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

Actuarial Valuation Report
for the Year Beginning July 1, 2017

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September 24, 2018

Mr. John Young
City Treasurer
2009 20th Street
Nitro, WV 25143

Captain Jonathan P. Atkins
Pension Board Secretary
City of Nitro Firemen's Pension and Relief Fund

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

Dear Mr. Young and Captain Atkins:

Upon the request of the Municipal Pensions Oversight Board, we have performed an actuarial valuation as of July 1, 2017, for the City of Nitro, 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 4.50%. The actuarial assumptions used in the actuarial valuation are set forth in Section VI of the report: Actuarial Assumptions and Methods.

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

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

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

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

The signing actuaries are independent of the plan sponsor.

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

Sincerely,

Alex Rivera

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

Lance J. Weiss

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

Contents

SECTION I

ACTUARIAL VALUATION RESULTS AS OF JULY 1, 2017

Executive Summary

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

The following table provides the Plan's funded status:

Funded Status as of:	July 1, 2017
Assets	$1,300,894
Actuarial Accrued Liability	$9,795,852
Unfunded Actuarial Accrued Liability	$8,494,958
Funded Ratio	13.28%

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

Employer Contributions for FYE:	June 30, 2018
FYE 06/30/2017 Alternative Contribution	$154,848
7% Increase in Alternative Contribution	$10,839
FYE 06/30/2018 Alternative Contribution	$165,687
Additional Contribution	$0
Final FYE 06/30/2018 Alternative Contribution	$165,687

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

Estimated Employer Contributions for FYE:	June 30, 2019
FYE 06/30/2018 Alternative Contribution	$165,687
7% Increase in Alternative Contribution	$11,598
FYE 06/30/2019 Alternative Contribution	$177,285
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	$177,285
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	$177,285

Executive Summary (Continued)

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

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

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

The sponsor is projected to satisfy the 15-year solvency test without making additional annual contributions in excess of the minimum alternative contribution. **However, given that the funded ratio as of June 30, 2017, is only 13.28%, and that the ratio of assets to expected benefits for the year is only 3.74, we strongly recommend that the sponsor continue to make additional contributions in excess of the statutory minimum.**

During fiscal year end June 30, 2017, the sponsor made a contribution of $485,000 which significantly exceeded the statutory minimum of $154,848. The excess contributions improved the funded status of the Plan and ultimately will reduce the overall costs to finance the program.

Commentary on Premium Tax Allocation

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

Based upon discussions with the MPOB, we understand the annual premium tax allocation is determined by September 1st each year. Municipalities can begin invoicing the MPOB for their share of the premium tax allocation after receiving their state provided actuarial study and after the municipality has made employer contributions to the local Plan. Each municipal treasurer shall use the invoice template provided by the MPOB to begin drawing down the state allocation for the municipal pension plan. This July 1, 2017, Actuarial Report from GRS is to be used by municipal pension plans to draw down the September 1, 2018 State Premium Tax Allocation which is allocated in Fiscal Year 2019. *The actuarial valuation and projection results assume the sponsor will make the statutory contributions on a monthly basis in accordance with statutes, including any additional amounts needed to satisfy the 15-year solvency test on an open group projection basis, and will be eligible to receive the premium tax allocation.*

Commentary on Solvency Projections and Supplemental Benefits

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

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

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

Additional Remarks on the Actuarial Valuation Results

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

- The actuarial assumptions and methods were recommended by the actuary, in the report *2016 Experience Review for the Years July 1, 2009, to July 1, 2014*, and approved by the Municipal Pensions Oversight Board and became effective beginning with the actuarial valuation as of July 1, 2015. The key actuarial assumptions are fully disclosed in Section VI of the report.
- The interest rate used to discount liabilities remained the same for the July 1, 2016 and July 1, 2017 actuarial valuations.
    - The interest rate assumption was developed by reviewing the Plan's current funded ratio, the 15-year projected funded ratio, the ratio of assets to benefits, the percentage of assets allocated to equities and the funding policy selected. The details of the methodology used to select the discount rate are presented in Section VI of the report. As of July 1, 2017, the Plan's funded ratio of 16% (using a testing interest rate of 5.50% for all plans using the Alternative funding policy), ratio of assets to benefits of 3.74, equity allocation of 36%, and 15-year projected funded ratio of 23%, resulted in a discount rate assumption of 4.50%.
- The Fund experienced an approximate annualized return of 6.85% 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 ($24,510).
- 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 $732,085 due to these events.

Alternative Funding

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

Based on the open group projections shown in Table 2, page II-2 and assuming that the sponsor makes the statutory required contributions, if all actuarial assumptions are realized in the future, including an investment return of 4.50%:

- The funded ratio is projected to increase from 13% at June 30, 2017, to 16% at June 30, 2027, to 21% at June 30, 2037, and then increase to 52% at June 30, 2057.
- Employer contributions are expected to increase from $165,687 (or 23% of pay) for the fiscal year end June 30, 2018, to 2,318,765 (or 71% of pay) for fiscal year end June 30, 2057.

Please note that a funded ratio of only 13% at June 30, 2017, means that the plan is severely underfunded.

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

A funding policy consistent with generally accepted actuarial principles is typically based on the sponsor contributing the normal cost net of employee contributions plus an amortization of the unfunded actuarial accrued liability. The annual amortization amount is generally 6% to 7% of the unfunded actuarial accrued liability. Under state statute, the annual premium tax allocation can only be used to finance the amortization of the unfunded actuarial accrued liability. For fiscal year end 2019, the Alternative funding policy contribution of $177,285 is sufficient to finance only 61% of the net employer normal cost of $291,349. The state premium tax allocation of $136,709 is sufficient to finance only 1.6% of the unfunded actuarial accrued liability of $8,494,958.

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

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

If the minimum employer contributions (calculated under the Alternative funding policy) are not made or investment return is less than the assumption of 4.50%, the funded ratio will be lower and the cash flow strain could be higher. If another significant market downtown occurs while the plan's funded ratio is declining, the plan may need to liquidate assets in order to pay benefits which could have a further adverse effect on the funded status of the System.

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

- If the actual return on assets is *less* than the assumed return of 4.50%, then the funded ratio will *decrease*. Conversely, if the actual return on assets is *greater* than the assumed return of 4.50% then the funded ratio will *increase*.
- If salaries *increase* by more than assumed, the funded ratio could *decrease*. If salaries *decrease* by more than assumed, the funded ratio could *increase.*
- If active members retire *sooner* than expected, the funded ratio will generally *decrease.* If active members retire *later* than expected, the funded ratio will generally *increase*.
- If active members become disabled during the year, the funded ratio could *decrease*.
- If retired members die *later* than expected, the funded ratio will *decrease*. If retired members die *sooner* than expected, the funded ratio will *increase*.

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

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

Schedule A: Summary of Key Valuation Results

Valuation Date		**July 1, 2016**		**July 1, 2017**
Valuation Interest Rate		4.50%		4.50%
Cost-of-Living Adjustment		2.75%		2.75%
Wage Inflation		3.75%		3.75%
Expected Payroll		$638,967		$719,541
Average Pay		$49,151		$51,396
Expected Benefit Payments		$318,922		$348,051
1. Actuarial Accrued Liability	No.		No.	
(a) Actives	13	$3,671,442	14	$3,543,782
(b) Retirees	7	$3,577,310	8	$4,568,059
(c) Survivors	1	$174,396	1	$173,035
(d) Disabled Members	2	$1,236,410	2	$1,510,976
(e) Deferred Vested Members	0	$0	0	$0
(f) Total	23	$8,659,558	25	$9,795,852
2. Present Value of Future Normal Costs		$4,002,212		$4,493,884
3. Present Value of Benefits (1(f) + 2)		$12,661,770		$14,289,736
4. Market Value of Assets		$862,839		$1,300,894
5. Unfunded Actuarial Accrued Liability (1(f) - 4)		$7,796,719		$8,494,958
6. Funded Ratio (4 / 1(f))		9.96%		13.28%
7. Net Employer Normal Cost				
(a) Normal Cost		$320,506		$348,019
(b) Administrative Expenses		$2,395		$2,669
(c) Gross Normal Cost (a + b)		$322,901		$350,688
(d) Employee Contribution Rate [a]		8.04%		8.25%
(e) Expected Employee Contributions		$51,343		$59,339
(f) Net Employer Normal Cost (c - e)		$271,558		$291,349
(% of Compensation)		42.50%		40.49%
		FYE 2018		**FYE 2019**
8. Estimated Minimum Employer Contribution [b]				
(a) Prior Year Alternative Contribution		$154,848		$165,687
(b) Increase in Alternative Contribution		7.00%		7.00%
(c) Current Year Alternative Contribution		$165,687		$177,285
(d) Additional Contribution		$0		$0
(e) Alternative Contribution (c + d)		$165,687		$177,285

[a] Blended rate reflecting 7.0% for members hired before January 1, 2010, and 9.5% for members hired after January 1, 2010.

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

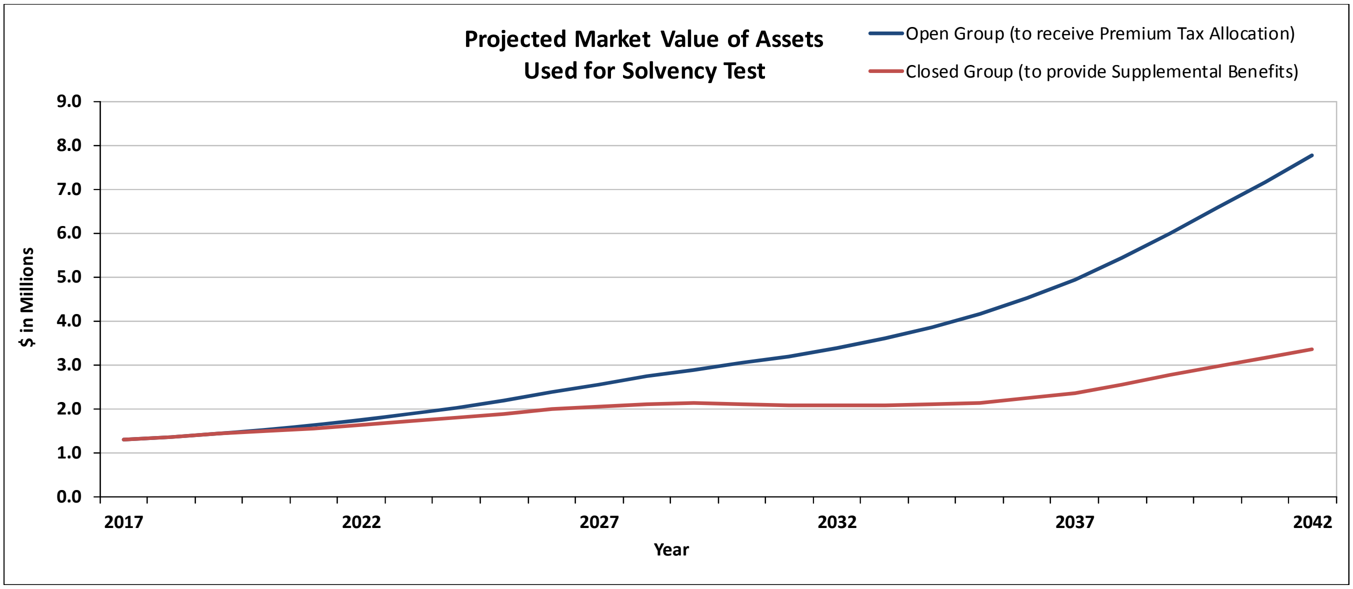
Schedule B: (Gain)/Loss Analysis

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

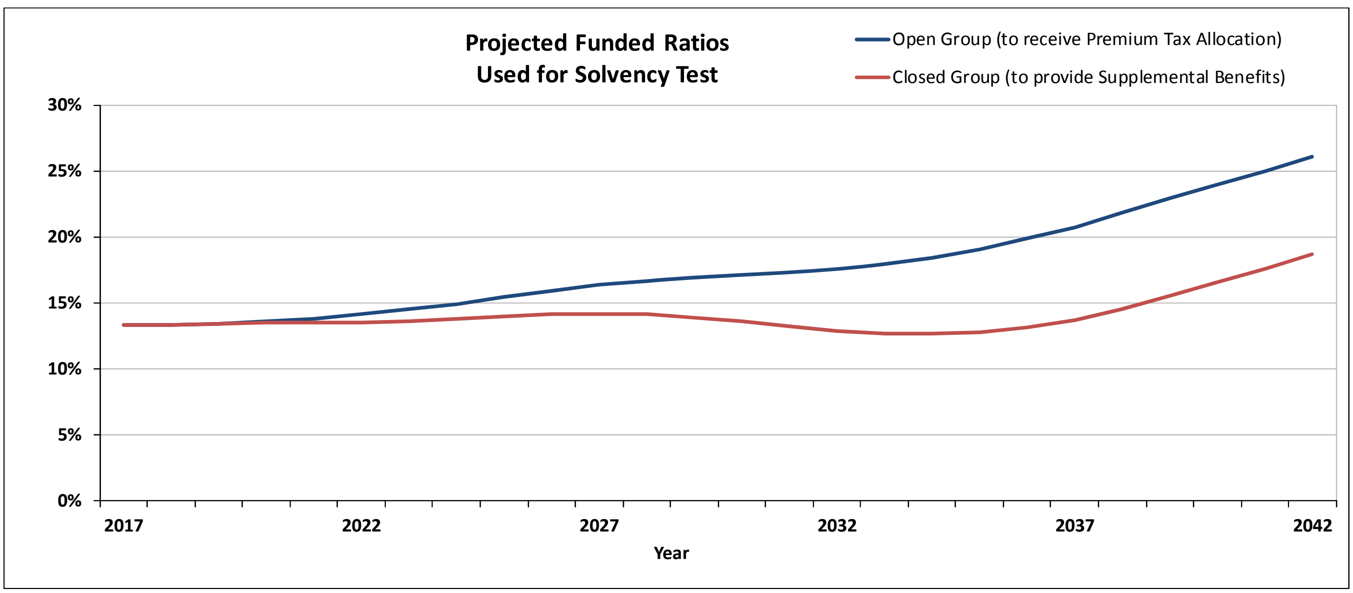
1.	(a) Actuarial Accrued Liability as of 7/1/2016	$8,659,558
	(b) Normal Cost due 7/1/2016	$320,506
	(c) Interest on (a) and (b) to 6/30/2017	$396,891
	(d) Benefit Payments with interest to 6/30/2017	$313,188
	(e) Effect of Assumption Changes	$0
	(f) Expected Liability at 7/1/2017 [(a) + (b) + (c) - (d) + (e)]	$9,063,767
	(g) Actual Liability at 7/1/2017	$9,795,852
	(h) Liability (Gain)/Loss [(g) - (f)]	**$732,085**
2.	(a) Market Value of Assets as of 7/1/2016	$862,839
	(b) Interest on (a) to 6/30/2017	$38,828
	(c) Contributions with interest to 6/30/2017	$687,905
	(d) Benefit Payments with interest to 6/30/2017	$313,188
	(e) Expected Assets at 6/30/2017 [(a) + (b) + (c) - (d)]	$1,276,384
	(f) Actual Assets at 7/1/2017	$1,300,894
	(g) Asset (Gain)/Loss [(e) - (f)]	**($24,510)**
3.	Total (Gain)/Loss [1(h) + 2(g)]	**$707,575**

Graphs 1A and 1B: Solvency Projections

Graph 1A



Graph 1B



SECTION II

ACTUARIAL PROJECTIONS

ALTERNATIVE FUNDING POLICY

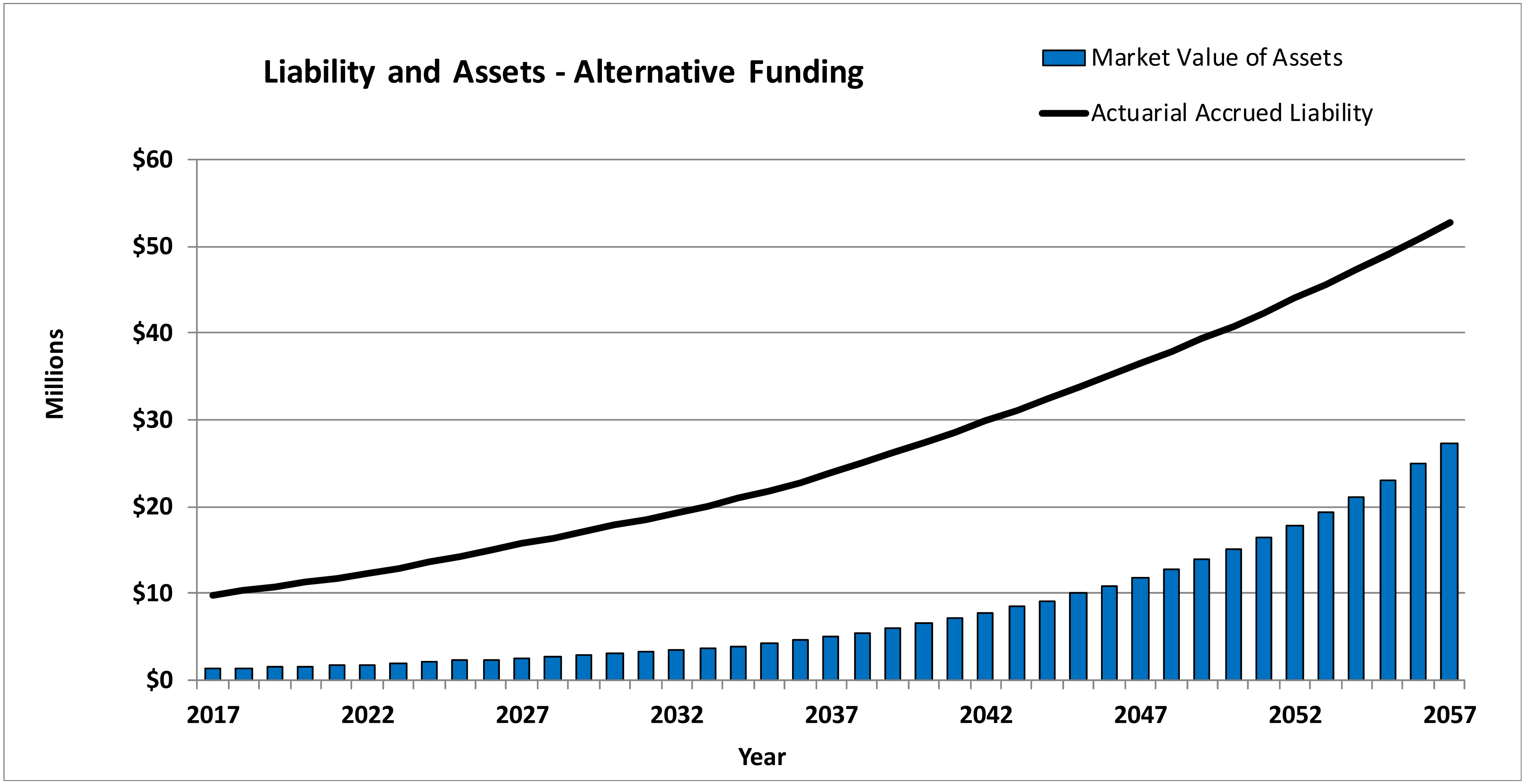
Alternative Funding on a Closed Group Basis, Table 1

Valuation Plan Year End 30-Jun	Number Active	Number Pay Status	Total Payroll	Total Assets: Assets (boy)	Benefit Payments	Expenses	Employer Contributions	Member Contributions	Premium Tax Allocation Contributions	Investment Income	Assets (eoy)	Actuarial Accrued Liability	Unfunded Liability	Funded Ratio
2017	14	11	$638,967	$862,836	$306,296	$90	$485,000	$60,503	$127,325	$71,616	$1,300,894	$9,795,852	$8,494,958	13%
2018	13	11	719,541	1,300,894	348,051	2,669	165,687	59,339	129,091	58,615	1,362,906	10,236,694	8,873,788	13%
2019	12	12	712,036	1,362,906	359,580	2,655	177,285	58,772	136,709	61,565	1,435,002	10,681,232	9,246,230	13%
2020	11	12	706,783	1,435,002	374,082	2,652	189,695	58,335	126,100	64,517	1,496,915	11,127,856	9,630,941	13%
2021	11	12	705,665	1,496,915	387,465	2,661	202,974	58,224	123,215	67,234	1,558,437	11,580,206	10,021,769	13%
2022	10	12	708,214	1,558,437	395,748	2,672	217,182	58,384	120,931	70,087	1,626,600	12,045,594	10,418,994	14%
2023	10	12	713,504	1,626,600	404,693	2,692	232,385	58,751	119,133	73,262	1,702,746	12,525,478	10,822,732	14%
2024	9	12	718,722	1,702,746	413,585	2,715	248,652	59,135	117,805	76,830	1,788,869	13,020,401	11,231,532	14%
2025	9	12	727,367	1,788,869	420,472	2,740	266,058	59,801	116,547	80,927	1,888,989	13,534,730	11,645,741	14%
2026	8	13	708,321	1,888,989	448,589	2,770	284,682	58,582	116,009	85,181	1,982,084	14,033,859	12,051,775	14%
2027	7	13	678,193	1,982,084	487,290	2,807	304,610	56,646	113,238	88,846	2,055,327	14,500,300	12,444,973	14%
2028	6	14	642,834	2,055,327	526,178	2,848	325,933	54,384	112,554	91,685	2,110,856	14,928,277	12,817,421	14%
2029	5	14	578,488	2,110,856	585,531	2,889	348,748	50,111	109,684	93,211	2,124,189	15,280,103	13,155,914	14%
2030	5	15	529,786	2,124,189	633,459	2,930	373,160	46,951	107,387	93,166	2,108,463	15,573,317	13,464,854	14%
2031	5	15	503,922	2,108,463	661,298	2,971	399,281	45,407	106,518	92,365	2,087,764	15,837,128	13,749,364	13%
2032	4	15	487,604	2,087,764	683,513	3,012	427,231	44,548	106,388	91,538	2,070,943	16,080,924	14,009,981	13%
2033	4	15	478,547	2,070,943	698,781	3,052	457,137	44,212	106,755	91,107	2,068,321	16,314,680	14,246,359	13%
2034	4	15	476,138	2,068,321	706,025	3,093	489,137	44,357	107,450	91,558	2,091,705	16,549,438	14,457,733	13%
2035	4	15	478,147	2,091,705	714,209	3,136	523,377	44,820	108,539	93,223	2,144,319	16,786,697	14,642,378	13%
2036	3	15	480,392	2,144,319	721,576	3,177	560,013	45,304	109,707	96,278	2,230,869	17,027,440	14,796,571	13%
2037	3	14	486,199	2,230,869	723,008	3,215	599,214	46,042	110,731	101,051	2,361,685	17,279,777	14,918,092	14%
2038	3	14	497,022	2,361,685	723,330	3,254	641,159	47,135	112,146	107,919	2,543,460	17,547,996	15,004,536	14%
2039	3	14	490,261	2,543,460	737,792	3,292	686,040	46,552	113,462	116,792	2,765,222	17,809,689	15,044,467	16%
2040	2	15	425,461	2,765,222	799,885	3,327	734,063	40,419	114,143	126,335	2,976,970	17,988,661	15,011,691	17%
2041	2	15	336,771	2,976,970	876,407	3,361	785,447	31,993	113,668	135,106	3,163,416	18,055,938	14,892,522	18%
2042	1	15	281,251	3,163,416	919,916	3,393	840,428	26,719	113,606	143,632	3,364,491	18,055,842	14,691,351	19%
2043	1	15	234,388	3,364,491	955,543	3,425	899,258	22,267	114,124	153,109	3,594,281	17,997,317	14,403,036	20%
2044	1	15	192,324	3,594,281	986,454	3,457	962,206	18,271	114,665	164,084	3,863,596	17,884,732	14,021,136	22%
2045	1	15	157,155	3,863,596	1,011,939	3,489	1,029,560	14,930	115,645	177,082	4,185,385	17,724,753	13,539,368	24%
2046	0	15	124,671	4,185,385	1,034,462	3,522	1,101,629	11,844	116,729	192,620	4,570,222	17,519,666	12,949,444	26%
2047	0	15	92,512	4,570,222	1,056,832	3,556	1,178,743	8,789	118,069	211,117	5,026,552	17,268,174	12,241,622	29%
2048	0	14	61,736	5,026,552	1,077,193	3,591	1,261,255	5,865	119,644	233,003	5,565,535	16,971,170	11,405,635	33%
2049	0	14	43,043	5,565,535	1,085,506	3,628	1,349,543	4,089	121,361	259,035	6,210,429	16,644,038	10,433,609	37%
2050	0	14	27,839	6,210,429	1,090,655	3,666	1,444,011	2,645	123,261	290,052	6,976,077	16,290,160	9,314,083	43%
2051	0	14	17,170	6,976,077	1,091,840	3,705	1,545,092	1,631	125,277	326,751	7,879,282	15,914,420	8,035,138	50%
2052	0	14	11,466	7,879,282	1,088,756	3,745	1,653,248	1,089	127,453	369,906	8,938,477	15,522,475	6,583,998	58%
2053	0	13	7,449	8,938,477	1,083,723	3,785	1,768,975	708	129,707	420,298	10,170,657	15,116,301	4,945,644	67%
2054	0	13	4,531	10,170,657	1,077,048	3,824	1,892,803	430	131,935	478,693	11,593,647	14,697,407	3,103,760	79%
2055	0	13	2,704	11,593,647	1,068,630	3,860	2,025,299	257	134,165	545,908	13,226,785	14,267,505	1,040,720	93%
2056	0	13	1,470	13,226,785	1,058,707	3,894	931,923	140	136,300	595,334	13,827,881	13,827,881	0	100%
2057	0	12	595	13,827,881	1,047,372	3,924	4,107	57	0	598,953	13,379,702	13,379,702	0	100%

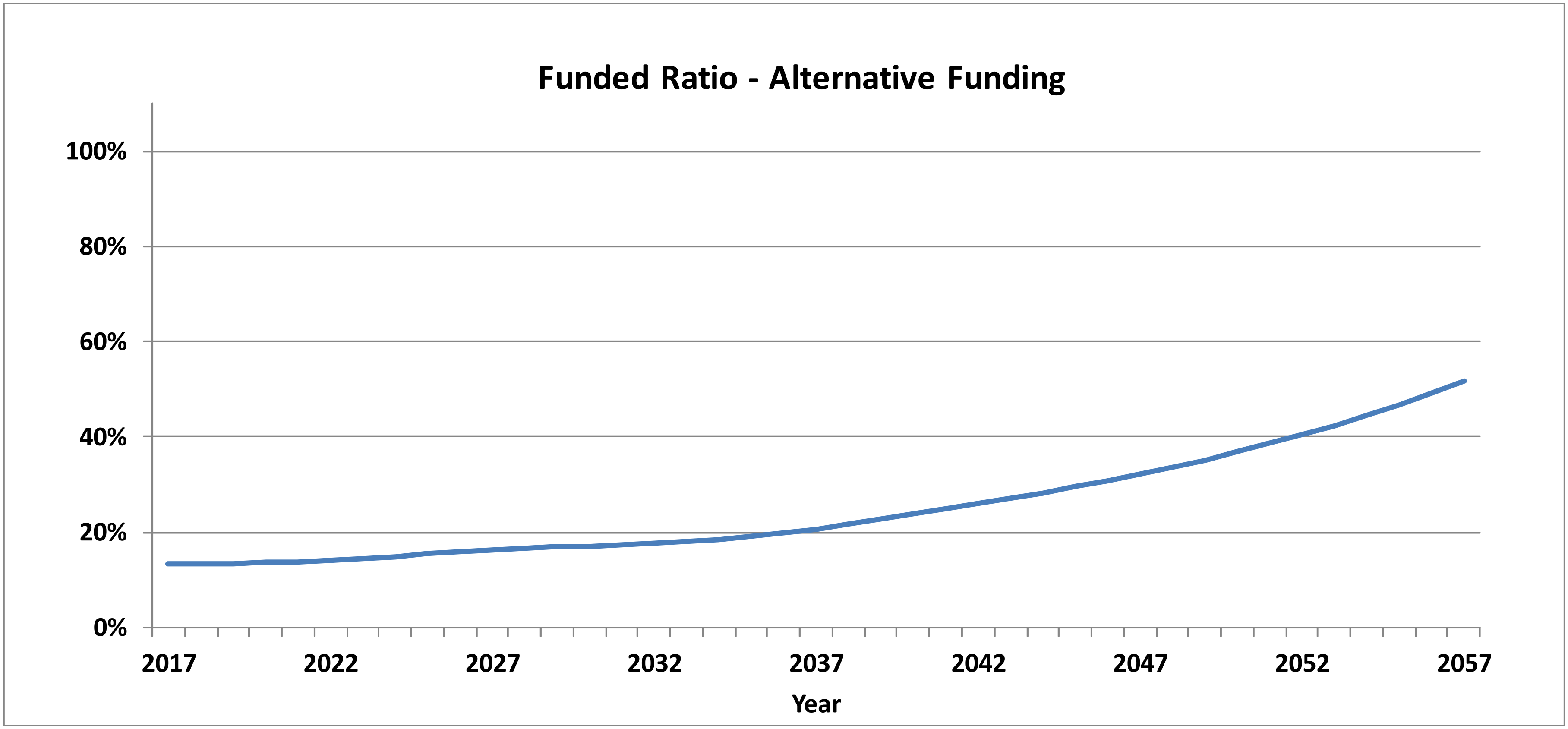
Alternative Funding on an Open Group Basis, Table 2

Valuation Plan Year End	Number			Total Assets										
30-Jun	Active	Pay Status	Total Payroll	Assets (boy)	Benefit Payments	Expenses	Employer Contributions	Member Contributions	Premium Tax Allocation Contributions	Investment Income	Assets (eoy)	Actuarial Accrued Liability	Unfunded Liability	Funded Ratio
2017	14	11	$638,967	$862,836	$306,296	$90	$485,000	$60,503	$127,325	$71,616	$1,300,894	$9,795,852	$8,494,958	13%
2018	14	11	719,541	1,300,894	348,051	2,669	165,687	59,339	129,091	58,615	1,362,906	10,248,892	8,885,986	13%
2019	14	12	758,877	1,362,906	359,580	2,776	177,285	63,325	136,709	61,664	1,439,533	10,728,116	9,288,583	13%
2020	14	12	798,776	1,439,533	374,282	2,878	189,695	67,160	141,884	65,259	1,526,371	11,231,862	9,705,491	14%
2021	14	12	840,049	1,526,371	388,174	2,978	202,974	71,054	145,182	69,311	1,623,740	11,763,544	10,139,804	14%
2022	14	12	883,393	1,623,740	397,197	3,074	217,182	75,094	148,363	73,967	1,738,074	12,330,727	10,592,653	14%
2023	14	12	928,730	1,738,074	407,015	3,172	232,385	79,291	151,627	79,395	1,870,585	12,935,485	11,064,900	14%
2024	14	12	973,698	1,870,585	416,885	3,269	248,652	83,490	154,980	85,667	2,023,219	13,579,901	11,556,682	15%
2025	14	12	1,024,894	2,023,219	424,891	3,373	266,058	88,252	158,521	92,927	2,200,713	14,268,943	12,068,230	15%
2026	14	13	1,044,797	2,200,713	454,292	3,468	284,682	90,774	161,860	100,802	2,381,072	14,978,192	12,597,120	16%
2027	14	13	1,091,879	2,381,072	494,422	3,660	304,610	96,308	167,792	108,720	2,560,421	15,694,336	13,133,915	16%
2028	14	14	1,112,199	2,560,421	535,022	3,793	325,933	99,343	172,371	116,528	2,735,782	16,416,814	13,681,032	17%
2029	14	14	1,135,076	2,735,782	596,331	3,997	348,748	103,504	178,932	123,797	2,890,434	17,117,964	14,227,530	17%
2030	14	15	1,178,973	2,890,434	646,440	4,204	373,160	109,261	185,520	130,454	3,038,185	17,814,675	14,776,490	17%
2031	14	15	1,229,776	3,038,185	676,762	4,364	399,281	115,093	191,014	137,258	3,199,705	18,533,564	15,333,859	17%
2032	14	15	1,284,891	3,199,705	701,607	4,509	427,231	121,164	196,207	144,843	3,383,035	19,284,438	15,901,403	18%
2033	14	15	1,345,656	3,383,035	719,685	4,645	457,137	127,637	201,399	153,613	3,598,490	20,078,475	16,479,985	18%
2034	14	15	1,411,346	3,598,490	729,979	4,773	489,137	134,430	206,399	164,051	3,857,754	20,928,395	17,070,641	18%
2035	14	15	1,481,284	3,857,754	741,478	4,901	523,377	141,538	211,733	176,498	4,164,521	21,838,051	17,673,530	19%
2036	14	15	1,552,531	4,164,521	752,489	5,024	560,013	148,788	217,003	191,148	4,523,960	22,812,229	18,288,269	20%
2037	14	15	1,631,774	4,523,960	757,690	5,151	599,214	156,587	222,396	208,370	4,947,686	23,862,094	18,914,408	21%
2038	14	15	1,713,057	4,947,686	762,075	5,271	641,159	164,359	227,867	228,566	5,442,291	24,995,192	19,552,901	22%
2039	14	15	1,779,285	5,442,291	780,430	5,397	686,040	170,632	233,543	251,677	5,998,356	26,196,228	20,197,872	23%
2040	14	15	1,806,836	5,998,356	847,968	5,565	734,063	173,232	240,586	276,476	6,569,180	27,405,817	20,836,637	24%
2041	14	16	1,856,414	6,569,180	932,505	5,828	785,447	177,817	250,534	301,743	7,146,388	28,602,972	21,456,584	25%
2042	14	16	1,924,901	7,146,388	986,896	6,056	840,428	183,990	259,570	328,064	7,765,488	29,825,844	22,060,356	26%
2043	14	16	1,988,131	7,765,488	1,037,499	6,259	899,258	189,482	267,840	356,408	8,434,718	31,082,205	22,647,487	27%
2044	14	16	2,063,589	8,434,718	1,087,793	6,487	962,206	195,775	277,012	387,144	9,162,576	32,373,256	23,210,680	28%
2045	14	16	2,130,892	9,162,576	1,138,546	6,702	1,029,560	201,408	285,726	420,581	9,954,603	33,698,382	23,743,779	30%
2046	14	17	2,210,572	9,954,603	1,196,312	6,952	1,101,629	208,549	295,648	456,916	10,814,081	35,055,916	24,241,835	31%
2047	14	17	2,282,190	10,814,081	1,260,628	7,194	1,178,743	214,852	305,386	496,228	11,741,468	36,442,213	24,700,745	32%
2048	14	17	2,362,200	11,741,468	1,328,817	7,460	1,261,255	222,103	316,029	538,672	12,743,250	37,856,566	25,113,316	34%
2049	14	17	2,448,784	12,743,250	1,389,615	7,723	1,349,543	229,875	326,638	584,766	13,836,735	39,311,958	25,475,223	35%
2050	14	18	2,536,151	13,836,735	1,451,122	7,991	1,444,011	237,831	337,540	635,120	15,032,124	40,809,571	25,777,447	37%
2051	14	18	2,631,569	15,032,124	1,513,847	8,274	1,545,092	246,513	349,016	690,209	16,340,833	42,352,955	26,012,122	39%
2052	14	18	2,728,353	16,340,833	1,576,533	8,558	1,653,248	255,054	360,644	750,555	17,775,243	43,945,634	26,170,391	40%
2053	14	18	2,827,388	17,775,243	1,642,415	8,856	1,768,975	264,179	372,862	816,681	19,346,669	45,585,308	26,238,639	42%
2054	14	19	2,931,563	19,346,669	1,714,016	9,167	1,892,803	273,648	385,597	889,044	21,064,579	47,273,076	26,208,497	45%
2055	14	19	3,036,582	21,064,579	1,788,336	9,483	2,025,299	283,379	398,693	968,146	22,942,277	49,008,556	26,066,279	47%
2056	14	19	3,148,454	22,942,277	1,867,178	9,812	2,167,070	294,307	412,375	1,054,583	24,993,622	50,793,404	25,799,782	49%
2057	14	19	3,267,154	24,993,622	1,948,678	10,142	2,318,765	305,987	426,256	1,149,017	27,234,826	52,635,029	25,400,203	52%

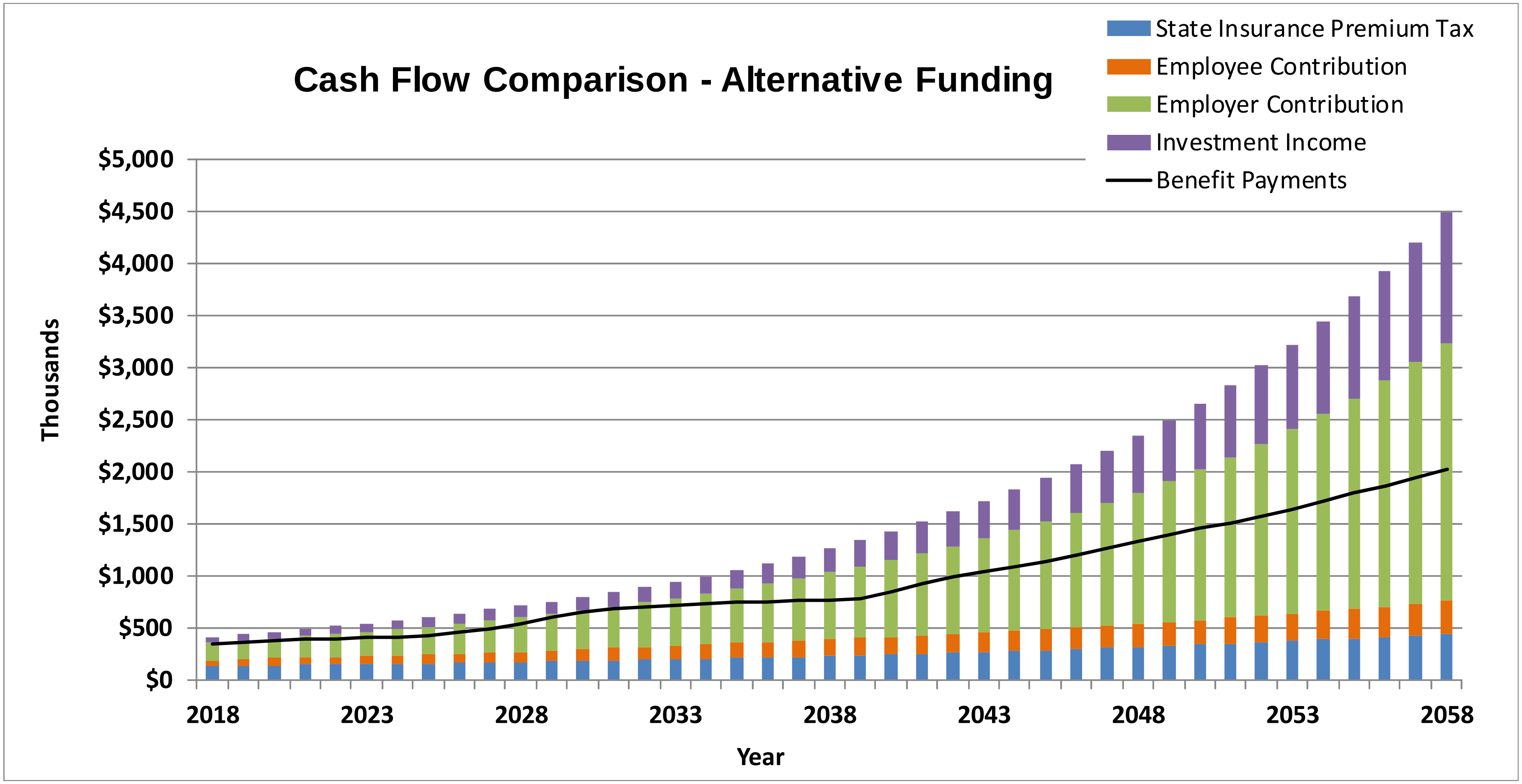
Open Group Actuarial Projections – Alternative Funding, Graph 2



Open Group Actuarial Projections – Alternative Funding, Graph 3



Open Group Actuarial Projections – Alternative Funding, Graph 4



SECTION III

FUNDING POLICY CHOICES

Actuarial Projections –Alternative/Optional/Conservation Funding

Funding Policy Choices

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

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

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

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

- Employer contributions equal to the normal cost, net of employee contributions, plus a 40-year closed period amortization from January 1, 2010, on a level dollar basis, of the unfunded actuarial accrued liability net of premium tax allocation applicable to the plan year.
- Employee contributions of 7% of pay if hired before January 1, 2010, which may be increased by up to 2.5% of pay if elected by the Board of trustees of the Plan. Employees hired after January 1, 2010, contribute 9.50% of pay.
- The premium tax allocation assigned to the Fund for the plan year.

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

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

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

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

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

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

Given that the funded ratio as of June 30, 2017 is only 13.3% and that the ratio of assets to expected benefits for the year is only 3.74, we strongly recommend that the sponsor make additional contributions in excess of the statutory minimum under both the Alternative and Conservation funding policies.

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

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

Total Employer Contributions for FYE June 30, 2019				
	Local Plan		Statewide Plan	
Funding Method	Amount	Percent of Pay	Amount	Percent of Pay
Alternative	$177,285	23.4%	NA	NA
Optional	$646,150	90.7%	$4,918	10.5%
Conservation	$253,978	35.7%	$4,918	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 $165,687 in fiscal year end 2018 to $2,318,765 in fiscal year end 2057. In fiscal year end 2057, the plan is projected to be 52% 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 $177,285 to $646,150. However, over the 40-year projection period, total employer contributions to both the local plan and the statewide plan are projected to decrease from $651,068 in fiscal year end 2019 to $427,480 in fiscal year end 2049, and the Plan is projected to be fully funded in 2050.

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

If the Conservation funding policy is selected in fiscal year end 2019, employer contributions to the local plan for fiscal year end 2019 are projected to increase from $177,285 to $253,978. During the 35-year projection period, total employer contributions to both the local plan and the statewide plan are projected to increase from $258,896 in fiscal year end 2019 to $1,215,081 in fiscal year end 2051 and the Plan is projected to be fully funded in 2052.

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

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

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

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

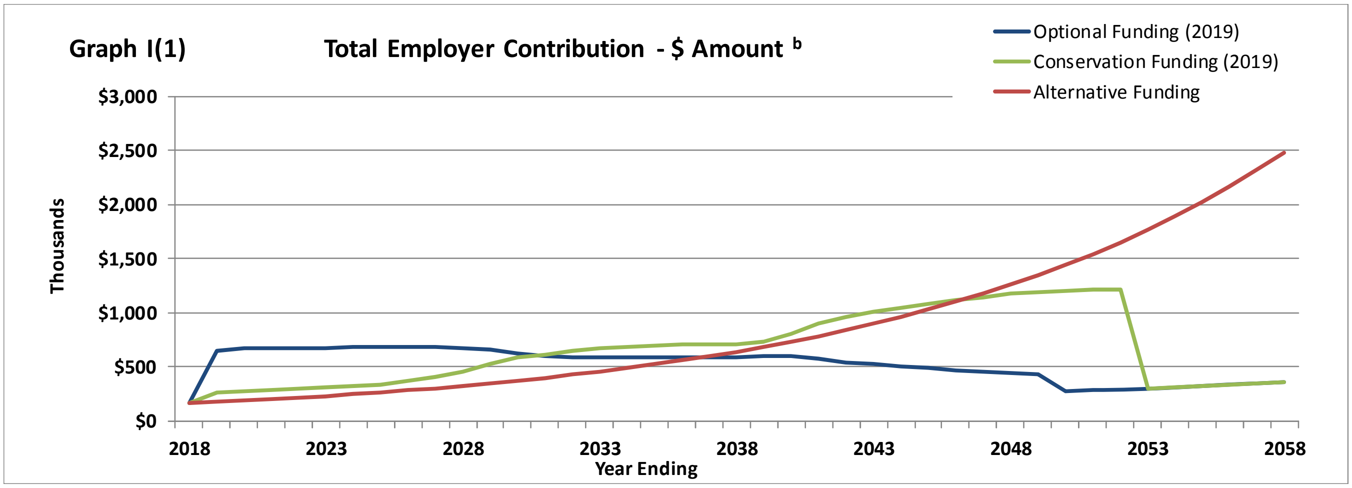
Scenario II – Sponsor Elects Optional or Conservation Policy if/when Contributions are Lower

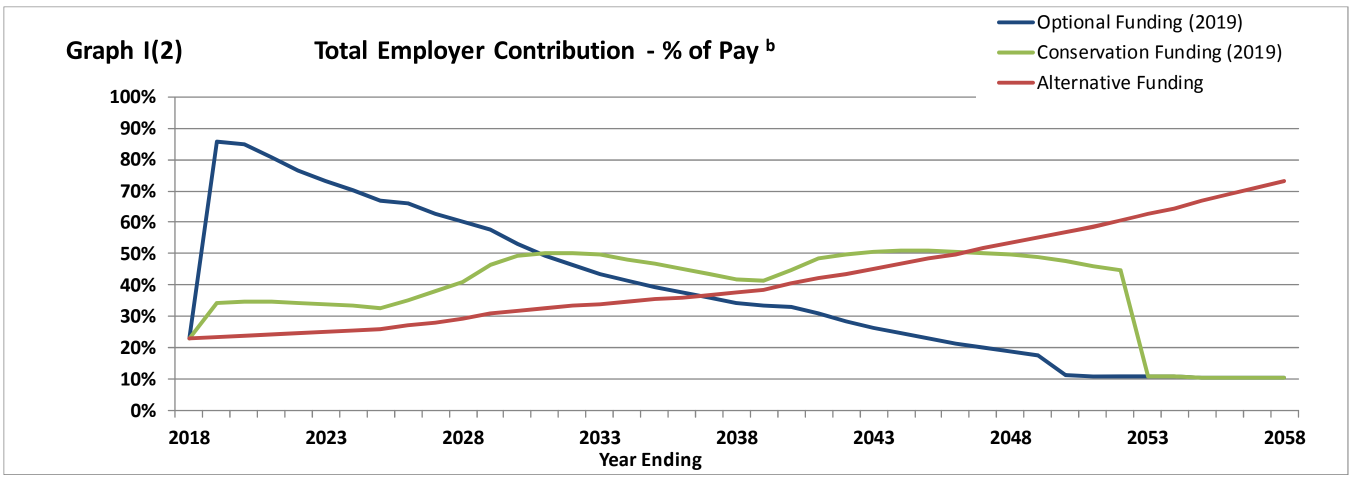
Under Scenario II, the plan sponsor is assumed to make contributions under the Alternative funding policy in future years, until the first year that either the Optional or Conservation policy produces a lower contribution. Under this assumption, the employer contributions under the Optional funding policy are not projected to be lower than contributions under the Alternative funding policy. In plan year end 2035, the employer contributions under the Conservation funding policy of $492,554 are projected to be lower than contributions under the Alternative funding policy of $523,377.

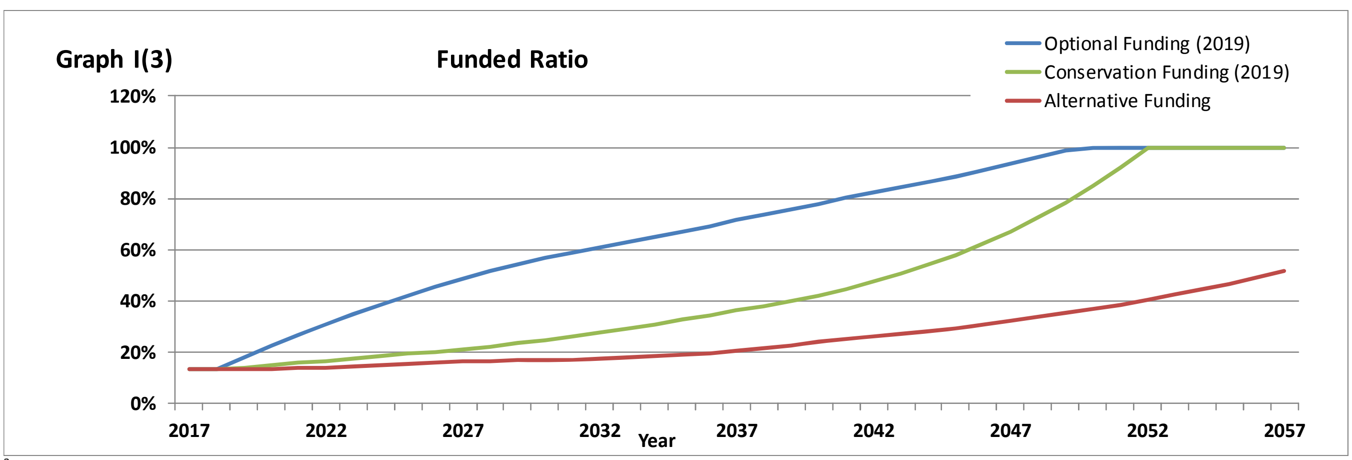
Graphs II(1), II(2), and III(3) show the projected contribution pattern and funded ratio. Based on these projections, the Conservation funding policy has lower projected employer contributions than the Alternative funding policy beginning in 2035. After 2035, the funded ratio under the Conservation funding policy increases at a lower rate than the Alternative funding policy. As stated above, however, the Conservation funding policy is dependent on expected benefits payments when considering the *expected number of retirement and disabilities.* The ultimate employer contributions depend on the *actual number of retirement and disabilities*, which could result in a more volatile contribution pattern when compared to the Optional funding policy.

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

Scenario I



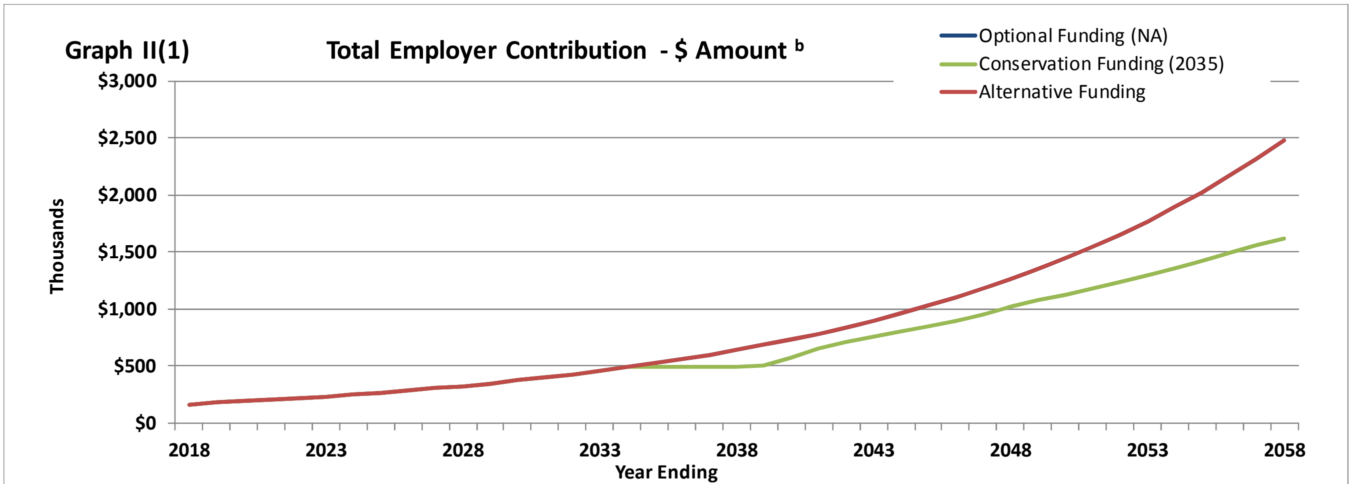


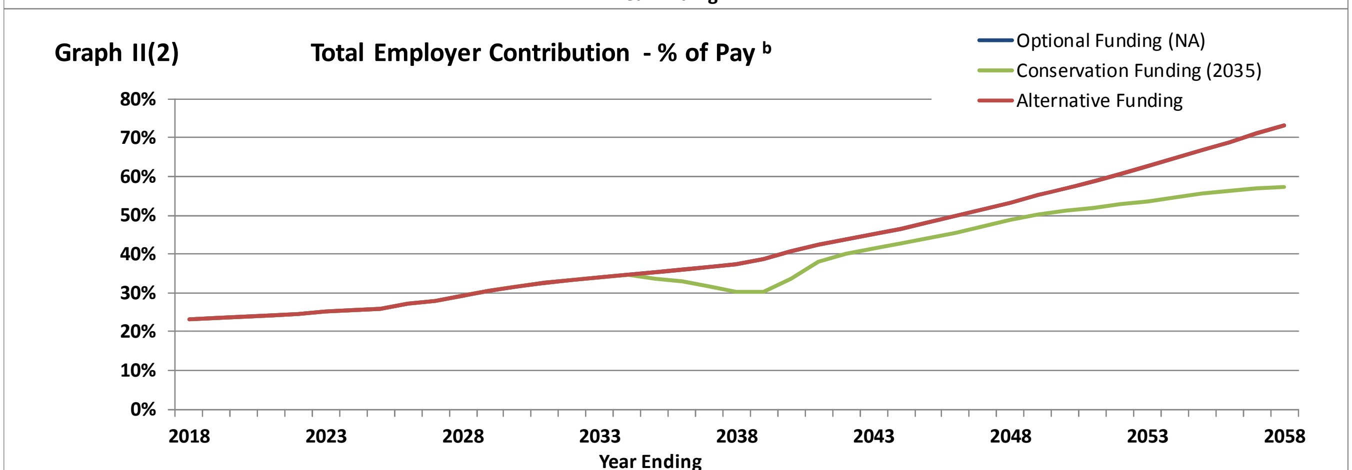


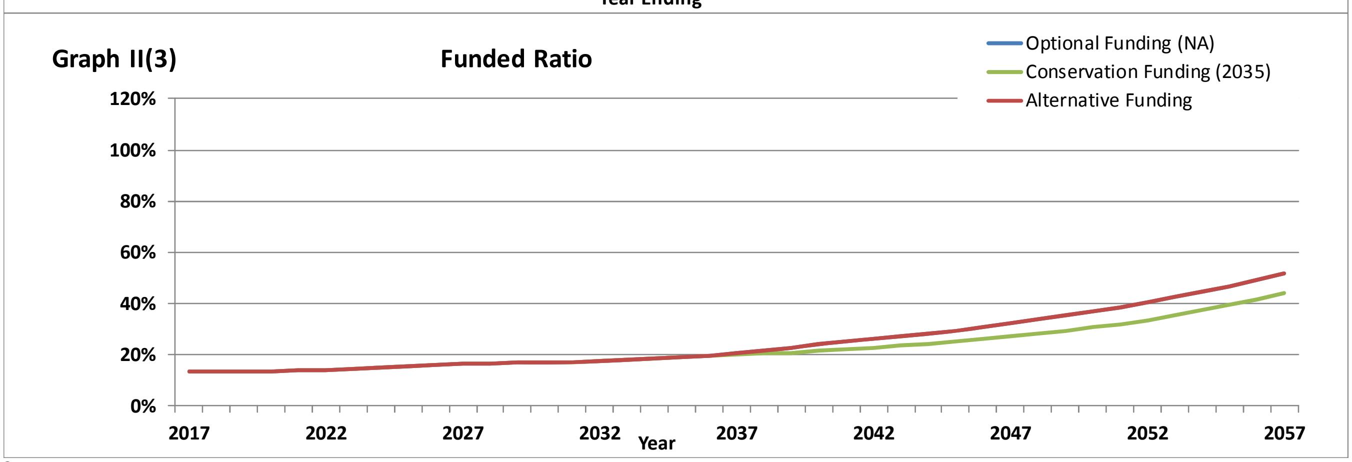
[a] *Assumes Sponsor elects either the Optional funding policy or Conservation funding policy in fiscal year end June 30, 2019, and makes the newly elected contribution in fiscal year end June 30, 2019.*
[b] *Based on total pay and includes contributions for future members projected to participate in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

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

Scenario II







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

SECTION IV

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

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

Valuation Date	**July 1, 2016**	**July 1, 2017**
Valuation Interest Rate	4.50%	4.50%
Cost-of-Living Adjustment	2.75%	2.75%
Wage Inflation	3.75%	3.75%
Actuarial Value of Assets	Market	Market
Actuarial Cost Method	Entry Age Normal	Entry Age Normal
Remaining Amortization Period [a]	24 Years, Level % of Pay	23 Years, Level % of Pay
Schedule of Funding Progress		
Actuarial Valuation Date	**July 1, 2016**	**July 1, 2017**
1. Market Value of Assets	$862,839	$1,300,894
2. Actuarial Accrued Liability	$8,659,558	$9,795,852
3. Unfunded Actuarial Accrued Liability (2 - 1)	$7,796,719	$8,494,958
4. Funded Ratio (1/2)	10%	13%
5. Expected Payroll	$638,967	$719,541
6. UAAL as Percentage of Covered Payroll (3/5)	1,220%	1,181%
Schedule of Employer Contributions [c]	**FYE 2017**	**FYE 2018**
1. Actuarially Determined Contribution		
(a) Employer Normal Cost	$271,558	$291,349
(b) Amortization of Unfunded Actuarial Accrued Liability	$352,480	$399,345
(c) Actuarially Determined Contribution (ADC) (a + b)	$624,038	$690,694
2. Employer Contribution [b]	$485,000	$165,687
3. Premium Tax Allocation	$127,325	$129,091
4. Percentage of ADC Contributed [(2 + 3)/1(c)]	98%	43%

[a] *Suggested amortization policy to comply with GASB Statement Nos. 67 and 68 Standards.*

[b] *Estimated employer contribution for fiscal year end June 30, 2018.*

[c] *The Alternative minimum contribution plus the premium tax allocation does not satisfy the Actuarially Determined Contribution as defined by GASB Statement Nos. 67 and 68.*

SECTION V

ACTUARIAL VALUATION DATA AS OF JULY 1, 2017

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

Plan Year Ending	June 30, 2016	June 30, 2017
A. Market Value of Assets End of Prior Year	$777,651	$862,839
Adjustment to Market Value of Assets at Beginning of Year	$0	($3)
Market Value of Assets Beginning of Year	$777,651	$862,836
1. Revenue During Fiscal Year		
(a) Employee Contribution	$55,075	$57,737
(b) Governmental Contribution		
(i) From Local Government	$144,719	$485,000
(ii) From State Government	$143,315	$127,325
(iii) Reallocation from State Government	$0	$0
(iv) Total	$288,034	$612,325
(c) Earnings on Investments		
(i) Net Appreciation/(Depreciation)	$7,405	$60,255
(ii) Bond Interest	$5,775	$4,844
(iii) Dividends	$8,794	$10,413
(iv) Net Realized Gain (Loss) on Sale/Exchange	$0	$0
(v) Other	$0	$0
(vi) Less Investment Expense	($2,788)	($3,896)
(vii) Total	$19,186	$71,616
(d) Other Revenue	$0	$0
(e) Receivable Investment Income/(Expense)	$0	$0
(f) Receivable Contribution [a]		
(i) From Employee Contributions	$0	$2,766
(ii) From Local Government	$0	$0
(iii) From State Government	$0	$0
(iv) Total	$0	$2,766
(g) Total Revenue (sum of (a) through (f))	$362,295	$744,444
2. Expenditures During Fiscal Year		
(a) Benefits Paid	$277,009	$291,710
(b) Withdrawals	$0	$14,586
(c) Administrative Expenses	$98	$90
(d) Payable Benefits and Withdrawals	$0	$0
(e) Payable Administrative Expenses	$0	$0
(f) Total Expenditures (sum of (a) through (e))	$277,107	$306,386
B. Market Value of Assets End of Year [A + 1(g) - 2(f)]	$862,839	$1,300,894
C. Approximate Return on Assets	2.35%	6.85%

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

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

Plan Year Ending	June 30, 2016		June 30, 2017	
1. Cash and Short-term Investments	$203,620	24%	$578,656	45%
2. Government Securities				
(a) US Treasury Bills, Notes and Bonds	$0		$0	
(b) US State and Local Governmental Debt Securities	$0		$0	
(c) Foreign Governmental Debt Securities	$0		$0	
(d) Other	$0		$0	
(e) Total Government Securities (sum of (a) through (d))	$0	0%	$0	0%
3. Corporate Fixed Income				
(a) US Bonds	$0		$0	
(b) US Mortgage or other Asset Backed Securities	$0		$0	
(c) US Mutual Fund Shares (Bonds)	$254,493		$0	
(d) US Exchange Traded Funds (Bonds)	$0		$247,722	
(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))	$254,493	29%	$247,722	19%
4. Corporate Equity				
(a) US Equity	$404,726		$0	
(b) US Mutual Fund Shares (Equity)	$0		$0	
(c) US Exchange Traded Funds (Equity)	$0		$471,750	
(d) International Equity	$0		$0	
(e) International Mutual Fund Shares (Equity)	$0		$0	
(f) International Exchange Traded Funds (Equity)	$0		$0	
(g) Total Corporate Equity (sum of (a) through (f))	$404,726	47%	$471,750	36%
5. Alternative Investments				
(a) Real Estate Investment Trust	$0		$0	
(b) Private Equity Fund	$0		$0	
(c) Hedge Funds	$0		$0	
(d) Other Alternative Investments	$0		$0	
(e) Total Alternative Investments (sum of (a) through (d))	$0	0%	$0	0%
6. Other	$0	0%	$0	0%
7. Receivable Contributions				
(a) From Employee Contributions	$0		$2,766	
(b) From Local Government	$0		$0	
(c) From State Government	$0		$0	
(d) Total Receivable Contributions (sum of (a) through (c))	$0	0%	$2,766	0%
8. Accruals				
(a) Receivable (other than State and Local Contributions)	$0		$0	
(b) Less Payable	$0		$0	
(c) Total	$0	0%	$0	0%
Market Value of Assets End of Year [sum of (1) through (8)]	**$862,839**		**$1,300,894**	

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

	Actives	Retirees	Disabled	Deferred Vested	Spouses and Beneficiaries	Totals
Total Participants July 1, 2016:	**13**	**7**	**2**	**0**	**1**	**23**
New Actives:	5					**5**
Returned to Actives Status:						**0**
Data Corrections/Other Changes:						**0**
Vested Terminations:						**0**
Non-Vested Terminations:	(3)					**(3)**
Disabled:						**0**
Retirements:	(1)	1				**0**
Deaths with Beneficiary:						**0**
Deaths w/o Beneficiary:						**0**
Expired Annuity or Stop Payment:						**0**
Net Changes:	1	1	0	0	0	**2**
Total Participants June 30, 2017:	**14**	**8**	**2**	**0**	**1**	**25**

Actuarial Valuation Data as of July 1, 2017

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

Attained Age	Less than 1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	Over 35	Totals	Valuation Payroll[a]
				Years of Service to Valuation Date							
Under 20											$ 0
20-24	3									**3**	**$ 109,938**
25-29		4	1							**5**	**$ 248,342**
30-34											**$ 0**
35-39				1	1					**2**	**$ 115,550**
40-44			1		2					**3**	**$ 185,332**
45-49											**$ 0**
50-54							1			**1**	**$ 63,856**
55-59											**$ 0**
60-64											**$ 0**
65-69											**$ 0**
Over 70											**$ 0**
Totals	**3**	**4**	**2**	**1**	**3**	**0**	**1**	**0**	**0**	**14**	**$ 723,017**

Averages

Age:	32.8	years
Service:	8.7	years
Annual Pay:	$51,644	[a]

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

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

Active Participants	July 1, 2016	July 1, 2017
Number of Actives	13	14
Total Annual Pay	$655,037	$723,017
Average Age	35.7	32.8
Average Service	10.3	8.7

Inactive Participants	July 1, 2016		July 1, 2017[a]	
Type	No.	Annual Benefit	No.	Annual Benefit
Retirees	7	$199,153	8	$250,641
Survivors	1	$17,369	1	$18,064
Disabled Members	2	$54,000	2	$56,160
Deferred Vested Members	0	$0	0	$0

[a]Data provided includes 3 non-vested members with accumulated contributions balances of $5,211.

SECTION VI

ACTUARIAL ASSUMPTIONS AND METHODS

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

Discount Rate

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

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

[1]Funded ratios based on a 6.0% investment return assumption for plans using an actuarially sound policy (standard or optional) and a 5.5% investment return assumption for other plans (alternative or conservation).

[2]Liquidity ratio equals assets as of the actuarial valuation date divided by expected benefit payments for the year.

[3]Based on investment policy.

As of June 30, 2017	
Assets	$1,300,894
Liabilities using a 5.50% discount rate	$8,382,342
Funded Ratio	16%
Expected Benefit Payments	$348,051
Liquidity Ratio	3.74
Equity Exposure	36%
Projected Funded Ratio after 15 years	23%

Discount Rate	4.50%

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 Nitro Firemen's Pension and Relief Fund reported 14 eligible active members and 11 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 $136,709 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% *plus* Wage Inflation Increment: 1.00% *plus*
Service-based Increase:	Years of Service / Increase 1 — 20.00% 2 — 6.50% 3 — 3.50% 4 — 2.75% 5-9 — 2.50% 10-29 — 2.00% 30-34 — 1.25% after 34 years of service — 0.00%
Post-retirement COLA	2.75% on first $15,000 of Annual Benefit and on the accumulated supplemental pension amounts for prior years. Assumed to be payable to all members receiving payments.
Increase in State Insurance Premium Tax Allocation	2.75% on and after year 1
Cost Method	Entry-Age-Normal, Level-Percentage-of-Pay
Amortization Policies:	
Alternative Plans and former Alternative Plans that selected the Conservation Policy	For GASB 67/68 Accounting: 30 – Year Closed Level-Percentage-of-Pay Amortization (from July 1, 2010 – 23 years remaining as of July 1, 2017).
Standard Plans and former Standard Plans that selected the Optional Policy	For funding and GASB 67/68 Accounting: 40-Year Closed Level-Dollar Amortization (from July 1, 1991 – 14 years remaining as of July 1, 2017)
Former Alternative Plans that selected the Optional Policy	For funding: 40-Year Closed Level-Dollar Amortization (from January 1, 2010 – 32.5 years remaining as of July 1, 2017). For GASB 67/68 Accounting: 30-Year Closed Level-Percentage-of-Pay Amortization (from July 1, 2010 – 23 years remaining as of July 1, 2017)

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

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

Administrative Expenses	Administrative expenses used are equal to 0.25% of expected pay plus 0.25% of expected benefits. Future expenses assumed to increase by the general inflation assumption.
Refunds Paid	Assumes non-vested inactive members as of July 1, 2017, with accumulated member contribution balances will receive a refund of their contributions during plan year end June 30, 2018.
Data Adjustments and Assumptions	None
Child Beneficiaries	Future survivor widow benefits are loaded by 12% to estimate impact of benefits provided to survivor children. The load assumes 90% of members are married with two children at time of death, and benefits for each child are paid for approximately 8 years.
General Projection Methodology	Open group projections assume: (i) Salaries will increase and members will decrement as specified in the actuarial assumption section. (ii) Active members who retire, become disabled, die or terminate during the year are replaced with new entrants such that the number of active members remains stable during the projection period. Pay for new entrants in future years is increased by the wage inflation assumption. The average age of a new entrant is based on observed experience over the last five years. (iii) Assets grow at the assumed rate of return. (iv) The sponsor makes the statutory required contribution on a monthly basis. (v) Non-vested members with accumulated plan balances as of July 1, 2017, will receive a refund during plan year end June 30, 2018. Closed group projections are the same as the open group projections except active members who retire, become disabled, die, or terminate are <u>not</u> replaced with new entrants.
Decrement Timing	Mid-Year

SECTION VII

SUMMARY OF PRINCIPAL PLAN PROVISIONS

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

SECTION VIII

APPENDIX – PROJECTION DATA

Actuarial Projections – Optional Funding in 2019
Table A-1

Valuation Plan Year End 30-Jun	Number		Total Assets										
	Active	Pay Status	Assets (boy)	Benefit Payments	Expenses	Employer Contribs.	Member Contribs.	Premium Tax Allocation Contribs.	Investment Income	Assets (eoy)	Actuarial Accrued Liability	Unfunded Liability	Funded Ratio
2017	14	11	$862,836	$306,296	$90	$485,000	$60,503	$127,325	$71,616	$1,300,894	$9,795,852	$8,494,958	13%
2018	13	11	1,300,894	348,051	2,669	165,687	59,339	129,091	58,615	1,362,906	10,236,694	8,873,788	13%
2019	12	12	1,362,906	359,580	2,655	646,150	58,772	136,709	71,998	1,914,300	10,681,232	8,766,932	18%
2020	11	12	1,914,300	374,082	2,652	666,506	58,335	141,884	97,047	2,501,337	11,127,856	8,626,519	22%
2021	11	12	2,501,337	387,465	2,661	662,332	58,224	145,182	123,144	3,100,093	11,580,206	8,480,113	27%
2022	10	12	3,100,093	395,748	2,672	658,456	58,384	148,363	149,891	3,716,766	12,045,594	8,328,828	31%
2023	10	12	3,716,766	404,693	2,692	656,188	58,751	151,627	177,473	4,353,420	12,525,478	8,172,058	35%
2024	9	12	4,353,420	413,585	2,715	655,164	59,135	154,980	205,984	5,012,383	13,020,401	8,008,018	38%
2025	9	12	5,012,383	420,472	2,740	653,874	59,801	158,521	235,549	5,696,915	13,534,730	7,837,815	42%
2026	8	13	5,696,915	448,589	2,770	654,213	58,582	161,860	265,781	6,385,992	14,033,859	7,647,867	46%
2027	7	13	6,385,992	487,290	2,807	640,234	56,646	167,792	295,705	7,056,272	14,500,300	7,444,028	49%
2028	6	14	7,056,272	526,178	2,848	621,922	54,384	172,371	324,646	7,700,568	14,928,277	7,227,709	52%
2029	5	14	7,700,568	585,531	2,889	597,392	50,111	178,932	351,822	8,290,404	15,280,103	6,989,699	54%
2030	5	15	8,290,404	633,459	2,930	559,868	46,951	185,520	376,538	8,822,891	15,573,317	6,750,426	57%
2031	5	15	8,822,891	661,298	2,971	530,246	45,407	191,014	399,309	9,324,597	15,837,128	6,512,531	59%
2032	4	15	9,324,597	683,513	3,012	510,960	44,548	196,207	421,057	9,810,844	16,080,924	6,270,080	61%
2033	4	15	9,810,844	698,781	3,052	496,555	44,212	201,399	442,386	10,293,562	16,314,680	6,021,118	63%
2034	4	15	10,293,562	706,025	3,093	485,830	44,357	206,399	463,822	10,784,852	16,549,438	5,764,586	65%
2035	4	15	10,784,852	714,209	3,136	477,908	44,820	211,733	485,700	11,287,668	16,786,697	5,499,029	67%
2036	3	15	11,287,668	721,576	3,177	472,241	45,304	217,003	508,163	11,805,627	17,027,440	5,221,813	69%
2037	3	14	11,805,627	723,008	3,215	466,711	46,042	222,396	531,452	12,346,005	17,279,777	4,933,772	71%
2038	3	14	12,346,005	723,330	3,254	462,685	47,135	227,867	555,817	12,912,925	17,547,996	4,635,071	74%
2039	3	14	12,912,925	737,792	3,292	460,850	46,552	233,543	581,079	13,493,865	17,809,689	4,315,824	76%
2040	2	15	13,493,865	799,885	3,327	451,135	40,419	240,586	605,642	14,028,435	17,988,661	3,960,226	78%
2041	2	15	14,028,435	876,407	3,361	416,703	31,993	250,534	627,262	14,475,160	18,055,938	3,580,778	80%
2042	1	15	14,475,160	919,916	3,393	372,250	26,719	259,570	645,490	14,855,880	18,055,842	3,199,962	82%
2043	1	15	14,855,880	955,543	3,425	338,854	22,267	267,840	661,171	15,187,043	17,997,317	2,810,274	84%
2044	1	15	15,187,043	986,454	3,457	308,599	18,271	277,012	674,827	15,475,841	17,884,732	2,408,891	87%
2045	1	15	15,475,841	1,011,939	3,489	280,723	14,930	285,726	686,755	15,728,546	17,724,753	1,996,207	89%
2046	0	15	15,728,546	1,034,462	3,522	254,235	11,844	295,648	697,187	15,949,476	17,519,666	1,570,190	91%
2047	0	15	15,949,476	1,056,832	3,556	228,886	8,789	305,386	706,215	16,138,364	17,268,174	1,129,810	93%
2048	0	14	16,138,364	1,077,193	3,591	202,446	5,865	316,029	713,844	16,295,764	16,971,170	675,406	96%
2049	0	14	16,295,764	1,085,506	3,628	174,877	4,089	326,638	720,325	16,432,559	16,644,038	211,479	99%
2050	0	14	16,432,559	1,090,655	3,666	17,956	2,645	211,053	720,269	16,290,160	16,290,160	0	100%
2051	0	14	16,290,160	1,091,840	3,705	9,253	1,631	0	708,921	15,914,420	15,914,420	0	100%
2052	0	14	15,914,420	1,088,756	3,745	7,439	1,089	0	692,028	15,522,474	15,522,475	0	100%
2053	0	13	15,522,474	1,083,723	3,785	6,162	708	0	674,465	15,116,301	15,116,301	0	100%
2054	0	13	15,116,301	1,077,048	3,824	5,239	430	0	656,308	14,697,406	14,697,407	0	100%
2055	0	13	14,697,406	1,068,630	3,860	4,703	257	0	637,628	14,267,504	14,267,505	0	100%
2056	0	13	14,267,504	1,058,707	3,894	4,345	140	0	618,492	13,827,880	13,827,881	0	100%
2057	0	12	13,827,880	1,047,372	3,924	4,107	57	0	598,953	13,379,701	13,379,702	0	100%

Actuarial Projections – Optional Funding in 2019
Table A-2

Employer Contributions

Valuation Plan Year End 30-Jun[a]	Closed Group Payroll	New Entrant Payroll	Total Payroll	Employee Contributions	Gross Normal Cost	Net Employer Normal Cost	Amortization of UAAL	Premium Tax Allocation Contributions	Net Employer Amortization	Expenses	Optional Employer Contribution	Statewide Employer Contribution
2018	$719,541	$0	$719,541	$59,339	$348,019	$288,680	$491,510	$136,709	$354,801	$2,669	$646,150	$0
2019	712,036	46,841	758,877	58,772	343,711	284,939	520,796	141,884	378,912	2,655	666,506	4,918
2020	706,783	91,992	798,776	58,335	340,839	282,504	522,358	145,182	377,176	2,652	662,332	9,659
2021	705,665	134,384	840,049	58,224	340,081	281,857	522,301	148,363	373,938	2,661	658,456	14,110
2022	708,214	175,179	883,393	58,384	341,268	282,884	522,259	151,627	370,632	2,672	656,188	18,394
2023	713,504	215,226	928,730	58,751	343,882	285,131	522,321	154,980	367,341	2,692	655,164	22,599
2024	718,722	254,975	973,698	59,135	346,342	287,207	522,473	158,521	363,952	2,715	653,874	26,772
2025	727,367	297,527	1,024,894	59,801	350,509	290,708	522,624	161,860	360,764	2,740	654,213	31,240
2026	708,321	336,475	1,044,797	58,582	340,969	282,387	522,870	167,792	355,078	2,770	640,234	35,330
2027	678,193	413,686	1,091,879	56,646	325,818	269,172	522,314	172,371	349,943	2,807	621,922	43,437
2028	642,834	469,365	1,112,199	54,384	306,529	252,145	521,330	178,932	342,398	2,848	597,392	49,283
2029	578,488	556,588	1,135,076	50,111	272,601	222,490	520,008	185,520	334,488	2,889	559,868	58,442
2030	529,786	649,187	1,178,973	46,951	247,618	200,667	517,662	191,014	326,648	2,930	530,246	68,165
2031	503,922	725,854	1,229,776	45,407	233,823	188,416	515,780	196,207	319,573	2,971	510,960	76,215
2032	487,604	797,287	1,284,891	44,548	224,847	180,299	514,642	201,399	313,243	3,012	496,555	83,715
2033	478,547	867,109	1,345,656	44,212	219,519	175,307	513,870	206,399	307,471	3,052	485,830	91,046
2034	476,138	935,208	1,411,346	44,357	217,531	173,174	513,374	211,733	301,641	3,093	477,908	98,197
2035	478,147	1,003,137	1,481,284	44,820	217,793	172,973	513,135	217,003	296,132	3,136	472,241	105,329
2036	480,392	1,072,139	1,552,531	45,304	218,137	172,833	513,097	222,396	290,701	3,177	466,711	112,575
2037	486,199	1,145,575	1,631,774	46,042	220,298	174,256	513,082	227,867	285,215	3,215	462,685	120,285
2038	497,022	1,216,035	1,713,057	47,135	225,039	177,904	513,235	233,543	279,692	3,254	460,850	127,684
2039	490,261	1,289,024	1,779,285	46,552	221,310	174,758	513,671	240,586	273,085	3,292	451,135	135,348
2040	425,461	1,381,375	1,806,836	40,419	190,981	150,562	513,348	250,534	262,814	3,327	416,703	145,044
2041	336,771	1,519,643	1,856,414	31,993	150,331	118,338	510,122	259,570	250,552	3,361	372,250	159,562
2042	281,251	1,643,650	1,924,901	26,719	125,000	98,281	505,019	267,840	237,179	3,393	338,854	172,583
2043	234,388	1,753,743	1,988,131	22,267	103,457	81,190	500,996	277,012	223,984	3,425	308,599	184,143
2044	192,324	1,871,265	2,063,589	18,271	84,078	65,807	497,185	285,726	211,459	3,457	280,723	196,483
2045	157,155	1,973,737	2,130,892	14,930	68,151	53,221	493,173	295,648	197,525	3,489	254,235	207,242
2046	124,671	2,085,901	2,210,572	11,844	53,570	41,726	489,024	305,386	183,638	3,522	228,886	219,020
2047	92,512	2,189,678	2,282,190	8,789	39,599	30,810	484,109	316,029	168,080	3,556	202,446	229,916
2048	61,736	2,300,463	2,362,200	5,865	26,505	20,640	477,284	326,638	150,646	3,591	174,877	241,549
2049	43,043	2,405,741	2,448,784	4,089	18,417	14,328	465,336	211,053	127,796	3,628	17,956 [b]	252,603
2050	27,839	2,508,311	2,536,151	2,645	11,794	9,149	0	0	0	3,666	9,253 [b]	263,373
2051	17,170	2,614,399	2,631,569	1,631	7,184	5,553	0	0	0	3,705	7,439 [b]	274,512
2052	11,466	2,716,887	2,728,353	1,089	4,780	3,691	0	0	0	3,745	6,162 [b]	285,273
2053	7,449	2,819,939	2,827,388	708	3,080	2,372	0	0	0	3,785	5,239 [b]	296,094
2054	4,531	2,927,032	2,931,563	430	1,850	1,420	0	0	0	3,824	4,703 [b]	307,338
2055	2,704	3,033,878	3,036,582	257	1,098	841	0	0	0	3,860	4,345 [b]	318,557
2056	1,470	3,146,984	3,148,454	140	590	450	0	0	0	3,894	4,107 [b]	330,433
2057	595	3,266,559	3,267,154	57	239	182	0	0	0	3,924	3,948 [b]	342,989

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

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

Actuarial Projections – Conservation Funding in 2019
Table A-3

Valuation Plan Year End 30-Jun	Number Active	Number Pay Status	Total Assets: Assets (boy)	Benefit Payments	Expenses	Employer Contribs.	Member Contribs.	Premium Tax Allocation Contribs.	Investment Income	Assets (eoy)	Actuarial Accrued Liability	Unfunded Liability	Funded Ratio
2017	14	11	$862,836	$306,296	$90	$485,000	$60,503	$127,325	$71,616	$1,300,894	$9,795,852	$8,494,958	13%
2018	13	11	1,300,894	348,051	2,669	165,687	59,339	129,091	58,616	1,362,907	10,236,694	8,873,788	13%
2019	12	12	1,362,907	359,580	2,655	253,978	58,772	136,709	63,272	1,513,403	10,681,232	9,167,829	14%
2020	11	12	1,513,403	374,082	2,652	266,558	58,335	141,884	70,107	1,673,552	11,127,856	9,454,304	15%
2021	11	12	1,673,552	387,465	2,661	278,592	58,224	145,182	77,354	1,842,779	11,580,206	9,737,428	16%
2022	10	12	1,842,779	395,748	2,672	285,364	58,384	148,363	85,010	2,021,480	12,045,594	10,024,114	17%
2023	10	12	2,021,480	404,693	2,692	292,605	58,751	151,627	93,094	2,210,172	12,525,478	10,315,306	18%
2024	9	12	2,210,172	413,585	2,715	299,739	59,135	154,980	101,629	2,409,355	13,020,401	10,611,046	19%
2025	9	12	2,409,355	420,472	2,740	304,557	59,801	158,521	110,639	2,619,661	13,534,730	10,915,069	19%
2026	8	13	2,619,661	448,589	2,770	332,167	58,582	161,860	120,138	2,841,049	14,033,859	11,192,810	20%
2027	7	13	2,841,049	487,290	2,807	369,778	56,646	167,792	130,164	3,075,333	14,500,300	11,424,967	21%
2028	6	14	3,075,333	526,178	2,848	408,424	54,384	172,371	140,752	3,322,238	14,928,277	11,606,039	22%
2029	5	14	3,322,238	585,531	2,889	468,238	50,111	178,932	151,923	3,583,021	15,280,103	11,697,082	23%
2030	5	15	3,583,021	633,459	2,930	515,737	46,951	185,520	163,724	3,858,564	15,573,317	11,714,752	25%
2031	5	15	3,858,564	661,298	2,971	542,356	45,407	191,014	176,183	4,149,255	15,837,128	11,687,873	26%
2032	4	15	4,149,255	683,513	3,012	562,940	44,548	196,207	189,324	4,455,749	16,080,924	11,625,175	28%
2033	4	15	4,455,749	698,781	3,052	576,163	44,212	201,399	203,178	4,778,867	16,314,680	11,535,813	29%
2034	4	15	4,778,867	706,025	3,093	581,066	44,357	206,399	217,780	5,119,352	16,549,438	11,430,087	31%
2035	4	15	5,119,352	714,209	3,136	586,513	44,820	211,733	233,168	5,478,241	16,786,697	11,308,457	33%
2036	3	15	5,478,241	721,576	3,177	591,151	45,304	217,003	249,385	5,856,331	17,027,440	11,171,109	34%
2037	3	14	5,856,331	723,008	3,215	589,597	46,042	222,396	266,468	6,254,611	17,279,777	11,025,166	36%
2038	3	14	6,254,611	723,330	3,254	586,619	47,135	227,867	284,462	6,674,111	17,547,996	10,873,885	38%
2039	3	14	6,674,111	737,792	3,292	599,103	46,552	233,543	303,408	7,115,633	17,809,689	10,694,056	40%
2040	2	15	7,115,633	799,885	3,327	663,293	40,419	240,586	323,343	7,580,061	17,988,661	10,408,599	42%
2041	2	15	7,580,061	876,407	3,361	742,566	31,993	250,534	344,337	8,069,724	18,055,938	9,986,214	45%
2042	1	15	8,069,724	919,916	3,393	786,572	26,719	259,570	366,466	8,585,742	18,055,842	9,470,100	48%
2043	1	15	8,585,742	955,543	3,425	822,340	22,267	267,840	389,774	9,128,995	17,997,317	8,868,322	51%
2044	1	15	9,128,995	986,454	3,457	852,611	18,271	277,012	414,320	9,701,299	17,884,732	8,183,434	54%
2045	1	15	9,701,299	1,011,939	3,489	877,107	14,930	285,726	440,171	10,303,804	17,724,753	7,420,949	58%
2046	0	15	10,303,804	1,034,462	3,522	897,895	11,844	295,648	467,396	10,938,603	17,519,666	6,581,063	62%
2047	0	15	10,938,603	1,056,832	3,556	918,586	8,789	305,386	496,073	11,607,049	17,268,174	5,661,125	67%
2048	0	14	11,607,049	1,077,193	3,591	936,760	5,865	316,029	526,275	12,311,194	16,971,170	4,659,976	73%
2049	0	14	12,311,194	1,085,506	3,628	941,937	4,089	326,638	558,088	13,052,812	16,644,038	3,591,226	78%
2050	0	14	13,052,812	1,090,655	3,666	943,542	2,645	337,540	591,591	13,833,809	16,290,160	2,456,351	85%
2051	0	14	13,833,809	1,091,840	3,705	940,569	1,631	349,016	626,876	14,656,356	15,914,420	1,258,064	92%
2052	0	14	14,656,356	1,088,756	3,745	932,853	1,089	360,644	664,033	15,522,474	15,522,475	0	100%
2053	0	13	15,522,474	1,083,723	3,785	6,161	708	0	674,465	15,116,300	15,116,301	0	100%
2054	0	13	15,116,300	1,077,048	3,824	5,240	430	0	656,308	14,697,407	14,697,407	0	100%
2055	0	13	14,697,407	1,068,630	3,860	4,703	257	0	637,628	14,267,505	14,267,505	0	100%
2056	0	13	14,267,505	1,058,707	3,894	4,345	140	0	618,492	13,827,881	13,827,881	0	100%
2057	0	12	13,827,881	1,047,372	3,924	4,106	57	0	598,953	13,379,701	13,379,702	0	100%

Actuarial Projections – Conservation Funding in 2019
Table A-4

	Benefit Payment Account[a]							Accumulation Account[b]						
Plan Year End 30-Jun	Assets (boy)	Net Benefit Pmts and Expenses	Employer Contribs.	6.75%[d] of Pay Member Contribs.	44.01% of Premium Tax Allocation	Investment Income	Transfer (To)/From Accumulation Account	Assets (boy)[c]	Net Benefit Pmts and Expenses	Employer Contribs.	1.50% of Pay Member Contribs.	55.99% of Premium Tax Allocation	Investment Income	Statewide Employer Contribution
2018	$1,300,894	$350,720	$165,687	$59,339	$129,091	$58,616	$0	$0	$0	$0	$0	$0	$0	$0
2019	1,362,907	362,235	253,978	48,091	60,166	61,331	(1,424,238)	1,424,238	0	0	10,681	76,543	1,941	4,918
2020	0	376,734	266,558	47,733	62,443	0	0	1,513,403	0	0	10,602	79,440	70,107	9,659
2021	0	390,126	278,592	47,639	63,895	0	0	1,673,552	0	0	10,585	81,287	77,354	14,110
2022	0	398,420	285,364	47,761	65,295	0	0	1,842,779	0	0	10,623	83,068	85,010	18,394
2023	0	407,385	292,605	48,048	66,732	0	0	2,021,479	0	0	10,703	84,896	93,094	22,599
2024	0	416,300	299,739	48,354	68,207	0	0	2,210,172	0	0	10,781	86,773	101,629	26,772
2025	0	423,212	304,557	48,890	69,765	0	0	2,409,355	0	0	10,911	88,756	110,639	31,240
2026	0	451,359	332,167	47,957	71,235	0	0	2,619,661	0	0	10,625	90,625	120,138	35,330
2027	0	490,097	369,778	46,473	73,846	0	0	2,841,049	0	0	10,173	93,947	130,164	43,437
2028	0	529,026	408,424	44,741	75,861	0	0	3,075,332	0	0	9,643	96,510	140,752	49,283
2029	0	588,420	468,238	41,434	78,748	0	0	3,322,238	0	0	8,677	100,184	151,923	58,442
2030	0	636,389	515,737	39,004	81,648	0	0	3,583,021	0	0	7,947	103,872	163,724	68,165
2031	0	664,269	542,356	37,848	84,065	0	0	3,858,564	0	0	7,559	106,948	176,183	76,215
2032	0	686,525	562,940	37,234	86,351	0	0	4,149,255	0	0	7,314	109,856	189,324	83,715
2033	0	701,833	576,163	37,034	88,636	0	0	4,455,749	0	0	7,178	112,763	203,178	91,046
2034	0	709,118	581,066	37,215	90,837	0	0	4,778,867	0	0	7,142	115,562	217,780	98,197
2035	0	717,345	586,513	37,648	93,184	0	0	5,119,352	0	0	7,172	118,549	233,168	105,329
2036	0	724,753	591,151	38,098	95,504	0	0	5,478,241	0	0	7,206	121,500	249,385	112,575
2037	0	726,223	589,597	38,749	97,877	0	0	5,856,331	0	0	7,293	124,519	266,468	120,285
2038	0	726,584	586,619	39,680	100,285	0	0	6,254,611	0	0	7,455	127,582	284,462	127,684
2039	0	741,084	599,103	39,198	102,783	0	0	6,674,111	0	0	7,354	130,760	303,408	135,348
2040	0	803,212	663,293	34,037	105,882	0	0	7,115,633	0	0	6,382	134,704	323,343	145,044
2041	0	879,768	742,566	26,941	110,261	0	0	7,580,061	0	0	5,052	140,274	344,337	159,562
2042	0	923,309	786,572	22,500	114,237	0	0	8,069,724	0	0	4,219	145,333	366,466	172,583
2043	0	958,968	822,340	18,751	117,877	0	0	8,585,742	0	0	3,516	149,963	389,774	184,143
2044	0	989,911	852,611	15,386	121,914	0	0	9,128,995	0	0	2,885	155,099	414,320	196,483
2045	0	1,015,428	877,107	12,573	125,748	0	0	9,701,298	0	0	2,357	159,977	440,171	207,242
2046	0	1,037,984	897,895	9,974	130,115	0	0	10,303,804	0	0	1,870	165,533	467,396	219,020
2047	0	1,060,388	918,586	7,401	134,401	0	0	10,938,603	0	0	1,388	170,985	496,073	229,916
2048	0	1,080,784	936,760	4,939	139,085	0	0	11,607,049	0	0	926	176,944	526,275	241,549
2049	0	1,089,134	941,937	3,443	143,754	0	0	12,311,194	0	0	646	182,884	558,088	252,603
2050	0	1,094,321	943,542	2,227	148,552	0	0	13,052,812	0	0	418	188,988	591,591	263,373
2051	0	1,095,545	940,569	1,373	153,603	0	0	13,833,809	0	0	258	195,413	626,876	274,512
2052	0	1,092,490	932,853	917	158,720	0	0	14,656,356	11	0	172	201,924	664,033	285,273
2053	0	0	0	0	0	0	0	15,522,474	1,087,508	6,161	708	0	674,465	296,094
2054	0	0	0	0	0	0	0	15,116,300	1,080,872	5,240	430	0	656,308	307,338
2055	0	0	0	0	0	0	0	14,697,406	1,072,490	4,703	257	0	637,628	318,557
2056	0	0	0	0	0	0	0	14,267,504	1,062,601	4,345	140	0	618,492	330,433
2057	0	0	0	0	0	0	0	13,827,880	1,051,296	4,106	57	0	598,953	342,989

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

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

[c] *Includes transfer from Benefit Payment Account to Accumulation Account in Plan Year End June 30, 2035.*

[d] *Blended employee contribution rate of 8.25% of pay less 1.50% of pay going into the Accumulation Account.*

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

Valuation Plan Year End 30-Jun	Number Active	Number Pay Status	Total Assets: Assets (boy)	Benefit Payments	Expenses	Employer Contribs.	Member Contribs.	Premium Tax Allocation Contribs.	Investment Income	Assets (eoy)	Actuarial Accrued Liability	Unfunded Liability	Funded Ratio
2017	14	11	$862,836	$306,296	$90	$485,000	$60,503	$127,325	$71,616	$1,300,894	$9,795,852	$8,494,958	13%
2018	14	11	1,300,894	348,051	2,669	165,687	59,339	129,091	58,615	1,362,906	10,248,892	8,885,986	13%
2019	14	12	1,362,906	359,580	2,776	177,285	63,325	136,709	61,664	1,439,533	10,728,116	9,288,583	13%
2020	14	12	1,439,533	374,282	2,878	189,695	67,160	141,884	65,259	1,526,371	11,231,862	9,705,491	14%
2021	14	12	1,526,371	388,174	2,978	202,974	71,054	145,182	69,311	1,623,740	11,763,544	10,139,804	14%
2022	14	12	1,623,740	397,197	3,074	217,182	75,094	148,363	73,967	1,738,074	12,330,727	10,592,653	14%
2023	14	12	1,738,074	407,015	3,172	232,385	79,291	151,627	79,395	1,870,585	12,935,485	11,064,900	14%
2024	14	12	1,870,585	416,885	3,269	248,652	83,490	154,980	85,667	2,023,219	13,579,901	11,556,682	15%
2025	14	12	2,023,219	424,891	3,373	266,058	88,252	158,521	92,927	2,200,713	14,268,943	12,068,230	15%
2026	14	13	2,200,713	454,292	3,468	284,682	90,774	161,860	100,802	2,381,072	14,978,192	12,597,120	16%
2027	14	13	2,381,072	494,422	3,660	304,610	96,308	167,792	108,720	2,560,421	15,694,336	13,133,915	16%
2028	14	14	2,560,421	535,022	3,793	325,933	99,343	172,371	116,528	2,735,782	16,416,814	13,681,032	17%
2029	14	14	2,735,782	596,331	3,997	348,748	103,504	178,932	123,797	2,890,434	17,117,964	14,227,530	17%
2030	14	15	2,890,434	646,440	4,204	373,160	109,261	185,520	130,454	3,038,185	17,814,675	14,776,490	17%
2031	14	15	3,038,185	676,762	4,364	399,281	115,093	191,014	137,258	3,199,705	18,533,564	15,333,859	17%
2032	14	15	3,199,705	701,607	4,509	427,231	121,164	196,207	144,843	3,383,035	19,284,438	15,901,403	18%
2033	14	15	3,383,035	719,685	4,645	457,137	127,637	201,399	153,613	3,598,490	20,078,475	16,479,985	18%
2034	14	15	3,598,490	729,979	4,773	489,137	134,430	206,399	164,051	3,857,754	20,928,395	17,070,641	18%
2035	14	15	3,857,754	741,478	4,901	523,377	141,538	211,733	176,498	4,164,521	21,838,051	17,673,530	19%
2036	14	15	4,164,521	752,489	5,024	560,013	148,788	217,003	191,148	4,523,960	22,812,229	18,288,269	20%
2037	14	15	4,523,960	757,690	5,151	599,214	156,587	222,396	208,370	4,947,686	23,862,094	18,914,408	21%
2038	14	15	4,947,686	762,075	5,271	641,159	164,359	227,867	228,566	5,442,291	24,995,192	19,552,901	22%
2039	14	15	5,442,291	780,430	5,397	686,040	170,632	233,543	251,677	5,998,356	26,196,228	20,197,872	23%
2040	14	15	5,998,356	847,968	5,565	734,063	173,232	240,586	276,476	6,569,180	27,405,817	20,836,637	24%
2041	14	16	6,569,180	932,505	5,828	785,447	177,817	250,534	301,743	7,146,388	28,602,972	21,456,584	25%
2042	14	16	7,146,388	986,896	6,056	840,428	183,990	259,570	328,064	7,765,488	29,825,844	22,060,356	26%
2043	14	16	7,765,488	1,037,499	6,259	899,258	189,482	267,840	356,408	8,434,718	31,082,205	22,647,487	27%
2044	14	16	8,434,718	1,087,793	6,487	962,206	195,775	277,012	387,144	9,162,576	32,373,256	23,210,680	28%
2045	14	16	9,162,576	1,138,546	6,702	1,029,560	201,408	285,726	420,581	9,954,603	33,698,382	23,743,779	30%
2046	14	17	9,954,603	1,196,312	6,952	1,101,629	208,549	295,648	456,916	10,814,081	35,055,916	24,241,835	31%
2047	14	17	10,814,081	1,260,628	7,194	1,178,743	214,852	305,386	496,228	11,741,468	36,442,213	24,700,745	32%
2048	14	17	11,741,468	1,328,817	7,460	1,261,255	222,103	316,029	538,672	12,743,250	37,856,566	25,113,316	34%
2049	14	17	12,743,250	1,389,615	7,723	1,349,543	229,875	326,638	584,766	13,836,735	39,311,958	25,475,223	35%
2050	14	18	13,836,735	1,451,122	7,991	1,444,011	237,831	337,540	635,120	15,032,124	40,809,571	25,777,447	37%
2051	14	18	15,032,124	1,513,847	8,274	1,545,092	246,513	349,016	690,209	16,340,833	42,352,955	26,012,122	39%
2052	14	18	16,340,833	1,576,533	8,558	1,653,248	255,054	360,644	750,555	17,775,243	43,945,634	26,170,391	40%
2053	14	18	17,775,243	1,642,415	8,856	1,768,975	264,179	372,862	816,681	19,346,669	45,585,308	26,238,639	42%
2054	14	19	19,346,669	1,714,016	9,167	1,892,803	273,648	385,597	889,044	21,064,579	47,273,076	26,208,497	45%
2055	14	19	21,064,579	1,788,336	9,483	2,025,299	283,379	398,693	968,146	22,942,277	49,008,556	26,066,279	47%
2056	14	19	22,942,277	1,867,178	9,812	2,167,070	294,307	412,375	1,054,583	24,993,622	50,793,404	25,799,782	49%
2057	14	19	24,993,622	1,948,678	10,142	2,318,765	305,987	426,256	1,149,017	27,234,826	52,635,029	25,400,203	52%

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

	Employer Contributions								Minimum Payment			
Valuation Plan Year End 30-Jun[a,b]	Total Payroll	Employee Contributions	Gross Normal Cost	Net Employer Normal Cost	Amortization of UAAL	Premium Tax Allocation Contributions	Net Employer Amortization	Expenses	Optional Employer Contribution	Alternative Employer Contribution	Minimum Employer Contribution	Statewide Employer Contribution
2018	$719,541	$59,339	$348,019	$288,680	$491,510	$136,709	$354,801	$2,669	$646,150	$177,285	$177,285	$0
2019	758,877	63,325	366,074	302,749	521,512	141,884	379,628	2,776	685,154	189,695	189,695	0
2020	798,776	67,160	384,793	317,633	553,439	145,182	408,257	2,878	728,767	202,974	202,974	0
2021	840,049	71,054	404,334	333,280	587,628	148,363	439,265	2,978	775,524	217,182	217,182	0
2022	883,393	75,094	425,080	349,986	624,473	151,627	472,846	3,074	825,906	232,385	232,385	0
2023	928,730	79,291	446,913	367,622	664,291	154,980	509,311	3,172	880,106	248,652	248,652	0
2024	973,698	83,490	468,465	384,975	707,424	158,521	548,903	3,269	937,147	266,058	266,058	0
2025	1,024,894	88,252	493,073	404,821	754,219	161,860	592,359	3,373	1,000,553	284,682	284,682	0
2026	1,044,797	90,774	502,268	411,494	805,087	167,792	637,295	3,468	1,052,257	304,610	304,610	0
2027	1,091,879	96,308	524,136	427,828	860,325	172,371	687,954	3,660	1,119,442	325,933	325,933	0
2028	1,112,199	99,343	531,630	432,287	919,811	178,932	740,879	3,793	1,176,959	348,748	348,748	0
2029	1,135,076	103,504	539,571	436,067	984,302	185,520	798,782	3,997	1,238,847	373,160	373,160	0
2030	1,178,973	109,261	559,070	449,810	1,053,701	191,014	862,687	4,204	1,316,700	399,281	399,281	0
2031	1,229,776	115,093	582,191	467,097	1,129,028	196,207	932,821	4,364	1,404,282	427,231	427,231	0
2032	1,284,891	121,164	607,651	486,487	1,211,733	201,399	1,010,334	4,509	1,501,330	457,137	457,137	0
2033	1,345,656	127,637	636,001	508,364	1,303,213	206,399	1,096,814	4,645	1,609,823	489,137	489,137	0
2034	1,411,346	134,430	666,877	532,447	1,405,121	211,733	1,193,388	4,773	1,730,608	523,377	523,377	0
2035	1,481,284	141,538	699,930	558,392	1,519,546	217,003	1,302,543	4,901	1,865,835	560,013	560,013	0
2036	1,552,531	148,788	733,592	584,804	1,649,062	222,396	1,426,666	5,024	2,016,495	599,214	599,214	0
2037	1,631,774	156,587	771,209	614,622	1,796,958	227,867	1,569,091	5,151	2,188,864	641,159	641,159	0
2038	1,713,057	164,359	809,935	645,577	1,967,570	233,543	1,734,027	5,271	2,384,875	686,040	686,040	0
2039	1,779,285	170,632	841,285	670,653	2,166,907	240,586	1,926,321	5,397	2,602,371	734,063	734,063	0
2040	1,806,836	173,232	855,105	681,873	2,402,445	250,534	2,151,911	5,565	2,839,349	785,447	785,447	0
2041	1,856,414	177,817	880,354	702,536	2,683,996	259,570	2,424,426	5,828	3,132,790	840,428	840,428	0
2042	1,924,901	183,990	913,990	730,000	3,026,153	267,840	2,758,313	6,056	3,494,369	899,258	899,258	0
2043	1,988,131	189,482	944,633	755,151	3,453,839	277,012	3,176,827	6,259	3,938,236	962,206	962,206	0
2044	2,063,589	195,775	980,944	785,168	4,006,723	285,726	3,720,997	6,487	4,512,653	1,029,560	1,029,560	0
2045	2,130,892	201,408	1,013,666	812,258	4,751,929	295,648	4,456,281	6,702	5,275,241	1,101,629	1,101,629	0
2046	2,210,572	208,549	1,052,464	843,915	5,816,668	305,386	5,511,282	6,952	6,362,149	1,178,743	1,178,743	0
2047	2,282,190	214,852	1,087,943	873,091	7,474,062	316,029	7,158,033	7,194	8,038,318	1,261,255	1,261,255	0
2048	2,362,200	222,103	1,127,660	905,557	10,434,733	326,638	10,108,095	7,460	11,021,111	1,349,543	1,349,543	0
2049	2,448,784	229,875	1,169,684	939,809	17,302,393	337,540	16,964,853	7,723	17,912,385	1,444,011	1,444,011	0
2050	2,536,151	237,831	1,211,791	973,960	26,042,108	349,016	25,693,092	7,991	26,675,043	1,545,092	1,545,092	0
2051	2,631,569	246,513	1,257,497	1,010,984	26,351,057	360,644	25,990,413	8,274	27,009,671	1,653,248	1,653,248	0
2052	2,728,353	255,054	1,303,712	1,048,657	26,590,954	372,862	26,218,092	8,558	27,275,307	1,768,975	1,768,975	0
2053	2,827,388	264,179	1,351,019	1,086,840	26,752,744	385,597	26,367,147	8,856	27,462,843	1,892,803	1,892,803	0
2054	2,931,563	273,648	1,400,875	1,127,226	26,822,511	398,693	26,423,818	9,167	27,524,167	2,025,299	2,025,299	0
2055	3,036,582	283,379	1,451,334	1,167,955	26,791,699	412,375	26,379,324	9,483	27,405,242	2,167,070	2,167,070	0
2056	3,148,454	294,307	1,505,304	1,210,998	26,646,316	426,256	26,220,060	9,812	27,166,056	2,318,765	2,318,765	0
2057	3,267,154	305,987	1,562,656	1,256,669	26,373,889	440,325	25,933,564	10,142	26,794,110	2,481,079	2,481,079	0

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

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

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

Actuarial Projections – Conservation Funding in 2035
Table A-7

Valuation Plan Year End 30-Jun	Number		Total Assets										
	Active	Pay Status	Assets (boy)	Benefit Payments	Expenses	Employer Contribs.	Member Contribs.	Premium Tax Allocation Contribs.	Investment Income	Assets (eoy)	Actuarial Accrued Liability	Unfunded Liability	Funded Ratio
2017	14	11	$862,836	$306,296	$90	$485,000	$60,503	$127,325	$71,616	$1,300,894	$9,795,852	$8,494,958	13%
2018	14	11	1,300,894	348,051	2,669	165,687	59,339	129,091	58,616	1,362,907	10,248,892	8,885,985	13%
2019	14	12	1,362,907	359,580	2,776	177,285	63,325	136,709	61,664	1,439,534	10,728,116	9,288,582	13%
2020	14	12	1,439,534	374,282	2,878	189,695	67,160	141,884	65,259	1,526,372	11,231,862	9,705,490	14%
2021	14	12	1,526,372	388,174	2,978	202,974	71,054	145,182	69,311	1,623,741	11,763,544	10,139,803	14%
2022	14	12	1,623,741	397,197	3,074	217,182	75,094	148,363	73,967	1,738,076	12,330,727	10,592,651	14%
2023	14	12	1,738,076	407,015	3,172	232,385	79,291	151,627	79,395	1,870,587	12,935,485	11,064,898	14%
2024	14	12	1,870,587	416,885	3,269	248,652	83,490	154,980	85,667	2,023,222	13,579,901	11,556,679	15%
2025	14	12	2,023,222	424,891	3,373	266,058	88,252	158,521	92,927	2,200,716	14,268,943	12,068,227	15%
2026	14	13	2,200,716	454,292	3,468	284,682	90,774	161,860	100,803	2,381,075	14,978,192	12,597,117	16%
2027	14	13	2,381,075	494,422	3,660	304,610	96,308	167,792	108,720	2,560,423	15,694,336	13,133,913	16%
2028	14	14	2,560,423	535,022	3,793	325,933	99,343	172,371	116,528	2,735,783	16,416,814	13,681,031	17%
2029	14	14	2,735,783	596,331	3,997	348,748	103,504	178,932	123,797	2,890,436	17,117,964	14,227,528	17%
2030	14	15	2,890,436	646,440	4,204	373,160	109,261	185,520	130,455	3,038,188	17,814,675	14,776,487	17%
2031	14	15	3,038,188	676,762	4,364	399,281	115,093	191,014	137,258	3,199,708	18,533,564	15,333,856	17%
2032	14	15	3,199,708	701,607	4,509	427,231	121,164	196,207	144,843	3,383,037	19,284,438	15,901,401	18%
2033	14	15	3,383,037	719,685	4,645	457,137	127,637	201,399	153,613	3,598,493	20,078,475	16,479,982	18%
2034	13	15	3,598,493	729,979	4,773	489,137	134,430	206,399	164,051	3,857,758	20,914,073	17,056,315	18%
2035	13	15	3,857,758	741,478	4,779	492,554	136,192	211,733	175,696	4,127,676	21,782,399	17,654,723	19%
2036	12	15	4,127,676	752,255	4,792	498,116	138,201	217,003	187,888	4,411,837	22,686,392	18,274,555	19%
2037	12	15	4,411,837	756,847	4,810	497,155	140,563	222,396	200,724	4,711,017	23,636,775	18,925,758	20%
2038	11	15	4,711,017	760,316	4,835	494,774	143,267	227,867	214,238	5,026,012	24,640,201	19,614,189	20%
2039	11	15	5,026,012	777,558	4,865	507,562	144,181	233,543	228,459	5,357,333	25,674,308	20,316,975	21%
2040	10	15	5,357,333	843,823	4,899	573,273	139,412	240,586	243,406	5,705,288	26,661,452	20,956,164	21%
2041	9	16	5,705,288	926,794	4,937	655,984	132,068	250,534	259,116	6,071,260	27,571,037	21,499,777	22%
2042	8	16	6,071,260	979,059	4,978	706,245	127,523	259,570	275,639	6,456,201	28,443,662	21,987,461	23%
2043	8	16	6,456,201	1,026,952	5,024	752,445	123,250	267,840	293,011	6,860,770	29,283,544	22,422,774	23%
2044	7	16	6,860,770	1,074,142	5,074	797,896	118,419	277,012	311,274	7,286,155	30,087,581	22,801,426	24%
2045	6	16	7,286,155	1,121,499	5,129	844,011	113,339	285,726	330,468	7,733,071	30,848,204	23,115,133	25%
2046	6	17	7,733,071	1,175,608	5,188	896,392	107,855	295,648	350,638	8,202,808	31,556,839	23,354,031	26%
2047	5	17	8,202,808	1,235,887	5,251	955,655	101,684	305,386	371,832	8,696,228	32,202,822	23,506,594	27%
2048	5	17	8,696,228	1,299,721	5,320	1,018,276	95,031	316,029	394,096	9,214,619	32,778,322	23,563,703	28%
2049	4	17	9,214,619	1,355,703	5,393	1,072,714	88,818	326,638	417,486	9,759,179	33,290,913	23,531,734	29%
2050	4	17	9,759,179	1,411,840	5,472	1,127,371	82,297	337,540	442,054	10,331,129	33,733,971	23,402,842	31%
2051	3	18	10,331,129	1,468,689	5,555	1,182,642	75,467	349,016	467,858	10,931,869	34,103,260	23,171,391	32%
2052	3	18	10,931,869	1,524,946	5,642	1,237,751	68,070	360,644	494,958	11,562,704	34,393,393	22,830,689	34%
2053	2	18	11,562,704	1,584,021	5,732	1,295,547	60,281	372,862	523,413	12,225,055	34,591,364	22,366,309	35%
2054	2	18	12,225,055	1,648,195	5,824	1,358,517	52,009	385,597	553,290	12,920,449	34,688,224	21,767,775	37%
2055	2	18	12,920,449	1,714,833	5,915	1,423,815	43,560	398,693	584,654	13,650,422	34,675,463	21,025,041	39%
2056	1	18	13,650,422	1,783,482	6,005	1,490,391	35,421	412,375	617,578	14,416,699	34,548,300	20,131,601	42%
2057	1	19	14,416,699	1,851,365	6,092	1,555,557	27,839	426,256	652,138	15,221,032	34,309,043	19,088,011	44%

Actuarial Projections – Conservation Funding in 2035
Table A-8

Plan Year End 30-Jun	Benefit Payment Account [a]: Assets (boy)	Net Benefit Pmts and Expenses	Employer Contribs.	6.75%[d] of Pay Member Contribs.	65.60% of Premium Tax Allocation	Investment Income	Accumulation Account [b]: Assets (boy)[c]	Net Benefit Pmts and Expenses	Employer Contribs.	1.50% of Pay Member Contribs.	34.40% of Premium Tax Allocation	Investment Income	Minimum Payment: Conservation Employer Cont.	Alternative Employer Cont.	Minimum Alt /Cons Cont.	Statewide Employer Contribution
2018	$1,300,894	$350,720	$165,687	$59,339	$129,091	$58,616	$0	$0	$0	$0	$0	$0	NA	$165,687	$165,687	$0
2019	1,362,907	362,356	177,285	63,325	136,709	61,664	0	0	0	0	0	0	NA	177,285	177,285	0
2020	1,439,534	377,160	189,695	67,160	141,884	65,259	0	0	0	0	0	0	NA	189,695	189,695	0
2021	1,526,372	391,152	202,974	71,054	145,182	69,311	0	0	0	0	0	0	NA	202,974	202,974	0
2022	1,623,741	400,271	217,182	75,094	148,363	73,967	0	0	0	0	0	0	NA	217,182	217,182	0
2023	1,738,075	410,187	232,385	79,291	151,627	79,395	0	0	0	0	0	0	NA	232,385	232,385	0
2024	1,870,587	420,154	248,652	83,490	154,980	85,667	0	0	0	0	0	0	NA	248,652	248,652	0
2025	2,023,222	428,264	266,058	88,252	158,521	92,927	0	0	0	0	0	0	NA	266,058	266,058	0
2026	2,200,716	457,760	284,682	90,774	161,860	100,803	0	0	0	0	0	0	NA	284,682	284,682	0
2027	2,381,075	498,082	304,610	96,308	167,792	108,720	0	0	0	0	0	0	NA	304,610	304,610	0
2028	2,560,423	538,815	325,933	99,343	172,371	116,528	0	0	0	0	0	0	NA	325,933	325,933	0
2029	2,735,783	600,328	348,748	103,504	178,932	123,797	0	0	0	0	0	0	NA	348,748	348,748	0
2030	2,890,436	650,644	373,160	109,261	185,520	130,455	0	0	0	0	0	0	NA	373,160	373,160	0
2031	3,038,188	681,126	399,281	115,093	191,014	137,258	0	0	0	0	0	0	NA	399,281	399,281	0
2032	3,199,707	706,116	427,231	121,164	196,207	144,843	0	0	0	0	0	0	NA	427,231	427,231	0
2033	3,383,037	724,330	457,137	127,637	201,399	153,613	0	0	0	0	0	0	NA	457,137	457,137	0
2034	3,598,492	734,752	489,137	134,430	206,399	164,051	0	0	0	0	0	0	NA	489,137	489,137	0
2035	3,857,757	746,257	492,554	114,798	138,905	173,599	4,031,357	0	0	21,394	72,828	2,097	492,554	523,377	492,554	5,775
2036	0	757,047	498,116	116,568	142,363	0	4,127,676	0	0	21,633	74,640	187,888	498,116	560,013	498,116	11,584
2037	0	761,657	497,155	118,602	145,900	0	4,411,837	0	0	21,961	76,495	200,724	497,155	599,214	497,155	17,610
2038	0	765,151	494,774	120,887	149,490	0	4,711,018	0	0	22,380	78,377	214,238	494,774	641,159	494,774	23,214
2039	0	782,423	507,562	121,648	153,213	0	5,026,013	0	0	22,533	80,329	228,459	507,562	686,040	507,562	29,097
2040	0	848,722	573,273	117,615	157,834	0	5,357,334	0	0	21,797	82,752	243,406	573,273	734,063	573,273	37,139
2041	0	931,731	655,984	111,386	164,361	0	5,705,289	0	0	20,682	86,174	259,116	655,984	785,447	655,984	50,149
2042	0	984,037	706,245	107,503	170,289	0	6,071,261	0	0	20,020	89,282	275,639	706,245	840,428	706,245	61,974
2043	0	1,031,976	752,445	103,818	175,713	0	6,456,202	0	0	19,432	92,126	293,011	752,445	899,258	752,445	72,728
2044	0	1,079,216	797,896	99,589	181,731	0	6,860,771	0	0	18,830	95,281	311,274	797,896	962,206	797,896	84,870
2045	0	1,126,628	844,011	95,169	187,448	0	7,286,156	0	0	18,170	98,278	330,468	844,011	1,029,560	844,011	96,552
2046	0	1,180,796	896,392	90,447	193,957	0	7,733,072	0	0	17,408	101,691	350,638	896,392	1,101,629	896,392	110,252
2047	0	1,241,138	955,655	85,137	200,346	0	8,202,809	0	0	16,547	105,041	371,832	955,655	1,178,743	955,655	123,799
2048	0	1,305,041	1,018,276	79,437	207,328	0	8,696,229	0	0	15,594	108,701	394,096	1,018,276	1,261,255	1,018,276	138,875
2049	0	1,361,096	1,072,714	74,094	214,288	0	9,214,620	0	0	14,724	112,350	417,486	1,072,714	1,349,543	1,072,714	154,051
2050	0	1,417,312	1,127,371	68,501	221,440	0	9,759,181	0	0	13,796	116,100	442,054	1,127,371	1,444,011	1,127,371	169,725
2051	0	1,474,244	1,182,642	62,633	228,969	0	10,331,131	0	0	12,834	120,048	467,858	1,182,642	1,545,092	1,182,642	186,475
2052	0	1,530,588	1,237,751	56,240	236,597	0	10,931,871	0	0	11,830	124,047	494,958	1,237,751	1,653,248	1,237,751	203,665
2053	0	1,589,753	1,295,547	49,593	244,613	0	11,562,706	0	0	10,688	128,250	523,413	1,295,547	1,768,975	1,295,547	222,062
2054	0	1,654,019	1,358,517	42,535	252,967	0	12,225,056	0	0	9,474	132,630	553,290	1,358,517	1,892,803	1,358,517	241,495
2055	0	1,720,748	1,423,815	35,375	261,558	0	12,920,450	0	0	8,185	137,134	584,654	1,423,815	2,025,299	1,423,815	261,549
2056	0	1,789,487	1,490,391	28,562	270,534	0	13,650,424	0	0	6,859	141,840	617,578	1,490,391	2,167,070	1,490,391	282,572
2057	0	1,857,457	1,555,557	22,259	279,641	0	14,416,701	0	0	5,580	146,615	652,138	1,555,557	2,318,765	1,555,557	303,994

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

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

[c] *Includes transfer from Benefit Payment Account to Accumulation Account in Plan Year End June 30, 2035.*

[d] *Blended employee contribution rate of 8.25% of pay less 1.50% of pay going into the Accumulation Account.*