



City of Ann Arbor Employees' Retirement System

Actuarial Valuation and Report

June 30, 2018

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Introduction

An actuarial valuation of the City of Ann Arbor Employees' Retirement System was performed as of June 30, 2018. The last valuation performed was as of June 30, 2017. The purpose of the valuation was to determine the current funding status of the Fund, with the intention that funding levels indicated by the valuation be used as the basis for contributions to the Fund.

Actuarial valuations are based on the integrity of employee data, plan asset data, plan provisions and an extensive set of assumptions regarding future events. There is necessary uncertainty with any actuarial calculation based on the accuracy of the data provided, the correct interpretation of plan provisions and the realization of the assumptions made. These results were based on participant data provided by the administrative office of the Fund and asset information provided by the Fund custodian. This information was not audited but was reviewed for reasonableness.

As required under the ordinance Chapter 18, 1:568, this valuation was prepared on the basis of the interest, salary and demographic assumptions that were determined from the Experience Study for the period July 1, 2013 to June 30, 2018 prepared by Findley, Inc. and approved by the Board for use beginning with the June 30, 2018 actuarial valuation. These assumptions will remain in effect for valuation purposes until such time as the Board adopts revised assumptions, which is scheduled to be performed before the June 30, 2023 valuation.

Detailed explanations of the actuarial assumptions and methods used in the report are contained in later sections of this report. Also included in this report is a summary of provisions of the plan as we understand them.

Legislative Background

This plan is a "governmental plan" as described in §414(d) of the Internal Revenue Code. As a governmental plan, the plan is exempt from many of the requirements placed on qualified plans, including (but not limited to) the reporting and disclosure requirements of ERISA, coverage under the Pension Benefit Guaranty Corporation ("PBGC"), and the minimum and maximum funding requirements of Code §412, 430, and 404.

Governmental Accounting Standards Board Statement 67 ("GASB 67") establishes financial reporting standards for defined benefit pension plans sponsored by employers that are subject to governmental accounting standards for plan years beginning after June 15, 2013. Governmental Accounting Standards Board Statement 68 ("GASB 68") provides standards for reporting pension expense, and related liabilities and assets for such plans for fiscal years beginning after June 15, 2014. The purpose of this report is to provide pertinent financial statement disclosure information relating to the City of Ann Arbor Employees' Retirement System for the fiscal year ending in 2018. Actuarial computations under Statement 68 are for purposes of fulfilling plan and employer governmental accounting requirements. This report has been prepared on a basis consistent with our understanding of the statements and does not constitute legal, accounting, tax or investment advice.

Purpose and Use

This report has been prepared exclusively for the City of Ann Arbor Employees' Retirement System. Actuarial computations under Statements No. 67 and No. 68 are for purposes of fulfilling employer and pension plan governmental accounting requirements, and may not be appropriate for other purposes. The calculations reported herein have been made on a basis consistent with our understanding of the statements. Findley is not responsible for consequences resulting from the use of any part of this report without prior authorization or approval. This report provides actuarial advice and does not constitute legal, accounting, tax or investment advice. Determinations for other purposes, such as funding, bond ratings, or judging benefit security, may be significantly different from the results shown in this report.

Actuarial findings in this report are based on actuarial assumptions which reflect expected plan experience. Although the deviation of the actual future plan experience and the expected experience inherently creates some uncertainty with the results, in our opinion the actuarial assumptions reasonably reflect the expected future experience of the plan. 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. All of these factors can result in the risk of volatility in the Net Pension Liability over time.

Notes about Participant Data

The actuarial valuation underlying this report has been made utilizing employee data furnished by the employer. While we have analyzed this information and found no material limitations, please note that a complete and independent audit of these data was not performed.

Actuarial Certification

The attached report summarizes the results of the actuarial valuation of the City of Ann Arbor Employees' Retirement System as of June 30, 2018. The report sets forth annual funding levels for the plan and provides information regarding estimated benefits for participants.

We trust this report will be helpful in the formulation of policy with respect to the operation and financing of the plan. The opportunity to serve you is appreciated, and we will be pleased to supplement this report in any way, as you request.

Except as noted in our report, we believe the information is sufficiently complete and reliable.

We have conducted an actuarial valuation of the plan as of June 30, 2018. The employee data and financial information used in the valuation were furnished by the employer and trustee, and we have not audited this information. Except as noted in our report, we believe the information is sufficiently complete and reliable. This report provides actuarial advice and does not constitute legal, accounting, tax or investment advice.

The actuarial valuation summarized in this report has been performed utilizing generally accepted actuarial principles. The actuarial valuation is based on actuarial assumptions set by the City of Ann Arbor. The employer has selected a long-term rate of return of 7.00%. I have reviewed all other assumptions established by the City and believe them to be reasonable. Based on the assumptions and methods stated herein, it is my opinion that the results fully and fairly disclose the actuarial position of the plan on the valuation date. I am a consulting actuary for Findley, Inc., a member of the American Academy of Actuaries and I meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein.

Findley, Inc.

By: _____
Matthew R. Klein, FSA, EA, MAAA
Fellow, Society of Actuaries

Date: October 15, 2018

By: _____
Amy Kennedy, EA

Date: October 15, 2018

Summary of Report

An actuarial valuation of the City of Ann Arbor Employees' Retirement System was conducted as of June 30, 2018. The purpose of the valuation is to determine the cost implications of the pension plan including a determination of annual funding levels to provide pertinent financial statement disclosure information for the fiscal year ending in June 30, 2018.

Funding Issues

Each year's valuation recognizes actuarial gains and losses which occur because of deviations of actual plan experience from anticipated plan experience. Such gains and losses for a year are aggregated into a net gain or loss which is reflected in either higher employer contribution levels in future years (net actuarial loss) or lower contributions in future years (net actuarial gain).

Employer Contributions of \$13,445,765 were made to the fund during the period June 30, 2017 to June 30, 2018. The actuarially determined contribution for the 2018-2019 plan year was \$13,464,778.

The contribution for the 2019-2020 plan year is \$14,092,966. The funded position of the plan at June 30, 2018 is 86.53%. This compares to employer contributions of \$13,464,778 and a funded percentage of 85.79% for the prior year. Page 30 provides extensive detail on the sources of gains and losses on the accrued liability from the previous year to this year. Although the funded percentage of the plan has improved slightly from the prior year, the Actuarial Employer Contributions have increased from the prior year. The main source of this increase is an increase in salary scale for Police and Fire divisions from the prior valuation. An increase in salary scale implies that projected benefits for current active members will be greater than the projected benefits under the prior valuation. As a result, the normal cost (the portion of future benefits attributable to this year) correspondingly increases.

Contribution Components under the System

Plan benefits are being funded by actuarially determined contributions payable by the City of Ann Arbor.

Notes Regarding Actuarial Calculations and Underlying Data

The actuarial calculations contained in this report are built on "deterministic" actuarial modeling which arrives at a single point solution. However, these actuarial calculations are based on a combination of demographic and asset data, as well as assumptions concerning future changes in these data. Different actuaries will arrive at different point-specific solutions to the same calculation due to differences in calculation methods. As such, any actuarial calculation is an estimate based on projected future occurrences. Unless otherwise noted, all assumptions are a combination of estimated future experience and estimates inherent in market data or plan experience.

While we provide what appear to be "exact" solutions in this report, it should be understood that other actuaries using reasonable methods and assumptions would arrive at different solutions; however, if underlying data and assumptions are identical, differences should be minor. Therefore, it is important to judge the reasonableness of the data and assumptions, and this report should be used only by individuals that understand the assumptions being used and the sensitivity of results to those assumptions. There is necessary uncertainty with any actuarial calculation based on the accuracy of the data provided, the correct interpretation of plan provisions and the realization of the assumptions made. As an example, an assumption is made regarding the future mortality of plan participants, which includes an assumption for future mortality improvements; however, this assumption does not anticipate some seminal event (e.g., the cure of all cancers) that could greatly affect retiree longevity and significantly increase plan liabilities. Additional studies can be undertaken to determine sensitivity of results to specific assumptions.

Comparative Summary of Membership Data

	June 30, 2018	June 30, 2017	Percent Increase
Number of active employees	695	696	(0.14%)
Average Age	44.4	44.6	(0.47%)
Average years of service	11.0	11.5	(4.52%)
Total Annual valuation salary	\$53,231,121	\$53,583,277	(0.66%)
Average annual valuation salary	\$76,592	\$76,987	(0.51%)
Total accumulated Contributions	\$50,492,732	\$53,334,398	(5.33%)
Average accumulated Contributions	\$72,651	\$76,630	(5.19%)

	June 30, 2018	June 30, 2017	Percent Increase
Number of inactive members	150	150	0.00%
Average Age	51.3	51.1	0.43%
Average Benefit Payments	\$14,199	\$14,369	(1.18%)

	June 30, 2018	June 30, 2017	Percent Increase
Number of members receiving payments			
Retirees	915	889	2.92%
Beneficiary	152	151	0.66%
Total	1,067	1,040	2.60%
Average Age	68.6	68.6	0.01%
Annual benefit amount			
Retirees	\$33,409,560	\$31,523,858	5.98%
Beneficiary	\$3,473,318	\$3,301,485	5.20%
Total	\$36,882,878	\$34,825,342	5.91%
Average benefit payments	\$34,567	\$33,486	3.23%

Comparative Summary of Key Actuarial Valuation Results

Summary of Member Data	June 30, 2018	June 30, 2017
Number of Members included in Valuation		
Active Members	695	696
Inactive Members	150	150
Retirees and Beneficiaries	1,067	1,040
Total	1,912	1,886
Annual Payroll		
Average (actual)	76,592	76,987
Annual Benefit Payments		
Inactive Members (average)	14,199	14,370
Retirees and Beneficiaries (average)	34,403	33,486
 Summary of Assets		
Fair Value	503,705,603	491,257,512
Fair Value Rate of Return	6.98%	11.96%
Actuarial Value	505,014,630	489,943,346
Actuarial Value Rate of Return	-0.04%	8.42%
 Summary of Liabilities		
Total Actuarial Accrued Liability	583,600,733	571,074,022
Unfunded Actuarial Liability	78,586,103	81,130,676
Funded Ratio	86.53%	85.79%
 Actuarial Employer Contribution Rate		
Employer Normal Cost Rate	13.22%	11.54%
Amortization of Unfunded Actuarial		
Accrued Liability (Surplus) Rate	12.27%	11.91%
Employer Actuarial Contribution Rate	25.70%	23.45%
Employee Contribution Rate	5.61%	5.92%
Total Actuarial Contribution Rate	31.31%	29.37%
Actual/Statutory Contribution Rate	31.31%	29.37%
Funding Period (years)	23	24

Basis of Valuation

This summary is not a Summary Plan Description or a plan document. You should not rely solely on this summary in making a determination of eligibility for the plan or its benefits.

Summary of Provisions of the Plan

The actuarial valuation includes all benefits provided by the City of Ann Arbor to current active and inactive plan members. Benefit provisions include retirement, death and disability benefits.

Regular Retirement *Eligibility*

(no reduction factor for age) General: Age 50 with 25 years of service, or age 60 with 5 years of service.

Police-Fire: 25 years of service, or age 55 with 5 years of service.

If new hires or rehires on or after the effective date in the table below, vesting year in above changed from 5 to 10 years.

Employee Group	Effective date
AAPOA	1/1/2012
AFSCME	8/29/2011
CSS/PSS	1/1/2012
DEPCHIEFS	7/2/2012
FIRE	7/1/2012
NON-Union	7/1/2011
POLICEPRO	7/2/2012
TEAMSTERS	7/2/2012

Mandatory Retirement None.
Age

- Annual Benefit Amount General:
- AFSCME, Non-Union and Teamsters Hired or Rehired on or after 1/1/2017: Total service x 1.25% of FAC.
 - All Other: Total service x 2.5% of final average comp (FAC).

A member may elect to receive all or a portion of his accumulated contributions in a lump sum at retirement and receive a lesser benefit.

Police-Fire:

Total service times 2.75% of final average compensation.

A member may elect to receive all or a portion of his accumulated contributions in a lump sum at retirement and receive a lesser benefit

Employee Group	Effective date
Assistant Fire Chiefs	7/1/2017
Police Deputy Chiefs	6/5/2017

Individuals hired into the above positions (or those promoted into the above positions from a position in which they were subject to the Dual Pension Plan) are subject to the Dual Pension Plan. Pension will be calculated using 1.375% multiplier.

Type of Final Average Compensation	Employee Group	Effective date
	AAPOA	1/1/2012
	AFSCME	8/29/2011
	CSS/PSS	1/1/2012
	DEPCHIEFS	7/2/2012
	FIRE	7/1/2012
	NON-Union	7/1/2011
	POLICEPRO	7/2/2012
	TEAMSTERS	7/2/2012

Hired or rehired before effective date – The greater of the highest 3 consecutive years out of last 10, or the last 36 months.

Hired or rehired on or after effective date – The greater of the highest 5 consecutive years out of last 10, or the last 60 months.

- Early Retirement (age reduction factor used) Eligibility:
- General: Age 50 with 20 years of service.
- Police-Fire: Age 50 with 20 years of service.

- Annual Benefit Amount Computed as regular retirement but the pension portion of the allowance is reduced by 0.33% for each month by which retirement precedes:
- For General: Earlier of a) age 60, or b) the age the member would have had 25 years of service.
- Police-Fire: Earlier of 1) age 55 or b) the age the member would have had 25 years of service.

Deferred Retirement (vested benefit)	<p>The annuity portion of the allowance is unreduced.</p> <p>Eligibility:</p> <p>5 years of service. Payable at age 60.</p> <p>If new hires or rehires on or after the effective date in the table on the prior page, vesting year in above changed from 5 to 10 years.</p> <p>Annual Benefit Amount:</p> <p>Same as regular retirement but based upon service and final average compensation at termination. A member may elect to receive all or a portion of his accumulated contributions at termination—if the member's age plus service total at least 50 and receive a lesser benefit at age 60.</p>
Duty Disability Retirement	<p><i>Eligibility:</i> No age or service requirement.</p> <p><u>Annual Benefit Amount:</u></p> <p>General</p> <p>Computed as regular retirement. Minimum to age 60 is 18% of final average compensation. Minimum after age 60 is sum of a) 12% of the portion of final average compensation not in excess of Social Security base, plus b) 18% of final average compensation in excess of Social Security base. Upon termination of worker's compensation, additional service credit is granted for period in receipt of worker's compensation and benefit is recomputed.</p> <p>Police-Fire</p> <p>Computed as regular retirement. Minimum benefit is 25% of final average compensation. Upon termination of worker's compensation, additional service credit is granted for period in receipt of worker's compensation and benefit is recomputed.</p>
Non-Duty Disability Retirement	<p><i>Eligibility:</i> 5 or more years of service.</p> <p>If new hires or rehires on or after the effective date in the table on the prior page, vesting year in above changed from 5 to 10 years.</p> <p><u>Annual Benefit Amount:</u></p> <p>General</p> <p>Computed as regular retirement. Minimum to age 60 is 18% of final average compensation. Minimum after age 60 is sum of a) 12% of the portion of final average compensation not in excess of Social Security base, plus b) 18% of final average compensation in excess of Social Security base.</p> <p>Police-Fire</p> <p>Computed as regular retirement. Minimum benefit is 25% of final average compensation.</p>
Duty Death Before Retirement	<p><i>Eligibility:</i> No age and service requirement.</p>

Annual Benefit Amount:

Computed as regular retirement but actuarially reduced in accordance with a 100% joint and survivor election. If the member had less than 25 years of service at time of death, a minimum of 25 years of service will be used to compute the benefits. Worker's compensation payments made to the member's beneficiary will offset the benefits paid by the Retirement System. Upon termination of worker's compensation payments the amount paid to the beneficiary will be the greater of the annual worker's compensation payment and the computed 100% joint and survivor retirement benefit.

Non-Duty Death Before Retirement

Eligibility: 5 years of service.

If new hires or rehires on or after the effective date in the table in the regular retirement section, vesting year in above changed from 5 to 10 years.

Annual Benefit Amount:

Computed as regular retirement but actuarially reduced in accordance with a 100% joint and survivor election. If there is no named beneficiary, a lump sum will be payable to the estate.

Post-Retirement Adjustments

Adjustments are made every July 1 to retirees and beneficiaries on the rolls at least 12 months. Adjustments are funded by financial gains, and are not guaranteed.

Member Contributions

6% of annual Compensation with effective date in the following table:

Employee Group	Effective date
AAPOA	1/1/2012
AFSCME	10/23/2011
CSS/PSS	8/14/2011
DEPCHIEFS	8/1/2010
FIRE	2/1/2010
NON-Union	7/1/2010
POLICEPRO	8/1/2010
TEAMSTERS	8/1/2010
COAM	5/6/2012

3% of annual Compensation with effective date in the following table:

Employee Group	Effective Date
AFSCME	1/1/2017
NON-Union	1/1/2017
TEAMSTERS	1/1/2017
Assistant Fire Chiefs	7/1/2017
Police Deputy Chiefs	6/5/2017

Summary of Actuarial Assumptions and Methods

Interest Rates	Discount Rate	7.00%
	Long-Term Rate of Return	7.00%

Salary Scale (Merit & Longevity)	Age	General	Police	Fire
	20	4.00 %	7.50 %	7.30 %
	25	3.40	6.60	6.50
	30	2.80	4.70	4.90
	35	2.10	3.40	3.40
	40	1.80	2.70	2.70
	45	1.50	2.40	2.40
	50	1.00	2.20	2.20
	55	0.70	2.00	2.00
	60	0.50	1.80	1.90
	The base rate at all ages is 3.50%			

Mortality	RP-2014 Healthy Employees and Annuitants, Generational Adjusted back to 2006, under Projection Scale MP-2017. These tables first used for the June 30, 2018 actuarial valuation.
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Rates of Retirement

General

Based on age as follows:

Age(s)	Normal	Early
50-59	25 %	10 %
60	30	
61-64	30	
65	60	
66-69	40	
70+	100	

Fire

Based on age as follows:

Age(s)	Normal	Early
50-54		10 %
55-59	25 %	
60+	100	

Based on service as follows:

Years of Service	Rates
25-34	25 %
35+	100

Police

Based on age as follows:

Age(s)	Normal	Early
50-54		10 %
55-59	50 %	
60+	100	

Based on service as follows:

Years of Service	Rates
25-34	50 %
35+	100

Rates of Disability

Age	General	Police	Fire
20	0.06 %	0.08 %	0.02 %
25	0.06	0.08	0.02
30	0.06	0.08	0.02
35	0.06	0.08	0.02
40	0.10	0.14	0.03
45	0.24	0.32	0.08
50	0.42	0.56	0.14
55	0.65	0.86	0.22
60	0.86	1.14	0.29

Percent of disabilities due to duty related:

General 25%

Police and Fire 50%

The above salary and disability assumptions were first used for the June 30, 2008 actuarial valuation.

Rates of Turnover

General

Based on age and service as follows:

Years of Service	Male	Female
0	6.00 %	16.00 %
1	4.80	13.00
2	4.00	11.00
3	3.20	8.00
4	2.50	6.00

After Five Years of Service

Age(s)	Male	Female
20-34	3.20 %	4.50 %
35+	3.25	3.50

Fire

Based on age and service as follows:

Years of Service	
0	4.50 %
1	4.00
2-4	3.60

After Five Years of Service

Age(s)	
20-29	1.40 %
30-34	1.10
35-39	.90
40-44	1.00
45-49	.90
50+	.50

Police

Based on age and service as follows:

Years of Service		
0-1	6.00	%
2	4.00	
3	3.00	
4	2.50	
After Five Years of Service		
Age(s)		
20-34	2.40	%
35-39	1.75	
40-44	.74	
45+	.48	

The interest rate credited on refunds of accumulated contributions paid to terminating members was assumed to be 8.0% per annum, compounded quarterly.

The above withdrawal assumptions were first used for the June 30, 2018 actuarial valuation.

Optional Form	All participants are assumed to elect the normal form of payment (straight life).
Assumptions Made In Valuing Spouse's Benefit	100% of males and 100% of females are assumed to be married for purposes of death-in-service benefits.
Measurement Date	June 30
Fiscal Year	The 12-month period ending June 30.
Asset Method	<p>Actuarial value of assets</p> <p>The actuarial value of assets is based on a five-year smoothing method and is determined by spreading the effect of each year's investment return in excess of or below the expected return. The Fair Value of assets at the valuation date is reduced by the sum of the following:</p> <ul style="list-style-type: none"> (i) 80% of the return to be spread during the first year preceding the valuation date, (ii) 60% of the return to be spread during the second year preceding the valuation date, (iii) 40% of the return to be spread during the third year preceding the valuation date, and (iv) 20% of the return to be spread during the fourth year preceding the valuation date. <p>The return to be spread is the difference between (1) the actual investment return on Fair Value and (2) the expected return on Fair Value.</p>
Employees Valued	All eligible employees as of June 30, 2018 were valued.

Selection of Assumptions	The actuary annually reviews the assumptions and methods for reasonableness. The City of Ann Arbor approves the actuarial report and the assumptions and funding methods described in the report. A complete review of non-economic assumptions, to satisfy ASOP 35, was done in 2018.
Pay Increase Timing	Middle of (Fiscal) year.
Decrements Timing	Decrements of all types are assumed to occur mid-year.
Eligibility Testing	Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.
Benefit Service	Exact fractional service is used to determine the amount of benefit payable.
Decrement Relativity	Decrement rates are used without adjustment for multiple decrement table effects.
Decrement Operation	Disability decrements do not operate during the first 5 years of service. Disability and withdrawal do not operate during retirement eligibility.
Incidence of Contributions	Contributions are assumed to be received continuously throughout the year based upon the computed percent-of- payroll shown in this report, and the actual payroll payable at the time contributions are made. New entrant normal cost contributions are applied to the funding of new entrant benefits.
Actuarial Cost Method	<p>Liabilities and contributions shown in this report are computed using the Entry Age Actuarial Cost Method of funding.</p> <p>Sometimes called a "funding method," this is a particular technique used by actuaries for establishing the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily the annual contribution to the plan is comprised of (1) the normal cost and (2) an amortization payment on the unfunded actuarial accrued liability.</p> <p>Under the Entry Age Actuarial Cost Method, the Normal Cost is computed as the level percentage of pay which, if paid from the earliest time each Member would have been eligible to join the Plan if it then existed (thus, entry age) until his retirement or termination, would accumulate with interest at the rate assumed in the valuation to a fund sufficient to pay all benefits under the Plan.</p> <p>The Normal Cost for the Plan is determined by summing individual results for each active Member and determining an average normal cost rate by dividing the summed individual normal costs by the total payroll of Members before assumed retirement age.</p> <p>The Actuarial Accrued Liability under this method at any point in time is the theoretical amount of the fund that would have accumulated had annual contributions equal to the Normal Cost been made in prior years (it does not represent the liability for benefits accrued to the valuation date.)</p> <p>Lump sum redemption factors are assumed to be:</p> <p>Members hired before July 1, 1982: General - 10%</p> <p>Members hired after June 30, 1982: 0%</p>

Changes in Assumptions from Prior Actuarial Valuation

This is the first year Findley has prepared these results. Prior year Valuations were completed by another consulting firm. Prior year results were matched well within reasonable tolerance.

The following assumption changes were adopted by the Board at its August 16, 2018 meeting based on the results of quinquennial Experience Review for the period of July 1, 2013 through June 30, 2018. These changes are incorporated with the June 30, 2018 actuarial valuation. The next Experience Review will cover the period of July 1, 2018 through June 30, 2023 to be first used with the June 30, 2023 valuation.

	Previous	Current
Healthy mortality	Post-retirement mortality: RP 2000 Combined Table projected to 2007 set forward 2 years for males and set back 3 years for females.	RP-2014 Healthy Employees and Annuitants, Adjusted back to 2006, Generational Under Projection Scale MP-2017
	Disabled mortality rates are the standard post-retirement mortality rates set forward 10 years. These tables first used for the June 30, 2008 actuarial valuation.	RP-2014 Disabled Mortality Table, Adjusted back to 2006, Generational Under Projection Scale MP-2017
	Pre-retirement mortality: 75% of post-retirement mortality rates. For Police and Fire 50% of deaths-in-service are assumed to be duty related.	RP-2014 Healthy Employees and Annuitants, Adjusted back to 2006, Generational Under Projection Scale MP-2017
Inflation	Previous	Current
	3.50%	2.50%

Salary Scale (Merit & Longevity)	Previous			Current			
Age	General	Police	Fire	Age	General	Police	Fire
20	4.00%	6.00%	5.80%	20	4.00%	7.50%	7.30%
25	3.60	5.10	5.00	25	3.60	6.60	6.50
30	2.80	3.20	3.40	30	2.80	4.70	4.90
35	2.10	1.90	1.90	35	2.10	3.40	3.40
40	1.80	1.20	1.20	40	1.80	2.70	2.70
45	1.50	0.90	0.90	45	1.50	2.40	2.40
50	1.00	0.70	0.70	50	1.00	2.20	2.20
55	0.70	0.50	0.50	55	0.70	2.00	2.00
60	0.50	0.30	0.40	60	0.50	1.80	1.90
The Base rate at all ages is 3.50%			The Base rate at all ages is 3.50%				

Rates of Turnover - General	Previous			Current					
Based on Years of Service as Follows:				Based on Years of Service as Follows:					
Years of Service	Male	Female		Years of Service	Male	Female			
0	6.00 %	16.00 %		0	6.00 %	16.00 %			
1	4.80	13.00		1	4.80	13.00			
2	4.00	11.00		2	4.00	11.00			
3	3.20	8.00		3	3.20	8.00			
4	2.50	6.00		4	2.50	6.00			
After 5 Years Of Service						After 5 Years Of Service			
Age(s)	Female		Male		Age(s)	Female		Male	
20-34	3.20 %		6.50 %		20-34	3.20 %		4.50 %	
35+	2.50		5.00		35+	3.25		3.50	

Rates of Retirement - General

Previous			Current		
Based on age as Follows:			Based on age as Follows:		
Age(s)	Normal	Early	Age(s)	Normal	Early
50	45 %	23 %	50	25 %	10 %
51-53	40	15	51-53	25	
54	40	18	54	25	
55	40	30	55	25	
56-57	40	42	56-57	25	
58-59	25	42	58-59	25	
60	25		60	30	
61-64	35		61-64	30	
65	60		65	60	
66-69	40		66-69	40	
70+	100		70+	100	

Rates of Retirement - Fire

Previous			Current		
Based on age as Follows			Based on age as Follows		
Age(s)	Normal	Early	Age(s)	Normal	Early
50-54		25 %	50-54		10 %
55-58	24 %		55-58	25 %	
59	34		59	25	
60+	100		60+	100	
Based on Service as Follows			Based on Service as Follows		
Years of	Rates		Years	Rates	
25	50 %		25	25 %	
26-27	35		26-27	25	
28	35		28	25	
29	25		29	25	
30-34	25		30-34	25	
35+	100		35+	100	

Rates of Retirement - Police

Previous			Current		
Based on age as Follows			Based on age as Follows		
Age(s)	Normal	Early	Age(s)	Normal	Early
50-54		35 %	50-54		10 %
55-59	75 %		55-59	50 %	
60+	100		60+	100	
Based on Service as Follows			Based on Service as Follows		
Years of	Rates		Years	Rates	
25	70 %		25	50 %	
26-27	70		26-27	50	
28	50		28	50	
29	50		29	50	
30-34	75		30-34	50	
35+	100		35+	100	

Additional Information Regarding Actuarial Assumptions

The following information is provided to assist the auditor in completing the required disclosures under GASB 67 and 68.

1. We have assumed the funding policy for the Plan is to contribute the greater of the actuarial determined contribution and the prior year increased by 2%.

The City of Ann Arbor Employees' Retirement System is funded by Employer and Member Contributions in accordance with the funding policy adopted by the Retirement Board, based on actuarially determined contributions (ADC), which require contributions be sufficient to pay the Normal Costs of active plan members, Plan expenses, and amortize the Unfunded Actuarial Accrued Liability over a declining period. Prior to this valuation, the period was 24 years and amortization payments were a level percentage of payroll. Effective with the 2017 valuation, the Board approved a change to a level dollar amortization that decreases by one year in each year until a 15-year open amortization period is obtained. Additionally, Section 1.3 of the City of Ann Arbor General Pension Policy allows for more than the Minimum Required policy as follows:

"The City of Ann Arbor will strive to achieve 100% funding of the City of Ann Arbor Employees' Retirement Plan. To the extent that 100% funding has been achieved, the City will continue to fund at a minimum the Normal Cost as defined by an outside actuary. To the extent that 100% funding had not been achieved, the City shall budget each fiscal year the higher of the ADC or the existing level of funding in the current budget year adjusted annually for the change in general fund budgeted revenues. In some years this may result in an excess contribution to the Pension Fund, which will serve to pay down the unfunded actuarial accrued liability and reduce future city cost increases."

2. Findley is **not** provided information concerning liabilities other than benefits, such as for legal or accounting fees.
3. Findley is **not** aware of any significant events subsequent to the current year's measurement date that could materially affect the information contained in this report.
4. We are **not** aware of any relationship between the plan or plan sponsor and Findley, Inc. which would impair or appear to impair our objectivity.
5. We have **not** been notified of any decision by the plan sponsor to fully or partially terminate the plan.
6. To the best of our knowledge, all information provided in this report has been determined in accordance with generally accepted accounting principles.
7. Matt Klein is an Enrolled Actuary, Fellow of the Society of Actuaries, and Member of the American Academy of Actuaries.
8. Amy Kennedy is an Enrolled Actuary and Member of the American Academy of Actuaries.

Plan Assets

Balance Sheet July 1, 2018

	Market Value
Assets	
Cash and Cash Equivalents	\$7,422,776
Equity Fund Investments	288,898,243
Real Estate	37,512,954
Hedge Funds	13,586,902
Fixed Income Fund Investments	155,315,811
Accrued Income	270,506
Other Assets	4,940,401
Total Assets	\$507,947,593
Liabilities	4,241,990
Net Assets	\$503,705,603
Summary of Operation	
Trust Fund, Beginning of Year	\$491,257,512
Prior Year Adjustment-close to Pension Res Reg Acct	(295,645)
Final Trust Fund, Beginning of Year (after adjustment)	490,961,867
Increases	
Employer Contributions	13,445,765
Employee Contributions	3,185,449
Net Investment Gains	33,550,876
Total increases	\$50,182,090
Decreases	
Benefit Payments	36,715,168
Other Expenses	723,186
Total decreases	\$37,438,354
Trust Fund, End of Year	503,705,603

Actuarial Value of Assets

Market Assets, July 1, 2017	\$490,961,867
Expected Return for 2017-18	34,367,331
Employee Contributions with Interest	3,296,940
Employer Contributions with Interest	13,902,808
Benefit Payments, with Interest	(38,000,199)
Plan Expenses, with Interest	(748,498)
Expected Asset Value, June 30, 2018	<u>\$503,780,249</u>
Market Asset Value, June 30, 2018	<u>503,705,603</u>
Variance from Expected Asset Value	\$(74,646)

2017-18	\$(74,646)
2016-17	21,252,725
2015-16	(29,837,440)
2014-15	(10,329,845)

Market Asset Value for June 30, 2018	\$503,705,603
-80% of 2017-18 Variance	59,717
-60% of 2016-17 Variance	(12,751,635)
-40% of 2015-16 Variance	11,934,976
-20% of 2014-15 Variance	2,065,969
Valuation Assets	<u>\$505,014,630</u>

Historical Asset Rate of Return

Year ending June 30	Actuarial Value Annual Recognized Rate of Return	Fair Value Annual Recognized Rate of Return
2009	1.30%	-20.00%
2010	1.60%	12.50%
2011	3.78%	23.37%
2012	0.60%	0.01%
2013	4.04%	12.28%
2014	11.18%	14.23%
2015	9.96%	4.22%
2016	6.22%	0.37%
2017	8.42%	11.96%
2018	-0.04%	6.98%

Forecast of Expected Benefit Payments

Year Ending June 30	Active Employees				Inactive Members				All Members			
	General	Police	Fire	Total Active	General	Police	Fire	Total Inactive	General	Police	Fire	Grand Total
2018	599,319	318,112	146,512	1,063,942	19,259,318	10,068,981	7,229,966	36,558,265	19,858,637	10,387,092	7,376,478	37,622,207
2019	1,398,111	753,616	445,684	2,597,410	19,122,798	9,983,104	7,129,769	36,235,671	20,520,908	10,736,720	7,575,453	38,833,081
2020	2,190,860	1,177,241	670,418	4,038,519	19,008,379	9,887,973	7,026,193	35,922,545	21,199,239	11,065,214	7,696,611	39,961,064
2021	2,977,171	1,747,303	934,064	5,658,537	18,921,591	9,783,616	6,918,597	35,623,805	21,898,762	11,530,919	7,852,661	41,282,342
2022	3,748,595	2,431,892	1,228,620	7,409,107	18,707,787	9,670,188	6,806,010	35,183,985	22,456,382	12,102,080	8,034,630	42,593,092
2023	4,559,615	3,080,842	1,569,358	9,209,815	18,473,385	9,567,786	6,688,155	34,729,326	23,033,000	12,648,629	8,257,512	43,939,141
2024	5,315,873	3,765,513	1,921,492	11,002,878	18,262,437	9,436,623	6,564,237	34,263,296	23,578,310	13,202,136	8,485,729	45,266,175
2025	6,072,514	4,391,321	2,329,084	12,792,919	18,019,059	9,346,769	6,433,648	33,799,475	24,091,573	13,738,089	8,762,732	46,592,394
2026	6,877,178	4,979,751	2,762,714	14,619,643	17,806,161	9,198,346	6,295,920	33,300,426	24,683,340	14,178,097	9,058,634	47,920,070
2027	7,680,279	5,608,482	3,161,711	16,450,472	17,541,883	9,041,605	6,150,716	32,734,203	25,222,162	14,650,087	9,312,427	49,184,675
2028	8,528,157	6,070,770	3,545,668	18,144,594	17,398,846	8,876,612	6,035,302	32,310,760	25,927,002	14,947,382	9,580,970	50,455,354
2029	9,356,939	6,306,087	3,902,361	19,565,388	17,134,160	8,750,434	5,874,394	31,758,988	26,491,099	15,056,521	9,776,755	51,324,376
2030	10,204,125	6,444,893	4,218,413	20,867,431	16,832,695	8,568,665	5,705,801	31,107,161	27,036,820	15,013,557	9,924,214	51,974,591
2031	11,081,577	6,517,126	4,590,324	22,189,026	16,432,181	8,421,415	5,529,703	30,383,298	27,513,757	14,938,541	10,120,026	52,572,324
2032	11,915,757	6,570,080	4,823,134	23,308,972	16,035,990	8,223,385	5,346,437	29,605,812	27,951,748	14,793,465	10,169,571	52,914,784
2033	12,772,266	6,643,563	4,996,716	24,412,544	15,564,201	8,015,799	5,156,483	28,736,483	28,336,467	14,659,362	10,153,198	53,149,027
2034	13,537,404	6,743,019	5,127,637	25,408,060	15,166,829	7,799,682	4,960,467	27,926,978	28,704,233	14,542,701	10,088,104	53,335,038
2035	14,371,643	6,857,254	5,237,025	26,465,923	14,718,932	7,575,231	4,766,663	27,060,826	29,090,575	14,432,485	10,003,688	53,526,748
2036	15,089,180	7,002,535	5,291,800	27,383,514	14,243,681	7,342,780	4,560,757	26,147,217	29,332,860	14,345,314	9,852,557	53,530,732
2037	15,909,867	7,443,374	5,377,225	28,730,466	13,723,525	7,102,764	4,351,140	25,177,430	29,633,392	14,546,138	9,728,366	53,907,896
2038	16,748,720	7,975,298	5,495,154	30,219,172	13,158,869	6,855,713	4,138,670	24,153,251	29,907,589	14,831,010	9,633,825	54,372,424
2039	17,538,810	8,507,565	5,581,734	31,628,108	12,616,629	6,602,276	3,924,240	23,143,145	30,155,439	15,109,841	9,505,974	54,771,254
2040	18,289,782	9,180,772	5,700,446	33,170,999	12,048,820	6,343,221	3,708,835	22,100,876	30,338,601	15,523,993	9,409,281	55,271,876
2041	18,922,944	9,769,164	5,854,039	34,546,147	11,430,820	6,079,378	3,493,571	21,003,769	30,353,764	15,848,542	9,347,610	55,549,916
2042	19,460,396	10,215,714	6,004,911	35,681,022	10,792,145	5,811,631	3,279,579	19,883,354	30,252,541	16,027,345	9,284,490	55,564,376
2043	19,952,281	10,516,711	6,161,964	36,630,955	10,145,829	5,540,979	3,067,932	18,754,740	30,098,109	16,057,690	9,229,896	55,385,695
2044	20,306,709	10,687,364	6,379,900	37,373,974	9,495,789	5,268,531	2,859,700	17,624,021	29,802,499	15,955,895	9,239,601	54,997,994
2045	20,434,072	10,788,111	6,500,040	37,722,222	8,846,292	4,995,456	2,655,844	16,497,591	29,280,363	15,783,567	9,155,883	54,219,813
2046	20,438,366	10,789,520	6,544,566	37,772,453	8,201,919	4,722,874	2,457,229	15,382,022	28,640,285	15,512,394	9,001,795	53,154,475
2047	20,379,480	10,719,101	6,543,424	37,642,005	7,567,366	4,451,712	2,264,703	14,283,781	27,946,846	15,170,813	8,808,127	51,925,786
2048	20,306,100	10,586,198	6,485,622	37,377,920	6,947,260	4,182,748	2,079,101	13,209,110	27,253,360	14,768,947	8,564,724	50,587,030

Analysis of Changes in Reserves for the Year Ended June 30, 2018

	Reserve for Employer Contributions			Reserve for Retired Benefit Payments	Reserve for Employee Contribution	Total Reserves
	Regular Account	Undistributed Investment Income	Total			
Balance, June 30, 2017	54,176,493	0	54,176,493	374,822,052	62,258,967	491,257,512
Prior Year Adjustment	(554,016)		(554,016)	554,016		0
Prior Year Adjustment-close to Pension Res Reg Acct				(295,645)		(295,645)
Adjustment to Reserves:						
Board Transfer			0	0		0
Transfer for Benefit Increase				0		
Employee Contributions			0	0	3,185,448	3,185,448
Employer Contribution	13,445,765		13,445,765	0		13,445,765
Investment Income		34,153,560	34,153,560	0		34,153,560
Allowances awarded	(19,682,320)		(19,682,320)	27,536,076	(7,853,756)	0
 Total Additions	 (6,236,556)	 34,153,560	 27,917,004	 27,536,076	 (4,668,308)	 50,784,772
Deductions:						
Benefits Paid			0	(35,807,321)		(35,807,321)
Refunds			0		(907,847)	(907,847)
Investment and admin services		(1,325,869)	(1,325,869)	0		(1,325,869)
Insurance Payments		0	0			0
Investment Income Distributions:						
Regular	3,535,294	(32,483,438)	(28,948,144)	25,966,137	2,982,008	
Excess Retirement		0	0	0		
Excess Closed to Pension Reserve	344,253	(344,253)	0	0		
 Balance, June 30, 2018	 51,265,468	 0	 51,265,468	 392,775,315	 59,664,820	 503,705,603

Reserve for Retired Benefit Payments

	Regular Account	Pension Adjustment Account	Pension Contingency Account	Total
Balance at June 30, 2017	374,822,052	0	0	374,822,052
Special Board Transfer				0
Miscellaneous adjustments	(295,645)			(295,645)
Transfer for Benefit Increase				0
Adjustment for benefit reserve				0
Adjustment per 06/30/2017 Actuary Report	554,016			554,016
Adjusted Balance at July 1, 2017	375,080,423	0	0	375,080,423
Transfers for New Retirees				0
Employer assets	19,682,320			19,682,320
Accumulated Contributions Transfers	7,853,756			7,853,756
Deductions				
Retirement Payments	(35,807,321)			(35,807,321)
Investment Income Credited				
Regular Interest	25,966,137 *	0		25,966,137
Extra Interest	*	0		0
Balance June 30, 2018	392,775,315	0	0	392,775,315

* Credited to Pension Adjustment Account

Actuarial Funding Results

Actuarial Liabilities and Normal Cost

Actuarial Liabilities

A. Present Value of Future Benefits	General Members	Police Members	Fire Members	Total
Active Members				
Retirement Benefits	116,097,497	71,779,730	45,229,130	233,106,357
Withdrawal Benefits	10,204,017	529,477	480,446	11,213,940
Disability Benefits	5,181,903	2,240,807	452,078	7,874,788
Death Benefits	1,357,521	362,789	307,174	2,027,484
Total	132,840,938	74,912,803	46,468,828	254,222,569
B. Inactive Members with Deferred Benefits	12,776,856	1,008,746	503,570	14,289,172
C. Inactive Members Receiving Benefits	207,841,801	114,351,702	76,636,525	398,830,028
D. Total Present Value of Future Benefits (A + B + C)	353,459,595	190,273,251	123,608,923	667,341,769
E. Present Value of Future Normal Costs	46,954,939	22,599,743	14,186,353	83,741,035
F. Total Actuarial Accrued Liability (D - E)	306,504,656	167,673,508	109,422,570	583,600,734

Normal Cost 2020

	General Members	Police Members	Fire Members	Total
Active Members				
Retirement Benefits	11.70%	19.69%	20.61%	
Withdrawal Benefits	2.21%	0.66%	0.56%	
Disability Benefits	0.73%	0.93%	0.30%	
Death Benefits	0.19%	0.15%	0.20%	
Total Normal Cost (As a % of pay)	14.82%	21.42%	21.67%	17.11%
Expected Member Contribution (As a % of pay)	6.38%	5.59%	5.67%	5.61%
Expected Member Contribution (Dollar amount)	2,029,205	657,455	392,671	3,079,331
Employer Normal Cost (As a % of pay)	12.06%	18.21%	18.40%	13.22%
Employer Normal Cost (Dollar amount)	3,840,020	2,142,042	1,275,178	7,257,240

Actuarial Contributions

	Fical Year Ending June 30, 2020					06/30/2019*
	General Members Traditional Plan	General Members Hybrid Plan	Police Members	Fire Members	Total	Total
Employer Contributions						
1. Annual Payroll	31,829,892	4,382,603	11,764,340	6,930,156	54,906,991	57,398,406
2. Total Actuarial Accrued Liability	306,432,277	72,379	167,673,508	109,422,570	583,600,734	571,074,022
3. Actuarial Value of Assets	265,168,931	62,633	145,095,045	94,688,021	505,014,630	489,943,346
4. Unfunded Actuarial Accrued Liability 'UAAL' (2. - 3.)	41,263,346	9,746	22,578,463	14,734,549	78,586,104	81,130,676
5. Funded Ratio (3. / 2.)	86.53%	86.53%	86.53%	86.53%	86.53%	85.79%
6. (UAAL) as a percent of Annual Payroll (4. / 1.)	129.64%	0.22%	191.92%	212.61%	143.13%	141.35%
7. Amortization Payment for (UAAL)						
i. Amount	3,538,868	836	1,936,396	1,263,679	6,739,779	6,838,408
ii. As a percent of Pay	11.12%	0.02%	16.46%	18.23%	12.27%	11.91%
8. Employer Normal Cost						
i. Amount	3,840,020	95,947	2,142,042	1,275,178	7,353,187	6,626,370
ii. As a percent of Pay	12.06%	2.19%	18.21%	18.40%	13.39%	11.54%
9. Actuarial Employer Contribution						
i. Amount	7,378,888	96,783	4,078,438	2,538,857	14,092,966	13,464,778
ii. As a percent of Pay	23.20%	2.20%	34.70%	36.60%	25.70%	23.50%
10. Funding Period	23	23	23	23	23	24
Funding Plan						
11. Assumed revenue Increase					2%	
12. Estimated Funding Plan Contribution					13,734,074	13,343,470
Estimated City Contribution						
13. Estimated City Contribution [Greater of (9. & 12.)]					14,092,966	13,464,778

* As shown in prior actuary's report

Actuarial (Gain)/Loss

Development of Actuarial (Gain) / Loss Amount

1. Expected Actuarial Accrued Liability	
a. Actuarial Accrued Liability at June 30, 2017	571,074,022
b. Normal Cost at June 30, 2017	9,359,829
c. (a. + b) with Interest to End of Year	621,064,221
d. Benefit Payments and Refund of Contributions through June 30, 2018 with Interest to End Year	37,978,465
e. Expected Actuarial Accrued Liability Before Changes (c. - d.)	583,085,755
f. Change in Actuarial Accrued Liability at June 30, 2018, Due to Change in Actuarial Assumptions	610,440
g. Change in Actuarial Accrued Liability at June 30, 2018, Due to Change in Actuarial Method	3,136,299
h. Change in Actuarial Accrued Liability at June 30, 2018, Due to Change in Plan Provisions	0
i. Expected Actuarial Accrued Liability at June 30, 2018, (e. + f. + g.)	586,832,494
2. Actuarial Accrued Liability at June 30, 2018	582,990,293
3. Liability (Gain) / Loss (2. - 1.i.)	(3,842,201)
4. Expected Actuarial Value of Assets	
a. Actuarial Value of Assets at June 30, 2018	489,943,346
b. Interest on a. to End of Year	34,296,034
c. Contributions Made for June 30, 2018	16,631,213
d. Interest on c. to End of Year	572,247
e. Benefit Payments and Refund of Contributions for June 30, 2018, with Interest to End of Year	37,978,465
f. Change in Actuarial Value of Assets at June 30, 2018 Due to Method Change	0
g. Expected Actuarial Value of Assets at June 30, 2018 (a. + b. + c. + d. - e. - f.)	503,464,375
5. Actuarial Value of Assets as of June 30, 2018	505,014,630
6. Actuarial Asset (Gain) / Loss (4.g. - 5.)	(1,550,255)
7. Actuarial (Gain) / Loss (3. + 6.)	(5,392,456)

Analysis of Actuarial (Gains) and Losses Resulting from Differences between Assumed and Actual Experience

Type of (gain) Loss	Year End June 30, 2018	Percent of Expected
(1) COLA Experience	0	0.00%
(2) Salary Experience	(6,354,711)	-1.09%
(3) Actuarial Valuation Method	3,136,299	0.54%
(4) Investment Experience	(1,550,255)	-0.27%
(5) Retiree Mortality Experience	345,308	0.06%
(6) Contribution Shortfall	0	0.00%
(7) (Gain) or Loss During Year From Experience, (1) + (2) + (3) + (4) + (5) + (6)	(4,423,359)	-0.76%
(8) Asset Valuation Method	0	0.00%
(9) Data correction	0	0.00%
(10) Return to work	128,476	0.02%
(11) Form of payment Changes	692,504	0.12%
(12) Turnover	440,643	0.08%
(13) Retirement	(2,787,833)	-0.48%
(14) Deaths among actives	113,339	0.02%
(15) Disability retirements	58,935	0.01%
(16) Other	384,839	0.07%
(17) Total (Gain) or Loss During Year, (7) + (8) + (9) + (10) + (11) + (12) + (13) + (14) + (15) + (16)	(5,392,456)	-0.92%

Actuarial Balance Sheet

Assets

Actuarial Value of Fund Assets	\$505,014,630
Unfunded Accrued Liability	78,586,103
Present Value of Future Employee Contributions	25,976,258
Present Value of Future Normal Cost	57,826,519
Total	\$667,403,510

Liabilities

Present Value of Benefits	
Retired Participants	\$398,830,027
Terminated Participants Entitled to Deferred Benefits	14,289,172
Active Participants	254,284,311
Total	\$667,403,510

History of UAAL and Funded Ratio (\$ in 000's)

Valuation Date	Actuarial Accrued Liability (AAL)	Actuarial Value of Assets (AVA)	Funded Ratio (AVA as % of AAL)	Unfunded Actuarial Accrued Liability (UAAL)
June 30, 2008	430,438	428,689	99.59%	1,749
June 30, 2009	455,219	426,283	93.64%	28,936
June 30, 2010	466,883	421,387	90.26%	45,496
June 30, 2011	481,330	423,734	88.03%	57,596
June 30, 2012	496,770	410,709	82.68%	86,061
June 30, 2013	507,435	407,170	80.24%	100,265
June 30, 2014	523,461	433,854	82.88%	89,607
June 30, 2015	533,198	459,480	86.17%	73,718
June 30, 2016	548,201	470,029	85.74%	78,172
June 30, 2017	571,074	489,943	85.79%	81,131
June 30, 2018	583,601	505,015	86.53%	78,586

Solvency Test

Valuation Date	Aggregate Liabilities For:			Valuation Assets (000's)	Portion of Accrued Liabilities Covered by Assets		
	(1)	(2)	(3)		(1)	(2)	(3)
	Active Member Contributions (000's)	Inactive Members (000's)	Active Members (Employer-Financed Portion) (000's)				
June 30, 2008	2,726			428,689			
June 30, 2009	2,815	276,709	175,695	426,283	100.00%	100.00%	83.53%
June 30, 2010	3,148	306,296	157,439	421,387	100.00%	100.00%	71.10%
June 30, 2011	2,790	327,964	150,576	423,734	100.00%	100.00%	61.75%
June 30, 2012	2,797	348,249	145,724	410,709	100.00%	100.00%	40.94%
June 30, 2013	2,858	353,683	150,895	407,170	100.00%	100.00%	33.55%
June 30, 2014	2,948	356,397	164,116	433,854	100.00%	100.00%	45.40%
June 30, 2015	3,013	361,314	168,871	459,480	100.00%	100.00%	56.35%
June 30, 2016	3,139	374,798	170,264	470,029	100.00%	100.00%	54.09%
June 30, 2017	3,325	389,354	178,395	489,943	100.00%	100.00%	54.52%
June 30, 2018	3,185	413,119	170,478	505,015	100.00%	100.00%	52.04%

Accounting Information

Schedule of Changes in Net Pension Liability as of June 30, 2018

	Total Pension Liability (a)	Plan Net Position (b)	Net Pension Liability (a) - (b)
Balances--at 06/30/2017	<u>\$559,390,000</u>	<u>\$491,278,000</u>	<u>\$68,112,000</u>
Changes for the Year:			
Service cost	9,403,000		9,403,000
Interest	38,552,000		38,552,000
Benefit changes			
Difference between expected and actual experience	15,517,000		15,517,000
Changes of assumptions			
Contributions--Employer		13,446,000	(13,446,000)
Contributions--members		3,185,000	(3,185,000)
Expected Investment Return		33,662,000	(33,662,000)
Difference between expected and actual returns		(427,000)	427,000
Refunds of contributions			
Benefits paid	(36,715,000)	(36,715,000)	0
Administrative expenses		(694,000)	694,000
Other changes			
Net Changes	<u>26,757,000</u>	<u>12,457,000</u>	<u>14,300,000</u>
Balances--at 06/30/2018	<u>\$586,147,000</u>	<u>\$503,735,000</u>	<u>\$82,412,000</u>

Net Pension Liability (Asset)

Total Pension Liability	586,147,000
Plan Fiduciary Net Position	<u>(503,735,000)</u>
Net Pension Liability	<u>\$82,412,000</u>

Plan Fiduciary Net Position as a Percentage of Total Pension Liability 85.94%

Sensitivity

The following represents the net pension liability calculated using the stated discount rate, as well as what the net pension liability would be if it were calculated using a discount rate that is 1-percentage-point lower or 1-percentage-point higher than the current rate:

	1% Decrease 6.00%	Current Rate 7.00%	1% Increase 8.00%
Net Pension Liability	<u>\$146,751,000</u>	<u>\$82,412,000</u>	<u>\$28,194,000</u>

GASB 68 Information

Pension Expense

	Fiscal Year Ending June 30, 2017	Fiscal Year Ending June 30, 2018
Service cost	8,869,000	9,403,000
Interest	37,755,000	38,552,000
Benefit changes	-	-
Contributions—members	(3,325,000)	(3,185,000)
Expected investment return	(31,277,000)	(33,662,000)
Recognition for Current Year		
Recognition of economic/demographic gains or losses	1,132,000	4,673,000
Recognition of investment gains or losses	(4,593,000)	85,000
Recognition of assumption changes or inputs	-	-
Recognition of Deferred Inflows/Outflows of Resources		
Recognition of economic/demographic gains or losses	(1,137,000)	(82,000)
Recognition of investment gains or losses	8,437,800	3,844,800
Recognition of assumption changes or inputs	-	-
Plan administrative expenses	747,000	694,000
Pension Expense	16,608,800	20,322,800

Amortization of Difference between Expected and Actual Experience

Measurement Year	2015	2016	2017	2018			
Amount Established	279,000	(3,826,000)	3,488,000	15,517,000			
Amortization Period	3.12	3.12	3.08	3.32			
Annual Recognition	89,000	(1,226,000)	1,132,000	4,673,000			
Amount Recognized					Total	Outflows	Inflows
2015	89,000				89,000	89,000	-
2016	89,000	(1,226,000)			(1,137,000)	89,000	(1,226,000)
2017	89,000	(1,226,000)	1,132,000		(5,000)	1,221,000	(1,226,000)
2018	12,000	(1,226,000)	1,132,000	4,673,000	4,591,000	5,817,000	(1,226,000)
2019	-	(148,000)	1,132,000	4,673,000	5,657,000	5,805,000	(148,000)
2020	-	-	92,000	4,673,000	4,765,000	4,765,000	-
2021	-	-	-	1,498,000	1,498,000	1,498,000	-
2022	-	-	-	-	-	-	-
2023	-	-	-	-	-	-	-
2024	-	-	-	-	-	-	-
2025	-	-	-	-	-	-	-
Deferred Balance							
2015	190,000				190,000	190,000	-
2016	101,000	(2,600,000)			(2,499,000)	101,000	(2,600,000)
2017	12,000	(1,374,000)	2,356,000		994,000	2,368,000	(1,374,000)
2018	-	(148,000)	1,224,000	10,844,000	11,920,000	12,068,000	(148,000)
2019	-	-	92,000	6,171,000	6,263,000	6,263,000	-
2020	-	-	-	1,498,000	1,498,000	1,498,000	-
2021	-	-	-	-	-	-	-
2022	-	-	-	-	-	-	-
2023	-	-	-	-	-	-	-
2024	-	-	-	-	-	-	-
2025	-	-	-	-	-	-	-

Amortization of Difference between Projected and Actual Earnings

Measurement Year	2015	2016	2017	2018
Amount Established	12,199,000	29,990,000	(22,966,000)	427,000
Amortization Period	5	5	5	5
Annual Recognition	2,439,800	5,998,000	(4,593,000)	85,000

Amount Recognized

					Total	Outflows	Inflows
2015	2,439,800				2,439,800	2,439,800	-
2016	2,439,800	5,998,000			8,437,800	8,437,800	-
2017	2,439,800	5,998,000	(4,593,000)		3,844,800	8,437,800	(4,593,000)
2018	2,439,800	5,998,000	(4,593,000)	85,000	3,929,800	8,522,800	(4,593,000)
2019	2,439,800	5,998,000	(4,593,000)	85,000	3,929,800	8,522,800	(4,593,000)
2020	-	5,998,000	(4,593,000)	85,000	1,490,000	6,083,000	(4,593,000)
2021	-	-	(4,594,000)	85,000	(4,509,000)	85,000	(4,594,000)
2022	-	-	-	87,000	87,000	87,000	-
2023	-	-	-	-	-	-	-
2024	-	-	-	-	-	-	-
2025	-	-	-	-	-	-	-

Deferred Balance

2015	9,759,200				9,759,200	9,759,200	-
2016	7,319,400	23,992,000			31,311,400	31,311,400	-
2017	4,879,600	17,994,000	(18,373,000)		4,500,600	22,873,600	(18,373,000)
2018	2,439,800	11,996,000	(13,780,000)	342,000	997,800	14,777,800	(13,780,000)
2019	-	5,998,000	(9,187,000)	257,000	(2,932,000)	6,255,000	(9,187,000)
2020	-	-	(4,594,000)	172,000	(4,422,000)	172,000	(4,594,000)
2021	-	-	-	87,000	87,000	87,000	-
2022	-	-	-	-	-	-	-
2023	-	-	-	-	-	-	-
2024	-	-	-	-	-	-	-
2025	-	-	-	-	-	-	-

Amortization of Changes in Assumptions

There are no amortizations due to a change in assumptions

Actuarial Funding Projections

Projection Assumptions and Methods

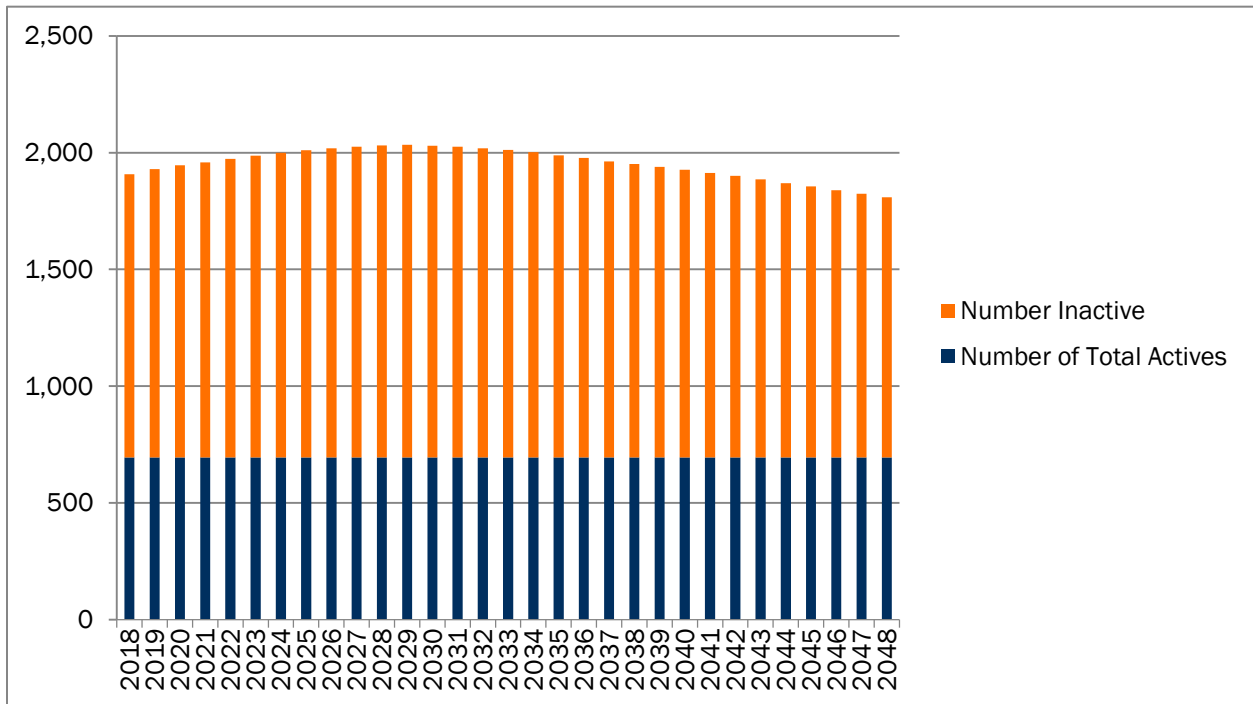
Key Assumptions

- 7.0% investment return on the Fair Value of Assets in all future years.
- 7.0% discount rate for determining liability.
- The Actuarial Value of Assets reflects the deferred gains and losses generated by the smoothing method. The current deferred amounts are recognized in the first four years of the projections.
- Actuarial assumptions and methods as described. All future demographic experience is assumed to be exactly realized.
- The actuarially calculated contribution rate is contributed each year.
- Projections assume a 0% increase in the total active member population. All new future members are expected to enter the plan upon date of hire and contribution rates are determined as a percent of total payroll.
- The projections are based on the combined impact of the Minimum Required Policy and the Funding Plan.
- For the Sensitivity Analysis, all assumptions and methods are the same except investment returns on the Fair Value of Assets are assumed as follows:
 - Base Case: 7.00% for all future years
 - Optimistic: 8.00% for all future years
 - Pessimistic: 6.00% for all future years

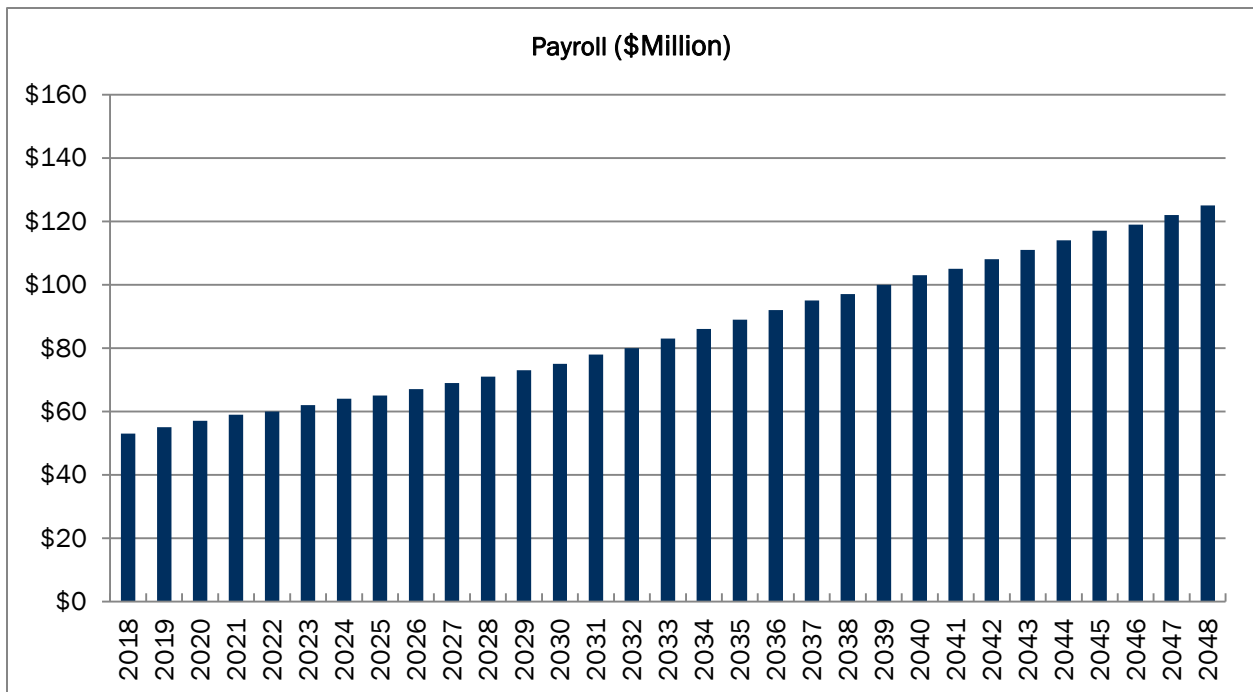
These scenarios are intended to illustrate the impact if investment return assumptions are different than the 7.00% assumed investment return. They do not illustrate the effect of changing the assumed discount rate for determining liabilities.

Membership Projection

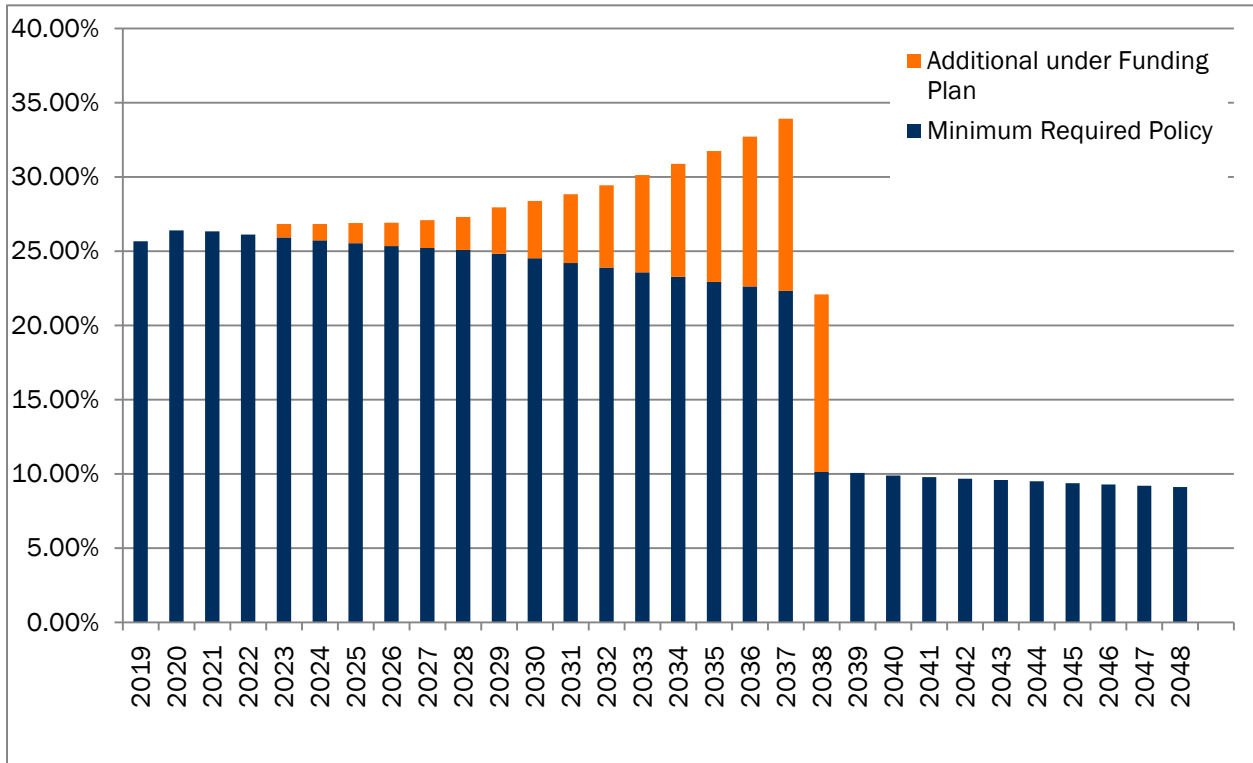
Projected Member Count



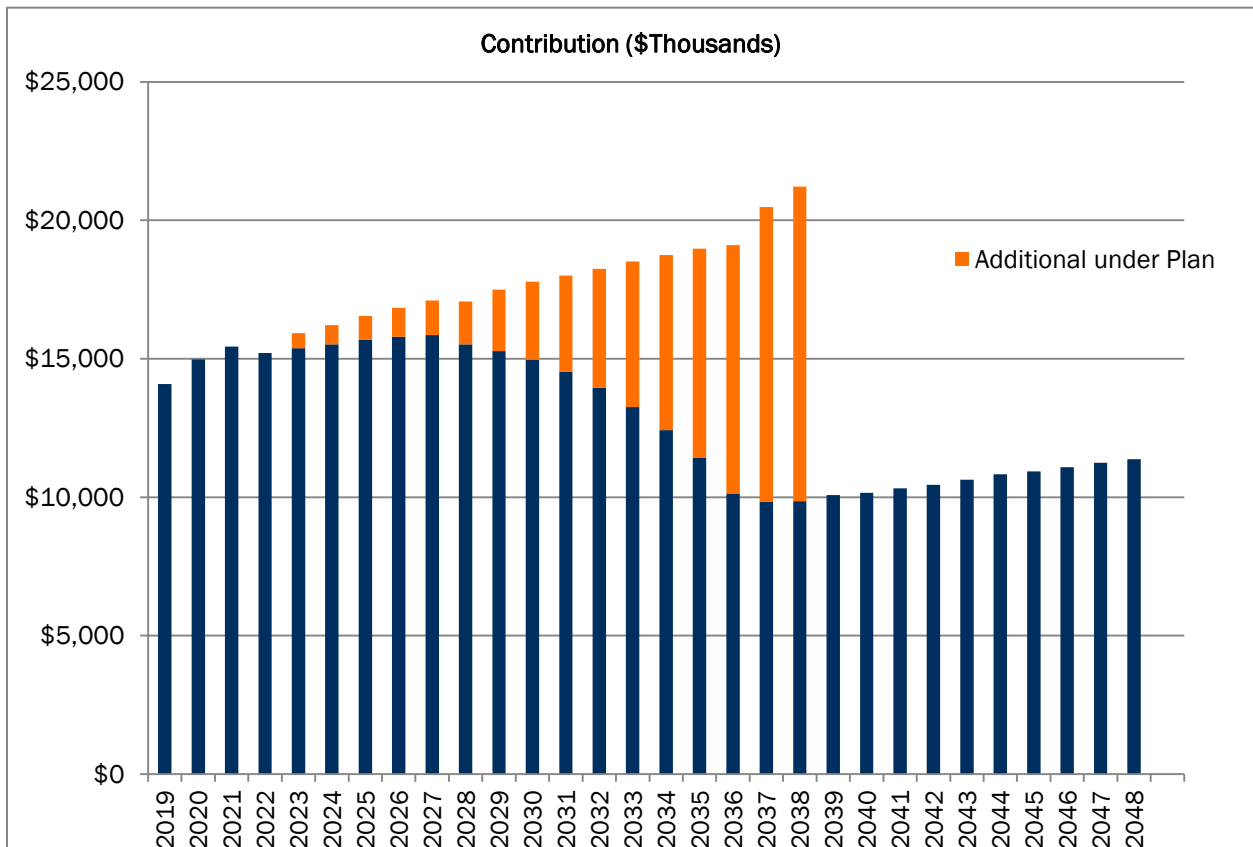
Projected Current and New Member Payroll



Projection of Employer Contribution Rates



Projection of Employer Contribution Amounts



Projection of Funded Status

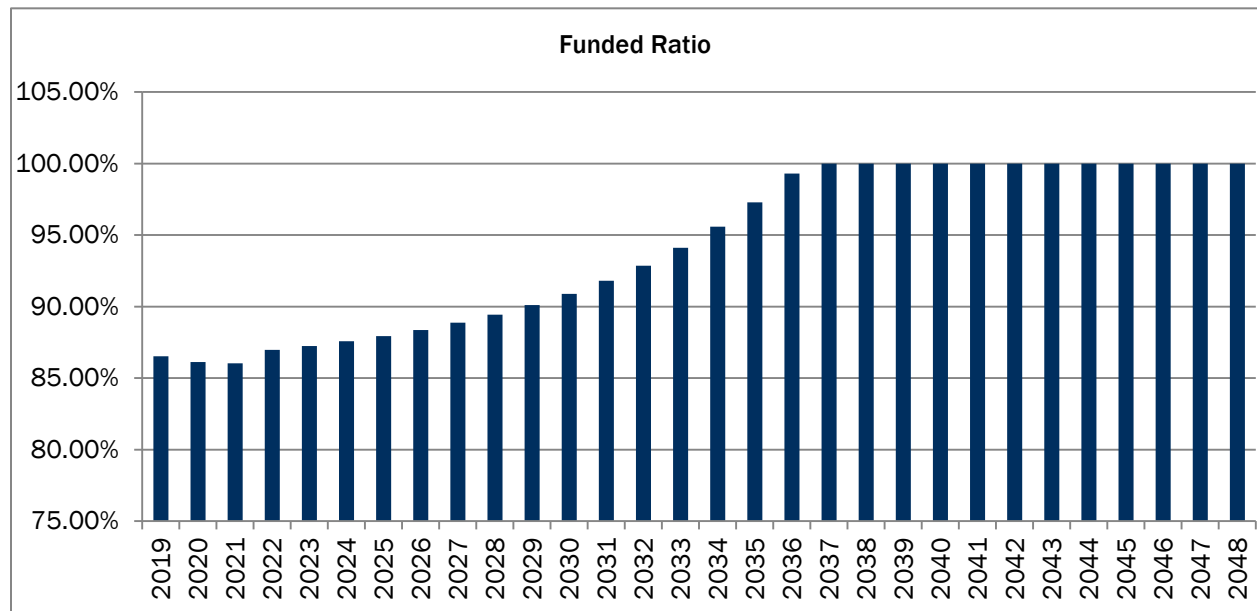


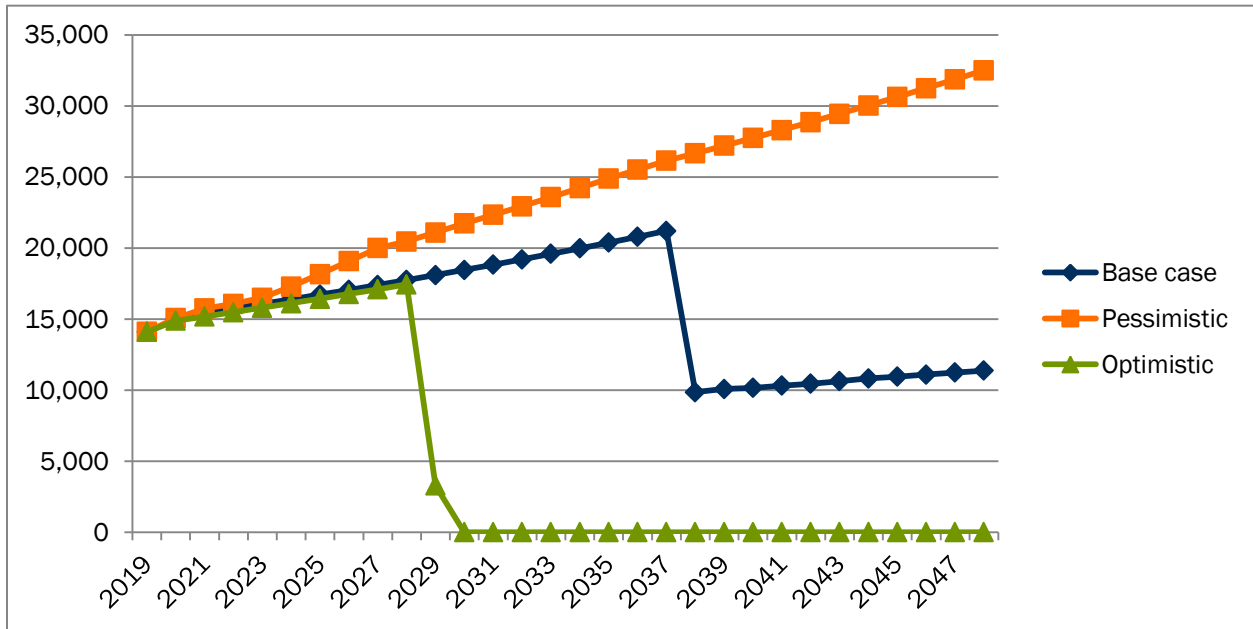
Table of Projected Actuarial Results

Beginning of Year	Cashflow for the next year							Valuation amount on June 30 of prior year				
	Contributions			Employee Contributions	Total Contributions	Benefit Payments	Investment Earnings	Value of Asset	Accrued Liability	Funded Ratio	Surplus (Deficit)	
	Minimum Required	Additional	Funding Plan									
2019	14,093	0	14,093	3,079	17,172	38,820	34,731	505,015	583,601	86.53%	(78,586)	
2020	14,978	0	14,978	3,281	18,259	39,979	35,422	511,579	594,050	86.12%	(82,471)	
2021	15,445	0	15,445	3,366	18,811	41,321	36,107	520,270	604,696	86.04%	(84,426)	
2022	15,208	546	15,754	3,415	19,169	42,636	36,745	534,946	615,099	86.97%	(80,153)	
2023	15,381	688	16,069	3,482	19,551	44,025	37,374	545,242	624,900	87.25%	(79,658)	
2024	15,526	864	16,390	3,535	19,925	45,305	37,977	555,355	634,122	87.58%	(78,767)	
2025	15,686	1,032	16,718	3,602	20,320	46,589	38,564	565,209	642,646	87.95%	(77,437)	
2026	15,802	1,251	17,053	3,669	20,722	47,878	39,132	574,944	650,576	88.37%	(75,632)	
2027	15,852	1,542	17,394	3,718	21,112	49,067	39,682	584,599	657,847	88.87%	(73,248)	
2028	15,525	2,217	17,742	3,773	21,515	50,274	40,194	594,218	664,354	89.44%	(70,136)	
2029	15,280	2,816	18,096	3,862	21,958	51,057	40,704	603,912	670,127	90.12%	(66,215)	
2030	14,969	3,489	18,458	3,966	22,424	51,627	41,235	613,771	675,254	90.89%	(61,483)	
2031	14,522	4,306	18,828	4,064	22,892	52,167	41,797	624,356	680,148	91.80%	(55,792)	
2032	13,946	5,258	19,204	4,167	23,371	52,464	42,407	636,057	684,982	92.86%	(48,925)	
2033	13,262	6,326	19,588	4,272	23,860	52,642	43,088	649,122	689,767	94.11%	(40,645)	
2034	12,423	7,557	19,980	4,384	24,364	52,790	43,856	664,056	694,799	95.58%	(30,743)	
2035	11,417	8,962	20,379	4,509	24,888	52,978	44,726	681,303	700,237	97.30%	(18,934)	
2036	10,139	10,648	20,787	4,623	25,410	53,031	45,712	701,273	706,182	99.30%	(4,909)	
2037	9,834	11,369	21,203	4,740	25,943	53,430	46,823	712,600	712,600	100.00%	0	
2038	9,854	0	9,854	4,786	14,640	53,902	48,005	715,827	715,827	100.00%	0	
2039	10,074	0	10,074	4,892	14,966	54,346	48,837	719,783	719,783	100.00%	0	
2040	10,155	0	10,155	4,952	15,107	54,911	49,693	724,348	724,348	100.00%	0	
2041	10,317	0	10,317	5,031	15,348	55,375	50,580	729,285	729,285	100.00%	0	
2042	10,452	0	10,452	5,101	15,553	55,777	51,503	734,807	734,807	100.00%	0	
2043	10,628	0	10,628	5,183	15,811	56,119	52,473	740,986	740,986	100.00%	0	
2044	10,824	0	10,824	5,277	16,101	56,672	53,490	747,968	747,968	100.00%	0	
2045	10,939	0	10,939	5,337	16,276	57,250	54,541	755,609	755,609	100.00%	0	
2046	11,086	0	11,086	5,403	16,489	57,845	55,630	763,839	763,839	100.00%	0	
2047	11,240	0	11,240	5,470	16,710	58,555	56,756	772,711	772,711	100.00%	0	

Note: Forecast based on the present employees with assumption about replacement and change in plan Provisions apply to new members.

Sensitivity Analysis

Impact Various Investment Rates of Return Have on the Employer Contribution Amount



Employee Data and Benefits

Summary of Members Included

As of June 30	General		Police		Fire		Total	
	2018	2017	2018	2017	2018	2017	2018	2017
Active Members								
(1) Number	499	495	118	121	78	80	695	696
(2) Average Age	45.1	45.4	41.7	41.6	43.6	44.3	44.4	44.6
(3) Average Credited Service	9.6	10.3	13.8	13.9	15.2	15.7	11.0	11.5
(4) Average Annual Earning	\$70,355	\$71,294	\$96,655	\$92,925	\$86,136	\$88,109	\$76,592	\$76,987
Retirees, Disableds, and Beneficiaries								
(1) Number	693	672	214	207	160	161	1,067	1,040
(2) Average Age	69.0	69.0	66.2	65.9	70.0	70.5	68.6	68.6
(3) Average Monthly Pension Benefit	\$2,327	\$2,250	\$3,936	\$3,877	\$3,777	\$3,650	\$2,867	\$2,790
Vested Terminations (vested at time of termination, not refunded contributions or commenced benefit)								
(1) Number	139	139	8	8	3	3	150	150
(2) Average Age	51.4	51.2	49.8	48.8	50.9	49.9	51.3	51.1
(3) Average Monthly Pension Benefit	\$1,137	\$1,152	\$1,709	\$1,709	\$1,923	\$1,923	\$1,183	\$1,197
Total Number of Members	1,331	1,306	340	336	241	244	1,912	1,886

Age and Service Distribution of Active Members as of June 30, 2018

Total

Attained Age		Years of Service								Total
		0-4	5-9	10-14	15-19	20-24	25-29	30-34	Over 34	
15-19	Number	1	0	0	0	0	0	0	0	1
	Total Salary	44,138	0	0	0	0	0	0	0	44,138
	Average Salary	44,138	0	0	0	0	0	0	0	44,138
20-24	Number	11	0	0	0	0	0	0	0	11
	Total Salary	515,276	0	0	0	0	0	0	0	515,276
	Average Salary	46,843	0	0	0	0	0	0	0	46,843
25-29	Number	53	7	0	0	0	0	0	0	60
	Total Salary	2,918,348	499,171	0	0	0	0	0	0	3,417,519
	Average Salary	55,063	71,310	0	0	0	0	0	0	56,959
30-34	Number	54	20	1	0	0	0	0	0	75
	Total Salary	3,174,585	1,574,812	57,618	0	0	0	0	0	4,807,015
	Average Salary	58,789	78,741	57,618	0	0	0	0	0	64,094
35-39	Number	40	16	12	4	0	0	0	0	72
	Total Salary	2,683,297	1,234,610	898,067	244,955	0	0	0	0	5,060,929
	Average Salary	67,082	77,163	74,839	61,239	0	0	0	0	70,291
40-44	Number	33	19	26	35	14	0	0	0	127
	Total Salary	2,253,969	1,321,654	2,007,335	3,049,247	1,433,262	0	0	0	10,065,467
	Average Salary	68,302	69,561	77,205	87,121	102,376	0	0	0	79,256
45-49	Number	24	15	29	26	41	4	0	0	139
	Total Salary	1,627,046	1,152,243	2,460,632	2,337,866	4,007,734	267,286	0	0	11,852,806
	Average Salary	67,794	76,816	84,849	89,918	97,750	66,822	0	0	85,272
50-54	Number	12	14	12	19	23	22	2	0	104
	Total Salary	823,838	981,690	928,627	1,439,733	2,221,562	2,093,167	269,702	0	8,758,319
	Average Salary	68,653	70,121	77,386	75,775	96,590	95,144	134,851	0	84,215
55-59	Number	13	8	10	18	13	7	4	0	73
	Total Salary	926,913	554,403	755,895	1,516,930	1,164,307	719,826	328,727	0	5,967,000
	Average Salary	71,301	69,300	75,590	84,274	89,562	102,832	82,182	0	81,740
60-64	Number	2	8	7	2	3	3	1	1	27
	Total Salary	261,600	551,188	567,479	124,686	256,960	326,014	150,696	65,676	2,304,297
	Average Salary	130,800	68,898	81,068	62,343	85,653	108,671	150,696	65,676	85,344
65-69	Number	1	1	1	1	1	1	0	0	6
	Total Salary	57,000	80,526	88,967	53,831	135,169	22,862	0	0	438,355
	Average Salary	57,000	80,526	88,967	53,831	135,169	22,862	0	0	73,059
Total	Number	244	108	98	105	95	37	7	1	695
	Total Salary	15,286,009	7,950,297	7,764,620	8,767,245	9,218,994	3,429,155	749,125	65,676	53,231,121
	Average Salary	62,648	73,614	79,231	83,498	97,042	92,680	107,018	65,676	76,592

General

Attained Age		Years of Service								Total
		0-4	5-9	10-14	15-19	20-24	25-29	30-34	Over 34	
15-19	Number	1	0	0	0	0	0	0	0	1
	Total Salary	44,138	0	0	0	0	0	0	0	44,138
	Average Salary	44,138	0	0	0	0	0	0	0	44,138
20-24	Number	7	0	0	0	0	0	0	0	7
	Total Salary	304,137	0	0	0	0	0	0	0	304,137
	Average Salary	43,448	0	0	0	0	0	0	0	43,448
25-29	Number	38	5	0	0	0	0	0	0	43
	Total Salary	1,999,521	309,705	0	0	0	0	0	0	2,309,227
	Average Salary	52,619	61,941	0	0	0	0	0	0	53,703
30-34	Number	35	10	1	0	0	0	0	0	46
	Total Salary	1,933,308	704,504	57,618	0	0	0	0	0	2,695,431
	Average Salary	55,237	70,450	57,618	0	0	0	0	0	58,596
35-39	Number	33	11	10	3	0	0	0	0	57
	Total Salary	2,142,833	784,203	707,866	158,397	0	0	0	0	3,793,300
	Average Salary	64,934	71,291	70,787	52,799	0	0	0	0	66,549
40-44	Number	31	18	21	13	3	0	0	0	86
	Total Salary	2,063,165	1,249,583	1,577,505	846,385	256,440	0	0	0	5,993,077
	Average Salary	66,554	69,421	75,119	65,107	85,480	0	0	0	69,687
45-49	Number	24	13	22	13	13	4	0	0	89
	Total Salary	1,627,046	998,720	1,871,766	1,048,569	1,009,786	267,286	0	0	6,823,174
	Average Salary	67,794	76,825	85,080	80,659	77,676	66,822	0	0	76,665
50-54	Number	11	14	12	17	8	11	1	0	74
	Total Salary	762,622	981,690	928,627	1,226,293	665,524	852,475	116,606	0	5,533,837
	Average Salary	69,329	70,121	77,386	72,135	83,191	77,498	116,606	0	74,782
55-59	Number	13	8	10	17	8	4	3	0	63
	Total Salary	926,913	554,403	755,895	1,435,706	623,862	362,733	208,734	0	4,868,246
	Average Salary	71,301	69,300	75,590	84,453	77,983	90,683	69,578	0	77,274
60-64	Number	2	8	7	2	3	3	1	1	27
	Total Salary	261,600	551,188	567,479	124,686	256,960	326,014	150,696	65,676	2,304,297
	Average Salary	130,800	68,898	81,068	62,343	85,653	108,671	150,696	65,676	85,344
65-69	Number	1	1	1	1	1	1	0	0	6
	Total Salary	57,000	80,526	88,967	53,831	135,169	22,862	0	0	438,355
	Average Salary	57,000	80,526	88,967	53,831	135,169	22,862	0	0	73,059
Total	Number	196	88	84	66	36	23	5	1	499
	Total Salary	12,122,283	6,214,523	6,555,724	4,893,867	2,947,741	1,831,370	476,036	65,676	35,107,218
	Average Salary	61,848	70,620	78,044	74,149	81,882	79,625	95,207	65,676	70,355

Police

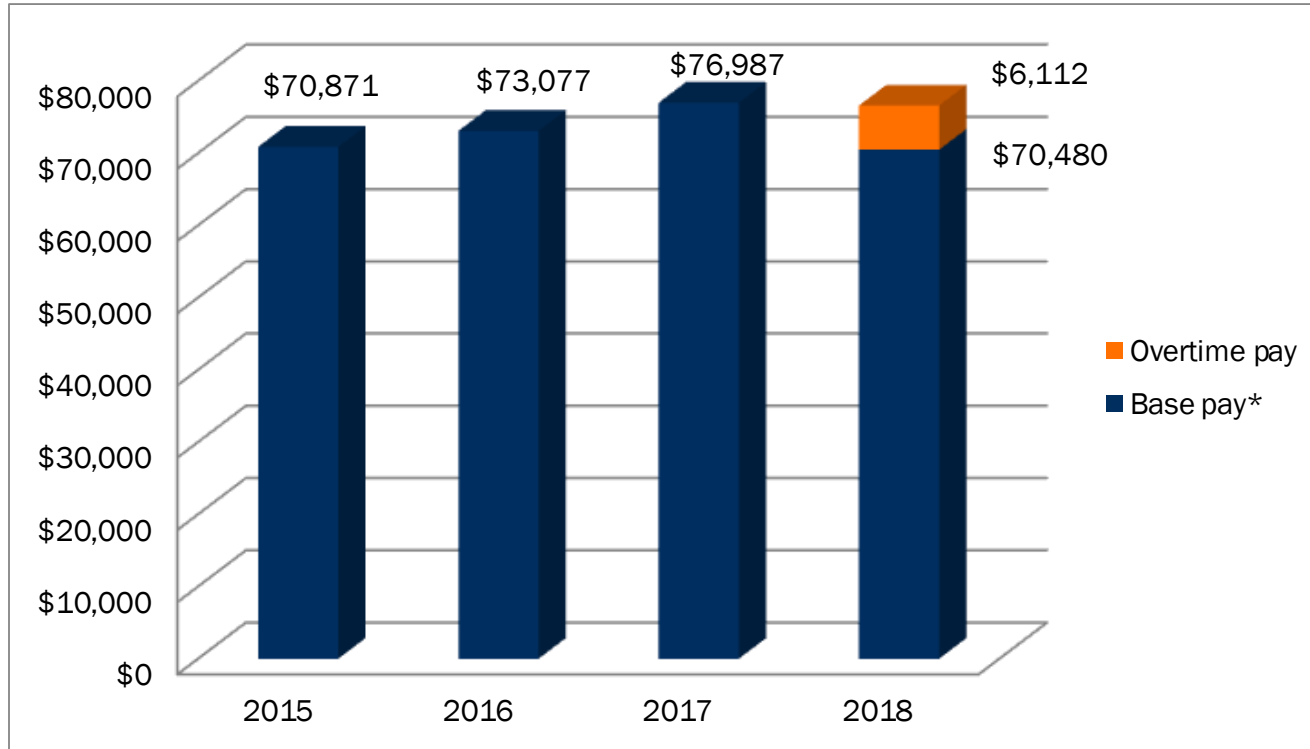
Attained Age		Years of Service								Total
		0-4	5-9	10-14	15-19	20-24	25-29	30-34	Over 34	
15-19	Number	0	0	0	0	0	0	0	0	0
	Total Salary	0	0	0	0	0	0	0	0	0
	Average Salary	0	0	0	0	0	0	0	0	0
20-24	Number	2	0	0	0	0	0	0	0	2
	Total Salary	112,571	0	0	0	0	0	0	0	112,571
	Average Salary	56,285	0	0	0	0	0	0	0	56,285
25-29	Number	9	2	0	0	0	0	0	0	11
	Total Salary	616,788	189,465	0	0	0	0	0	0	806,253
	Average Salary	68,532	94,733	0	0	0	0	0	0	73,296
30-34	Number	14	7	0	0	0	0	0	0	21
	Total Salary	948,771	642,397	0	0	0	0	0	0	1,591,168
	Average Salary	67,769	91,771	0	0	0	0	0	0	75,770
35-39	Number	6	3	1	0	0	0	0	0	10
	Total Salary	477,312	289,940	103,251	0	0	0	0	0	870,503
	Average Salary	79,552	96,647	103,251	0	0	0	0	0	87,050
40-44	Number	2	1	1	13	8	0	0	0	25
	Total Salary	190,804	72,071	107,349	1,382,659	856,047	0	0	0	2,608,931
	Average Salary	95,402	72,071	107,349	106,358	107,006	0	0	0	104,357
45-49	Number	0	0	1	7	19	0	0	0	27
	Total Salary	0	0	93,259	751,665	2,090,845	0	0	0	2,935,769
	Average Salary	0	0	93,259	107,381	110,044	0	0	0	108,732
50-54	Number	1	0	0	2	8	3	1	0	15
	Total Salary	61,216	0	0	213,440	879,165	359,102	153,096	0	1,666,019
	Average Salary	61,216	0	0	106,720	109,896	119,701	153,096	0	111,068
55-59	Number	0	0	0	0	4	2	1	0	7
	Total Salary	0	0	0	0	438,434	255,629	119,993	0	814,056
	Average Salary	0	0	0	0	109,609	127,814	119,993	0	116,294
60-64	Number	0	0	0	0	0	0	0	0	0
	Total Salary	0	0	0	0	0	0	0	0	0
	Average Salary	0	0	0	0	0	0	0	0	0
65-69	Number	0	0	0	0	0	0	0	0	0
	Total Salary	0	0	0	0	0	0	0	0	0
	Average Salary	0	0	0	0	0	0	0	0	0
Total	Number	34	13	3	22	39	5	2	0	118
	Total Salary	2,407,462	1,193,873	303,859	2,347,763	4,264,491	614,731	273,089	0	11,405,269
	Average Salary	70,808	91,836	101,286	106,717	109,346	122,946	136,544	0	96,655

Fire

Attained Age		Years of Service								Total
		0-4	5-9	10-14	15-19	20-24	25-29	30-34	Over 34	
15-19	Number	0	0	0	0	0	0	0	0	0
	Total Salary	0	0	0	0	0	0	0	0	0
	Average Salary	0	0	0	0	0	0	0	0	0
20-24	Number	2	0	0	0	0	0	0	0	2
	Total Salary	98,569	0	0	0	0	0	0	0	98,569
	Average Salary	49,284	0	0	0	0	0	0	0	49,284
25-29	Number	6	0	0	0	0	0	0	0	6
	Total Salary	302,039	0	0	0	0	0	0	0	302,039
	Average Salary	50,340	0	0	0	0	0	0	0	50,340
30-34	Number	5	3	0	0	0	0	0	0	8
	Total Salary	292,505	227,911	0	0	0	0	0	0	520,417
	Average Salary	58,501	75,970	0	0	0	0	0	0	65,052
35-39	Number	1	2	1	1	0	0	0	0	5
	Total Salary	63,152	160,467	86,950	86,557	0	0	0	0	397,126
	Average Salary	63,152	80,234	86,950	86,557	0	0	0	0	79,425
40-44	Number	0	0	4	9	3	0	0	0	16
	Total Salary	0	0	322,481	820,203	320,775	0	0	0	1,463,459
	Average Salary	0	0	80,620	91,134	106,925	0	0	0	91,466
45-49	Number	0	2	6	6	9	0	0	0	23
	Total Salary	0	153,522	495,607	537,632	907,102	0	0	0	2,093,863
	Average Salary	0	76,761	82,601	89,605	100,789	0	0	0	91,038
50-54	Number	0	0	0	0	7	8	0	0	15
	Total Salary	0	0	0	0	676,874	881,590	0	0	1,558,464
	Average Salary	0	0	0	0	96,696	110,199	0	0	103,898
55-59	Number	0	0	0	1	1	1	0	0	3
	Total Salary	0	0	0	81,224	102,010	101,465	0	0	284,698
	Average Salary	0	0	0	81,224	102,010	101,465	0	0	94,899
60-64	Number	0	0	0	0	0	0	0	0	0
	Total Salary	0	0	0	0	0	0	0	0	0
	Average Salary	0	0	0	0	0	0	0	0	0
65-69	Number	0	0	0	0	0	0	0	0	0
	Total Salary	0	0	0	0	0	0	0	0	0
	Average Salary	0	0	0	0	0	0	0	0	0
Total	Number	14	7	11	17	20	9	0	0	78
	Total Salary	756,265	541,901	905,037	1,525,615	2,006,761	983,054	0	0	6,718,634
	Average Salary	54,019	77,414	82,276	89,742	100,338	109,228	0	0	86,136

Covered Population

Average Plan Year Pay for June 30



*2015-2017 statistics were provided by the prior actuary and are shown in total only (base + overtime pay).

Member Data Reconciliation

	Active Members	Inactive Members				Total
		With Deferred Benefits	Retired Members	Disabled Members	Beneficiaries	
As of 6/30/2017	696	150	861	28	151	1,886
Age Retirements	(42)	(5)	47			0
Disability Retirements	0					0
Deaths Without Beneficiary		0	(9)	(4)	(11)	(24)
Deaths With Beneficiary		0	(11)	0	11	0
Non-vested Terminations	(23)					(23)
Vested Terminations	(7)	7				0
Rehires	2	(2)				0
Cash-outs						0
Expiration of Benefits						0
Data Corrections			(1)		1	0
Transfers Out						0
Pick Ups			4			4
Net Change	(70)	0	30	(4)	1	(43)
New Entrants During the Year	69					69
As of 6/30/2018	695	150	891	24	152	1,912

Number Added to and Removed from Active Membership

Year Ended 30-Jun	Number Added During Year		Terminations During Year											Active Members End of Year
	A	E	Age & Service Retirement		Disability Retirement		Died In-Service		Withdrawals					
			A	E	A	E	A	E	Vested	Other*	Total			
			A	E	A	E	A	E	A	A	A	E		
General Members														
2014	38	22	14	19.5	0	1.4	0	0.8	3	5	8	17.8	476	
2015	48	41	23	23.8	1	1.4	0	0.8	8	9	17	18.0	483	
2016	46	41	23	26.7	1	1.4	0	0.8	9	8	17	18.0	488	
2017	51	44	19	26.7	0	1.4	0	0.8	11	14	25	18.0	495	
2018	59	57	23	25.8	0	1.3	0	0.7	13	21	34	19.5	499	
5-Yr. Totals			102	122.5	2	6.9	0	3.9			101	91.3		
Police Members														
2014	3	3	2	4.3	0	0.3	0	0.1	0	1	1	1.6	115	
2015	10	4	1	4.6	0	0.3	0	0.1	1	2	3	1.3	121	
2016	7	8	7	7.2	0	0.4	0	0.1	0	1	1	1.8	120	
2017	10	9	9	7.2	0	0.4	0	0.1	0	0	0	1.8	121	
2018	6	9	5	11.5	0	0.3	0	0.1	2	2	4	2.5	118	
5-Yr. Totals			24	34.8	0	1.7	0	0.5			9	9.0		
Fire Members														
2014	0	1	1	3.3	0	0.1	0	0.1	0	0	0	0.9	84	
2015	1	1	1	3.9	0	0.1	0	0.1	0	0	0	0.9	84	
2016	-2**	5	5	4.4	0	0.1	0	0.1	0	0	0	0.8	77	
2017	9	6	6	4.4	0	0.1	0	0.1	0	0	0	0.8	80	
2018	4	6	5	7.0	0	0.1	0	0.1	1	0	1	0.8	78	
5-Yr. Totals			18	23.0	0	0.5	0	0.5			1	4.2		

A represents actual number
E represents expected number
*Balancing item
**Transfer to General member

Schedule of Active Member Data

Valuation Date	Number				Annual Earnings	Annual	Percent Increase/
	General	Police	Fire	Total		Average	(Decrease) In Average
					Earnings	Earnings	Earnings
June 30, 2008	564	149	92	805	51,287,330	63,711	0.7%
June 30, 2009	547	148	91	786	52,559,496	66,870	5.0%
June 30, 2010	516	124	88	728	48,688,316	66,880	0.0%
June 30, 2011	462	119	83	664	45,921,381	69,159	3.4%
June 30, 2012	461	113	76	650	44,003,987	67,698	-2.1%
June 30, 2013	460	115	85	660	45,063,112	68,277	0.9%
June 30, 2014	476	115	84	675	47,956,745	71,047	4.1%
June 30, 2015	483	121	84	688	48,759,189	70,871	-0.2%
June 30, 2016	488	120	77	685	50,057,471	73,077	3.1%
June 30, 2017	495	121	80	696	53,583,277	76,987	5.4%
June 30, 2018	499	118	78	695	53,231,121	76,592	-0.5%

Schedule of Inactive Member Data

Valuation Date	Number				Benefit Payments	Annual Benefit	
	General	Police	Fire	Total		Benefit Payments	Payments
June 30, 2012	138	12	3	153	\$ 1,838,157	\$ 12,014	
June 30, 2013	133	9	3	145	\$ 1,955,314	\$ 13,485	
June 30, 2014	128	9	3	140	\$ 1,836,967	\$ 13,121	
June 30, 2015	132	10	3	145	\$ 1,912,274	\$ 13,188	
June 30, 2016	139	9	3	151	\$ 1,989,657	\$ 13,177	
June 30, 2017	139	8	3	150	\$ 2,155,289	\$ 14,369	
June 30, 2018	139	8	3	150	\$ 2,129,867	\$ 14,199	

Schedule of Retired Members by Type of Benefit and Option Elected

Amount of Monthly Pension Benefit	Number of Recipients	Type of Pension Benefit			Option Selected							
		1	2	3	1	2	3	4	5	6	7	8
\$ 1 - \$ 300	10	10	0	0	8	0	1	1	0	0	0	0
301 - 600	42	29	10	3	26	0	8	2	1	3	0	2
601 - 900	68	54	12	2	41	0	16	6	1	2	0	2
901 - 1,200	99	55	37	7	63	0	21	5	2	7	0	1
1,201 - 1,500	65	45	16	4	36	3	16	5	4	0	1	0
1,501 - 1,800	53	40	11	2	23	1	14	9	5	0	0	1
1,801 - 2,100	57	42	15	0	28	1	17	5	4	0	0	2
2,101 - 2,400	72	62	8	2	32	5	17	9	6	2	0	1
2,401 - 2,700	95	83	9	3	37	6	28	12	10	2	0	0
2,701 - 3,000	61	56	5	0	22	3	16	11	7	2	0	0
3,001 - 3,300	76	68	8	0	31	0	20	18	6	1	0	0
3,301 - 3,600	59	55	4	0	22	2	19	13	3	0	0	0
3,601 - 3,900	49	44	5	0	15	1	22	6	4	0	0	1
3,901 - 4,200	44	38	5	1	15	1	14	10	2	1	0	1
Over \$4,200	217	210	7	0	60	14	70	49	16	3	1	4
Totals	1,067	891	152	24	459	37	299	161	71	23	2	15

- | Type of Pension Benefit | Option Selected |
|-------------------------|---|
| 1. Regular Retirement | 1. Whole Life Annuity |
| 2. Survivor Payment | 2. 50% Joint and Contingent Annuity |
| 3. Disability | 3. 100% Joint and Contingent Annuity |
| | 4. 50% Joint and Contingent and pop up Annuity |
| | 5. 100% Joint and Contingent and pop up Annuity |
| | 6. Straight Life equated |
| | 7. Certain and Life Annuity |
| | 8. Cash refund |

Schedule of Retired Members and Beneficiaries

As of June 30	2018	2017	2016	2015	2014
Service					
(1) Number, Fiscal Year Start	861	844	826	814	808
(2) Net Change	30	17	18	12	6
(3) Number, Fiscal Year End	891	861	844	826	814
(4) Average Current Age	67.6	67.6	67.4	67.2	66.7
(5) Average Monthly Pension Benefit	\$ 3,069	\$ 3,005	\$ 2,947	\$ 2,893	\$ 2,901
Surviving Spouse's Benefits					
(1) Number, Fiscal Year Start	151	144	142	138	134
(2) Net Change	1	7	2	4	4
(3) Number, Fiscal Year End	152	151	144	142	138
(4) Average Current Age	75.2	75.0	74.7	74.6	73.9
(5) Average Monthly Pension Benefit	\$ 1,904	\$ 1,822	\$ 1,820	\$ 1,816	\$ 1,781
Disabilities					
(1) Number, Fiscal Year Start	28	29	28	28	29
(2) Net Change	(4)	(1)	1	0	(1)
(3) Number, Fiscal Year End	24	28	29	28	28
(4) Average Current Age	64.4	65.9	65.1	64.8	65.1
(5) Average Monthly Pension Benefit	\$ 1,455	\$ 1,406	\$ 1,451	\$ 1,416	\$ 1,340
Total					
(1) Number, Fiscal Year Start	1,040	1,017	996	980	971
(2) Net Change	27	23	21	16	9
(3) Number, Fiscal Year End	1,067	1,040	1,017	996	980
(4) Average Current Age	68.6	68.6	68.4	68.2	67.6
(5) Average Monthly Pension Benefit	\$ 2,867	\$ 2,790	\$ 2,745	\$ 2,698	\$ 2,699

Retirees Added to and Removed from Rolls

Year Ended	Added to Rolls		Removed from Rolls		Rolls - End of Year		Percent Increase in Annual Pension Allowances	Average Annual Pension Allowance
	No.	Annual Pension Allowances	No.	Annual Pension Allowances	No.	Annual Pension Allowances		
June 30, 2008	21	587,394	21	434,680	820	24,044,369	0.6%	29,322
June 30, 2009	35	1,058,152	21	492,876	834	24,609,645	2.4%	29,508
June 30, 2010	64	2,799,052	19	234,046	879	27,174,651	10.4%	30,915
June 30, 2011	70	2,348,793	16	359,570	933	29,163,874	7.3%	31,258
June 30, 2012	52	1,738,639	23	363,419	962	30,539,094	4.7%	31,745
June 30, 2013	39	1,088,155	30	570,919	971	31,056,330	1.7%	31,984
June 30, 2014	34	1,077,287	25	399,142	980	31,734,475	2.2%	32,382
June 30, 2015	36	1,092,699	20	577,986	996	32,249,188	1.6%	32,379
June 30, 2016	45	1,816,942	24	571,037	1,017	33,495,093	3.9%	32,935
June 30, 2017	53	2,004,609	30	674,361	1,040	34,825,341	4.0%	33,486
June 30, 2018	63	2,630,068	33	747,504	1,070	36,707,905	5.4%	34,306

Schedule of Benefit Payments

In Payment

Attained Age	Regular retirement & Survivor payment		Disability		Total	
	No.	Annual Allowances	No.	Annual Allowances	No.	Annual Allowances
<30	1	9,142	0	0	1	9,142
30-34	1	20,470	0	0	1	20,470
35-39	0	0	1	9,892	1	9,892
40-44	3	82,944	0	0	3	82,944
45-49	14	821,796	1	28,921	15	850,718
50-54	60	2,927,487	2	22,861	62	2,950,348
55-59	130	5,759,255	4	85,738	134	5,844,993
60-64	198	7,394,845	3	40,262	201	7,435,107
65-69	196	7,342,176	7	132,576	203	7,474,752
70-74	182	5,571,324	4	71,536	186	5,642,860
75	32	1,044,939	0	0	32	1,044,939
76	19	634,402	0	0	19	634,402
77	24	645,507	0	0	24	645,507
78	14	389,169	1	13,345	15	402,515
79	10	232,541	0	0	10	232,541
80	14	271,674	0	0	14	271,674
81	19	423,679	0	0	19	423,679
82	19	510,166	0	0	19	510,166
83	13	390,886	0	0	13	390,886
84	10	255,000	0	0	10	255,000
85	11	258,901	0	0	11	258,901
86	14	288,083	1	13,930	15	302,013
87	10	182,115	0	0	10	182,115
88	6	116,167	0	0	6	116,167
89	9	168,443	0	0	9	168,443
90	8	123,303	0	0	8	123,303
91	9	186,000	0	0	9	186,000
92	3	31,290	0	0	3	31,290
93	3	30,637	0	0	3	30,637
94	1	15,899	0	0	1	15,899
95	5	72,979	0	0	5	72,979
96	2	29,390	0	0	2	29,390
97	3	58,231	0	0	3	58,231
98	0	0	0	0	0	0
99	0	0	0	0	0	0
100	0	0	0	0	0	0
101	0	0	0	0	0	0
102	0	0	0	0	0	0
103	0	0	0	0	0	0
Total	1,043	36,288,844	24	419,062	1,067	36,707,905

Not In Payment

Attained Age	Inactive Members	
	No.	Estimated Annual Allowances
35	0	0
36	0	0
37	2	27,513
38	3	28,858
39	4	68,903
40	1	9,059
41	4	60,741
42	9	103,083
43	7	73,035
44	2	29,341
45	2	7,057
46	7	106,639
47	6	62,730
48	7	140,604
49	8	192,867
50	10	198,252
51	9	120,728
52	5	60,077
53	11	146,601
54	5	84,272
55	3	27,605
56	8	109,100
57	11	181,017
58	4	74,110
59	12	111,710
60	3	22,922
61	2	5,837
62	2	45,844
63	1	14,842
64	0	0
65	0	0
66	0	0
67	0	0
68	0	0
69	0	0
70	1	6,327
71	1	10,192
Total	150	2,129,867