Gabriel Roeder Smith & Company
Consultants & Actuaries

CITY OF TRAVERSE CITY ACT 345 RETIREMENT SYSTEM

FORTY-SIXTH ANNUAL ACTUARIAL VALUATION

JUNE 30, 2016

CONTENTS

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February 24, 2017

Retirement Board
City of Traverse City
Act 345 Retirement System
Traverse City, Michigan

Dear Board Members:

The results of the June 30, 2016 annual actuarial valuation of the City of Traverse City Act 345 Retirement System are presented in this report. The purpose of the valuation was to measure the System's funding progress and to determine the employer contribution for the 2017-2018 fiscal year. This report should not be relied upon for any other purpose. This report may be distributed to parties other than the System only in its entirety and only with the permission of the Board. GRS is not responsible for unauthorized use of this report.

The valuation was based upon information, furnished by the City, concerning Retirement System benefits, financial transactions, and individual members, terminated members, retirees and beneficiaries. Data was checked for internal and year-to-year consistency, but was not audited, by us. As a result, we are unable to assume responsibility for the accuracy or completeness of the data provided.

The computed contribution rate shown on page A-2 may be considered as a minimum contribution rate that complies with the Board's funding policy. Users of this report should be aware that contributions made at that rate do not guarantee benefit security. Given the importance of benefit security to any retirement system, we suggest that contributions to the System in excess of those presented in this report be considered.

The contribution rate in this report is determined using the actuarial assumptions and methods disclosed in Section C of this report. The assumptions are established by the Board after consulting with the actuary. This report does not include a more robust assessment of the risks of future experience not meeting the actuarial assumptions. Additional assessment of risks was outside the scope of this assignment. We encourage a review and assessment of investment and other significant risks that may have a material effect on the plan's financial condition.

Future actuarial measurements may differ significantly from those presented in this report due to such factors as experience differing from that anticipated by actuarial assumptions, changes in plan provisions, actuarial assumptions/methods or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements.

To the best of our knowledge, this report is complete and accurate and the valuation was conducted in accordance with standards of practice prescribed by the Actuarial Standards Board and in compliance with the applicable state statutes.

Mark Buis and James D. Anderson are independent of the plan sponsor and are Members of the American Academy of Actuaries (MAAA) who meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein. It is our opinion that the actuarial assumptions used for the valuation produce results which are reasonable.

Gabriel, Roeder, Smith & Company will be pleased to review this valuation and report with the Retirement Board and to answer any questions pertaining to the valuation.

Respectfully submitted,

Mark Buis

Mark Buis, FSA, EA, FCA, MAAA

James D. Anderson

James D. Anderson, FSA, EA, MAAA

MB/JDA:dj

SECTION A

VALUATION RESULTS

FUNDING OBJECTIVE

The funding objective of the Retirement System is to establish and receive contributions which, when combined with investment income, will accumulate over each member's working lifetime an amount expected to be sufficient to finance benefits to be paid during retirement.

CONTRIBUTION RATES

The Retirement System is supported by member contributions, City contributions, and investment income from Retirement System assets.

Contributions which satisfy the funding objective are determined by the annual actuarial valuation and are sufficient to:

(1) Cover the actuarial present value of benefits allocated to the current year by the actuarial cost method described in Section C (the normal cost); and

(2) Finance over a period of future years the actuarial present value of benefits not covered by valuation assets and anticipated future normal costs (unfunded actuarial accrued liability).

Computed contribution rates for the fiscal year beginning July 1, 2017 are shown on page A-2.

COMPUTED CONTRIBUTIONS FOR THE FISCAL YEAR

Contributions for	Contributions Expressed as Percents of Annual Pay For Fiscal Year Beginning	
	July 1, 2017	**July 1, 2016**
Normal Cost		
Age and service benefits	12.89 %	12.83 %
Death and disability benefits	1.65	1.64
Termination benefits	0.24	0.27
Deferred age and service benefits	1.61	1.61
Total	16.39	16.35
Employee Contributions	(2.07)	(2.45)
Employer Normal Cost	14.32	13.90
Amortization Payment	35.59	35.05
Total Computed City Contributions	**49.91** %	**48.95** %
Dollars Based on Projected Payroll		
Policemen	$ 989,955	$ 982,812
Firemen	851,860	821,118
Total	$1,841,815	$1,803,930

Unfunded actuarial accrued liabilities were amortized as a level percent of active member payroll over a closed period of 17 years.

Comparative contribution amounts for prior fiscal years are shown on page A-4.

PRESENT VALUE OF FUTURE BENEFITS AND ACCRUED LIABILITY

Determination of Unfunded Accrued Liability

	June 30, 2016	June 30, 2015
A. Accrued Liability		
1. For retirees and beneficiaries	$ 26,747,986	$ 26,474,592
2. For vested terminated members	1,340,900	409,665
3. For present active members		
a. Value of expected future benefit payments	21,157,124	21,320,134
b. Value of future normal costs	5,944,369	6,064,409
c. Active member accrued liability: (a) - (b)	15,212,755	15,255,725
4. Total accrued liability	43,301,641	42,139,982
B. Present Assets (Funding Value)	27,513,168	25,942,576
C. Unfunded Accrued Liability: (A.4) - (B)	15,788,473	16,197,406
D. Funding Ratio: (B) / (A.4)	63.5%	61.6%
E. Funding Ratio: Market Value Basis	60.7%	62.3%

COMPUTED CITY CONTRIBUTIONS
COMPARATIVE STATEMENT

Fiscal Year Beginning July 1		Valuation Payroll	% of Payroll Contributions	Dollar Contributions
1993		$2,016,886	23.99%	$ 483,851
1994		2,131,177	22.99	489,957
1995	#	2,131,057	22.04	469,685
1996		2,168,366	18.52	401,581
1997		2,212,378	16.55	366,149
1998	@	2,259,312	8.57	193,624
1999	#	2,337,389	9.74	227,662
2000	#	2,470,379	11.94	294,964
2001		2,467,235	10.67	276,417
2002		2,393,258	13.63	342,511
2003	@	2,402,524	15.80	396,681
2004		2,671,393	22.04	615,269
2005	@#	3,139,509	26.76	877,938
2006		3,509,371	26.93	987,602
2007	#	3,234,852	26.55	897,502
2008		3,173,479	27.89	924,911
2009	#	3,348,677	32.99	1,154,441
2010	#	3,348,677	32.99	1,206,390
2011	@	3,308,083	37.25	1,345,660
2012	#	3,131,962	45.23	1,532,181
2013	#	3,114,425	48.67	1,639,480
2014		3,018,448	51.56	1,683,306
2015		3,262,658	49.89	1,760,565
2016		3,407,221	48.95	1,803,930
2017		3,411,863	49.91	1,841,815

@ *After changes in actuarial assumptions or methods.*
# *After changes in benefit provisions.*

DEVELOPMENT OF FUNDING VALUE OF ASSETS

Year Ended June 30	2015	2016	2017	2018	2019
A. Funding Value Beginning of Year	$24,538,031	$25,942,576			
B. Market Value End of Year	26,242,812	26,283,437			
C. Market Value Beginning of Year	26,286,837	26,242,812			
D. Non-Investment Net Cash Flow	(507,906)	(458,293)			
E. Investment Income					
E1. Market Total: B - C - D	463,881	498,918			
E2. Amount for Immediate Recognition: (7.5%)	1,821,306	1,928,507			
E3. Amount for Phased-in Recognition: E1 - E2	(1,357,425)	(1,429,589)			
F. Phased-In Recognition of Investment Income					
F1. Current Year: 0.25 x E3	(339,356)	(357,397)			
F2. First Prior Year	521,174	(339,356)	$(357,397)		
F3. Second Prior Year	275,957	521,174	(339,356)	$(357,397)	
F4. Third Prior Year	(366,630)	275,957	521,174	(339,357)	$(357,398)
F5. Total Recognized Investment Gain	91,145	100,378	(175,579)	(696,754)	(357,398)
G. Funding Value End of Year: A + D + E2 + F5	25,942,576	27,513,168			
H. Difference Between Market & Funding Value	300,236	(1,229,731)			
I. Funding Value Rate of Return	**7.88%**	**7.89%**			
J. Market Value Rate of Return	**1.78%**	**1.92%**			

The Funding Value of Assets recognizes assumed investment income (line E2) fully each year. Differences between actual and assumed investment income (line E3) are phased-in over a closed 4-year period. During periods when investment performance exceeds the assumed rate, Funding Value of Assets will tend to be less than Market Value. During periods when investment performance is less than the assumed rate, Funding Value of Assets will tend to be greater than Market Value. The Funding Value of Assets is unbiased with respect to Market Value. At any time it may be either greater or less than Market Value. If actual and assumed rates of investment income are exactly equal for 3 consecutive years, the Funding Value will become equal to Market Value.

VALUATION ASSETS AND UNFUNDED ACTUARIAL ACCRUED LIABILITY

In financing actuarial accrued liabilities, valuation assets of $27,513,168 were distributed as follows:

	Present Valuation Assets Applied to			
Reserves for	**Member Actuarial Accrued Liability**	**Retired Life Actuarial Liability**	**Contingency Reserve**	**Totals**
Employees' Contributions	$291,595	$	$	$ 291,595
Employer Contributions	421,264			421,264
Retired Benefit Payments	52,323	26,747,986		26,800,309
Undistributed Investment Income				
Totals	$765,182	$26,747,986	$ none	$27,513,168

Assets were applied against actuarial accrued liabilities in determining unfunded actuarial accrued liabilities as follows:

	Retired Lives	Active Members	Total
Computed Actuarial Accrued Liabilities	$26,747,986	$16,553,655	$43,301,641
Applied Assets	26,747,986	765,182	27,513,168
Unfunded Actuarial Accrued Liabilities	$ none	$15,788,473	$15,788,473
Funded Ratio	100.0%	4.62%	63.5%

DERIVATION OF ACTUARIAL GAIN (LOSS)
YEAR ENDED JUNE 30, 2016

Actual experience will usually not coincide exactly with assumed experience. It is expected that gains and losses will cancel each other over a period of years, but sizable year-to-year fluctuations are common. Detail on the derivation of the experience gain (loss) is shown below, along with a year-by-year comparative schedule.

(1)	UAAL* at start of year	$16,197,406
(2)	Employer normal cost from last valuation	557,081
(3)	Actual employer contributions	1,869,075
(4)	Inerest Accrual: [(1) x .075 + ((2) - (3)) x .0375]	1,165,606
(5)	Expected UAAL before changes: (1) + (2) - (3) + (4)	16,051,018
(6)	Change from plan provisions	0
(7)	Change from revised actuarial assumptions	0
(8)	Expected UAAL after changes: (5) + (6) + (7)	16,051,018
(9)	Actual UAAL at end of year	15,788,473
(10)	Gain (loss): (8) - (9)	262,545
(11)	Gain (loss) as percent of actuarial accrued liabilities at start of year ($42,139,982)	0.6%

* *Unfunded actuarial accrued liability.*

Year End	Actuarial Gain (Loss) as % of Beginning Accrued Liabilities
2007	5.8 %
2008	(2.3)
2009	(15.8)
2010	(6.9)
2011	(6.8)
2012	(4.6)
2013	(2.2)
2014	(0.1)
2015	1.3
2016	0.6

COMMENTS AND CERTIFICATION

Comment 1: Net Retirement System experience was more favorable than assumed for the year ended June 30, 2016. Current year asset losses due to unfavorable investment experience were offset by unrecognized gains from 2013 and 2014, which when added to demographic gains, resulted in a gain of $262,545. As a result, contribution requirements increased slightly from $1,803,930 to $1,841,815. Under the level percent of pay funding method, the contribution was expected to increase to approximately $1,880,000.

Public Act 728: On December 30, 2002 Michigan Public Act 728 became effective. This Act sets new standards for all Michigan State and Local government retirement systems. In particular, the Act requires that supplemental actuarial analysis be performed by the System's actuary (including an analysis of the long-term costs associated with any proposed pension benefit change) and provided to the Retirement Board and the decision-making body that will approve the proposed pension benefit change. This analysis is required at least 7 days before a proposed pension benefit change is adopted. There are additional requirements related to the confirmation of receipt by the System of the required employer contributions.

Recommendation 1: The balance in the Reserve for Retired Benefit Payments was more than the accrued liabilities for current retirants and beneficiaries by $52,323. We recommend a transfer of $52,323 from the Reserve for Retired Benefit Payments to the Reserve for Employer Contributions. For purposes of the valuation, the transfer was assumed to have been made as of June 30, 2016.

Certification: To the best of our knowledge and belief, the valuation is complete and accurate and was made in accordance with generally recognized actuarial methods. The actuarial assumptions summarized in Section D are individually, and in the aggregate, a reasonable representation of the anticipated future experience of the System.

ACTUARIAL DISCLOSURE: The computed contribution rate shown on A-2 may be considered as a minimum contribution rate that complies with the Board's funding objective. Users of this report should be aware that contributions made at that rate do not guarantee benefit security. Given the importance of benefit security to any retirement system, we suggest that contributions to the System in excess of those presented in this report be considered.

The contribution rate in this report is determined using the actuarial assumptions and methods disclosed in Section C of this report. This report includes certain risk metrics on page D-1, but does not include a more robust assessment of the risks of future experience not meeting the actuarial assumptions. Additional assessment of risks was outside the scope of this assignment. We encourage a review and assessment of investment and other significant risks that may have a material effect on the plan's financial condition.

OTHER OBSERVATIONS:

General Implications of Contribution Allocation Procedure or Funding Policy on Future Expected Plan Contributions and Funded Status

Given the plan's contribution allocation procedure, if all actuarial assumptions are met (including the assumption of the plan earning 7.5% on the actuarial value of assets), it is expected that:

1) employer normal cost amounts as a percentage of payroll will remain approximately level year-to-year;
2) the unfunded actuarial accrued liability will be fully amortized after 17 years; and
3) the funded status of the plan will increase gradually towards a 100% funded ratio.

Limitations of Funded Status Measurements

Unless otherwise indicated, a funded status measurement presented in this report is based upon the actuarial accrued liability and the actuarial value of assets. Unless otherwise indicated, with regards to any funded status measurements presented in this report:

1) The measurement is inappropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations.
2) The measurement is inappropriate for assessing the need for or the amount of future employer contributions.
3) The measurement would produce a different result if the market value of assets were used instead of the actuarial value of assets, unless the market value of assets is used in the measurement.
4) The funding level of the plan on a Market Value Basis is shown on page A-3.

SECTION B

VALUATION DATA

BRIEF SUMMARY OF BENEFIT PROVISIONS EVALUATED JUNE 30, 2016

SERVICE RETIREMENT

Eligibility: All Police: Age 50 with 25 or more years of service. Additionally, Police Patrol age 60 with 10 or more years of service, and Police Captain and Police Sergeants age 60 regardless of service.
Fire: Any age with 25 or more years of service, age 55 with a minimum of 10 years of service, or age 60.

Amount: Police Patrol hired prior to 7/1/2009: Straight life pension equals 2.8% (2.5% for service on/or after 6/30/2014) of 3-year Average Final Compensation (AFC) times first 25 years of service plus 1% of AFC times years of service in excess of 25 years.
Police Captains hired prior to 7/1/2009: Straight life pension equals 2.8% of 3-year AFC times first 25 years of service plus 1% of AFC times years of service in excess of 25 years.
Police Sergeants: Straight life pension equals 2.8% of 3-year AFC times first 25 years of service plus 1% of AFC times years of service in excess of 25 years.
Fire hired prior to 7/1/2009: Straight life pension equals 2.8% of 3-year AFC times first 25 years of service plus 1% of AFC times years of service in excess of 25 years.
Police Patrol, Police Captain, and Fire members hired on or after 7/1/2009: Straight life pension equals 2% of 3-year AFC times first 25 years of service plus 1% of AFC times years of service in excess of 25 years.

DEFERRED RETIREMENT

Eligibility: 10 or more years of service.

Amount: Computed as service retirement but based upon service, AFC and benefit in effect at termination. Benefit begins at date retirement would have occurred had member remained in employment.

DEATH AFTER RETIREMENT SURVIVOR'S PENSION

Eligibility: Payable to a surviving spouse, if any, upon the death of a retired member who was receiving a straight life pension which was effective July 1, 1975 or later.

Amount: Spouse's pension equals 60% of the straight life pension the deceased retirant was receiving.

NON-DUTY DEATH-IN-SERVICE SURVIVOR'S PENSION

Eligibility: Payable to a surviving spouse, if any, upon the death of a member with 20 (10 for Fire) or more years of service.

Amount: Accrued straight life pension actuarially reduced in accordance with an Option I election.

DUTY DEATH-IN-SERVICE SURVIVOR'S PENSION

Eligibility: Police: Payable upon the expiration of Worker's Compensation to the survivors of a member who died in the line of duty. Fire: Payable to a surviving spouse.

Amount: Police: Same amount that was paid by Worker's Compensation. Fire: 100% joint and survivor benefit calculated as if the deceased member had retired with 25 years of service.

NON-DUTY DISABILITY

Eligibility: Payable upon the total and permanent disability of a member with 5 or more years of service.

Amount: To Age 55: 1.5% of AFC times years of service.
At Age 55: Same as Service Retirement Pension.

BRIEF SUMMARY OF BENEFIT PROVISIONS
JUNE 30, 2016

DUTY DISABILITY

Eligibility: Payable upon the total and permanent disability of a member in the line of duty.

Amount: To Age 55: 50% (70% for Fire) of AFC.
At Age 55: Same as Service Retirement Pension with service credit from date of disability to age 55.

POST-RETIREMENT INCREASES

Eligibility: Payable to pre-July 1, 1990 retirees.

Amount: 2.5% of the original pension amount. The adjustment to be given annually for the twenty-year period June 30, 1991 to June 30, 2010.

Eligibility: Police Sergeants Unit (effective 8/1/1998).

Amount: 2.5% of the original pension amount or inflation, whichever is less. The adjustment to be given annually for the twenty-year period beginning one year after retirement.

Eligibility: Police Captain's Unit (effective 1/1/1994).

Amount: 2.5% of the original pension amount or inflation, whichever is less. The adjustment to be given annually for the twenty-year period beginning one year after retirement.

Eligibility: Police Patrol Unit (effective 1/1/1999).

Amount: 2.5% of the original pension amount or inflation, whichever is less. The adjustment to be given annually for the twenty-year period beginning one year after retirement.

Eligibility: Firefighters Unit (effective 7/1/2000).

Amount: 2.5% of the original pension amount or inflation, whichever is less. The adjustment to be given annually for the twenty-year period beginning one year after retirement.

MEMBER CONTRIBUTIONS

Amount: Police Captain: 6.0%
Police Sergeants: 1.0% effective 7/1/2014, 2.0% effective 7/1/2015
Firefighters hired prior to 7/1/2009: 4.53%
Others: None

RETIRANTS AND BENEFICIARIES ADDED TO AND REMOVED FROM ROLLS
COMPARATIVE STATEMENT

Year	Added to Rolls		Removed from Rolls		Rolls End of Year		% Incr.	Average	Present
Ended		Annual		Annual		Annual	Annual	Annual	Value of
June 30	No.	Pensions*	No.	Pensions	No.	Pensions	Pensions	Pensions	Pensions
1987					12	$ 101,491	0.0 %	$ 8,458	$ 1,178,533
1988	1	$ 3,906	1	$ 3,894	12	101,503	0.0	8,459	1,114,399
1989	1	19,921			13	121,424	19.6	9,340	1,349,703
1990	3	78,294			16	199,718	64.5	12,482	2,249,808
1991	1	13,894	1	15,680	16	197,932	(0.9)	12,371	2,193,170
1992	3	66,260			19	264,192	33.5	13,905	3,349,394
1993	6	104,840	1	7,919	24	361,113	36.7	15,046	4,465,170
1994	1	33,569			25	394,682	9.3	15,788	4,739,149
1995	1	29,038			26	423,720	7.4	16,297	4,979,286
1996	1	33,958			27	457,678	8.0	16,951	5,284,081
1997	6	141,666	1	6,285	32	593,059	29.6	18,533	6,905,968
1998	3	103,938			35	696,997	17.5	19,914	7,657,575
1999	3	98,263	1	29,936	37	765,324	9.8	20,684	8,723,773
2000	5	125,436	3	54,942	39	835,818	9.2	21,431	9,666,179
2001	6	150,697	1	19,528	44	966,987	15.7	21,977	11,169,394
2002	6	167,691			50	1,134,678	17.3	22,694	13,201,802
2003	3	113,405	1	33,031	52	1,215,052	7.1	23,366	14,050,761
2004	2	77,718			54	1,292,770	6.4	23,940	14,856,369
2005	1	55,815	2	36,178	53	1,312,407	1.5	24,762	15,565,403
2006		9,751			53	1,322,158	0.7	24,946	15,396,062
2007		31,449			53	1,353,607	2.4	25,540	15,435,629
2008	1	78,667			54	1,432,274	5.8	26,524	16,335,658
2009	2	126,446	1	12,067	55	1,546,653	8.0	28,121	17,741,980
2010		19,610			55	1,566,263	1.3	28,478	17,582,590
2011	4	177,516	1	18,285	58	1,725,494	10.2	29,750	20,194,577
2012	1	61,866			59	1,787,360	3.6	30,294	20,603,012
2013	4	241,127	1	7,664	62	2,020,823	13.1	32,594	23,610,845
2014	5	227,369	1	42,929	66	2,205,263	9.1	33,413	25,765,011
2015	3	135,766	1	44,577	68	2,296,452	4.1	33,771	26,474,592
2016	2	90,172	3	45,697	67	2,340,927	1.9	34,939	26,747,986

* *Includes post-retirement increases beginning with the 89/90 valuation year.*

RETIRANTS AND BENEFICIARIES - JUNE 30, 2016
BY TYPE OF PENSIONS BEING PAID

Type of Pensions Being Paid	No.	Annual Pensions Being Paid
Age and Service Pensions		
Straight life pension - terminating at death of retirant	8	$ 270,629
Straight life pension - automatic 60% survivor pension to surviving spouse	40	1,694,168
Option I pension - 100% joint and survivor	3	94,025
Option II - 50% joint and survivor	1	19,438
Pension being paid survivor beneficiary of deceased retirant *	12	179,496
Total age and service pensions	64	2,257,756
Casualty Pensions		
Duty disability pension	1	24,443
Duty death survivor pension	1	30,240
Non-duty disability survivor pension	1	28,488
Total casualty pensions	3	83,171
Total Pensions Being Paid	**67**	**$2,340,927**

* *Includes benefit being paid due to Eligible Domestic Relations Order (EDRO).*

RETIRANTS AND BENEFICIARIES - JUNE 30, 2016
TABULATED BY ATTAINED AGE

Attained Age	No.	Annual Pensions
50 - 54	4	$ 200,920
55 - 59	7	343,069
60 - 64	13	486,521
65 - 69	13	520,447
70 - 74	16	485,765
75 - 79	7	191,710
80 - 84	4	78,097
85 - 89	2	25,088
95 - 99	1	9,310
Totals	**67**	**$2,340,927**

Average Age at Retirement: 53.2 years
Average Age Now: 68.6 years

ACTIVE MEMBERS INCLUDED IN VALUATION

Year Ended June 30	Active Members	Vested Term. Members	Valuation Payroll	Average Age	Average Service	Average Pay	% Inc. Avg. Pay
1997	54	0	$2,212,378	41.9 yrs.	13.8 yrs.	$40,970	3.8 %
1998	53	0	2,259,312	41.8	13.4	42,629	4.0
1999	55	0	2,337,389	41.1	12.5	42,498	(0.3)
2000	56	0	2,470,379	40.6	11.8	44,114	3.8
2001	56	0	2,467,235	39.4	10.8	44,058	(0.1)
2002	56	2	2,393,258	38.6	9.3	42,737	(3.0)
2003	55	2	2,402,524	38.6	9.5	43,682	2.2
2004	54	2	2,671,393	38.7	9.5	49,470	13.3
2005	56	2	3,139,509	38.6	9.5	56,063	13.3
2006	61	2	3,509,371	38.7	9.6	57,531	2.6
2007	59	3	3,234,852	39.6	10.6	54,828	(4.7)
2008	58	4	3,173,479	39.8	10.8	54,715	(0.2)
2009	56	4	3,348,677	40.3	11.4	59,798	9.3
2010	55	4	3,308,083	41.4	12.5	60,147	0.6
2011	51	4	3,131,962	42.1	12.8	61,411	2.1
2012	50	4	3,114,425	42.7	13.5	62,289	1.4
2013	47	4	3,018,448	42.3	13.5	64,222	3.1
2014	49	3	3,262,658	41.0	12.5	66,585	3.7
2015	50	3	3,407,221	40.7	12.4	68,144	2.3
2016	49	4	3,411,863	40.8	12.7	69,630	2.2

Additions to and Removals from Active Membership
Actual and Expected Numbers

Year Ended June 30	Number Added During Year A	Number Added During Year E	Normal Retirement A	Normal Retirement E	Disability Retirement A	Disability Retirement E	Died-in-Service A	Died-in-Service E	Other Terminations A	Other Terminations E	Active Members End of Year
2012	0	1	1	1.8	0	0.1	0	0.1	0	1.0	50
2013	1	4	4	2.7	0	0.1	0	0.1	0	0.9	47
2014	5	3	3	2.7	0	0.1	0	0.1	0	0.9	49
2015	3	2	1	2.0	0	0.1	0	0.0	1	1.5	50
2016	1	2	1	1.3	0	0.1	0	0.0	1	1.5	49

A Represents actual number.
E Represents expected number based on assumptions outlined in Section C.

ACTIVE POLICE MEMBERS - JUNE 30, 2016
BY ATTAINED AGE AND YEARS OF SERVICE

Attained Age	Years of Service to Valuation Date 0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	Totals No.	Valuation Payroll
25-29	3							3	$ 180,880
30-34	3		1					4	252,181
35-39			3					3	203,410
40-44			4	2				6	419,523
45-49			3	3	1	1		8	559,526
50-54				1		1		2	152,463
55-59			1					1	65,855
Totals	**6**		**12**	**6**	**1**	**2**		**27**	**$1,833,838**

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

Age: 40.8 years
Service: 12.9 years
Annual Pay: $67,920

ACTIVE FIRE MEMBERS - JUNE 30, 2016
BY ATTAINED AGE AND YEARS OF SERVICE

Attained	Years of Service to Valuation Date							Totals	
Age	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
30-34	3	2	1					6	$ 391,547
35-39	1		4					5	329,865
40-44			2	1				3	211,849
45-49			2		2			4	310,412
50-54			1	2				3	249,518
62					1			1	84,834
Totals	**4**	**2**	**10**	**3**	**3**			**22**	**$ 1,578,025**

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

Age: 40.9 years
Service: 12.4 years
Annual Pay: $71,728

SUMMARY OF CURRENT ASSET INFORMATION REPORTED FOR VALUATION

Value of Assets

	2015-2016	2014-2015
Cash & equivalents	$ 2,762,680	$ 3,243,676
Short-term investments	0	0
Bonds & stocks	21,279,384	21,021,675
Mortgages	0	0
Real estate	1,532,228	1,353,972
Other	790,439	722,938
Invoice receivable	0	0
Accounts payable	(81,294)	(99,449)
Total reported market value of assets	26,283,437	26,242,812
Less assets available for health insurance	0	0
Market adjustment*	(1,229,731)	300,236
Total valuation assets	$27,513,168	$25,942,576

* *See page A-5 for development of valuation assets.*

Revenues and Expenditures

	2015-2016	2014-2015
Balance - July 1*	$25,942,576	$24,538,031
Revenues		
Employees' contributions	58,510	76,863
Employer contributions	1,810,565	1,683,306
Recognized investment income	2,013,594	1,895,928
Total	3,882,669	3,656,097
Expenditures		
Benefit payments	2,312,077	2,251,552
Refunds	0	0
Miscellaneous	0	0
Total	2,312,077	2,251,552
Balance - June 30*	$27,513,168	$25,942,576

* *Excluding Assets for Health Insurance.*

ASSET INFORMATION REPORTED FOR VALUATION
COMPARATIVE STATEMENT

Year Ended June 30	Valuation Assets Beginning of Year	Revenues: Employee Contrib.	Revenues: Employer Contrib.	Revenues: Investment Income	Revenues: Misc. Income	Expenses: Retirement Benefits	Expenses: Contrib. Refunds	Expenses: Misc. Expenses	Valuation Assets Year End
1992	$ 8,387,749		$ 408,778	$ 644,301		$ 209,173			$ 9,231,655
1993	9,231,655		475,283	716,047		327,073			10,095,912
1994	10,095,912		483,851	1,145,445		372,469			11,352,739
1995	11,352,739		489,957	820,512		394,681			12,268,527
1996	12,268,527		469,685	1,346,979		444,268	$ 7,212		13,633,711
1997 #	13,633,711		401,581	2,001,114		515,777			15,520,629
1998	15,520,629		366,149	2,617,169		618,759			17,885,188
1999	17,885,188		193,624	3,022,274		695,756			20,405,330
2000	20,405,330		227,662	2,670,256		806,090			22,497,158
2001	22,497,158		294,964	1,779,369		876,288			23,695,203
2002	23,695,203	$ 1,755	276,417	602,451		983,199			23,592,627
2003	23,592,627		342,511	60,299		1,153,327			22,842,110
2004	22,842,110		396,681	18,488		1,219,022			22,038,257
2005	22,038,257	92,637	615,269	453,461		1,318,161			21,881,463
2006	21,881,463	41,871	877,938	1,104,141		1,314,073			22,591,340
2007	22,591,340		987,602	1,939,278		1,335,435			24,182,785
2008	24,182,785		897,502	1,138,229		1,380,058			24,838,458
2009	24,838,458		924,911	-552,770		1,455,257		$ 186	23,755,156
2010	23,755,156	2,976	1,154,441	(413,031)		1,548,595			22,950,947
2011	22,950,947	26,133	1,206,390	(591,337)		1,674,983			21,917,150
2012	21,917,150	51,144	1,345,660	(324,414)		1,733,268			21,256,272
2013	21,256,272	74,264	1,532,181	1,660,023		1,872,620			22,650,120
2014	22,650,120	75,526	1,639,480	2,269,559		2,096,654			24,538,031
2015	24,538,031	76,863	1,683,306	1,895,928		2,251,552			25,942,576
2016	25,942,576	58,510	1,810,565	2,013,594		2,312,077			27,513,168

 # Beginning with the June 30, 1997 valuation, assets are equal to the Funding Value.

SECTION C

VALUATION METHODS AND ASSUMPTIONS

ACTUARIAL COST METHODS USED FOR THE VALUATION

Age and Service and Casualty Benefits: Normal cost and the allocation of actuarial present values between service rendered before and after the valuation date were determined using an individual entry-age actuarial cost method having the following characteristics:

- the annual normal costs for each individual active member, payable from the date of employment to the date of retirement, are sufficient to accumulate the value of the member's benefit at the time of retirement; and

- each annual normal cost is a constant percentage of the member's year-by-year projected covered pay.

Amortization of Unfunded Actuarial Accrued Liabilities: Unfunded actuarial accrued liabilities were amortized by level percent-of-payroll contributions (principal and interest combined) over a closed period of 17 years.

Active member payroll was assumed to increase 4.0% a year for the purpose of determining the level percent contributions.

The valuation assets used for funding purposes is derived as follows: prior year valuation assets are increased by contributions and expected investment income and reduced by refunds, benefit payments and expenses. To this amount is added 25% of the difference between expected and actual investment income for each of the previous four years.

Lump sum at retirement redemption factor: 5.0% of Fire active member actuarial liabilities. (Normal retirement only.)

ACTUARIAL ASSUMPTIONS IN THE VALUATION PROCESS

The contribution and benefit values of the System are calculated by applying actuarial assumptions to the benefit provisions and people information furnished, using the actuarial cost methods described on the previous page.

The principal areas of risk which require assumptions about future experience are:

- long-term rates of investment return to be generated by the assets of the System
- patterns of pay increases to members
- rates of mortality among members, retirants, and beneficiaries
- rates of withdrawal of active members
- rates of disability among active members
- the age patterns of actual retirements

The monetary effect of each assumption is calculated for as long as a present covered person survives -- a period of time which can be as long as a century.

Actual experience of the System will not coincide exactly with assumed experience, regardless of the choice of the assumptions. Each valuation provides a complete recalculation of assumed future experience and takes into account all past differences between assumed and actual experience. The result is a continual series of adjustments (usually small) to the computed contribution rate.

From time-to-time, one or more of the assumptions is modified to reflect experience trends (but not random or temporary year-to-year fluctuations).

The rate of investment return (regular interest), net of investment expense, was 7.5% per year, compounded annually. This rate is not the assumed real return which, for funding purposes, is the rate of return in excess of average salary increases. Considering other assumptions used in the valuation, the 7.5% translates to a real return over wage inflation of approximately 3.5%. Experience over the last 5 years has been as illustrated below:

	Year Ended June 30					5-Year
	2016	2015	2014	2013	2012	Average
1) Nominal rate of return	7.9 %	7.9 %	10.2 %	8.0 %	(1.1) %	6.6 %
2) Increase in CPI	1.0	0.1	2.1	1.8	1.7	1.3
3) Average salary increase	2.2	2.3	3.7	3.1	1.4	2.5
4) Real return						
- investment purposes	6.9	7.8	8.1	6.2	(2.8)	5.2
- funding purposes	5.7	5.6	6.5	4.9	(2.5)	4.0
- assumption	3.5	3.5	3.5	3.5	3.5	3.5

The nominal rate of return was computed using the approximate formula: i = I divided by 1/2 (A+B-I), where I is realized investment income net after expenses, A is the beginning of year asset value and B is the end of year asset value.

The mortality table used to measure pre- and post-retirement mortality was the RP-2000 Mortality Table for males and females projected 20 years with Scale AA. Mortality rates were adjusted to include margin for future mortality improvement as described above.

	Single Life Retirement Values			
Sample	Present Value of $1 Monthly for Life		Future Life Expectancy (Years)	
Ages	Men	Women	Men	Women
50	$146.52	$147.02	33.72	34.63
55	139.44	140.08	28.98	29.88
60	130.21	131.31	24.36	25.31
65	118.86	120.76	20.00	21.02
70	105.68	108.61	15.98	17.06
75	90.20	94.82	12.28	13.47
80	73.06	79.37	9.01	10.23

This assumption is used to measure the probabilities of members dying before retirement and the probabilities of each benefit payment being made after retirement. Disabled mortality is set-forward 10 years.

Rates of separation from active membership are represented by the following table (rates do not apply to members eligible to retire and do not include separation on account of death or disability). This assumption measures the probabilities of members remaining in employment.

Sample Ages	Years of Service	% of Active Members Separating within Next Year
ALL	0	15.00 %
	1	10.00
	2	8.00
	3	7.00
	4	6.00
25	5 & Over	6.00
30		5.10
35		2.70
40		1.60
45		1.10
50		1.00
55		1.00
60		1.00

Wage Inflation used to project current salaries is represented by the following table.

Sample	Percent Increase in Salary During Next Year		
Ages	Base	Merit and Seniority	Total
20	4.0 %	3.0 %	7.0 %
25	4.0	3.0	7.0
30	4.0	2.6	6.6
35	4.0	1.1	5.1
40	4.0	0.2	4.2
45	4.0	0.2	4.2
50	4.0	0.2	4.2
55	4.0	0.1	4.1
60	4.0	0.0	4.0

If the number of active members remains constant, then the total active member payroll will increase 4.0% annually, the base portion of the individual salary increase assumptions. This increasing payroll was recognized in amortizing unfunded actuarial accrued liabilities.

Price inflation is not explicitly assumed in this valuation, but based upon other assumptions in this report, price inflation of 2.75% could be assumed.

Sample rates of becoming disabled are as follows:

Sample Ages	Percent Becoming Disabled within Next Year	
	Men	**Women**
20	0.08 %	0.10 %
25	0.08	0.10
30	0.08	0.10
35	0.08	0.10
40	0.20	0.36
45	0.27	0.41
50	0.49	0.57
55	0.89	0.77
60	1.41	1.02

75% are assumed to be duty-related and 25% are assumed to be non-duty related.

Probabilities of retirement for members eligible to retire were:

Retirement Ages	Percent of Active Members Retiring	
	Police	**Fire**
45		20 %
46		20
47		20
48		20
49		20
50	35 %	20
51	25	15
52	20	10
53	15	10
54	15	10
55	15	10
56	15	10
57	15	10
58	25	10
59	30	20
60	100	100

A Police member is eligible for retirement after attaining age 50 with 25 or more years of service, or, after attaining age 60. A Fire member is eligible for retirement at any age with 25 or more years of service, or, age 55 with 10 or more years of service, or, after attaining age 60.

DEFINITIONS OF TECHNICAL TERMS

***Accrued Service* -** Service credited under the system which was rendered before the date of the actuarial valuation.

***Actuarial Accrued Liability* -** The difference between the actuarial present value of system benefits and the actuarial present value of future normal costs. Also referred to as "past service liability."

***Actuarial Assumptions* -** Estimates of future experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and salary increases. Decrement assumptions (rates of mortality, disability, turnover and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (salary increases and investment income) consist of an underlying rate in an inflation-free environment plus a provision for a long-term average rate of inflation.

***Actuarial Cost Method* -** A mathematical budgeting procedure for allocating the dollar amount of the "actuarial present value of future benefits" between future normal costs and actuarial accrued liability. Sometimes referred to as the "actuarial funding method."

***Actuarial Equivalent* -** One series of payments is said to be actuarially equivalent to another series of payments if the two series have the same actuarial present value.

***Actuarial Gain (Loss)* -** The difference between actual unfunded actuarial accrued liabilities and anticipated unfunded actuarial accrued liabilities -- during the period between two valuation dates. It is a measurement of the difference between actual and expected experience.

***Actuarial Present Value* -** The amount of funds currently required to provide a payment or series of payments in the future. It is determined by discounting future payments at predetermined rates of interest, and by probabilities of payments.

Amortization **-** Paying off an interest-discounted amount with periodic payments of interest and (generally) principal -- as opposed to paying off with a lump sum payment.

Normal Cost **-** The portion of the actuarial present value of future benefits that is assigned to the current year by the actuarial cost method. Sometimes referred to as "current service cost."

Unfunded Actuarial Accrued Liabilities **-** The difference between actuarial accrued liabilities and valuation assets. Sometimes referred to as "unfunded past service liability" or "unfunded supplemental present value."

Valuation Assets **-** The value of current plan assets recognized for valuation purposes.

SECTION D
FINANCIAL REPORTING

NOTE: GASB Statements No. 67 and No. 68 are effective for Governmental Retirement Plans for the fiscal year beginning after June 15, 2013 (GASB Statement No. 67) and the fiscal year beginning after June 15, 2014 (GASB Statement No. 68). These statements replace GASB Statements No. 25 and No. 27.

SCHEDULE OF FUNDING PROGRESS

Actuarial Valuation Date June 30	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) -- Entry Age (b)	Unfunded AAL (UAAL) (b - a)	Funded Ratio (a / b)	Covered Payroll (c)	UAAL as a % of Covered Payroll ((b - a) / c)
2007 *	$24,182,785	$26,789,239	$ 2,606,454	90.3 %	$3,234,852	80.6 %
2008	24,838,458	28,047,507	3,209,049	88.6	3,173,479	101.1
2009 *	23,755,156	31,384,903	7,629,747	75.7	3,348,677	227.8
2010 *	22,950,947	34,264,396	11,313,449	67.0	3,308,083	342.0
2011 #	21,917,150	36,334,692	14,417,542	60.3	3,131,962	460.3
2012 *	21,256,272	37,186,684	15,930,412	57.2	3,114,425	511.5
2013	22,650,120	39,428,961	16,778,841	57.4	3,018,448	555.9
2014	24,538,031	41,323,551	16,785,520	59.4	3,262,658	514.5
2015	25,942,576	42,139,982	16,197,406	61.6	3,407,221	475.4
2016	27,513,168	43,301,641	15,788,473	63.5	3,411,863	462.8

SCHEDULE OF EMPLOYER CONTRIBUTIONS

Fiscal Year Ended June 30	Contribution Rates as Percents of Valuation Payroll	Computed Dollar Contribution Based on Valuation Payroll	Actual Contribution	Percentage Contributed
2009	27.89 %	$ 924,911	$ 924,911	100 %
2010 *	32.99	1,154,441	1,154,441	100
2011 *	32.99	1,206,390	1,206,390	100
2012 *	37.25	1,345,660	1,345,660	100
2013 #	45.23	1,532,181	1,532,181	100
2014 *	48.67	1,639,480	1,639,480	100
2015	51.56	1,683,306	1,683,306	100
2016	49.89	1,760,565	1,810,565	103
2017	48.95	1,803,930		
2018	49.91	1,841,815		

* *Plan amended.*
\# *Actuarial assumptions revised.*

SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS

The information presented on the previous pages was determined as part of the actuarial valuations at the dates indicated. Additional information as of the latest actuarial valuation follows:

Valuation date:	June 30, 2016
Actuarial cost method:	Entry Age
Amortization method:	Level percent
Remaining amortization period:	17 years closed
Asset valuation method:	4-year smoothed market
Actuarial assumptions:	
Investment rate of return	7.5%
Projected salary increases*	4.0% - 7.0%
*Includes wage inflation at	4.0%
Cost-of-living adjustments	2.5% of original pension for twenty years, payable to Pre-July 1, 1990 retirees, 2.5% of original pension or inflation whichever is less, for twenty years, payable to the Police Captains unit (effective 1/1/1994) and Police Sergeants (effective 8/1/1998) and Police Patrol (effective 1/1/1999) and Firefighters unit (effective 7/1/2000)

Membership in the plan consisted of the following on June 30, 2016, the date of the latest actuarial valuation:

Retirees and beneficiaries receiving benefits	67
Terminated plan members entitled to but not yet receiving benefits	4
Active plan members	49
Total	120

APPENDIX

AMORTIZATION PAYOFF SCHEDULE

Date	Period	Unfunded Actuarial Accrued Liability (UAAL) (Beg. of Year)	UAAL Payment %	UAAL Payment $	Interest	UAAL (End of Year)
June 30, 2016		$ 15,788,473				
July 1, 2017	17	16,420,012	35.59%	$ 1,287,776	$ 1,183,791	$ 16,316,027
July 1, 2018	16	16,316,027	35.59%	1,339,287	1,174,084	16,150,824
July 1, 2019	15	16,150,824	35.59%	1,392,859	1,159,709	15,917,674
July 1, 2020	14	15,917,674	35.59%	1,448,573	1,140,159	15,609,260
July 1, 2021	13	15,609,260	35.59%	1,506,516	1,114,881	15,217,625
July 1, 2022	12	15,217,625	35.59%	1,566,777	1,083,276	14,734,124
July 1, 2023	11	14,734,124	35.59%	1,629,448	1,044,691	14,149,368
July 1, 2024	10	14,149,368	35.59%	1,694,626	998,420	13,453,163
July 1, 2025	9	13,453,163	35.59%	1,762,411	943,693	12,634,445
July 1, 2026	8	12,634,445	35.59%	1,832,907	879,678	11,681,216
July 1, 2027	7	11,681,216	35.59%	1,906,223	805,469	10,580,462
July 1, 2028	6	10,580,462	35.59%	1,982,472	720,088	9,318,078
July 1, 2029	5	9,318,078	35.59%	2,061,771	622,471	7,878,778
July 1, 2030	4	7,878,778	35.59%	2,144,242	511,468	6,246,004
July 1, 2031	3	6,246,004	35.59%	2,230,012	385,833	4,401,825
July 1, 2032	2	4,401,825	35.59%	2,319,212	244,215	2,326,828
July 1, 2033	1	2,326,828	35.59%	2,411,981	85,153	0

Unfunded liability at June 30, 2016 adjusted to July 1, 2017. Payment based on 7.50% interest and 4.00% wage base over 17 years beginning on the Fiscal Year starting July 1, 2017.