

**CITY OF KALAMAZOO EMPLOYEES RETIREMENT SYSTEM**  
**SIXTY-FIFTH ANNUAL ACTUARIAL VALUATION**  
**DECEMBER 31, 2016**

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June 6, 2017

The Retirement Investment Committee  
The Board of Trustees  
City of Kalamazoo Employees Retirement System  
Kalamazoo, Michigan

**Re: City of Kalamazoo Employees Retirement System Annual Actuarial Valuation  
as of December 31, 2016 Actuarial Disclosures**

Ladies and Gentlemen:

The results of the December 31, 2016 Annual Actuarial Valuation of the City of Kalamazoo Employees Retirement System are presented in this report.

The computed contribution rate shown on page B-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 D of this report. 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.

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, to determine the employer contribution rate for the fiscal year ending December 31, 2017, and to determine the split of assets, as of December 31, 2016, resulting from the Metro Transit to Central County Transportation Authority (CCTA) spin-off. 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 December 31, 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 City of Kalamazoo 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 the City of Kalamazoo.

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

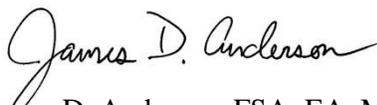
This report has been prepared by actuaries who have substantial experience valuing public employee retirement systems. To the best of our knowledge the information contained in this report is accurate and fairly presents the actuarial position of the City of Kalamazoo Employees Retirement System as of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

James D. Anderson and Rebecca L. Stouffer are Members of the American Academy of Actuaries (MAAA) and meet the Academy's Qualification Standards to render the actuarial opinions contained herein.

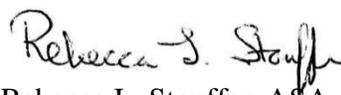
The signing actuaries are independent of the plan sponsor.

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

Respectfully submitted,



James D. Anderson, FSA, EA, MAAA



Rebecca L. Stouffer, ASA, MAAA

JDA/RLS:bd

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**SECTION A**  
**EXECUTIVE SUMMARY**

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## EXECUTIVE SUMMARY

### *Computed Employer Contributions - Fiscal Year Beginning January 1, 2017.*

As expected, based on last year's results, City contributions will not be required for year 2017.

The pensions provided by the City to its employees through the Retirement System are valuable financial benefits. Every year that City employees earn another year of credit toward their pensions, there is a cost associated with that credit. The cost of benefits accruing during the year, known as the normal cost, totals \$5.9 million for fiscal year beginning January 1, 2017. Refer to page B-2 for additional information. The reason that City contributions are not currently needed to support the Retirement System is that favorable experience over decades, and member contributions, have resulted in assets in excess of the accrued liability as of the valuation date. This overfunded liability is currently supporting the pension costs that would otherwise require City contributions. As employees accrue larger pensions by earning additional service each year, the cost of those larger pensions may use up the overfunded liability.

### *2016 Funding Position*

This year valuation assets represent 134.0% of accrued liabilities; last year the ratio was 129.7%. The increase in funding position is primarily the result of small experience gains outlined on page A-3.

### *Contribution Requirements Longer Term*

The System continues to have an overfunding credit and application of the credit brings the required Employer contribution amount to \$0. Contributions are based on a smoothed (actuarial) value of assets that recognize a given year's asset gain or loss over the current and subsequent four years. Looking forward from December 31, 2016, scheduled recognition of prior gains will help strengthen the overfunding credit. Future investment gains could offer additional support to the overfunding. Conversely, future investment losses would reduce the credit. Any significant losses will hasten the emergence of a City contribution requirement.

## EXECUTIVE SUMMARY (CONTINUED)

We understand that certain groups have an employee contribution rate tied to the funded status of the plan. For example, if the plan is less than 120% funded, additional employee contributions are required. The funded percent as of December 31, 2016 is 134.0%. Please note that it is possible that the funded percent could fall below 120% at the next valuation as of December 31, 2017.

### *Reasons for Changes*

There are three general reasons why contribution requirements change from one valuation to the next. The first is a change in the benefits or eligibility conditions of the System. The second is a change in the valuation assumptions used to predict future occurrences and the methods used to finance the benefits. The third is the difference during the year between the System's actual experience and what the assumptions predicted, or the plan experience.

### *Changes in Plan Provisions*

Effective October 1, 2016, the City of Kalamazoo's existing transit operations spun off to become part of the Central County Transportation Authority (CCTA). The CCTA is a stand alone single-employer pension plan.

There have been no plan provision changes since the 2014 valuation.

### *Changes in Cost Methods and Actuarial Assumptions*

As a result of the CCTA's spin-off and the similar relative values of the Market Value of Assets (City and CCTA combined) to the Actuarial Value of Assets (City and CCTA combined), the December 31, 2016 Actuarial Value of Assets was reset to the Market Value. Implications of this action follow:

- 1) Provision of a clean starting point for the separate City and CCTA asset values. The 2017 valuation will smooth investment gains/(losses) separately for the City and CCTA, utilizing the same method in place historically.
- 2) A slight 0.9% increase in total valuation assets as of December 31, 2016.
- 3) Full recognition of historical deferred assets gains/(losses).

## EXECUTIVE SUMMARY (CONTINUED)

### *Changes in Cost Methods and Actuarial Assumptions (Concluded)*

As of December 31, 2016, an aggregate actuarial asset value was developed consistent with prior City of Kalamazoo Employees Retirement System pension valuation methodology. On this aggregate basis, a mark-to-market adjustment of \$5.8 million reset the Actuarial Value of Assets to Market Value of Assets of \$634,741,566 as the valuation date. The aggregate asset value was divided into separate amounts for the City Plan (\$604,411,432) and CCTA Plan (\$30,330,134) to reflect the spinoff of CCTA into its own stand alone pension plan. After spinoff, the funded level of each plan is 134%, based on the methodology described in the Appendix of this report which utilizes the benefits, data, and assumptions used in this valuation and the corresponding Annual Actuarial Valuation of the Central County Transportation Authority Pension Plan as of December 31, 2016.

### *2016 Plan Experience*

There was an experience gain of \$13,351,375 during 2016, primarily due to favorable asset experience, offset in part by more new disability retirements than expected. This represents 2.90% of the 2015 accrued liabilities. The effect of this gain is an increase in the overfunding credit.

### *Causes of the Gain*

The market value of assets returned 12.67% in 2016 and the return on the (smoothed) valuation assets was 11.23%. Net investment income on the smoothed basis was larger than the long-term assumption of 7.5%, resulting in a gain of \$15,174,880. The remaining loss of \$1,823,505 represents demographic experience difference than assumed, primarily resulting from the reasons described above.

Investment gain (loss)	\$ 15,174,880
Remaining gain (loss)	<u>(1,823,505)</u>
Gain (loss) from all causes	\$ 13,351,375

## EXECUTIVE SUMMARY (CONCLUDED)

### *Other Observations*

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 for the plan), it is expected that:

- (1) total normal cost amounts as a percentage-of-payroll will remain approximately level year-to-year;
- (2) employer normal cost amount as a percentage-of-payroll will fluctuate as the population make up and funded ratio of the plan changes (employee contributions for certain groups are tied to the plan's funding position.);
- (3) the overfunding credit will be used up over a period of years; and
- (4) the funded status of the plan will decrease towards a 100% funded ratio.

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 regard 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.

### *Conclusion*

For years, the overfunded position enjoyed by the System has generated a funding credit which allowed the City to temporarily reduce (and then temporarily eliminate) annual contributions to the System trust.

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**SECTION B**  
**VALUATION RESULTS**

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## COMPUTED CONTRIBUTIONS TO PROVIDE BENEFITS

The Retirement System is supported by contributions from the City (when required) and active members and by the investment income earned on System assets. Member contribution rates are determined by the benefit provisions of the System and are summarized in Section B of this report. The City provides an actuarially determined contribution, the remainder, if any, needed to meet the financial objective.

Member and City contributions cover both (i) normal cost, and (ii) financing of the unfunded accrued liability over a period of future years. The normal cost is the portion of System costs allocated to the current year by the valuation method described in Section D. The unfunded accrued liability is the portion of System costs not covered by present System assets and future normal costs.

For a plan that is overfunded, contribution income needs to cover the normal cost less an amortization credit on the overfunding. When a plan is extremely overfunded, the amortization credit can completely offset the normal cost, eliminating the need for employer contribution income. This can persist for years as long as investment income is sufficient to maintain the overfunding.

When contributions are once again required, we recommend one of the following procedures for determining City contributions to the Retirement System.

- (1) Contribute dollar amounts for a period which are equal to the City's percent-of-payroll contribution requirements on page B-2 multiplied by the covered active member payroll for the period. Adjustments should be made as necessary to exclude items of pay that are not covered compensation for Retirement System benefits and to include non-payroll payments that are covered compensation.
- (2) Contribute the dollar amounts on page B-2.

**COMPUTED CONTRIBUTIONS TO PROVIDE BENEFITS  
EXPRESSED AS PERCENTS AND DOLLARS OF ACTIVE MEMBER PAYROLL**

<u>Contributions for the Year Beginning January 1,</u>	<u>2017&amp;</u>	<u>2016</u>
Normal cost of benefits		
Age & service	15.59 %	15.03 %
Disability	1.28	1.29
Pre-retirement survivor	0.37	0.37
Refunds of member contributions	0.20	0.19
Total normal cost	17.44	16.88
Administrative expense allowance	0.65	0.65
Less: Member contributions*	3.17	2.95
Employer normal cost	14.92	14.58
Unfunded actuarial accrued liabilities^	(55.29)	(43.34)
<b>Employer Contribution Requirement@</b>	<b>(40.37)</b>	<b>(28.76)</b>

<u>Contributions for the Year Beginning January 1,</u>	<u>2017&amp;</u>	<u>2016</u>
Normal cost of benefits		
Age & service	\$ 5,289,422	\$ 5,801,080
Disability	434,282	497,897
Pre-retirement survivor	125,535	142,808
Refunds of member contributions	67,857	73,334
Total normal cost	5,917,096	6,515,119
Administrative expense allowance	220,534	250,878
Less: Member contributions*	1,075,527	1,138,602
Employer normal cost	5,062,103	5,627,395
Unfunded actuarial accrued liabilities^	(18,758,957)	(16,727,799)
<b>Employer Contribution Requirement@</b>	<b>\$ (13,696,854)</b>	<b>\$ (11,100,404)</b>
<b>Valuation Payroll</b>	<b>\$ 32,780,965</b>	<b>\$ 37,291,474</b>
<b>Recommended Employer Contribution</b>	<b>\$ 0</b>	<b>\$ 0</b>

\* Weighted average of various contribution rates.

@ As the System cannot contribute back to the employer, no employer contribution is required. Payroll used to develop the Employer Contribution Requirement is adjusted for pay increases assumed to occur between the valuation date and the fiscal year of contribution.

^ Page B-4 displays the unfunded accrued liabilities (or overfunding) that are amortized by the contribution rates shown above.

& After spin-off of certain members and plan assets to the CCTA Pension Plan.

## HISTORY OF CITY'S CONTRIBUTION RATES

Fiscal Year	Valuation Date Dec. 31	Contribution as Percent of Valuation Payroll	Recommended	Actual
1998 *	1997	0.00 %	\$ 0	\$ 0
1999 *	1998	0.00	0	0
2000 *@	1999	0.00	0	0
2001 *	2000	0.00	0	0
2002 *	2001	0.00	0	0
2003 *@	2002	0.00	0	0
2004 *	2003	0.00	0	0
2005 @	2004	0.00	0	0
2006 *@	2005	0.00	0	0
2007 *	2006	0.00	0	0
2008 *	2007	0.00	0	0
2009 *	2008	0.00	0	0
2010 *@	2009	0.00	0	0
2011 *@	2010	0.00	0	0
2012 *	2011	0.00	0	0
2013 *#	2012	0.00	0	1,811,492
2014 @#	2013	0.00	0	760,912
2015 #	2014	0.00	0	1,602,053
2016	2015	0.00	0	0
2017 &	2016	0.00	0	!

\* *Retirement System amended.*

@ *Revised actuarial assumptions and/or methods.*

# *Actual Employer contributions were to cover the cost of lump sum payments in relation to the Early Retirement Initiative.*

! *Not yet available.*

& *After spin-off of certain members and plan assets to the CCTA Pension Plan.*

## UNFUNDED ACCRUED LIABILITY

	<b>Year Ending December 31,</b>	
	<b>2016&amp;</b>	<b>2015</b>
A. Accrued Liability		
1. For Retirees and Beneficiaries	\$334,517,262	\$333,147,365
2. For Vested Terminated Members	4,802,098	4,352,733
3. For Present Active Members		
a. Value of expected future benefit payments	157,640,637	172,211,864
b. Value of future normal costs	46,029,357	49,578,339
c. Active member liability: (a) - (b)	111,611,280	122,633,525
4. Total	450,930,640	460,133,623
B. Present Assets		
1. Valuation Basis	604,411,432	596,998,070
2. Market Basis	604,411,432	589,527,061
C. Unfunded Accrued Liability (Excess Assets)		
1. Valuation Basis: (A.4) - (B.1)	(153,480,792)	(136,864,447)
2. Market Basis: (A.4) - (B.2)	(153,480,792)	(129,393,438)
D. Funded percent		
1. Valuation Basis: (B.1) / (A.4)	134.0%	129.7%
2. Market Basis: (B.2) / (A.4)	134.0%	128.1%

&     *After spin-off of certain members and plan assets to the CCTA Pension Plan.*

## 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 Percentage of Covered Payroll [(b)-(a)]/(c)
12/31/07 @	\$500,788,244	\$327,242,870	\$ (173,545,374)	153.0%	\$42,889,419	(404.6)%
12/31/08 @	506,592,573	344,799,153	(161,793,420)	146.9	44,159,590	(366.4)
12/31/09 @	509,060,409	358,160,400	(150,900,009)	142.1	44,435,753	(339.6)
12/31/10 @	518,339,022	367,423,552	(150,915,470)	141.1	43,007,800	(350.9)
12/31/11 @	509,931,421	380,802,126	(129,129,295)	133.9	42,305,663	(305.2)
12/31/12	505,234,953	420,711,365	(84,523,588)	120.1	36,538,969	(231.3)
12/31/13	547,923,629	432,148,526	(115,775,103)	126.8	36,331,892	(318.7)
12/31/14 #	580,220,033	452,381,149	(127,838,884)	128.3	37,198,788	(343.7)
12/31/15	596,998,070	460,133,623	(136,864,447)	129.7	37,291,474	(367.0)
12/31/16 #&	604,411,432	450,930,640	(153,480,792)	134.0	32,780,965	(468.2)

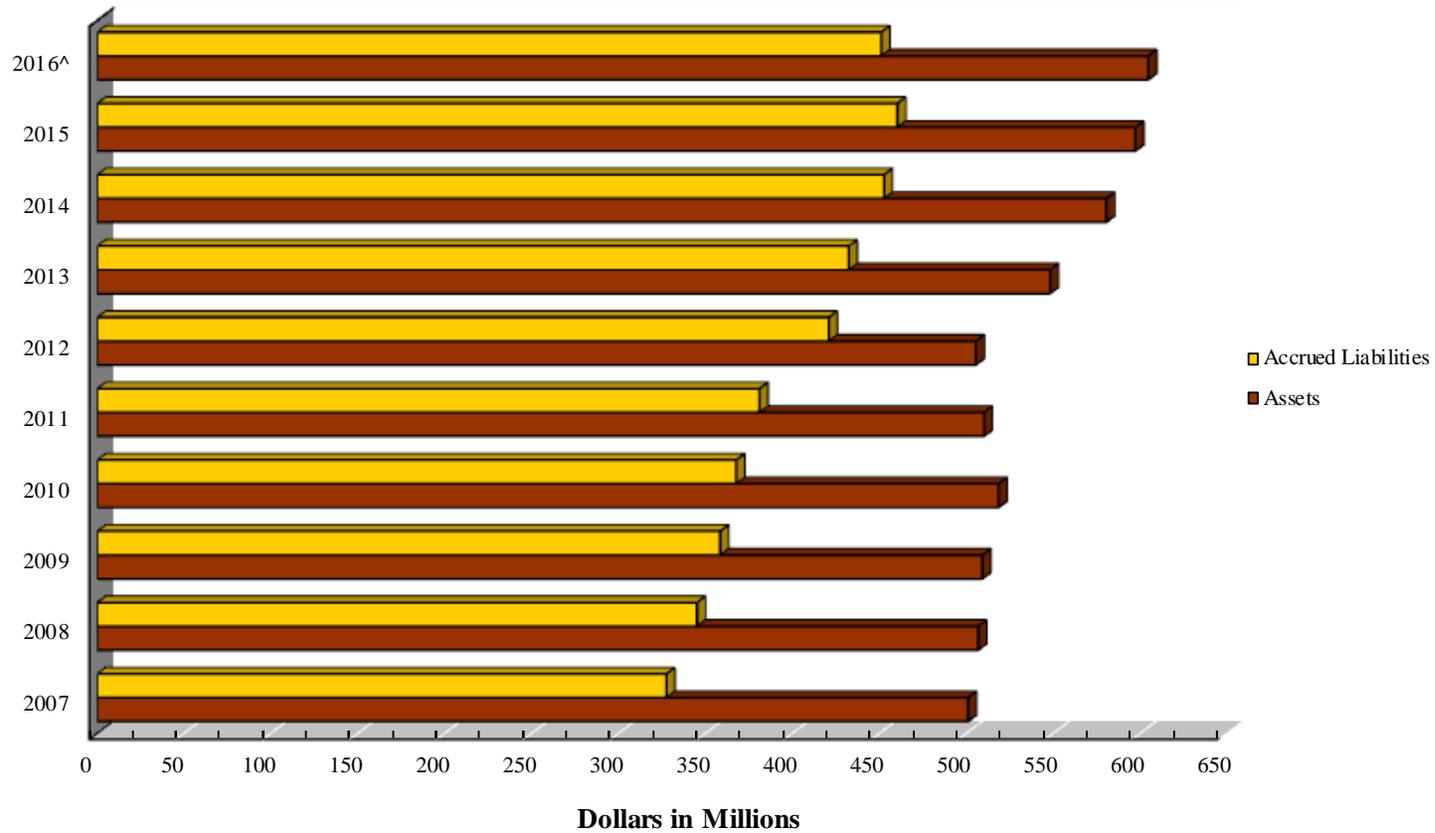
@ Plan amended.

# Certain assumptions revised.

& After spin-off of certain members and plan assets to the CCTA Pension Plan.

## ASSETS AND ACCRUED LIABILITIES

**Valuation Year**



2007 assets equaled 153% of accrued liabilities.  
 2016^ assets equaled 134% of accrued liabilities.

^ After spin-off of certain members and plan assets to the CCTA Pension Plan.

**DEVELOPMENT OF EXPERIENCE GAIN (LOSS)  
YEAR ENDED DECEMBER 31, 2016**

Actual experience will never (except by coincidence) exactly match assumed experience. It is hoped that gains and losses will cancel each other over a period of years, but sizable year-to-year fluctuations are common. Detail on the development of the experience gain (loss) is shown below.

	<b>Year Ending December 31,</b>	
	<b>2016</b>	<b>2015</b>
(1) UAAL* at start of year	\$(136,864,447)	\$(127,838,884)
(2) Normal cost from prior year	5,746,503	6,492,446
(3) Actual contributions**	1,100,129	2,686,851
(4) Interest accruals on (1), (2), and (3)	(10,092,694)	(9,446,926)
(5) Expected UAAL before changes: (1) + (2) - (3) + (4)	(142,310,767)	(133,480,215)
(6) Impact of CCTA spin-off	7,701,861	0
(7) Change from revised actuarial assumptions and/or methods	(5,520,511)	0
(8) Expected UAAL after changes: (5) + (6) + (7)	(140,129,417)	(133,480,215)
(9) Actual UAAL at end of year	(153,480,792)	(136,864,447)
(10) Gain (loss): (8) - (9)	13,351,375	3,384,232
(11) Gain (loss) as percent of actuarial accrued liabilities at start of year	2.90%	0.75%

\* *Unfunded Actuarial Accrued Liabilities.*

\*\* *The actual contribution includes an employer contribution of \$1,602,053 in 2015, to cover the cost of lump sum payments related to the Early Retirement Initiative.*

<b>2016 Gain (Loss)</b>		
<b>Totals</b>	<b>Investment</b>	<b>Non-Investment</b>
\$13,351,375	\$15,174,880	\$(1,823,505)

## DEVELOPMENT OF VALUATION ASSETS

Year Ended December 31:	2014	2015	2016	2017	2018	2019	2020
A. City: Valuation Assets Beginning of Year	\$547,923,629	\$580,220,033	\$596,998,070				
B. City + CCTA: Market Value End of Year	625,472,082	589,527,061	634,741,566				
C. City: Market Value Beginning of Year	610,613,257	625,472,082	589,527,061				
D. Non-Investment Net Cash Flow	(26,206,621)	(25,970,504)	(27,725,487)				
E. Investment Income							
E1. Market Total: B - C - D	41,065,446	(9,974,517)	72,939,992				
E2. Amount for Immediate Recognition (7.5%)	40,111,524	42,542,609	43,735,149				
E3. Amount for Phased-In Recognition: E1-E2	953,922	(52,517,126)	29,204,843				
F. Phased-In Recognition of Investment Income							
F1. Current Year: 0.2 x E3	190,784	(10,503,425)	5,840,969				
F2. First Prior Year	13,562,349	190,784	(10,503,425)				
F3. Second Prior Year	6,845,641	13,562,349	190,784	0			
F4. Third Prior Year	(9,889,418)	6,845,641	13,562,349		0		
F5. Fourth Prior Year	7,682,145	(9,889,417)	6,845,641	0	0	0	
F6. Mark to Market	0	0	5,797,516	0	0	0	0
F7. Total Phased-In Recognition	18,391,501	205,932	21,733,834	0	0	0	0
G. City + CCTA: Valuation Assets End of Year: A + D + E2 + F7	580,220,033	596,998,070	634,741,566				
H. Difference between Market & Valuation Assets: B - G	45,252,049	(7,471,009)	0	0	0	0	0
I. Valuation Asset Recognized Rate of Return	10.94%	7.54%	11.23%				
J. Market Value Recognized Rate of Return	6.87%	(1.63)%	12.67%				
K. End of Year Assets By Plan (as determined in Appendix A of the City of Kalamazoo Employees Retirement System valuation report)							
K1. City							
a. Market Value of Assets			\$604,411,432				
b. Funding Value of Assets			604,411,432				
K2. CCTA							
a. Market Value of Assets			30,330,134				
b. Funding Value of Assets			30,330,134				

The Valuation 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 5-year period. During periods when investment performance exceeds the assumed rate, Valuation Assets will tend to be less than Market Value. During periods when investment performance is less than the assumed rate, Valuation Assets will tend to be greater than Market Value. The Valuation Assets are unbiased with respect to Market Value. At any time, it may be either greater or less than Market Value. If assumed rates are exactly realized for 4 consecutive years, it will become equal to Market Value.

## VALUATION ASSET GROWTH HISTORY

Year	Net Contribution Income	Net Investment Return	Benefit Payments and Refunds	Year End Assets*
1997	\$ 2,453,815	\$ 47,847,856	\$ 8,327,995	\$ 242,615,527
1998	1,748,664 @	33,752,473	9,115,891	269,000,773 @
1998	--	--	--	267,200,773 #
1999	1,474,740	45,017,668	9,993,770	303,699,411
2000	1,302,970	36,510,420	10,069,664	331,443,137
2001	1,261,691	27,898,652	11,446,161	349,157,319
Five- Year Period	8,241,880	191,027,069	48,953,481	
2002	1,313,297	9,341,851	11,157,971	348,654,496
2003	1,314,089	23,609,527	12,390,484	361,187,628
2004	1,360,815	41,621,866	13,555,032	390,615,277
2005	1,232,973	44,444,158	13,726,647	422,565,761
2006	1,238,628	53,842,184	14,365,610	463,280,963
Five- Year Period	6,459,802	172,859,586	65,195,744	
2007	1,344,408	52,089,141	15,926,268	500,788,244
2008	1,445,963	20,324,800	15,966,434	506,592,573
2009	1,368,975	17,762,035	16,663,174	509,060,409
2010	1,432,395	24,986,635	17,140,417	518,339,022
2011	1,268,330	8,714,595	18,390,526	509,931,421
Five- Year Period	6,860,071	123,877,206	84,086,819	
2012	951,916	19,419,524	25,067,907 &	505,234,954
2013 \$	2,652,485	67,194,702	27,158,512 &	547,923,629
2014 \$	1,595,508	58,503,025	27,802,129 &	580,220,033
2015 \$	2,386,196	42,748,541	28,356,700	596,998,070
2016	771,383	65,468,983	28,496,870	634,741,566
2016	--	--	--	604,411,432 ^
Five- Year Period	8,357,488	253,334,775	136,882,118	

\* Does not reflect future contributions to purchase service.

@ Before transfer to County.

# After transfer of \$1,800,000 to County.

& Includes special distributions under the ERI.

\$ Includes an employer contribution of \$1,811,492 in 2013, \$760,912 in 2014, and \$1,602,053 in 2015 to cover the cost of lump sum payments related to the Early Retirement Initiative.

^ After transfer of \$30,330,134 to CCTA.

**VALUATION ASSET INVESTMENT EXPERIENCE HISTORY**  
**(\$000 OMITTED)**

Year	Assumed Net Investment Income		Net Dividends and Interest		Recognized Gains (Losses) *		Net Investment Income		Experience Gain (Loss)
	Amount	%	Amount	%	Amount	%	Amount	%	
1997	\$ 14,828	7.50 %	\$6,244	3.16 %	\$ 41,604	21.04 %	\$ 47,848	24.20 %	\$ 33,020
1998	17,920	7.50	6,259	2.62	27,494	11.51	33,752	14.13	15,833
1999	19,721	7.50	7,844	2.98	37,173	14.14	45,018	17.12	25,297
2000	22,449	7.50	8,675	2.90	27,836	9.30	36,510	12.20	14,062
2001	24,477	7.50	5,705	1.75	22,171	6.79	27,876	8.54	3,398
2002	25,818	7.50	5,113	1.49	4,229	1.21	9,342	2.70	(16,476)
2003	25,734	7.50	5,790	1.69	17,819	5.21	23,610	6.90	(2,124)
2004	26,632	7.50	7,356	2.07	34,266	9.65	41,622	11.72	14,989
2005	28,828	7.50	15,466	4.02	28,978	7.54	44,444	11.56	15,617
2006	31,200	7.50	21,321	5.13	32,521	7.82	53,842	12.94	22,642
2007	34,199	7.50	24,659	5.41	27,430	6.02	52,089	11.42	17,890
2008	37,015	7.50	14,940	3.03	5,385	1.09	20,325	4.12	(16,690)
2009	37,421	7.50	7,655	1.53	10,107	2.03	17,762	3.56	(19,659)
2010	37,590	7.50	9,773	1.95	15,214	3.04	24,987	4.99	(12,604)
2011	38,233	7.50	9,511	1.87	(796)	(0.16)	8,715	1.71	(29,519)
2012	37,341	7.50	14,063	2.82	5,357	1.08	19,420	3.90	(17,921)
2013	36,974	7.50	13,899	2.82	53,296	10.81	67,195	13.63	30,221
2014	40,112	7.50	13,406	2.51	45,097	8.43	58,503	10.94	18,392
2015	42,543	7.50	14,413	2.54	28,336	5.00	42,749	7.54	206
2016^	43,735	7.50	14,868	2.55	50,601	8.68	65,469	11.23	21,734

\* In addition to net interest and dividends.

^ Experience includes impact of Mark-to-Market.

## DEVELOPMENT OF VALUATION INVESTMENT GAIN (LOSS) YEAR ENDED DECEMBER 31, 2016

The December 31, 2015 valuation assumed an average 7.5% net return on valuation assets for future years. Net investment return in excess of 7.5% represents a gain. If net investment return falls short of 7.5%, the difference between an income of 7.5% and the net return represents a loss. For the year ended December 31, 2016, the valuation anticipated investment return of \$43,735,149 (see item E2 on page B-8). Total phased-in recognition amounted to a gain of \$15,936,318 for the year (see item F7-F6 on page B-8), resulting in a return of 10.23% (11.23% after reflecting the mark-to-market) on a valuation basis (see item I on page B-8).

Please note that this analysis uses asset values and investment income as defined for the actuarial valuation (dollar weighted). It is not, therefore, appropriate as a measure of manager performance.

### RATES OF RETURN AND CHANGE IN PAYS AND LIABILITIES

	Year Ended December 31,					5-Year Average*
	2016	2015	2014	2013	2012	
Increase in average salary#	3.6%	0.7%	2.3%	4.6%	4.6%	3.1%
Return on assets^	11.2	7.5	10.9	13.6	3.9	9.4
Liability growth !	3.1	1.7	1.9	2.7	10.5	3.9

\* *Compound rate of increase.*

# *For members employed throughout the most recent two years.*

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

! *The liability growth for the year ended December 31, 2014 is before reflecting a change to the assumptions and methods resulting from an experience review dated February 19, 2015. The liability growth for the year ended December 31, 2016 is net of the CCTA transfer liability.*

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## SECTION C

### SUMMARY OF THE INFORMATION SUBMITTED FOR THE VALUATION

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# BRIEF SUMMARY OF BENEFIT PROVISIONS\*

## AS REPORTED FOR DECEMBER 31, 2016 VALUATION

### Eligibility

### Amount

#### REGULAR RETIREMENT (no reduction factor for age)

General: Age 57 with 25 years of service, or age 62 with 10 years of service. AFSCME members only may also retire at age 60 with 20 years of service.

Total service multiplied by:

2.1% of FAC – KMEA – effective 1/1/08  
2.1% of FAC – AFSCME – effective 10/2/07  
2.3% of FAC – Exempt members  
2.1% of FAC – Other General members–CSO – effective 1/1/08  
2.7% of FAC – Public Safety members

FAC (Final Average Compensation) – Highest 3 consecutive years out of the last 10.

Public Safety: 25 years of service or age 50 with 10 years of service.

Maximum benefit for Public Safety members is equal to 70.2% of FAC.

#### EARLY RETIREMENT (age reduction factor used)

General: Age 55 with 15 years of service.

Computed as a regular retirement but reduced by 4/10 of 1% for each month and fraction of a month by which retirement precedes age 62 if less than 25 years of service or age 57 if 25 or more years of service.

Public Safety: 20 years of service.

2% of final average compensation multiplied by years of credited service.

#### DEFERRED RETIREMENT

10 years of service for most members, 5 years for Exempt hired before 9/1/2010, 9 years for AFSCME and 8 years for KMEA hired before 1/1/2009. Benefit begins at age 62 for General employees, and at age 50 for Public Safety employees.

General: Computed as a regular or early retirement but based upon service and final average compensation at termination date.

Public Safety: Computed as early retirement.

#### NON-DUTY DEATH-IN-SERVICE

10 years of service for most members, 5 years for Exempt hired before 9/1/2010, 9 years for AFSCME and 8 years for KMEA hired before 1/1/2009.

General: Computed as a regular retirement but actuarially reduced in accordance with a 100% joint and survivor election.

Public Safety: A benefit of 33-1/3% of final compensation is paid to the surviving spouse. Unmarried children under 18 years of age receive equal shares of 25% of final compensation.

#### DUTY DEATH-IN-SERVICE

Payable to the survivors of a member who died in the line of duty.

A benefit of 33-1/3% of final compensation is paid to the surviving spouse. Unmarried children under 18 years of age receive equal shares of 25% of final compensation. Worker's compensation payments are offset.

\* This represents a brief summary of Plan provisions. As always official Plan documents, including the Ordinance and any applicable Collective Bargaining Agreements, will ultimately govern the benefits payable from the Plan.

**BRIEF SUMMARY OF BENEFIT PROVISIONS\***  
**AS REPORTED FOR DECEMBER 31, 2016 VALUATION (CONTINUED)**

**Eligibility**

**Amount**

**NON-DUTY DISABILITY**

10 years of service for most members, 5 years for General Exempt hired before 9/1/2010, 9 years for AFSCME and 8 years for KMEA hired before 1/1/2009.

Computed as regular retirement. Reduced on a dollar-for-dollar basis by amount of worker's compensation, if any.

**DUTY DISABILITY**

No age or service requirements.

General: Computed as regular retirement with additional service credit granted from day of actual retirement to date of voluntary retirement eligibility.

Public Safety: Computed as regular retirement. During worker's compensation period benefit cannot exceed the difference between final compensation and worker's compensation.

**DEATH AFTER RETIREMENT**

Spouse of Public Safety member retired on or after July 1, 1972.

50% of the regular retirement benefit the deceased retiree was receiving.

**POST-RETIREMENT ADJUSTMENTS**  
**(Eligibility for PRAs vary by retirement type)**

AFSCME members who retire on and after 10/25/1999.

1% increases compounded annually, beginning one year after retirement; 2% compounded annually beginning at age 75.

KMEA members.

1.5% increases compounded annually, beginning the latter of the Retirees 64<sup>th</sup> birthday and one year after retirement; 2% compounded annually beginning at age 75 (effective in 2002).

Public Safety members who retired on and after 1/1/95 with 25 or more years of service.

2% increases compounded annually.

Exempt members.

1.5% increases compounded annually one year after retirement for members who elected to contribute by May 2006.

**13TH CHECKS**

Retired by 12/31/1999; retired at least 5 years; have attained age 70 prior to June 1 of the year preceding the periodic payment to be made; had at least 25 years of service with the City; ineligible for post-retirement benefit increases; pension less than \$20,000. Continuation of this program is conditional as described in the ordinance.

The periodic payment described herein shall be made in June every third year, commencing 2001; however, no payment shall be made in any year in which the fund's actuary projects (based upon a valuation of the fund as of December 31 of the prior year) the need for City contributions to the fund (for one or more actuarial grouping) within 10 years of the projection nor if the actuary recommends a contribution by the City (for one or more actuarial grouping) for that year. In the event a periodic payment is not made in a year in which it would otherwise occur (because of the actuary's projection or recommendation), then the payment shall be made in the next year in which no such actuarial projection or recommendation is made. In the event that a periodic payment is so delayed, future periodic payments shall be made every third year thereafter (so long as not prohibited by an actuarial projection or recommendation).

\* This represents a brief summary of Plan provisions. As always official Plan documents, including the Ordinance and any applicable Collective Bargaining Agreements, will ultimately govern the benefits payable from the Plan.

**BRIEF SUMMARY OF BENEFIT PROVISIONS\***  
**AS REPORTED FOR DECEMBER 31, 2016 VALUATION (CONCLUDED)**

**Eligibility**

**Amount**

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**MEMBER CONTRIBUTIONS**

AFSCME members:	1% - effective 10/2/06. If funding % goes below 120% contribution rate reverts to 2%.
KMEA members:	1% of AC.
Exempt members:	1.5% of AC, 3% of AC for Exempt Members hired after 6/1/2006, 3.5% for Exempt Members who signed up for the PRA by May of 2006.
Non-Sworn Public Safety members:	1% of AC.
Sworn Public Safety members:	4.5% of AC. If funding % goes below 120% contribution rate reverts to 6.5%.

**CITY CONTRIBUTIONS**

Actuarially determined amounts, which, together with member contributions, are sufficient to cover both (i) normal costs of the plan, and (ii) financing of unfunded accrued benefit values over a selected period of future years.

*\* This represents a brief summary of Plan provisions. As always official Plan documents, including the Ordinance and any applicable Collective Bargaining Agreements, will ultimately govern the benefits payable from the Plan.*

**REPORTED FINANCIAL INFORMATION**  
**YEAR ENDED DECEMBER 31, 2016**  
**MARKET VALUE**

**City and CCTA Combined**

**Income and Expenses**

**Revenues:**

a. Member contributions	\$ 1,100,129	
b. Employer contributions	0	
c. Interest and dividends	16,890,114	
d. Gain on sale of investments	15,000,871	
e. Unrealized gains and losses	43,071,080	
f. Miscellaneous	<u>1,427</u>	
g. Total		<u>\$76,063,621</u>

**Expenditures:**

a. Refunds of member contributions	22,652	
b. Benefits paid	28,474,218	
c. Administrative expenses	328,746	
d. Investment expenses	<u>2,023,500</u>	
Total		<u>30,849,116</u>

**Reserve Increase:**

Total revenues minus total expenditures	<u><u>\$45,214,505</u></u>
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Please note that the above exhibit shows the combined experience for the City of Kalamazoo and the CCTA.

**REPORTED FINANCIAL INFORMATION (VALUATION BASIS)  
YEAR ENDED DECEMBER 31, 2016**

**City and CCTA Combined**

**Assets and Reserves on Valuation Basis**

<b>Assets:</b>		<b>Reserve Accounts:</b>	
a. Cash or equivalents	\$ 251,608	a. Member contributions	\$ 43,640,870
b. Receivables net of payables	(67,186)	b. Employer contributions	243,144,234
c. Stocks	435,933,185	c. Retired benefit payments	347,956,463
d. Fixed income	165,345,079		
e. Real Estate Investment Fund	33,278,881		
f. Funding Value Adjustment	<u>0</u>		
 Total	 <u><u>\$634,741,567</u></u>	 Total	 <u><u>\$634,741,567</u></u>

The value of future benefit payments to retirees and beneficiaries as of December 31, 2016 is \$348,294,970. The value of the Reserve for Retired Benefit Payments was \$347,956,463. The figures below compare the retired liabilities to the reported retiree reserve balance.

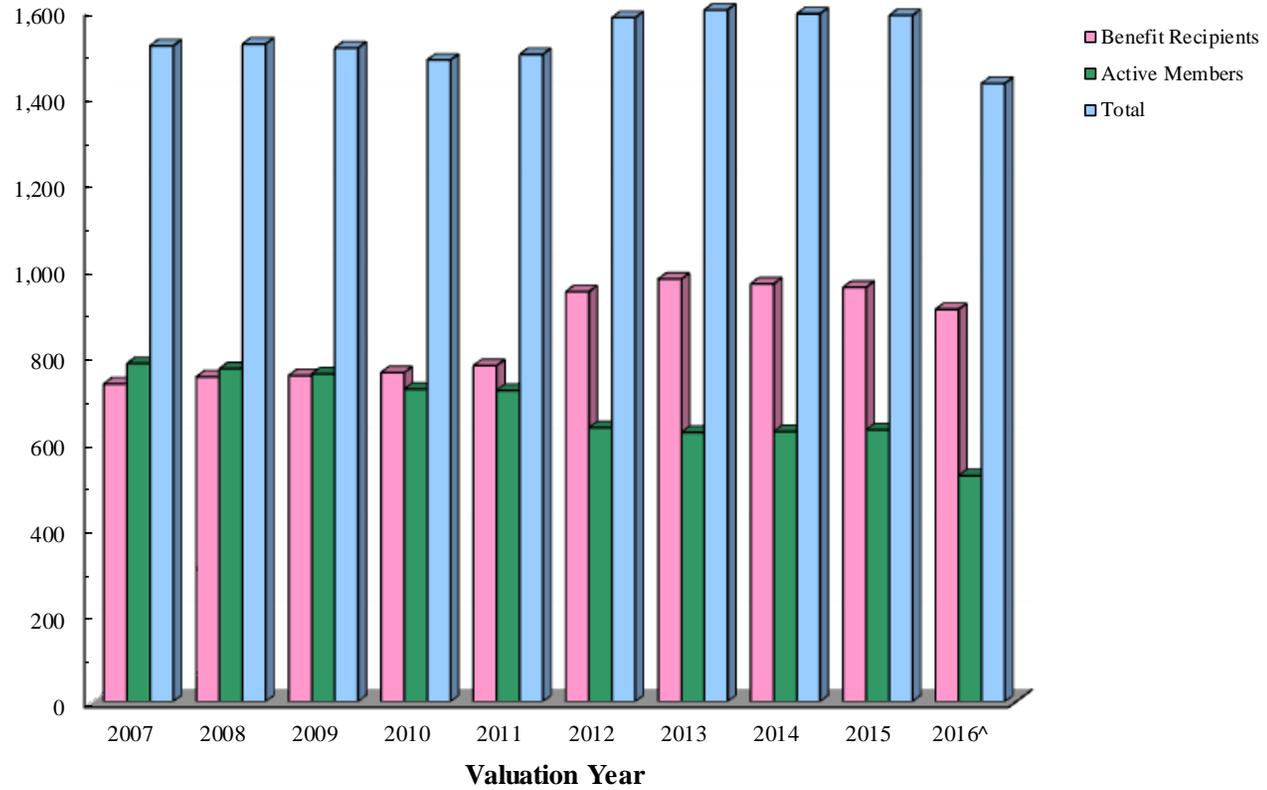
<u>Accrued Liability</u>	<u>Reported Retiree Reserve</u>	<u>Unfunded Liability (Excess Assets)</u>
\$ 348,294,970	\$ 347,956,463	\$ 338,507

Our valuation assumes that amounts equal to the unfunded retiree liabilities for all divisions have been transferred effective January 1, 2017 from the employer reserves to the retiree reserves, to fully fund the retiree accrued liabilities.

Please note that the above exhibits show the combined experience for the City of Kalamazoo and the CCTA.

# ACTIVE MEMBERS & BENEFIT RECIPIENTS

**Covered Persons**



<sup>^</sup> After spin-off of certain members and plan assets to the CCTA Pension Plan.

**RETIREMENTS DURING 2016**  
**TABULATED BY ANNUAL AMOUNT OF BENEFIT**

<b>Annual Amount</b>	<b>Age and Service</b>	<b>Disability</b>	<b>Survivors</b>	<b>Totals</b>
\$22,000-\$23,999	1			1
24,000 - 25,999	2			2
26,000 - 27,999	3			3
30,000 - 31,999	1			1
34,000 - 35,999	1			1
38,000 - 39,999		1		1
50,000 - 51,999	1	1		2
52,000 - 53,999	2	1		3
54,000 - 55,999	3			3
58,000 - 59,999	1			1
62,000 - 63,999	2			2
70,000 - 71,999	1			1
72,000 - 73,999	3			3
74,000 - 75,999	1			1
<b>Totals</b>	<b>22</b>	<b>3</b>	<b>0</b>	<b>25</b>

*This exhibit does not include new alternate payees due to EDRO or new beneficiaries from retirees.*

**RETIREMENTS DURING 2016  
TABULATED BY AGE NEAREST BIRTHDAY  
AND TYPE OF RETIREMENT**

Ages	Age and Service		Disability		Survivors		Totals	
	No.	Annual Allowances	No.	Annual Allowances	No.	Annual Allowances	No.	Annual Allowances
32			1	\$ 50,357			1	\$ 50,357
36			1	38,764			1	38,764
47	2	\$ 84,894					2	84,894
48	2	143,039					2	143,039
49	6	361,533					6	361,533
50	1	72,300	1	53,185			2	125,485
53	1	72,470					1	72,470
55	1	54,100					1	54,100
56	3	112,361					3	112,361
57	1	25,109					1	25,109
58	1	58,650					1	58,650
59	2	52,857					2	52,857
60	2	48,896					2	48,896
<b>Totals</b>	<b>22</b>	<b>\$ 1,086,210</b>	<b>3</b>	<b>\$ 142,306</b>	<b>0</b>	<b>\$ -</b>	<b>25</b>	<b>\$ 1,228,516</b>

*This exhibit does not include new alternate payees due to EDRO or new beneficiaries from retirees.*

**RETIREES AND BENEFICIARIES AS OF DECEMBER 31, 2016**  
**TABULATED BY NEAREST AGE AND TYPE OF RETIREMENT\***

Attained Age	Age and Service		Disability		Survivors		Totals	
	No.	Annual Allowances	No.	Annual Allowances	No.	Annual Allowances	No.	Annual Allowances
0 - 39			2	\$ 89,121	3	\$ 58,602	5	\$ 147,723
40 - 44			2	110,920			2	110,920
45 - 49	23	\$ 1,252,533	2	112,909			25	1,365,442
50 - 54	55	2,678,064	10	347,578	1	22,429	66	3,048,071
55 - 59	103	4,520,957	8	238,386	1	32,934	112	4,792,277
60 - 64	123	5,037,226	6	162,835	2	22,949	131	5,223,010
65 - 69	167	5,779,784	12	194,619	3	34,237	182	6,008,640
70 - 74	118	3,631,083	4	43,078	1	3,654	123	3,677,815
75 - 79	100	2,060,224	4	19,959	3	31,705	107	2,111,888
80	18	259,044					18	259,044
81	11	154,540	1	10,705			12	165,245
82	15	217,983					15	217,983
83	15	171,675					15	171,675
84	10	97,585	2	11,014			12	108,599
85	9	146,068	1	7,943			10	154,011
86	11	134,801					11	134,801
87	9	87,442					9	87,442
88	10	108,235					10	108,235
89	4	32,607	2	9,732			6	42,339
90 & Over	33	253,501	2	23,562			35	277,063
<b>Totals</b>	<b>834</b>	<b>\$26,623,352</b>	<b>58</b>	<b>\$ 1,382,361</b>	<b>14</b>	<b>\$ 206,510</b>	<b>906</b>	<b>\$28,212,223</b>

\* The retired members with service in more than one group are displayed as if each person were receiving two pensions.

Average Age at Retirement: 53.7 Years.

Average Age Now: 68.2 Years.

**RETIREES AND BENEFICIARIES - DECEMBER 31, 2016**  
**TABULATED BY YEARS RETIRED - NEAREST YEAR**

Years Retired	Service Retirement	Disability Retirement	Death-in-Service	Beneficiary of Retiree	Totals	Cumulative Percent
44		1			1	0.1%
43		2			2	0.3%
42		1		2	3	0.7%
40	1			5	6	1.3%
39		1	1	1	3	1.7%
38	1			2	3	2.0%
37	3	1		2	6	2.6%
36	1			2	3	3.0%
35	4	1	1	2	8	3.9%
34	9			11	20	6.1%
33	6			7	13	7.5%
32	7			9	16	9.3%
31	6	1		5	12	10.6%
30	9	1		2	12	11.9%
29	7	1		3	11	13.1%
28	14	1	1	5	21	15.5%
27	9	1		6	16	17.2%
26	14	1			15	18.9%
25	10			3	13	20.3%
24	5	1		3	9	21.3%
23	19	2	1	1	23	23.8%
22	20		1	6	27	26.8%
21	41	2		6	49	32.2%
20	18	1		4	23	34.8%
19	21		1	1	23	37.3%
18	12	1		1	14	38.9%
17	16			4	20	41.1%
16	16	3	1		20	43.3%
15	11	3		1	15	44.9%
14	46	3	2	5	56	51.1%
13	15	1			16	52.9%
12	19	1		1	21	55.2%
11	14	4	1	1	20	57.4%
10	16	4			20	59.6%
9	22	2		1	25	62.4%
8	17	5		1	23	64.9%
7	17	1			18	66.9%
6	27	3	1	3	34	70.6%
5	94	2		1	97	81.3%
4	99			1	100	92.4%
3	31	1			32	95.9%
2	2	2	1		5	96.5%
1	10	1	2		13	97.9%
Less than 1	17	2			19	100.0%
Totals	726	58	14	108	906	

## RETIREE AND BENEFICIARY COMPARATIVE SCHEDULE<sup>@</sup>

Year Ended Dec. 31	Added to Rolls#		Removed from Rolls		Rolls End of Year		% Incr. in Annual Allowances	Average Allowances	Discounted Value of Allowances	
	No.	Annual Allowances*	No.	Annual Allowances	No.	Annual Allowances			Totals	Average
1997	41	\$ 825,236	23	\$ 131,913	605	\$ 8,357,415	9.0 %	\$ 13,814	\$ 93,826,629	\$ 155,085
1998	42	782,825	25	253,483	622	8,886,757	6.3	14,287	100,635,001	161,793
1999	31	800,436	21	110,375	632	9,576,818	7.8	15,153	109,572,407	173,374
2000	33	791,069	19	149,304	646	10,218,583	6.7	15,818	120,319,918	186,254
2001	24	530,225	18	147,375	652	10,601,433	3.7	16,260	124,502,845	190,955
2002	47	1,227,293	20	191,684	679	11,637,042	9.8	17,139	136,218,282	200,616
2003	40	929,269	24	208,928	695	12,357,383	6.2	17,780	145,275,896	209,030
2004	32	841,492	18	191,402	709	13,007,473	5.3	18,346	153,594,898	216,636
2005	31	1,367,707	25	268,275	715	14,106,905	8.5	19,730	168,715,852	235,966
2006	24	697,001	19	54,017	720	14,749,889	4.6	20,486	175,276,935	243,440
2007	31	863,128	17	134,800	734	15,478,217	4.9	21,087	181,074,645	246,696
2008	35	1,051,335	19	185,258	750	16,344,294	5.6	21,792	188,654,437	251,539
2009	25	1,554,246	22	247,330	753	17,651,210	8.0	23,441	191,338,855	254,102
2010	47	458,377	40	364,571	760	17,745,016	0.5	23,349	202,420,395	266,343
2011	46	1,104,498	30	132,052	776	18,717,462	5.5	24,120	212,102,413	273,328
2012	191	7,069,939	20	139,920	947	25,647,481	37.0	27,083	300,896,407	317,736
2013	51	2,374,598	22	345,230	976	27,676,849	7.9	28,357	325,233,541	333,231
2014	21	623,969	32	466,386	965	27,834,432	0.6	28,844	334,310,975	346,436
2015	15	621,680	23	370,675	957	28,085,437	0.9	29,347	333,147,365	348,116
2016 <sup>^</sup>	35	1,675,602	86	1,548,816	906	28,212,223	0.5	31,139	334,517,262	369,224

<sup>@</sup> The retired members with service in more than one group are displayed as if each person were receiving two pensions.

\* Includes post-retirement adjustments.

# Includes survivors of newly deceased retirees and alternate payees under EDRO.

<sup>^</sup> Includes impact of CCTA spin-off.

**RETIREES AND BENEFICIARIES DECEMBER 31, 2016  
TABULATED BY TYPE OF ALLOWANCES BEING PAID\***

Option Elected	Age & Service	Disability		Death		Totals
		Non-Duty	Duty	Non-Duty	Duty	
Regular	283	4	10			297
Regular - 50% J & S	232		10			242
A-Cash refund	1					1
B-100% J & S	113	4	12			129
C-50% J & S	89	1	3			93
D-10 Year Certain	4					4
E-15 Year Certain	4		2			6
Survivor	108	8	4	11	3	134
<b>Totals</b>	<b>834</b>	<b>17</b>	<b>41</b>	<b>11</b>	<b>3</b>	<b>906</b>

\* The retired members with service in more than one group are displayed as if each person were receiving two pensions.

**TERMINATED MEMBERS WITH A DEFERRED VESTED BENEFIT  
 DECEMBER 31, 2016  
 TABULATED BY NEAREST AGE AND ESTIMATED ALLOWANCE**

<b>Attained Age</b>	<b>No.</b>	<b>Deferred Allowances</b>
33	2	\$ 13,982
39	1	14,621
41	3	44,559
43	1	14,455
44	2	19,824
45	4	61,792
46	1	12,974
47	2	20,300
48	2	39,183
49	4	42,003
50	4	55,653
51	1	10,483
52	2	22,252
53	3	35,666
54	3	31,701
55	3	45,547
56	4	68,065
57	3	52,472
58	2	20,319
59	2	48,659
60	1	10,663
62	2	14,193
69	1	8,420
<b>Totals</b>	<b>53</b>	<b>\$707,786</b>

**ACTIVE MEMBERS AS OF DECEMBER 31, 2016  
BY ATTAINED AGE AND YEARS OF SERVICE**

Attained Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
20-24	5							5	\$ 211,579
25-29	35	5						40	1,928,147
30-34	39	30	15					84	5,230,700
35-39	31	12	19	7	1			70	4,365,217
40-44	15	4	13	32	11	1		76	5,152,407
45-49	13	7	7	28	39	4		98	7,121,358
50-54	8	4	5	10	15	8	3	53	3,287,070
55-59	8	4	4	13	17	6	1	53	3,094,150
60	3	2	1	3	4	1	2	16	903,677
61				2	3	1		6	367,799
62		2		2	1	2		7	338,877
63	1	1			1			3	203,593
64	1		1	1				3	204,405
65	1				1			2	91,147
66				2				2	133,193
67	1							1	12,801
68	1	1						2	86,605
70	1							1	48,238
<b>Totals</b>	<b>163</b>	<b>72</b>	<b>65</b>	<b>100</b>	<b>93</b>	<b>23</b>	<b>6</b>	<b>522</b>	<b>\$32,780,963</b>

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

Age: 43.5 years.

Service: 12.4 years.

Annual Pay: \$62,799.

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**SECTION D**

**ACTUARIAL COST METHODS AND ASSUMPTIONS**

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## VALUATION METHODS AND ASSUMPTIONS

In accordance with Subsection 2-252.2c (10) of the Retirement System Ordinance, the actuarial assumptions are recommended to the City Commission by the Retirement Investment Committee (RIC). The actuarial assumptions used for this report were based upon the results of an Experience Study for the City of Kalamazoo Employees Retirement System covering the period January 1, 2009 through December 31, 2013. A report dated February 19, 2015 presented the results of this experience study. Unless otherwise noted, the assumptions were first used with the actuarial valuation date of December 31, 2014. The actuarial assumptions represent estimates of future experience.

*The normal cost* was computed as follows:

The series of contributions necessary to accumulate the present value at time of retirement of the portion of a member's pension attributable to service likely to be rendered after the valuation date was computed so that each contribution in the series was a constant percentage of the member's year-by-year projected covered compensation. This is the individual entry age normal actuarial cost method.

*The accrued liability* was computed and financed as follows:

Retirees and Beneficiaries: The discounted value of pensions likely to be paid retirees and beneficiaries was computed using the investment return and mortality assumptions. This amount was financed by applicable accrued assets.

Active and Inactive members: The discounted value of benefits likely to be paid active and inactive members on account of service rendered prior to the valuation date was computed using the assumptions outlined on the following pages. The computed amount was reduced by applicable valuation assets and the remainder (or overfunding) was financed as a level percent-of-payroll over a rolling period of 10 years.

## VALUATION METHODS AND ASSUMPTIONS (CONCLUDED)

*Asset valuation method:* Last year's valuation assets are increased by contributions and expected investment income on last year's valuation assets and non-investment net cash flow and reduced by refunds, benefit payments and expenses. To this amount is added the phased-in recognition of investment income. The phased-in recognition is the sum over the five years ending on the valuation date of 20% of the difference between each year's expected return and actual market return.

As of December 31, 2016, an aggregate actuarial asset value was developed consistent with prior City of Kalamazoo Employees Retirement System pension valuation methodology. On this aggregate basis, a mark-to-market adjustment of \$5.8 million reset the Actuarial Value of Assets to Market Value of Assets of \$634,741,566 as the valuation date. The aggregate asset value was divided into separate amounts for the City Plan (\$604,411,432) and CCTA Plan (\$30,330,134) to reflect the spinoff of CCTA into its own stand alone pension plan. After spinoff, the funded level of each plan is 134%, based on the methodology described in the Appendix of this report which utilizes the benefits, data, and assumptions used in this valuation and the corresponding Annual Actuarial Valuation of the Central County Transportation Authority Pension Plan as of December 31, 2016.

## ACTUARIAL ASSUMPTIONS USED FOR THE VALUATION

**INVESTMENT RETURN.** The rate of investment return is compounded annually net of investment 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. Approximate net rates of investment return, for the purpose of comparisons with assumed rates, are shown below. Actual increases in active member pays are also shown for comparative purposes.

	Year Ended December 31					5-Year
	2016	2015	2014	2013	2012	Average*
Rate of Investment Return <sup>^</sup>	11.2%	7.5%	10.9%	13.6%	3.9%	9.4%
Increase in Average Pay <sup>#</sup>	3.6	0.7	2.3	4.6	4.6	3.1
Real Rate of Return	7.6	6.8	8.6	9.0	(0.7)	6.3

\* *Compound rate of increase.*

# *For members employed throughout the most recent two years.*

<sup>^</sup> *The nominal rate of return was computed using the approximate formula  $i = I$  divided by  $1/2 (A + B - I)$ , where  $I$  is actual investment income net of expenses,  $A$  is the beginning of year asset value, and  $B$  is the end of year asset value.*

These rates of return should not be used for measurement of an investment advisor's performance or for comparisons with other systems.

**INVESTMENT EXPENSES.** 0.50% of average valuation assets.

**ADMINISTRATIVE EXPENSES.** 0.65% of covered member payroll was added to the Normal Cost in anticipation of administrative expenses expected to be paid during the fiscal year.

**ACTUARIAL ASSUMPTIONS USED FOR THE VALUATION  
(CONTINUED)**

**PAY PROJECTIONS.** These assumptions are used to project current pays to those upon which benefits will be based.

The annual rate of pay increases consists of two parts:

- (i) a long-term rate of pay inflation equal to 3.5%; and
- (ii) merit and longevity increases which vary according to age or length of service. These rates are illustrated below.

<b>Years of Service</b>	<b>KMEA</b>	<b>AFSCME</b>	<b>Exempt</b>	<b>Non-Sworn Public Safety</b>	<b>Public Safety</b>
1	6.0%	8.0%	6.0%	8.0%	12.0%
2	5.0	3.0	6.0	7.0	12.0
3	4.0	3.0	0.5	6.0	5.5
4	2.0	2.0	0.5	4.0	4.5
5	1.0	2.0	0.5	3.0	4.5
6	1.0	1.0	0.3	1.5	4.0
7	1.0	0.0	0.3	1.5	4.0
8	1.0	0.0	0.3	1.5	4.0
9	0.0	0.0	0.3	1.5	1.5
10	0.0	0.0	0.3	1.5	1.3
11	0.0	0.0	0.3	0.5	1.0
12	0.0	0.0	0.3	0.3	1.0
13	0.0	0.0	0.3	0.3	0.5
14	0.0	0.0	0.3	0.3	0.5
thereafter	0.0	0.0	0.3	0.3	0.5

If the number and distribution of active members remain constant, then the total active member payroll is expected to increase 3.5% annually for the base portion of the salary increase assumptions. This increasing payroll was recognized in amortizing unfunded actuarial accrued liabilities.

**ACTUARIAL ASSUMPTIONS USED FOR THE VALUATION  
(CONTINUED)**

*The mortality table* used was the RP-2000 Mortality Combined Healthy Tables, projected 20 years with U.S. Projection Scale BB.

<b>Ages</b>	<b>Value at Retirement of \$1 Monthly for Life*</b>		<b>Future Life Expectancy (years)</b>	
	<b>Men</b>	<b>Women</b>	<b>Men</b>	<b>Women</b>
50	\$144.67	\$147.85	32.99	35.59
55	137.49	141.58	28.37	30.90
60	128.51	133.44	23.94	26.34
65	117.58	123.33	19.74	21.98
70	104.59	111.45	15.83	17.93
75	89.73	97.95	12.26	14.25
80	73.73	83.02	9.13	10.95

\* Values are before post-retirement increases are reflected.

This assumption is used to measure the probabilities of members dying before retirement and the probabilities of each benefit payment being made after retirement. Rates for disabled members were set forward 7 years.

## ACTUARIAL ASSUMPTIONS USED FOR THE VALUATION (CONTINUED)

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

<b>Retirement Ages</b>	<b>KMEA</b>	<b>AFSCME</b>	<b>Exempt</b>	<b>Non-Sworn Public Safety</b>
55	2%	6%	10%	10%
56	2	7	10	10
57	5	10	25	25
58	5	7	25	25
59	7	6	20	20
60	15	30	25	25
61	15	20	30	30
62	50	60	30	30
63	15	25	15	15
64	10	25	15	15
65	100	100	100	100

<b>Years of Service</b>	<b>Public Safety</b>
20	2%
21	4
22	4
23	2
24	2
25	70
26	30
27	45
28	25
29	25
30	100

Retirement probabilities were applied for General members after both attaining age 55 and completing 15 years of service, or age 62 with 10 years of service (5 years for Exempt hired before 9/1/2010, 9 years for AFSCME and 8 years for KMEA hired before 1/1/2009). AFSCME members are also considered eligible for retirement at age 60 with 20 or more years of service. Retirement probabilities were applied for Public Safety members upon completion of 20 years of service with 100% retirement probability assumed at age 60 with 10 years of service. The assumptions above were first used for the December 31, 2009 valuation.

## ACTUARIAL ASSUMPTIONS USED FOR THE VALUATION (CONCLUDED)

*Rates of disability* were as follows:

Sample Ages	% of Active Members Becoming Disabled within Next Year	
	Public Safety AFSCME	KMEA Exempt CSO
20	0.23%	0.04%
25	0.27	0.04
30	0.32	0.04
35	0.40	0.04
40	0.55	0.10
45	0.76	0.13
50	1.45	0.25
55	2.84	0.45
60	0.00	0.71

*Rates of separation from active membership* were as shown below (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				
		KMEA	AFSCME	All Exempt	Non-Sworn Public Safety	Public Safety
	0	15.0%	15.0%	15.0%	15.0%	6.0%
	1	14.0	14.0	14.0	14.0	4.0
	2	9.0	9.0	9.0	9.0	3.0
	3	8.0	8.0	8.0	8.0	2.5
	4	7.0	7.0	7.0	7.0	2.5
25	5 or Over	7.4	7.4	7.4	7.4	2.2
30		5.8	5.8	5.8	5.8	2.0
35		5.0	5.0	5.0	5.0	1.4
40		4.0	4.0	4.0	4.0	1.1
45		3.3	3.3	3.3	3.3	0.8
50		2.5	2.5	2.5	2.5	0.6
55		2.0	2.0	2.0	2.0	0.4
60		2.0	2.0	2.0	2.0	0.4

The assumptions above were first used for the December 31, 2009 valuation.

## MISCELLANEOUS AND TECHNICAL ASSUMPTIONS

<b>Active Member Group Size</b>	The number of active members was assumed to remain constant.
<b>Marriage Assumption</b>	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.
<b>Pay Increase Timing</b>	Was assumed to occur in the middle of the year. This means that the pays reported for the valuation are assumed to be rates of pay on the valuation date.
<b>Decrement Timing</b>	Decrements are assumed to occur at the middle of the fiscal year.
<b>Eligibility Testing</b>	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.
<b>Benefit Service</b>	Exact fractional service is used to determine the amount of benefit payable.
<b>Decrement Relativity</b>	Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.
<b>Decrement Operation</b>	Death-in-service decrement does not operate until member becomes vested. Withdrawal does not operate during retirement eligibility.
<b>Normal Form of Benefit</b>	The assumed normal form of benefit is straight life form. For public safety members, the assumed normal form of benefit is an automatic 50% Joint and Survivor form. 90% of public safety members were assumed to be married for the purposes of this benefit.
<b>Incidence of Contributions</b>	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.
<b>Actuarial Equivalence Basis for Optional Forms of Payment</b>	7.5% interest with an 85%/15% unisex blend of the RP-2000 Mortality Combined Healthy Tables, projected 20 years with U.S. Projection Scale BB, effective January 1, 2016.
<b>Post-Retirement Adjustment Timing</b>	Post-retirement adjustments (PRAs) were assumed to be paid on January 1 of each year for Public Safety and Exempt retirees (beginning the year immediately following retirement for Public Safety retirees and the second year following retirement for Exempt retirees). PRAs were assumed to be paid on the first of the month immediately following the retiree's birthday for all other groups.
<b>Active Member Pay Adjustments</b>	New hire pays were annualized. Pays were adjusted for members on Worker's Compensation of Leave of Absence for part of the valuation year.

## 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.” Under the actuarial cost method used the “AAL” differs somewhat from the value of future payments based on benefits earned as of the valuation date.

**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, retirement, investment income and salary increases. Decrement assumptions (rates of mortality, separation, 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 appropriate 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 normal costs to be paid in the future and the actuarial accrued liability. Sometimes referred to as the “actuarial funding method.”

**ACTUARIAL EQUIVALENT.** Benefits whose actuarial present values are equal.

**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.** Payment of an interest-bearing liability by means of periodic contributions of interest and principal, as opposed to a lump sum payment.

**EXPERIENCE GAIN (LOSS).** A measure of the difference between actual experience and experience anticipated by a set of actuarial assumptions during the period between two actuarial valuation dates, in accordance with the actuarial cost method being used.

**NORMAL COST.** The annual cost assigned, under the actuarial funding method, to current and subsequent plan years. Sometimes referred to as “current service cost.” An amortization payment toward the unfunded actuarial accrued liability is in addition to the normal cost.

## **GLOSSARY (CONCLUDED)**

**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.

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## APPENDIX

### METRO TRANSIT SPIN-OFF

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## **METRO TRANSIT SPIN-OFF TO THE CENTRAL COUNTY TRANSPORTATION AUTHORITY (CCTA)**

**Background:** The City of Kalamazoo’s existing transit operations became part of the Central County Transportation Authority (CCTA) effective October 1, 2016, the “Spin-Off date.” The City’s Retirement System previously covered “Transferred Employees” and “City Retirees” historically employed by Metro Transit (“terms” are defined in the Comprehensive Transition Agreement). The amount of Retirement System liabilities, as of December 31, 2016, attributable to the aforementioned individuals shown in this Appendix was determined in the Annual Actuarial Valuation of the Central County Transportation Authority Pension Plan as of December 31, 2016. The amount of Retirement System assets, as of December 31, 2016, attributable to the City System and the CCTA Pension Plan were determined in this Appendix.

These calculations have been prepared in accordance with the terms of the Comprehensive Transition Agreement, dated October 19, 2015 with the following exception -- the date of the calculation was December 31, 2016, as opposed to the Spin-Off date of October 1, 2016. The calculation date was selected and mutually agreed upon by parties at both the City and the CCTA and provides the administrative advantage of allowing the asset transfer calculation to be prepared in conjunction with this, December 31, 2016, annual actuarial valuation.

The table included in this Appendix shows valuation results based on a date of December 31, 2016. Those classified as “Transferred Employees” and “City Retirees,” now classified as “Central County Transportation Authority” were identified by the City via the demographic data supplied for purposes of preparing the December 31, 2016 annual actuarial valuation reports for the City Plan and the CCTA Plan. Plan provisions and assumptions/methods utilized in the preparation of the valuation liabilities and asset split are described in the separate annual actuarial valuation reports as of December 31, 2016 for the City of Kalamazoo Employees Retirement System and the Central County Transportation Authority Pension Plan. After the spin-off, the resulting funded level of each plan is 134% as shown in Items 4. and 6. on Appendix-2.

## Schedule as of December 31, 2016 Valuation Date

Group	Central County Transportation Authority (Resulting from City Spin-Off)	Remaining City of Kalamazoo Employees Retirement System
<b>1. Member Statistics:</b>		
a. Active Count	99	522
i. Average Age	46.8	43.5
ii. Average Service	9.0	12.4
iii. Average Pay	\$ 46,291	\$ 62,799
b. Terminated Vested Count	7	53
i. Average Age	47.3	50.8
ii. Average Allowance	\$ 12,295	\$ 13,354
c. Retired Count	64	906
i. Average Age	67.8	68.2
ii. Average Allowance	\$ 18,921	\$ 31,139
d. Total Count (1.a. + 1.b. + 1.c.)	170	1,481
<b>2. Accrued Liability:</b>		
a. Active	\$ 8,328,869	\$ 111,611,280
b. Terminated Vested	521,696	4,802,098
c. Retired	13,777,708	334,517,262
d. Total (2.a. + 2.b. + 2.c.)	\$ 22,628,273	\$ 450,930,640
<b>3. Market Value of Assets:</b>	\$ 30,330,134	\$ 604,411,432
<b>4. Market Funded Ratio (3. / 2.d.):</b>	134.0%	134.0%
<b>5. Valuation Assets:</b>	\$ 30,330,134	\$ 604,411,432
<b>6. Valuation Funded Ratio (5. / 2.d.):</b>	134.0%	134.0%
<b>7. Unfunded Actuarial Accrued Liability (UAAL):</b>		
a. Market Basis (2.d. - 3.)	\$ (7,701,861)	\$ (153,480,792)
b. Valuation Basis (2.d. - 5.)	\$ (7,701,861)	\$ (153,480,792)
<b>8. Employer Contribution Requirement for Year Beginning:*</b>		
a. Employer Normal Cost %	11.21%	14.92%
b. UAAL%	(18.71%)	(55.29%)
c. Employer Contribution % (8.a. + 8.b.)	(7.50%)	(40.37%)
d. Employer Contribution \$	\$ (365,079)	\$ (13,696,854)
e. Minimum Employer Contribution \$	\$ 0	\$ 0

\* September 1, 2017 for CCTA and January 1, 2017 for the City.