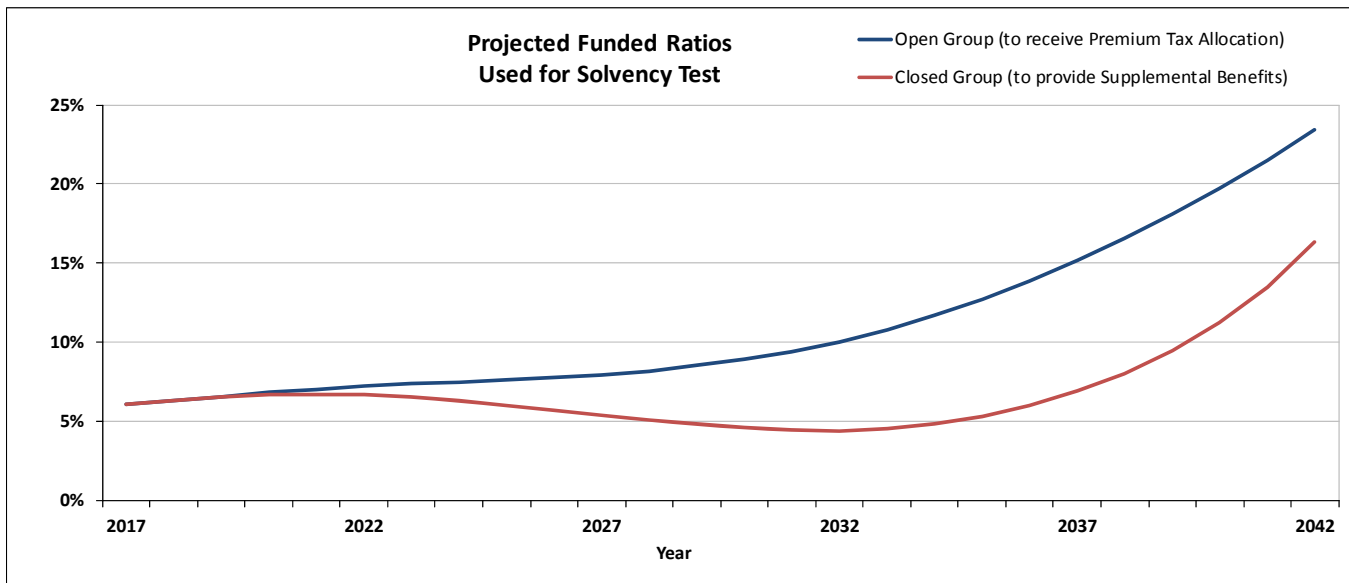
1. (a) Actuarial Accrued Liability as of 7/1/2016	\$36,103,505
(b) Normal Cost due 7/1/2016	\$1,170,618
(c) Interest on (a) and (b) to 6/30/2017	\$1,467,553
(d) Benefit Payments with interest to 6/30/2017	\$1,210,268
(e) Effect of Assumption Changes	\$0
(f) Expected Liability at 7/1/2017 [(a) + (b) + (c) - (d) + (e)]	\$37,531,408
(g) Actual Liability at 7/1/2017	\$37,985,998
(h) Liability (Gain)/Loss [(g) - (f)]	<b>\$454,590</b>
2. (a) Market Value of Assets as of 7/1/2016	\$2,049,753
(b) Interest on (a) to 6/30/2017	\$81,990
(c) Contributions with interest to 6/30/2017	\$1,281,204
(d) Benefit Payments with interest to 6/30/2017	\$1,210,268
(e) Expected Assets at 6/30/2017 [(a) + (b) + (c) - (d)]	\$2,202,679
(f) Actual Assets at 7/1/2017	\$2,306,918
(g) Asset (Gain)/Loss [(e) - (f)]	<b>(\$104,239)</b>
3. Total (Gain)/Loss [1(h) + 2(g)]	<b>\$350,351</b>

# Graphs 1A and 1B: Solvency Projections

## Graph 1A



## Graph 1B





## **SECTION II**

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**ACTUARIAL PROJECTIONS**

**ALTERNATIVE FUNDING POLICY**

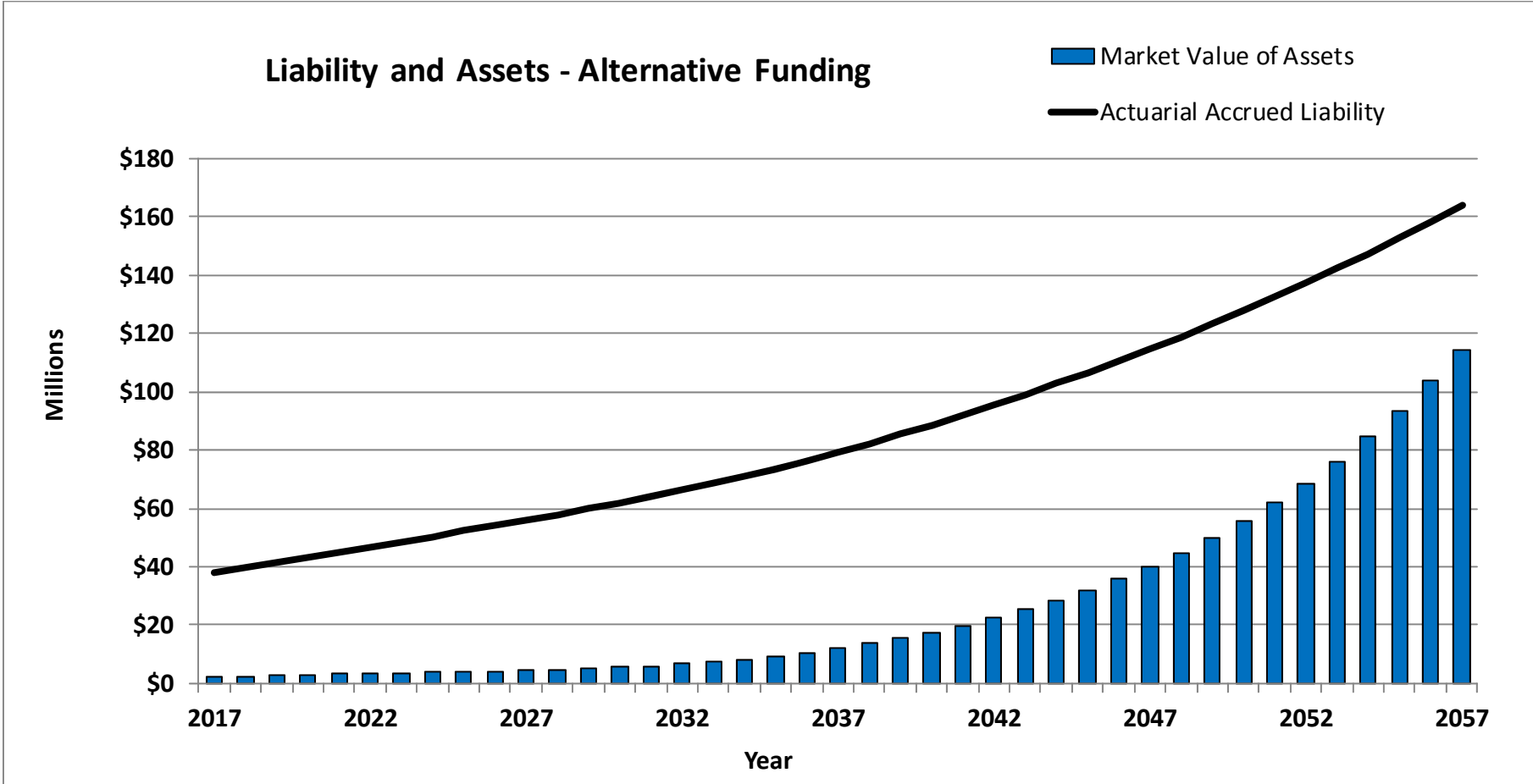
# Alternative Funding on a Closed Group Basis, Table 1

Valuation Year End 30-Jun	Number		Total Payroll	Total Assets								Assets (eoy)	Actuarial Accrued Liability	Unfunded Liability	Funded Ratio
	Active	Status		Assets (boy)	Benefit Payments	Employer Expenses	Employer Contributions	Member Contributions	Premium Tax Allocation	Investment Income					
											Assets (eoy)				
2017	43	41	\$1,914,061	\$2,049,753	\$1,186,537	\$3,000	\$689,626	\$175,541	\$390,915	\$190,620	\$2,306,918	\$37,985,998	\$35,679,080	6%	
2018	40	42	2,288,223	2,306,918	1,236,810	8,813	737,898	178,900	419,174	94,066	2,491,333	39,660,577	37,169,244	6%	
2019	38	43	2,279,947	2,491,333	1,281,988	8,857	789,551	178,548	439,511	101,965	2,710,063	41,347,551	38,637,488	7%	
2020	35	44	2,257,156	2,710,063	1,372,815	8,924	844,820	177,136	416,872	109,534	2,876,685	42,993,289	40,116,604	7%	
2021	33	45	2,189,483	2,876,685	1,479,543	9,013	903,957	172,646	408,906	115,007	2,988,645	44,553,250	41,564,605	7%	
2022	31	46	2,135,369	2,988,645	1,564,110	9,115	967,234	169,163	399,354	118,804	3,069,975	46,055,610	42,985,635	7%	
2023	27	48	2,052,270	3,069,975	1,668,192	9,224	1,034,940	163,703	395,018	121,140	3,107,360	47,458,897	44,351,537	7%	
2024	25	49	1,929,283	3,107,360	1,797,124	9,338	1,107,386	155,509	385,259	121,159	3,070,211	48,708,814	45,638,603	6%	
2025	23	50	1,839,765	3,070,211	1,897,433	9,458	1,184,903	149,705	379,404	118,988	2,996,320	49,849,453	46,853,133	6%	
2026	21	51	1,748,945	2,996,320	1,991,690	9,578	1,267,846	143,823	374,713	115,597	2,897,031	50,880,691	47,983,660	6%	
2027	19	52	1,662,823	2,897,031	2,081,544	9,707	1,356,595	138,294	370,386	111,406	2,782,461	51,805,134	49,022,673	5%	
2028	18	53	1,595,817	2,782,461	2,155,398	9,839	1,451,557	134,156	367,514	107,100	2,677,552	52,646,084	49,968,532	5%	
2029	16	54	1,516,102	2,677,552	2,231,767	9,970	1,553,166	129,186	366,348	103,279	2,587,795	53,389,059	50,801,264	5%	
2030	14	54	1,406,443	2,587,795	2,331,242	10,103	1,661,888	122,156	363,374	99,671	2,493,538	53,988,290	51,494,752	5%	
2031	13	55	1,313,199	2,493,538	2,411,748	10,231	1,778,220	115,916	360,706	96,432	2,422,833	54,468,346	52,045,513	4%	
2032	12	55	1,252,363	2,422,833	2,466,028	10,359	1,902,695	111,463	360,213	94,893	2,415,711	54,871,261	52,455,550	4%	
2033	11	55	1,213,046	2,415,711	2,501,827	10,485	2,035,884	108,674	361,021	96,495	2,505,473	55,226,534	52,721,061	5%	
2034	9	55	1,149,160	2,505,473	2,559,140	10,613	2,178,396	103,598	363,407	101,717	2,682,838	55,495,651	52,812,813	5%	
2035	8	55	1,069,868	2,682,838	2,627,339	10,737	2,330,884	97,184	363,858	110,360	2,947,048	55,655,430	52,708,382	5%	
2036	8	55	1,028,911	2,947,048	2,666,914	10,854	2,494,046	94,185	366,302	123,363	3,347,177	55,754,926	52,407,749	6%	
2037	6	56	911,813	3,347,177	2,746,650	10,965	2,668,629	83,609	369,583	141,100	3,852,483	55,703,812	51,851,329	7%	
2038	5	56	757,427	3,852,483	2,849,132	11,078	2,855,433	69,254	367,438	162,653	4,447,052	55,449,949	51,002,897	8%	
2039	4	55	654,883	4,447,052	2,916,893	11,186	3,055,313	60,165	369,164	188,905	5,192,520	55,054,392	49,861,872	9%	
2040	3	55	571,433	5,192,520	2,970,404	11,289	3,269,185	53,024	372,062	221,812	6,126,910	54,538,855	48,411,945	11%	
2041	3	54	501,177	6,126,910	3,012,805	11,389	3,498,028	46,740	375,973	262,831	7,286,288	53,918,382	46,632,094	14%	
2042	2	54	388,439	7,286,288	3,090,105	11,485	3,742,890	36,280	380,334	312,402	8,656,604	53,131,325	44,474,721	16%	
2043	1	54	272,522	8,656,604	3,163,639	11,578	4,004,892	25,446	383,556	370,794	10,266,076	52,174,293	41,908,217	20%	
2044	1	53	202,728	10,266,076	3,193,966	11,668	4,285,234	18,955	388,002	440,083	12,192,716	51,110,167	38,917,451	24%	
2045	1	52	156,875	12,192,716	3,203,244	11,754	4,585,200	14,712	392,812	522,914	14,493,356	49,969,137	35,475,781	29%	
2046	0	51	126,137	14,493,356	3,199,344	11,837	4,906,164	11,863	398,078	621,420	17,219,700	48,769,897	31,550,197	35%	
2047	0	50	91,077	17,219,700	3,198,535	11,916	5,249,595	8,572	403,524	737,332	20,408,272	47,505,129	27,096,857	43%	
2048	0	49	58,124	20,408,272	3,193,198	11,990	5,617,067	5,468	408,868	872,301	24,106,788	46,178,267	22,071,479	52%	
2049	0	48	40,034	24,106,788	3,171,983	12,057	6,010,262	3,781	414,181	1,028,519	28,379,492	44,810,819	16,431,327	63%	
2050	0	47	27,257	28,379,492	3,144,334	12,117	6,430,980	2,589	419,374	1,208,384	33,284,369	43,410,402	10,126,033	77%	
2051	0	46	18,286	33,284,369	3,111,258	12,169	6,881,149	1,737	424,376	1,414,231	38,882,436	41,983,148	3,100,712	93%	
2052	0	45	10,472	38,882,436	3,074,524	12,211	7,749,382	995	429,068	1,557,133	40,532,279	40,532,279	0	100%	
2053	0	44	5,178	40,532,279	3,033,107	12,242	14,222	492	0	1,561,273	39,062,917	39,062,917	0	100%	
2054	0	43	3,020	39,062,917	2,986,551	12,261	13,390	287	0	1,503,399	37,581,182	37,581,182	0	100%	
2055	0	42	2,027	37,581,182	2,936,179	12,266	13,024	193	0	1,445,118	36,091,072	36,091,072	0	100%	
2056	0	40	1,360	36,091,072	2,882,482	12,255	12,764	129	0	1,386,571	34,595,799	34,595,799	0	100%	
2057	0	39	550	34,595,799	2,825,676	12,228	12,434	52	0	1,327,878	33,098,259	33,098,259	0	100%	

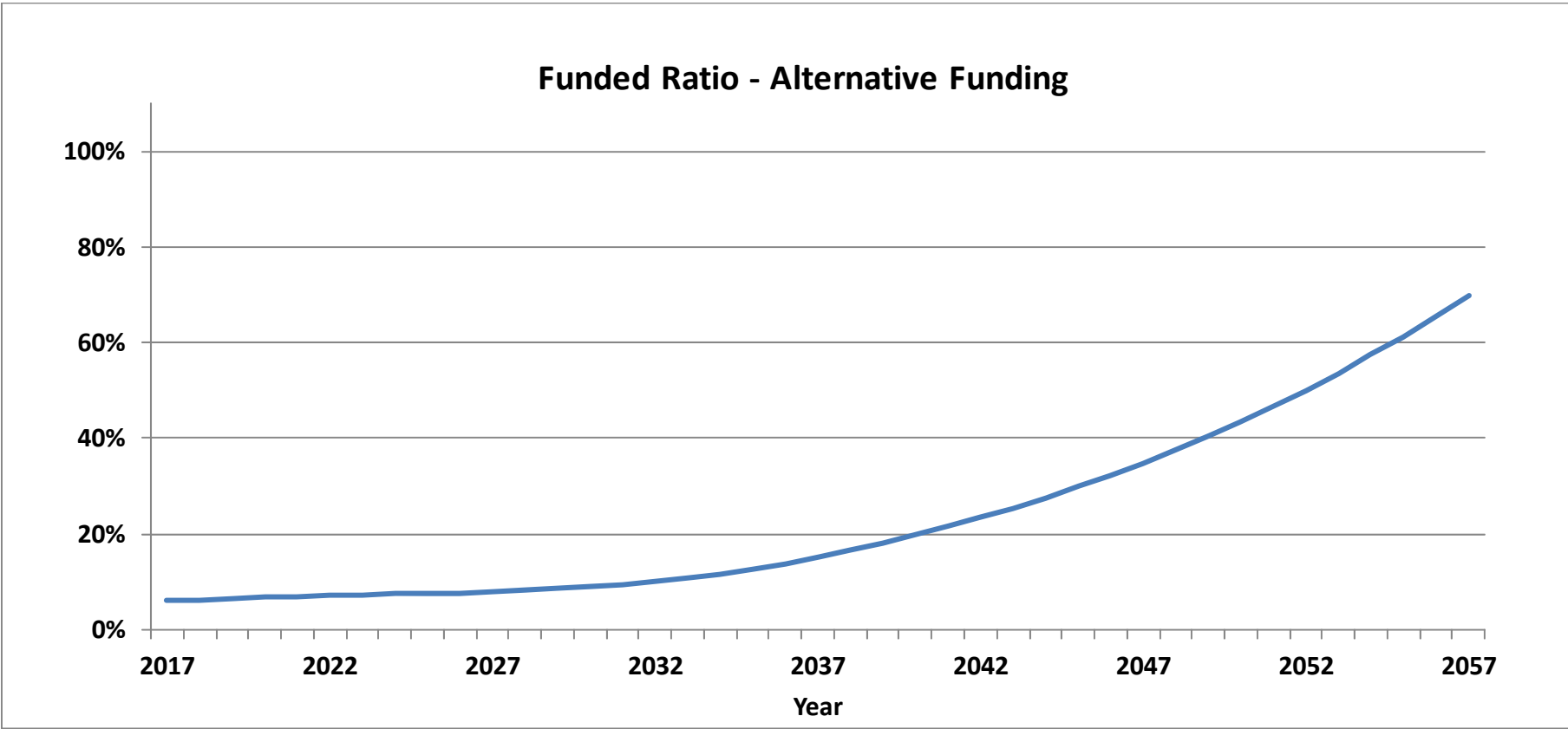
## Alternative Funding on an Open Group Basis, Table 2

Valuation Plan Year End 30-Jun	Number		Total Assets										Actuarial Accrued Liability	Unfunded Liability	Funded Ratio			
	Active	Pay Status	Total Payroll	Assets			Benefit		Employer		Member					Premium Tax	Investment	Assets
				Payments	Expenses	Contributions	Contributions	Contributions	Contributions	Allocation	Income	(eoy)						
2017	43	41	\$1,914,061	\$2,049,753	\$1,186,537	\$3,000	\$689,626	\$175,541	\$390,915	\$190,620	\$2,306,918	\$37,985,998	\$35,679,080	6%				
2018	43	42	2,288,223	2,306,918	1,236,810	8,813	737,898	178,900	419,174	94,066	2,491,333	39,660,577	37,169,244	6%				
2019	43	43	2,385,349	2,491,333	1,281,988	9,149	789,551	189,393	439,511	102,174	2,720,826	41,410,165	38,689,339	7%				
2020	43	44	2,473,895	2,720,826	1,373,197	9,482	844,820	198,740	456,563	111,159	2,949,428	43,186,654	40,237,226	7%				
2021	43	45	2,538,440	2,949,428	1,480,990	8,876	903,957	207,035	469,305	119,748	3,158,607	44,960,180	41,801,573	7%				
2022	43	46	2,646,981	3,158,607	1,567,267	10,343	967,234	219,344	483,910	128,184	3,379,668	46,779,844	43,400,176	7%				
2023	43	48	2,695,395	3,379,668	1,673,746	10,709	1,034,940	226,293	496,125	136,631	3,589,201	48,589,321	45,000,120	7%				
2024	43	49	2,773,001	3,589,201	1,805,624	11,258	1,107,386	237,855	513,460	144,396	3,775,416	50,378,567	46,603,151	7%				
2025	43	50	2,867,156	3,775,416	1,909,525	11,731	1,184,903	249,685	528,989	151,855	3,969,592	52,186,412	48,216,820	8%				
2026	43	52	2,957,964	3,969,592	2,008,053	12,185	1,267,846	261,328	544,187	159,836	4,182,551	54,016,110	49,833,559	8%				
2027	43	52	3,069,372	4,182,551	2,102,821	12,673	1,356,595	275,016	560,721	168,824	4,428,212	55,884,520	51,456,308	8%				
2028	43	53	3,198,671	4,428,212	2,182,199	13,141	1,451,557	289,893	577,214	179,570	4,731,107	57,819,633	53,088,526	8%				
2029	43	54	3,310,331	4,731,107	2,264,650	13,580	1,553,166	303,476	593,277	192,645	5,095,440	59,809,511	54,714,071	9%				
2030	43	55	3,422,808	5,095,440	2,370,810	14,086	1,661,888	318,224	611,001	207,902	5,509,559	61,832,306	56,322,747	9%				
2031	43	55	3,570,963	5,509,559	2,458,699	14,610	1,778,220	335,586	629,605	225,731	6,005,392	63,930,370	57,924,978	9%				
2032	43	56	3,736,611	6,005,392	2,521,283	15,073	1,902,695	353,074	646,864	247,470	6,619,139	66,143,871	59,524,732	10%				
2033	43	55	3,924,440	6,619,139	2,566,265	15,525	2,035,884	372,405	664,587	274,491	7,384,716	68,509,624	61,124,908	11%				
2034	43	56	4,076,159	7,384,716	2,633,611	15,937	2,178,396	388,318	681,242	307,240	8,290,364	70,989,531	62,699,167	12%				
2035	43	56	4,264,778	8,290,364	2,712,585	16,457	2,330,884	408,387	702,288	345,725	9,348,605	73,598,670	64,250,065	13%				
2036	43	56	4,484,040	9,348,605	2,764,001	16,923	2,494,046	430,774	721,963	391,091	10,605,554	76,389,906	65,784,352	14%				
2037	43	57	4,617,189	10,605,554	2,856,807	17,344	2,668,629	443,163	740,431	443,592	12,027,218	79,275,521	67,248,303	15%				
2038	43	57	4,813,505	12,027,218	2,973,603	18,019	2,855,433	461,454	767,555	502,730	13,622,768	82,265,474	68,642,706	17%				
2039	43	58	5,012,685	13,622,768	3,062,607	18,586	3,055,313	479,881	791,614	569,578	15,437,961	85,387,686	69,949,725	18%				
2040	43	58	5,228,998	15,437,961	3,152,323	19,171	3,269,185	499,717	816,670	645,523	17,497,563	88,661,296	71,163,733	20%				
2041	43	58	5,433,055	17,497,563	3,242,323	19,730	3,498,028	517,737	841,152	731,487	19,823,913	92,081,194	72,257,281	22%				
2042	43	59	5,598,372	19,823,913	3,381,870	20,340	3,742,890	531,756	867,502	827,414	22,391,265	95,578,469	73,187,204	23%				
2043	43	59	5,792,808	22,391,265	3,536,312	21,062	4,004,892	548,513	897,362	933,147	25,217,805	99,159,560	73,941,755	25%				
2044	43	60	6,007,057	25,217,805	3,665,834	21,765	4,285,234	567,452	927,047	1,050,144	28,360,083	102,858,432	74,498,349	28%				
2045	43	60	6,232,176	28,360,083	3,796,745	22,472	4,585,200	587,645	956,697	1,180,157	31,850,565	106,688,510	74,837,945	30%				
2046	43	61	6,466,063	31,850,565	3,932,026	23,192	4,906,164	608,307	987,069	1,324,450	35,721,337	110,658,024	74,936,687	32%				
2047	43	61	6,689,240	35,721,337	4,085,141	23,933	5,249,595	628,365	1,018,328	1,484,051	39,992,602	114,745,279	74,752,677	35%				
2048	43	62	6,931,547	39,992,602	4,252,205	24,733	5,617,067	650,683	1,051,921	1,659,962	44,695,297	118,955,769	74,260,472	38%				
2049	43	62	7,182,390	44,695,297	4,419,228	25,530	6,010,262	673,297	1,085,612	1,853,648	49,873,357	123,302,910	73,429,553	40%				
2050	43	63	7,441,756	49,873,357	4,591,828	26,356	6,430,980	697,577	1,120,644	2,066,842	55,571,216	127,789,074	72,217,858	43%				
2051	43	63	7,715,647	55,571,216	4,773,235	27,207	6,881,149	723,740	1,156,785	2,301,296	61,833,745	132,424,215	70,590,470	47%				
2052	43	64	8,001,361	61,833,745	4,960,628	28,069	7,362,829	751,068	1,193,654	2,558,880	68,711,479	137,219,052	68,507,573	50%				
2053	43	64	8,303,579	68,711,479	5,149,679	28,947	7,878,227	779,709	1,231,443	2,841,750	76,263,982	142,188,280	65,924,298	54%				
2054	43	64	8,616,007	76,263,982	5,340,265	29,832	8,429,703	809,371	1,269,762	3,152,326	84,555,047	147,344,066	62,789,019	57%				
2055	43	65	8,945,197	84,555,047	5,533,076	30,740	9,019,782	841,546	1,309,371	3,493,240	93,655,171	152,700,270	59,045,099	61%				
2056	43	65	9,293,987	93,655,171	5,729,955	31,656	9,651,167	874,322	1,349,697	3,867,280	103,636,026	158,277,856	54,641,830	65%				
2057	43	65	9,646,173	103,636,026	5,926,280	32,574	10,326,749	906,771	1,390,505	4,277,437	114,578,634	164,084,486	49,505,852	70%				

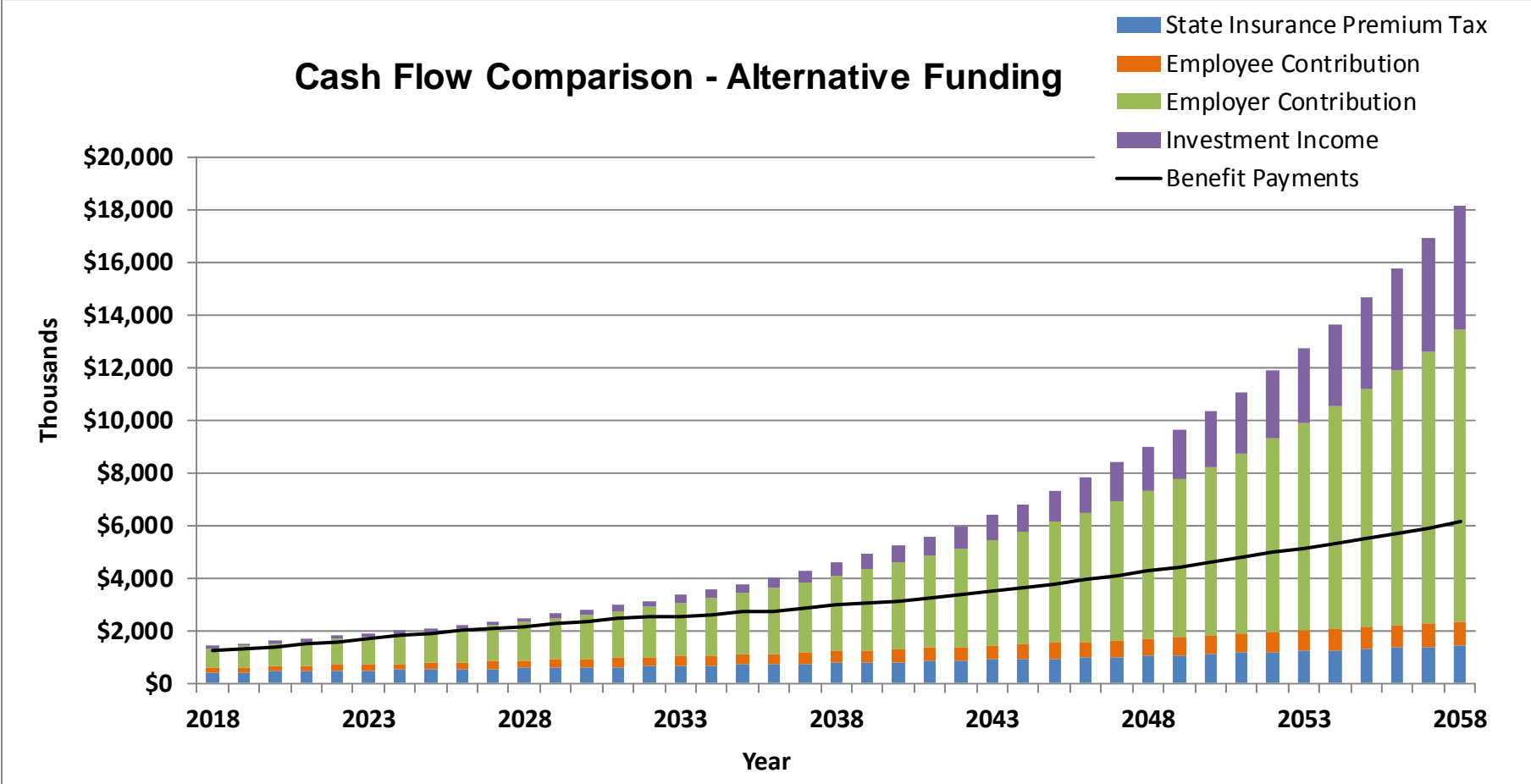
# Open Group Actuarial Projections – Alternative Funding, Graph 2



# Open Group Actuarial Projections – Alternative Funding, Graph 3



# Open Group Actuarial Projections – Alternative Funding, Graph 4



**SECTION III**

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



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

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

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

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

Given that the funded ratio as of June 30, 2017 is only 6.1% and that the ratio of assets to expected benefits for the year is only 1.87, we strongly recommend that the sponsor make additional contributions in excess of the statutory minimum under both the Alternative and Conservation funding policies.

### **Scenario I – Sponsor Immediately Elects either the Optional or Conservation Funding Policy**

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:

<b>Total Employer Contributions for FYE June 30, 2019</b>				
	<b>Local Plan</b>		<b>Statewide Plan</b>	
<b>Funding Method</b>	<b>Amount</b>	<b>Percent of Pay</b>	<b>Amount</b>	<b>Percent of Pay</b>
Alternative	\$789,551	33.1%	NA	NA
Optional	\$2,721,828	119.4%	\$11,067	10.5%
Conservation	\$979,615	43.0%	\$11,067	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 \$737,898 in fiscal year end 2018 to \$10,326,749 in fiscal year end 2057. In fiscal year end 2057, the plan is projected to be 70% 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 \$789,551 to \$2,721,828. However, over the 40-year projection period, total employer contributions to both the local plan and the statewide plan are projected to decrease from \$2,732,895 in fiscal year end 2019 to \$1,620,171 in fiscal year end 2049, and the Plan is projected to be fully funded in 2050.

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

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If the Conservation funding policy is selected in fiscal year end 2019, employer contributions to the local plan for fiscal year end 2019 are projected to increase from \$789,551 to \$979,615. During the 35-year projection period, total employer contributions to both the local plan and the statewide plan are projected to increase from \$990,683 in fiscal year end 2019 to \$3,490,960 in fiscal year end 2051 and the Plan is projected to be fully funded in 2052.

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

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

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

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

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

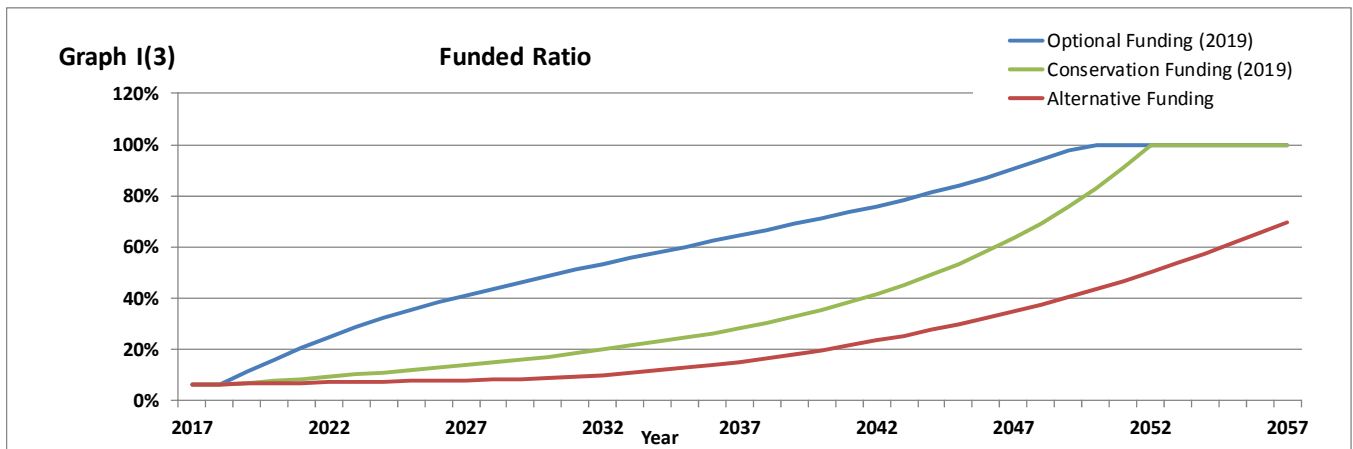
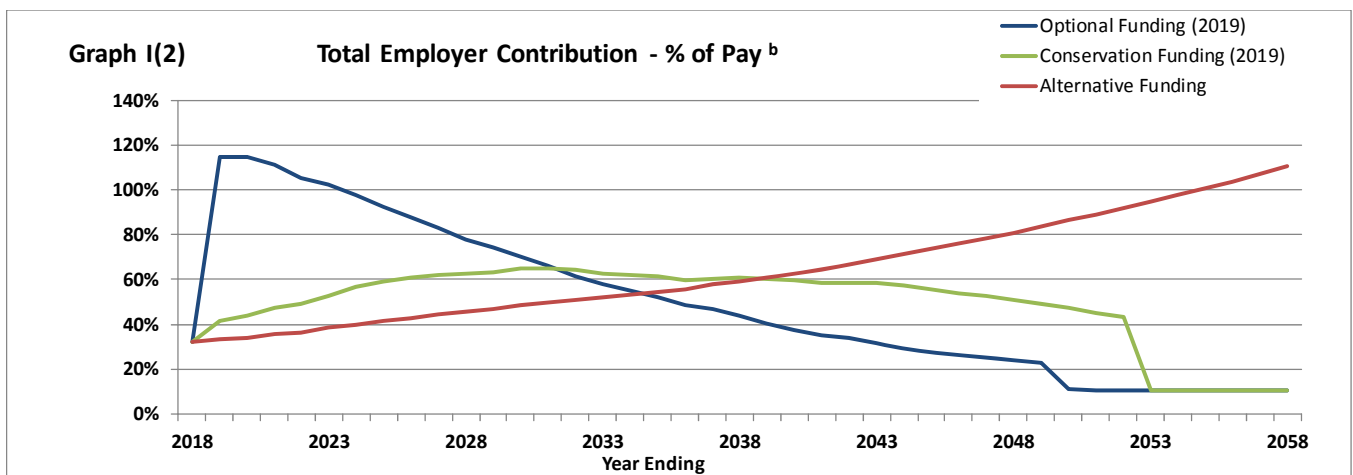
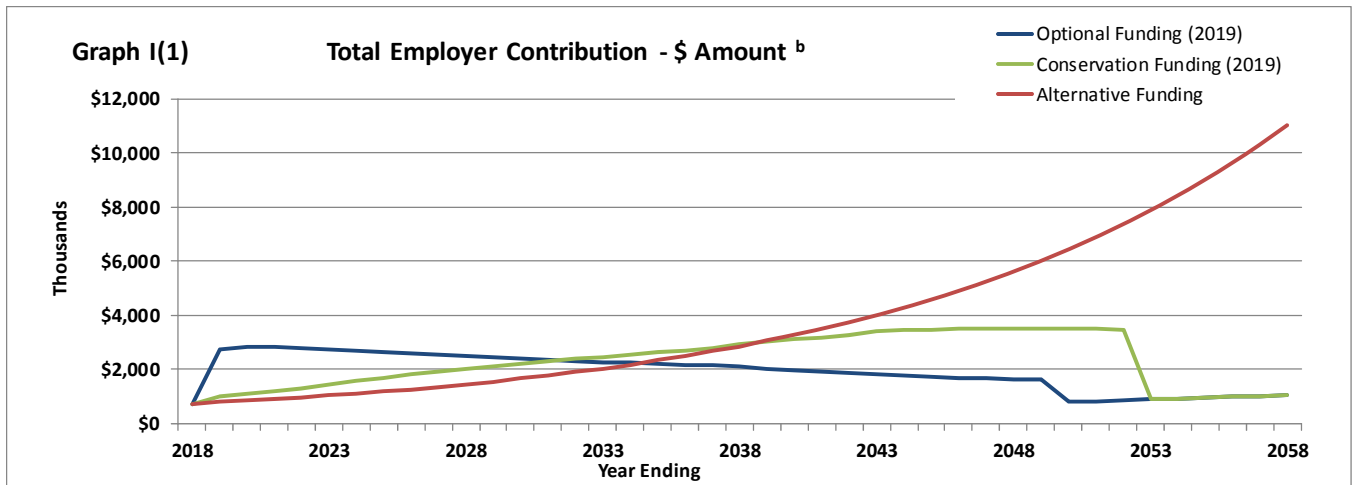
Under Scenario II, the plan sponsor is assumed to make contributions under the Alternative funding policy in future years, until the first year that either the Optional or Conservation policy produces a lower contribution. Under this assumption, the employer contributions under the Optional funding policy are not projected to be lower than contributions under the Alternative funding policy. In plan year end 2033, the employer contributions under the Conservation funding policy of \$1,998,914 are projected to be lower than contributions under the Alternative funding policy of \$2,035,884.

Graphs II(1), II(2), and III(3) show the projected contribution pattern and funded ratio. Based on these projections, the Conservation funding policy has lower projected employer contributions than the Alternative funding policy beginning in 2033. After 2033, 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<sup>a</sup> (Continued)

## Scenario I

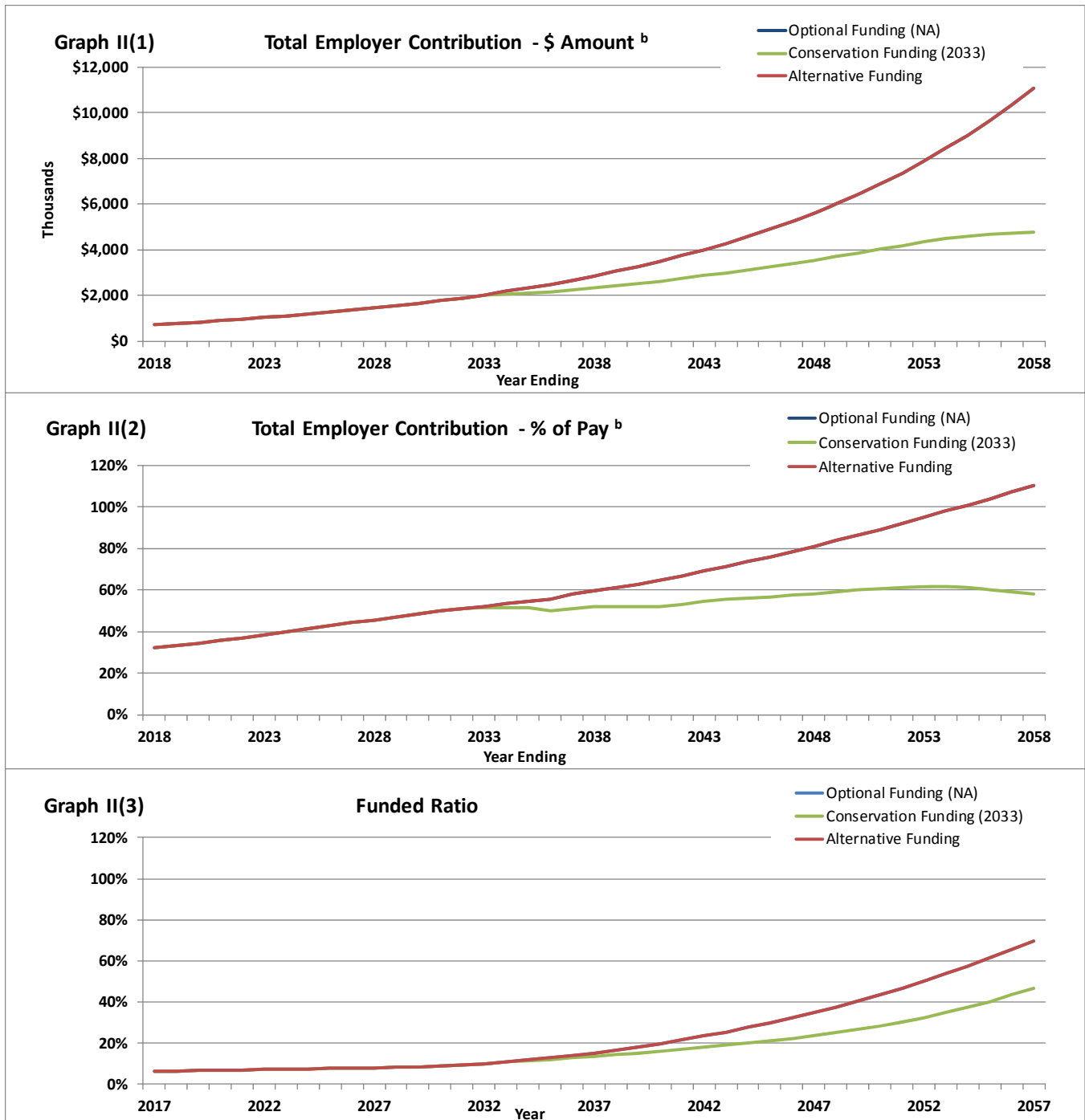


<sup>a</sup> Assumes Sponsor elects either the Optional funding policy or Conservation funding policy in fiscal year end June 30, 2019, and makes the newly elected contribution in fiscal year end June 30, 2019.

<sup>b</sup> Based on total pay and includes contributions for future members projected to participate in the statewide plan.

# Actuarial Projections –Alternative/Optional/Conservation Funding<sup>a</sup> (Continued)

## Scenario II



<sup>a</sup> 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.

<sup>b</sup> Based on total pay and includes contributions for future members projected to participate in the statewide plan.

## **SECTION IV**

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

# Actuarially Determined Contribution for GASB Statement Nos. 67 and 68 Reporting

## Schedule C: Funding Progress and Employer Contributions

Valuation Date	July 1, 2016	July 1, 2017
Valuation Interest Rate	4.00%	4.00%
Cost-of-Living Adjustment	2.75%	2.75%
Wage Inflation	3.75%	3.75%
Actuarial Value of Assets	Market	Market
Actuarial Cost Method	Entry Age Normal	Entry Age Normal
Remaining Amortization Period <sup>a</sup>	24 Years, Level % of Pay	23 Years, Level % of Pay
<b>Schedule of Funding Progress</b>		
Actuarial Valuation Date	July 1, 2016	July 1, 2017
1. Market Value of Assets	\$2,033,787	\$2,306,918
2. Actuarial Accrued Liability	\$36,103,505	\$37,985,998
3. Unfunded Actuarial Accrued Liability (2 - 1)	\$34,069,718	\$35,679,080
4. Funded Ratio (1/2)	6%	6%
5. Expected Payroll	\$1,914,061	\$2,288,223
6. UAAL as Percentage of Covered Payroll (3/5)	1,780%	1,559%
<b>Schedule of Employer Contributions <sup>c</sup></b>		
1. Actuarially Determined Contribution	FYE 2017	FYE 2018
(a) Employer Normal Cost	\$1,033,346	\$1,218,949
(b) Amortization of Unfunded Actuarial Accrued Liability	\$1,459,208	\$1,592,678
(c) Actuarially Determined Contribution (ADC) (a + b)	\$2,492,554	\$2,811,627
2. Employer Contribution <sup>b</sup>	\$689,626	\$737,898
3. Premium Tax Allocation	\$390,915	\$419,174
4. Percentage of ADC Contributed [ (2 + 3)/1(c)]	43%	41%

<sup>a</sup> Suggested amortization policy to comply with GASB Statement Nos. 67 and 68 Standards.

<sup>b</sup> Estimated employer contribution for fiscal year end June 30, 2018.

<sup>c</sup> 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**

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**ACTUARIAL VALUATION DATA AS OF  
JULY 1, 2017**

# Actuarial Valuation Data as of July 1, 2017

## Schedule D: Reconciliation of Assets

Plan Year Ending	June 30, 2016	June 30, 2017
A. Market Value of Assets End of Prior Year	\$1,902,157	\$2,033,787
Adjustment to Market Value of Assets at Beginning of Year	(\$15,965)	\$15,966
Market Value of Assets Beginning of Year	\$1,886,192	\$2,049,753
1. Revenue During Fiscal Year		
(a) Employee Contribution	\$151,787	\$175,541
(b) Governmental Contribution		
(i) From Local Government	\$644,495	\$689,626
(ii) From State Government	\$390,915	\$390,915
(iii) Reallocation from State Government	\$0	\$0
(iv) Total	\$1,035,410	\$1,080,541
(c) Earnings on Investments		
(i) Net Appreciation/(Depreciation)	\$9,928	\$146,625
(ii) Bond Interest	\$9,325	\$12,371
(iii) Dividends	\$20,593	\$23,994
(iv) Net Realized Gain (Loss) on Sale/Exchange	(\$834)	\$12,977
(v) Other	\$0	\$3,046
(vi) Less Investment Expense	(\$5,809)	(\$8,393)
(vii) Total	\$33,203	\$190,620
(d) Other Revenue	\$0	\$0
(e) Receivable Investment Income/(Expense)	\$0	\$0
(f) Receivable Contribution <sup>a</sup>		
(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))	\$1,220,400	\$1,446,702
2. Expenditures During Fiscal Year		
(a) Benefits Paid	\$1,049,562	\$1,186,537
(b) Withdrawals	\$20,243	\$0
(c) Administrative Expenses	\$3,000	\$3,000
(d) Payable Benefits and Withdrawals	\$0	\$0
(e) Payable Administrative Expenses	\$0	\$0
(f) Total Expenditures (sum of (a) through (e))	\$1,072,805	\$1,189,537
B. Market Value of Assets End of Year		
[A + 1(g) - 2(f)]	\$2,033,787	\$2,306,918
C. Approximate Return on Assets	1.55%	9.01%

<sup>a</sup> 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	\$384,895	19%	\$1,057,325	46%
2. Government Securities				
(a) US Treasury Bills, Notes and Bonds	\$148,328		\$47,964	
(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) )	\$148,328	7%	\$47,964	2%
3. Corporate Fixed Income				
(a) US Bonds	\$461,270		\$0	
(b) US Mortgage or other Asset Backed Securities	\$0		\$0	
(c) US Mutual Fund Shares (Bonds)	\$0		\$0	
(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) )	\$461,270	23%	\$0	0%
4. Corporate Equity				
(a) US Equity	\$288,113		\$360,769	
(b) US Mutual Fund Shares (Equity)	\$0		\$0	
(c) US Exchange Traded Funds (Equity)	\$705,464		\$776,834	
(d) International Equity	\$0		\$0	
(e) International Mutual Fund Shares (Equity)	\$0		\$0	
(f) International Exchange Traded Funds (Equity)	\$45,717		\$64,026	
(g) Total Corporate Equity (sum of (a) through (f) )	\$1,039,294	51%	\$1,201,629	52%
5. Alternative Investments				
(a) Real Estate Investment Trust	\$0		\$0	
(b) Private Equity Fund	\$0		\$0	
(c) Hedge Funds	\$0		\$0	
(d) Other Alternative Investments	\$0		\$0	
(e) Total Alternative Investments (sum of (a) through (d) )	\$0	0%	\$0	0%
6. Other	\$0	0%	\$0	0%
7. Receivable Contributions				
(a) From Employee Contributions	\$0		\$0	
(b) From Local Government	\$0		\$0	
(c) From State Government	\$0		\$0	
(d) Total Receivable Contributions (sum of (a) through (c) )	\$0	0%	\$0	0%
8. Accruals				
(a) Receivable (other than State and Local Contributions)	\$0		\$0	
(b) Less Payable	\$0		\$0	
(c) Total	\$0	0%	\$0	0%
<b>Market Value of Assets End of Year</b>	<b>\$2,033,787</b>		<b>\$2,306,918</b>	
<b>[ sum of (1) through (8) ]</b>				

## Actuarial Valuation Data as of July 1, 2017

### Schedule F: Summary of Participant Activity

	Actives	Retirees	Disabled	Deferred Vested	Spouses and Beneficiaries	Totals
<b>Total Participants July 1, 2016:</b>	<b>37</b>	<b>23</b>	<b>8</b>	<b>0</b>	<b>10</b>	<b>78</b>
New Actives:	8					<b>8</b>
Returned to Actives Status:	2		(2)			<b>0</b>
Data Corrections/Other Changes:			1			<b>1</b>
Vested Terminations:	(1)			1		<b>0</b>
Non-Vested Terminations:	(1)					<b>(1)</b>
Disabled:						<b>0</b>
Retirements:	(2)	2				<b>0</b>
Deaths with Beneficiary:		(1)			1	<b>0</b>
Deaths w/o Beneficiary:			(1)		(1)	<b>(2)</b>
Expired Annuity or Stop Payment:						<b>0</b>
Net Changes:	6	1	(2)	1	0	<b>6</b>
<b>Total Participants June 30, 2017:</b>	<b>43</b>	<b>24</b>	<b>6</b>	<b>1</b>	<b>10</b>	<b>84</b>

## Actuarial Valuation Data as of July 1, 2017

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

Attained Age	<u>Years of Service to Valuation Date</u>									Totals	Valuation Payroll <sup>a</sup>
	Less than 1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	Over 35		
Under 20											\$ 0
20-24	2									2	\$ 74,000
25-29	1	3	1							5	\$ 239,636
30-34	2	3	3	1						9	\$ 382,648
35-39	2		3	3						8	\$ 370,322
40-44			1	2	4	1				8	\$ 485,962
45-49				3	4	3	1			11	\$ 742,569
50-54											\$ 0
55-59											\$ 0
60-64											\$ 0
65-69											\$ 0
Over 70											\$ 0
<b>Totals</b>	<b>7</b>	<b>6</b>	<b>8</b>	<b>9</b>	<b>8</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>43</b>	<b>\$ 2,295,137</b>
<b>Averages</b> _____											
Age: 37.9 years											
Service: 10.2 years											
Annual Pay: \$53,375 <sup>a</sup>											

<sup>a</sup> 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	37	43
Total Annual Pay	\$1,916,650	\$2,295,137
Average Age	39.5	37.9
Average Service	11.9	10.2

Inactive Participants	July 1, 2016		July 1, 2017 <sup>a</sup>	
Type	No.	Annual Benefit	No.	Annual Benefit
Retirees	23	\$848,355	24	\$905,462
Survivors	10	\$133,689	10	\$133,472
Disabled Members	8	\$198,731	6	\$151,714
Deferred Vested Members	0	\$0	1	\$45,600

<sup>a</sup>Data provided includes 1 non-vested member with an accumulated contributions balance of \$113.

## **SECTION VI**

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### **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 <sup>1</sup>	Liquidity Ratio <sup>2</sup>	Equity Exposure <sup>3</sup>	Projected Funded Ratio after 15 Years <sup>1</sup>	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%

<sup>1</sup>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).

<sup>2</sup>Liquidity ratio equals assets as of the actuarial valuation date divided by expected benefit payments for the year.

<sup>3</sup>Based on investment policy.

As of June 30, 2017	
Assets	\$2,306,918
Liabilities using a 5.50% discount rate	\$30,449,378
Funded Ratio	8%
Expected Benefit Payments	\$1,236,810
Liquidity Ratio	1.87
Equity Exposure	52%
Projected Funded Ratio after 15 years	14.8%

Discount Rate

4.00%

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

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**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 South Charleston Firemen’s Pension and Relief Fund reported 44 eligible active members and 42 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 \$439,511 for the fiscal year ending June 30, 2019.
- (6) The total premium tax allocation was assumed to increase by 2.75% in calendar years ending on and after 2019.

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

General Inflation	2.75%																		
Expected Salary Increase	General Inflation: 2.75% <i>plus</i>																		
Service-based Increase:	Wage Inflation Increment: 1.00% <i>plus</i>																		
	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;"><u>Years of Service</u></th> <th style="text-align: center;"><u>Increase</u></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">20.00%</td> </tr> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">6.50%</td> </tr> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">3.50%</td> </tr> <tr> <td style="text-align: center;">4</td> <td style="text-align: center;">2.75%</td> </tr> <tr> <td style="text-align: center;">5-9</td> <td style="text-align: center;">2.50%</td> </tr> <tr> <td style="text-align: center;">10-29</td> <td style="text-align: center;">2.00%</td> </tr> <tr> <td style="text-align: center;">30-34</td> <td style="text-align: center;">1.25%</td> </tr> <tr> <td style="text-align: center;">after 34 years of service</td> <td style="text-align: center;">0.00%</td> </tr> </tbody> </table>	<u>Years of Service</u>	<u>Increase</u>	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%
<u>Years of Service</u>	<u>Increase</u>																		
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																		
<i>Amortization Policies:</i>																			
Alternative Plans and former Alternative Plans that selected the Conservation Policy	For GASB 67/68 Accounting: 30 – Year Closed Level-Percentage-of-Pay Amortization (from July 1, 2010 – 23 years remaining as of July 1, 2017).																		
Standard Plans and former Standard Plans that selected the Optional Policy	For funding and GASB 67/68 Accounting: 40-Year Closed Level-Dollar Amortization (from July 1, 1991 – 14 years remaining as of July 1, 2017)																		
Former Alternative Plans that selected the Optional Policy	For funding: 40-Year Closed Level-Dollar Amortization (from January 1, 2010 – 32.5 years remaining as of July 1, 2017). For GASB 67/68 Accounting: 30-Year Closed Level-Percentage-of-Pay Amortization (from July 1, 2010 – 23 years remaining as of July 1, 2017)																		



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

Asset Method	Market Value										
Turnover	<p>Sample Rates –</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"><u>Age</u></th> <th style="text-align: right;"><u>Rates</u></th> </tr> </thead> <tbody> <tr> <td style="text-align: left;">25</td> <td style="text-align: right;">9%</td> </tr> <tr> <td style="text-align: left;">35</td> <td style="text-align: right;">4%</td> </tr> <tr> <td style="text-align: left;">45</td> <td style="text-align: right;">2%</td> </tr> <tr> <td style="text-align: left;">50</td> <td style="text-align: right;">0%</td> </tr> </tbody> </table>	<u>Age</u>	<u>Rates</u>	25	9%	35	4%	45	2%	50	0%
<u>Age</u>	<u>Rates</u>										
25	9%										
35	4%										
45	2%										
50	0%										
Retirement	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"><u>Age</u></th> <th style="text-align: right;"><u>Rates<sup>a</sup></u></th> </tr> </thead> <tbody> <tr> <td style="text-align: left;">50</td> <td style="text-align: right;">45%</td> </tr> <tr> <td style="text-align: left;">51-55</td> <td style="text-align: right;">30%</td> </tr> <tr> <td style="text-align: left;">56-59</td> <td style="text-align: right;">35%</td> </tr> <tr> <td style="text-align: left;">60</td> <td style="text-align: right;">100%</td> </tr> </tbody> </table> <p><sup>a</sup>Terminated vested participants are assumed to retire at age 50.</p>	<u>Age</u>	<u>Rates<sup>a</sup></u>	50	45%	51-55	30%	56-59	35%	60	100%
<u>Age</u>	<u>Rates<sup>a</sup></u>										
50	45%										
51-55	30%										
56-59	35%										
60	100%										
Mortality	<p>Active: RP-2014 Blue Collar Healthy Employee<sup>b</sup></p> <p>Post-Retirement: RP-2014 Blue Collar Healthy Annuitant</p> <p>Disabled: RP-2014 Blue Collar Healthy Annuitant set forward four years</p> <p>Tables above incorporate generational mortality improvement using MP-2014 2-dimensional mortality improvement scales</p> <p><sup>b</sup>Assumes 10% of deaths are duty-related and 90% are non-duty related.</p>										
Disability	<p>Sample Rates –</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"><u>Age</u></th> <th style="text-align: right;"><u>Rates<sup>c</sup></u></th> </tr> </thead> <tbody> <tr> <td style="text-align: left;">30</td> <td style="text-align: right;">0.22%</td> </tr> <tr> <td style="text-align: left;">40</td> <td style="text-align: right;">0.50%</td> </tr> <tr> <td style="text-align: left;">50</td> <td style="text-align: right;">0.79%</td> </tr> </tbody> </table> <p><sup>c</sup>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.</p>	<u>Age</u>	<u>Rates<sup>c</sup></u>	30	0.22%	40	0.50%	50	0.79%		
<u>Age</u>	<u>Rates<sup>c</sup></u>										
30	0.22%										
40	0.50%										
50	0.79%										
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	Administrative expenses used are equal to 0.25% of expected pay plus 0.25% of expected benefits. Future expenses assumed to increase by the general inflation assumption.
Refunds Paid	Assumes non-vested inactive members as of July 1, 2017, with accumulated member contribution balances will receive a refund of their contributions during plan year end June 30, 2018.
Data Adjustments and Assumptions	One member marked deceased as of July 1, 2016 was corrected to be Disabled as of July 1, 2016.
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	<p>Open group projections assume:</p> <ul style="list-style-type: none"> <li>(i) Salaries will increase and members will decrement as specified in the actuarial assumption section.</li> <li>(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.</li> <li>(iii) Assets grow at the assumed rate of return.</li> <li>(iv) The sponsor makes the statutory required contribution on a monthly basis.</li> <li>(v) Non-vested members with accumulated plan balances as of July 1, 2017, will receive a refund during plan year end June 30, 2018.</li> </ul> <p>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.</p>
Decrement Timing	Mid-Year

**SECTION VII**

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**SUMMARY OF PRINCIPAL PLAN PROVISIONS**

# Summary of Principal Plan Provisions

## Actuarial Valuation as of July 1, 2017

---

**Employee Eligibility** — All compensated employees of the Fire Department are eligible to participate in the Firemen's Pension and Relief Fund.

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

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

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

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

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

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

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

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

**Contributions** — Participating employees contribute 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.

## Summary of Principal Plan Provisions

### Actuarial Valuation as of July 1, 2017 (Continued)

---

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

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

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

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

The benefit is equal to 60% of the participant's benefit, but not less than \$300 per month, payable to the spouse until death or remarriage. Other dependents (children, parents, brothers and sisters) are also eligible for death benefits. To each dependent child, 20 percent of the participant's benefit until the child attains eighteen or marries; to each dependent orphaned child, 25 percent of the participant's benefit until the child attains 18 or marries; to each dependent parent, 10 percent of the participant's benefit for life, and to each dependent brother or sister, the sum of fifty dollars per month (but a total not to exceed \$100 per month) until such individual attains the age of eighteen years or marries.

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

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

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

**Refunds** — Any member who terminates from their department without receiving a retirement pension shall be refunded all deductions made from his salary, without interest. Any member who receives such a refund and subsequently wishes to reenter the department must repay to the pension fund all sums refunded with interest at the rate of eight percent annual.

# SECTION VIII

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## APPENDIX – PROJECTION DATA

# Actuarial Projections – Optional Funding in 2019

## Table A-1

Valuation Plan	Total Assets													
	Number		Assets							Premium Tax		Actuarial Accrued Liability	Unfunded Liability	Funded Ratio
	Year End 30-Jun	Pay Active Status	Assets (bov)	Benefit Payments	Expenses	Employer Contribs.	Member Contribs.	Allocation Contribs.	Investment Income	Assets (eoy)				
2017	43	41	\$2,049,753	\$1,186,537	\$3,000	\$689,626	\$175,541	\$390,915	\$190,620	\$2,306,918	\$37,985,998	\$35,679,080	6%	
2018	40	42	2,306,918	1,236,810	8,813	737,898	178,900	419,174	94,066	2,491,333	39,660,577	37,169,244	6%	
2019	38	43	2,491,333	1,281,988	8,857	2,721,828	178,548	439,511	140,232	4,680,607	41,347,551	36,666,944	11%	
2020	35	44	4,680,607	1,372,815	8,924	2,809,771	177,136	456,563	228,055	6,970,392	42,993,289	36,022,897	16%	
2021	33	45	6,970,392	1,479,543	9,013	2,788,582	172,646	469,305	317,274	9,229,643	44,553,250	35,323,607	21%	
2022	31	46	9,229,643	1,564,110	9,115	2,736,270	169,163	483,910	405,152	11,450,913	46,055,610	34,604,697	25%	
2023	27	48	11,450,913	1,668,192	9,224	2,692,354	163,703	496,125	491,203	13,616,882	47,458,897	33,842,015	29%	
2024	25	49	13,616,882	1,797,124	9,338	2,626,688	155,509	513,460	574,167	15,680,244	48,708,814	33,028,570	32%	
2025	23	50	15,680,244	1,897,433	9,458	2,539,929	149,705	528,989	653,187	17,645,163	49,849,453	32,204,290	35%	
2026	21	51	17,645,163	1,991,690	9,578	2,470,191	143,823	544,187	728,718	19,530,814	50,880,691	31,349,877	38%	
2027	19	52	19,530,814	2,081,544	9,707	2,398,467	138,294	560,721	801,160	21,338,205	51,805,134	30,466,929	41%	
2028	18	53	21,338,205	2,155,398	9,839	2,328,553	134,156	577,214	870,850	23,083,742	52,646,084	29,562,342	44%	
2029	16	54	23,083,742	2,231,767	9,970	2,268,867	129,186	593,277	938,195	24,771,530	53,389,059	28,617,529	46%	
2030	14	54	24,771,530	2,331,242	10,103	2,200,580	122,156	611,001	1,002,593	26,366,514	53,988,290	27,621,776	49%	
2031	13	55	26,366,514	2,411,748	10,231	2,114,772	115,916	629,605	1,063,341	27,868,169	54,468,346	26,600,177	51%	
2032	12	55	27,868,169	2,466,028	10,359	2,039,023	111,463	646,864	1,121,083	29,310,216	54,871,261	25,561,045	53%	
2033	11	55	29,310,216	2,501,827	10,485	1,981,162	108,674	664,587	1,177,203	30,729,530	55,226,534	24,497,004	56%	
2034	9	55	30,729,530	2,559,140	10,613	1,937,437	103,598	681,242	1,232,202	32,114,255	55,495,651	23,381,396	58%	
2035	8	55	32,114,255	2,627,339	10,737	1,878,277	97,184	702,288	1,285,356	33,439,283	55,655,430	22,216,147	60%	
2036	8	55	33,439,283	2,666,914	10,854	1,812,212	94,185	721,963	1,336,593	34,726,468	55,754,926	21,028,458	62%	
2037	6	56	34,726,468	2,746,650	10,965	1,766,688	83,609	740,431	1,385,754	35,945,334	55,703,812	19,758,478	65%	
2038	5	56	35,945,334	2,849,132	11,078	1,675,849	69,254	767,555	1,430,930	37,028,713	55,449,949	18,421,236	67%	
2039	4	55	37,028,713	2,916,893	11,186	1,565,334	60,165	791,614	1,471,030	37,988,777	55,054,392	17,065,615	69%	
2040	3	55	37,988,777	2,970,404	11,289	1,478,747	53,024	816,670	1,507,010	38,862,535	54,538,855	15,676,320	71%	
2041	3	54	38,862,535	3,012,805	11,389	1,405,595	46,740	841,152	1,540,031	39,671,859	53,918,382	14,246,523	74%	
2042	2	54	39,671,859	3,090,105	11,485	1,339,030	36,280	867,502	1,569,867	40,382,948	53,131,325	12,748,377	76%	
2043	1	54	40,382,948	3,163,639	11,578	1,252,406	25,446	897,362	1,595,514	40,978,459	52,174,293	11,195,834	79%	
2044	1	53	40,978,459	3,193,966	11,668	1,162,447	18,955	927,047	1,617,410	41,498,684	51,110,167	9,611,483	81%	
2045	1	52	41,498,684	3,203,244	11,754	1,091,503	14,712	956,697	1,637,132	41,983,729	49,969,137	7,985,408	84%	
2046	0	51	41,983,729	3,199,344	11,837	1,032,550	11,863	987,069	1,655,986	42,460,016	48,769,897	6,309,881	87%	
2047	0	50	42,460,016	3,198,535	11,916	980,959	8,572	1,018,328	1,674,584	42,932,008	47,505,129	4,573,121	90%	
2048	0	49	42,932,008	3,193,198	11,990	926,351	5,468	1,051,921	1,693,091	43,403,651	46,178,267	2,774,616	94%	
2049	0	48	43,403,651	3,171,983	12,057	870,224	3,781	1,085,612	1,711,898	43,891,126	44,810,819	919,693	98%	
2050	0	47	43,891,126	3,144,334	12,117	28,102	2,589	932,820	1,712,216	43,410,402	43,410,402	0	100%	
2051	0	46	43,410,402	3,111,258	12,169	19,456	1,737	0	1,674,980	41,983,148	41,983,148	0	100%	
2052	0	45	41,983,148	3,074,524	12,211	16,331	995	0	1,618,540	40,532,279	40,532,279	0	100%	
2053	0	44	40,532,279	3,033,107	12,242	14,222	492	0	1,561,273	39,062,917	39,062,917	0	100%	
2054	0	43	39,062,917	2,986,551	12,261	13,390	287	0	1,503,399	37,581,181	37,581,182	0	100%	
2055	0	42	37,581,181	2,936,179	12,266	13,024	193	0	1,445,118	36,091,072	36,091,072	0	100%	
2056	0	40	36,091,072	2,882,482	12,255	12,764	129	0	1,386,571	34,595,798	34,595,799	0	100%	
2057	0	39	34,595,798	2,825,676	12,228	12,434	52	0	1,327,878	33,098,259	33,098,259	0	100%	

# Actuarial Projections – Optional Funding in 2019

## Table A-2

### Employer Contributions

Valuation Plan Year End 30-Jun <sup>a</sup>	Closed Group Payroll	New Entrant Payroll	Total Payroll	Employee Contributions	Gross Normal Cost	Net Employer Normal Cost	Amortization of UAAL	Premium Tax Allocation Contributions	Net Employer Amortization Expenses	Optional Employer Contribution	Statewide Employer Contribution	
2018	\$2,288,223	\$0	\$2,288,223	\$178,900	\$1,389,036	\$1,210,136	\$1,942,390	\$439,511	\$1,502,879	\$8,813	\$2,721,828	\$0
2019	2,279,947	105,402	2,385,349	178,548	1,380,612	1,202,064	2,055,413	456,563	1,598,850	8,857	2,809,771	11,067
2020	2,257,156	216,738	2,473,895	177,136	1,364,667	1,187,531	2,061,431	469,305	1,592,126	8,924	2,788,582	22,758
2021	2,189,483	348,958	2,538,440	172,646	1,322,866	1,150,220	2,060,947	483,910	1,577,037	9,013	2,736,270	36,641
2022	2,135,369	511,612	2,646,981	169,163	1,289,821	1,120,658	2,058,706	496,125	1,562,581	9,115	2,692,354	53,719
2023	2,052,270	643,125	2,695,395	163,703	1,237,845	1,074,142	2,056,782	513,460	1,543,322	9,224	2,626,688	67,528
2024	1,929,283	843,718	2,773,001	155,509	1,161,303	1,005,794	2,053,786	528,989	1,524,797	9,338	2,539,929	88,590
2025	1,839,765	1,027,392	2,867,156	149,705	1,105,348	955,643	2,049,277	544,187	1,505,090	9,458	2,470,191	107,876
2026	1,748,945	1,209,020	2,957,964	143,823	1,047,685	903,862	2,045,748	560,721	1,485,027	9,578	2,398,467	126,947
2027	1,662,823	1,406,549	3,069,372	138,294	992,275	853,981	2,042,079	577,214	1,464,865	9,707	2,328,553	147,688
2028	1,595,817	1,602,854	3,198,671	134,156	948,023	813,867	2,038,438	593,277	1,445,161	9,839	2,268,867	168,300
2029	1,516,102	1,794,229	3,310,331	129,186	895,420	766,234	2,035,377	611,001	1,424,376	9,970	2,200,580	188,394
2030	1,406,443	2,016,365	3,422,808	122,156	824,717	702,561	2,031,712	629,605	1,402,107	10,103	2,114,772	211,718
2031	1,313,199	2,257,764	3,570,963	115,916	764,887	648,971	2,026,686	646,864	1,379,822	10,231	2,039,023	237,065
2032	1,252,363	2,484,248	3,736,611	111,463	724,702	613,239	2,022,151	664,587	1,357,564	10,359	1,981,162	260,846
2033	1,213,046	2,711,394	3,924,440	108,674	697,950	589,276	2,018,918	681,242	1,337,676	10,485	1,937,437	284,696
2034	1,149,160	2,926,999	4,076,159	103,598	656,902	553,304	2,016,647	702,288	1,314,359	10,613	1,878,277	307,335
2035	1,069,868	3,194,910	4,264,778	97,184	607,324	510,140	2,013,297	721,963	1,291,334	10,737	1,812,212	335,466
2036	1,028,911	3,455,129	4,484,040	94,185	581,433	487,248	2,009,017	740,431	1,268,586	10,854	1,766,688	362,789
2037	911,813	3,705,377	4,617,189	83,609	509,658	426,049	2,006,390	767,555	1,238,835	10,965	1,675,849	389,065
2038	757,427	4,056,078	4,813,505	69,254	415,313	346,059	1,999,811	791,614	1,208,197	11,078	1,565,334	425,888
2039	654,883	4,357,802	5,012,685	60,165	354,111	293,946	1,990,286	816,670	1,173,616	11,186	1,478,747	457,569
2040	571,433	4,657,565	5,228,998	53,024	305,490	252,466	1,982,992	841,152	1,141,840	11,289	1,405,595	489,044
2041	501,177	4,931,877	5,433,055	46,740	265,153	218,413	1,976,730	867,502	1,109,228	11,389	1,339,030	517,847
2042	388,439	5,209,934	5,598,372	36,280	203,501	167,221	1,971,062	897,362	1,073,700	11,485	1,252,406	547,043
2043	272,522	5,520,287	5,792,808	25,446	141,214	115,768	1,962,148	927,047	1,035,101	11,578	1,162,447	579,630
2044	202,728	5,804,330	6,007,057	18,955	104,053	85,098	1,951,434	956,697	994,737	11,668	1,091,503	609,455
2045	156,875	6,075,301	6,232,176	14,712	79,654	64,942	1,942,923	987,069	955,854	11,754	1,032,550	637,907
2046	126,137	6,339,926	6,466,063	11,863	63,453	51,590	1,935,860	1,018,328	917,532	11,837	980,959	665,692
2047	91,077	6,598,164	6,689,240	8,572	45,412	36,840	1,929,516	1,051,921	877,595	11,916	926,351	692,807
2048	58,124	6,873,423	6,931,547	5,468	28,796	23,328	1,920,518	1,085,612	834,906	11,990	870,224	721,709
2049	40,034	7,142,356	7,182,390	3,781	19,826	16,045	1,904,811	932,820	784,167	12,057	28,102	<sup>b</sup> 749,947
2050	27,257	7,414,499	7,441,756	2,589	13,491	10,902	0	0	0	12,117	19,456	<sup>b</sup> 778,522
2051	18,286	7,697,361	7,715,647	1,737	9,027	7,290	0	0	0	12,169	16,331	<sup>b</sup> 808,223
2052	10,472	7,990,889	8,001,361	995	5,116	4,121	0	0	0	12,211	14,222	<sup>b</sup> 839,043
2053	5,178	8,298,400	8,303,579	492	2,471	1,979	0	0	0	12,242	13,390	<sup>b</sup> 871,332
2054	3,020	8,612,987	8,616,007	287	1,417	1,130	0	0	0	12,261	13,024	<sup>b</sup> 904,364
2055	2,027	8,943,170	8,945,197	193	951	758	0	0	0	12,266	12,764	<sup>b</sup> 939,033
2056	1,360	9,292,627	9,293,987	129	638	509	0	0	0	12,255	12,434	<sup>b</sup> 975,726
2057	550	9,645,623	9,646,173	52	257	205	0	0	0	12,228	12,180	<sup>b</sup> 1,012,790

<sup>a</sup> Assumes employer makes contributions for the applicable valuation plan year in the following fiscal year.

<sup>b</sup> Amount required to remain at 100% funded.



# Actuarial Projections – Conservation Funding in 2019

## Table A-3

Valuation			Total Assets										Actuarial		
Plan	Number		Assets	Benefit	Expenses	Employer	Member	Premium Tax		Assets	Accrued	Unfunded	Funded		
	Year End	Pay						Allocation	Investment					Liability	Liability
30-Jun	Active	Status	(boy)	Payments		Contribs.	Contribs.	Contribs.	Income	(eoy)	Liability	Liability	Ratio		
2017	43	41	\$2,049,753	\$1,186,537	\$3,000	\$689,626	\$175,541	\$390,915	\$190,620	\$2,306,918	\$37,985,998	\$35,679,080	6%		
2018	40	42	2,306,918	1,236,810	8,813	737,898	178,900	419,174	94,066	2,491,333	39,660,577	37,169,244	6%		
2019	38	43	2,491,333	1,281,988	8,857	979,615	178,548	439,511	105,730	2,903,892	41,347,551	38,443,659	7%		
2020	35	44	2,903,892	1,372,815	8,924	1,065,105	177,136	456,563	122,435	3,343,392	42,993,289	39,649,897	8%		
2021	33	45	3,343,392	1,479,543	9,013	1,170,559	172,646	469,305	140,151	3,807,497	44,553,250	40,745,754	9%		
2022	31	46	3,807,497	1,564,110	9,115	1,252,354	169,163	483,910	158,879	4,298,578	46,055,610	41,757,032	9%		
2023	27	48	4,298,578	1,668,192	9,224	1,356,120	163,703	496,125	178,647	4,815,757	47,458,897	42,643,140	10%		
2024	25	49	4,815,757	1,797,124	9,338	1,484,933	155,509	513,460	199,511	5,362,708	48,708,814	43,346,106	11%		
2025	23	50	5,362,708	1,897,433	9,458	1,583,927	149,705	528,989	221,553	5,939,991	49,849,453	43,909,462	12%		
2026	21	51	5,939,991	1,991,690	9,578	1,677,053	143,823	544,187	244,804	6,548,590	50,880,691	44,332,100	13%		
2027	19	52	6,548,590	2,081,544	9,707	1,764,995	138,294	560,721	269,326	7,190,676	51,805,134	44,614,458	14%		
2028	18	53	7,190,676	2,155,398	9,839	1,835,852	134,156	577,214	295,192	7,867,853	52,646,084	44,778,231	15%		
2029	16	54	7,867,853	2,231,767	9,970	1,910,028	129,186	593,277	322,452	8,581,059	53,389,059	44,808,000	16%		
2030	14	54	8,581,059	2,331,242	10,103	2,008,291	122,156	611,001	351,166	9,332,328	53,988,290	44,655,961	17%		
2031	13	55	9,332,328	2,411,748	10,231	2,086,703	115,916	629,605	381,417	10,123,989	54,468,346	44,344,357	19%		
2032	12	55	10,123,989	2,466,028	10,359	2,138,097	111,463	646,864	413,278	10,957,305	54,871,261	43,913,957	20%		
2033	11	55	10,957,305	2,501,827	10,485	2,169,493	108,674	664,587	446,817	11,834,563	55,226,534	43,391,971	21%		
2034	9	55	11,834,563	2,559,140	10,613	2,224,727	103,598	681,242	482,092	12,756,469	55,495,651	42,739,182	23%		
2035	8	55	12,756,469	2,627,339	10,737	2,290,284	97,184	702,288	519,204	13,727,353	55,655,430	41,928,077	25%		
2036	8	55	13,727,353	2,666,914	10,854	2,324,891	94,185	721,963	558,269	14,748,892	55,754,926	41,006,034	26%		
2037	6	56	14,748,892	2,746,650	10,965	2,406,544	83,609	740,431	599,322	15,821,183	55,703,812	39,882,629	28%		
2038	5	56	15,821,183	2,849,132	11,078	2,510,879	69,254	767,555	642,501	16,951,163	55,449,949	38,498,786	31%		
2039	4	55	16,951,163	2,916,893	11,186	2,577,164	60,165	791,614	687,966	18,139,993	55,054,392	36,914,399	33%		
2040	3	55	18,139,993	2,970,404	11,289	2,627,153	53,024	816,670	735,802	19,390,950	54,538,855	35,147,905	36%		
2041	3	54	19,390,950	3,012,805	11,389	2,665,590	46,740	841,152	786,120	20,706,358	53,918,382	33,212,025	38%		
2042	2	54	20,706,358	3,090,105	11,485	2,741,750	36,280	867,502	839,026	22,089,325	53,131,325	31,042,000	42%		
2043	1	54	22,089,325	3,163,639	11,578	2,813,134	25,446	897,362	894,678	23,544,729	52,174,293	28,629,564	45%		
2044	1	53	23,544,729	3,193,966	11,668	2,837,724	18,955	927,047	953,238	25,076,058	51,110,167	26,034,109	49%		
2045	1	52	25,076,058	3,203,244	11,754	2,839,385	14,712	956,697	1,014,841	26,686,695	49,969,137	23,282,442	53%		
2046	0	51	26,686,695	3,199,344	11,837	2,826,424	11,863	987,069	1,079,631	28,380,501	48,769,897	20,389,397	58%		
2047	0	50	28,380,501	3,198,535	11,916	2,816,590	8,572	1,018,328	1,147,757	30,161,297	47,505,129	17,343,833	63%		
2048	0	49	30,161,297	3,193,198	11,990	2,801,182	5,468	1,051,921	1,219,391	32,034,070	46,178,267	14,144,196	69%		
2049	0	48	32,034,070	3,171,983	12,057	2,768,658	3,781	1,085,612	1,294,711	34,002,792	44,810,819	10,808,028	76%		
2050	0	47	34,002,792	3,144,334	12,117	2,728,767	2,589	1,120,644	1,373,886	36,072,226	43,410,402	7,338,176	83%		
2051	0	46	36,072,226	3,111,258	12,169	2,682,737	1,737	1,156,785	1,457,105	38,247,164	41,983,148	3,735,984	91%		
2052	0	45	38,247,164	3,074,524	12,211	2,632,650	995	1,193,654	1,544,553	40,532,280	40,532,279	0	100%		
2053	0	44	40,532,280	3,033,107	12,242	14,221	492	0	1,561,273	39,062,917	39,062,917	0	100%		
2054	0	43	39,062,917	2,986,551	12,261	13,390	287	0	1,503,399	37,581,181	37,581,182	0	100%		
2055	0	42	37,581,181	2,936,179	12,266	13,025	193	0	1,445,118	36,091,072	36,091,072	0	100%		
2056	0	40	36,091,072	2,882,482	12,255	12,764	129	0	1,386,571	34,595,799	34,595,799	0	100%		
2057	0	39	34,595,799	2,825,676	12,228	12,434	52	0	1,327,878	33,098,259	33,098,259	0	100%		

# Actuarial Projections – Conservation Funding in 2019

## Table A-4

Plan Year End 30-Jun	Benefit Payment Account <sup>a</sup>							Accumulation Account <sup>b</sup>						Statewide Employer Contribution
	Assets (boy)	Net Benefit Pmts and Expenses	Employer Contribs.	6.32% <sup>d</sup> of Pay Member Contribs.	37.97% of Premium Tax Allocation	Investment Income	Transfer (To)/From Accumulation Account	Assets (boy) <sup>c</sup>	Net Benefit Pmts and Expenses	Employer Contribs.	1.50% of Pay Member Contribs.	62.03% of Premium Tax Allocation	Investment Income	
2018	\$2,306,918	\$1,245,623	\$737,898	\$178,900	\$419,174	\$94,066	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2019	2,491,333	1,290,845	979,615	144,349	166,881	99,653	(2,590,986)	2,590,986	0	0	34,199	272,630	6,076	11,067
2020	0	1,381,739	1,065,105	143,279	173,355	0	0	2,903,892	0	0	33,857	283,208	122,435	22,758
2021	0	1,488,556	1,170,559	139,804	178,193	0	0	3,343,391	0	0	32,842	291,111	140,151	36,641
2022	0	1,573,225	1,252,354	137,132	183,739	0	0	3,807,496	0	0	32,031	300,171	158,879	53,719
2023	0	1,677,416	1,356,120	132,919	188,377	0	0	4,298,577	0	0	30,784	307,748	178,647	67,528
2024	0	1,806,462	1,484,933	126,570	194,959	0	0	4,815,756	0	0	28,939	318,501	199,511	88,590
2025	0	1,906,891	1,583,927	122,109	200,855	0	0	5,362,707	0	0	27,596	328,134	221,553	107,876
2026	0	2,001,268	1,677,053	117,589	206,626	0	0	5,939,990	0	0	26,234	337,561	244,804	126,947
2027	0	2,091,251	1,764,995	113,352	212,904	0	0	6,548,590	0	0	24,942	347,817	269,326	147,688
2028	0	2,165,237	1,835,852	110,219	219,166	0	0	7,190,675	0	0	23,937	358,048	295,192	168,300
2029	0	2,241,737	1,910,028	106,444	225,265	0	0	7,867,852	0	0	22,742	368,012	322,452	188,394
2030	0	2,341,345	2,008,291	101,059	231,995	0	0	8,581,058	0	0	21,097	379,006	351,166	211,718
2031	0	2,421,979	2,086,703	96,218	239,058	0	0	9,332,327	0	0	19,698	390,546	381,417	237,065
2032	0	2,476,387	2,138,097	92,678	245,612	0	0	10,123,989	0	0	18,785	401,252	413,278	260,846
2033	0	2,512,312	2,169,493	90,478	252,341	0	0	10,957,304	0	0	18,196	412,246	446,817	284,696
2034	0	2,569,753	2,224,727	86,361	258,665	0	0	11,834,563	0	0	17,237	422,577	482,092	307,335
2035	0	2,638,076	2,290,284	81,136	266,656	0	0	12,756,469	0	0	16,048	435,632	519,204	335,466
2036	0	2,677,768	2,324,891	78,751	274,126	0	0	13,727,352	0	0	15,434	447,836	558,269	362,789
2037	0	2,757,615	2,406,544	69,932	281,139	0	0	14,748,892	0	0	13,677	459,292	599,322	389,065
2038	0	2,860,210	2,510,879	57,893	291,438	0	0	15,821,183	0	0	11,361	476,118	642,501	425,888
2039	0	2,928,079	2,577,164	50,342	300,573	0	0	16,951,162	0	0	9,823	491,041	687,966	457,569
2040	0	2,981,693	2,627,153	44,453	310,087	0	0	18,139,992	0	0	8,571	506,584	735,802	489,044
2041	0	3,024,194	2,665,590	39,222	319,382	0	0	19,390,949	0	0	7,518	521,770	786,120	517,847
2042	0	3,101,590	2,741,750	30,453	329,387	0	0	20,706,357	0	0	5,827	538,115	839,026	547,043
2043	0	3,175,217	2,813,134	21,358	340,725	0	0	22,089,325	0	0	4,088	556,637	894,678	579,630
2044	0	3,205,634	2,837,724	15,914	351,996	0	0	23,544,728	0	0	3,041	575,051	953,238	609,455
2045	0	3,214,998	2,839,385	12,359	363,254	0	0	25,076,057	0	0	2,353	593,443	1,014,841	637,907
2046	0	3,211,181	2,826,424	9,971	374,786	0	0	26,686,694	0	0	1,892	612,283	1,079,631	665,692
2047	0	3,210,451	2,816,590	7,206	386,655	0	0	28,380,500	0	0	1,366	631,673	1,147,757	692,807
2048	0	3,205,188	2,801,182	4,596	399,410	0	0	30,161,296	0	0	872	652,511	1,219,391	721,709
2049	0	3,184,040	2,768,658	3,180	412,202	0	0	32,034,070	0	0	601	673,409	1,294,711	749,947
2050	0	3,156,451	2,728,767	2,180	425,504	0	0	34,002,791	0	0	409	695,140	1,373,886	778,522
2051	0	3,123,427	2,682,737	1,463	439,227	0	0	36,072,225	0	0	274	717,558	1,457,105	808,223
2052	0	3,086,713	2,632,650	838	453,226	0	0	38,247,163	22	0	157	740,428	1,544,553	839,043
2053	0	0	0	0	0	0	0	40,532,279	3,045,349	14,221	492	0	1,561,273	871,332
2054	0	0	0	0	0	0	0	39,062,916	2,998,812	13,390	287	0	1,503,399	904,364
2055	0	0	0	0	0	0	0	37,581,180	2,948,445	13,025	193	0	1,445,118	939,033
2056	0	0	0	0	0	0	0	36,091,071	2,894,737	12,764	129	0	1,386,571	975,726
2057	0	0	0	0	0	0	0	34,595,798	2,837,904	12,434	52	0	1,327,878	1,012,790

<sup>a</sup> 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.

<sup>b</sup> Assets accumulate in the Pension and Relief Fund.

<sup>c</sup> Includes transfer from Benefit Payment Account to Accumulation Account in Plan Year End June 30, 2033.

<sup>d</sup> Blended employee contribution rate of 7.82% of pay less 1.50% of pay going into the Accumulation Account.

# Actuarial Projections – Optional Funding in (N/A)

## Table A-5

Valuation Plan	Total Assets													
	Number		Assets							Premium Tax		Actuarial Liability	Unfunded Liability	Funded Ratio
	Year End 30-Jun	Pay	Assets (boy)	Benefit Payments	Expenses	Employer Contribs.	Member Contribs.	Allocation Contribs.	Investment Income	Assets (eoy)				
2017	43	41	\$2,049,753	\$1,186,537	\$3,000	\$689,626	\$175,541	\$390,915	\$190,620	\$2,306,918	\$37,985,998	\$35,679,080	6%	
2018	43	42	2,306,918	1,236,810	8,813	737,898	178,900	419,174	94,066	2,491,333	39,660,577	37,169,244	6%	
2019	43	43	2,491,333	1,281,988	9,149	789,551	189,393	439,511	102,174	2,720,826	41,410,165	38,689,339	7%	
2020	43	44	2,720,826	1,373,197	9,482	844,820	198,740	456,563	111,159	2,949,428	43,186,654	40,237,226	7%	
2021	43	45	2,949,428	1,480,990	9,876	903,957	207,035	469,305	119,748	3,158,607	44,960,180	41,801,573	7%	
2022	43	46	3,158,607	1,567,267	10,343	967,234	219,344	483,910	128,184	3,379,668	46,779,844	43,400,176	7%	
2023	43	48	3,379,668	1,673,746	10,709	1,034,940	226,293	496,125	136,631	3,589,201	48,589,321	45,000,120	7%	
2024	43	49	3,589,201	1,805,624	11,258	1,107,386	237,855	513,460	144,396	3,775,416	50,378,567	46,603,151	7%	
2025	43	50	3,775,416	1,909,525	11,731	1,184,903	249,685	528,989	151,855	3,969,592	52,186,412	48,216,820	8%	
2026	43	52	3,969,592	2,008,053	12,185	1,267,846	261,328	544,187	159,836	4,182,551	54,016,110	49,833,559	8%	
2027	43	52	4,182,551	2,102,821	12,673	1,356,595	275,016	560,721	168,824	4,428,212	55,884,520	51,456,308	8%	
2028	43	53	4,428,212	2,182,199	13,141	1,451,557	289,893	577,214	179,570	4,731,107	57,819,633	53,088,526	8%	
2029	43	54	4,731,107	2,264,650	13,580	1,553,166	303,476	593,277	192,645	5,095,440	59,809,511	54,714,071	9%	
2030	43	55	5,095,440	2,370,810	14,086	1,661,888	318,224	611,001	207,902	5,509,559	61,832,306	56,322,747	9%	
2031	43	55	5,509,559	2,458,699	14,610	1,778,220	335,586	629,605	225,731	6,005,392	63,930,370	57,924,978	9%	
2032	43	56	6,005,392	2,521,283	15,073	1,902,695	353,074	646,864	247,470	6,619,139	66,143,871	59,524,732	10%	
2033	43	55	6,619,139	2,566,265	15,525	2,035,884	372,405	664,587	274,491	7,384,716	68,509,624	61,124,908	11%	
2034	43	56	7,384,716	2,633,611	15,937	2,178,396	388,318	681,242	307,240	8,290,364	70,989,531	62,699,167	12%	
2035	43	56	8,290,364	2,712,585	16,457	2,330,884	408,387	702,288	345,725	9,348,605	73,598,670	64,250,065	13%	
2036	43	56	9,348,605	2,764,001	16,923	2,494,046	430,774	721,963	391,091	10,605,554	76,389,906	65,784,352	14%	
2037	43	57	10,605,554	2,856,807	17,344	2,668,629	443,163	740,431	443,592	12,027,218	79,275,521	67,248,303	15%	
2038	43	57	12,027,218	2,973,603	18,019	2,855,433	461,454	767,555	502,730	13,622,768	82,265,474	68,642,706	17%	
2039	43	58	13,622,768	3,062,607	18,586	3,055,313	479,881	791,614	569,578	15,437,961	85,387,686	69,949,725	18%	
2040	43	58	15,437,961	3,152,323	19,171	3,269,185	499,717	816,670	645,523	17,497,563	88,661,296	71,163,733	20%	
2041	43	58	17,497,563	3,242,323	19,730	3,498,028	517,737	841,152	731,487	19,823,913	92,081,194	72,257,281	22%	
2042	43	59	19,823,913	3,381,870	20,340	3,742,890	531,756	867,502	827,414	22,391,265	95,578,469	73,187,204	23%	
2043	43	59	22,391,265	3,536,312	21,062	4,004,892	548,513	897,362	933,147	25,217,805	99,159,560	73,941,755	25%	
2044	43	60	25,217,805	3,665,834	21,765	4,285,234	567,452	927,047	1,050,144	28,360,083	102,858,432	74,498,349	28%	
2045	43	60	28,360,083	3,796,745	22,472	4,585,200	587,645	956,697	1,180,157	31,850,565	106,688,510	74,837,945	30%	
2046	43	61	31,850,565	3,932,026	23,192	4,906,164	608,307	987,069	1,324,450	35,721,337	110,658,024	74,936,687	32%	
2047	43	61	35,721,337	4,085,141	23,933	5,249,595	628,365	1,018,328	1,484,051	39,992,602	114,745,279	74,752,677	35%	
2048	43	62	39,992,602	4,252,205	24,733	5,617,067	650,683	1,051,921	1,659,962	44,695,297	118,955,769	74,260,472	38%	
2049	43	62	44,695,297	4,419,228	25,530	6,010,262	673,297	1,085,612	1,853,648	49,873,357	123,302,910	73,429,553	40%	
2050	43	63	49,873,357	4,591,828	26,356	6,430,980	697,577	1,120,644	2,066,842	55,571,216	127,789,074	72,217,858	43%	
2051	43	63	55,571,216	4,773,235	27,207	6,881,149	723,740	1,156,785	2,301,296	61,833,745	132,424,215	70,590,470	47%	
2052	43	64	61,833,745	4,960,628	28,069	7,362,829	751,068	1,193,654	2,558,880	68,711,479	137,219,052	68,507,573	50%	
2053	43	64	68,711,479	5,149,679	28,947	7,878,227	779,709	1,231,443	2,841,750	76,263,982	142,188,280	65,924,298	54%	
2054	43	64	76,263,982	5,340,265	29,832	8,429,703	809,371	1,269,762	3,152,326	84,555,047	147,344,066	62,789,019	57%	
2055	43	65	84,555,047	5,533,076	30,740	9,019,782	841,546	1,309,371	3,493,240	93,655,171	152,700,270	59,045,099	61%	
2056	43	65	93,655,171	5,729,955	31,656	9,651,167	874,322	1,349,697	3,867,280	103,636,026	158,277,856	54,641,830	65%	
2057	43	65	103,636,026	5,926,280	32,574	10,326,749	906,771	1,390,505	4,277,437	114,578,634	164,084,486	49,505,852	70%	

# Actuarial Projections – Optional Funding in (N/A)

## Table A-6

Valuation Plan Year End 30-Jun <sup>a,b</sup>	Employer Contributions								Minimum Payment			Statewide Employer Contribution
	Total Payroll	Employee Contributions	Gross Normal Cost	Net Employer Normal Cost	Amortization of UAAL	Premium Tax Allocation Contributions	Net Employer Amortization	Expenses	Optional Employer Contribution	Alternative Employer Contribution	Minimum Employer Contribution	
2018	\$2,288,223	\$178,900	\$1,389,036	\$1,210,136	\$1,942,390	\$439,511	\$1,502,879	\$8,813	\$2,721,828	\$789,551	\$789,551	\$0
2019	2,385,349	189,393	1,442,396	1,253,003	2,055,413	456,563	1,598,850	9,149	2,861,002	844,820	844,820	0
2020	2,473,895	198,740	1,491,874	1,293,134	2,175,131	469,305	1,705,826	9,482	3,008,443	903,957	903,957	0
2021	2,538,440	207,035	1,527,854	1,320,819	2,302,057	483,910	1,818,147	9,876	3,148,842	967,234	967,234	0
2022	2,646,981	219,344	1,590,559	1,371,215	2,436,250	496,125	1,940,125	10,343	3,321,684	1,034,940	1,034,940	0
2023	2,695,395	226,293	1,616,234	1,389,941	2,579,554	513,460	2,066,094	10,709	3,466,745	1,107,386	1,107,386	0
2024	2,773,001	237,855	1,657,920	1,420,065	2,730,943	528,989	2,201,954	11,258	3,633,277	1,184,903	1,184,903	0
2025	2,867,156	249,685	1,710,471	1,460,786	2,891,521	544,187	2,347,334	11,731	3,819,851	1,267,846	1,267,846	0
2026	2,957,964	261,328	1,760,255	1,498,926	3,062,929	560,721	2,502,208	12,185	4,013,320	1,356,595	1,356,595	0
2027	3,069,372	275,016	1,821,741	1,546,725	3,246,076	577,214	2,668,862	12,673	4,228,260	1,451,557	1,451,557	0
2028	3,198,671	289,893	1,893,813	1,603,919	3,442,766	593,277	2,849,489	13,141	4,466,550	1,553,166	1,553,166	0
2029	3,310,331	303,476	1,954,768	1,651,293	3,655,163	611,001	3,044,162	13,580	4,709,035	1,661,888	1,661,888	0
2030	3,422,808	318,224	2,015,766	1,697,542	3,884,446	629,605	3,254,841	14,086	4,966,469	1,778,220	1,778,220	0
2031	3,570,963	335,586	2,099,075	1,763,489	4,132,555	646,864	3,485,691	14,610	5,263,790	1,902,695	1,902,695	0
2032	3,736,611	353,074	2,193,433	1,840,359	4,403,470	664,587	3,738,883	15,073	5,594,316	2,035,884	2,035,884	0
2033	3,924,440	372,405	2,301,708	1,929,303	4,701,511	681,242	4,020,269	15,525	5,965,098	2,178,396	2,178,396	0
2034	4,076,159	388,318	2,389,005	2,000,686	5,031,936	702,288	4,329,648	15,937	6,346,271	2,330,884	2,330,884	0
2035	4,264,778	408,387	2,498,487	2,090,100	5,398,825	721,963	4,676,862	16,457	6,783,420	2,494,046	2,494,046	0
2036	4,484,040	430,774	2,627,283	2,196,509	5,810,163	740,431	5,069,732	16,923	7,283,165	2,668,629	2,668,629	0
2037	4,617,189	443,163	2,704,449	2,261,286	6,276,687	767,555	5,509,132	17,344	7,787,762	2,855,433	2,855,433	0
2038	4,813,505	461,454	2,817,299	2,355,846	6,806,391	791,614	6,014,777	18,019	8,388,642	3,055,313	3,055,313	0
2039	5,012,685	479,881	2,933,696	2,453,815	7,416,364	816,670	6,599,694	18,586	9,072,095	3,269,185	3,269,185	0
2040	5,228,998	499,717	3,060,799	2,561,082	8,128,025	841,152	7,286,873	19,171	9,867,126	3,498,028	3,498,028	0
2041	5,433,055	517,737	3,180,445	2,662,708	8,973,504	867,502	8,106,002	19,730	10,788,441	3,742,890	3,742,890	0
2042	5,598,372	531,756	3,280,437	2,748,681	9,997,075	897,362	9,099,713	20,340	11,868,734	4,004,892	4,004,892	0
2043	5,792,808	548,513	3,398,179	2,849,665	11,264,505	927,047	10,337,458	21,062	13,208,186	4,285,234	4,285,234	0
2044	6,007,057	567,452	3,525,142	2,957,690	12,888,049	956,697	11,931,352	21,765	14,910,807	4,585,200	4,585,200	0
2045	6,232,176	587,645	3,657,183	3,069,538	15,059,542	987,069	14,072,473	22,472	17,164,482	4,906,164	4,906,164	0
2046	6,466,063	608,307	3,793,730	3,185,422	18,142,563	1,018,328	17,124,235	23,192	20,332,850	5,249,595	5,249,595	0
2047	6,689,240	628,365	3,925,070	3,296,705	22,915,093	1,051,921	21,863,172	23,933	25,183,810	5,617,067	5,617,067	0
2048	6,931,547	650,683	4,068,498	3,417,816	31,392,965	1,085,612	30,307,353	24,733	33,749,903	6,010,262	6,010,262	0
2049	7,182,390	673,297	4,216,373	3,543,076	50,980,802	1,120,644	49,860,158	25,530	53,428,765	6,430,980	6,430,980	0
2050	7,441,756	697,577	4,369,040	3,671,462	74,883,720	1,156,785	73,726,935	26,356	76,100,800	6,881,149	6,881,149	0
2051	7,715,647	723,740	4,530,194	3,806,453	73,648,030	1,193,654	72,454,376	27,207	74,540,032	7,362,829	7,362,829	0
2052	8,001,361	751,068	4,698,724	3,947,656	71,988,413	1,231,443	70,756,970	28,069	72,522,319	7,878,227	7,878,227	0
2053	8,303,579	779,709	4,877,387	4,097,677	69,864,268	1,269,762	68,594,506	28,947	69,999,401	8,429,703	8,429,703	0
2054	8,616,007	809,371	5,062,041	4,252,671	67,229,834	1,309,371	65,920,463	29,832	66,918,265	9,019,782	9,019,782	0
2055	8,945,197	841,546	5,256,551	4,415,005	64,032,465	1,349,697	62,682,768	30,740	63,231,889	9,651,167	9,651,167	0
2056	9,293,987	874,322	5,462,962	4,588,640	60,214,402	1,390,505	58,823,897	31,656	58,871,230	10,326,749	10,326,749	0
2057	9,646,173	906,771	5,671,075	4,764,304	55,723,933	1,433,262	54,290,671	32,574	53,758,733	11,049,621	11,049,621	0

<sup>a</sup> Assumes sponsor selects Optional funding policy if contributions are lower.

<sup>b</sup> Assumes employer makes contributions for the applicable valuation plan year in the following fiscal year.

<sup>c</sup> Amount required to remain at 100% funded.

# Actuarial Projections – Conservation Funding in 2033

## Table A-7

Valuation Plan	Total Assets													
	Number		Assets (boy)	Benefit Payments	Expenses	Employer Contribs.	Member Contribs.	Premium Tax			Assets (eoy)	Actuarial Accrued Liability	Unfunded Liability	Funded Ratio
	Year End 30-Jun	Active						Pay Status	Allocation Contribs.	Investment Income				
2017	43	41	\$2,049,753	\$1,186,537	\$3,000	\$689,626	\$175,541	\$390,915	\$190,620	\$2,306,918	\$37,985,998	\$35,679,080	6%	
2018	43	42	2,306,918	1,236,810	8,813	737,898	178,900	419,174	94,066	2,491,333	39,660,577	37,169,244	6%	
2019	43	43	2,491,333	1,281,988	9,149	789,551	189,393	439,511	102,175	2,720,826	41,410,165	38,689,339	7%	
2020	43	44	2,720,826	1,373,197	9,482	844,820	198,740	456,563	111,159	2,949,429	43,186,654	40,237,225	7%	
2021	43	45	2,949,429	1,480,990	9,876	903,957	207,035	469,305	119,748	3,158,608	44,960,180	41,801,572	7%	
2022	43	46	3,158,608	1,567,267	10,343	967,234	219,344	483,910	128,184	3,379,670	46,779,844	43,400,174	7%	
2023	43	48	3,379,670	1,673,746	10,709	1,034,940	226,293	496,125	136,631	3,589,204	48,589,321	45,000,117	7%	
2024	43	49	3,589,204	1,805,624	11,258	1,107,386	237,855	513,460	144,396	3,775,419	50,378,567	46,603,148	7%	
2025	43	50	3,775,419	1,909,525	11,731	1,184,903	249,685	528,989	151,855	3,969,595	52,186,412	48,216,817	8%	
2026	43	52	3,969,595	2,008,053	12,185	1,267,846	261,328	544,187	159,836	4,182,554	54,016,110	49,833,556	8%	
2027	43	52	4,182,554	2,102,821	12,673	1,356,595	275,016	560,721	168,824	4,428,216	55,884,520	51,456,304	8%	
2028	43	53	4,428,216	2,182,199	13,141	1,451,557	289,893	577,214	179,571	4,731,111	57,819,633	53,088,522	8%	
2029	43	54	4,731,111	2,264,650	13,580	1,553,166	303,476	593,277	192,645	5,095,445	59,809,511	54,714,066	9%	
2030	43	55	5,095,445	2,370,810	14,086	1,661,888	318,224	611,001	207,902	5,509,564	61,832,306	56,322,742	9%	
2031	43	55	5,509,564	2,458,699	14,610	1,778,220	335,586	629,605	225,732	6,005,398	63,930,370	57,924,972	9%	
2032	40	56	6,005,398	2,521,283	15,073	1,902,695	353,074	646,864	247,470	6,619,145	66,143,871	59,524,726	10%	
2033	38	55	6,619,145	2,566,265	15,119	1,998,914	355,106	664,587	273,425	7,329,793	68,409,753	61,079,960	11%	
2034	36	56	7,329,793	2,633,002	15,190	2,058,352	355,169	681,242	302,036	8,078,400	70,688,667	62,610,267	11%	
2035	34	56	8,078,400	2,710,324	15,276	2,127,107	354,460	702,288	332,211	8,868,866	72,963,227	64,094,361	12%	
2036	32	56	8,868,866	2,759,080	15,371	2,164,538	357,767	721,963	364,059	9,702,741	75,289,836	65,587,095	13%	
2037	30	57	9,702,741	2,848,325	15,474	2,250,369	352,639	740,431	397,608	10,579,989	77,585,773	67,005,784	14%	
2038	28	57	10,579,989	2,960,922	15,591	2,360,744	341,943	767,555	432,977	11,506,696	79,791,439	68,284,743	14%	
2039	26	57	11,506,696	3,044,786	15,716	2,440,323	335,122	791,614	470,300	12,483,553	81,945,652	69,462,099	15%	
2040	24	58	12,483,553	3,128,359	15,850	2,519,323	328,239	816,670	509,641	13,513,218	84,053,476	70,540,258	16%	
2041	22	58	13,513,218	3,211,209	15,991	2,599,079	320,010	841,152	551,085	14,597,344	86,105,111	71,507,767	17%	
2042	20	59	14,597,344	3,342,751	16,141	2,732,586	304,949	867,502	594,710	15,738,199	88,008,108	72,269,909	18%	
2043	18	59	15,738,199	3,488,348	16,298	2,881,551	286,525	897,362	640,634	16,939,625	89,724,872	72,785,247	19%	
2044	17	60	16,939,625	3,607,841	16,463	3,002,692	270,124	927,047	688,983	18,204,167	91,276,570	73,072,403	20%	
2045	15	60	18,204,167	3,727,346	16,635	3,123,753	253,830	956,697	739,857	19,534,323	92,659,818	73,125,495	21%	
2046	13	60	19,534,323	3,849,748	16,813	3,248,460	236,374	987,069	793,361	20,933,026	93,862,366	72,929,340	22%	
2047	12	61	20,933,026	3,988,568	16,997	3,391,408	216,253	1,018,328	849,608	22,403,058	94,838,863	72,435,805	24%	
2048	10	61	22,403,058	4,139,777	17,185	3,547,277	194,289	1,051,921	908,728	23,948,311	95,558,339	71,610,028	25%	
2049	9	62	23,948,311	4,289,323	17,376	3,702,377	171,294	1,085,612	970,856	25,571,750	96,011,787	70,440,037	27%	
2050	7	62	25,571,750	4,442,446	17,569	3,861,419	147,057	1,120,644	1,036,121	27,276,975	96,170,113	68,893,138	28%	
2051	6	62	27,276,975	4,602,249	17,763	4,025,126	124,145	1,156,785	1,104,665	29,067,684	96,010,745	66,943,061	30%	
2052	5	62	29,067,684	4,765,597	17,958	4,189,936	103,539	1,193,654	1,176,641	30,947,899	95,537,560	64,589,661	32%	
2053	4	62	30,947,899	4,919,742	18,146	4,344,063	84,397	1,231,443	1,252,215	32,922,129	94,776,623	61,854,494	35%	
2054	3	62	32,922,129	5,052,496	18,325	4,474,973	67,086	1,269,762	1,331,560	34,994,689	93,743,902	58,749,213	37%	
2055	2	61	34,994,689	5,170,125	18,495	4,587,851	52,383	1,309,371	1,414,858	37,170,532	92,458,072	55,287,540	40%	
2056	2	61	37,170,532	5,270,403	18,654	4,680,861	40,278	1,349,697	1,502,304	39,454,615	90,951,120	51,496,505	43%	
2057	1	60	39,454,615	5,346,025	18,799	4,747,311	30,261	1,390,505	1,594,092	41,851,960	89,256,561	47,404,601	47%	

# Actuarial Projections – Conservation Funding in 2033

## Table A-8

Plan Year End 30-Jun	Benefit Payment Account <sup>a</sup>						Accumulation Account <sup>b</sup>						Minimum Payment			Statewide Employer Contribution
	Assets (boy)	Net Benefit Pmts and Expenses	Employer Contribs.	6.32% <sup>d</sup> of Pay Member Contribs.	42.69% of Premium Tax Allocation	Investment Income	Assets (boy) <sup>c</sup>	Net Benefit Pmts and Expenses	Employer Contribs.	1.50% of Pay Member Contribs.	57.31% of Premium Tax Allocation	Investment Income	Conservation Employer Cont.	Alternative Employer Cont.	Minimum Alt /Cons Cont.	
2018	\$2,306,918	\$1,245,623	\$737,898	\$178,900	\$419,174	\$94,066	\$0	\$0	\$0	\$0	\$0	\$0	NA	\$737,898	\$737,898	\$0
2019	2,491,333	1,291,137	789,551	189,393	439,511	102,175	0	0	0	0	0	0	NA	789,551	789,551	0
2020	2,720,826	1,382,679	844,820	198,740	456,563	111,159	0	0	0	0	0	0	NA	844,820	844,820	0
2021	2,949,429	1,490,866	903,957	207,035	469,305	119,748	0	0	0	0	0	0	NA	903,957	903,957	0
2022	3,158,607	1,577,610	967,234	219,344	483,910	128,184	0	0	0	0	0	0	NA	967,234	967,234	0
2023	3,379,669	1,684,455	1,034,940	226,293	496,125	136,631	0	0	0	0	0	0	NA	1,034,940	1,034,940	0
2024	3,589,203	1,816,882	1,107,386	237,855	513,460	144,396	0	0	0	0	0	0	NA	1,107,386	1,107,386	0
2025	3,775,418	1,921,256	1,184,903	249,685	528,989	151,855	0	0	0	0	0	0	NA	1,184,903	1,184,903	0
2026	3,969,594	2,020,238	1,267,846	261,328	544,187	159,836	0	0	0	0	0	0	NA	1,267,846	1,267,846	0
2027	4,182,553	2,115,494	1,356,595	275,016	560,721	168,824	0	0	0	0	0	0	NA	1,356,595	1,356,595	0
2028	4,428,215	2,195,340	1,451,557	289,893	577,214	179,571	0	0	0	0	0	0	NA	1,451,557	1,451,557	0
2029	4,731,110	2,278,230	1,553,166	303,476	593,277	192,645	0	0	0	0	0	0	NA	1,553,166	1,553,166	0
2030	5,095,444	2,384,896	1,661,888	318,224	611,001	207,902	0	0	0	0	0	0	NA	1,661,888	1,661,888	0
2031	5,509,563	2,473,309	1,778,220	335,586	629,605	225,732	0	0	0	0	0	0	NA	1,778,220	1,778,220	0
2032	6,005,396	2,536,356	1,902,695	353,074	646,864	247,470	0	0	0	0	0	0	NA	1,902,695	1,902,695	0
2033	6,619,144	2,581,384	1,998,914	298,761	283,709	264,766	6,883,911	0	56,345	380,878	8,659	1,998,914	2,035,884	1,998,914	17,653	
2034	0	2,648,192	2,058,352	299,021	290,819	0	7,329,793	0	56,148	390,423	302,036	2,058,352	2,178,396	2,058,352	34,963	
2035	0	2,725,600	2,127,107	298,690	299,803	0	8,078,400	0	55,770	402,485	332,211	2,127,107	2,330,884	2,127,107	57,414	
2036	0	2,774,451	2,164,538	301,711	308,202	0	8,868,865	0	56,056	413,760	364,059	2,164,538	2,494,046	2,164,538	78,430	
2037	0	2,863,799	2,250,369	297,344	316,086	0	9,702,741	0	55,295	424,345	397,608	2,250,369	2,668,629	2,250,369	97,738	
2038	0	2,976,513	2,360,744	288,103	327,666	0	10,579,988	0	53,840	439,890	432,977	2,360,744	2,855,433	2,360,744	128,539	
2039	0	3,060,502	2,440,323	282,243	337,936	0	11,506,695	0	52,879	453,678	470,300	2,440,323	3,055,313	2,440,323	156,176	
2040	0	3,144,209	2,519,323	276,253	348,633	0	12,483,552	0	51,986	468,038	509,641	2,519,323	3,269,185	2,519,323	185,144	
2041	0	3,227,200	2,599,079	269,037	359,084	0	13,513,217	0	50,973	482,068	551,085	2,599,079	3,498,028	2,599,079	213,662	
2042	0	3,358,892	2,732,586	255,974	370,332	0	14,597,343	0	48,975	497,170	594,710	2,732,586	3,742,890	2,732,586	245,007	
2043	0	3,504,646	2,881,551	240,016	383,079	0	15,738,198	0	46,509	514,283	640,634	2,881,551	4,004,892	2,881,551	282,680	
2044	0	3,624,304	3,002,692	225,860	395,752	0	16,939,623	0	44,264	531,295	688,983	3,002,692	4,285,234	3,002,692	320,894	
2045	0	3,743,981	3,123,753	211,819	408,409	0	18,204,165	0	42,011	548,288	739,857	3,123,753	4,585,200	3,123,753	360,299	
2046	0	3,866,561	3,248,460	196,726	421,375	0	19,534,321	0	39,648	565,694	793,361	3,248,460	4,906,164	3,248,460	401,404	
2047	0	4,005,565	3,391,408	179,438	434,719	0	20,933,024	0	36,815	583,609	849,608	3,391,408	5,249,595	3,391,408	444,663	
2048	0	4,156,962	3,547,277	160,625	449,060	0	22,403,056	0	33,664	602,861	908,728	3,547,277	5,617,067	3,547,277	492,167	
2049	0	4,306,699	3,702,377	140,880	463,442	0	23,948,310	0	30,414	622,169	970,856	3,702,377	6,010,262	3,702,377	541,251	
2050	0	4,460,015	3,861,419	120,199	478,397	0	25,571,749	0	26,858	642,246	1,036,121	3,861,419	6,430,980	3,861,419	593,376	
2051	0	4,620,012	4,025,126	101,060	493,826	0	27,276,974	0	23,085	662,959	1,104,665	4,025,126	6,881,149	4,025,126	648,548	
2052	0	4,783,555	4,189,936	84,054	509,565	0	29,067,684	0	19,485	684,089	1,176,641	4,189,936	7,362,829	4,189,936	703,750	
2053	0	4,937,888	4,344,063	68,128	525,697	0	30,947,899	0	16,269	705,746	1,252,215	4,344,063	7,878,227	4,344,063	757,994	
2054	0	5,070,821	4,474,973	53,793	542,055	0	32,922,129	0	13,293	727,707	1,331,560	4,474,973	8,429,703	4,474,973	811,626	
2055	0	5,188,620	4,587,851	41,805	558,964	0	34,994,689	0	10,578	750,407	1,414,858	4,587,851	9,019,782	4,587,851	865,203	
2056	0	5,289,057	4,680,861	32,017	576,179	0	37,170,532	0	8,261	773,518	1,502,304	4,680,861	9,651,167	4,680,861	918,042	
2057	0	5,364,824	4,747,311	23,913	593,600	0	39,454,615	0	6,348	796,905	1,594,092	4,747,311	10,326,749	4,747,311	968,415	

<sup>a</sup> 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.

<sup>b</sup> Assets accumulate in the Pension and Relief Fund.

<sup>c</sup> Includes transfer from Benefit Payment Account to Accumulation Account in Plan Year End June 30, 2033.

<sup>d</sup> Blended employee contribution rate of 7.82% of pay less 1.50% of pay going into the Accumulation Account.