CHEIRON Classic Values, Innovative Advice

City of Kansas City Missouri Employees' Retirement System

Actuarial Valuation as of May 1, 2017

Produced by Cheiron

September 2017

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TABLE OF CONTENTS

September 11, 2017

Board of Pension Trustees
City of Kansas City, Missouri Employees' Retirement System
12th Floor, City Hall
414 East 12th Street
Kansas City, MO 64106

Dear Members of the Board:

At your request, we have conducted an actuarial valuation of the City of Kansas City, Missouri Employees' Retirement System (KCERS) as of May 1, 2017. The valuation is organized as follows:

- In Section I of the **Board Summary** we describe the purpose of an actuarial valuation and summarize the key results found in this valuation;

- The **Main Body** of the report presents details on the System's:

  - Section II - Assets
  - Section III - Liabilities
  - Section IV - Contributions
  - Section V - Financial Statement Information

- In the **Appendices**, we conclude our report with detailed information describing the System's membership (Appendix A), actuarial assumptions and methods employed (Appendix B), a summary of pertinent plan provisions (Appendix C), and a glossary of terms (Appendix D).

The purpose of this report is to present the annual actuarial valuation of the City of Kansas City, Missouri Employees' Retirement System. This report is for the use of the Employees' Retirement Board and its auditors in preparing financial reports in accordance with applicable law and accounting requirements.

In preparing our report, we relied on information (some oral and some written) supplied by KCERS' staff. This information includes, but is not limited to, the plan provisions, employee data, and unaudited financial information. We performed an informal examination of the obvious characteristics of the data for reasonableness and consistency in accordance with Actuarial Standard of Practice No. 23.

Future valuation reports may differ significantly from the current results presented in this report due to such factors as the following: plan experience differing from that anticipated by the assumptions; changes in assumptions; and changes in plan provisions or applicable law.

Board of Pension Trustees
City of Kansas City, Missouri Employees' Retirement System
September 11, 2017

To the best of our knowledge, this report and its contents have been prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board. Furthermore, as credentialed actuaries, we meet the Qualification Standards of the American Academy of Actuaries to render the opinions contained in this report. This report does not address any contractual or legal issues. We are not attorneys and our firm does not provide any legal services or advice.

This report was prepared for the Employees' Retirement System for the purposes described herein and for the use by the plan auditor in completing an audit related to the matters herein. Other users of this valuation report are not intended users as defined in the Actuarial Standards of Practice, and Cheiron assumes no duty or liability to any other user.

Sincerely,
Cheiron

Stephen T. McElhaney, FSA, FCA, EA, MAAA
Principal Consulting Actuary

Jacqueline King, ASA, EA, MAAA
Associate Actuary

SECTION I – BOARD SUMMARY

The primary purpose of the actuarial valuation and this report is to measure, describe, and identify as of the valuation date:

- The financial condition of the System,
- Past and expected trends in the financial progress of the System,
- The City's Actuarially Determined Contribution for Fiscal Year Ending 2019, and
- Information required for the System's financial statement.

In the balance of this Board Summary, we present (A) the basis upon which this year's valuation was completed, (B) the key findings of this valuation including a summary of all key financial results, (C) an examination of the historical trends, and (D) the projected financial outlook for the System.

A. Valuation Basis

This May 1, 2017 valuation represents Cheiron's eleventh valuation performed for KCERS. There have been no changes in assumptions, methodologies, and plan provisions since the May 1, 2016 valuation. The contribution rate changes as a result of the May 1, 2016 revised assumptions are being phased-in over five years, and the current valuation is at the second year of this phase-in. The data, methods, assumptions, and plan provisions that serve as the basis for this valuation are all summarized in the appendices.

B. Key Findings of this Valuation

The key results of the May 1, 2017 actuarial valuation are as follows:

- We have calculated the City's contribution rate on two bases:
    - The actuarially determined City contribution rate under the Board's funding policy would have remained at the 17.03% rate calculated as of May 1, 2016 if the full effect of the May 1, 2016 revised actuarial assumptions had been recognized at both valuation dates. Due to the five-year phase-in of the new assumptions, the actuarially determined employer contribution rate has been calculated as 15.40% as of May 1, 2017 compared to 14.85% as of May 1, 2016. The actual rate that the City is scheduled to contribute for the current year is 14.85% of payroll, which is the actuarially determined Board contribution rate reflecting the five-year phase-in for the prior year.
    - Under the City ordinance, the City's budgeted contribution rate for the year beginning May 1, 2018 will be based upon a 30-year open amortization for the entire amount of unfunded actuarial liability. This rate is 13.88% as of May 1, 2017, which also reflects the five-year phase-in of the revised actuarial assumptions.

- The Employees' Retirement System's (ERS) unfunded actuarial liability increased from $212 million on May 1, 2016 to $216 million on May 1, 2017.

SECTION I – BOARD SUMMARY

- The ERS's funding ratio, the ratio of actuarial asset value over liabilities, increased from 83.3% as of May 1, 2016 to 83.5% as of May 1, 2017.

- The primary factor in the increase of the Plan's unfunded actuarial liability was an overall actuarial loss of $2.8 million.
    - During the year ended April 30, 2017, the System's assets earned 10.47% on a market value basis. The return on the actuarial asset value was 7.39% (as compared to 7.50% assumed). This resulted in an actuarial loss on investments of $1.2 million. However, the Plan also experienced a loss of $3.9 million due to the difference between actual contributions and the actuarially determined contribution as a result of payroll and timing differences as well as the five-year phase-in of the assumption changes.
    - On the liability side, the System experienced an actuarial gain of $2.3 million.

This report does not include disclosures required by GASB Statements No. 67 and 68. Statement No. 67 was effective for the plan year ending April 30, 2015. Statement No. 68 was effective for the employer fiscal year ending April 30, 2016. Please refer to the separate report issued by Cheiron for accounting and financial disclosure information under GASB Statements No. 67 and No. 68.

SECTION I – BOARD SUMMARY

The following is Table I-1 which summarizes the key results of the valuation with respect to the System's membership, assets and liabilities, and contributions. The results are presented and compared for both the current and prior plan year.

Table I-1
City of Kansas City, Missouri Employees' Retirement System
Summary of Principal Plan Results

Valuation as of:	May 1, 2016	May 1, 2017	% Change
Participant Counts			
Active Participants	3,161	3,170	0.3%
Disabled Participants	9	8	(11.1%)
Retirees and Beneficiaries	2,353	2,392	1.7%
Terminated Vested Participants	101	111	9.9%
Inactive Participants	220	283	28.6%
Total	**5,844**	**5,964**	2.1%
Annual Salaries of Active Members	$ 164,248,048	$ 167,811,028	2.2%
Annual Retirement Allowances for Retired Members and Beneficiaries*	$ 59,000,266	$ 62,041,765	5.2%
Assets and Liabilities			
Actuarial Liability (AL)	$ 1,268,159,303	$ 1,312,154,844	3.5%
Actuarial Value of Assets (AVA)	1,055,813,977	1,095,866,148	3.8%
Unfunded Actuarial Liability (UAL)	$ 212,345,326	$ 216,288,696	1.9%
Funded Ratio (AVA)	83.3%	83.5%	
Funded Ratio (MVA)	80.7%	83.2%	
Present Value of Accrued Benefits (PVAB)	$ 1,146,687,938	$ 1,187,554,815	3.6%
Market Value of Assets (MVA)	1,023,610,172	1,092,298,852	6.7%
Unfunded/(Surplus) PVAB	$ 123,077,766	$ 95,255,963	
Accrued Benefit Funding Ratio	89.3%	92.0%	
Contributions as a Percentage of Payroll under Board's Funding Policy **	**Fiscal Year 2018**	**Fiscal Year 2019**	
Normal Cost Rate	7.85%	7.71%	
Administrative Expense Rate	0.24%	0.24%	
Unfunded Actuarial Liability Rate	6.76%	7.45%	
Total Actuarially Determined City Contribution Rate	14.85%	15.40%	
Actuarially Determined Contribution (GASB)	$24,390,835	$25,842,898	6.0%

** The annual retirement allowances do not include the subsidy benefits*

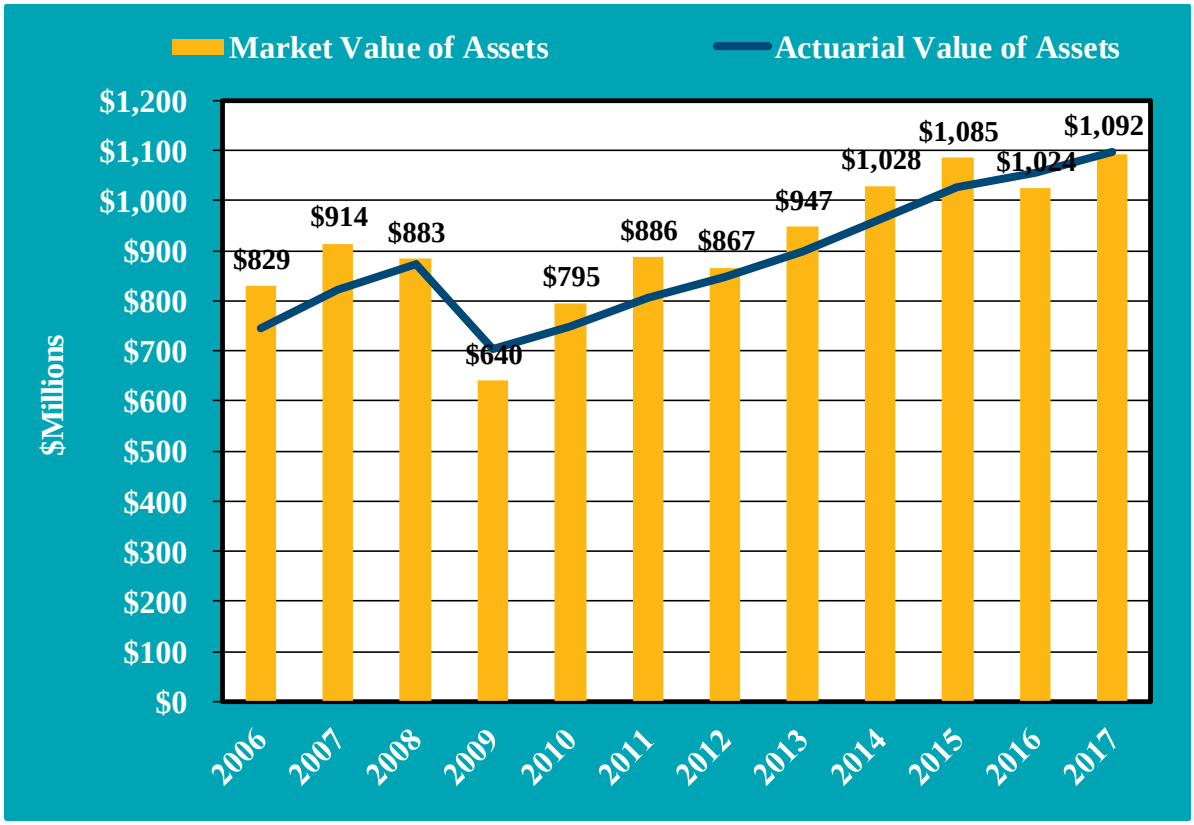
*** Fiscal Year 2018 and 2019 contribution rate and ADC reflect the 5-year phase-in of the 2016 assumption changes*

SECTION I – BOARD SUMMARY

C. Historical Trends

Despite the fact that for most retirement systems, the greatest attention is given to the current valuation results and in particular the size of the current unfunded actuarial liability and the City's contribution, it is important to remember that each valuation is merely a snapshot in the long-term progress of a pension fund. It is more important to judge a current year's valuation result relative to historical trends, as well as trends expected into the future. The numbers above the bars represent the value (in millions) of the market value of assets.

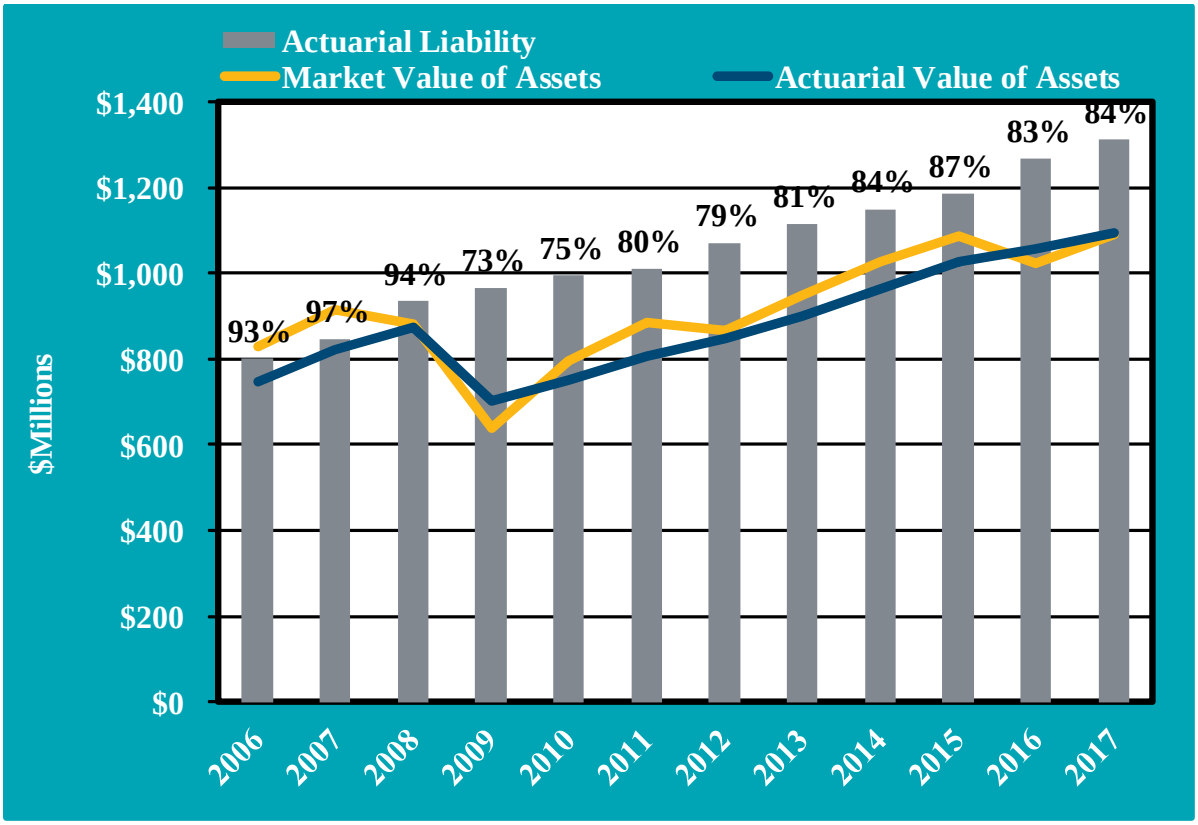
System Assets



There was a market value of assets (MVA) gain on investments in 2017, returning 10.47%, increasing from $1,024 million to $1,092 million. With the asset smoothing method in place, the actuarial value of assets has tracked a slightly smoother path through the volatility of the market value of assets. As can be seen in the graph, the actuarial value of assets (AVA) increased from 2016 to 2017, even though it returned 7.39%, which is less than the assumed earnings of 7.50%.

SECTION I – BOARD SUMMARY

Assets and Liabilities



The above chart compares the actuarial value of assets to the actuarial liabilities as well as the funded ratio, sometimes referred to as the benefit security ratio. This chart shows that in 2009, the System had its lowest funded ratio in the past 10 years, but has since increased until 2016 where it decreased as a result of the changes to actuarial assumptions.

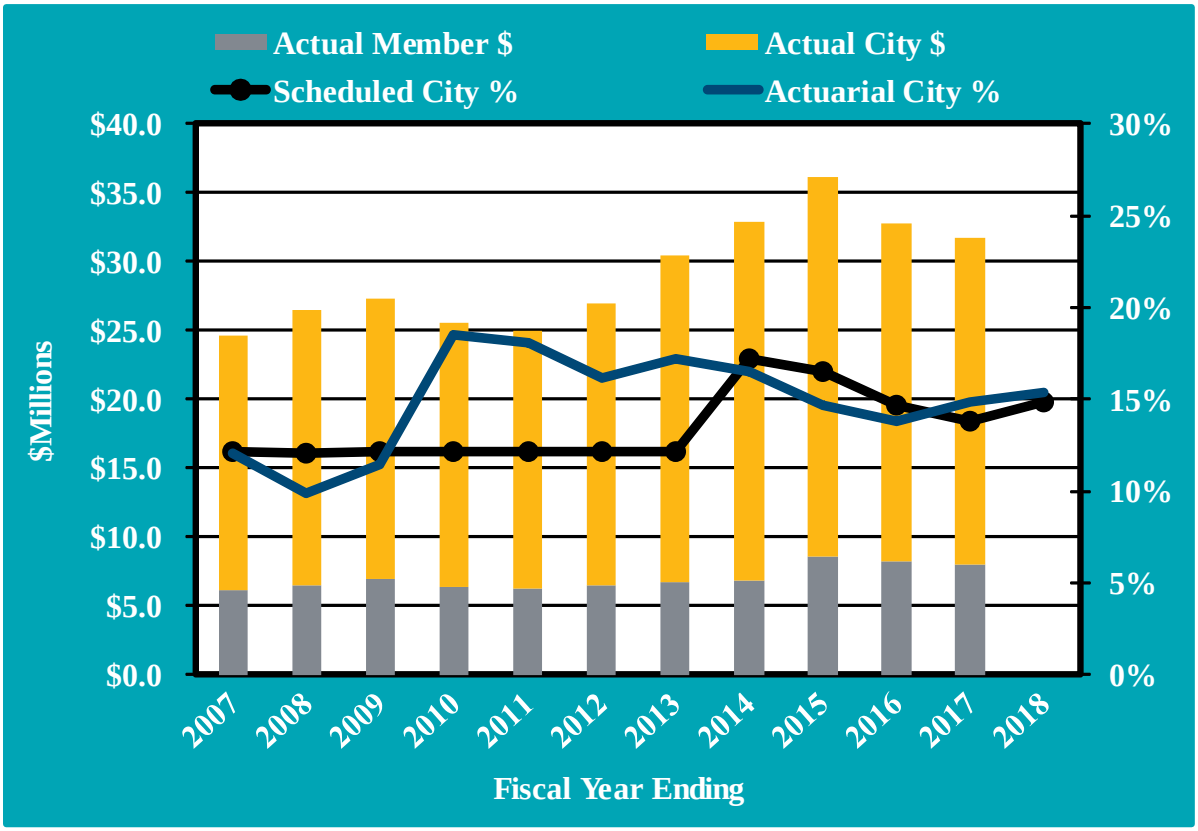
SECTION I – BOARD SUMMARY

Contribution Rates

The stacked bars in this graph show the dollar amount of contributions made by the City and the members (depicted on the left hand scale) since Fiscal Year Ending 2007. The blue line shows the City's actuarial contribution rate under the Board's funding policy as a percent of payroll (depicted on the right hand scale). The black line shows the scheduled City contribution rate as a percent of payroll (depicted on the right hand scale).

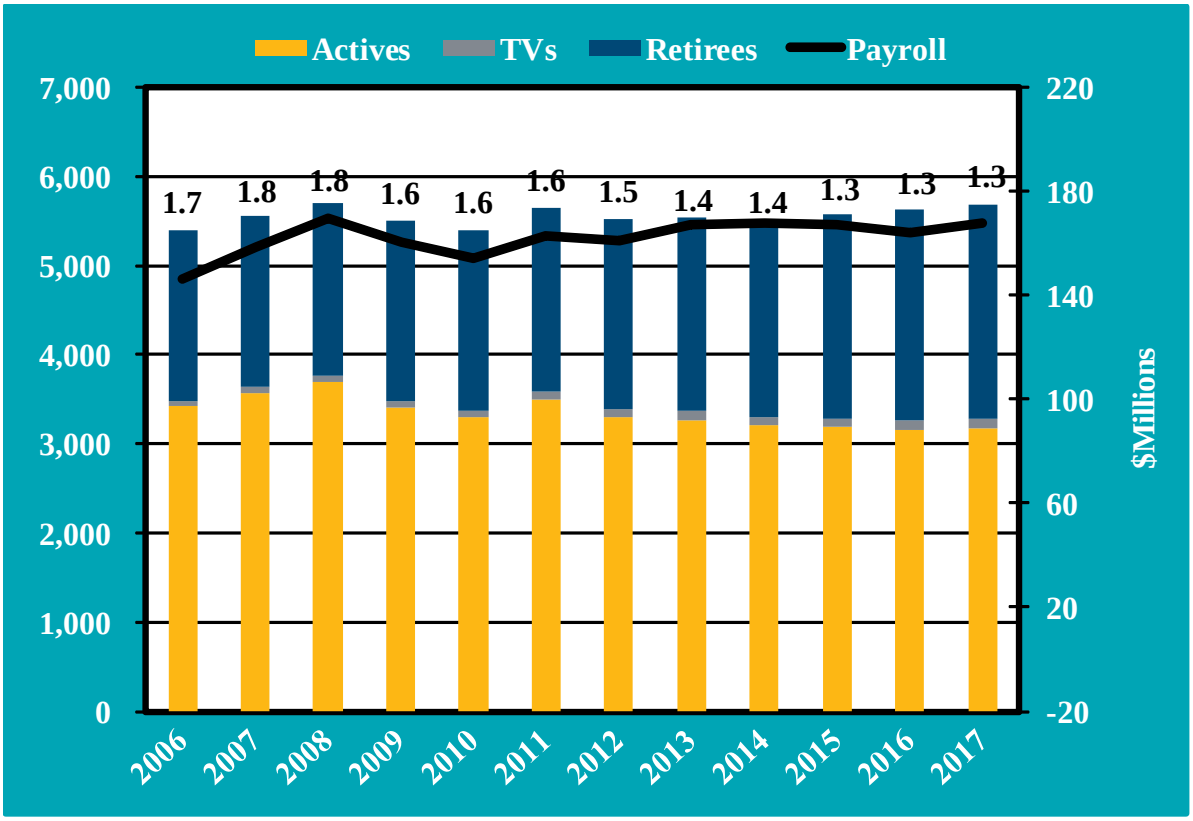
The member contribution rate is set by City law at 4% (more than 4% for certain MAST employees) of payroll prior to April 20, 2014, and 5% (more than 5% for certain MAST employees) of payroll effective April 20, 2014.

For Fiscal Years Ending from 2007 through 2013, the City contribution rate was 9.50% of payroll plus 2.53% of payroll for the retirement window offered in 2003 (paid annually through April 30, 2013) for General Employees, and 19.50% of payroll for Judges and Elected Officials. For Fiscal Years Ending 2014 and later, the scheduled City contribution rate is the actuarial contribution rate, determined under the City's funding policy, in the prior year's actuarial valuation. The actuarial contribution rate under the Board's funding policy increased from 14.85% of payroll in 2016 to 15.40% of payroll in 2017 reflecting investment losses and the phase-in of changes in actuarial assumptions. For the Fiscal Year Ending 2018, the City is contributing 14.85% of payroll.



SECTION I – BOARD SUMMARY

Participant Trends



The above chart provides a measure for the maturity in the plan, by comparing the ratio of active members to inactive members (retirees and terminated-vesteds). The ratio of active members to inactive members has decreased over the last 12 years. The System's active-to-inactive ratio was 1.7 in 2006, and there are 1.3 actives supporting each inactive member today. The black line shows the total active participating payroll for each valuation year.

D. Future Expected Financial Trends

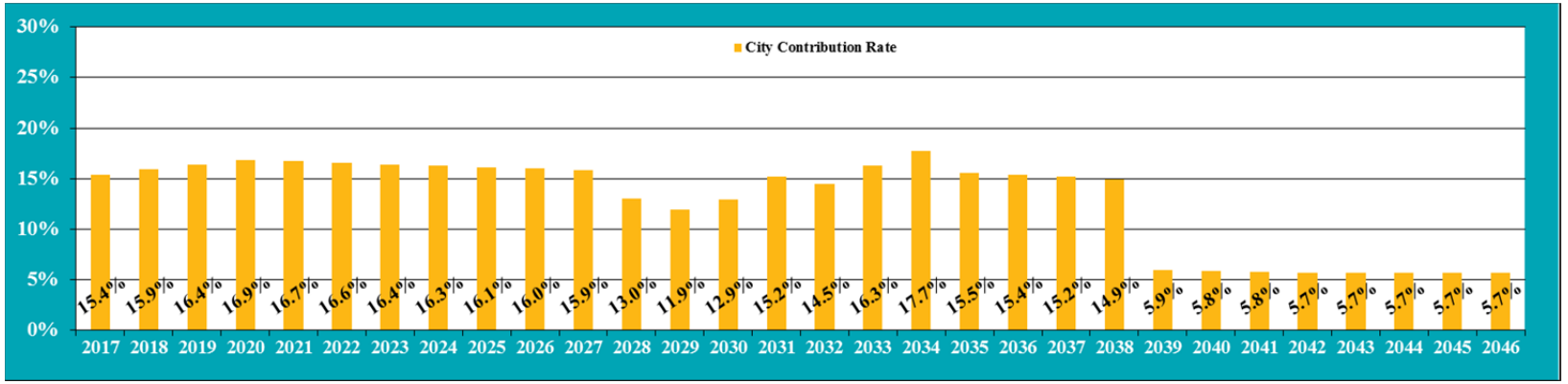
The analysis of projected financial trends is perhaps the most important component of this valuation. In this Section, we present the implications of the May 1, 2017 valuation results in terms of (1) the projected City's contributions and (2) projected System's funded status (ratio of assets over liabilities). For each projection set, we assume three future different investment return scenarios: baseline returns of 7.50%, optimistic returns of 9.00%, and pessimistic returns of 6.00%. The projections assume that the City makes contributions equal to the prior year's actuarially determined contribution rate under the Board's funding policy.

1. Contribution Rate Projections (Board Funding Policy)

The first set of charts shows the expected City contribution rate. The years shown in the charts are plan years beginning May 1.

Baseline Returns of 7.50%

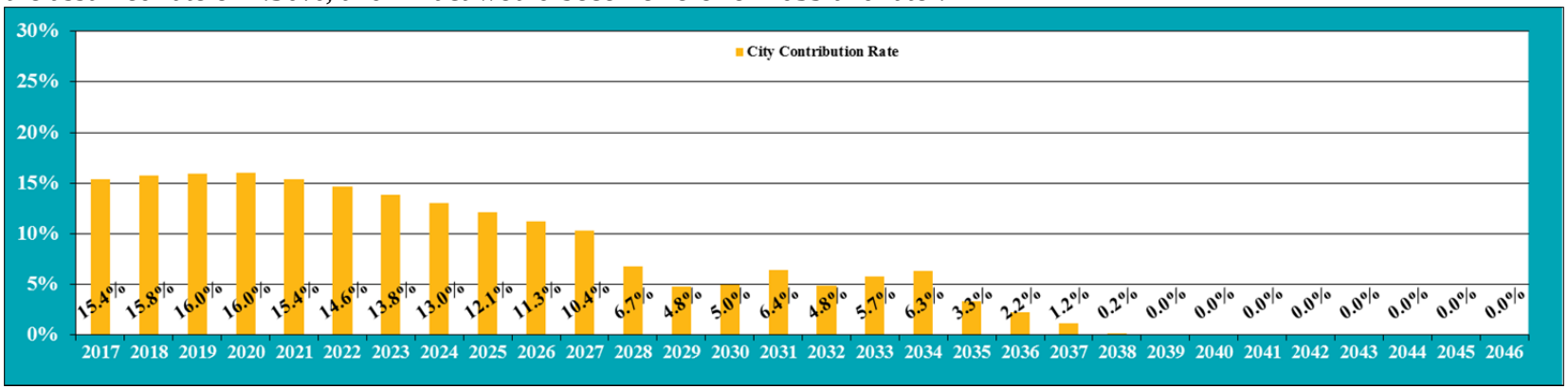
Assuming that the fund earns the assumed investment rate of 7.5% on a market value basis and that the City continues to contribute the current scheduled contribution rate equal to the prior year's actuarially determined contribution rate, the contribution rate will increase over the next four years as the revised actuarial assumptions become fully phased-in, and then fluctuate as the various amortization bases become fully amortized. The large decrease in the rate in 2039 reflects the full amortization of the 30-year loss base established in 2009.



SECTION I – BOARD SUMMARY

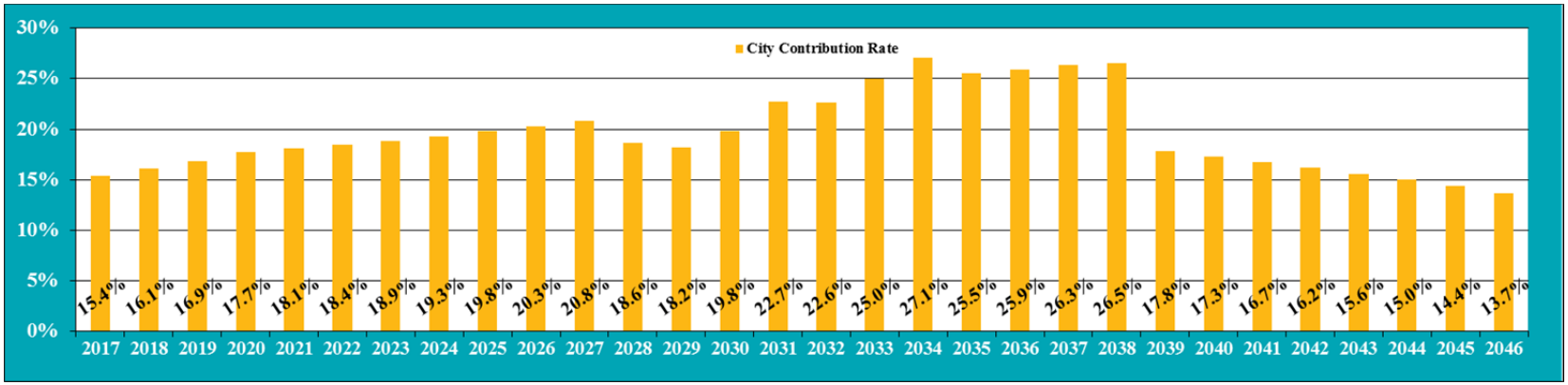
Optimistic Returns of 9.00%

If the fund earns 1.50% greater than the assumed rate, all of the future contribution rates will be lower than if the fund earns the assumed rate of 7.50%, and in fact would become zero for 2039 and later.



Pessimistic Returns of 6.00%

If the fund earns 1.50% less than the assumed rate, the future contribution rates will be considerably greater than if the fund earns the assumed rate of 7.50%.



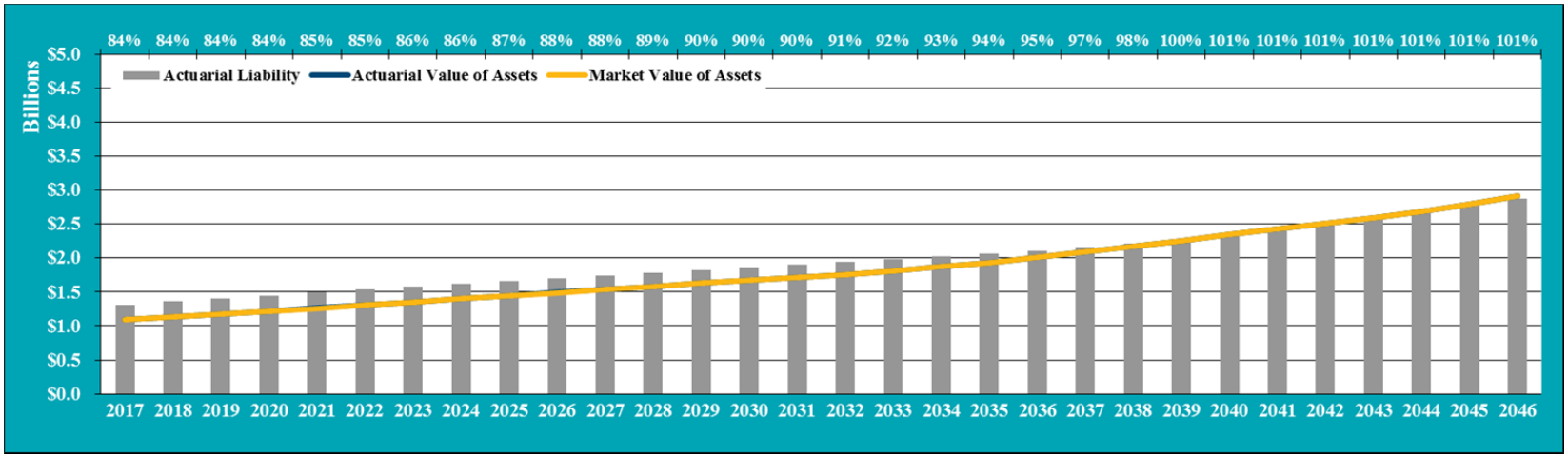
SECTION I – BOARD SUMMARY

2. Asset and Liability Projections (Board Funding Policy)

The next set of projection charts compares the market value of assets (gold line) and the actuarial or smoothed value of assets (blue line) to the System's actuarial liabilities (gray bars). The top of each chart also portrays the System's funded ratio (ratio of actuarial value of assets to actuarial liabilities). The years shown in the chart are plan years beginning May 1.

Baseline Returns of 7.50%

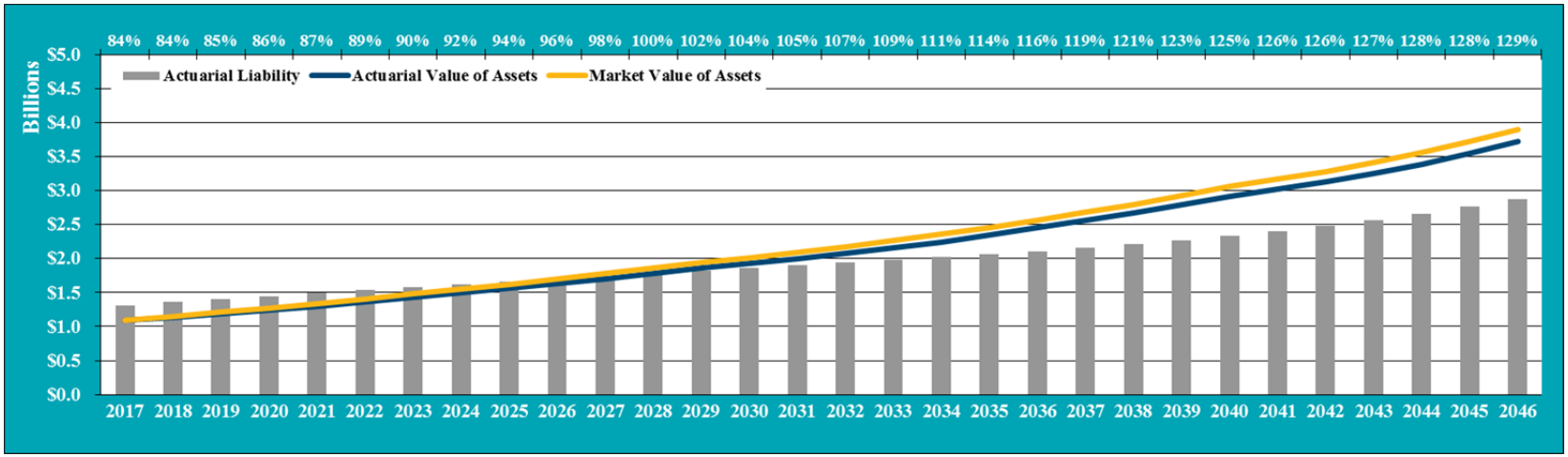
Assuming that the fund earns the assumed investment rate of 7.5% and that the City continues to contribute the current scheduled contribution rate equal to the prior year's actuarially determined contribution rate, the funded ratio will increase gradually over the next 30 years reaching 100% by the end of the projection.



SECTION I – BOARD SUMMARY

Optimistic Returns of 9.00%

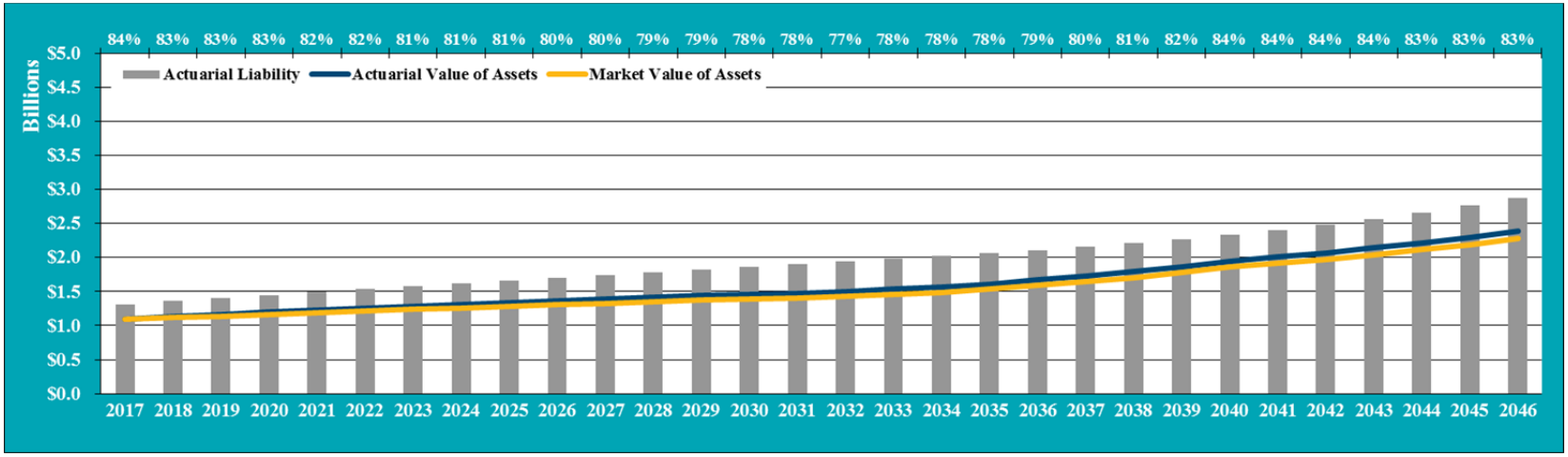
If the fund earns 1.50% greater than the assumed rate of return, the funded ratio will increase to 129% over the next 30 years.



SECTION I – BOARD SUMMARY

Pessimistic Returns of 6.00%

If the fund earns 1.50% less than the assumed rate of return, the funded ratio will decrease gradually to 77%, then increase to 83% over the next 30 years.



SECTION I – BOARD SUMMARY

3. 30 Year Projections Based on City Contribution Policy:

The charts on the following two pages show 30-year cost projections under two amortization policies: (1) 30-year open amortization which is the current City contribution policy and (2) 30-year closed amortization from May 1, 2014 for comparison purposes. For the purpose of these projections, it has been assumed that the active population remains constant and the fund earns the assumed return of 7.5% per year on market value. These projections reflect the five-year phase-in of the revised actuarial assumptions.

SECTION I – BOARD SUMMARY

30-Year Open Amortization Method:

City of Kansas City, Missouri Employees' Retirement System
Projection Based on April 30, 2016 Actuarial Valuation
30-Year Open Amortization
Interest at 7.50%
Amounts in thousands

Valuation as of April 30, (1)	Employer Contribution Rate (2)	Member Contribution Rate (3)	Compensation at Valuation (4)	Employer Contribution (5)	Actuarial Accrued Liability (AAL) (6)	Actuarial Value of Assets (AVA) (7)	Unfunded AAL (8)	UAL Amortization Payment Rate (9)	Normal Cost Rate (10)	Administrative Expense Rate (11)	Employer ADC (12)	Dollar Amount of ADC (13)	Funded Ratio Using AVA (14)
2017	14.85%	5.01%	$ 167,811	$ 24,920	$ 1,312,155	$ 1,095,866	$ 216,289	5.93%	7.71%	0.24%	13.88%	$ 23,292	83.5%
2018	13.88%	5.01%	$ 174,104	$ 24,166	$ 1,356,830	$ 1,134,822	$ 222,007	6.22%	7.58%	0.24%	14.04%	$ 24,437	83.6%
2019	14.04%	5.01%	$ 180,633	$ 25,361	$ 1,402,748	$ 1,173,882	$ 228,866	6.52%	7.49%	0.24%	14.25%	$ 25,737	83.7%
2020	14.25%	5.01%	$ 187,407	$ 26,705	$ 1,448,164	$ 1,213,145	$ 235,019	6.80%	7.40%	0.24%	14.44%	$ 27,062	83.8%
2021	14.44%	5.01%	$ 194,434	$ 28,076	$ 1,493,017	$ 1,252,718	$ 240,300	6.71%	7.22%	0.24%	14.17%	$ 27,551	83.9%
2022	14.17%	5.01%	$ 201,726	$ 28,585	$ 1,537,131	$ 1,292,479	$ 244,652	6.58%	7.05%	0.24%	13.87%	$ 27,979	84.1%
2023	13.87%	5.01%	$ 209,290	$ 29,029	$ 1,580,302	$ 1,331,365	$ 248,936	6.45%	6.89%	0.24%	13.58%	$ 28,422	84.2%
2024	13.58%	5.01%	$ 217,139	$ 29,487	$ 1,622,619	$ 1,369,374	$ 253,245	6.33%	6.75%	0.24%	13.32%	$ 28,923	84.4%
2025	13.32%	5.00%	$ 225,281	$ 30,007	$ 1,663,890	$ 1,406,285	$ 257,605	6.20%	6.61%	0.24%	13.05%	$ 29,399	84.5%
2026	13.05%	5.00%	$ 233,729	$ 30,502	$ 1,704,342	$ 1,442,368	$ 261,975	6.08%	6.48%	0.24%	12.80%	$ 29,917	84.6%
2027	12.80%	5.00%	$ 242,494	$ 31,039	$ 1,744,145	$ 1,477,727	$ 266,419	5.96%	6.36%	0.24%	12.56%	$ 30,457	84.7%
2028	12.56%	5.00%	$ 251,588	$ 31,599	$ 1,783,362	$ 1,512,428	$ 270,934	5.84%	6.26%	0.24%	12.34%	$ 31,046	84.8%
2029	12.34%	5.00%	$ 261,022	$ 32,210	$ 1,822,011	$ 1,546,475	$ 275,536	5.73%	6.16%	0.24%	12.13%	$ 31,662	84.9%
2030	12.13%	5.00%	$ 270,811	$ 32,849	$ 1,860,233	$ 1,580,022	$ 280,211	5.61%	6.08%	0.24%	11.93%	$ 32,308	84.9%
2031	11.93%	5.00%	$ 280,966	$ 33,519	$ 1,898,563	$ 1,613,595	$ 284,968	5.50%	6.00%	0.24%	11.74%	$ 32,985	85.0%
2032	11.74%	5.00%	$ 291,502	$ 34,222	$ 1,937,552	$ 1,647,738	$ 289,814	5.39%	5.93%	0.24%	11.56%	$ 33,698	85.0%
2033	11.56%	5.00%	$ 302,434	$ 34,961	$ 1,977,421	$ 1,682,657	$ 294,764	5.29%	5.87%	0.24%	11.40%	$ 34,477	85.1%
2034	11.40%	5.00%	$ 313,775	$ 35,770	$ 2,018,773	$ 1,718,958	$ 299,815	5.18%	5.82%	0.24%	11.24%	$ 35,268	85.1%
2035	11.24%	5.00%	$ 325,542	$ 36,591	$ 2,062,010	$ 1,757,069	$ 304,941	5.08%	5.77%	0.24%	11.09%	$ 36,103	85.2%
2036	11.09%	5.00%	$ 337,749	$ 37,456	$ 2,107,760	$ 1,797,589	$ 310,171	4.98%	5.73%	0.24%	10.95%	$ 36,984	85.3%
2037	10.95%	5.00%	$ 350,415	$ 38,370	$ 2,156,668	$ 1,841,161	$ 315,507	4.89%	5.69%	0.24%	10.82%	$ 37,915	85.4%
2038	10.82%	5.00%	$ 363,555	$ 39,337	$ 2,209,672	$ 1,888,731	$ 320,941	4.79%	5.66%	0.24%	10.69%	$ 38,864	85.5%
2039	10.69%	5.00%	$ 377,189	$ 40,321	$ 2,267,452	$ 1,940,984	$ 326,468	4.70%	5.63%	0.24%	10.57%	$ 39,869	85.6%
2040	10.57%	5.00%	$ 391,333	$ 41,364	$ 2,330,702	$ 1,998,586	$ 332,116	4.60%	5.61%	0.24%	10.45%	$ 40,894	85.8%
2041	10.45%	5.00%	$ 406,008	$ 42,428	$ 2,400,496	$ 2,062,624	$ 337,873	4.52%	5.59%	0.24%	10.35%	$ 42,022	85.9%
2042	10.35%	5.00%	$ 421,234	$ 43,598	$ 2,477,573	$ 2,133,808	$ 343,765	4.43%	5.57%	0.24%	10.24%	$ 43,134	86.1%
2043	10.24%	5.00%	$ 437,030	$ 44,752	$ 2,562,851	$ 2,213,117	$ 349,734	4.34%	5.56%	0.24%	10.14%	$ 44,315	86.4%
2044	10.14%	5.00%	$ 453,419	$ 45,977	$ 2,657,620	$ 2,301,773	$ 355,847	4.26%	5.55%	0.24%	10.05%	$ 45,569	86.6%
2045	10.05%	5.00%	$ 470,422	$ 47,277	$ 2,762,987	$ 2,400,903	$ 362,084	4.18%	5.54%	0.24%	9.96%	$ 46,854	86.9%
2046	9.96%	5.00%	$ 488,063	$ 48,611	$ 2,880,096	$ 2,511,678	$ 368,418	4.10%	5.53%	0.24%	9.87%	$ 48,172	87.2%
2047	9.87%	5.00%	$ 506,365	$ 49,978	$ 3,010,243	$ 2,635,376	$ 374,867	4.02%	5.53%	0.24%	9.79%	$ 49,573	87.5%

Projections assume a constant population and no actuarial gains and losses

SECTION I – BOARD SUMMARY

30-Year Closed Amortization Method:

City of Kansas City, Missouri Employees' Retirement System
Projection Based on April 30, 2016 Actuarial Valuation
30-Year Closed Amortization from May 1, 2014
Interest at 7.50%
Amounts in thousands

Valuation as of April 30, (1)	Employer Contribution Rate (2)	Member Contribution Rate (3)	Compensation at Valuation (4)	Employer Contribution (5)	Actuarial Accrued Liability (AAL) (6)	Actuarial Value of Assets (AVA) (7)	Unfunded AAL (8)	UAL Amortization Payment Rate (9)	Normal Cost Rate (10)	Administrative Expense Rate (11)	Employer ADC (12)	Dollar Amount of ADC (13)	Funded Ratio Using AVA (14)
2017	14.85%	5.01%	$ 167,811	$ 24,920	$ 1,312,155	$ 1,095,866	$ 216,289	6.37%	7.71%	0.24%	14.32%	$ 24,031	83.5%
2018	14.32%	5.01%	$ 174,104	$ 24,932	$ 1,356,830	$ 1,134,822	$ 222,007	6.82%	7.58%	0.24%	14.64%	$ 25,482	83.6%
2019	14.64%	5.01%	$ 180,633	$ 26,445	$ 1,402,748	$ 1,174,676	$ 228,072	7.28%	7.49%	0.24%	15.01%	$ 27,109	83.7%
2020	15.01%	5.01%	$ 187,407	$ 28,130	$ 1,448,164	$ 1,215,123	$ 233,041	7.71%	7.40%	0.24%	15.35%	$ 28,767	83.9%
2021	15.35%	5.01%	$ 194,434	$ 29,846	$ 1,493,017	$ 1,256,320	$ 236,697	7.76%	7.22%	0.24%	15.22%	$ 29,593	84.1%
2022	15.22%	5.01%	$ 201,726	$ 30,703	$ 1,537,131	$ 1,298,187	$ 238,945	7.77%	7.05%	0.24%	15.06%	$ 30,380	84.5%
2023	15.06%	5.01%	$ 209,290	$ 31,519	$ 1,580,302	$ 1,339,697	$ 240,605	7.78%	6.89%	0.24%	14.91%	$ 31,205	84.8%
2024	14.91%	5.01%	$ 217,139	$ 32,375	$ 1,622,619	$ 1,380,913	$ 241,706	7.79%	6.75%	0.24%	14.78%	$ 32,093	85.1%
2025	14.78%	5.00%	$ 225,281	$ 33,297	$ 1,663,890	$ 1,421,684	$ 242,207	7.79%	6.61%	0.24%	14.64%	$ 32,981	85.4%
2026	14.64%	5.00%	$ 233,729	$ 34,218	$ 1,704,342	$ 1,462,331	$ 242,011	7.80%	6.48%	0.24%	14.52%	$ 33,938	85.8%
2027	14.52%	5.00%	$ 242,494	$ 35,210	$ 1,744,145	$ 1,503,041	$ 241,105	7.80%	6.36%	0.24%	14.40%	$ 34,919	86.2%
2028	14.40%	5.00%	$ 251,588	$ 36,229	$ 1,783,362	$ 1,543,965	$ 239,398	7.81%	6.26%	0.24%	14.31%	$ 36,002	86.6%
2029	14.31%	5.00%	$ 261,022	$ 37,352	$ 1,822,011	$ 1,585,176	$ 236,834	7.81%	6.16%	0.24%	14.21%	$ 37,091	87.0%
2030	14.21%	5.00%	$ 270,811	$ 38,482	$ 1,860,233	$ 1,626,958	$ 233,276	7.82%	6.08%	0.24%	14.14%	$ 38,293	87.5%
2031	14.14%	5.00%	$ 280,966	$ 39,729	$ 1,898,563	$ 1,669,891	$ 228,672	7.83%	6.00%	0.24%	14.07%	$ 39,532	88.0%
2032	14.07%	5.00%	$ 291,502	$ 41,014	$ 1,937,552	$ 1,714,695	$ 222,858	7.84%	5.93%	0.24%	14.01%	$ 40,839	88.5%
2033	14.01%	5.00%	$ 302,434	$ 42,371	$ 1,977,421	$ 1,761,678	$ 215,744	7.85%	5.87%	0.24%	13.96%	$ 42,220	89.1%
2034	13.96%	5.00%	$ 313,775	$ 43,803	$ 2,018,773	$ 1,811,587	$ 207,185	7.86%	5.82%	0.24%	13.92%	$ 43,677	89.7%
2035	13.92%	5.00%	$ 325,542	$ 45,315	$ 2,062,010	$ 1,864,974	$ 197,036	7.87%	5.77%	0.24%	13.88%	$ 45,185	90.4%
2036	13.88%	5.00%	$ 337,749	$ 46,880	$ 2,107,760	$ 1,922,633	$ 185,127	7.88%	5.73%	0.24%	13.85%	$ 46,778	91.2%
2037	13.85%	5.00%	$ 350,415	$ 48,532	$ 2,156,668	$ 1,985,353	$ 171,315	7.90%	5.69%	0.24%	13.83%	$ 48,462	92.1%
2038	13.83%	5.00%	$ 363,555	$ 50,280	$ 2,209,672	$ 2,054,273	$ 155,398	7.92%	5.66%	0.24%	13.82%	$ 50,243	93.0%
2039	13.82%	5.00%	$ 377,189	$ 52,127	$ 2,267,452	$ 2,130,288	$ 137,164	7.95%	5.63%	0.24%	13.82%	$ 52,127	94.0%
2040	13.82%	5.00%	$ 391,333	$ 54,082	$ 2,330,702	$ 2,214,329	$ 116,373	7.99%	5.61%	0.24%	13.84%	$ 54,161	95.0%
2041	13.84%	5.00%	$ 406,008	$ 56,192	$ 2,400,496	$ 2,307,734	$ 92,762	8.04%	5.59%	0.24%	13.87%	$ 56,313	96.1%
2042	13.87%	5.00%	$ 421,234	$ 58,425	$ 2,477,573	$ 2,411,572	$ 66,001	8.13%	5.57%	0.24%	13.94%	$ 58,720	97.3%
2043	13.94%	5.00%	$ 437,030	$ 60,922	$ 2,562,851	$ 2,527,086	$ 35,765	8.34%	5.56%	0.24%	14.14%	$ 61,796	98.6%
2044	14.14%	5.00%	$ 453,419	$ 64,113	$ 2,657,620	$ 2,656,056	$ 1,564	0.35%	5.55%	0.24%	6.14%	$ 27,840	99.9%
2045	6.14%	5.00%	$ 470,422	$ 28,884	$ 2,762,987	$ 2,800,562	$ (37,575)	-8.14%	5.54%	0.24%	0.00%	$ -	101.4%
2046	0.00%	5.00%	$ 488,063	$ -	$ 2,880,096	$ 2,922,240	$ (42,144)	-8.80%	5.53%	0.24%	0.00%	$ -	101.5%
2047	0.00%	5.00%	$ 506,365	$ -	$ 3,010,243	$ 3,026,329	$ (16,086)	-3.24%	5.53%	0.24%	2.53%	$ 12,811	100.5%

SECTION II – ASSETS

Pension plan assets play a key role in the financial operation of the System and in the decisions the Trustees may make with respect to future deployment of those assets. The level of assets, the allocation of assets among asset classes, and the methodology used to measure assets will likely impact benefit levels, City contributions, and the ultimate security of participants' benefits.

In this section, we present detailed information on the System assets including:

- **Disclosure** of the System assets as of April 30, 2016 and April 30, 2017;
- Statement of the **changes** in market values during the year;
- Development of the **Actuarial Value of Assets**;
- An assessment of **investment performance**; and
- A projection of the System's expected **cash flows** for the next 10 years.

Disclosure

There are two types of asset values disclosed in this valuation, the market value of assets and the actuarial value of assets. The market value represents a "snap-shot" or "cash-out" value which provides the principal basis for measuring financial performance from one year to the next. Market values, however, can fluctuate widely with corresponding swings in the marketplace. As a result, market values are usually not as suitable for year-to-year budgeting as are the actuarial value of assets which reflect smoothing of annual investment returns.

Table II-1 below discloses and compares each asset value as of April 30, 2016 and 2017.

Table II-1
Statement of Assets at Market Value as of April 30,

Assets	2016	2017	% Change
Cash	$ 18,204,817	$ 15,408,858	(15.36%)
Stock and Collective Trusts	1,004,136,284	1,076,006,335	7.16%
Accounts Receivable	1,341,477	3,089,314	130.29%
Interest and Dividends	981,168	944,554	(3.73%)
Contributions Receivable	1,200,795	1,258,303	4.79%
Expenses	(495,404)	(1,418,563)	186.34%
Purchase of Investments	(1,758,965)	(2,989,949)	69.98%
Market Value of Assets	**$ 1,023,610,172**	**$ 1,092,298,852**	6.71%

SECTION II – ASSETS

Changes in Market Value

Table II-2 below shows the components of change between the market value of assets as of April 30, 2016 and April 30, 2017.

Table II-2
Changes in Market Values

Value of Assets – April 30, 2016		**$ 1,023,610,172**
Additions		
Member Contributions	$ 7,966,105	
Employer Contributions	23,701,217	
Interest and Dividends	16,539,591	
Investment Return	92,516,905	
Total Additions	**$ 140,723,818**	
Deductions		
Benefit Payments	$ (67,877,732)	
Investment Expenses	(3,770,622)	
Administrative Expenses	(386,784)	
Total Deductions	**$ (72,035,138)**	
Value of Assets – April 30, 2017		**$ 1,092,298,852**

SECTION II – ASSETS

Actuarial Value of Assets

The next table, Table II-3, shows how the actuarial value of assets is developed.

Asset values are gradually adjusted toward market value by adding 25% of the difference between the market value and expected actuarial asset value to the expected actuarial asset value. The expected actuarial asset value is the actuarial asset value at the beginning of the year plus contributions, less benefit payments, all with interest at the assumed net rate of investment return on an actuarial basis. If the actuarial value of assets is less than 85% or more than 110% of the market value, an adjustment is made to the actuarial value to bring the value within this corridor.

Table II-3
Development of Actuarial Value of Assets

1.	**Actuarial Value of Assets at May 1, 2016**	**$ 1,055,813,977**
2.	Contributions	31,667,322
3.	Benefit Payments and Administrative Expenses	(68,264,516)
4.	Expected Return	77,838,464
5.	Expected Actuarial Value at End of Year = (1) + (2) + (3) + (4)	1,097,055,247
6.	Actual Market Value of Assets at April 30, 2017	1,092,298,852
7.	Excess of (6) over (5)	(4,756,395)
8.	Adjustment toward market value: 25% of (7)	(1,189,099)
9.	Adjustment to be within 85%/110% corridor	0
10.	**Actuarial Value of Assets at May 1, 2017 = (5) + (8) + (9)**	**$ 1,095,866,148**

SECTION II – ASSETS

Investment Performance

The market value of assets (MVA) returned 10.47% during plan year ending April 30, 2017, which is greater than the assumed 7.50% return. A return of 7.39% was experienced on the actuarial value of assets (AVA). Below, we show additional historical returns.

Table II-4
Historical Asset Returns

Fiscal Year Ending April 30,	Return on Market Value	Return on Actuarial Value	Assumed Return
2008	(1.73%)	8.14%	7.75%
2009	(25.78%)	(17.92%)	7.50%
2010	28.14%	9.24%	7.50%
2011	14.76%	10.62%	7.50%
2012	0.68%	8.32%	7.50%
2013	12.39%	9.38%	7.50%
2014	11.44%	9.96%	7.50%
2015	8.33%	9.58%	7.50%
2016	(2.47%)	6.44%	7.50%
2017	10.47%	7.39%	7.50%

Projection of System's Future Cash Flows

Table II-5
Projection of System's Expected Cash Flows ($ thousands)

Year Beginning May 1,	Benefits and Expenses	Total Contributions*	Net Cash Flow
2017	$ (74,101)	$ 33,327	$ (40,774)
2018	(76,557)	35,533	(41,024)
2019	(80,852)	37,785	(43,067)
2020	(85,192)	40,119	(45,073)
2021	(89,688)	42,497	(47,191)
2022	(94,356)	43,827	(50,529)
2023	(98,898)	45,114	(53,784)
2024	(103,606)	46,457	(57,149)
2025	(108,042)	47,883	(60,159)
2026	(112,297)	49,350	(62,947)

* *Expected contributions include City contributions and Member contributions. City contributions are projected under the Board's funding policy assuming future market value returns of 7.5% as shown in the graph on page 10.*

SECTION III – LIABILITIES

In this section, we present detailed information on the System liabilities including:

- **Disclosure** of the System liabilities as of May 1, 2016 and May 1, 2017, and
- Statement of **changes** in these liabilities during the year.

Disclosure

Several types of liabilities are calculated and presented in this report. Each type is distinguished by the people ultimately using the figures and the purpose for which they are using them.

- **Present Value of Future Benefits:** Used for measuring all future System obligations, represents the amount of money needed today to fund all benefits of the System both earned as of the valuation date and those to be earned in the future by current plan participants, under the current plan provisions.

- **Actuarial Liability:** Used for funding calculations, this liability is calculated taking the present value of benefits and subtracting the present value of future member contributions and future employer normal costs under an acceptable actuarial funding method. This method is referred to as the **Entry Age Normal** funding method.

- **Present Value of Accrued Benefits:** Used for communicating the current level of liabilities, this liability represents the total amount of money needed today to fund the current accrued obligations of the System, assuming no future accruals of benefits.

None of these liabilities are appropriate for measuring the cost of settlement of plan liabilities either by purchase of annuities or payment of lump sums.

Table III-1, which follows, discloses each of these liabilities for the current and prior valuations. With respect to each disclosure, a subtraction of the appropriate value of plan assets yields, for each respective type, a **net surplus** or an **unfunded liability**.

SECTION III – LIABILITIES

Table III-1
Liabilities/Net (Surplus)/Unfunded

	May 1, 2016	May 1, 2017
Present Value of Future Benefits		
Active Participant Benefits	$ 682,374,676	$ 693,445,901
Retiree and Inactive Benefits	730,541,280	763,849,760
Present Value of Future Benefits (PVB)	**$ 1,412,915,956**	**$ 1,457,295,661**
Actuarial Liability		
Present Value of Future Benefits (PVB)	$ 1,412,915,956	$ 1,457,295,661
Present Value of Future Normal Costs (PVFNC)	144,756,653	145,140,817
Actuarial Liability (AAL = PVB – PVFNC)	**1,268,159,303**	**1,312,154,844**
Actuarial Value of Assets (AVA)	1,055,813,977	1,095,866,148
Net (Surplus)/Unfunded (AL – AVA)	**$ 212,345,326**	**$ 216,288,696**
Present Value of Accrued Benefits		
Present Value of Future Benefits (PVB)	$ 1,412,915,956	$ 1,457,295,661
Present Value of Future Benefit Accruals (PVFBA)	266,228,018	269,740,846
Present Value of Accrued Benefits (PVAB = PVB – PVFBA)	**1,146,687,938**	**1,187,554,815**
Market Value of Assets (MVA)	1,023,610,172	1,092,298,852
Net Unfunded/(Surplus)	**$ 123,077,766**	**$ 95,255,963**

SECTION III – LIABILITIES

Changes in Liabilities

Each of the Liabilities disclosed in the prior table are expected to change at each valuation. The components of that change, depending upon which liability is analyzed, can include:

- New hires since the last valuation
- Benefits accrued since the last valuation
- System amendments increasing benefits
- Passage of time which adds interest to the prior liability
- Benefits paid to retirees since the last valuation
- Participants retiring, terminating, or dying at rates different than expected
- A change in actuarial or investment assumptions
- A change in the actuarial funding method

Unfunded liabilities will change because of all of the above, and also due to changes in plan assets resulting from:

- Employer contributions different than expected
- Investment earnings different than expected
- A change in the method used to measure plan assets

In each valuation, we report on those elements of change which are of particular significance, potentially affecting the long-term financial outlook of the System. Below, we present key changes in liabilities since the last valuation.

In the table that follows, we show the components of change in the actuarial liability between May 1, 2016 and May 1, 2017.

Table III-2

	Actuarial Liability
Liabilities May 1, 2016	$ 1,268,159,303
Liabilities May 1, 2017	1,312,154,844
Liability Increase/(Decrease)	**43,995,541**
Change Due to:	
Plan Amendments	0
Assumption Changes	0
Actuarial (Gain)/Loss	(2,291,715)
Benefits Accumulated and Other Sources	46,287,256

SECTION III – LIABILITIES

In addition, we breakdown the change in actuarial liability further by showing the total actuarial (gain)/loss by source, as shown in Table III-3 below.

TABLE III-3
(Gain)/Loss by Source as of May 1, 2017

Turnover	$ 168,000
Retirement	(1,310,000)
Pre-retirement mortality	(1,876,000)
Post-retirement mortality	(1,650,000)
Salary increase more/(less) than expected for continuing actives	(3,122,000)
New entrants	5,204,000
Data Composition & Miscellaneous changes	294,000
Total (Gain)/Loss	**$ (2,292,000)**

Table III-4
Historical Liability (Gains)/Losses ($ Millions)

Change due to:	2013	2014	2015	2016	2017
Turnover	$ (1.1)	$ (6.1)	$ (0.4)	$ 1.9	$ 0.2
Retirement	(0.5)	1.5	0.7	(0.5)	(1.3)
Pre-retirement mortality	0.7	0.8	0.7	0.7	(1.9)
Post-retirement mortality	(2.7)	(4.1)	1.5	0.2	(1.7)
Salary change	5.7	(5.4)	(11.2)	(17.0)	(3.1)
New entrants	3.0	1.6	0.9	2.6	5.2
Miscellaneous	(4.0)	2.8	1.7	6.4	0.3
Total (Gain)/Loss	**$ 1.1**	**$ (8.9)**	**$ (6.1)**	**$ (5.7)**	**$ (2.3)**

SECTION IV – CONTRIBUTIONS

In the process of evaluating the financial condition of any pension plan, the actuary analyzes the assets and liabilities to determine what level (if any) of contributions is needed to properly maintain the funding status of the System. Typically, the actuarial process will use a funding method that will result in a pattern of contributions that are both stable and predictable.

For this System, the funding method employed is the **Entry Age Actuarial Cost Method**. Under this method, there are three primary components to the total actuarially determined contribution: the **normal cost rate** (employee and employer), the **administrative expense rate**, and the **unfunded actuarial liability rate** (UAL rate). The normal cost rate is determined by taking the value, as of entry age into the system, of each member's projected future benefits. This value is then divided by the value, also at entry age, of each member's expected future salary. The normal cost rate is multiplied by current salary to determine each member's normal cost rate. Finally, the total normal cost rate is reduced by the member contribution rate to produce the employer normal cost rate. The difference between the Entry Age Normal actuarial liability and the actuarial value of assets is the unfunded actuarial liability.

Contributions are calculated on two bases:

- Under the Board's policy for calculating the Actuarially Determined Contribution, the unfunded actuarial liability is amortized under a layered approach over a 20-year period as a level percent of pay for all years except with respect to the experience loss for the plan year ending April 30, 2009. That loss was amortized over 30 years. All future gains or losses to the unfunded actuarial liability will establish new 20-year amortization periods. Payroll is expected to increase 3.75% per year.

- Under the City ordinance, the City's contributions will be based upon a 30-year open amortization of the entire unfunded liability.

For both calculations, the increase in contribution rates due to the May 1, 2016 actuarial assumption changes is phased-in over five years.

SECTION IV – CONTRIBUTIONS

Table IV-1 below presents and compares the employer contribution rates for the System for this valuation and the prior one using both the current Board funding policy amortization method and using a 30-year open amortization method.

Table IV-1
Employer Contribution Rate*

	May 1, 2016	May 1, 2017
Current Board Funding Policy		
Entry Age Normal Cost Rate	7.85%	7.71%
Administrative Expense Rate	0.24%	0.24%
Amortization Payment	6.76%	7.45%
Actuarially Determined Contribution	14.85%	15.40%
30-Year Open Amortization Method		
Entry Age Normal Cost Rate	7.85%	7.71%
Administrative Expense Rate	0.24%	0.24%
Amortization Payment	5.61%	5.93%
Actuarially Determined Contribution	13.70%	13.88%

** Rates reflect the 5-year phase-in of the 2016 assumption changes*

SECTION IV – CONTRIBUTIONS

Table IV-2 below presents the May 1, 2017 employer contribution rates for the System split between the General Employees and the Judges and Elected Officials. The employer contribution rate is based on the amortization schedule shown in Table IV-3. The employer contribution rates are then compared to what the City is expected to contribute for the current plan year. The current expected City contribution rate for all employees for the year ending April 30, 2018 is 14.85% of payroll.

Table IV -2
Development of Plan Contribution Rate
as of May 1, 2017

	General Employees	Judges and Elected Officials	Total
1. Normal Cost (Monthly):			
a. Total Normal Cost	12.99%	20.03%	13.02%
b. Administrative Expense	0.24%	0.24%	0.24%
c. Expected Members Contribution	5.01%	5.00%	5.01%
d. Employer Paid Normal Cost (a) + (b) - (c)	8.22%	15.27%	8.25%
2. Amortization of Unfunded Liability			
a. Actuarial Liability	$1,297,523,438	$14,631,406	$1,312,154,844
b. Actuarial Value of Assets[1]	1,083,646,506	12,219,642	$1,095,866,148
c. Unfunded Liability (a) - (b)	213,876,932	2,411,764	216,288,696
d. Amortization of Unfunded Liability	8.73%	20.10%	8.78%
3. Actuarially Determined Employer Contribution Rate before phase-in (1) + (2d)	16.95%	35.37%	17.03%
4. Increase due to change in 2016 assumptions	2.71%	3.69%	2.72%
5. Actuarially Determined Employer Contribution Rate after phase-in (3) - (60% x (4)) [2]	15.32%	33.15%	15.40%
6. Scheduled City Contributions [3]	14.85%	14.85%	14.85%

[1] *Allocated in proportion to the Actuarial Liability*

[2] *Total payroll is $167,811,028, and the actuarially determined contribution for plan year ending April 30, 2019 is $25,842,898 based on the total employer actuarially determined contribution rate. The payroll for the judges and elected officials is $741,315, and the actuarially determined contribution for this group for the plan year ending April 30, 2019 is $238,184*

[3] *The scheduled contribution is based upon the prior year's actuarially determined employer contribution rate for all employees.*

SECTION IV – CONTRIBUTIONS

Under the Board funding policy, for purposes of calculating the Actuarially Determined Contribution under GASB, the Unfunded Actuarial Liability is amortized in accordance with the schedule below:

Initial unfunded actuarial liability (as of May 1, 2008)	20 years
Changes to the UAL on May 1, 2009	30 years
Changes to the UAL on and after May 1, 2010	20 years

Amortization payments as of May 1, 2017 are shown in the table below.

TABLE IV-3
Unfunded Actuarial Liabilitiy Amortization Schedule

Item	Date Created	Initial Years	Initial Balance	Remaining Years	Outstanding Balance	Amortization Payment	Amortization Factor
Initial UAL	5/1/2008	20	$ 60,653,589	11	$ 53,702,172	$ 5,906,047	9.093
2009 (Gain)/Loss*	5/1/2009	30	$ 201,970,870	22	$ 225,366,741	$ 14,782,490	15.246
2010 (Gain)/Loss*	5/1/2010	20	$ (21,123,472)	13	$ (19,912,504)	$ (1,915,177)	10.397
2011 (Gain)/Loss*	5/1/2011	20	$ (12,149,092)	14	$ (11,702,385)	$ (1,062,354)	11.016
2011 Assumption Change	5/1/2011	20	$ (32,092,544)	14	$ (30,912,545)	$ (2,806,271)	11.016
2012 (Gain)/Loss*	5/1/2012	20	$ 372,006	15	$ 364,217	$ 31,365	11.612
2012 Plan Amendment	5/1/2012	20	$ 16,284,519	15	$ 15,943,595	$ 1,372,996	11.612
2013 (Gain)/Loss*	5/1/2013	20	$ (11,094,653)	16	$ (10,990,603)	$ (901,742)	12.188
2014 (Gain)/Loss*	5/1/2014	20	$ (29,765,565)	17	$ (29,715,489)	$ (2,331,720)	12.744
2014 Plan Amendment	5/1/2014	20	$ 253,038	17	$ 252,612	$ 19,822	12.744
2015 (Gain)/Loss*	5/1/2015	20	$ (29,953,245)	18	$ (29,991,597)	$ (2,258,325)	13.280
2016 (Gain)/Loss*	5/1/2016	20	$ 2,724,018	19	$ 2,727,402	$ 197,664	13.798
2016 Assumption Change	5/1/2016	20	$ 48,300,635	19	$ 48,360,639	$ 3,504,853	13.798
2017 (Gain)/Loss*	5/1/2017	20	$ 2,796,441	20	$ 2,796,441	$ 195,585	14.298
Total					**$ 216,288,696**	**$ 14,735,232**	

**Also includes differences between the Actuarially Determined Contribution and the actual contributions made.*

*** Results do not reflect the 5 year phase-in of the 2016 assumption changes*

Under the City ordinance, amortization payments are calculated using a 30-year open amortization method. The amortization payment as of May 1, 2017 is shown in the table below.

TABLE IV-4
Unfunded Actuarial Liability Amortization Schedule

UAL	Remaining Years*	Amortization Payment**	Amortization Factor
$216,288,696	30	$11,735,974	18.430

**30-year open amortization*

*** Results do not reflect the 5 year phase-in of the 2016 assumption changes*

SECTION V – FINANCIAL STATEMENT INFORMATION

The Government Finance Officers Association (GFOA) maintains a checklist of items to be included in a public retirement system's Comprehensive Annual Financial Report (CAFR) in order to receive recognition for excellence in financial reporting. Although the Kansas City Employees' Retirement System does not issue a CAFR under GFOA guidelines, we have included certain schedules in this section for possible inclusion within the System's audited financial statements.

Tables V-1 through V-5 are exhibits which could be used with the CAFR report. Table V-1 is the Note to Required Supplementary Information, Table V-2 is a history of gains and losses in actuarial liability, Table V-3 is the Solvency Test which shows the portion of actuarial liability covered by assets, Table V-4 shows historical Actuarially Determined Contribution information, compared to what the City actually contributed, and Table V-5 is the Schedule of Funding Progress.

SECTION V – FINANCIAL STATEMENT INFORMATION

Table V-1
NOTE TO REQUIRED SUPPLEMENTARY INFORMATION

The information presented in the required supplementary schedules was determined as part of the actuarial valuation at the date indicated. Additional information as of the latest actuarial valuation follows.

Valuation date	May 1, 2017
Actuarial cost method	Entry age
Amortization method	20-year layered amortization, level percent of pay*
Remaining amortization period for the UAL	Weighted average of 20.8 years
Asset valuation method	Four year smoothing using Expected Value Method
Actuarial assumptions:	
Investment rate of return	7.50%
Projected salary increases	Ranges from 5.0% to 3.75%
Cost-of-living adjustments	3.0% simple
Inflation	3.0%

The actuarial assumptions used have been based upon recommendations by the actuary and adopted by the System's Board of Trustees. The most recent actuarial experience study was performed for the period May 1, 2010 through April 30, 2015.

The rate of employer actuarially determined contributions to the System is composed of the normal cost, expected administrative expenses, and an amortization of the unfunded actuarial liability. The normal cost is a level percent of payroll cost which, along with member contributions, will pay for projected benefits at retirement for the average plan participant. The actuarial liability is that portion of the present value of projected benefits that will not be paid by future employer normal costs or member contributions. The difference between this liability and the actuarial value of assets as of the same date is the unfunded actuarial liability. The contribution rate change as a result of the revised assumptions adopted as of May 1, 2016 is phased-in over five years.

** For all years except changes to the 5/1/2009 unfunded actuarial liability, which are amortized over 30 years.*

SECTION V – FINANCIAL STATEMENT INFORMATION

Table V-2
ANALYSIS OF FINANCIAL EXPERIENCE
Gain and Loss in Unfunded Actuarial Liability During Years Ended April 30
Resulting from Differences Between Assumed Experience and Actual Experience

	Gain (or Loss) for Year ending April 30, (expressed in thousands)								
Type of Activity	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Investment Income*	$(216,876)	$ 5,151	$ 18,253	$ 880	$ 12,225	$ 20,897	$ 23,876	$ (8,394)	$ (5,088)
Combined Liability Experience	12,781	15,972	(6,104)	(1,252)	(1,130)	8,868	6,077	5,670	2,292
Gain/(or Loss) during Year from Financial Experience	$(204,095)	$ 21,123	$ 12,149	$ (372)	$ 11,095	$ 29,765	$ 29,953	$ (2,724)	$ (2,796)
Non-Recurring Gain/(or Loss) Items	0	0	32,093	(16,285)	0	(253)	0	(48,301)	0
Composite Gain/(or Loss) during Year	$(204,095)	$ 21,123	$ 44,242	$ (16,657)	$ 11,095	$ 29,512	$ 29,953	$ (51,025)	$ (2,796)

** Investment experience includes differences in actual and recommended contributions*

SECTION V – FINANCIAL STATEMENT INFORMATION

Table V-3
SOLVENCY TEST
Aggregate Actuarial Liabilities for
(expressed in thousands)

Valuation Date May 1	Active Member Contributions (1)	Retirees & Beneficiaries (2)	Active Member Employer Financed Contributions (3)	Actuarial Value of Reported Assets	Portion of Actuarial Liabilities Covered by Reported Assets (1)	(2)	(3)
2008	$78,339	$468,489	$387,506	$873,680	100%	100%	84%
2009	$78,693	$502,980	$385,106	$704,069	100%	100%	32%
2010	$82,853	$521,175	$390,740	$749,552	100%	100%	37%
2011	$87,137	$549,227	$374,632	$806,793	100%	100%	45%
2012	$88,746	$577,175	$404,832	$847,090	100%	100%	45%
2013	$90,514	$603,734	$420,917	$900,062	100%	100%	49%
2014	$92,849	$630,056	$426,979	$962,152	100%	100%	56%
2015	$96,110	$669,335	$420,299	$1,026,046	100%	100%	62%
2016	$100,307	$730,541	$437,311	$1,055,814	100%	100%	51%
2017	$102,889	$763,850	$445,416	$1,095,866	100%	100%	51%

SECTION V – FINANCIAL STATEMENT INFORMATION

Table V-4
Schedule of City Contributions

Plan Year Ended April 30	Actuarially Determined Contributions		Actual Contributions	Percentage Contributed
2009	$19,364,846	*	$20,330,486	104.99%
2010	$29,589,060	*	$19,186,317	64.84%
2011	$27,772,227	*	$18,822,709	67.78%
2012	$26,326,555	*	$20,543,487	78.03%
2013	$27,682,872	*	$23,744,372	85.77%
2014	$27,568,194	*	$25,987,662	94.27%
2015	$27,568,194	**	$27,569,434	100.00%
2016	$24,540,893	**	$24,577,647	100.15%
2017	$23,042,413	**	$23,701,217	102.86%
2018	$24,390,835	**	--	--

**The actuarially determined contribution for the plan years ended April 30, 2009 through April 30, 2014 is based on the actuarially computed contribution for the valuation year.*

***For plan years ended April 30, 2015 and later, the actuarially determined contribution is based on the calculation for the prior valuation year using estimated valuation payroll. The actuarially computed contribution for the current valuation year is described in Section IV, Table IV-2.*

SECTION V – FINANCIAL STATEMENT INFORMATION

Table V-5
Schedule of Funding Progress

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Liability (b)	Unfunded Actuarial Liability (b) - (a)	Funded Ratio (a) / (b)	Covered Payroll (c)	UAL as a Percentage of Covered Payroll* [(b) - (a)] / (c)
5/1/2008	$873,680,276	$934,333,865	$60,653,589	93.51%	$169,867,066	35.71%
5/1/2009	$704,069,429	$966,779,322	$262,709,893	72.83%	$160,200,649	163.99%
5/1/2010	$749,551,649	$994,767,684	$245,216,035	75.35%	$153,948,044	159.28%
5/1/2011	$806,792,596	$1,010,996,133	$204,203,537	79.80%	$163,113,722	125.19%
5/1/2012	$847,089,856	$1,070,752,440	$223,662,584	79.11%	$161,134,295	138.81%
5/1/2013	$900,061,516	$1,115,165,108	$215,103,592	80.71%	$166,877,688	128.90%
5/1/2014	$962,152,010	$1,149,883,725	$187,731,715	83.67%	$167,629,048	111.99%
5/1/2015	$1,026,045,837	$1,185,743,686	$159,697,849	86.53%	$166,853,097	95.71%
5/1/2016	$1,055,813,977	$1,268,159,303	$212,345,326	83.26%	$164,248,048	129.28%
5/1/2017	$1,095,866,148	$1,312,154,844	$216,288,696	83.52%	$167,811,028	128.89%

** Not less than zero*

APPENDIX A – MEMBERSHIP INFORMATION

City of Kansas City, Missouri Employees' Retirement System Active Member Data	May 1, 2016	May 1, 2017	% Change
Total			
Count	3,161	3,170	0.28%
Average Current Age	47.14	47.12	-0.04%
Average Service	12.08	12.08	0.00%
Average Valuation Pay	$ 51,961	$ 52,937	1.88%
Annual Compensation	$ 164,248,048	$ 167,811,028	2.17%
General Members			
Count	3,156	3,165	0.29%
Average Current Age	47.13	47.11	-0.04%
Average Service	12.08	12.08	0.00%
Average Valuation Pay	$ 51,813	$ 52,787	1.88%
Annual Compensation	$ 163,521,333	$ 167,069,713	2.17%
Judges			
Count	5	5	0.00%
Average Current Age	53.69	54.69	1.86%
Average Service	12.22	13.22	8.18%
Average Valuation Pay	$ 145,343	$ 148,263	2.01%
Annual Compensation	$ 726,715	$ 741,315	2.01%
Elected Officials			
Count	0	0	0.00%
Average Current Age	0.00	0.00	0.00%
Average Service	0.00	0.00	0.00%
Average Valuation Pay	$ 0	$ 0	0.00%
Annual Compensation	$ 0	$ 0	0.00%

APPENDIX A – MEMBERSHIP INFORMATION

Kansas City Employees' Retirement System Table of Plan Coverage	May 1, 2016	May 1, 2017	% change
Active Members in Valuation			
Tier 1			
Number	2,647	2,415	-8.76%
Average Age	48.98	49.89	1.86%
Average Service	14.25	15.43	8.28%
Total Payroll	$ 144,497,880	$ 137,435,697	-4.89%
Average Anticipated Payroll	$ 54,589	$ 56,909	4.25%
Account Balance	$ 99,454,710	$ 100,877,071	1.43%
Eligible to Retire on:			
Normal Pension	101	104	2.97%
Optional Pension	378	404	6.88%
Early Pension	247	253	2.43%
Deferred Pension	1,498	1,398	-6.68%
Total Active Vested Members	2,224	2,159	-2.92%
Tier 2			
Number	514	755	46.89%
Average Age	37.70	38.25	1.46%
Average Service	0.92	1.38	50.00%
Total Payroll	$ 19,750,168	$ 30,375,331	53.80%
Average Anticipated Payroll	$ 38,424	$ 40,232	4.70%
Account Balance	$ 852,530	$ 2,012,180	136.02%
Eligible to Retire on:			
Normal Pension	0	0	N/A
Optional Pension	0	0	N/A
Early Pension	0	0	N/A
Deferred Pension	0	0	N/A
Total Active Vested Members	0	0	N/A
Total			
Number	3,161	3,170	0.28%
Average Age	47.14	47.12	-0.04%
Average Service	12.08	12.08	0.00%
Total Payroll	$ 164,248,048	$ 167,811,028	2.17%
Average Anticipated Payroll	$ 51,961	$ 52,937	1.88%
Account Balance	$ 100,307,240	$ 102,889,251	2.57%
Eligible to Retire on:			
Normal Pension	101	104	2.97%
Optional Pension	378	404	6.88%
Early Pension	247	253	2.43%
Deferred Pension	1,498	1,398	-6.68%
Total Active Vested Members	2,224	2,159	-2.92%

APPENDIX A – MEMBERSHIP INFORMATION

Kansas City Employees' Retirement System Table of Plan Coverage (cont.)	May 1, 2016	May 1, 2017	% change
Vested Terminated Members	101	111	9.90%
Deaths During the Plan Year	93	115	23.66%
Pensioners:			
Number in Pay Status			
Retirees	1,967	2,012	2.29%
Disabled Retirees	9	8	-11.11%
Total	1,976	2,020	2.23%
Average Age	70.08	70.29	0.29%
Average Monthly Benefit**	$ 2,283	$ 2,349	2.87%
Beneficiaries in Pay Status*	386	380	-1.55%
Members Due Refunds	220	283	28.64%

** Widows, QDROs, and Children*

*** The monthly benefit does not include the health insurance subsidy benefits*

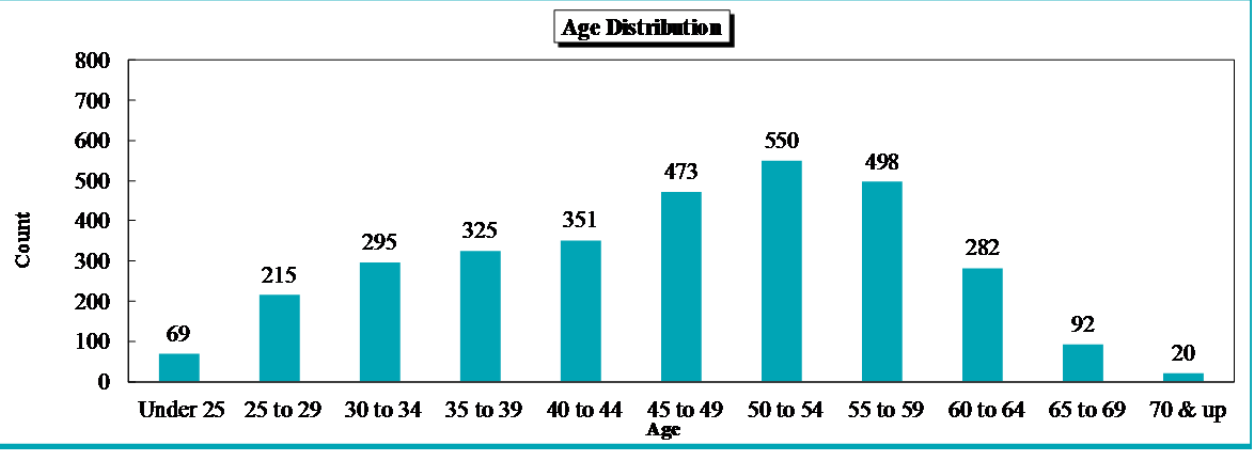
APPENDIX A – MEMBERSHIP INFORMATION

Kansas City Employees' Retirement System Distribution of Active Members by Age and Service as of May 1, 2017

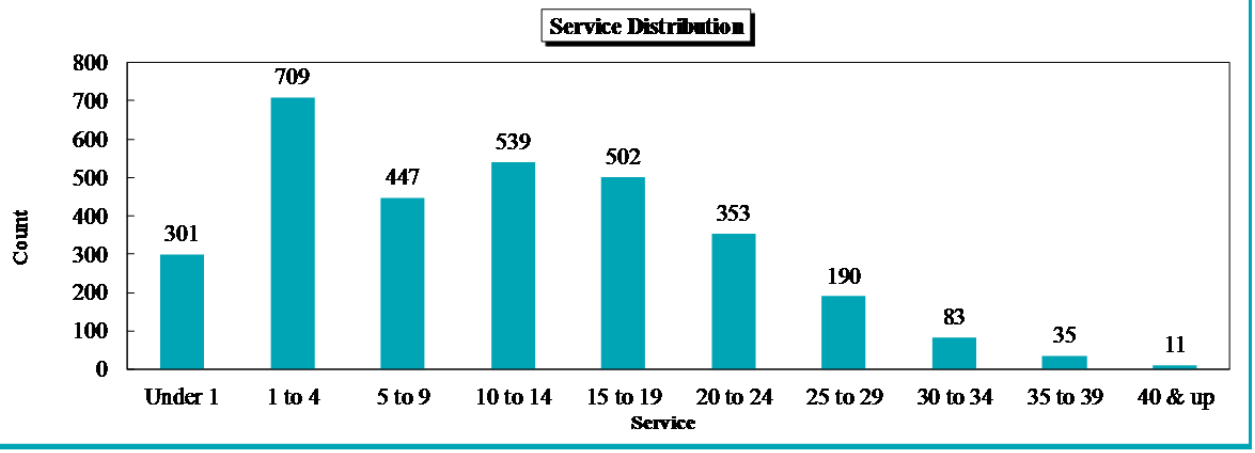
COUNTS BY AGE/SERVICE

Age	Service: Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	Total
Under 25	39	29	1	0	0	0	0	0	0	0	69
25 to 29	71	115	28	1	0	0	0	0	0	0	215
30 to 34	58	130	66	40	1	0	0	0	0	0	295
35 to 39	31	122	73	69	29	1	0	0	0	0	325
40 to 44	24	80	67	96	71	13	0	0	0	0	351
45 to 49	27	71	63	91	125	73	22	1	0	0	473
50 to 54	24	59	63	85	126	112	61	18	2	0	550
55 to 59	19	59	48	86	84	93	63	34	11	1	498
60 to 64	6	36	25	48	48	45	31	23	17	3	282
65 to 69	1	7	12	20	17	11	11	5	4	4	92
70 & up	1	1	1	3	1	5	2	2	1	3	20
Total	301	709	447	539	502	353	190	83	35	11	3,170

Kansas City Employees' Retirement System Distribution of Active Members by Age as of May 1, 2017



Kansas City Employees' Retirement System Distribution of Active Members by Service as of May 1, 2017



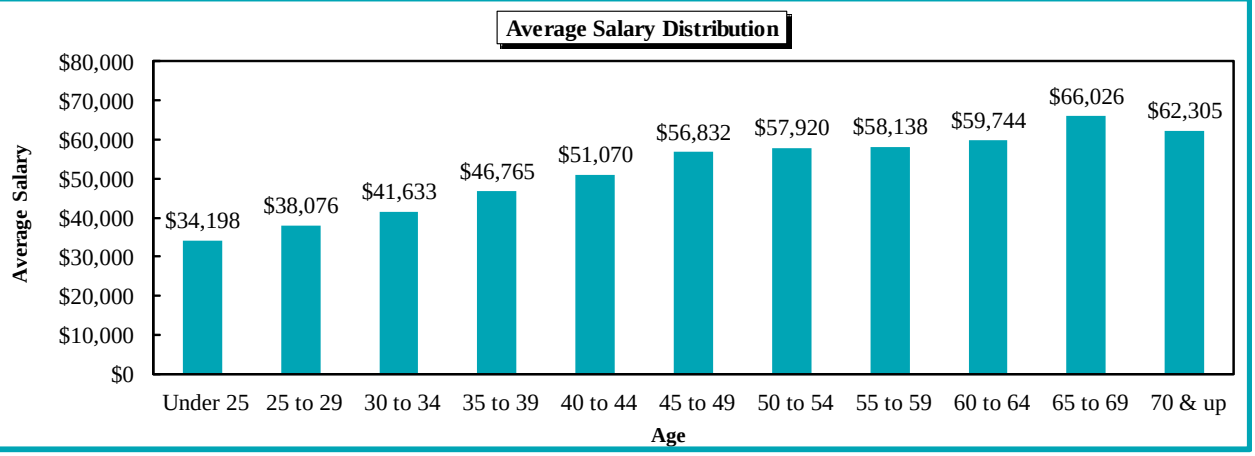
APPENDIX A – MEMBERSHIP INFORMATION

Kansas City Employees' Retirement System Distribution of Active Members by Age and Service as of May 1, 2017

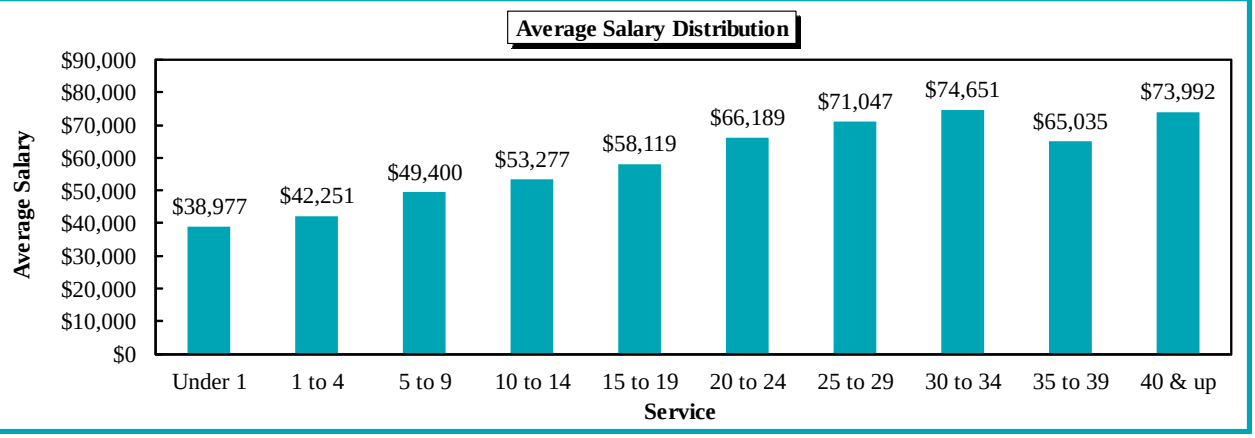
AVERAGE SALARY BY AGE/SERVICE

Age	Service										
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	Total
Under 25	$ 35,380	$ 32,673	$ 32,340	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$34,198
25 to 29	37,578	38,120	39,096	39,864	-	-	-	-	-	-	38,076
30 to 34	38,939	40,485	44,535	44,411	44,484	-	-	-	-	-	41,633
35 to 39	44,190	42,943	50,338	49,876	49,122	49,068	-	-	-	-	46,765
40 to 44	37,445	45,919	52,140	53,237	54,751	66,309	-	-	-	-	51,070
45 to 49	36,181	44,565	55,964	56,385	59,862	68,416	69,897	69,084	-	-	56,832
50 to 54	39,177	44,656	49,568	51,848	61,052	66,139	67,202	76,475	87,492	-	57,920
55 to 59	43,839	45,446	47,276	55,365	52,478	66,435	73,932	68,618	68,799	73,944	58,138
60 to 64	42,916	43,397	45,189	55,312	65,204	62,328	73,927	78,481	60,882	58,992	59,744
65 to 69	96,000	53,637	62,853	62,959	62,077	68,274	70,723	74,047	62,538	96,222	66,026
70 & up	53,616	30,816	45,504	44,640	50,700	63,507	67,248	121,056	59,304	59,368	62,305
Total	$ 38,977	$ 42,251	$ 49,400	$ 53,277	$ 58,119	$ 66,189	$ 71,047	$ 74,651	$ 65,035	$ 73,992	$52,937

Kansas City Employees' Retirement System Distribution of Active Members by Age as of May 1, 2017



Kansas City Employees' Retirement System Distribution of Active Members by Service as of May 1, 2017



APPENDIX A – MEMBERSHIP INFORMATION

Kansas City Employees' Retirement System
Pensions in Payment Status by Type and Monthly Amount
as of May 1, 2017

Monthly Amount	Total	Normal	Early	Optional	Vested	Disability	Widows & QDROs
Total	**2,400**	**277**	**215**	**1,325**	**195**	**8**	**380**
Under $500	231	24	52	3	34	0	118
$500-$1,000	398	68	79	69	73	1	108
$1,000-$1,500	350	46	47	145	45	7	60
$1,500-$2,000	332	42	21	206	25	0	38
$2,000-$2,500	277	23	10	212	10	0	22
$2,500-$3,000	253	24	1	206	7	0	15
$3,000-$3,500	159	10	2	141	0	0	6
$3,500-$4,000	117	14	1	96	1	0	5
$4,000-$4,500	94	8	1	84	0	0	1
$4,500-$5,000	54	8	0	45	0	0	1
$5,000 & over	135	10	1	118	0	0	6

During the year ended April 30, 2017 there were 146 new pensions awarded (35 Normal, 7 Early, 56 Optional, 15 Vested, 0 Disability, and 33 Widows and QDROs)

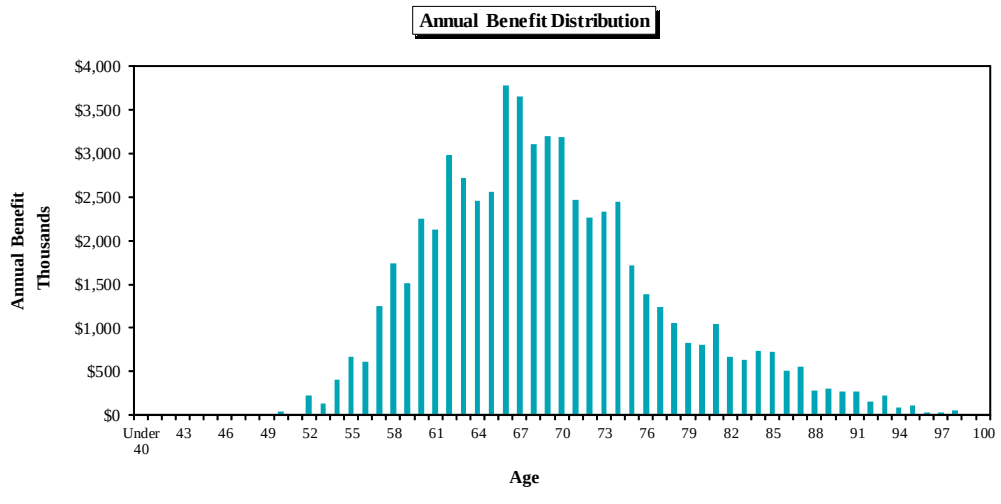
APPENDIX A – MEMBERSHIP INFORMATION

Kansas City Employees' Retirement System Distribution of Retired Members and Survivors as of May 1, 2017

Age	Count	Annual Benefit*	Age	Count	Annual Benefit*	Age	Count	Annual Benefit*
<25	0	$0	57	43	$1,255,651	89	21	$309,350
25	0	0	58	57	1,739,195	90	23	273,128
26	0	0	59	48	1,509,738	91	24	269,112
27	0	0	60	72	2,250,144	92	13	158,401
28	0	0	61	71	2,124,600	93	17	224,541
29	0	0	62	104	2,978,002	94	8	83,558
30	0	0	63	94	2,721,165	95	14	105,528
31	0	0	64	93	2,461,173	96	4	31,063
32	0	0	65	98	2,565,304	97	4	26,075
33	0	0	66	128	3,782,070	98	7	51,864
34	0	0	67	127	3,656,188	99	2	7,499
35	0	0	68	111	3,106,591	100	0	0
36	0	0	69	109	3,200,482	101	1	3,422
37	0	0	70	108	3,186,956	102	0	0
38	0	0	71	78	2,469,051	103	1	6,039
39	1	12,645	72	82	2,261,985	104	0	0
40	0	0	73	84	2,326,672	105	0	0
41	0	0	74	86	2,449,109	106	0	0
42	0	0	75	62	1,721,016	107	0	0
43	0	0	76	56	1,386,092	108	0	0
44	0	0	77	52	1,240,688	109	0	0
45	0	0	78	50	1,056,037	110	0	0
46	0	0	79	40	827,381	111	0	0
47	1	13,274	80	43	810,362	112	0	0
48	1	4,466	81	47	1,046,987	113	0	0
49	1	3,485	82	33	671,043	114	0	0
50	2	40,180	83	33	638,527	115	0	0
51	0	0	84	38	739,081	116	0	0
52	6	220,939	85	35	724,734	117	0	0
53	5	137,761	86	41	506,621	118	0	0
54	13	403,716	87	31	552,277	119	0	0
55	26	672,245	88	17	282,261	120	0	0
56	26	614,186						
						Totals	2,392	$61,919,660

** The annual benefit does not include the subsidy benefits*

Kansas City Employees' Retirement System Distribution of Retired Members and Survivors as of May 1, 2017



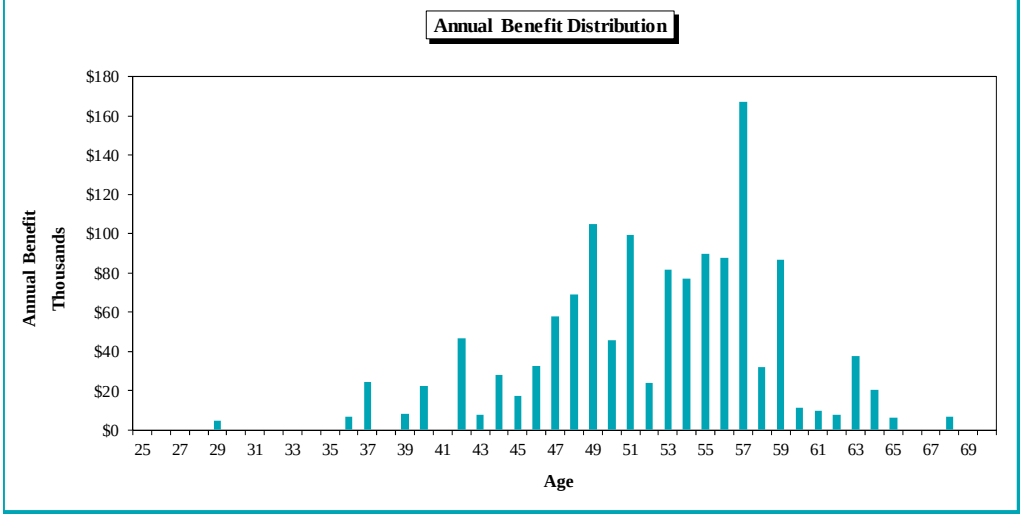
APPENDIX A – MEMBERSHIP INFORMATION

Kansas City Employees' Retirement System Distribution of Vested Members as of May 1, 2017

Age	Count	Annual Unreduced Benefit*	Age	Count	Annual Unreduced Benefit*	Age	Count	Annual Unreduced Benefit*
<25	0	$0	57	10	$166,974	89	0	$0
25	0	0	58	5	32,273	90	0	0
26	0	0	59	7	86,833	91	0	0
27	0	0	60	2	11,424	92	0	0
28	0	0	61	1	9,735	93	0	0
29	1	4,988	62	2	7,800	94	0	0
30	0	0	63	4	37,718	95	0	0
31	0	0	64	3	20,268	96	0	0
32	0	0	65	1	6,425	97	0	0
33	0	0	66	0	0	98	0	0
34	0	0	67	0	0	99	0	0
35	0	0	68	2	6,793	100	0	0
36	1	6,785	69	0	0	101	0	0
37	4	24,572	70	0	0	102	0	0
38	0	0	71	0	0	103	0	0
39	1	8,173	72	0	0	104	0	0
40	3	22,446	73	0	0	105	0	0
41	0	0	74	0	0	106	0	0
42	4	46,964	75	0	0	107	0	0
43	2	7,985	76	0	0	108	0	0
44	3	28,221	77	0	0	109	0	0
45	2	17,625	78	0	0	110	0	0
46	2	32,497	79	0	0	111	0	0
47	4	57,747	80	0	0	112	0	0
48	5	69,238	81	0	0	113	0	0
49	6	104,765	82	0	0	114	0	0
50	3	45,951	83	0	0	115	0	0
51	6	99,310	84	0	0	116	0	0
52	3	24,172	85	0	0	117	0	0
53	4	81,609	86	0	0	118	0	0
54	7	76,990	87	0	0	119	0	0
55	8	89,983	88	0	0	120	0	0
56	5	87,565						
						Totals	111	$1,323,829

** The annual benefit does not include the subsidy benefits*

Kansas City Employees' Retirement System Distribution of Vested Members as of May 1, 2017



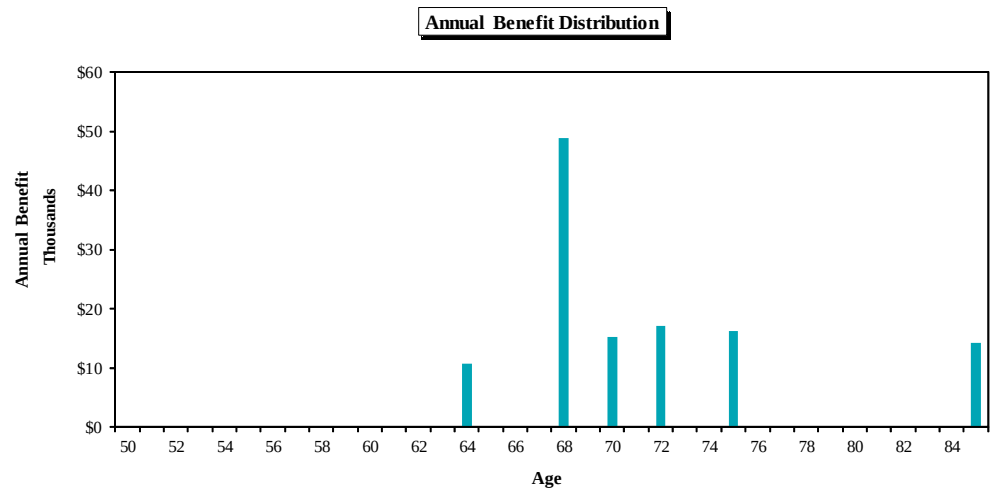
APPENDIX A – MEMBERSHIP INFORMATION

Kansas City Employees' Retirement System Distribution of Disabled Members as of May 1, 2017

Age	Count	Annual Benefit*	Age	Count	Annual Benefit*	Age	Count	Annual Benefit*
<25	0	$0	57	0	$0	89	0	$0
25	0	0	58	0	0	90	0	0
26	0	0	59	0	0	91	0	0
27	0	0	60	0	0	92	0	0
28	0	0	61	0	0	93	0	0
29	0	0	62	0	0	94	0	0
30	0	0	63	0	0	95	0	0
31	0	0	64	1	10,646	96	0	0
32	0	0	65	0	0	97	0	0
33	0	0	66	0	0	98	0	0
34	0	0	67	0	0	99	0	0
35	0	0	68	3	48,798	100	0	0
36	0	0	69	0	0	101	0	0
37	0	0	70	1	15,151	102	0	0
38	0	0	71	0	0	103	0	0
39	0	0	72	1	17,067	104	0	0
40	0	0	73	0	0	105	0	0
41	0	0	74	0	0	106	0	0
42	0	0	75	1	16,197	107	0	0
43	0	0	76	0	0	108	0	0
44	0	0	77	0	0	109	0	0
45	0	0	78	0	0	110	0	0
46	0	0	79	0	0	111	0	0
47	0	0	80	0	0	112	0	0
48	0	0	81	0	0	113	0	0
49	0	0	82	0	0	114	0	0
50	0	0	83	0	0	115	0	0
51	0	0	84	0	0	116	0	0
52	0	0	85	1	14,249	117	0	0
53	0	0	86	0	0	118	0	0
54	0	0	87	0	0	119	0	0
55	0	0	88	0	0	120	0	0
56	0	0						
						Totals	8	$122,108

** The annual benefit does not include the subsidy benefits*

Kansas City Employees' Retirement System Distribution of Disabled Members as of May 1, 2017



APPENDIX A – MEMBERSHIP INFORMATION

Kansas City Employees' Retirement System
Change in Plan Membership

Tier 1

	Actives	Vested Terminations	Refund Due	Disabilities	Retirees	Beneficiaries*	Total
May 1, 2016	**2,647**	**101**	**124**	**9**	**1,967**	**386**	**5,234**
New Entrants	0	0	0	0	0	0	0
Rehires	2	0	(2)	0	0	0	0
Vested Terminations	(8)	8	0	0	0	0	0
Terminated with Refund Due	(49)	0	49	0	0	0	0
Return of Contributions	(73)	(2)	(28)	0	0	0	(103)
Disabilities	0	0	0	0	0	0	0
Retirements	(95)	(8)	(3)	0	106	0	0
Benefits Suspended	0	0	0	0	0	(2)	(2)
Deaths	(9)	0	(1)	(1)	(68)	(37)	(116)
New Survivor	0	0	0	0	0	32	32
Miscellaneous Adjustments	0	12	2	0	7	1	22
May 1, 2017	**2,415**	**111**	**141**	**8**	**2,012**	**380**	**5,067**

Tier 2

	Actives	Vested Terminations	Refund Due	Disabilities	Retirees	Beneficiaries*	Total
May 1, 2016	**514**	**0**	**96**	**0**	**0**	**0**	**610**
New Entrants	316	0	28	0	0	0	344
Rehires	7	0	(2)	0	0	0	5
Vested Terminations	0	0	0	0	0	0	0
Terminated with Refund Due	(32)	0	32	0	0	0	0
Return of Contributions	(50)	0	(12)	0	0	0	(62)
Disabilities	0	0	0	0	0	0	0
Retirements	0	0	0	0	0	0	0
Benefits Suspended	0	0	0	0	0	0	0
Deaths	0	0	0	0	0	0	0
New Survivor	0	0	0	0	0	0	0
Miscellaneous Adjustments	0	0	0	0	0	0	0
May 1, 2017	**755**	**0**	**142**	**0**	**0**	**0**	**897**

Total

	Actives	Vested Terminations	Refund Due	Disabilities	Retirees	Beneficiaries*	Total
May 1, 2016	**3,161**	**101**	**220**	**9**	**1,967**	**386**	**5,844**
New Entrants	316	0	28	0	0	0	344
Rehires	9	0	(4)	0	0	0	5
Vested Terminations	(8)	8	0	0	0	0	0
Terminated with Refund Due	(81)	0	81	0	0	0	0
Return of Contributions	(123)	(2)	(40)	0	0	0	(165)
Disabilities	0	0	0	0	0	0	0
Retirements	(95)	(8)	(3)	0	106	0	0
Benefits Suspended	0	0	0	0	0	(2)	(2)
Deaths	(9)	0	(1)	(1)	(68)	(37)	(116)
New Survivor	0	0	0	0	0	32	32
Miscellaneous Adjustments	0	12	2	0	7	1	22
May 1, 2017	**3,170**	**111**	**283**	**8**	**2,012**	**380**	**5,964**

** Widows & QDROs*

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

A. Actuarial Assumptions

1. Net Investment Return

7.50% per annum, including inflation of 3.00% and net of investment fees.

2. Mortality Rates

Non-annuitant mortality:	RP-2000 Combined Healthy Non-Annuitant Mortality Table (multiplied by 0.956 for males and 0.960 for females), projected using a modified Scale MP-2015 on a generational basis.
Healthy annuitant mortality:	RP-2000 Combined Healthy Annuitant Mortality Table (multiplied by 1.078 for males and 1.065 for females), projected using a modified Scale MP-2015 on a generational basis.
Disabled annuitant mortality:	RP-2000 Combined Disabled Mortality Table (multiplied by 1.300 for males and 1.500 for females), projected using a modified Scale MP-2015 on a generational basis.
Modified Projection Scale:	Modified Scale MP-2015 using the Society of Actuaries' model implementation tool with rates converging to the ultimate rate in 2019 (instead of 2029) and an ultimate rate improvement of 0.85% (instead of 1.0%) up to age 85 decreasing to 0.7% (instead of 0.85%) at age 95.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

3. Termination Rates before Retirement

Sample Withdrawal Rates*			
Age	General Employees**	Judges	Elected Officials
20	12%	0	30%
25	9	0	30
30	8	0	30
35	7	0	30
40	5	0	30
45	4	0	30
50	4	0	30
55	4	0	30
60	4	0	30
65	4	0	30
70	0	0	0

* Withdrawal rates end upon first assumed retirement age.
** Select rates for first four years of service for General Employees:

Select Period	
Years of Service	Rate
0 – 1	17.5%
1 – 2	15.0%
2 – 3	12.0%
3 – 4	10.0%

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

4. Retirement Rates

Age	General Employees			Judges and Elected Officials
	Age Plus Service Less than 80/85* Points	Age Plus Service Equal to 80/85* Points	Age Plus Service Greater than 80/85* Points	
Under 55	0.0%	25.0%	12.5%	0.0%
55	5.0	25.0	12.5	0.0
56	5.0	25.0	12.5	0.0
57	5.0	25.0	12.5	0.0
58	5.0	25.0	12.5	0.0
59	5.0	25.0	12.5	0.0
60	10.0	25.0	12.5	10.0
61	10.0	25.0	20.0	10.0
62	10.0	25.0	20.0	10.0
63	15.0	25.0	20.0	10.0
64	15.0	25.0	20.0	10.0
65	30.0	35.0	40.0	50.0
66	30.0	35.0	30.0	50.0
67	30.0	35.0	30.0	50.0
68	30.0	35.0	30.0	50.0
69	30.0	35.0	30.0	50.0
70	100.0	100.0	100.0	100.0

* 80 points for Tier 1 members and 85 points for Tier 2 members.

5. Retirement Age for Inactive Vested Members

58 if years of service is greater than or equal to 10, and 62 if years of service is less than 10.

6. Percent Married

70% for males and 40% for females in active status.

7. Age of Spouse

Male participants are three years older than their spouses and female participants are two years younger than their spouses.

8. Joint and Survivor Election Assumption

90% for married males and 75% for married females in active status.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

9. Sick Leave and Vacation Service Conversion

No additional service granted.

10. Administrative Expenses

0.24% of payroll is added to the normal cost of the system for expected administrative expenses.

11. Salary Increases

General Employees	
Service	**Rate (%)**
0	5.000%
1	4.940
2	4.880
3	4.820
4	4.760
5	4.700
6	4.640
7	4.580
8	4.520
9	4.460
10	4.400
11	4.340
12	4.280
13	4.220
14	4.160
15	4.100
16	4.040
17	3.980
18	3.920
19	3.860
20	3.800
21 and up	3.750

Judges and Elected Official: 3.75% per year for all ages.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

12. Interest on Employee Contributions

5.00% per year, compounded annually.

13. Unknown Data for Members

Same as those exhibited by Members with similar known characteristics. If not specified, Members are assumed to be male.

14. Changes since Last Valuation

None

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

B. Rationale for Assumptions

1. Economic Assumptions

The investment return assumption of 7.50% was selected based upon an analysis that included (a) capital market assumptions provided by the investment consultant, (b) the asset allocation of the fund, and (c) investment return assumptions of other public retirement systems.

The inflation assumption of 3.0% was selected based upon an analysis that included (a) input from the investment consultant, (b) historical inflation as measured by the Consumer Price Index, and (c) implied inflation in long-term government bonds.

The long-term wage growth assumption of 3.75% was based upon the inflation assumption of 3.0% plus a real wage growth assumption of 0.75%, which was derived from an analysis of historical increases in Social Security Average earnings.

2. Demographic Assumptions

The demographic assumptions are based upon the most recent experience study covering the period 2010-2015.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

C. Actuarial Methods

1. Actuarial Value of Assets

Asset values are gradually adjusted toward market value by adding 25% of the difference between the market value and expected actuarial asset value to the expected actuarial asset value. The expected actuarial asset value is the actuarial asset value at the beginning of the year plus contributions, less benefit payments and administrative expenses, all with interest at the assumed net rate of investment return on an actuarial basis. If the actuarial value of assets is less than 85% or more than 110% of the market value, an adjustment is made to the actuarial value to bring the value within this corridor.

2. Actuarial Cost Method

Entry Age Normal Actuarial Cost Method: Entry age is the age at the time the participant commenced employment. Normal cost and actuarial liability are calculated on an individual basis and are allocated by salary, with normal cost determined as if the current benefit accrual rate had always been in effect.

3. Amortization of Unfunded Actuarial Liability/Surplus

i. Board Funding Policy: 20-year layered amortization method; level percent of pay for all years except the May 1, 2009 Plan Year (30-year layer). Under the layered approach, the May 1, 2009 changes to the unfunded actuarial liability will be written down over a 30-year period and all future changes to the unfunded actuarial liability will establish new 20-year amortization periods. Payroll is expected to increase 3.75% per year.

ii. City Contribution Policy: Under the Ordinance, the City's contribution will be based on an open 30-year amortization period, level percent of pay.

iii. Contribution rate changes as a result of revised assumptions adopted as of May 1, 2016 are phased-in over five years (20% phase-in per year).

4. Changes since Last Valuation

None

APPENDIX C – SUMMARY OF PLAN PROVISIONS
TIER 1

1. Plan Year

May 1 through April 30.

2. Membership

All full-time permanent employees hired prior to April 20, 2014 in the classified and unclassified services shall become members as a condition of employment. Employees of any administrative board or board of control as organized and existing under general laws of Missouri and as defined in Revised Statutes of Missouri, Section 95.540, whose governing body has elected membership, shall become members. Unless otherwise provided, no members of the Council, including the Mayor, who commence a term of office after April 30, 2011 shall participate in this plan for any service after April 30, 2011. However, members of the Council, including the Mayor, elected on March 27, 2007 for a term beginning May 1, 2007 and also elected on March 22, 2011 for a term beginning May 1, 2011 are members of this plan as long as they are continuously a member of the Council, including the Mayor. Membership shall begin on the first day of employment.

3. Credited Service

Total creditable service is defined as the sum of the number of years of membership service and prior service.

Membership Service:	Years and full calendar months of employment while a contributing member of this System.
Prior Service:	Years and full calendar months of employment preceding December 21, 1962, if continuous with membership service.

APPENDIX C – SUMMARY OF PLAN PROVISIONS
TIER 1

MAST employees are credited with service after April 25, 2010, plus a fraction of their service earned prior to April 25, 2010. This Fraction is based on their age and service as of April 25, 2010 as shown in the following table:

Sum of Age and Prior Service as of 4/25/10 Less Adjustment for Prior Retirement Benefit	Percent of Prior Service Credit
Over 80	100%
74 to 79	90
68 to 73	80
62 to 67	70
56 to 61	60
50 to 55	50
44 to 49	40
38 to 43	30
32 to 37	20
26 to 31	10
20 to 25	5

4. Normal Retirement

Age Requirement: General Employees: 65
Judges and Elected Officials: Later of age 60 or expiration of term of office.

Service Requirement: General Employees: 5 years of creditable service.
Judges and Elected Officials: One elective term.

Amount: General Employees:
If unmarried or married and not electing a joint & survivor benefit at time of retirement, 2.22% of final average compensation multiplied by years and months of creditable service.

If married and electing a joint & survivor benefit at date of retirement, 2.00% of final average compensation multiplied by years and months of creditable service.

Minimum benefit: $400 per month if retirement with at least 10 years of creditable service.

Maximum benefit: 70% of final average compensation.

APPENDIX C – SUMMARY OF PLAN PROVISIONS
TIER 1

Judges and Elected Officials:
2.22% of average monthly compensation received by then serving Judges and Elected Officials of the same office during the 24 months preceding the beginning of the annuity multiplied by years and months of creditable service.

Maximum benefit: 70% of the existing salary for then serving Judges and Elected Officials of the same office.

A member retiring with a normal, optional, service or early retirement benefit may elect to withdraw all, or a portion of, member accumulated contributions and interest, and receive a reduced annuity.

Final average compensation is defined as the monthly average of the two highest years of compensation in the last ten years (for Elected Officials, last 24 months for then serving elected official of same office). Compensation does not include bonus, overtime, expense allowance or other extraordinary compensation.

5. Optional Retirement

Age/Service Requirement:	60 and 10 years of creditable service, or the sum of age and service equals 80, if earlier.
Amount:	Same as normal retirement.

6. Early Retirement

Age/Service Requirement:	General Employees: 60 and 5 years of creditable service, or 55 and 10 years of creditable service. Judges and Elected Officials: 55 and 10 years of creditable service.
Amount:	Accrued benefit reduced by ½ of 1% per month of age less than 60 or, if service is less than ten, ½ of 1% per month of age less than 65.

7. Disability Benefit

Disability benefits are provided through a separate long-term disability program, effective June 1, 1996.

APPENDIX C – SUMMARY OF PLAN PROVISIONS
TIER 1

8. Vesting

Age Requirement: None

Service Requirement: Five years of service.

Amount: Accrued benefit payable at age 60, or payable at age 65 if service less than 10.

9. Withdrawal (Refund) Benefit

Age Requirement: None

Service Requirement: Less than five years of service.

Amount: An employee terminating before becoming eligible for a deferred pension or choosing not to elect a deferred benefit, will receive a return of contributions with interest.

10. Pre-Retirement Death Benefit

Service less than five years

Age Requirement: None

Service Requirement: Less than five years.

Amount: Lump sum equal to the member's accumulated contributions and interest shall be paid to the surviving spouse or, if no surviving spouse, to the designated beneficiary, or, if none, to the member's estate.

Service of five or more years but less than 20 years:

Age Requirement: None

Service Requirement: Five or more years of service but less than 20 years.

Amount: The surviving spouse may elect, in lieu of the lump sum settlement above, an annuity equal to 50% of the member's accrued annuity at the time of death. The effective date of this annuity shall be the later of the first day of the month following the member's death or attainment of what would have been the member's early retirement

date. The annuity is reduced for early retirement if paid at the member's early retirement date.

Service of 20 or more years of service:

Age Requirement: None

Service Requirement: 20 or more years of service.

Amount: The surviving spouse may elect, in lieu of the settlements above, an annuity equal to 100% of the member's accrued annuity at the time of death, actuarially reduced for 100% joint and survivor coverage. The effective date of this annuity shall be the first day of the month following the member's death.

11. Post-Retirement Death Benefit

Age Requirement: None

Service Requirement: None

Amount: The surviving spouse shall receive an annuity equal to 50% of the member's accrued annuity, or, if the member elected the actuarially equivalent 100% joint and survivor annuity, this annuity shall continue to be paid to the surviving spouse. Either annuity is payable until death of the spouse.

12. Minimum Surviving Spouses' Pension

A minimum benefit of $200 per month is paid to surviving spouses of members with 10 or more years of creditable service.

13. Health Insurance Subsidy

A monthly health insurance subsidy of $200 is paid to all current and future pensioners. Benefits are payable for the lifetime of the member and are not subject to an annual cost-of-living adjustment.

14. Cost-of-Living Adjustment (COLA)

An increase of 3.00% of the original pension will be made annually. Members must retire on or before January 1 in order to receive a COLA in the following year.

APPENDIX C – SUMMARY OF PLAN PROVISIONS
TIER 1

15. Contributions

a. Member
- 5.00% of salary for non-MAST employees.
- Between 5.00% and 7.00% for MAST employees based on their age and service as of April 25, 2010, (see following table).
- The City "picks up" these employee contributions.

b. City
- For the year beginning May 1, 2017, the City is contributing 14.85% of payroll, which is the actuarially determined Board contribution rate for the prior year. Future City contributions will be determined through the City's budgeting process.

The contribution rate for MAST employees is based upon the following table:

Sum of Age and Prior Service as of 4/25/10 Less Adjustment for Prior Retirement Benefit	Contribution Rate
Over 80	7.0%
74 to 79	6.0%
68 to 73	5.8%
62 to 67	5.6%
56 to 61	5.4%
50 to 55	5.2%
44 to 49	5.1%
38 to 43	5.0%
32 to 37	5.0%
26 to 31	5.0%
20 to 25	5.0%

16. Interest on Employee Contributions

As determined by the Board of Trustees.

17. Changes since Last Valuation

None

APPENDIX C – SUMMARY OF PLAN PROVISIONS
TIER 2

1. Plan Year

May 1 through April 30.

2. Membership

All full-time permanent employees hired on or after April 20, 2014 in the classified and unclassified services shall become members as a condition of employment.

3. Credited Service

Total creditable service is defined as the sum of the number of years of membership service and prior service.

Membership Service:	Years and full calendar months of employment while a contributing member of this System.
Prior Service:	Years and full calendar months of employment preceding December 21, 1962, if continuous with membership service.

4. Normal Retirement

Age Requirement:	67
Service Requirement:	10 years of creditable service.
Amount:	1.75% of final average compensation multiplied by years and months of creditable service. Minimum benefit: $400 per month if retirement with at least 10 years of creditable service. Maximum benefit: 70% of final average compensation. A member retiring with a normal, optional, service or early retirement benefit may elect to withdraw all, or a portion of, member accumulated contributions and interest, and receive a reduced annuity. Final average compensation is defined as the monthly average of the three highest years of compensation in the last 10 years. Compensation does not include bonus, overtime, expense allowance or other extraordinary compensation.

APPENDIX C – SUMMARY OF PLAN PROVISIONS
TIER 2

5. Optional Retirement

Age/Service Requirement:	The earlier of age 62 and 10 years of creditable service, or the sum of age and service equals 85.
Amount:	Same as normal retirement.

6. Early Retirement

Age/Service Requirement:	57 and 10 years of creditable service.
Amount:	Accrued benefit reduced by ½ of 1% per month of age less than 62.

7. Disability Benefit

Disability benefits are provided through a separate long-term disability program.

8. Vesting

Age Requirement:	None
Service Requirement:	Ten years of service
Amount:	Accrued benefit payable at age 62

9. Withdrawal (Refund) Benefit

Age Requirement:	None
Service Requirement:	Less than ten years of service
Amount:	An employee terminating before becoming eligible for a deferred pension or choosing not to elect a deferred benefit, will receive a return of contributions with interest.

10. Pre-Retirement Death Benefit

Service less than ten years

Age Requirement:	None
Service Requirement:	Less than ten years

APPENDIX C – SUMMARY OF PLAN PROVISIONS
TIER 2

Amount: Lump sum equal to the member's accumulated contributions and interest shall be paid to the surviving spouse or, if no surviving spouse, to the designated beneficiary, or, if none, to the member's estate.

Service of ten or more years but less than 20 years:

Age Requirement: None

Service Requirement: Ten or more years of service but less than 20 years.

Amount: The surviving spouse may elect, in lieu of the lump sum settlement above, an annuity equal to 50% of the member's accrued annuity at the time of death. The effective date of this annuity shall be the later of the first day of the month following the member's death or attainment of what would have been the member's early retirement date. The annuity is reduced for early retirement if paid at the member's early retirement date.

Service of 20 or more years of service:

Age Requirement: None

Service Requirement: 20 or more years of service.

Amount: The surviving spouse may elect, in lieu of the settlements above, an annuity equal to 100% of the member's accrued annuity at the time of death, actuarially reduced for 100% joint and survivor coverage. The effective date of this annuity shall be the first day of the month following the member's death.

11. Post-Retirement Death Benefit

Age Requirement: None

Service Requirement: None

Amount: The surviving spouse shall receive an annuity equal to 50% of the member's accrued annuity, or, if the member elected the actuarially equivalent 100% joint and survivor annuity, this annuity shall continue to be paid to the surviving spouse. Either annuity is payable until death of the spouse.

APPENDIX C – SUMMARY OF PLAN PROVISIONS
TIER 2

12. Minimum Surviving Spouses' Pension

A minimum benefit of $200 per month is paid to surviving spouses of members with 10 or more years of creditable service.

13. Health Insurance Subsidy

A monthly health insurance subsidy of $200 is paid to all current and future pensioners. Benefits are payable for the lifetime of the member and are not subject to an annual cost-of-living adjustment.

14. Cost-of-Living Adjustment (COLA)

COLA will only be payable if the prior year's funding ratio is greater than or equal to 80% and will be equal to the percentage increase in the consumer price index, up to a maximum of 2.50%, payable at age 62. Members must retire on or before January 1, in order to receive a COLA in the next year.

15. Contributions

a. Member	-	5.00% of salary.
	-	The City "picks up" these employee contributions.
b. City	-	For the year beginning May 1, 2017, the City is contributing 14.85% of payroll, which is the actuarially determined Board contribution rate for the prior year. Future City contributions will be determined through the City's budgeting process.

16. Interest on Employee Contributions

As determined by the Board of Trustees.

17. Changes since Last Valuation

None

APPENDIX D – GLOSSARY OF TERMS

1. Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disability, and retirement; changes in compensation; inflation; rates of investment earnings, and asset appreciation or depreciation; and other relevant items.

2. Actuarial Cost Method

A procedure for determining the Actuarial Present Value of pension plan benefits and expenses and for developing an allocation of such value to each year of service, usually in the form of a Normal Cost and an Actuarial Liability.

3. Actuarial 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, as determined in accordance with a particular Actuarial Cost Method.

4. Actuarial Liability

The portion of the Actuarial Present Value of Projected Benefits which will not be paid by future Normal Costs. It represents the value of the past Normal Costs with interest to the valuation date.

5. Actuarial Present Value (Present Value)

The value as of a given date of a future amount or series of payments. The Actuarial Present Value discounts the payments to the given date at the assumed investment return and includes the probability of the payment being made. As a simple example: assume you owe $100 to a friend one year from now. Also, assume there is a 1% probability of your friend dying over the next year, in which case you won't be obligated to pay him. If the assumed investment return is 10%, the actuarial present value is:

Amount		Probability of Payment		1/(1+Investment Return)		
$100	x	(1 - .01)	x	1/(1+.1)	=	$90

6. Actuarial Valuation

The determination, as of a specified date, of the Normal Cost, Actuarial Liability, Actuarial Value of Assets, and related Actuarial Present Values for a pension plan.

APPENDIX D – GLOSSARY OF TERMS

7. Actuarial Value of Assets

The value of cash, investments and other property belonging to a pension plan as used by the actuary for the purpose of an Actuarial Valuation. The purpose of an Actuarial Value of Assets is to smooth out fluctuations in market values. This way long-term costs are not distorted by short-term fluctuations in the market.

8. Actuarially Equivalent

Of equal Actuarial Present Value, determined as of a given date with each value based on the same set of Actuarial Assumptions.

9. Amortization Payment

The portion of the pension plan contribution which is designed to pay interest and principal on the Unfunded Actuarial Liability in order to pay for that liability in a given number of years.

10. Entry Age Normal Actuarial Cost Method

A method under which the Actuarial Present Value of the Projected Benefits of each individual included in an Actuarial Valuation is allocated on a level basis over the earnings of the individual between entry age and assumed exit ages.

11. Funded Percentage

The ratio of the Actuarial Value of Assets to the Actuarial Liabilities.

12. Investment Return Assumption

The assumed interest rate used for projecting dollar related values in the future.

13. Mortality Table

A set of percentages that estimate the probability of death at a particular point in time. Typically, the rates are annual and based on age and sex.

14. Normal Cost

That portion of the Actuarial Present Value of pension plan benefits and expenses, which is allocated to a valuation year by the Actuarial Cost Method.

APPENDIX D – GLOSSARY OF TERMS

15. Projected Benefits

Those pension plan benefit amounts which are expected to be paid in the future under a particular set of Actuarial Assumptions, taking into account such items as the effect of advancement in age and increases in future compensation and service credits.

16. Unfunded Actuarial Liability

The excess of the Actuarial Liability over the Actuarial Value of Assets.

Classic Values, Innovative Advice