

CITY OF ST. CLAIR SHORES EMPLOYEES RETIREMENT SYSTEM
64TH ACTUARIAL VALUATION REPORT
AS OF JUNE 30, 2016

Contents

<u>Section</u>	<u>Page</u>	
		Introduction
A		Valuation Results
	1	Funding Objective
	2	City's Computed Contributions
	3	Determination of Unfunded Actuarial Accrued Liability
	4	Development of Funding Value of Assets
	5	Derivation of Experience Gain (Loss)
	6	Valuation Assets and Unfunded Actuarial Accrued Liability
	7	Comparative Schedule and Risk Factors
	8-9	Comments
B		Valuation Data
	1-2	Summary of Benefit Provisions
	3	Summary of Asset Information Furnished for Valuation
	4-6	Retired Life Data
	7-8	Active Member Data
	9	Inactive Vested Member Data
C		Valuation Methods and Assumptions
	1	Actuarial Cost Method
	2-6	Actuarial Assumptions
	7	Miscellaneous and Technical Assumptions
	8-9	Glossary
D		Financial Reporting
	1	Schedule of Funding Progress and Employer Contributions
	2	Supplementary Information
		Appendix
	1	Amortization Payoff Schedule

November 1, 2016

Retirement Board
City of St. Clair Shores
Employees Retirement System
St. Clair Shores, Michigan

Re: City of St. Clair Shores Employees Retirement System Actuarial Valuation as of June 30, 2016
Actuarial Disclosures

Dear Board Members:

The results of the June 30, 2016 Annual Actuarial Valuation of the City of St. Clair Shores Employees Retirement System are presented in this report.

This report was prepared at the request of the Board and is intended for use by the Retirement System and those designated or approved by the Board. This report may be provided 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 purposes of the valuation are to measure the System's funding progress as of June 30, 2016, and to determine the employer contribution rate for the fiscal year ending June 30, 2018. This report should not be relied on for any purpose other than the purposes described herein. Determinations of financial results, associated with the benefits described in this report, for purposes other than those identified above may be significantly different.

The findings in this report are based on data and other information through June 30, 2016. 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. The scope of an actuarial valuation does not include an analysis of the potential range of such future measurements.

This valuation assumed the continuing ability of the plan sponsor to make the contributions necessary to fund this plan. A determination regarding whether or not the plan sponsor is actually able to do so is outside our scope of expertise and was not performed.

The valuation was based upon information furnished by the Plan Administrator, concerning Retirement System benefits, financial transactions, plan provisions and active members, terminated members, retirees and beneficiaries. We checked for internal reasonability and year-to-year consistency, but did not audit the data. We are not responsible for the accuracy or completeness of the information provided by Plan Administrator.

In addition, this report was prepared using certain assumptions approved by the Board as described in the section of this report entitled Valuation Methods and Assumptions.

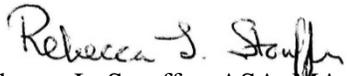
This report has been prepared by actuaries who have substantial experience valuing public employee retirement systems. To the best of our knowledge the information contained in this report is accurate and fairly presents the actuarial position of the City of St. Clair Shores Employees Retirement System as of the valuation date. All calculations have been made in conformity with generally accepted actuarial principles and practices and the Actuarial Standards of Practice issued by the Actuarial Standards Board.

Gabriel, Roeder, Smith & Company will be pleased to review this valuation report with the Board of Trustees and answer any questions pertaining to the valuation. Rebecca L. Stouffer and Mark Buis are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

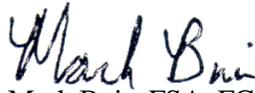
The signing actuaries are independent of the plan sponsor.

Respectfully submitted,

GABRIEL, ROEDER, SMITH & COMPANY



Rebecca L. Stouffer, ASA, MAAA



Mark Buis, FSA, FCA, EA, MAAA

RLS/MB:ah

SECTION A

VALUATION RESULTS

Funding Objective

The funding objective of the Retirement System is to establish and receive sufficient contributions to cover benefits payable without passing the cost on to future generations of citizens.

Contributions

The Retirement System is supported by member contributions, City's 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 costs allocated to the current year by the actuarial cost methods described in Section C (the normal cost); and
- (2) finance over a period of future years the actuarial cost not covered by present assets and anticipated future normal costs (unfunded actuarial accrued liability).

Contribution requirements for the fiscal year beginning July 1, 2017 are shown on page A-2.

The Board of Trustees of the City of St. Clair Shores Employees Retirement System confirms that the System provides for payment of the required employer contribution as described in Section 20m of Michigan Public Act No. 728.

City's Computed Contributions

Contributions for	For Fiscal Year Beginning July 1,	
	2017	2016
NORMAL COST		
Age and service pensions	\$ 442,687	\$ 465,058
Death before retirement pensions	14,136	16,701
Disability pensions	26,784	29,120
Total	483,607	510,879
MEMBERS' CONTRIBUTIONS		
Gross contributions	31,993	37,256
Less prospective refunds	4,092	4,711
Available for pensions	27,901	32,545
CITY'S NORMAL COST	455,706	478,334
AMORTIZATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITIES#	\$2,188,608	\$2,075,870
TOTAL CITY CONTRIBUTIONS *^	\$2,644,314	\$2,554,204

Unfunded actuarial accrued liabilities were financed as a level dollar amount over a period of 25 years (18 years for the fiscal year beginning July 1, 2016).

* *Contribution amounts for prior fiscal years are shown on page A-7.*

^ *The estimated contribution as a percentage of payroll for the fiscal year beginning July 1, 2017 is 71.1%. This estimated contribution is for informational purposes only and is based on projected payroll of \$3,720,063. The Plan is closed to new hires and it is our understanding the City makes contributions on the dollar basis noted above. To the extent that actual payroll is different, the actual percentage will vary.*

Determination of Unfunded Actuarial Accrued Liability

	June 30,	
	2016	2015
A. Accrued Liability		
1. For retirees and beneficiaries	\$ 45,222,536	\$ 42,352,046
2. For vested terminated members	2,109,071	2,061,820
3. For present active members		
a. Value of expected future benefit payments	21,289,811	18,635,823
b. Value of future normal costs	3,177,151	3,058,477
c. Active member accrued liability: (a) - (b)	18,112,660	15,577,346
4. Total accrued liability	65,444,267	59,991,212
B. Present Assets (Funding Value)	39,907,111	39,768,186
C. Unfunded Accrued Liability: (A.4) - (B)	25,537,156	20,223,026
D. Funding Ratio: (B) / (A.4)	61.0%	66.3%
E. Funding Ratio: Market Value Basis	55.9%	65.4%

Development of Funding Value of Assets

Year Ended June 30:	2015*	2016	2017	2018	2019
A. Funding Value Beginning of Year	\$39,619,309	\$39,768,186			
B. Market Value End of Year	39,230,459	36,607,467			
C. Market Value Beginning of Year	41,176,701	39,230,459			
D. Non-Investment Net Cash Flow	(2,153,674)	(2,194,574)			
E. Investment Income					
E1. Market Total: B - C - D	207,432	(428,418)			
E2. Amount for Immediate Recognition (8.0%)	3,083,398	3,093,672			
E3. Amount for Phased-In Recognition: E1-E2	(2,875,966)	(3,522,090)			
F. Phased-In Recognition of Investment Income					
F1. Current Year: 0.25 x E3	(718,992)	(880,523)			
F2. First Prior Year	779,907	(718,992)	\$(880,523)		
F3. Second Prior Year	59,436	779,907	(718,992)	\$(880,523)	
F4. Third Prior Year	(901,198)	59,435	779,905	(718,990)	\$(880,521)
F5. Total Recognized Investment Gain (Loss)	(780,847)	(760,173)	(819,610)	(1,599,513)	\$(880,521)
G. Funding Value End of Year: A + D + E2 + F5	39,768,186	39,907,111			
H. Difference between Market & Funding Value	(537,727)	(3,299,644)			
I. Recognized Rate of Return - Funding Value	5.97%	6.03%			
J. Recognized Rate of Return - Market Value	0.52%	(1.12)%			

* Beginning of year Market Value and Funding Value were adjusted to include the Excess Earnings Reserve (EER).

The Funding Value of Assets recognizes assumed investment income (line E.2) fully each year. Differences between actual and assumed investment income (line E.3) 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.

Derivation of Experience Gain (Loss)

Actual experience will never (except by coincidence) 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	\$ 20,223,026
(2) Total normal cost	515,589
(3) Actual contributions for pensions	2,835,042
(4) Interest accrual ((1) + 1/2 [(2)-(3)]) x 8.00%	1,525,064
(5) Expected UAAL* before changes (1) + (2) - (3) + (4)	19,428,637
(6) Change from benefit improvements	0
(7) Change in actuarial assumptions	5,351,422
(8) Expected UAAL* before changes (5) + (6) + (7)	24,780,059
(9) Actual UAAL*	25,537,156
(10) Gain (loss) (8) - (9)	(757,097)
(11) Gain (loss) as percent of actuarial accrued liabilities at start of year (\$59,991,212)	(1.3%)

* *Unfunded actuarial accrued liabilities.*

Experience Gain (Loss)	
as % of	
Valuation Date	Beginning Accrued Liability
6-30-09	2.3 %
6-30-10	(7.1)
6-30-11	(6.1)
6-30-12	(4.1)
6-30-13	(0.4)
6-30-14	0.8
6-30-15	(2.3)
6-30-16	(1.3)

Valuation Assets and Unfunded Actuarial Accrued Liability

In financing the actuarial accrued liabilities, the valuation assets of \$39,907,111 were distributed as shown below:

Reserves for	Present Valuation Assets Applied to			Totals
	Member Actuarial Accrued Liability	Retired Life Actuarial Liabilities	Contingency Reserve	
Employees' Contributions	\$ 594,067			\$ 594,067
Employer Contributions	(5,909,492)	\$36,200,200		30,290,708
Retired Benefit Payments		9,022,336		9,022,336
Undistributed Income				0
Totals	\$ (5,315,425)	\$45,222,536	\$ none	\$39,907,111

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

	Retired Lives	Active Members	Total
Computed Actuarial Accrued Liabilities	\$45,222,536	\$20,221,731	\$65,444,267
Applied Assets	45,222,536	(5,315,425)	39,907,111
Unfunded Actuarial Accrued Liabilities	\$ none	\$25,537,156	\$25,537,156

Comparative Schedule and Risk Factors

Valuation Date	Actuarial Accrued Liabilities & Reserves	Accrued Assets	Percent Funded	Unfunded Actuarial Accrued Liabilities & Reserves		City's Contribution Rate @
				Dollars	Amortization Period	
06/30/07	\$53,868,304	\$44,702,803	83.0 %	\$ 9,165,501	18 yrs.	26.21 %*
06/30/08	55,873,969	45,610,111	81.6	10,263,858	25	\$1,866,531 #
06/30/09	54,466,034	43,364,264	79.6	11,101,770	24	1,812,824 #
06/30/10	55,767,178	41,130,494	73.8	14,636,684	23	2,090,393 *
06/30/11	56,714,374	38,612,848	68.1	18,101,526	22	2,379,350
06/30/12	56,805,539	36,435,503	64.1	20,370,036	21	2,561,038
06/30/13	57,648,592	37,291,564	64.7	20,357,028	20	2,512,506
06/30/14	58,329,977	38,900,248	66.7	19,429,729	19	2,462,821
06/30/15	59,991,212	39,768,186	66.3	20,223,026	18	2,554,204 #
06/30/16	65,444,267	39,907,111	61.0	25,537,156	25	2,644,314 #

@ Beginning with the June 30, 2008 valuation, level dollar financing was used. Prior valuations used level percent of payroll.

* Retirement System amended.

Revised actuarial assumptions and/or methods.

Percent Funded is the Ratio of Valuation Assets to Actuarial Accrued Liabilities. This is a traditional measure of a system's funding progress. Except in years when the system is amended or actuarial assumptions are revised, this ratio can be expected to increase gradually toward 100%.

Comments

ACTUARIAL EXPERIENCE: Retirement System experience during the year ended June 30, 2016 was less favorable than expected, resulting in a loss of \$757,097. The loss was primarily attributable to recognized investment income that was less than assumed and the impact of an arbitration award, with a portion of the loss offset by demographic gains.

As of June 30, 2016, there are \$3.3 million of unrecognized investment losses that will be gradually recognized over the next three years. Recognition of these losses will put upward pressure on required contributions over the next several years.

ACTUARIAL ASSUMPTIONS AND/OR METHODS: Actuarial assumptions were updated following the preparation of an assumption study dated August 11, 2016. In particular:

- The investment return assumption was lowered from 8.0% to 7.5%,
- A price inflation assumption 2.75% was adopted,
- The wage inflation assumption was lowered from 4.0% to 3.5%,
- The rates of mortality were updated to a version of the RP-2014 fully generational tables, including the use of the MP-2015 mortality improvement scale (More information can be found on page C-5.), and
- The amortization period was lengthened from 18 to 25 years.

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.

Comments (Concluded)

ACTUARIAL DISCLOSURE (CONCLUDED): The contribution rate in this report is determined using the actuarial assumptions and methods disclosed in Section C of this report. This report includes risk metrics on page A-7, 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 System's financial condition.

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 C are individually and in the aggregate, a reasonable representation of the past and anticipated future experience of the System.

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 dollar amounts will eventually decrease as active payroll declines due to the closed nature of the plan,
- 2) Amortization payment dollar amounts will remain level over the next 25 years,
- 3) The unfunded actuarial accrued liability will be fully amortized after 25 years, and
- 4) 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 (June 30, 2016)

Regular Retirement (No reduction factor for age)

Eligibility - Age 50 with 25 years of service, or age 60 with 10 or more years of service.

Annual Amount – **AFSCME, Court Non-Union, Court Clerical, and PEA:** Total service multiplied by 2.5% of average final compensation with a maximum of 80% of average final compensation.

Dispatchers: Total service multiplied by 2.5% of average final compensation with a maximum of 75% of average final compensation.

AR4: Total service multiplied by 2.5% of average final compensation with a maximum of 62.5% of average final compensation. Maximum benefit for AR4 members cannot exceed base pay as of termination date.

Type of Average Final Compensation - Highest 5 non-consecutive years out of last 10. Court Clerical and Dispatchers – Highest 5 consecutive years out of last 10.

Deferred Retirement (Vested Benefit)

Eligibility - 10 years of service, benefit begins at age 60.

Annual Amount - Computed as regular retirement but based on average final compensation and service at time of termination.

Duty Disability Retirement

Eligibility - No age or service requirement.

Annual Amount - Computed as regular retirement with a minimum benefit of 20% of average final compensation. Upon termination of worker's compensation or age 60, whichever occurs first, benefit is recomputed to include additional service credit for the period worker's compensation was paid.

Non-Duty Disability Retirement

Eligibility - 10 or more years of service.

Annual Amount - Computed as regular retirement.

Death-in-Service Survivor Pension

Eligibility - 10 years of service.

Annual Amount - Computed as regular retirement but actuarially reduced in accordance with a 100% joint and survivor election.

Brief Summary of Benefit Provisions
(June 30, 2016)
(Concluded)

Post-Retirement Cost-of-Living Adjustments

Retirees effective 7/1/93 (Court Clerical effective 1/1/03): 5% cost-of-living increase at age 60 or five years after retirement, whichever is later, with a second increase of 5% five years after the first increase.

Member Contributions

AR4 and Court Non-Union: None

AFSCME, Court Clerical, Dispatchers, and PEA: 1.0% of pay

City's Contributions

Actuarially determined amounts which are sufficient to at least cover the requirements of the funding objective stated on page A-1.

New Hires

The Plan is closed. No new hires will participate in this Retirement System.

Summary of Asset Information Furnished for Valuation

Balance Sheet as of JUNE 30, 2016

Current Assets		Reserves for	
Cash & Equivalents	\$ 2,304,595	Employees' Contributions	\$ 594,067
Receivables & Accruals	624,201	Employer Contributions	25,869,455
Bonds	5,475,377	Retired Benefit Payments	9,022,336
Common Stocks	8,413,246	Excess Earnings Reserve	1,121,609
ADR	4,615,351		
Foreign Stocks	968,127		
Real Estate	696,376		
Mortgages	0		
Foreign Gov. & Agencies	0		
Other Fixed Income	3,293,223		
Other Equities	10,741,154		
Other Assets (Securities lending)	2,808,781		
Accounts payable	(480,375)		
Amount due to Broker (Securities lending)	(2,852,589)		
Total Current Assets	\$36,607,467	Total Reserves	\$36,607,467
Market Adjustment*	3,299,644	Market Adjustment*	3,299,644
Total Valuation Assets**	\$39,907,111	Total Valuation Assets**	\$39,907,111

* See page A-4 for derivation of the market adjustment.

** Includes the Excess Earnings Reserve.

Revenues and Expenditures

Balance July 1, 2015	\$39,768,186
Revenues	
Employees' contributions	97,276
Employer contributions	2,462,821
Medicare reimbursement#	274,945
Recognized investment income (valuation purposes)	2,333,499
Expenditures	
Benefit payments	4,754,671
Refund of member contributions	0
Medicare payments#	274,945
Balance June 30, 2016	\$39,907,111

Medicare payments to retirees are paid monthly by the custodian from the Retirement System's assets. At the end of each quarter, these amounts are reimbursed to the System by the City.

Retiree and Beneficiary Comparative Schedule

Year Ended June 30	Added to Rolls		Removed from Rolls		Rolls End of Year				% Incr. in Annual Pensions	Average Pension	Expected Removals	
	No.	Annual Pensions	No.	Annual Pensions	No.	Active Per Retired	Annual Pensions				No.	\$
							Dollars	% of Pay*				
1992	4	\$ 52,214	2	\$ 12,910	148	1.1	\$ 1,340,885	26.1 %	3.0 %	\$ 9,060	4.0	\$ 29,661
1993	8	76,157	7	37,863	149	1.1	1,379,179	25.8	2.9	9,256	4.3	32,537
1994	13	182,612	1	8,297	161	1	1,553,494	26.6	12.6	9,649	4.6	35,545
1995	11	221,649	6	43,953	166	0.9	1,731,190	30.8	11.4	10,429	5.2	41,238
1996	13	251,022	6	69,322	173	1.1	1,912,890	33.3	10.5	11,057	5.5	45,700
1997	11	162,889	8	78,664	176	0.9	1,997,115	31.6	4.4	11,347	5.7	48,811
1998	9	187,510	6	43,223	179	0.9	2,141,402	32.8	7.2	11,963	6.2	53,260
1999	16	289,747	12	163,410	183	0.9	2,267,739	32.0	5.9	12,392	5.6	49,841
2000	6	163,121	8	66,733	181	1.0	2,364,127	31.3	4.3	13,061	5.8	52,574
2001	8	147,094	5	38,062	184	0.9	2,473,159	33.8	4.6	13,441	5.9	56,028
2002	9	190,085	11	88,107	182	0.9	2,575,137	32.7	4.1	14,149	6.0	57,982
2003	8	233,641	4	30,096	186	0.8	2,778,682	37.9	7.9	14,939	6.0	61,381
2004	15	454,673	10	96,771	191	0.8	3,136,584	45.0	12.9	16,422	6.5	66,604
2005	14	440,795	10	51,437	195	0.7	3,525,942	54.0	12.4	18,082	6.7	70,640
2006	6	230,143	9	128,414	192	0.7	3,627,671	53.5	2.9	18,894	7.2	84,343
2007	14	271,387	8	69,238	198	0.6	3,829,820	58.4	5.6	19,343	7.3	89,201
2008	6	108,961	5	19,817	199	0.6	3,918,964	59.0	2.3	19,693	7.6	96,874
2009	5	101,229	6	90,820	198	0.6	3,929,373	58.4	0.3	19,845	7.2	90,602
2010	12	206,333	6	72,949	204	0.5	4,062,757	63.8	3.4	19,915	7.7	98,271
2011	12	225,699	6	98,440	210	0.5	4,190,016	71.4	3.1	19,952	8.4	107,628
2012	8	190,569	5	85,405	213	0.4	4,295,180	81.0	2.5	20,165	9.0	114,822
2013	18	444,226	14	195,321	217	0.4	4,544,085	98.8	5.8	20,940	9.6	123,626
2014	7	176,718	10	118,734	214	0.4	4,602,069	99.8	1.3	21,505	9.4	129,877
2015	7	154,294	11	113,586	210	0.3	4,642,777	108.4	0.9	22,108	9.4	135,332
2016	10	230,088	8	199,859	212	0.3	4,673,006	109.7	0.7	22,042	9.5	143,393

* Pay used for this purpose is the payroll for the now closed group of active members.

Retiree and Beneficiary Data June 30, 2016

Tabulated by Type of Pensions Being Paid

<u>Type of Pensions Being Paid</u>	<u>No.</u>	<u>Annual Pensions</u>
Age and Service Pensions		
Regular pension - benefit		
Terminating at death of retirant	78	\$1,715,784
Option A pension - joint and survivor benefit	60	1,489,858
Option B pension - modified joint and survivor benefit	26	741,453
Survivor beneficiary of deceased age and service retiree	28	424,955
Other - benefit being paid to an ex-spouse	<u>8</u>	<u>80,827</u>
Total age and service pensions	200	\$4,452,877
Casualty Pensions		
Duty disability		
Regular pension	2	\$ 35,190
Non-Duty Disability pensions		
Regular pension	5	90,529
Option A pension		
Option B pension	1	10,617
Survivor beneficiary of deceased non-duty disability retiree	<u>2</u>	<u>6,430</u>
Total	10	142,766
Non-duty death - spouse	2	77,363
Total casualty pensions	<u>12</u>	<u>220,129</u>
Total Pensions Being Paid	212	\$4,673,006

Retiree and Beneficiary Data June 30, 2016
Tabulated by Age

Attained Age	No.	Annual Pensions
45 - 49	1	\$ 7,296
50 - 54	3	54,273
55 - 59	6	173,850
60 - 64	41	1,192,380
65	9	236,289
66	10	208,209
67	8	288,082
68	11	273,214
69	8	209,683
70	4	152,634
71	13	375,351
72	3	39,060
73	7	112,155
74	6	120,226
75	3	73,396
76	4	104,653
77	4	92,881
78	6	111,626
79	1	11,434
80	5	103,609
81	4	51,874
82	2	15,295
83	6	68,228
84	8	119,460
85	4	104,091
86	5	68,813
87	7	91,254
88	2	17,079
89	4	40,308
90	3	35,535
91	3	22,942
92	2	20,513
93	3	15,714
94	2	28,154
95	2	23,950
97	1	6,647
101	1	2,848
Totals	212	\$4,673,006

Average Age at Retirement: 58.1 years.
Average Age Now: 73.5 years.

Comparative Schedules

Active Members in Valuation

Valuation Date June 30	Active Members	Valuation Payroll	Average			
			Age	Service	Pay	% Inc.
1992	162	\$5,139,022	46.1 yrs.	13.8 yrs.	\$31,722	3.8 %
1993	166	5,353,229	45.8	13.7	32,248	1.7
1994	160	5,838,352	45.5	13.5	36,490	13.2
1995	157	5,623,083	44.7	13.4	35,816	(1.8)
1996	156	5,752,354	44.8	13.0	36,874	2.9
1997	163	6,311,705	44.5	12.2	38,722	5.0
1998	162	6,520,030	44.7	12.2	40,247	3.9
1999	167	7,090,025	44.4	11.1	42,455	5.5
2000	173	7,543,720	44.5	11.2	43,605	2.7
2001	169	7,316,759	45.1	11.5	43,294	(0.7)
2002	169	7,868,956	45.8	11.5	46,562	7.5
2003	154	7,324,919	46.6	11.4	47,564	2.2
2004	145	6,969,930	46.7	11.1	48,068	1.1
2005	134	6,532,301	47.0	10.7	48,749	1.4
2006	134	6,783,425	47.5	10.6	50,623	3.8
2007	124	6,557,936	47.2	11.4	52,887	4.5
2008	121	6,647,356	47.5	12.1	54,937	3.9
2009	117	6,726,665	48.3	12.8	57,493	4.7
2010	109	6,371,328	48.8	13.6	58,453	1.7
2011	98	5,865,873	49.0	14.6	59,856	2.4
2012	92	5,299,757	49.5	15.2	57,606	(3.8)
2013	78	4,599,115	48.8	15.6	58,963	2.4
2014	75	4,611,639	49.4	16.4	61,489	4.3
2015	67	4,282,301	49.8	17.1	63,915	3.9
2016	66	4,261,711	50.6	18.1	64,571	1.0

Active Members Added to and Removed from Rolls

Year Ended	Number Added During Year		Terminations During Year										Active Members End of Year
			Normal Retirement		Disability Retirement		Died-in-Service		Withdrawal				
	A	E	A	E	A	E	A	E	Vested	Other	Total		
06/30/12	1	0	4	7.6	0	0.4	0	0.2	3	0	3	2.0	92
06/30/13	0	0	11	9.0	0	0.3	1	0.2	1	1	2	1.8	78
06/30/14	0	0	3	4.8	0	0.3	0	0.2	0	0	0	1.6	75
06/30/15	0	0	4	5.9	0	0.3	0	0.2	3	1	4	1.4	67
06/30/16	0	0	1	5.5	0	0.3	0	0.2	0	0	0	1.3	66

A represents actual number.

E represents expected number.

**Active Members June 30, 2016
By Age and Years of Service**

Age	Years of Service to Valuation Date							No.	Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 & Up		Salary	Average
30-34			2					2	\$ 120,100	\$60,050
35-39		2	3	2				7	402,586	57,512
40-44			4	6	1			11	667,999	60,727
45-49				5				5	315,093	63,019
50-54			4	6	4			14	884,559	63,183
55-59		1		12	2	1	4	20	1,365,689	68,284
60				1				1	43,300	43,300
61			1		2			3	198,991	66,330
63					1			1	109,079	109,079
65+				2				2	154,315	77,158
Totals		3	14	34	10	1	4	66	\$4,261,711	\$64,571

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

Age: 50.6 years

Service: 18.1 years

Annual Pay: \$64,571

Inactive Vested Members June 30, 2016

Tabulated by Age

Age	No.	Estimated Deferred Annual Pensions
43	1	\$ 6,691
46	2	82,912
47	1	12,215
48	1	12,983
49	2	25,999
50	1	28,594
51	1	21,403
52	4	42,011
54	2	20,946
57	3	42,647
59	2	28,664
Totals	20	\$325,065

Average Age Now: 52.3 years.

SECTION C

VALUATION METHODS AND ASSUMPTIONS

Actuarial Cost Method

The actuarial cost method is the procedure for allocating the actuarial present value of benefits and expenses to time periods. The method used for your valuation is known as the *individual entry-age actuarial cost method*, and has the following characteristics:

- The annual normal costs for each individual active member is sufficient to accumulate the value of the member's pension at the time of retirement.
- Each annual normal cost is a constant percentage of the member's year-by-year projected pensionable compensation.

The unfunded actuarial accrued liability was financed as a level dollar of member payroll over a period of 25 years. This unfunded actuarial accrued liability payment reflects any payment expected to be made between the valuation date and the date contributions determined by this report are scheduled to begin.

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

Excess Earning Reserve: An amount equal to the market value of the Excess Earning Reserve is added to the liabilities to assure proper allocation of assets to liabilities.

Actuarial Assumptions Used for the Valuation

The contribution requirements and benefit values of the System are calculated by applying actuarial assumptions to the benefit provisions and demographic information furnished by the Plan Sponsor, using the actuarial cost method described on the previous page.

The principal areas of financial risk which require assumptions about future experiences 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 (without entitlement to a retirement benefit)
- rates of disability among 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. 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.

Valuation Assumptions

The rate of investment is compounded annually net of expenses.

Investment Return	7.50%
Wage Inflation	3.50%
Price Inflation	2.75%
Spread Between Investment Return and Wage Inflation	4.00%
Spread Between Investment Return and Price Inflation	4.75%

These assumptions are used to equate the value of payments due at different points in time.

Economic experience during the last 5 years has been as follows:

	Year Ending					5-Year
	6/30/16	6/30/15	6/30/14	6/30/13	6/30/12	Average
1) Nominal rate of return#	6.0 %	6.0 %	10.1 %	8.0 %	(0.1)%	6.0%
2) Increase in CPI	1.0	0.1	2.1	1.8	1.7	1.3%
3) Average salary increase*	1.1	1.4	4.2	1.7	(3.7)	0.9%
4) Real return:						
- investment purposes	5.0	5.9	8.0	6.2	(1.8)	4.7%
- funding purposes	4.9	4.6	5.9	6.3	3.7	5.1%
- assumption	4.0	4.0	4.0	4.0	4.0	4.0%

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 of expenses, A is the beginning of year asset value and B is the end of year asset value.

* *Based on members who were active both at the beginning and end of the year.*

Valuation Assumptions (Continued)

The rates of salary increase used for individual members are in accordance with the following table. This assumption is used to project a member's current salary to the salaries upon which benefit amounts will be based. Base wage growth was set to 2.5% for 2012-2019.

Sample Salary Adjustment Factors Used to Project Salaries in Years 2020 and Beyond

Sample Ages	Percent Increase in Salary During Next Year	
	Base	Promotion & Seniority
20	3.5 %	3.7 %
25	3.5	3.2
30	3.5	2.7
35	3.5	2.2
40	3.5	1.4
45	3.5	0.7
50	3.5	0.2
55	3.5	0.0

The rates of retirement used to measure the probability of eligible members retiring during the next year were as follows:

Retirement Ages	Percent of Active Members Retiring within Next Year
50	20 %
51	20
52	20
53	20
54	20
55	25
56	25
57	25
58	25
59	25
60	30
61	30
62	30
63	30
64	30
65	100

These rates were first used for the June 30, 2008 valuation.

Valuation Assumptions (Continued)

Mortality. This assumption is used to measure the probabilities of members dying before retirement and the probabilities of each benefit payment being made after retirement. The mortality rates utilized are based upon the RP-2014 tables, as extended, and include a margin for future mortality improvement projected using a fully generational improvement scale. The tables used are as follows:

- **Healthy Pre-Retirement:** The RP-2014 Employee Generational Mortality Tables, with blue-collar adjustments and extended via cubic spline. This table is adjusted backwards to 2006 with the MP-2014 scale. A base year of 2006 with future mortality improvements assumed each year using scale MP-2015.
- **Healthy Post-Retirement:** The RP-2014 Healthy Annuitant Generational Mortality Tables, with blue-collar adjustments and extended via cubic spline. This table is adjusted backwards to 2006 with the MP-2014 scale. A base year of 2006 with future mortality improvements assumed each year using scale MP-2015.
- **Disability Retirement:** The RP-2014 Disabled Mortality Table, extended via cubic spline. This table is adjusted backwards to 2006 with the MP-2014 scale. A base year of 2006 with future mortality improvements assumed each year using scale MP-2015.

Sample Attained Ages	Healthy Pre- Retirement		Healthy Post-Retirement		Disabled Retirement	
	Future Life		Future Life		Future Life	
	Expectancy (Years)*		Expectancy (Years)*		Expectancy (Years)*	
	Men	Women	Men	Women	Men	Women
55	30.29	35.49	29.10	32.02	21.94	25.77
60	25.45	30.49	24.54	27.28	18.89	22.16
65	20.91	25.58	20.21	22.70	15.90	18.57
70	16.72	20.81	16.15	18.34	12.98	15.06
75	12.90	16.27	12.47	14.34	10.25	11.85
80	9.51	12.00	9.28	10.82	7.83	9.11

* Based on retirements in 2016. Retirements in future years will reflect improvements in life expectancy.

These rates were first used for the June 30, 2016 valuation.

Valuation Assumptions (Concluded)

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.

<u>Sample Ages</u>	<u>Years of Service</u>	<u>% of Active Members Separating within Next Year</u>
ALL	0	15.00 %
	1	12.00
	2	10.00
	3	8.00
	4	6.00
25	5 & Over	5.00
30		5.00
35		4.50
40		3.00
45		2.60
50		1.50
55		1.50
60		1.50

The rates were first used for the June 30, 2008 valuation.

Vested members who terminate with a benefit worth less than 100% of their own accumulated contributions were assumed to forfeit their vested benefit.

Rates of disability are represented by the following table:

<u>Sample Ages</u>	<u>Percent Becoming Disabled within Next Year</u>
20	0.03%
25	0.05%
30	0.07%
35	0.13%
40	0.19%
45	0.28%
50	0.45%
55	0.76%
60	1.10%

These rates were first used for the June 30, 1986 valuation. For purposes of the valuation we assume that all disabilities are ordinary, as opposed to non-duty disabilities.

Miscellaneous and Technical Assumptions

June 30, 2016

Marriage Assumption:	100% of males and 100% of females are assumed to be married for purposes of death-in-service benefits. Male spouses are assumed to be three years older than female spouses.
Pay Increase Timing:	Beginning of the valuation year.
Decrement 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.
Decrement Operation:	All decrements the first 5 years of service. Only mortality operates during retirement eligibility.
Service Credit Accruals:	It is assumed that members accrue one year of service credit per year.
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.
Normal Form of Benefit:	Straight life benefit terminating at death of retiree.
Benefit Service:	Exact fractional service is used to determine the amount of benefit payable.
Payroll Adjustment:	Members who did not work the entire plan year had pays adjusted to reasonably reflect a full year's pay.
Assumption Rationale:	Certain actuarial assumptions were based upon the results of an assumption study for the City of St. Clair Shores Employees Retirement System. A report dated August 11, 2016 presented the results of this study. Other assumptions were based upon an experience study dated, September 23, 2008. We believe these assumptions continue to be suitable for purposes of this study.

Glossary

Actuarial Accrued Liability. The difference between (i) the actuarial present value of future plan benefits, and (ii) the actuarial present value of future normal cost. Sometimes referred to as "accrued liability" or "past service liability."

Accrued Service. The service credited under the plan which was rendered before the date of the actuarial valuation.

Actuarial Assumptions. Estimates of future plan 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 plan benefits" between the actuarial present value of future normal cost and the actuarial accrued liability. Sometimes referred to as the "actuarial funding method."

Actuarial Equivalent. A single amount or series of amounts of equal value to another single amount or series of amounts, computed on the basis of the rate(s) of interest and mortality tables used by the plan.

Actuarial Present Value. The amount of funds presently required to provide a payment or series of payments in the future. It is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Amortization. Paying off an interest-bearing liability by means of periodic payments of interest and principal, as opposed to paying it off with a lump sum payment.

Experience Gain (Loss). A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions during the period between two actuarial valuation dates, in accordance with the actuarial cost method being used.

Glossary (Concluded)

Funding Value of Assets. The value of assets derived by spreading the capital value changes (unrealized and realized gain and losses) in equal dollar installments over four years. This treatment removes the timing of investment activities from the valuation process.

Normal Cost. The annual cost assigned, under the actuarial funding method, to current and subsequent plan years. Sometimes referred to as "current service cost." Any payment toward the unfunded actuarial accrued liability is not part of the normal cost.

Reserve Account. An account used to indicate that funds have been set aside for a specific purpose and are not generally available for other uses.

Unfunded Actuarial Accrued Liability. The difference between the actuarial accrued liability and valuation assets. Sometimes referred to as "unfunded accrued liability."

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	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 *	\$44,702,803	\$53,868,304	\$ 9,165,501	83.0 %	\$6,557,936	139.8 %
2008 #	45,610,111	55,873,969	10,263,858	81.6	6,647,356	154.4
2009 #	43,364,264	54,466,034	11,101,770	79.6	6,726,665	N/A
2010 *	41,130,494	55,767,178	14,636,684	73.8	6,371,328	N/A
2011	38,612,848	56,714,374	18,101,526	68.1	5,865,873	N/A
2012	36,435,503	56,805,539	20,370,036	64.1	5,299,757	N/A
2013	37,291,564	57,648,592	20,357,028	64.7	4,599,115	N/A
2014	38,900,248	58,329,977	19,429,729	66.7	4,611,639	N/A
2015 #	39,768,186	59,991,212	20,223,026	66.3	4,282,301	N/A
2016 #	39,907,111	65,444,267	25,537,156	61.0	4,261,711	N/A

Schedule of Employer Contributions

Fiscal Yr. Ended June 30	Val. Yr. Ended June 30	Contribution Rates as Percents of Valuation Payroll	Computed Dollar Contribution Based on Valuation	Annual Required Contribution Based on Actual Payroll
2009	2007 *	26.21 %	\$ 1,822,990	\$ 1,823,179
2010	2008 #	N/A	1,866,531	1,866,531
2011	2009 #	N/A	1,812,824	1,808,157
2012	2010 *	N/A	2,090,393	2,095,060
2013	2011 *	N/A	2,379,350	2,379,350
2014	2012	N/A	2,561,038	2,561,038
2015	2013	N/A	2,512,506	2,512,506
2016	2014	N/A	2,462,821	2,462,821
2017	2015 #	N/A	2,554,204	-
2018	2016 #	N/A	2,644,314	-

* Retirement System amended.

Revised actuarial assumptions and/or methods.

Supplementary Information

The information presented in the supplementary schedules 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 dollar
Remaining amortization period:	25 years (closed)
Asset valuation method:	4-year smoothed market
Actuarial assumptions:	
Investment rate of return	7.5%
Projected salary increases*	3.5% - 7.2%
Includes inflation at	3.5%
Cost-of-living adjustments (Compounded)	
Retirees (effective 7/1/93)	5% cost-of-living increases at age 60 or five years after retirement, whichever is later, with a second increase of 5% five years after the first increase.

* Wage inflation is assumed to be 2.5% for 2015-2019.

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

Retirees and beneficiaries receiving benefits	212
Terminated plan members entitled to but not yet receiving benefits	20
Active plan members	66
Total	298

APPENDIX

Amortization Payoff Schedule

Date	Period	Unfunded Liability (BOY)	UAL Payment \$	Interest	Unfunded Liability (EOY)
June 30, 2016		\$ 25,537,156			
July 1, 2017	25	25,300,135	\$ 2,188,608	\$ 1,816,426	\$ 24,927,953
July 1, 2018	24	24,927,953	2,188,609	1,788,513	24,527,857
July 1, 2019	23	24,527,857	2,188,608	1,758,506	24,097,755
July 1, 2020	22	24,097,755	2,188,608	1,726,248	23,635,395
July 1, 2021	21	23,635,395	2,188,609	1,691,571	23,138,357
July 1, 2022	20	23,138,357	2,188,609	1,654,293	22,604,041
July 1, 2023	19	22,604,041	2,188,608	1,614,219	22,029,653
July 1, 2024	18	22,029,653	2,188,608	1,571,140	21,412,185
July 1, 2025	17	21,412,185	2,188,609	1,524,830	20,748,406
July 1, 2026	16	20,748,406	2,188,609	1,475,047	20,034,844
July 1, 2027	15	20,034,844	2,188,608	1,421,530	19,267,766
July 1, 2028	14	19,267,766	2,188,608	1,363,999	18,443,156
July 1, 2029	13	18,443,156	2,188,609	1,302,153	17,556,700
July 1, 2030	12	17,556,700	2,188,609	1,235,669	16,603,760
July 1, 2031	11	16,603,760	2,188,608	1,164,198	15,579,351
July 1, 2032	10	15,579,351	2,188,609	1,087,368	14,478,109
July 1, 2033	9	14,478,109	2,188,608	1,004,775	13,294,276
July 1, 2034	8	13,294,276	2,188,608	915,987	12,021,655
July 1, 2035	7	12,021,655	2,188,609	820,540	10,653,586
July 1, 2036	6	10,653,586	2,188,608	717,935	9,182,914
July 1, 2037	5	9,182,914	2,188,609	607,635	7,601,940
July 1, 2038	4	7,601,940	2,188,609	489,062	5,902,392
July 1, 2039	3	5,902,392	2,188,608	361,596	4,075,380
July 1, 2040	2	4,075,380	2,188,608	224,570	2,111,342
July 1, 2041	1	2,111,342	2,188,609	77,267	0

Unfunded liability at June 30, 2016 adjusted to July 1, 2017 with payments expected to be made between the valuation date and July 1, 2017. Payment based on 7.50% interest over a period of 25 years beginning on the Fiscal Year starting July 1, 2017.