

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

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



September 27, 2018

Mr. Brian Blankenship  
Finance Director  
100 Courthouse Road  
Princeton, WV 24740

Lt. Thomas Matt Mould  
Pension Board Secretary  
City of Princeton Firemen's Pension and Relief Fund

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

Dear Mr. Blankenship and Lt. Mould:

Upon the request of the Municipal Pensions Oversight Board, we have performed an actuarial valuation as of July 1, 2017, for the City of Princeton, 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.



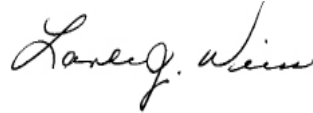
The signing actuaries are independent of the plan sponsor.

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 Princeton, 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	\$2,879,155
Actuarial Accrued Liability	\$12,003,972
Unfunded Actuarial Accrued Liability	\$9,124,817
Funded Ratio	23.99%

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	\$100,642
7% Increase in Alternative Contribution	\$7,045
FYE 06/30/2018 Alternative Contribution	\$107,687
Additional Contribution	\$0
Final FYE 06/30/2018 Alternative Contribution	\$107,687

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	\$107,687
7% Increase in Alternative Contribution	\$7,538
FYE 06/30/2019 Alternative Contribution	\$115,225
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	\$115,225
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	\$115,225



## 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.”

Under the Closed Group Projection, Plan assets are expected to be depleted by plan year end 2035, and remain at zero until plan year end 2046. Employer contributions after plan year end 2035 equal the minimum amount needed to pay plan benefits and expenses on a pay-as-you-go basis, but not less than the Alternative funding policy contribution. In plan year end 2047, the Alternative funding policy contribution is greater than the pay-as-you-go contribution.

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 24% and projected to decline to 5% as of June 30, 2040, we strongly recommend that the sponsor make additional contributions in excess of the statutory minimum.**

Because the 15-year solvency test is not consistent with generally accepted actuarial principles, we recommend that the sponsor make additional annual contributions, starting in fiscal year end June 30, 2019, equal to \$49,562, which increases by 7% per year each year thereafter. On a closed group basis, this is projected to maintain assets at no less than 50% of the value as of June 30, 2017, over the 40-year projection period (to a low of \$1,439,754 as of June 30, 2040) as shown in Table 1(d). Under this scenario, the funded ratio is projected to reach a minimum level of 18% in 2031 on an open group projection basis, as shown in Table 1(c).

## 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 changed from 4.50% for the July 1, 2016 actuarial valuation to 4.00% for the July 1, 2017 actuarial valuation.
  - The interest rate assumption was developed by reviewing the Plan's current funded ratio, the 15-year projected funded ratio, the ratio of assets to benefits, the percentage of assets allocated to equities and the funding policy selected. The details of the methodology used to select the discount rate are presented in Section VI of the report. As of July 1, 2017, the Plan's funded ratio of 30% (using a testing interest rate of 5.50% for all plans using the Alternative funding policy), ratio of assets to benefits of 7.46, equity allocation of 54%, and 15-year projected funded ratio of 19%, resulted in a recommended discount rate assumption of 4.00% due to the low projected funded ratio.
  - The change in interest rate used to discount liabilities from 4.50% as of July 1, 2016, to 4.00% as of July 1, 2017, increased liabilities by \$905,435.
- The Fund experienced an approximate annualized return of 9.84% on the market value of assets during the plan year ended June 30, 2017, which compares to the expected annualized return of 4.50%. The difference in actual versus expected return produced an asset (gain)/loss of (\$141,106).
- 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 (\$6,113) 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 1(a), page II-1 and assuming that the sponsor makes the statutory required contributions, if all actuarial assumptions are realized in the future, including an investment return of 4.00%:

- The funded ratio is projected to decrease from 24% at June 30, 2017, to 16% at June 30, 2027, to 5% at June 30, 2040, and then increase slowly to 18% at June 30, 2057.
- Employer contributions are expected to increase from \$107,687 (or 19% of pay) for the fiscal year end June 30, 2018, to \$1,507,070 (or 68% of pay) for fiscal year end June 30, 2057.

## Executive Summary (Continued)

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Please note that a funded ratio of only 24% at June 30, 2017, which is projected to decline significantly in the future, means that the plan is severely underfunded.

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 \$115,225 is sufficient to finance only 39% of the net employer normal cost of \$298,550. The state premium tax allocation of \$136,710 is sufficient to finance only 1.5% of the unfunded actuarial accrued liability of \$9,124,817.

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 the 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*.

## Executive Summary (Continued)

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

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

## Schedule A: Summary of Key Valuation Results

Valuation Date	<b>July 1, 2016</b>		<b>July 1, 2017</b>	
Valuation Interest Rate	4.50%		4.00%	
Cost-of-Living Adjustment	2.75%		2.75%	
Wage Inflation	3.75%		3.75%	
Expected Payroll	\$591,104		\$565,135	
Average Pay	\$45,470		\$47,095	
Expected Benefit Payments	\$360,332		\$385,883	
<b>1. Actuarial Accrued Liability</b>	<u>No.</u>		<u>No.</u>	
(a) Actives	13	\$4,220,175	12	\$5,149,351
(b) Retirees	11	\$4,468,210	11	\$4,637,011
(c) Survivors	2	\$383,136	2	\$392,932
(d) Disabled Members	2	\$1,063,684	2	\$1,224,178
(e) Deferred Vested Members	1	\$531,571	1	\$600,500
(f) Total	29	\$10,666,776	28	\$12,003,972
<b>2. Present Value of Future Normal Costs</b>		\$3,257,296		\$3,421,128
<b>3. Present Value of Benefits (1(f) + 2)</b>		\$13,924,072		\$15,425,100
<b>4. Market Value of Assets</b>		\$2,687,005		\$2,879,155
<b>5. Unfunded Actuarial Accrued Liability (1(f) - 4)</b>		\$7,979,771		\$9,124,817
<b>6. Funded Ratio (4 / 1(f))</b>		25.19%		23.99%
<b>7. Net Employer Normal Cost</b>				
(a) Normal Cost		\$305,916		\$337,741
(b) Administrative Expenses		\$2,730		\$2,644
(c) Gross Normal Cost (a + b)		\$308,646		\$340,385
(d) Employee Contribution Rate <sup>a</sup>		7.52%		7.40%
(e) Expected Employee Contributions		\$44,471		\$41,835
(f) Net Employer Normal Cost (c - e)		\$264,175		\$298,550
( % of Compensation)		44.69%		52.83%
		<b>FYE 2018</b>		<b>FYE 2019</b>
<b>8. Estimated Minimum Employer Contribution <sup>b</sup></b>				
(a) Prior Year Alternative Contribution		\$100,642		\$107,687
(b) Increase in Alternative Contribution		7.00%		7.00%
(c) Current Year Alternative Contribution		\$107,687		\$115,225
(d) Additional Contribution		\$0		\$0
(e) Alternative Contribution ( c + d )		\$107,687		\$115,225

<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.

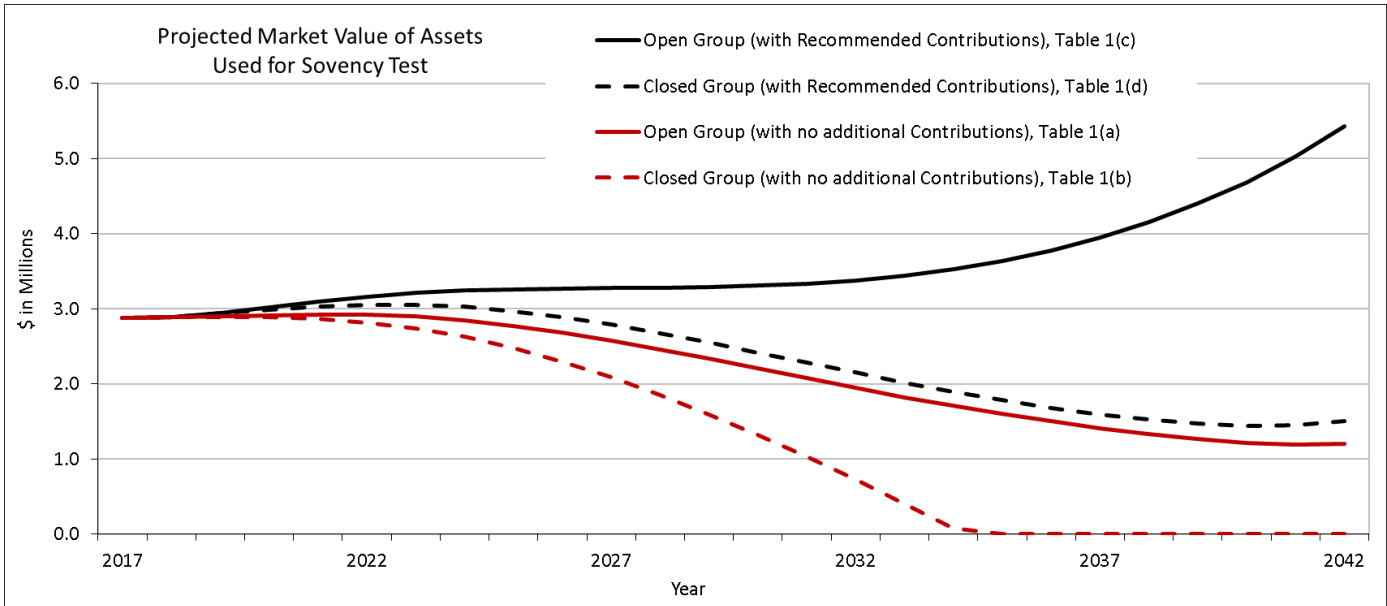
## Schedule B: (Gain)/Loss Analysis

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

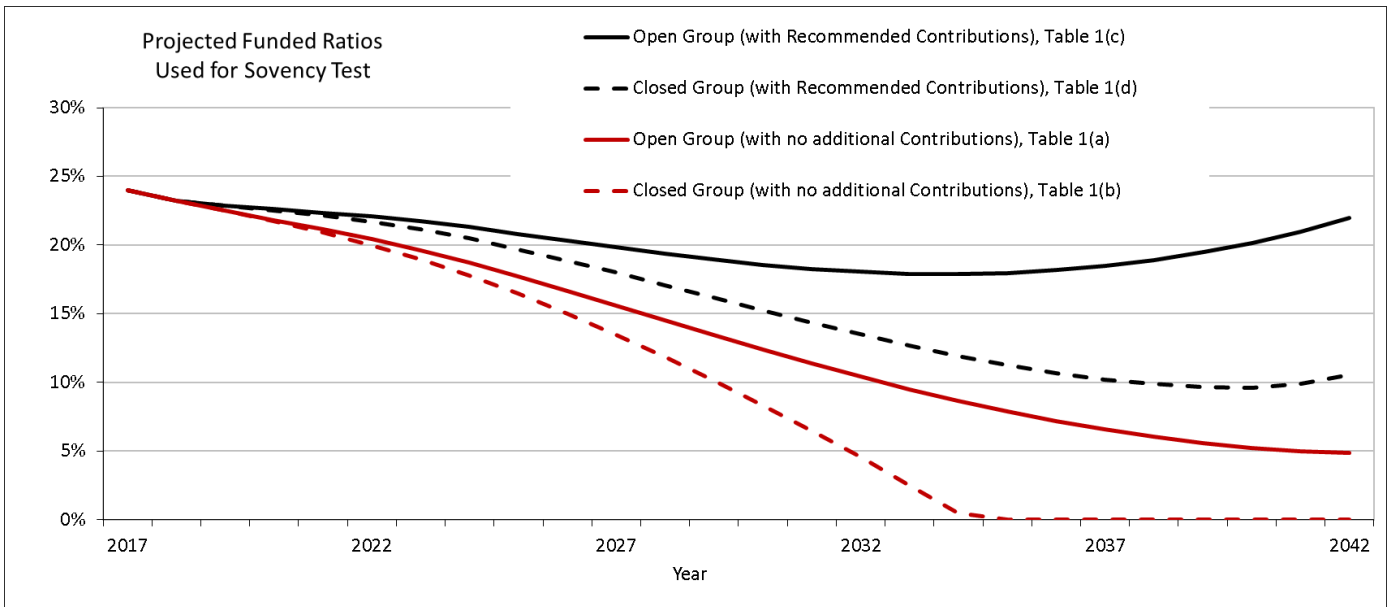
1. (a) Actuarial Accrued Liability as of 7/1/2016	\$10,666,776
(b) Normal Cost due 7/1/2016	\$305,916
(c) Interest on (a) and (b) to 6/30/2017	\$486,888
(d) Benefit Payments with interest to 6/30/2017	\$354,930
(e) Effect of Assumption Changes	\$905,435
(f) Expected Liability at 7/1/2017 [(a) + (b) + (c) - (d) + (e)]	\$12,010,085
(g) Actual Liability at 7/1/2017	\$12,003,972
(h) Liability (Gain)/Loss [(g) - (f)]	<b>(\$6,113)</b>
2. (a) Market Value of Assets as of 7/1/2016	\$2,687,005
(b) Interest on (a) to 6/30/2017	\$120,915
(c) Contributions with interest to 6/30/2017	\$285,059
(d) Benefit Payments with interest to 6/30/2017	\$354,930
(e) Expected Assets at 6/30/2017 [(a) + (b) + (c) - (d)]	\$2,738,049
(f) Actual Assets at 7/1/2017	\$2,879,155
(g) Asset (Gain)/Loss [(e) - (f)]	<b>(\$141,106)</b>
3. Total (Gain)/Loss [1(h) + 2(g)]	<b>(\$147,219)</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 an Open Group Basis, Table 1(a) (with no Additional Contributions)

Valuation Plan Year End	Number		Total Assets										Actuarial Accrued Liability	Unfunded Liability	Funded Ratio
	Pay	Status	Total Payroll	Assets (boy)	Benefit Payments	Employer Expenses	Member Contributions	Member Contributions	Premium Tax Allocation Contributions	Investment Income	Assets (eoy)				
												Active			
2017	12	16	\$591,104	\$2,687,005	\$347,120	\$429	\$100,645	\$47,856	\$130,285	\$260,913	\$2,879,155	\$12,003,972	\$9,124,817	24%	
2018	12	17	565,135	2,879,155	385,883	2,644	107,687	41,835	134,652	113,100	2,887,901	12,435,249	9,547,348	23%	
2019	12	17	590,136	2,887,901	397,918	2,814	115,225	44,911	136,710	113,458	2,897,474	12,882,463	9,984,989	22%	
2020	12	18	617,878	2,897,474	411,316	2,930	123,291	47,517	144,328	113,936	2,912,300	13,348,563	10,436,263	22%	
2021	12	18	633,909	2,912,300	431,723	3,037	131,921	49,297	148,171	114,406	2,921,334	13,820,424	10,899,090	21%	
2022	12	18	659,881	2,921,334	460,755	3,179	141,155	52,197	152,902	114,522	2,918,176	14,295,425	11,377,249	20%	
2023	12	19	691,005	2,918,176	496,690	3,290	151,036	55,145	156,873	114,016	2,895,266	14,770,396	11,875,130	20%	
2024	12	20	685,533	2,895,266	536,357	3,391	161,609	55,502	160,757	112,605	2,845,990	15,219,284	12,373,294	19%	
2025	12	20	702,001	2,845,990	584,215	3,601	172,922	58,676	167,542	110,103	2,767,417	15,644,594	12,877,177	18%	
2026	12	20	728,727	2,767,417	610,577	3,746	185,027	61,801	172,674	106,839	2,679,434	16,074,134	13,394,700	17%	
2027	12	21	746,026	2,679,434	642,239	3,872	197,979	64,178	177,433	103,087	2,576,000	16,499,077	13,923,077	16%	
2028	12	21	776,502	2,576,000	673,873	4,030	211,838	67,946	183,234	98,784	2,459,898	16,927,934	14,468,036	15%	
2029	12	21	799,261	2,459,898	698,744	4,152	226,667	70,826	188,157	94,094	2,336,746	17,361,321	15,024,575	13%	
2030	12	21	827,840	2,336,746	723,527	4,296	242,534	74,483	193,624	89,169	2,208,733	17,802,000	15,593,267	12%	
2031	12	21	860,884	2,208,733	742,619	4,420	259,511	78,303	198,666	84,179	2,082,353	18,258,992	16,176,639	11%	
2032	12	21	887,841	2,082,353	767,325	4,536	277,677	81,707	203,556	79,157	1,952,589	18,724,452	16,771,863	10%	
2033	12	21	922,829	1,952,589	791,487	4,674	297,114	86,040	209,376	74,071	1,823,028	19,203,702	17,380,674	9%	
2034	12	21	968,185	1,823,028	803,823	4,796	317,912	90,938	214,730	69,256	1,707,245	19,715,702	18,008,457	9%	
2035	12	21	1,002,359	1,707,245	823,674	4,895	340,166	94,874	219,804	64,850	1,598,369	20,249,304	18,650,935	8%	
2036	12	20	1,046,991	1,598,369	844,691	5,025	363,978	100,036	225,848	60,769	1,499,283	20,810,313	19,311,030	7%	
2037	12	20	1,080,544	1,499,283	865,833	5,128	389,456	103,448	231,105	57,061	1,409,392	21,392,551	19,983,159	7%	
2038	12	20	1,122,478	1,409,392	888,136	5,262	416,718	107,491	237,635	53,770	1,331,608	21,999,666	20,668,058	6%	
2039	12	20	1,155,215	1,331,608	910,588	5,377	445,888	110,658	243,595	50,970	1,266,755	22,623,919	21,357,164	6%	
2040	12	20	1,199,741	1,266,755	936,366	5,526	477,100	115,102	250,771	48,711	1,216,547	23,270,787	22,054,240	5%	
2041	12	20	1,250,310	1,216,547	952,452	5,652	510,497	119,701	257,239	47,262	1,193,141	23,955,457	22,762,316	5%	
2042	12	20	1,301,871	1,193,141	966,025	5,778	546,232	124,364	263,765	46,984	1,202,684	24,679,882	23,477,198	5%	
2043	12	20	1,355,948	1,202,684	980,003	5,909	584,468	129,078	270,412	48,069	1,248,799	25,446,082	24,197,283	5%	
2044	12	20	1,409,438	1,248,799	995,251	6,043	625,381	133,477	277,253	50,641	1,334,258	26,253,718	24,919,460	5%	
2045	12	19	1,462,123	1,334,258	1,013,361	6,190	669,158	138,008	284,474	54,798	1,461,144	27,098,116	25,636,972	5%	
2046	12	19	1,516,796	1,461,144	1,036,827	6,352	715,999	142,935	292,212	60,584	1,629,695	27,977,660	26,347,965	6%	
2047	12	19	1,573,047	1,629,695	1,064,672	6,520	766,119	147,960	300,231	68,022	1,840,835	28,892,493	27,051,658	6%	
2048	12	19	1,630,523	1,840,835	1,095,068	6,696	819,747	152,983	308,617	77,189	2,097,608	29,841,941	27,744,333	7%	
2049	12	19	1,688,092	2,097,608	1,128,264	6,880	877,129	158,072	317,323	88,209	2,403,197	30,823,998	28,420,801	8%	
2050	12	19	1,747,389	2,403,197	1,165,084	7,075	938,528	163,473	326,513	101,205	2,760,756	31,837,135	29,076,379	9%	
2051	12	20	1,809,447	2,760,756	1,205,517	7,279	1,004,225	169,084	336,068	116,304	3,173,641	32,882,114	29,708,473	10%	
2052	12	20	1,872,093	3,173,641	1,248,678	7,489	1,074,521	174,759	345,937	133,660	3,646,351	33,957,758	30,311,407	11%	
2053	12	20	1,937,065	3,646,351	1,294,684	7,709	1,149,737	180,981	356,255	153,471	4,184,402	35,063,719	30,879,317	12%	
2054	12	20	2,006,311	4,184,402	1,343,638	7,934	1,230,219	187,606	366,868	175,954	4,793,477	36,203,375	31,409,898	13%	
2055	12	20	2,078,343	4,793,477	1,392,929	8,161	1,316,334	194,386	377,695	201,390	5,482,192	37,379,635	31,897,443	15%	
2056	12	20	2,153,340	5,482,192	1,442,322	8,393	1,408,477	201,485	388,813	230,141	6,260,393	38,594,410	32,334,017	16%	
2057	12	20	2,231,622	6,260,393	1,493,013	8,629	1,507,070	208,971	400,185	262,587	7,137,564	39,850,705	32,713,141	18%	

## Alternative Funding on a Closed Group Basis, Table 1(b) (with no Additional Contributions)

Valuation Plan Year End 30-Jun	Number		Total Payroll	Total Assets							Investment Income	Assets (eoy)	Actuarial Accrued Liability	Unfunded Liability	Funded Ratio
	Active	Pay Status		Assets (boy)	Benefit Payments	Expenses	Employer Contributions	Member Contributions	Premium Tax						
									Allocation Contributions						
2017	12	16	\$591,104	\$2,687,005	\$347,120	\$429	\$100,645	\$47,856	\$130,285	\$260,913	\$2,879,155	\$12,003,972	\$9,124,817	24%	
2018	11	17	565,135	2,879,155	385,883	2,644	107,687	41,835	134,652	113,100	2,887,901	12,435,249	9,547,348	23%	
2019	10	17	549,197	2,887,901	397,918	2,689	115,225	40,732	136,710	113,378	2,893,339	12,858,859	9,965,520	23%	
2020	9	18	548,252	2,893,339	411,159	2,735	123,291	40,680	128,202	113,323	2,884,941	13,284,077	10,399,136	22%	
2021	9	18	537,716	2,884,941	431,159	2,781	131,921	39,960	127,083	112,725	2,862,690	13,698,415	10,835,725	21%	
2022	8	18	525,218	2,862,690	459,669	2,828	141,155	39,108	124,666	111,387	2,816,510	14,091,735	11,275,225	20%	
2023	8	19	525,870	2,816,510	494,954	2,874	151,036	39,186	123,896	109,022	2,741,822	14,464,596	11,722,774	19%	
2024	6	20	492,858	2,741,822	533,878	2,922	161,609	36,922	123,888	105,427	2,632,868	14,791,937	12,159,069	18%	
2025	6	20	443,306	2,632,868	580,872	2,969	172,922	33,512	119,662	100,211	2,475,334	15,053,351	12,578,017	16%	
2026	5	20	420,651	2,475,334	606,133	3,016	185,027	31,998	118,083	93,586	2,294,879	15,284,784	12,989,905	15%	
2027	5	20	394,142	2,294,879	636,412	3,061	197,979	30,221	117,563	85,979	2,087,147	15,479,441	13,392,294	13%	
2028	4	21	368,342	2,087,147	666,483	3,105	211,838	28,495	116,466	77,292	1,851,649	15,637,372	13,785,723	12%	
2029	4	21	344,008	1,851,649	689,654	3,147	226,667	26,873	116,423	67,673	1,596,484	15,762,942	14,166,458	10%	
2030	3	21	315,952	1,596,484	712,656	3,186	242,534	24,992	115,359	57,265	1,320,793	15,852,031	14,531,238	8%	
2031	3	21	295,883	1,320,793	729,814	3,222	259,511	23,672	115,148	46,203	1,032,292	15,914,080	14,881,788	6%	
2032	2	21	270,557	1,032,292	752,387	3,255	277,677	21,986	115,303	34,545	726,161	15,940,001	15,213,840	5%	
2033	2	21	241,981	726,161	774,403	3,285	297,114	20,073	115,220	22,208	403,089	15,927,014	15,523,925	3%	
2034	2	20	226,934	403,089	784,302	3,314	317,912	19,109	115,358	9,485	77,337	15,894,053	15,816,716	0%	
2035	2	20	207,504	77,337	801,426	3,342	591,445	17,838	116,617	1,531	0	15,831,832	15,831,832	0%	
2036	1	20	184,887	0	819,677	3,368	689,356	16,346	117,343	0	0	15,736,424	15,736,424	0%	
2037	1	20	157,901	0	837,760	3,391	708,534	14,127	118,490	0	0	15,603,373	15,603,373	0%	
2038	1	20	127,491	0	856,706	3,412	729,609	11,493	119,017	0	0	15,428,030	15,428,030	0%	
2039	0	20	97,132	0	875,133	3,432	749,521	8,786	120,257	0	0	15,209,235	15,209,235	0%	
2040	0	19	65,315	0	893,326	3,449	769,884	5,889	121,002	0	0	14,944,602	14,944,602	0%	
2041	0	19	47,300	0	899,823	3,465	776,704	4,272	122,313	0	0	14,652,277	14,652,277	0%	
2042	0	19	33,577	0	902,724	3,480	779,326	3,053	123,825	0	0	14,337,339	14,337,339	0%	
2043	0	18	23,496	0	902,481	3,494	778,446	2,153	125,376	0	0	14,004,186	14,004,186	0%	
2044	0	18	16,586	0	899,456	3,506	774,370	1,522	127,070	0	0	13,656,755	13,656,755	0%	
2045	0	17	10,968	0	895,026	3,518	768,792	1,020	128,731	0	0	13,296,708	13,296,708	0%	
2046	0	17	6,863	0	889,038	3,529	761,543	652	130,372	0	0	12,925,977	12,925,977	0%	
2047	0	17	4,020	0	881,701	3,539	766,119	382	132,049	264	13,574	12,546,223	12,532,649	0%	
2048	0	16	2,078	13,574	873,277	3,548	819,747	197	133,694	2,065	92,452	12,158,718	12,066,266	1%	
2049	0	16	846	92,452	863,923	3,556	877,129	80	135,330	6,571	244,084	11,764,532	11,520,448	2%	
2050	0	15	0	244,084	853,848	3,563	938,528	0	136,906	14,081	476,188	11,364,356	10,888,168	4%	
2051	0	15	0	476,188	842,736	3,568	1,004,225	0	138,456	24,917	797,481	10,959,505	10,162,024	7%	
2052	0	15	0	797,481	831,139	3,573	1,074,521	0	139,942	39,420	1,216,652	10,550,287	9,333,635	12%	
2053	0	14	0	1,216,652	819,000	3,576	1,149,737	0	141,348	57,945	1,743,106	10,137,079	8,393,973	17%	
2054	0	14	0	1,743,106	806,259	3,576	1,230,219	0	142,648	80,875	2,387,013	9,720,336	7,333,323	25%	
2055	0	13	0	2,387,013	792,844	3,574	1,316,334	0	143,843	108,625	3,159,397	9,300,604	6,141,207	34%	
2056	0	13	0	3,159,397	778,674	3,568	1,408,477	0	144,888	141,648	4,072,167	8,878,534	4,806,367	46%	
2057	0	13	0	4,072,167	763,660	3,558	1,507,070	0	145,750	180,425	5,138,193	8,454,892	3,316,699	61%	

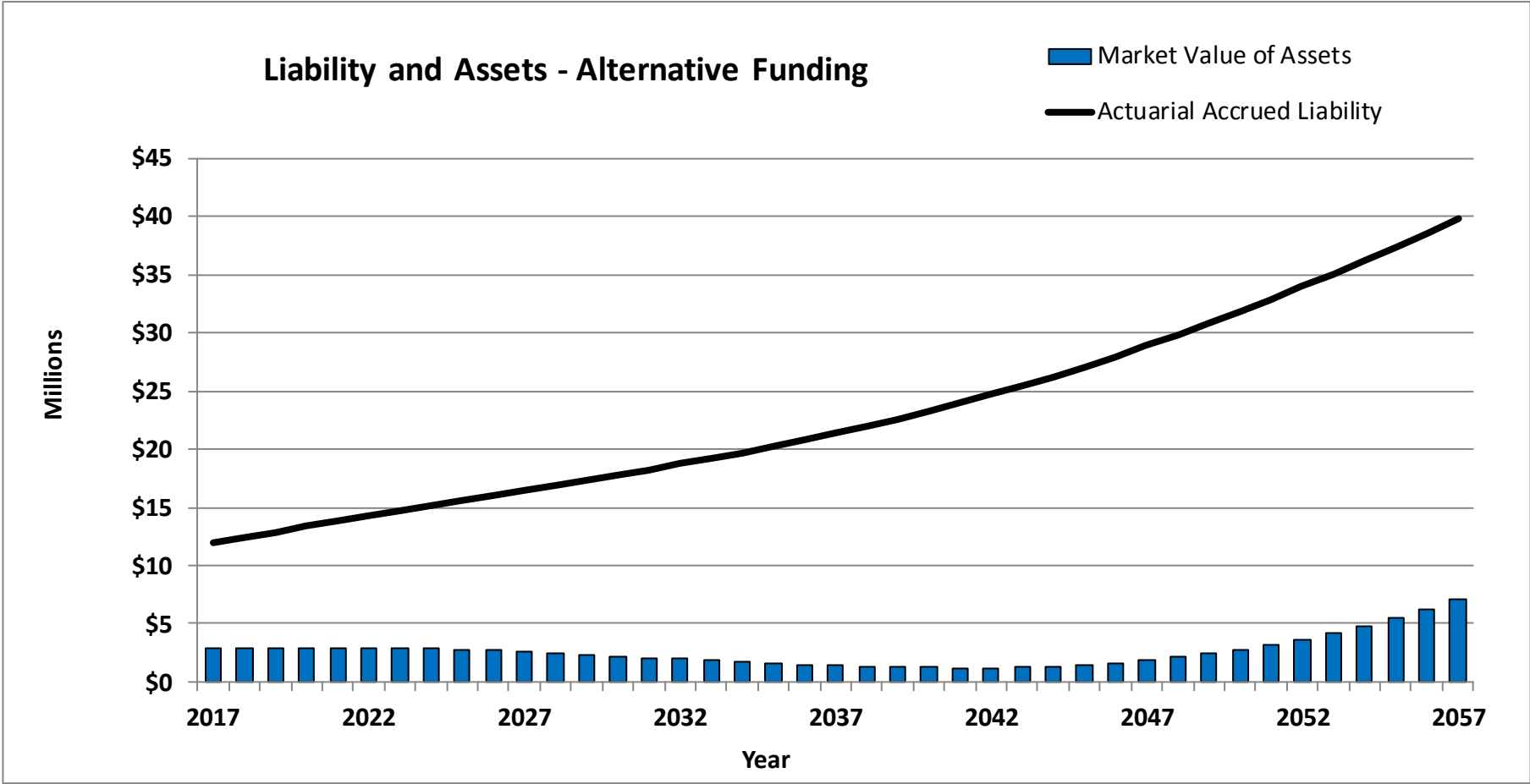
# Alternative Funding on an Open Group Basis, Table 1(c) (with Recommended Contributions starting in PYE 2019)

Valuation Plan Year End	Number		Total Assets										Actuarial Accrued Liability	Unfunded Liability	Funded Ratio
	Pay Status	Total Payroll	Assets (bov)	Benefit Payments	Expenses	Employer Contributions	Member Contributions*	Premium Tax Allocation Contributions	Investment Income	Assets (eoy)					
30-Jun	Active														
2017	12	16	\$591,104	\$2,687,005	\$347,120	\$429	\$100,645	\$47,856	\$130,285	\$260,913	\$2,879,155	\$12,003,972	\$9,124,817	24%	
2018	12	17	565,135	2,879,155	385,883	2,644	107,687	41,835	134,652	113,100	2,887,901	12,435,249	9,547,348	23%	
2019	12	17	590,136	2,887,901	397,918	2,814	164,787	44,911	136,710	114,440	2,948,018	12,882,463	9,934,445	23%	
2020	12	18	617,878	2,948,018	411,316	2,930	176,322	47,517	144,328	117,008	3,018,947	13,348,563	10,329,616	23%	
2021	12	18	633,909	3,018,947	431,723	3,037	188,665	49,297	148,171	119,795	3,090,114	13,820,424	10,730,310	22%	
2022	12	18	659,881	3,090,114	460,755	3,179	201,872	52,197	152,902	122,476	3,155,627	14,295,425	11,139,798	22%	
2023	12	19	691,005	3,155,627	496,690	3,290	216,003	55,145	156,873	124,800	3,208,468	14,770,396	11,561,928	22%	
2024	12	20	685,533	3,208,468	536,357	3,391	231,123	55,502	160,757	126,510	3,242,611	15,219,284	11,976,673	21%	
2025	12	20	702,001	3,242,611	584,215	3,601	247,302	58,676	167,542	127,441	3,255,756	15,644,594	12,388,838	21%	
2026	12	20	728,727	3,255,756	610,577	3,746	264,613	61,801	172,674	127,949	3,268,469	16,074,134	12,805,665	20%	
2027	12	21	746,026	3,268,469	642,239	3,872	283,136	64,178	177,433	128,335	3,275,440	16,499,077	13,223,637	20%	
2028	12	21	776,502	3,275,440	673,873	4,030	302,956	67,946	183,234	128,567	3,280,239	16,927,934	13,647,695	19%	
2029	12	21	799,261	3,280,239	698,744	4,152	324,163	70,826	188,157	128,838	3,289,327	17,361,321	14,071,994	19%	
2030	12	21	827,840	3,289,327	723,527	4,296	346,854	74,483	193,624	129,338	3,305,803	17,802,000	14,496,197	19%	
2031	12	21	860,884	3,305,803	742,619	4,420	371,134	78,303	198,666	130,273	3,337,140	18,258,992	14,921,852	18%	
2032	12	21	887,841	3,337,140	767,325	4,536	397,113	81,707	203,556	131,714	3,379,369	18,724,452	15,345,083	18%	
2033	12	21	922,829	3,379,369	791,487	4,674	424,911	86,040	209,376	133,673	3,437,207	19,203,702	15,766,495	18%	
2034	12	21	968,185	3,437,207	803,823	4,796	454,655	90,938	214,730	136,532	3,525,443	19,715,702	16,190,259	18%	
2035	12	21	1,002,359	3,525,443	823,674	4,895	486,481	94,874	219,804	140,475	3,638,507	20,249,304	16,610,797	18%	
2036	12	20	1,046,991	3,638,507	844,691	5,025	520,535	100,036	225,848	145,475	3,780,684	20,810,313	17,029,629	18%	
2037	12	20	1,080,544	3,780,684	865,833	5,128	556,972	103,448	231,105	151,635	3,952,883	21,392,551	17,439,668	18%	
2038	12	20	1,122,478	3,952,883	888,136	5,262	595,960	107,491	237,635	159,060	4,159,631	21,999,666	17,840,035	19%	
2039	12	20	1,155,215	4,159,631	910,588	5,377	637,677	110,658	243,595	167,889	4,403,486	22,623,919	18,220,433	19%	
2040	12	20	1,199,741	4,403,486	936,366	5,526	682,314	115,102	250,771	178,244	4,688,025	23,270,787	18,582,762	20%	
2041	12	20	1,250,310	4,688,025	952,452	5,652	730,076	119,701	257,239	190,470	5,027,406	23,955,457	18,928,051	21%	
2042	12	20	1,301,871	5,027,406	966,025	5,778	781,181	124,364	263,765	205,008	5,429,922	24,679,882	19,249,960	22%	
2043	12	20	1,355,948	5,429,922	980,003	5,909	835,864	129,078	270,412	222,137	5,901,501	25,446,082	19,544,581	23%	
2044	12	20	1,409,438	5,901,501	995,251	6,043	894,374	133,477	277,253	242,076	6,447,388	26,253,718	19,806,330	25%	
2045	12	19	1,462,123	6,447,388	1,013,361	6,190	956,980	138,008	284,474	265,023	7,072,321	27,098,116	20,025,795	26%	
2046	12	19	1,516,796	7,072,321	1,036,827	6,352	1,023,969	142,935	292,212	291,130	7,779,388	27,977,660	20,198,272	28%	
2047	12	19	1,573,047	7,779,388	1,064,672	6,520	1,095,647	147,960	300,231	320,536	8,572,570	28,892,493	20,319,923	30%	
2048	12	19	1,630,523	8,572,570	1,095,068	6,696	1,172,342	152,983	308,617	353,442	9,458,191	29,841,941	20,383,750	32%	
2049	12	19	1,688,092	9,458,191	1,128,264	6,880	1,254,406	158,072	317,323	390,104	10,442,952	30,823,998	20,381,046	34%	
2050	12	19	1,747,389	10,442,952	1,165,084	7,075	1,342,214	163,473	326,513	430,790	11,533,782	31,837,135	20,303,353	36%	
2051	12	20	1,809,447	11,533,782	1,205,517	7,279	1,436,169	169,084	336,068	475,779	12,738,086	32,882,114	20,144,028	39%	
2052	12	20	1,872,093	12,738,086	1,248,678	7,489	1,536,701	174,759	345,937	525,391	14,064,707	33,957,758	19,893,051	41%	
2053	12	20	1,937,065	14,064,707	1,294,684	7,709	1,644,270	180,981	356,255	579,999	15,523,819	35,063,719	19,539,900	44%	
2054	12	20	2,006,311	15,523,819	1,343,638	7,934	1,759,369	187,606	366,868	640,010	17,126,100	36,203,375	19,077,275	47%	
2055	12	20	2,078,343	17,126,100	1,392,929	8,161	1,882,525	194,386	377,695	705,907	18,885,523	37,379,635	18,494,112	51%	
2056	12	20	2,153,340	18,885,523	1,442,322	8,393	2,014,302	201,485	388,813	778,272	20,817,680	38,594,410	17,776,730	54%	
2057	12	20	2,231,622	20,817,680	1,493,013	8,629	2,155,303	208,971	400,185	857,716	22,938,213	39,850,705	16,912,492	58%	

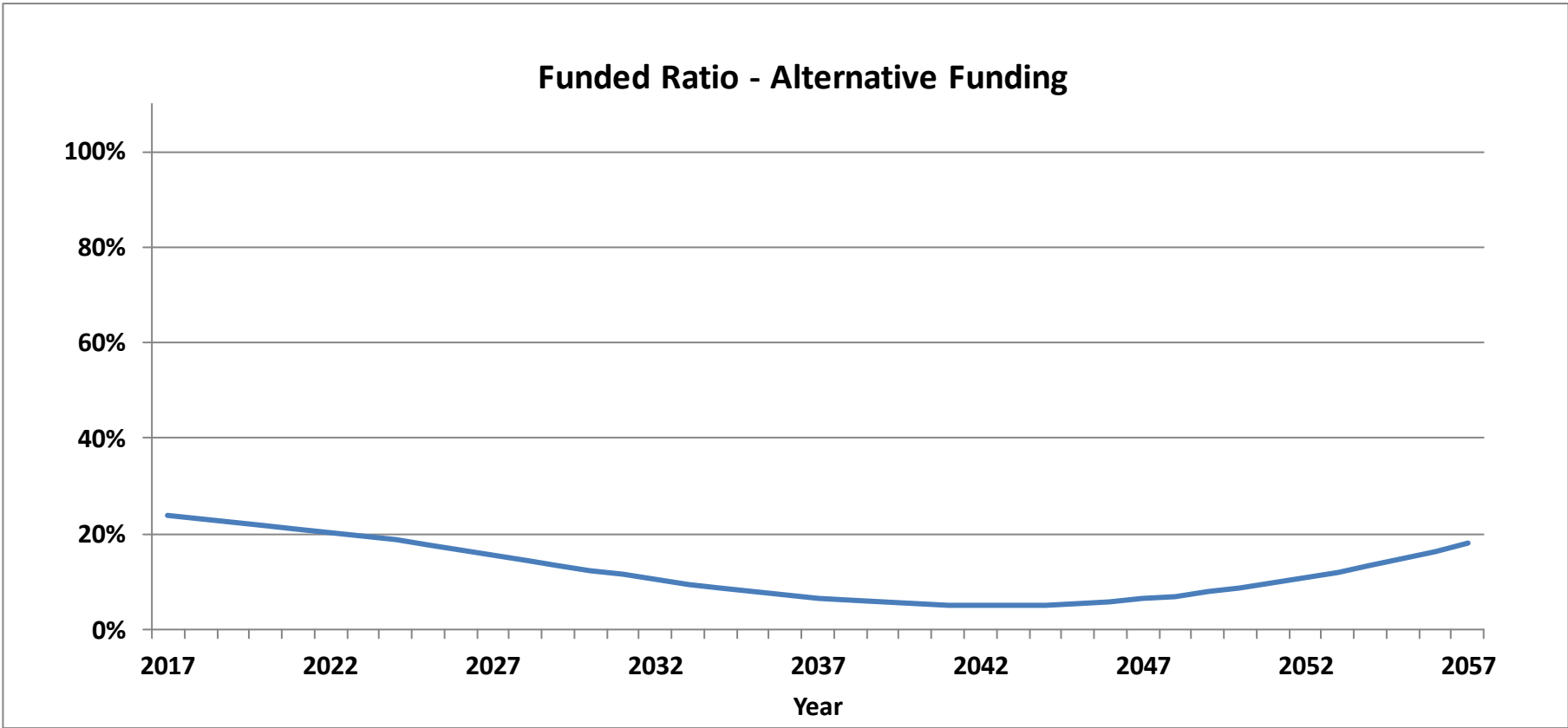
# Alternative Funding on an Closed Group Basis, Table 1(d) (with Recommended Contributions starting in PYE 2019)

Valuation Plan	Total Assets																
	Number		Total Payroll	Assets			Employer		Member		Premium Tax		Investment Income	Assets (eoy)	Actuarial		Funded Ratio
	Active	Pay Status		(boy)	Benefit Payments	Expenses	Contributions	Contributions*	Allocation Contributions	Accrued Liability	Unfunded Liability						
Year End 30-Jun																	
2017	12	16	\$591,104	\$2,687,005	\$347,120	\$429	\$100,645	\$47,856	\$130,285	\$260,913	\$2,879,155	\$12,003,972	\$9,124,817	24%			
2018	11	17	565,135	2,879,155	385,883	2,644	107,687	41,835	134,652	113,100	2,887,901	12,435,249	9,547,348	23%			
2019	10	17	549,197	2,887,901	397,918	2,689	164,787	40,732	136,710	114,360	2,943,883	12,858,859	9,914,976	23%			
2020	9	18	548,252	2,943,883	411,159	2,735	176,322	40,680	128,202	116,395	2,991,588	13,284,077	10,292,489	23%			
2021	9	18	537,716	2,991,588	431,159	2,781	188,665	39,960	127,083	118,114	3,031,470	13,698,415	10,666,945	22%			
2022	8	18	525,218	3,031,470	459,669	2,828	201,872	39,108	124,666	119,341	3,053,961	14,091,735	11,037,774	22%			
2023	8	19	525,870	3,053,961	494,954	2,874	216,003	39,186	123,896	119,807	3,055,025	14,464,596	11,409,571	21%			
2024	6	20	492,858	3,055,025	533,878	2,922	231,123	36,922	123,888	119,332	3,029,490	14,791,937	11,762,447	20%			
2025	6	20	443,306	3,029,490	580,872	2,969	247,302	33,512	119,662	117,549	2,963,674	15,053,351	12,089,677	20%			
2026	5	20	420,651	2,963,674	606,133	3,016	264,613	31,998	118,083	114,696	2,883,915	15,284,784	12,400,869	19%			
2027	5	20	394,142	2,883,915	636,412	3,061	283,136	30,221	117,563	111,227	2,786,588	15,479,441	12,692,853	18%			
2028	4	21	368,342	2,786,588	666,483	3,105	302,956	28,495	116,466	107,074	2,671,990	15,637,372	12,965,382	17%			
2029	4	21	344,008	2,671,990	689,654	3,147	324,163	26,873	116,423	102,417	2,549,065	15,762,942	13,213,877	16%			
2030	3	21	315,952	2,549,065	712,656	3,186	346,854	24,992	115,359	97,435	2,417,864	15,852,031	13,434,167	15%			
2031	3	21	295,883	2,417,864	729,814	3,222	371,134	23,672	115,148	92,297	2,287,080	15,914,080	13,627,000	14%			
2032	2	21	270,557	2,287,080	752,387	3,255	397,113	21,986	115,303	87,102	2,152,942	15,940,001	13,787,059	14%			
2033	2	21	241,981	2,152,942	774,403	3,285	424,911	20,073	115,220	81,810	2,017,269	15,927,014	13,909,745	13%			
2034	2	20	226,934	2,017,269	784,302	3,314	454,655	19,109	115,358	76,760	1,895,535	15,894,053	13,998,518	12%			
2035	2	20	207,504	1,895,535	801,426	3,342	486,481	17,838	116,617	72,181	1,783,884	15,831,832	14,047,948	11%			
2036	1	20	184,887	1,783,884	819,677	3,368	520,535	16,346	117,343	68,012	1,683,075	15,736,424	14,053,349	11%			
2037	1	20	157,901	1,683,075	837,760	3,391	556,972	14,127	118,490	64,321	1,595,834	15,603,373	14,007,539	10%			
2038	1	20	127,491	1,595,834	856,706	3,412	595,960	11,493	119,017	61,187	1,523,372	15,428,030	13,904,658	10%			
2039	0	20	97,132	1,523,372	875,133	3,432	637,677	8,786	120,257	58,720	1,470,248	15,209,235	13,738,987	10%			
2040	0	19	65,315	1,470,248	893,326	3,449	682,314	5,889	121,002	57,076	1,439,754	14,944,602	13,504,848	10%			
2041	0	19	47,300	1,439,754	899,823	3,465	730,076	4,272	122,313	56,667	1,449,793	14,652,277	13,202,484	10%			
2042	0	19	33,577	1,449,793	902,724	3,480	781,181	3,053	123,825	58,028	1,509,676	14,337,339	12,827,663	11%			
2043	0	18	23,496	1,509,676	902,481	3,494	835,864	2,153	125,376	61,524	1,628,618	14,004,186	12,375,568	12%			
2044	0	18	16,586	1,628,618	899,456	3,506	894,374	1,522	127,070	67,521	1,816,143	13,656,755	11,840,612	13%			
2045	0	17	10,968	1,816,143	895,026	3,518	956,980	1,020	128,731	76,372	2,080,703	13,296,708	11,216,005	16%			
2046	0	17	6,863	2,080,703	889,038	3,529	1,023,969	652	130,372	88,426	2,431,555	12,925,977	10,494,422	19%			
2047	0	17	4,020	2,431,555	881,701	3,539	1,095,647	382	132,049	104,052	2,878,445	12,546,223	9,667,778	23%			
2048	0	16	2,078	2,878,445	873,277	3,548	1,172,342	197	133,694	123,642	3,431,495	12,158,718	8,727,223	28%			
2049	0	16	846	3,431,495	863,923	3,556	1,254,406	80	135,330	147,604	4,101,437	11,764,532	7,663,095	35%			
2050	0	15	0	4,101,437	853,848	3,563	1,342,214	0	136,906	176,370	4,899,516	11,364,356	6,464,840	43%			
2051	0	15	0	4,899,516	842,736	3,568	1,436,169	0	138,456	210,405	5,838,241	10,959,505	5,121,264	53%			
2052	0	15	0	5,838,241	831,139	3,573	1,536,701	0	139,942	250,203	6,930,375	10,550,287	3,619,912	66%			
2053	0	14	0	6,930,375	819,000	3,576	1,644,270	0	141,348	296,287	8,189,704	10,137,079	1,947,375	81%			
2054	0	14	0	8,189,704	806,259	3,576	1,759,369	0	142,648	349,218	9,631,104	9,720,336	89,232	99%			
2055	0	13	0	9,631,104	792,844	3,574	3,576	0	90,997	371,345	9,300,604	9,300,604	0	100%			
2056	0	13	0	9,300,604	778,674	3,568	3,569	0	0	356,603	8,878,534	8,878,534	0	100%			
2057	0	13	0	8,878,534	763,660	3,558	3,558	0	0	340,018	8,454,891	8,454,892	0	100%			

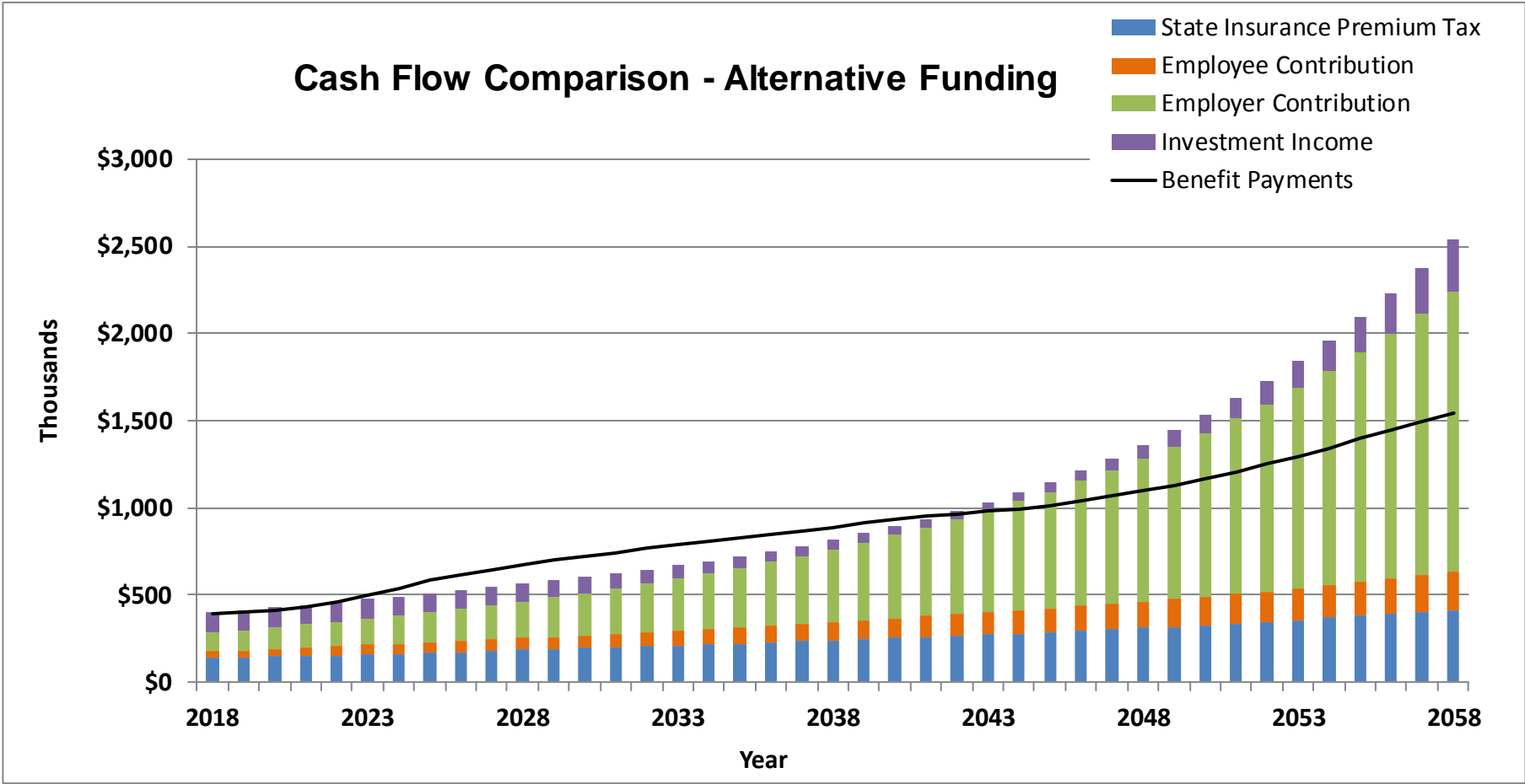
# Open Group Actuarial Projections – Alternative Funding, Graph 2 (with No Additional Contributions)



# Open Group Actuarial Projections – Alternative Funding, Graph 3 (with No Additional Contributions)



# Open Group Actuarial Projections – Alternative Funding, Graph 4 (with No Additional Contributions)





**SECTION III**

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**FUNDING POLICY CHOICES**

# Actuarial Projections –Alternative/Optional/Conservation Funding

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## 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 is only 24% as of June 30, 2017, and projected to decline significantly to 5% as of June 30, 2040, we strongly recommend that the sponsor makes additional contributions in excess of the statutory minimum under either the Alternative or 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	\$115,225	19.5%	NA	NA
Optional	\$658,600	119.9%	\$4,299	10.5%
Conservation	\$231,403	42.1%	\$4,299	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 \$107,687 in fiscal year end 2018 to \$1,507,070 in fiscal year end 2057. In fiscal year end 2057, the plan is projected to be 18% 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 \$115,225 to \$658,600. However, over the 40-year projection period, total employer contributions to both the local plan and the statewide plan are projected to decrease from \$662,899 in fiscal year end 2019 to \$363,220 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 \$115,225 to \$231,403. During the 35-year projection period, total employer contributions to both the local plan and the statewide plan are projected to increase from \$235,702 in fiscal year end 2019 to \$700,228 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 significantly 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 significantly 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**

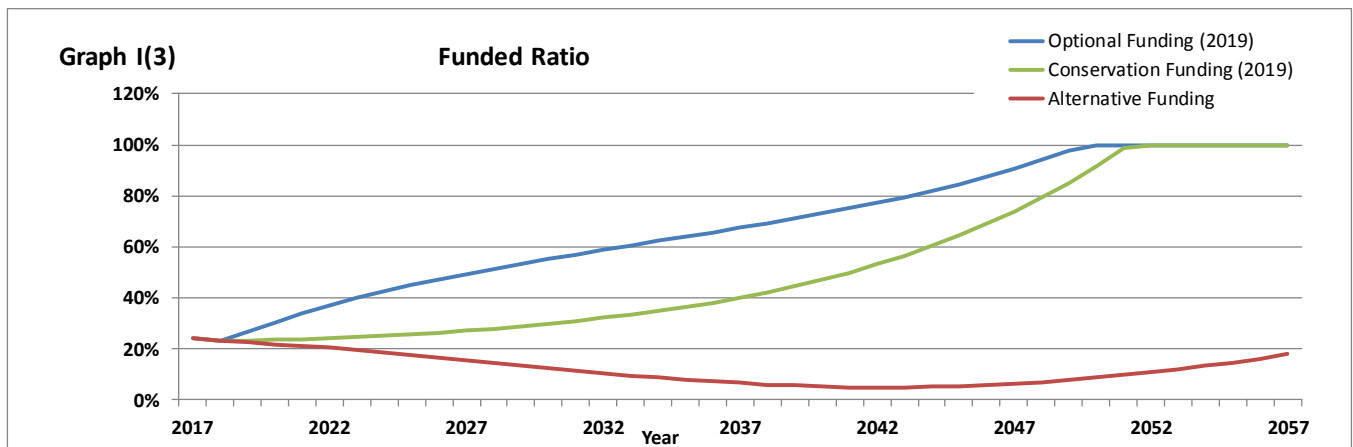
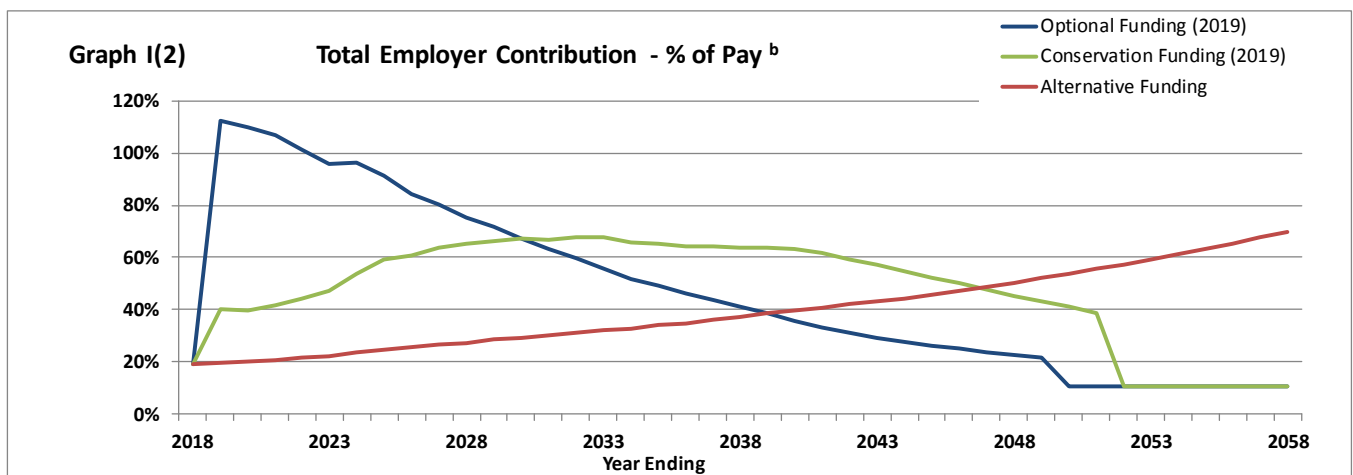
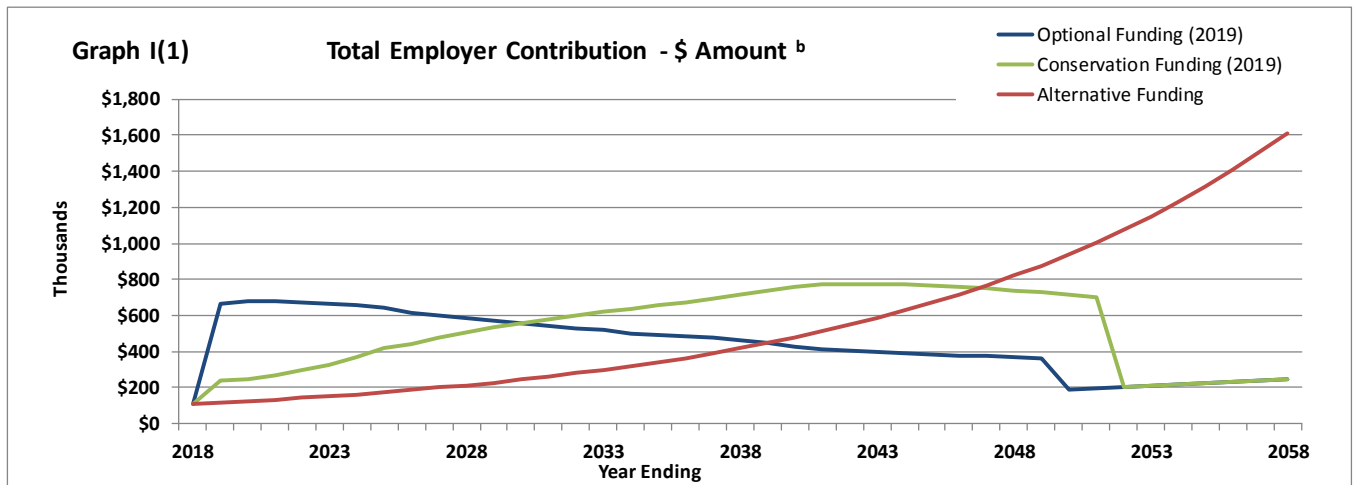
Under Scenario II, the plan sponsor is assumed to make contributions under the Alternative funding policy in future years, until the first year that either the Optional or Conservation policy produces a lower contribution. Under this assumption, the employer contributions under the Optional funding policy are not projected to be lower than contributions under the Alternative funding policy. In plan year end 2050, the employer contributions under the Conservation funding policy of \$915,753 are projected to be lower than contributions under the Alternative funding policy of \$938,528.

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 2050. After 2050, the funded ratio under the Conservation funding policy increases at a slightly 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

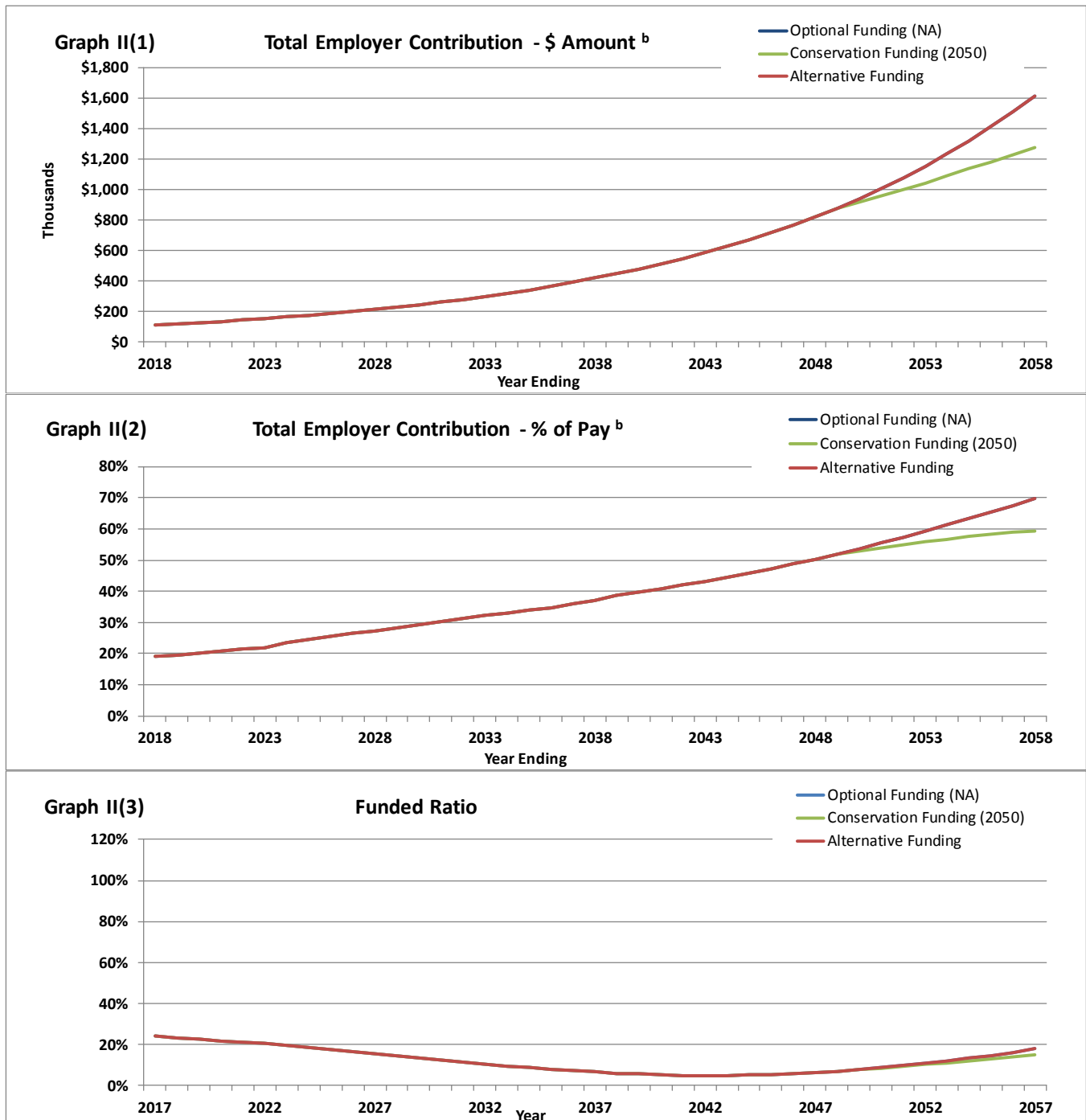


<sup>a</sup> Assumes Sponsor elects either the Optional funding policy or Conservation funding policy in fiscal year end June 30, 2019, and makes the newly elected contribution in fiscal year end June 30, 2019.

<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

	<b>July 1, 2016</b>	<b>July 1, 2017</b>
Valuation Date		
Valuation Interest Rate	4.50%	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>		
	<b>July 1, 2016</b>	<b>July 1, 2017</b>
Actuarial Valuation Date		
1. Market Value of Assets	\$2,687,005	\$2,879,155
2. Actuarial Accrued Liability	\$10,666,776	\$12,003,972
3. Unfunded Actuarial Accrued Liability (2 - 1)	\$7,979,771	\$9,124,817
4. Funded Ratio (1/2)	25%	24%
5. Expected Payroll	\$591,104	\$565,135
6. UAAL as Percentage of Covered Payroll (3/5)	1,350%	1,615%
<b>Schedule of Employer Contributions <sup>c</sup></b>		
	<b>FYE 2017</b>	<b>FYE 2018</b>
1. Actuarially Determined Contribution		
(a) Employer Normal Cost	\$264,175	\$298,550
(b) Amortization of Unfunded Actuarial Accrued Liability	\$360,756	\$407,323
(c) Actuarially Determined Contribution (ADC) (a + b)	\$624,931	\$705,873
2. Employer Contribution <sup>b</sup>	\$100,645	\$107,687
3. Premium Tax Allocation	\$130,285	\$134,652
4. Percentage of ADC Contributed [ (2 + 3)/1(c)]	37%	34%

<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 Beginning of Year	\$2,812,016	\$2,687,005
Adjustment to Market Value of Assets at Beginning of Year	\$0	\$0
Market Value of Assets Beginning of Year	\$2,812,016	\$2,687,005
1. Revenue During Fiscal Year		
(a) Employee Contribution	\$44,131	\$47,856
(b) Governmental Contribution		
(i) From Local Government	\$94,060	\$100,645
(ii) From State Government	\$124,903	\$130,285
(iii) Reallocation from State Government	\$0	\$0
(iv) Total	\$218,963	\$230,930
(c) Earnings on Investments		
(i) Net Appreciation/(Depreciation)	(\$83,975)	\$222,406
(ii) Bond Interest	\$19,232	\$16,157
(iii) Dividends	\$41,970	\$33,832
(iv) Net Realized Gain (Loss) on Sale/Exchange	\$525	\$5,714
(v) Other	\$0	\$0
(vi) Less Investment Expense	(\$17,942)	(\$17,196)
(vii) Total	(\$40,190)	\$260,913
(d) Other Revenue	\$2,930	\$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))	\$225,834	\$539,699
2. Expenditures During Fiscal Year		
(a) Benefits Paid	\$350,586	\$347,120
(b) Withdrawals	\$0	\$0
(c) Administrative Expenses	\$259	\$0
(d) Payable Benefits and Withdrawals	\$0	\$0
(e) Payable Administrative Expenses	\$0	\$429
(f) Total Expenditures (sum of (a) through (e))	\$350,845	\$347,549
B. Market Value of Assets End of Year		
[A + 1(g) - 2(f)]	\$2,687,005	\$2,879,155
C. Approximate Return on Assets	(1.39)%	9.84%

<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	\$263,610	10%	\$253,643	9%
2. Government Securities				
(a) US Treasury Bills, Notes and Bonds	\$239,497		\$178,206	
(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) )	\$239,497	9%	\$178,206	6%
3. Corporate Fixed Income				
(a) US Bonds	\$266,566		\$287,471	
(b) US Mortgage or other Asset Backed Securities	\$0		\$0	
(c) US Mutual Fund Shares (Bonds)	\$0		\$193,220	
(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) )	\$266,566	10%	\$480,691	16%
4. Corporate Equity				
(a) US Equity	\$242,957		\$76,336	
(b) US Mutual Fund Shares (Equity)	\$0		\$0	
(c) US Exchange Traded Funds (Equity)	\$716,533		\$823,768	
(d) International Equity	\$564,946		\$634,046	
(e) International Mutual Fund Shares (Equity)	\$0		\$0	
(f) International Exchange Traded Funds (Equity)	\$0		\$8,544	
(g) Total Corporate Equity (sum of (a) through (f) )	\$1,524,436	57%	\$1,542,694	54%
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	\$392,896		\$423,921	
(e) Total Alternative Investments (sum of (a) through (d) )	\$392,896	14%	\$423,921	15%
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>\$2,687,005</b>		<b>\$2,879,155</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>13</b>	<b>11</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>29</b>
New Actives:						<b>0</b>
Returned to Actives Status:						<b>0</b>
Data Corrections/Other Changes:						<b>0</b>
Vested Terminations:						<b>0</b>
Non-Vested Terminations:	(1)					<b>(1)</b>
Disabled:						<b>0</b>
Retirements:						<b>0</b>
Deaths with Beneficiary:						<b>0</b>
Deaths w/o Beneficiary:						<b>0</b>
Expired Annuity or Stop Payment:						<b>0</b>
Net Changes:	(1)	0	0	0	0	<b>(1)</b>
<b>Total Participants June 30, 2017:</b>	<b>12</b>	<b>11</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>28</b>

## Actuarial Valuation Data as of July 1, 2017

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

Attained Age	Years of Service to Valuation Date									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											\$ 0
25-29		1								1	\$ 42,589
30-34		1		1						2	\$ 95,732
35-39				1						1	\$ 41,042
40-44			1		1	2				4	\$ 202,494
45-49				1		3				4	\$ 197,301
50-54											\$ 0
55-59											\$ 0
60-64											\$ 0
65-69											\$ 0
Over 70											\$ 0
<b>Totals</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>\$ 579,157</b>
<b>Averages</b> _____											
Age: 41.0 years											
Service: 14.8 years											
Annual Pay: \$48,263 <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	13	12
Total Annual Pay	\$584,131	\$579,157
Average Age	39.2	41.0
Average Service	12.8	14.8

Inactive Participants	July 1, 2016		July 1, 2017 <sup>a</sup>	
Type	No.	Annual Benefit	No.	Annual Benefit
Retirees	11	\$282,621	11	\$285,609
Survivors	2	\$27,208	2	\$27,562
Disabled Members	2	\$45,291	2	\$45,722
Deferred Vested Members	1	\$29,616	1	\$29,616

<sup>a</sup>Data provided includes 1 non-vested member with an accumulated contributions balance of \$10,148.

**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	\$2,879,155
Liabilities using a 5.50% discount rate	\$9,576,639
Funded Ratio	30%
Expected Benefit Payments	\$385,883
Liquidity Ratio	7.46
Equity Exposure	54%
Projected Funded Ratio after 15 years	19%

Discount Rate <sup>a</sup>

4.00%

<sup>a</sup> Recommended discount rate of 4.00% due to declining projected funded ratio over the next 30 years.



## 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 Princeton Firemen’s Pension and Relief Fund reported 13 eligible active members and 15 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 \$136,710 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; border-bottom: 1px solid black;">Years of Service</th> <th style="text-align: center; border-bottom: 1px solid black;">Increase</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>	Years of Service	Increase	1	20.00%	2	6.50%	3	3.50%	4	2.75%	5-9	2.50%	10-29	2.00%	30-34	1.25%	after 34 years of service	0.00%
Years of Service	Increase																		
1	20.00%																		
2	6.50%																		
3	3.50%																		
4	2.75%																		
5-9	2.50%																		
10-29	2.00%																		
30-34	1.25%																		
after 34 years of service	0.00%																		
Post-retirement COLA	2.75% on first \$15,000 of Annual Benefit and on the accumulated supplemental pension amounts for prior years. Assumed to be payable to all members receiving payments.																		
Increase in State Insurance Premium Tax Allocation	2.75% on and after year 1																		
Cost Method	Entry-Age-Normal, Level-Percentage-of-Pay																		
<p><i>Amortization Policies:</i></p> <p>Alternative Plans and former Alternative Plans that selected the Conservation Policy</p> <p>Standard Plans and former Standard Plans that selected the Optional Policy</p> <p>Former Alternative Plans that selected the Optional Policy</p>	<p>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).</p> <p>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)</p> <p>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)</p>																		

## 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; border-bottom: 1px solid black;"><u>Age</u></th> <th style="text-align: right; border-bottom: 1px solid black;"><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; border-bottom: 1px solid black;"><u>Age</u></th> <th style="text-align: right; border-bottom: 1px solid black;"><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; border-bottom: 1px solid black;"><u>Age</u></th> <th style="text-align: right; border-bottom: 1px solid black;"><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	Plan year 2018 administrative expenses assumed to be equal to 15% of all reported 2017 expenses. Future expenses assumed to increase by the general inflation assumption.
Refunds Paid	Assumes non-vested inactive members as of July 1, 2017, with accumulated member contribution balances will receive a refund of their contributions during plan year end June 30, 2018.
Data Adjustments and Assumptions	None
Child Beneficiaries	Future survivor widow benefits are loaded by 12% to estimate impact of benefits provided to survivor children. The load assumes 90% of members are married with two children at time of death, and benefits for each child are paid for approximately 8 years.
General Projection Methodology	<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

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**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)

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**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											Actuarial Accrued Liability	Unfunded Liability	Funded Ratio
	Year End 30-Jun	Number		Assets (bo)	Benefit Payments	Expenses	Employer Contribs.	Member Contribs.	Premium Tax		Assets (eoy)			
		Pay	Active Status						Allocation	Investment Income				
2017	12	16	\$2,687,005	\$347,120	\$429	\$100,645	\$47,856	\$130,285	\$260,913	\$2,879,155	\$12,003,972	\$9,124,817	24%	
2018	11	17	2,879,155	385,883	2,644	107,687	41,835	134,652	113,100	2,887,901	12,435,249	9,547,348	23%	
2019	10	17	2,887,901	397,918	2,689	658,600	40,732	136,710	124,139	3,447,475	12,858,859	9,411,384	27%	
2020	9	18	3,447,475	411,159	2,735	671,173	40,680	144,328	146,658	4,036,420	13,284,077	9,247,657	30%	
2021	9	18	4,036,420	431,159	2,781	666,738	39,960	148,171	169,793	4,627,142	13,698,415	9,071,273	34%	
2022	8	18	4,627,142	459,669	2,828	655,381	39,108	152,902	192,708	5,204,744	14,091,735	8,886,991	37%	
2023	8	19	5,204,744	494,954	2,874	643,584	39,186	156,873	214,959	5,761,518	14,464,596	8,703,078	40%	
2024	6	20	5,761,518	533,878	2,922	638,988	36,922	160,757	236,399	6,297,784	14,791,937	8,494,153	43%	
2025	6	20	6,297,784	580,872	2,969	614,140	33,512	167,542	256,493	6,785,630	15,053,351	8,267,721	45%	
2026	5	20	6,785,630	606,133	3,016	580,834	31,998	172,674	274,918	7,236,904	15,284,784	8,047,880	47%	
2027	5	20	7,236,904	636,412	3,061	561,398	30,221	177,433	292,042	7,658,524	15,479,441	7,820,917	49%	
2028	4	21	7,658,524	666,483	3,105	541,628	28,495	183,234	308,000	8,050,292	15,637,372	7,587,080	51%	
2029	4	21	8,050,292	689,654	3,147	523,898	26,873	188,157	322,926	8,419,345	15,762,942	7,343,597	53%	
2030	3	21	8,419,345	712,656	3,186	504,470	24,992	193,624	336,917	8,763,507	15,852,031	7,088,524	55%	
2031	3	21	8,763,507	729,814	3,222	482,625	23,672	198,666	349,984	9,085,419	15,914,080	6,828,661	57%	
2032	2	21	9,085,419	752,387	3,255	465,007	21,986	203,556	362,128	9,382,454	15,940,001	6,557,547	59%	
2033	2	21	9,382,454	774,403	3,285	444,600	20,073	209,376	373,246	9,652,061	15,927,014	6,274,953	61%	
2034	2	20	9,652,061	784,302	3,314	422,878	19,109	214,730	383,490	9,904,651	15,894,053	5,989,402	62%	
2035	2	20	9,904,651	801,426	3,342	408,245	17,838	219,804	393,039	10,138,809	15,831,832	5,693,023	64%	
2036	1	20	10,138,809	819,677	3,368	392,380	16,346	225,848	401,820	10,352,158	15,736,424	5,384,266	66%	
2037	1	20	10,352,158	837,760	3,391	375,890	14,127	231,105	409,729	10,541,857	15,603,373	5,061,516	68%	
2038	1	20	10,541,857	856,706	3,412	355,419	11,493	237,635	416,613	10,702,898	15,428,030	4,725,132	69%	
2039	0	20	10,702,898	875,133	3,432	333,368	8,786	243,595	422,317	10,832,400	15,209,235	4,376,835	71%	
2040	0	19	10,832,400	893,326	3,449	309,844	5,889	250,771	426,756	10,928,885	14,944,602	4,015,717	73%	
2041	0	19	10,928,885	899,823	3,465	286,174	4,272	257,239	430,113	11,003,395	14,652,277	3,648,882	75%	
2042	0	19	11,003,395	902,724	3,480	268,796	3,053	263,765	432,797	11,065,602	14,337,339	3,271,737	77%	
2043	0	18	11,065,602	902,481	3,494	254,040	2,153	270,412	435,111	11,121,343	14,004,186	2,882,843	79%	
2044	0	18	11,121,343	899,456	3,506	241,091	1,522	277,253	437,267	11,175,514	13,656,755	2,481,241	82%	
2045	0	17	11,175,514	895,026	3,518	229,477	1,020	284,474	439,425	11,231,366	13,296,708	2,065,342	84%	
2046	0	17	11,231,366	889,038	3,529	218,163	652	292,212	441,699	11,291,525	12,925,977	1,634,452	87%	
2047	0	17	11,291,525	881,701	3,539	207,307	382	300,231	444,188	11,358,394	12,546,223	1,187,829	91%	
2048	0	16	11,358,394	873,277	3,548	196,665	197	308,617	446,982	11,434,031	12,158,718	724,687	94%	
2049	0	16	11,434,031	863,923	3,556	186,059	80	317,323	450,152	11,520,167	11,764,532	244,365	98%	
2050	0	15	11,520,167	853,848	3,563	3,962	0	248,805	448,833	11,364,356	11,364,356	0	100%	
2051	0	15	11,364,356	842,736	3,568	3,569	0	0	437,885	10,959,505	10,959,505	0	100%	
2052	0	15	10,959,505	831,139	3,573	3,573	0	0	421,920	10,550,287	10,550,287	0	100%	
2053	0	14	10,550,287	819,000	3,576	3,575	0	0	405,792	10,137,079	10,137,079	0	100%	
2054	0	14	10,137,079	806,259	3,576	3,576	0	0	389,516	9,720,336	9,720,336	0	100%	
2055	0	13	9,720,336	792,844	3,574	3,574	0	0	373,112	9,300,604	9,300,604	0	100%	
2056	0	13	9,300,604	778,674	3,568	3,569	0	0	356,603	8,878,535	8,878,534	0	100%	
2057	0	13	8,878,535	763,660	3,558	3,558	0	0	340,018	8,454,892	8,454,892	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	\$565,135	\$0	\$565,135	\$41,835	\$337,741	\$295,906	\$496,760	\$136,710	\$360,050	\$2,644	\$658,600	\$0
2019	549,197	40,939	590,136	40,732	325,588	284,856	527,956	144,328	383,628	2,689	671,173	4,299
2020	548,252	69,626	617,878	40,680	323,742	283,062	529,112	148,171	380,941	2,735	666,738	7,311
2021	537,716	96,193	633,909	39,960	316,384	276,424	529,078	152,902	376,176	2,781	655,381	10,100
2022	525,218	134,664	659,881	39,108	308,051	268,943	528,686	156,873	371,813	2,828	643,584	14,140
2023	525,870	165,135	691,005	39,186	307,846	268,660	528,211	160,757	367,454	2,874	638,988	17,339
2024	492,858	192,674	685,533	36,922	287,514	250,592	528,168	167,542	360,626	2,922	614,140	20,231
2025	443,306	258,695	702,001	33,512	257,026	223,514	527,025	172,674	354,351	2,969	580,834	27,163
2026	420,651	308,076	728,727	31,998	242,613	210,615	525,199	177,433	347,766	3,016	561,398	32,348
2027	394,142	351,884	746,026	30,221	227,795	197,574	524,226	183,234	340,992	3,061	541,628	36,948
2028	368,342	408,160	776,502	28,495	214,174	185,679	523,271	188,157	335,114	3,105	523,898	42,857
2029	344,008	455,252	799,261	26,873	199,447	172,574	522,373	193,624	328,749	3,147	504,470	47,801
2030	315,952	511,888	827,840	24,992	181,737	156,745	521,361	198,666	322,695	3,186	482,625	53,748
2031	295,883	565,001	860,884	23,672	168,909	145,237	520,105	203,556	316,549	3,222	465,007	59,325
2032	270,557	617,283	887,841	21,986	153,591	131,605	519,116	209,376	309,740	3,255	444,600	64,815
2033	241,981	680,848	922,829	20,073	136,454	116,381	517,942	214,730	303,212	3,285	422,878	71,489
2034	226,934	741,251	968,185	19,109	127,275	108,166	516,568	219,804	296,764	3,314	408,245	77,831
2035	207,504	794,855	1,002,359	17,838	116,996	99,158	515,728	225,848	289,880	3,342	392,380	83,460
2036	184,887	862,105	1,046,991	16,346	105,149	88,803	514,823	231,105	283,718	3,368	375,890	90,521
2037	157,901	922,643	1,080,544	14,127	90,060	75,933	513,729	237,635	276,094	3,391	355,419	96,878
2038	127,491	994,987	1,122,478	11,493	72,754	61,261	512,290	243,595	268,695	3,412	333,368	104,474
2039	97,132	1,058,083	1,155,215	8,786	55,453	46,667	510,517	250,771	259,746	3,432	309,844	111,099
2040	65,315	1,134,426	1,199,741	5,889	37,273	31,384	508,580	257,239	251,341	3,449	286,174	119,115
2041	47,300	1,203,011	1,250,310	4,272	27,000	22,728	506,368	263,765	242,603	3,465	268,796	126,316
2042	33,577	1,268,294	1,301,871	3,053	19,188	16,135	504,837	270,412	234,425	3,480	254,040	133,171
2043	23,496	1,332,452	1,355,948	2,153	13,438	11,285	503,565	277,253	226,312	3,494	241,091	139,907
2044	16,586	1,392,852	1,409,438	1,522	9,487	7,965	502,480	284,474	218,006	3,506	229,477	146,249
2045	10,968	1,451,156	1,462,123	1,020	6,304	5,284	501,573	292,212	209,361	3,518	218,163	152,371
2046	6,863	1,509,934	1,516,796	652	3,971	3,319	500,690	300,231	200,459	3,529	207,307	158,543
2047	4,020	1,569,027	1,573,047	382	2,322	1,940	499,804	308,617	191,187	3,539	196,665	164,748
2048	2,078	1,628,445	1,630,523	197	1,194	997	498,838	317,323	181,515	3,548	186,059	170,987
2049	846	1,687,246	1,688,092	80	487	407	497,507	248,805	170,994	3,556	3,962	<sup>b</sup> 177,161
2050	0	1,747,389	1,747,389	0	0	0	0	0	0	3,563	3,569	<sup>b</sup> 183,476
2051	0	1,809,447	1,809,447	0	0	0	0	0	0	3,568	3,573	<sup>b</sup> 189,992
2052	0	1,872,093	1,872,093	0	0	0	0	0	0	3,573	3,575	<sup>b</sup> 196,570
2053	0	1,937,065	1,937,065	0	0	0	0	0	0	3,576	3,576	<sup>b</sup> 203,392
2054	0	2,006,311	2,006,311	0	0	0	0	0	0	3,576	3,574	<sup>b</sup> 210,663
2055	0	2,078,343	2,078,343	0	0	0	0	0	0	3,574	3,569	<sup>b</sup> 218,226
2056	0	2,153,340	2,153,340	0	0	0	0	0	0	3,568	3,558	<sup>b</sup> 226,101
2057	0	2,231,622	2,231,622	0	0	0	0	0	0	3,558	3,543	<sup>b</sup> 234,320

<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 Plan	Total Assets													
	Number		Benefit			Employer		Member		Premium Tax		Actuarial		
	Year End	Pay	Assets	Benefit	Expenses	Contribs.	Contribs.	Allocation	Investment	Assets	Accrued	Unfunded	Funded	
30-Jun	Active	Status	(bov)	Payments				Contribs.	Income	(eoy)	Liability	Liability	Ratio	
2017	12	16	\$2,687,005	\$347,120	\$429	\$100,645	\$47,856	\$130,285	\$260,913	\$2,879,155	\$12,003,972	\$9,124,817	24%	
2018	11	17	2,879,155	385,883	2,644	107,687	41,835	134,652	113,100	2,887,902	12,435,249	9,547,348	23%	
2019	10	17	2,887,902	397,918	2,689	231,403	40,732	136,710	115,679	3,011,819	12,858,859	9,847,040	23%	
2020	9	18	3,011,819	411,159	2,735	237,110	40,680	144,328	120,636	3,140,679	13,284,077	10,143,399	24%	
2021	9	18	3,140,679	431,159	2,781	253,875	39,960	148,171	125,787	3,274,532	13,698,415	10,423,883	24%	
2022	8	18	3,274,532	459,669	2,828	278,365	39,108	152,902	131,137	3,413,547	14,091,735	10,678,189	24%	
2023	8	19	3,413,547	494,954	2,874	309,657	39,186	156,873	136,698	3,558,133	14,464,596	10,906,463	25%	
2024	6	20	3,558,133	533,878	2,922	346,514	36,922	160,757	142,472	3,707,998	14,791,937	11,083,940	25%	
2025	6	20	3,707,998	580,872	2,969	389,437	33,512	167,542	148,452	3,863,100	15,053,351	11,190,251	26%	
2026	5	20	3,863,100	606,133	3,016	410,787	31,998	172,674	154,649	4,024,059	15,284,784	11,260,725	26%	
2027	5	20	4,024,059	636,412	3,061	437,731	30,221	177,433	161,079	4,191,050	15,479,441	11,288,392	27%	
2028	4	21	4,191,050	666,483	3,105	463,384	28,495	183,234	167,751	4,364,326	15,637,372	11,273,046	28%	
2029	4	21	4,364,326	689,654	3,147	482,931	26,873	188,157	174,675	4,544,161	15,762,942	11,218,781	29%	
2030	3	21	4,544,161	712,656	3,186	501,965	24,992	193,624	181,860	4,730,760	15,852,031	11,121,271	30%	
2031	3	21	4,730,760	729,814	3,222	515,136	23,672	198,666	189,318	4,924,516	15,914,080	10,989,565	31%	
2032	2	21	4,924,516	752,387	3,255	534,158	21,986	203,556	197,061	5,125,635	15,940,001	10,814,367	32%	
2033	2	21	5,125,635	774,403	3,285	551,869	20,073	209,376	205,097	5,334,362	15,927,014	10,592,653	33%	
2034	2	20	5,334,362	784,302	3,314	557,181	19,109	214,730	213,442	5,551,208	15,894,053	10,342,846	35%	
2035	2	20	5,551,208	801,426	3,342	570,239	17,838	219,804	222,110	5,776,431	15,831,832	10,055,401	36%	
2036	1	20	5,776,431	819,677	3,368	583,624	16,346	225,848	231,112	6,010,316	15,736,424	9,726,108	38%	
2037	1	20	6,010,316	837,760	3,391	598,288	14,127	231,105	240,460	6,253,145	15,603,373	9,350,228	40%	
2038	1	20	6,253,145	856,706	3,412	612,902	11,493	237,635	250,164	6,505,221	15,428,030	8,922,809	42%	
2039	0	20	6,505,221	875,133	3,432	627,641	8,786	243,595	260,238	6,766,916	15,209,235	8,442,319	44%	
2040	0	19	6,766,916	893,326	3,449	641,095	5,889	250,771	270,696	7,038,592	14,944,602	7,906,010	47%	
2041	0	19	7,038,592	899,823	3,465	642,486	4,272	257,239	281,558	7,320,859	14,652,277	7,331,418	50%	
2042	0	19	7,320,859	902,724	3,480	639,890	3,053	263,765	292,844	7,614,207	14,337,339	6,723,132	53%	
2043	0	18	7,614,207	902,481	3,494	633,762	2,153	270,412	304,575	7,919,134	14,004,186	6,085,053	57%	
2044	0	18	7,919,134	899,456	3,506	624,436	1,522	277,253	316,770	8,236,153	13,656,755	5,420,602	60%	
2045	0	17	8,236,153	895,026	3,518	613,215	1,020	284,474	329,449	8,565,767	13,296,708	4,730,942	64%	
2046	0	17	8,565,767	889,038	3,529	599,806	652	292,212	342,633	8,908,503	12,925,977	4,017,474	69%	
2047	0	17	8,908,503	881,701	3,539	584,687	382	300,231	356,341	9,264,904	12,546,223	3,281,319	74%	
2048	0	16	9,264,904	873,277	3,548	568,042	197	308,617	370,597	9,635,532	12,158,718	2,523,187	79%	
2049	0	16	9,635,532	863,923	3,556	550,089	80	317,323	385,422	10,020,967	11,764,532	1,743,565	85%	
2050	0	15	10,020,967	853,848	3,563	530,898	0	326,513	400,839	10,421,806	11,364,356	942,550	92%	
2051	0	15	10,421,806	842,736	3,568	510,236	0	336,068	416,872	10,838,678	10,959,505	120,827	99%	
2052	0	15	10,838,678	831,139	3,573	3,572	0	123,225	419,528	10,550,291	10,550,287	0	100%	
2053	0	14	10,550,291	819,000	3,576	3,576	0	0	405,792	10,137,083	10,137,079	0	100%	
2054	0	14	10,137,083	806,259	3,576	3,576	0	0	389,516	9,720,336	9,720,336	0	100%	
2055	0	13	9,720,336	792,844	3,574	3,574	0	0	373,112	9,300,604	9,300,604	0	100%	
2056	0	13	9,300,604	778,674	3,568	3,568	0	0	356,603	8,878,533	8,878,534	0	100%	
2057	0	13	8,878,533	763,660	3,558	3,559	0	0	340,018	8,454,892	8,454,892	0	100%	

# Actuarial Projections – Conservation Funding in 2019

## Table A-4

Plan Year End	Benefit Payment Account <sup>a</sup>							Accumulation Account <sup>b</sup>						Statewide Employer Contribution
	Assets (boy)	Net Benefit Pmts and Expenses	Employer Contribs.	5.90% of Pay Member Contribs.	100.00% 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.	0.00% of Premium Tax Allocation	Investment Income	
2018	\$2,879,155	\$388,527	\$107,687	\$41,835	\$134,652	\$113,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2019	2,887,902	400,607	231,403	32,494	136,710	115,516	(3,003,418)	3,003,418	0	0	8,238	0	163	4,299
2020	0	413,894	237,110	32,456	144,328	0	0	3,011,819	0	0	8,224	0	120,636	7,311
2021	0	433,940	253,875	31,894	148,171	0	0	3,140,679	0	0	8,066	0	125,787	10,100
2022	0	462,497	278,365	31,230	152,902	0	0	3,274,532	0	0	7,878	0	131,137	14,140
2023	0	497,828	309,657	31,298	156,873	0	0	3,413,547	0	0	7,888	0	136,698	17,339
2024	0	536,800	346,514	29,529	160,757	0	0	3,558,133	0	0	7,393	0	142,472	20,231
2025	0	583,841	389,437	26,862	167,542	0	0	3,707,998	0	0	6,650	0	148,452	27,163
2026	0	609,149	410,787	25,688	172,674	0	0	3,863,100	0	0	6,310	0	154,649	32,348
2027	0	639,473	437,731	24,309	177,433	0	0	4,024,059	0	0	5,912	0	161,079	36,948
2028	0	669,588	463,384	22,970	183,234	0	0	4,191,050	0	0	5,525	0	167,751	42,857
2029	0	692,801	482,931	21,713	188,157	0	0	4,364,326	0	0	5,160	0	174,675	47,801
2030	0	715,842	501,965	20,253	193,624	0	0	4,544,161	0	0	4,739	0	181,860	53,748
2031	0	733,036	515,136	19,234	198,666	0	0	4,730,760	0	0	4,438	0	189,318	59,325
2032	0	755,642	534,158	17,928	203,556	0	0	4,924,516	0	0	4,058	0	197,061	64,815
2033	0	777,688	551,869	16,443	209,376	0	0	5,125,635	0	0	3,630	0	205,097	71,489
2034	0	787,616	557,181	15,705	214,730	0	0	5,334,362	0	0	3,404	0	213,442	77,831
2035	0	804,768	570,239	14,725	219,804	0	0	5,551,208	0	0	3,113	0	222,110	83,460
2036	0	823,045	583,624	13,573	225,848	0	0	5,776,431	0	0	2,773	0	231,112	90,521
2037	0	841,151	598,288	11,758	231,105	0	0	6,010,316	0	0	2,369	0	240,460	96,878
2038	0	860,118	612,902	9,581	237,635	0	0	6,253,145	0	0	1,912	0	250,164	104,474
2039	0	878,565	627,641	7,329	243,595	0	0	6,505,221	0	0	1,457	0	260,238	111,099
2040	0	896,775	641,095	4,909	250,771	0	0	6,766,916	0	0	980	0	270,696	119,115
2041	0	903,288	642,486	3,563	257,239	0	0	7,038,592	0	0	709	0	281,558	126,316
2042	0	906,204	639,890	2,549	263,765	0	0	7,320,859	0	0	504	0	292,844	133,171
2043	0	905,975	633,762	1,801	270,412	0	0	7,614,207	0	0	352	0	304,575	139,907
2044	0	902,962	624,436	1,273	277,253	0	0	7,919,134	0	0	249	0	316,770	146,249
2045	0	898,544	613,215	855	284,474	0	0	8,236,153	0	0	165	0	329,449	152,371
2046	0	892,567	599,806	549	292,212	0	0	8,565,767	0	0	103	0	342,633	158,543
2047	0	885,240	584,687	322	300,231	0	0	8,908,503	0	0	60	0	356,341	164,748
2048	0	876,825	568,042	166	308,617	0	0	9,264,904	0	0	31	0	370,597	170,987
2049	0	867,479	550,089	67	317,323	0	0	9,635,532	0	0	13	0	385,422	177,161
2050	0	857,411	530,898	0	326,513	0	0	10,020,967	0	0	0	0	400,839	183,476
2051	0	846,304	510,236	0	336,068	0	0	10,421,806	0	0	0	0	416,872	189,992
2052	0	126,794	3,568	0	123,225	0	0	10,838,678	707,918	0	0	0	419,527	196,570
2053	0	0	0	0	0	0	0	10,550,287	822,576	3,576	0	0	405,792	203,392
2054	0	0	0	0	0	0	0	10,137,079	809,835	3,576	0	0	389,516	210,663
2055	0	0	0	0	0	0	0	9,720,336	796,418	3,574	0	0	373,112	218,226
2056	0	0	0	0	0	0	0	9,300,604	782,242	3,568	0	0	356,603	226,101
2057	0	0	0	0	0	0	0	8,878,533	767,218	3,559	0	0	340,018	234,320

<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, 2050.

<sup>d</sup> Blended employee contribution rate of 7.40% 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 (bo)	Benefit Payments	Expenses	Employer Contribs.	Member Contribs.	Allocation Contribs.	Investment Income	Assets (eoy)				
2017	12	16	\$2,687,005	\$347,120	\$429	\$100,645	\$47,856	\$130,285	\$260,913	\$2,879,155	\$12,003,972	\$9,124,817	24%	
2018	12	17	2,879,155	385,883	2,644	107,687	41,835	134,652	113,100	2,887,901	12,435,249	9,547,348	23%	
2019	12	17	2,887,901	397,918	2,814	115,225	44,911	136,710	113,458	2,897,474	12,882,463	9,984,989	22%	
2020	12	18	2,897,474	411,316	2,930	123,291	47,517	144,328	113,936	2,912,300	13,348,563	10,436,263	22%	
2021	12	18	2,912,300	431,723	3,037	131,921	49,297	148,171	114,406	2,921,334	13,820,424	10,899,090	21%	
2022	12	18	2,921,334	460,755	3,179	141,155	52,197	152,902	114,522	2,918,176	14,295,425	11,377,249	20%	
2023	12	19	2,918,176	496,690	3,290	151,036	55,145	156,873	114,016	2,895,266	14,770,396	11,875,130	20%	
2024	12	20	2,895,266	536,357	3,391	161,609	55,502	160,757	112,605	2,845,990	15,219,284	12,373,294	19%	
2025	12	20	2,845,990	584,215	3,601	172,922	58,676	167,542	110,103	2,767,417	15,644,594	12,877,177	18%	
2026	12	20	2,767,417	610,577	3,746	185,027	61,801	172,674	106,839	2,679,434	16,074,134	13,394,700	17%	
2027	12	21	2,679,434	642,239	3,872	197,979	64,178	177,433	103,087	2,576,000	16,499,077	13,923,077	16%	
2028	12	21	2,576,000	673,873	4,030	211,838	67,946	183,234	98,784	2,459,898	16,927,934	14,468,036	15%	
2029	12	21	2,459,898	698,744	4,152	226,667	70,826	188,157	94,094	2,336,746	17,361,321	15,024,575	13%	
2030	12	21	2,336,746	723,527	4,296	242,534	74,483	193,624	89,169	2,208,733	17,802,000	15,593,267	12%	
2031	12	21	2,208,733	742,619	4,420	259,511	78,303	198,666	84,179	2,082,353	18,258,992	16,176,639	11%	
2032	12	21	2,082,353	767,325	4,536	277,677	81,707	203,556	79,157	1,952,589	18,724,452	16,771,863	10%	
2033	12	21	1,952,589	791,487	4,674	297,114	86,040	209,376	74,071	1,823,028	19,203,702	17,380,674	9%	
2034	12	21	1,823,028	803,823	4,796	317,912	90,938	214,730	69,256	1,707,245	19,715,702	18,008,457	9%	
2035	12	21	1,707,245	823,674	4,895	340,166	94,874	219,804	64,850	1,598,369	20,249,304	18,650,935	8%	
2036	12	20	1,598,369	844,691	5,025	363,978	100,036	225,848	60,769	1,499,283	20,810,313	19,311,030	7%	
2037	12	20	1,499,283	865,833	5,128	389,456	103,448	231,105	57,061	1,409,392	21,392,551	19,983,159	7%	
2038	12	20	1,409,392	888,136	5,262	416,718	107,491	237,635	53,770	1,331,608	21,999,666	20,668,058	6%	
2039	12	20	1,331,608	910,588	5,377	445,888	110,658	243,595	50,970	1,266,755	22,623,919	21,357,164	6%	
2040	12	20	1,266,755	936,366	5,526	477,100	115,102	250,771	48,711	1,216,547	23,270,787	22,054,240	5%	
2041	12	20	1,216,547	952,452	5,652	510,497	119,701	257,239	47,262	1,193,141	23,955,457	22,762,316	5%	
2042	12	20	1,193,141	966,025	5,778	546,232	124,364	263,765	46,984	1,202,684	24,679,882	23,477,198	5%	
2043	12	20	1,202,684	980,003	5,909	584,468	129,078	270,412	48,069	1,248,799	25,446,082	24,197,283	5%	
2044	12	20	1,248,799	995,251	6,043	625,381	133,477	277,253	50,641	1,334,258	26,253,718	24,919,460	5%	
2045	12	19	1,334,258	1,013,361	6,190	669,158	138,008	284,474	54,798	1,461,144	27,098,116	25,636,972	5%	
2046	12	19	1,461,144	1,036,827	6,352	715,999	142,935	292,212	60,584	1,629,695	27,977,660	26,347,965	6%	
2047	12	19	1,629,695	1,064,672	6,520	766,119	147,960	300,231	68,022	1,840,835	28,892,493	27,051,658	6%	
2048	12	19	1,840,835	1,095,068	6,696	819,747	152,983	308,617	77,189	2,097,608	29,841,941	27,744,333	7%	
2049	12	19	2,097,608	1,128,264	6,880	877,129	158,072	317,323	88,209	2,403,197	30,823,998	28,420,801	8%	
2050	12	19	2,403,197	1,165,084	7,075	938,528	163,473	326,513	101,205	2,760,756	31,837,135	29,076,379	9%	
2051	12	20	2,760,756	1,205,517	7,279	1,004,225	169,084	336,068	116,304	3,173,641	32,882,114	29,708,473	10%	
2052	12	20	3,173,641	1,248,678	7,489	1,074,521	174,759	345,937	133,660	3,646,351	33,957,758	30,311,407	11%	
2053	12	20	3,646,351	1,294,684	7,709	1,149,737	180,981	356,255	153,471	4,184,402	35,063,719	30,879,317	12%	
2054	12	20	4,184,402	1,343,638	7,934	1,230,219	187,606	366,868	175,954	4,793,477	36,203,375	31,409,898	13%	
2055	12	20	4,793,477	1,392,929	8,161	1,316,334	194,386	377,695	201,390	5,482,192	37,379,635	31,897,443	15%	
2056	12	20	5,482,192	1,442,322	8,393	1,408,477	201,485	388,813	230,141	6,260,393	38,594,410	32,334,017	16%	
2057	12	20	6,260,393	1,493,013	8,629	1,507,070	208,971	400,185	262,587	7,137,564	39,850,705	32,713,141	18%	

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

## Table A-6

Valuation Plan Year End 30-Jun <sup>ab</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	\$565,135	\$41,835	\$337,741	\$295,906	\$496,760	\$136,710	\$360,050	\$2,644	\$658,600	\$115,225	\$115,225	\$0
2019	590,136	44,911	348,895	303,984	527,956	144,328	383,628	2,814	690,425	123,291	123,291	0
2020	617,878	47,517	363,460	315,943	561,360	148,171	413,189	2,930	732,062	131,921	131,921	0
2021	633,909	49,297	371,355	322,059	597,081	152,902	444,179	3,037	769,275	141,155	141,155	0
2022	659,881	52,197	385,094	332,897	635,213	156,873	478,340	3,179	814,417	151,036	151,036	0
2023	691,005	55,145	402,460	347,314	676,224	160,757	515,467	3,290	866,071	161,609	161,609	0
2024	685,533	55,502	398,057	342,555	720,672	167,542	553,130	3,391	899,077	172,922	172,922	0
2025	702,001	58,676	405,431	346,755	767,708	172,674	595,034	3,601	945,391	185,027	185,027	0
2026	728,727	61,801	419,501	357,699	818,011	177,433	640,578	3,746	1,002,024	197,979	197,979	0
2027	746,026	64,178	430,047	365,869	872,509	183,234	689,275	3,872	1,059,016	211,838	211,838	0
2028	776,502	67,946	448,931	380,986	931,545	188,157	743,388	4,030	1,128,404	226,667	226,667	0
2029	799,261	70,826	461,535	390,709	996,129	193,624	802,505	4,152	1,197,366	242,534	242,534	0
2030	827,840	74,483	476,619	402,136	1,066,675	198,666	868,009	4,296	1,274,441	259,511	259,511	0
2031	860,884	78,303	494,627	416,325	1,144,121	203,556	940,565	4,420	1,361,310	277,677	277,677	0
2032	887,841	81,707	509,711	428,005	1,229,752	209,376	1,020,376	4,536	1,452,917	297,114	297,114	0
2033	922,829	86,040	529,436	443,397	1,324,712	214,730	1,109,982	4,674	1,558,054	317,912	317,912	0
2034	968,185	90,938	555,370	464,431	1,430,815	219,804	1,211,011	4,796	1,680,239	340,166	340,166	0
2035	1,002,359	94,874	576,378	481,504	1,550,651	225,848	1,324,803	4,895	1,811,202	363,978	363,978	0
2036	1,046,991	100,036	603,623	503,587	1,686,613	231,105	1,455,508	5,025	1,964,121	389,456	389,456	0
2037	1,080,544	103,448	623,856	520,408	1,842,525	237,635	1,604,890	5,128	2,130,426	416,718	416,718	0
2038	1,122,478	107,491	648,416	540,925	2,022,552	243,595	1,778,957	5,262	2,325,144	445,888	445,888	0
2039	1,155,215	110,658	667,402	556,744	2,233,039	250,771	1,982,268	5,377	2,544,388	477,100	477,100	0
2040	1,199,741	115,102	692,877	577,775	2,481,662	257,239	2,224,423	5,526	2,807,725	510,497	510,497	0
2041	1,250,310	119,701	721,743	602,043	2,780,964	263,765	2,517,199	5,652	3,124,894	546,232	546,232	0
2042	1,301,871	124,364	750,988	626,624	3,149,255	270,412	2,878,843	5,778	3,511,245	584,468	584,468	0
2043	1,355,948	129,078	781,568	652,491	3,613,460	277,253	3,336,207	5,909	3,994,606	625,381	625,381	0
2044	1,409,438	133,477	811,671	678,194	4,217,587	284,474	3,933,113	6,043	4,617,350	669,158	669,158	0
2045	1,462,123	138,008	841,052	703,045	5,037,369	292,212	4,745,157	6,190	5,454,392	715,999	715,999	0
2046	1,516,796	142,935	871,609	728,673	6,215,034	300,231	5,914,803	6,352	6,649,828	766,119	766,119	0
2047	1,573,047	147,960	903,180	755,221	8,057,016	308,617	7,748,399	6,520	8,510,139	819,747	819,747	0
2048	1,630,523	152,983	935,372	782,389	11,360,553	317,323	11,043,230	6,696	11,832,314	877,129	877,129	0
2049	1,688,092	158,072	967,646	809,575	19,046,854	326,513	18,720,341	6,880	19,536,796	938,528	938,528	0
2050	1,747,389	163,473	1,001,075	837,602	28,983,634	336,068	28,647,566	7,075	29,492,244	1,004,225	1,004,225	0
2051	1,809,447	169,084	1,036,209	867,125	29,652,195	345,937	29,306,258	7,279	30,180,662	1,074,521	1,074,521	0
2052	1,872,093	174,759	1,071,834	897,075	30,296,806	356,255	29,940,551	7,489	30,845,115	1,149,737	1,149,737	0
2053	1,937,065	180,981	1,108,935	927,953	30,911,681	366,868	30,544,813	7,709	31,480,475	1,230,219	1,230,219	0
2054	2,006,311	187,606	1,148,557	960,951	31,490,837	377,695	31,113,142	7,934	32,082,027	1,316,334	1,316,334	0
2055	2,078,343	194,386	1,189,895	995,509	32,031,926	388,813	31,643,113	8,161	32,646,784	1,408,477	1,408,477	0
2056	2,153,340	201,485	1,233,065	1,031,580	32,529,126	400,185	32,128,941	8,393	33,168,914	1,507,070	1,507,070	0
2057	2,231,622	208,971	1,278,215	1,069,244	32,974,346	411,829	32,562,517	8,629	33,640,390	1,612,565	1,612,565	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 2050

## Table A-7

Valuation Plan	Total Assets												Actuarial Accrued Liability	Unfunded Liability	Funded Ratio
	Year End 30-Jun	Number		Assets (boy)	Benefit Payments	Expenses	Employer Contribs.	Member Contribs.	Premium Tax		Assets (eoy)				
		Active	Pay Status						Allocation Contribs.	Investment Income					
2017	12	16	\$2,687,005	\$347,120	\$429	\$100,645	\$47,856	\$130,285	\$260,913	\$2,879,155	\$12,003,972	\$9,124,817	24%		
2018	12	17	2,879,155	385,883	2,644	107,687	41,835	134,652	113,100	2,887,902	12,435,249	9,547,347	23%		
2019	12	17	2,887,902	397,918	2,814	115,225	44,911	136,710	113,459	2,897,475	12,882,463	9,984,988	22%		
2020	12	18	2,897,475	411,316	2,930	123,291	47,517	144,328	113,936	2,912,301	13,348,563	10,436,262	22%		
2021	12	18	2,912,301	431,723	3,037	131,921	49,297	148,171	114,405	2,921,335	13,820,424	10,899,089	21%		
2022	12	18	2,921,335	460,755	3,179	141,155	52,197	152,902	114,523	2,918,178	14,295,425	11,377,247	20%		
2023	12	19	2,918,178	496,690	3,290	151,036	55,145	156,873	114,015	2,895,267	14,770,396	11,875,129	20%		
2024	12	20	2,895,267	536,357	3,391	161,609	55,502	160,757	112,605	2,845,992	15,219,284	12,373,292	19%		
2025	12	20	2,845,992	584,215	3,601	172,922	58,676	167,542	110,103	2,767,419	15,644,594	12,877,175	18%		
2026	12	20	2,767,419	610,577	3,746	185,027	61,801	172,674	106,839	2,679,437	16,074,134	13,394,697	17%		
2027	12	21	2,679,437	642,239	3,872	197,979	64,178	177,433	103,088	2,576,004	16,499,077	13,923,073	16%		
2028	12	21	2,576,004	673,873	4,030	211,838	67,946	183,234	98,785	2,459,904	16,927,934	14,468,030	15%		
2029	12	21	2,459,904	698,744	4,152	226,667	70,826	188,157	94,094	2,336,752	17,361,321	15,024,569	13%		
2030	12	21	2,336,752	723,527	4,296	242,534	74,483	193,624	89,169	2,208,739	17,802,000	15,593,261	12%		
2031	12	21	2,208,739	742,619	4,420	259,511	78,303	198,666	84,180	2,082,360	18,258,992	16,176,632	11%		
2032	12	21	2,082,360	767,325	4,536	277,677	81,707	203,556	79,157	1,952,596	18,724,452	16,771,856	10%		
2033	12	21	1,952,596	791,487	4,674	297,114	86,040	209,376	74,071	1,823,036	19,203,702	17,380,666	9%		
2034	12	21	1,823,036	803,823	4,796	317,912	90,938	214,730	69,257	1,707,254	19,715,702	18,008,448	9%		
2035	12	21	1,707,254	823,674	4,895	340,166	94,874	219,804	64,850	1,598,379	20,249,304	18,650,925	8%		
2036	12	20	1,598,379	844,691	5,025	363,978	100,036	225,848	60,769	1,499,294	20,810,313	19,311,019	7%		
2037	12	20	1,499,294	865,833	5,128	389,456	103,448	231,105	57,062	1,409,404	21,392,551	19,983,147	7%		
2038	12	20	1,409,404	888,136	5,262	416,718	107,491	237,635	53,771	1,331,621	21,999,666	20,668,045	6%		
2039	12	20	1,331,621	910,588	5,377	445,888	110,658	243,595	50,971	1,266,768	22,623,919	21,357,151	6%		
2040	12	20	1,266,768	936,366	5,526	477,100	115,102	250,771	48,712	1,216,561	23,270,787	22,054,226	5%		
2041	12	20	1,216,561	952,452	5,652	510,497	119,701	257,239	47,263	1,193,157	23,955,457	22,762,300	5%		
2042	12	20	1,193,157	966,025	5,778	546,232	124,364	263,765	46,985	1,202,700	24,679,882	23,477,182	5%		
2043	12	20	1,202,700	980,003	5,909	584,468	129,078	270,412	48,069	1,248,815	25,446,082	24,197,267	5%		
2044	12	20	1,248,815	995,251	6,043	625,381	133,477	277,253	50,642	1,334,274	26,253,718	24,919,444	5%		
2045	12	19	1,334,274	1,013,361	6,190	669,158	138,008	284,474	54,799	1,461,162	27,098,116	25,636,954	5%		
2046	12	19	1,461,162	1,036,827	6,352	715,999	142,935	292,212	60,585	1,629,714	27,977,660	26,347,946	6%		
2047	12	19	1,629,714	1,064,672	6,520	766,119	147,960	300,231	68,023	1,840,855	28,892,493	27,051,638	6%		
2048	12	19	1,840,855	1,095,068	6,696	819,747	152,983	308,617	77,191	2,097,629	29,841,941	27,744,312	7%		
2049	11	19	2,097,629	1,128,264	6,880	877,129	158,072	317,323	88,210	2,403,219	30,823,998	28,420,779	8%		
2050	10	19	2,403,219	1,165,084	6,886	915,753	154,865	326,513	100,588	2,728,968	31,788,515	29,059,547	9%		
2051	10	20	2,728,968	1,205,194	6,902	955,214	151,340	336,068	113,724	3,073,218	32,728,602	29,655,384	9%		
2052	9	20	3,073,218	1,247,379	6,929	996,888	147,505	345,937	127,603	3,436,843	33,638,466	30,201,623	10%		
2053	8	20	3,436,843	1,291,876	6,964	1,040,675	143,653	356,255	142,261	3,820,847	34,512,325	30,691,478	11%		
2054	8	20	3,820,847	1,338,880	7,005	1,086,911	139,749	366,868	157,738	4,226,227	35,348,506	31,122,279	12%		
2055	7	20	4,226,227	1,385,896	7,050	1,133,253	135,664	377,695	174,073	4,653,966	36,145,481	31,491,515	13%		
2056	7	20	4,653,966	1,432,555	7,099	1,179,281	131,398	388,813	191,304	5,105,108	36,899,649	31,794,541	14%		
2057	6	20	5,105,108	1,480,041	7,150	1,226,145	126,998	400,185	209,475	5,580,720	37,608,081	32,027,361	15%		

# Actuarial Projections – Conservation Funding in 2050

## 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.	5.90% <sup>d</sup> of Pay Member Contribs.	38.68% of Premium Tax Allocation	Investment Income	Assets (boy) <sup>c</sup>	Net Benefit Pmts and Expenses	Employer Contribs.	1.50% of Pay Member Contribs.	61.32% of Premium Tax Allocation	Investment Income	Conservation Employer Cont.	Alternative Employer Cont.	Minimum Alt /Cons Cont.	
2018	\$2,879,155	\$388,527	\$107,687	\$41,835	\$134,652	\$113,100	\$0	\$0	\$0	\$0	\$0	\$0	NA	\$107,687	\$107,687	\$0
2019	2,887,902	400,732	115,225	44,911	136,710	113,459	0	0	0	0	0	0	NA	115,225	115,225	0
2020	2,897,475	414,246	123,291	47,517	144,328	113,936	0	0	0	0	0	0	NA	123,291	123,291	0
2021	2,912,300	434,760	131,921	49,297	148,171	114,405	0	0	0	0	0	0	NA	131,921	131,921	0
2022	2,921,334	463,934	141,155	52,197	152,902	114,523	0	0	0	0	0	0	NA	141,155	141,155	0
2023	2,918,177	499,980	151,036	55,145	156,873	114,015	0	0	0	0	0	0	NA	151,036	151,036	0
2024	2,895,266	539,748	161,609	55,502	160,757	112,605	0	0	0	0	0	0	NA	161,609	161,609	0
2025	2,845,991	587,816	172,922	58,676	167,542	110,103	0	0	0	0	0	0	NA	172,922	172,922	0
2026	2,767,418	614,323	185,027	61,801	172,674	106,839	0	0	0	0	0	0	NA	185,027	185,027	0
2027	2,679,436	646,111	197,979	64,178	177,433	103,088	0	0	0	0	0	0	NA	197,979	197,979	0
2028	2,576,002	677,903	211,838	67,946	183,234	98,785	0	0	0	0	0	0	NA	211,838	211,838	0
2029	2,459,902	702,896	226,667	70,826	188,157	94,094	0	0	0	0	0	0	NA	226,667	226,667	0
2030	2,336,750	727,823	242,534	74,483	193,624	89,169	0	0	0	0	0	0	NA	242,534	242,534	0
2031	2,208,738	747,039	259,511	78,303	198,666	84,180	0	0	0	0	0	0	NA	259,511	259,511	0
2032	2,082,359	771,861	277,677	81,707	203,556	79,157	0	0	0	0	0	0	NA	277,677	277,677	0
2033	1,952,595	796,161	297,114	86,040	209,376	74,071	0	0	0	0	0	0	NA	297,114	297,114	0
2034	1,823,035	808,619	317,912	90,938	214,730	69,257	0	0	0	0	0	0	NA	317,912	317,912	0
2035	1,707,252	828,569	340,166	94,874	219,804	64,850	0	0	0	0	0	0	NA	340,166	340,166	0
2036	1,598,377	849,716	363,978	100,036	225,848	60,769	0	0	0	0	0	0	NA	363,978	363,978	0
2037	1,499,292	870,961	389,456	103,448	231,105	57,062	0	0	0	0	0	0	NA	389,456	389,456	0
2038	1,409,402	893,398	416,718	107,491	237,635	53,771	0	0	0	0	0	0	NA	416,718	416,718	0
2039	1,331,618	915,965	445,888	110,658	243,595	50,971	0	0	0	0	0	0	NA	445,888	445,888	0
2040	1,266,766	941,892	477,100	115,102	250,771	48,712	0	0	0	0	0	0	NA	477,100	477,100	0
2041	1,216,559	958,104	510,497	119,701	257,239	47,263	0	0	0	0	0	0	NA	510,497	510,497	0
2042	1,193,155	971,803	546,232	124,364	263,765	46,985	0	0	0	0	0	0	NA	546,232	546,232	0
2043	1,202,698	985,912	584,468	129,078	270,412	48,069	0	0	0	0	0	0	NA	584,468	584,468	0
2044	1,248,813	1,001,294	625,381	133,477	277,253	50,642	0	0	0	0	0	0	NA	625,381	625,381	0
2045	1,334,273	1,019,551	669,158	138,008	284,474	54,799	0	0	0	0	0	0	NA	669,158	669,158	0
2046	1,461,160	1,043,179	715,999	142,935	292,212	60,585	0	0	0	0	0	0	NA	715,999	715,999	0
2047	1,629,712	1,071,192	766,119	147,960	300,231	68,023	0	0	0	0	0	0	NA	766,119	766,119	0
2048	1,840,853	1,101,764	819,747	152,983	308,617	77,191	0	0	0	0	0	0	NA	819,747	819,747	0
2049	2,097,627	1,135,144	877,129	158,072	317,323	88,210	0	0	0	0	0	0	NA	877,129	877,129	0
2050	2,403,217	1,171,970	915,753	129,919	126,298	96,129	2,499,348	0	0	24,946	200,215	4,459	915,753	938,528	915,753	8,854
2051	0	1,212,096	955,214	126,888	129,994	0	2,728,968	0	0	24,452	206,074	113,724	955,214	1,004,225	955,214	18,825
2052	0	1,254,308	996,888	123,609	133,811	0	3,073,218	0	0	23,896	212,126	127,603	996,888	1,074,521	996,888	29,299
2053	0	1,298,840	1,040,675	120,363	137,802	0	3,436,843	0	0	23,290	218,453	142,261	1,040,675	1,149,737	1,040,675	40,360
2054	0	1,345,885	1,086,911	117,067	141,907	0	3,820,846	0	0	22,682	224,960	157,738	1,086,911	1,230,219	1,086,911	51,888
2055	0	1,392,946	1,133,253	113,598	146,095	0	4,226,226	0	0	22,066	231,600	174,073	1,133,253	1,316,334	1,133,253	63,767
2056	0	1,439,654	1,179,281	109,977	150,396	0	4,653,965	0	0	21,421	238,417	191,304	1,179,281	1,408,477	1,179,281	76,157
2057	0	1,487,191	1,226,145	106,251	154,795	0	5,105,107	0	0	20,747	245,390	209,475	1,226,145	1,507,070	1,226,145	89,091

<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, 2050.

<sup>d</sup> Blended employee contribution rate of 7.40% of pay less 1.50% of pay going into the Accumulation Account.