

CITY OF MANCHESTER EMPLOYEES' CONTRIBUTORY RETIREMENT SYSTEM
ANNUAL ACTUARIAL VALUATION REPORT
DECEMBER 31, 2015

CONTENTS

Section	Page	
1-2		<i>Introduction</i>
A		<i>Valuation Results</i>
	1	Executive Summary
	2	Summary Statement of System Resources and Obligations
	3	Asset Information
	4-5	Valuation Assets and Unfunded Actuarial Accrued Liability
	6	Derivation of Experience Gain (Loss)
	7-10	Computed Contributions
	11-13	Comments
	14-17	Comparative Statements
	18-21	Unfunded Actuarial Accrued Liability Schedules
B		<i>Benefit Provisions and Valuation Data</i>
	1-3	Summary of Benefit Provisions
	4-8	Retired Life Data
	9	Inactive Vested Members
	10-11	Active Member Data
C		<i>Valuation Methods and Assumptions</i>
	1	Actuarial Cost Method
	2-5	Actuarial Assumptions
	6	Miscellaneous and Technical Assumptions
D		<i>GASB Statement No. 43</i>
	1-2	GASB Statement No. 43
E		<i>Operation of the Retirement System</i>
	1-2	Financial Objective
	3	Financing Diagram
	4	Flow of Money
	5-6	Glossary



March 29, 2016

Board of Trustees
City of Manchester Employees'
Contributory Retirement System
1045 Elm Street, Suite 403
Manchester, New Hampshire 03101-1824

Dear Board Members:

The results of the December 31, 2015 **Annual Actuarial Valuation of the City of Manchester Employees' Contributory Retirement System (MECRS)** are presented in this report. The purposes of the valuation were:

- to measure the System's funding progress;
- to calculate the employer contribution rate for the City's fiscal year 2017; and
- to determine actuarial information for reporting purposes in compliance with Governmental Accounting Standards Board (GASB) Statement No. 43 for the plan's 2015 fiscal year. The information required for GASB Statement No. 67 will be provided in a separate report.

The results of this valuation may not be applicable for other purposes.

The valuation results summarized in this report involve actuarial calculations that require assumptions about future events. We believe that the assumptions and methods used in this report are reasonable and appropriate for the purpose for which they have been used. However, other assumptions and methods could also be reasonable and could result in materially different results. In addition, because it is not possible or practical to consider every possible contingency, we may use summary information, estimates or simplifications of calculations to facilitate the modeling of future events. We may also exclude factors or data that are deemed to be immaterial.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to: actual plan experience differing from assumed; changes in economic or demographic assumptions; changes in funding policy; changes in plan provisions or applicable law; etc. An analysis of the potential range of such future measurement was beyond the scope of this valuation.

If there is other information that you need in order to make an informed decision regarding the matters discussed in this report, please contact us.


The valuation was based upon information, furnished by the Retirement System, concerning Retirement System benefits, financial transactions, and individual members, terminated members, retirees and beneficiaries. Data was checked for year-to-year consistency, but was not otherwise audited.

This report has been prepared by actuaries who have substantial experience valuing public employee retirement systems. To the best of our knowledge, this report is complete and accurate and was made in accordance with standards of practice promulgated by the Actuarial Standards Board of the American Academy of Actuaries. The actuarial assumptions used for the valuation produce results which, individually and in the aggregate, are reasonable. We certify that the information contained in this report is accurate and fairly presents the actuarial position of MECRS as of December 31, 2015.

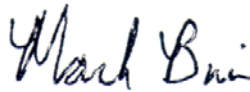
This report replaces our preliminary report dated March 3, 2016. Results presented in this report are unchanged from those presented in the preliminary report.

Mark Buis is a Member of the American Academy of Actuaries (MAAA), and meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein. The signing individuals are independent of the plan sponsors.

Respectfully submitted,



Kenneth G. Alberts



Mark Buis, FSA, EA, MAAA

KGA/MB:mrb:ah

2288

SECTION A

VALUATION RESULTS

EXECUTIVE SUMMARY

FUNDING OBJECTIVE

The funding objective of the Retirement System is to establish and receive contributions which, when expressed as percents of active member payroll, will remain approximately level from year to year and will accumulate sufficient assets over each member's working lifetime to finance promised benefits throughout retirement.

CONTRIBUTION RATES

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

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

- Cover the actuarial present value of benefits allocated to the current year by the actuarial cost method described in Section C (the normal cost); and
- Finance over a period of future years the actuarial present value of benefits not covered by valuation assets and anticipated future normal costs (unfunded actuarial accrued liability).

The computed pension contribution rate for the City's fiscal year 2017 is 22.48% of covered payroll.

The computed health subsidy contribution rate for the City's fiscal year 2017 is 1.26% of covered payroll. The details of these contribution rates are shown on page A-7.

The contribution rates are sufficient to finance the employer normal cost and to amortize the unfunded pension actuarial accrued liability (full funding credit) as a level percent-of-payroll over a period of 24 years for pension benefits, and 24 years for health subsidy benefits.

SUMMARY STATEMENT OF SYSTEM RESOURCES AND OBLIGATIONS
DECEMBER 31, 2015

Present Resources and Expected Future Resources

	Pension	Health
A. Actuarial value of System assets:		
1. Net assets from System financial statements	\$186,492,399	\$ 9,618,278
2. Funding value adjustment	12,440,283	641,603
3. Valuation assets	198,932,682	10,259,881
B. Present value of expected future employer contributions:		
1. For normal costs	38,275,811	0
2. For unfunded actuarial accrued liabilities	115,423,058	10,391,511
3. Totals	153,698,869	10,391,511
C. Present value of expected future member contributions:	18,465,433	6,155,144
D. Total Present and Expected Future Resources	\$371,096,984	\$26,806,536

Actuarial Present Value of Expected Future Benefit Payments

	Pension	Health
A. To retirees and beneficiaries:	\$164,982,271	\$ 10,493,621
B. To vested terminated members:	6,107,467	386,955
C. To present active members:		
1. Allocated to service rendered prior to valuation date	143,266,002	10,765,443
2. Allocated to service likely to be rendered after valuation date	56,741,244	5,160,517
3. Total	200,007,246	15,925,960
D. Total Actuarial Present Value of Expected Future Benefit Payments	\$371,096,984	\$26,806,536

**SUMMARY OF CURRENT ASSET INFORMATION
FURNISHED FOR THE VALUATION**

Balance Sheet

Reported Assets - Actuarial Value as of December 31		
	2015	2014
Cash & Equivalents	\$ 5,061,139	\$ 5,647,037
Investments	191,820,900	196,837,860
Receivables	2,493	11,296
Property, Plant, Equipment	33,603	78,408
Accrued Interest & Dividends	27,694	45,929
Receivable for Add'l Contribution Calculator	850	1,500
Payable for Investments Purchased	(66,531)	(143,766)
Accounts Payable	(258,159)	(192,587)
Benefits Payable	(1,296,350)	(1,077,970)
Additional Contribution Account	783,434	857,994
Other	1,604	0
Market Value Total	196,110,677	202,065,700
Funding Value Adjustment	13,081,886	(1,487,058)
Total Valuation Assets	\$209,192,563	\$200,578,642

Revenues and Expenditures

	2015	2014
Funding Value - January 1	\$200,578,642	\$186,106,837
Revenues		
Employees' Contributions	2,802,113	2,606,348
Employer Contributions	12,536,782	11,573,605
Recognized Investment Income	10,559,870	14,921,227
Total	25,898,765	29,101,180
Expenditures		
Benefit Payments	15,245,156	12,884,744
Refund of Member Contributions	446,590	207,947
Expenses and Fees	1,593,098	1,536,684
Total	17,284,844	14,629,375
Funding Value - December 31	\$209,192,563	\$200,578,642
Rate of Return Recognized	4.8 %	7.4 %

DEVELOPMENT OF FUNDING VALUE OF ASSETS

Year Ended December 31:	2013	2014	2015	2016	2017	2018	2019
A. Funding Value Beginning of Year	\$168,735,030	\$186,106,837	\$200,578,642				
B. Market Value End of Year	194,491,136	202,065,700	196,110,677				
C. Market Value Beginning of Year	166,555,171	194,373,638	202,146,990				
D. Non-Investment Net Cash Flow	1,645,965	706,384	(939,910)				
D1. Post-Valuation Adjustment	50,537	117,498	(81,290)				
E. Investment Income							
E1. Market Total: B - C - D - D1	26,239,463	6,868,180	(5,015,113)				
E2. Amount for Immediate Recognition (7.25%)	12,292,956	13,518,352	14,507,880				
E3. Amount for Phased-In Recognition: E1-E2	13,946,507	(6,650,172)	(19,522,993)				
F. Phased-In Recognition of Investment Income							
F1. Current Year: 0.20 x E3	2,789,301	(1,330,034)	(3,904,599)				
F2. First Prior Year	948,010	2,789,301	(1,330,034)	\$(3,904,599)			
F3. Second Prior Year	(3,456,728)	948,010	2,789,301	(1,330,034)	\$(3,904,599)		
F4. Third Prior Year	1,296,521	(3,456,728)	948,010	2,789,301	(1,330,034)	\$(3,904,599)	
F5. Fourth Prior Year	1,855,782	1,296,520	(3,456,727)	948,008	2,789,303	(1,330,036)	\$(3,904,597)
F6. Total Recognized Investment Gain	3,432,886	247,069	(4,954,049)	(1,497,324)	(2,445,330)	(5,234,635)	(3,904,597)
G. Preliminary Funding Value End of Year: A + D + E2 + F6	186,106,837	200,578,642	209,192,563				
H. Actuarial Value after Application of 20% Corridor Limit	186,106,837	200,578,642	209,192,563				
I. Difference between Market & Funding Value	8,384,299	1,487,058	(13,081,886)				
J. Recognized Rate of Return	9.3 %	7.4 %	4.8 %				
K. Market Rate of Return	15.7 %	3.6 %	(2.5)%				
L. Ratio of Funding Value to Market Value	95.7 %	99.3 %	106.7 %				

The Funding Value of Assets recognizes assumed investment income (line E2) fully each year. Differences between actual and assumed investment income (line E3) are phased-in over a closed 5-year period. During periods when investment performance exceeds the assumed rate, Funding Value of Assets will tend to be less than Market Value. During periods when investment performance is less than the assumed rate, Funding Value of Assets will tend to be greater than Market Value. The Funding Value of Assets is unbiased with respect to Market Value. At any time it may be either greater or less than Market Value. If actual and assumed rates of retirement income are exactly equal for four consecutive years, the Funding Value will become equal to Market Value.

**ALLOCATION OF FUNDING VALUE OF ASSETS
YEAR ENDED DECEMBER 31, 2015**

(A) Total Market Value	\$196,110,677
(B) Pension Market Value	\$186,492,399
(C) Ratio: (B)/(A)	95.0955%
(D) Total Funding Value	\$209,192,563
(E) Pension Funding Value: (D) x (C)	\$198,932,682
(F) Health Funding Value: (D) - (E)	\$ 10,259,881

**DEVELOPMENT OF UNFUNDED ACTUARIAL ACCRUED LIABILITY
YEAR ENDED DECEMBER 31, 2015**

	Pension	Health
Present Value of Future Benefits - Retirees	\$164,982,271	\$10,493,621
Present Value of Future Benefits - Deferreds	6,107,467	386,955
Present Value of Future Benefits - Actives	200,007,246	15,925,960
Total Present Value of Future Benefits	\$371,096,984	\$26,806,536
Present Value of Future Normal Cost	56,741,244	5,160,517
Actuarial Accrued Liability	\$314,355,740	\$21,646,019
Actuarial Value of Assets	198,932,682	10,259,881
Unfunded Actuarial Accrued Liability	\$115,423,058	\$11,386,138
Funded Ratio	63.3%	47.4%

**DERIVATION OF EXPERIENCE GAIN (LOSS)
YEAR ENDED DECEMBER 31, 2015**

Actual experience will never (except by coincidence) match exactly with assumed experience. Gains and losses often cancel each other over a period of years, but sizable year-to-year fluctuations are common. Detail on the derivation of the experience gain (loss) is shown below, along with a year-by-year comparative schedule.

	Pension	Health
(1) UAAL* at start of year	\$105,945,385	\$9,992,959
(2) Total normal cost from last valuation	6,739,984	596,939
(3) Actual contributions (employer & employee)	13,859,754	1,121,631
(4) Interest accrual: [(1) + 1/2 ((2) - (3))] x 0.0725	7,422,949	705,469
(5) Expected UAAL before changes: (1) + (2) - (3) + (4)	106,248,564	10,173,736
(6) Change from new assumptions and methodology	0	0
(7) Change from ad-hoc COLA increases (above or below assumed)	0	N/A
(8) Change from Chapter 159 service upgrade	498,682	N/A
(9) Expected UAAL after changes: (5) + (6) + (7) + (8)	106,747,246	10,173,736
(10) Actual UAAL at end of year	115,423,058	11,386,138
(11) Gain (loss): (9) - (10)	(8,675,812)	(1,212,402)
(12) Gain (loss) as percent of actuarial accrued liabilities at start of year	(2.9)%	(6.2)%

* *Unfunded Actuarial Accrued Liability.*

Valuation Date December 31	Experience Gain (Loss) as % of Beginning Accrued Liability	
	Pension	Health
2006	0.1 %	N/A
2007	2.3 %	0.024
2008	(14.3)%	(2.8)%
2009	(0.3)%	2.8 %
2010	(0.2)%	1.9 %
2011	(2.6)%	(2.8)%
2012	(4.2)%	(3.1)%
2013	(0.1)%	(0.1)%
2014	(0.8)%	(1.1)%
2015	(2.9)%	(6.2)%

COMPUTED CONTRIBUTIONS FOR THE CITY'S FISCAL YEAR 2017

Contributions For	Contributions Expressed as % of Active Member Payroll
Total Normal Cost	12.45%
Member Contributions	<u>3.75%</u>
Employer Normal Cost	8.70%
Unfunded Actuarial Accrued Liabilities*	13.78%
Employer Pension Total	22.48%
Health Contribution**	1.26%
Employer Total	23.74%
Valuation Payroll	\$ 52,953,903
Projected Payroll	\$ 55,354,612
Estimated Contribution Dollars	\$ 13,141,185
<u>Pension</u>	
Unfunded Actuarial Accrued Liabilities	\$115,423,058
Funded Status	63.3%
<u>Health</u>	
Unfunded Actuarial Accrued Liabilities	\$ 11,386,138
Funded Status	47.4%

* Unfunded actuarial accrued liabilities for pension are currently financed as a level percent-of-payroll over a remaining amortization period of 24 years.

** Currently based on a remaining 24-year amortization of unfunded actuarial accrued liabilities for Health.

Note: For each 1% ad-hoc COLA increase above the assumed COLA, the UAAL will increase by approximately \$1,650,000 and the employer contribution rate will increase by approximately 0.20% (based on current payroll and a 24-year amortization period). In developing these costs for the ad-hoc COLA increase, it was assumed that the increase would be a one-time permanent increase to all members retired as of December 31, 2015 and the additional liability would be amortized over 24 years. It was also assumed that the increase would be effective on January 1, 2016.

The computed contributed rate shown above is in compliance 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 recommend benefit security be considered when adopting a contribution rate. The Board is free to adopt a larger contribution rate than shown herein, if they believe it to be appropriate and if such larger contribution is based on sound actuarial funding, methods and assumptions.

**COMPUTED CONTRIBUTIONS FOR THE
CITY'S FISCAL YEAR 2017**

Contribution Rate Reconciliation	% of Payroll		
	Pension	Health	Total
Last Year's Rate	20.72 %	0.99 %	21.71 %
Normal Cost Change	0.03 %	0.05 %	0.08 %
Miscellaneous Changes in Group Demographics	(0.12)%	0.00 %	(0.12)%
Assumption and Methodology Changes#	0.00 %	0.00 %	0.00 %
Employer Portion of SB 402 Purchases	0.03 %	0.00 %	0.03 %
COLA (portion above the assumption)	0.00 %	0.00 %	0.00 %
Payroll growth less than expected	0.77 %	0.07 %	0.84 %
Experience (Gain) Loss	1.05 %	0.15 %	1.20 %
This Year's Rate	22.48%	1.26%	23.74%

See Comments.

**MECRS AND CITY
COMPUTED CONTRIBUTIONS FOR THE
CITY'S FISCAL YEAR 2017**

Contributions For	Contributions Expressed as % of Active Member Payroll		
	City# Non EPD and Parking	City# EPD and Parking	Other MECRS Employers
Employer Pension Total	22.48%	22.48%	22.48%
Health Contribution	1.26%	1.26%	1.26%
Employer Total	23.74%	23.74%	23.74%
Valuation Payroll	\$28,671,844	\$2,662,180	\$21,619,879
Projected Payroll City's FY 2017##	29,971,706	2,782,872	22,600,034
Estimated Annual Dollar Contributions			
Pension	\$ 6,737,639	\$ 625,590	\$ 5,080,488
Health	377,643	35,064	284,760
Total	\$ 7,115,282	\$ 660,654	\$ 5,365,248
Semi-Annual Dollar Contribution Payable on July 1 and December 31			
Pension	\$ 3,309,878	\$ 307,322	N/A
Health	185,518	17,225	N/A
Total	\$ 3,495,396	\$ 324,547	N/A

Assuming contributions continuously throughout the year.

Current projection factor is 1.04534 (1.03^{1.5}).

**FY 2015 CITY TRUE-UP CONTRIBUTIONS PAYABLE
DURING CITY'S FISCAL YEAR 2017**

	City Non EPD and Parking	City EPD and Parking	Total City
(1) Projected Fiscal Year 2015 Payroll	\$30,577,656	\$2,612,804	\$33,190,460
(2) Actual Fiscal Year 2015 Payroll #	31,422,018	3,065,023	34,487,041
(3) True-Up Rate (2)/(1) - 1.00	2.76%	17.31%	3.91%
(4) FY 2015 Semi-Annual Contribution (Actual)			
Pension	\$ 3,034,309	\$ 259,276	\$ 3,293,585
Health	139,698	11,937	151,635
Total	\$ 3,174,007	\$ 271,213	\$ 3,445,220
(5) Semi-Annual Shortfall/(Overage)			
Pension	\$ 83,747	\$ 44,881	\$ 128,628
Health	3,856	2,066	5,922
Total	\$ 87,603	\$ 46,947	\$ 134,550
(6) Fiscal Year 2015 True-Up as of July 1, 2016			
(5) x 1.0725 + (5) x 1.03625			
Pension	\$ 176,601	\$ 94,643	\$ 271,244
Health	8,131	4,357	12,488
Total	\$ 184,732	\$ 99,000	\$ 283,732

This information was provided by the System in aggregate, by group, independent of the member data.

The true-up is to account for the differences in actual and assumed payroll that would have affected the contribution had the City been making contributions on a payroll period basis.

COMMENTS

COMMENT A – RESULTS: The Retirement System is 63.3% funded for pension benefits and 47.4% funded for health subsidy benefits as of December 31, 2015. The pension Unfunded Actuarial Accrued Liability (UAAL) of \$115,423,058 is amortized over a closed 24-year period; the health subsidy UAAL of \$11,386,138 is amortized over a closed 24-year period.

COMMENT B – EXPERIENCE: Experience during the year ended December 31, 2015 was less favorable than assumed resulting in an experience loss. The primary sources of experience losses were more retirements than expected and recognized investment return lower than assumed (7.25% assumed versus 4.8% recognized). Losses were partially offset by pay increases less than assumed. Overall, the pension experience loss was approximately 2.9% of beginning of year liabilities. The pension funding status decreased from 64.3% to 63.3% during the year. The primary sources of experience losses for health were investment return (7.25% assumed versus 4.8% recognized), and the number of new retirees electing coverage. Not only did more members retire than assumed, but the percent of retiring members electing health subsidy coverage was greater than assumed (see Comment F). Overall, the health experience loss was approximately 6.2% of beginning of year liabilities. The health funding status decreased from 48.6% to 47.4% during the year.

A primary reason for the increased number of retirements (compared to assumed) was an early retirement incentive program (see Comment H).

The recognized rate of return was 4.8%, despite the fact that return on a market value basis was (2.6)% (net of expenses). This is due to the fact that investment experience above or below assumed is spread over 5 years. One fifth of this year's loss was added to the portion of gains and losses from the previous 4 years scheduled to be recognized this year, resulting in an overall loss. It is important to note that next year, we anticipate recognizing a market loss in total if the market rate of return is below 11% (after accounting for the gains and losses scheduled to be recognized next year), resulting in upward pressure on contributions.

COMMENTS

COMMENT C – BENEFIT CHANGES:

1. The previously adopted SB402 allows for members to upgrade their benefit multiplier under Chapter 159 from 1.5% to 2.0% per year of service rendered prior to 1999 when they choose. Liabilities increased approximately \$997,364 as a result of members electing to purchase this benefit during 2015. An additional \$498,682 in member contributions was contributed as a result of these elections.
2. COLA increases were assumed to be 1.25% of current pensions. In 2015, actual increases were 1.25% of current pensions.

COMMENT D – RETIREE HEALTH BENEFITS: Post-retirement health care benefits are funded in part by retired members (via co-pays, deductibles, etc.), but mostly by employer contributions to the Retirement System that are permitted (up to certain limits) by §401(h) of the U.S. Internal Revenue Code. IRC §401(h) permits a defined benefit plan to provide medical benefits for retired employees if, among other things:

- A separate medical care account is maintained.
- The benefits satisfy non-discrimination rules.
- The medical benefits, along with any life insurance provided by the plan, are subordinate to the retirement benefits. Benefits are considered subordinate if they do not exceed 25% of the aggregate contributions other than contributions to fund past service liabilities.

The health care contribution rate was determined to pass the 25% test for the 2017 City fiscal year as follows:

Employer Pension Rate (not more than normal cost)	8.70%
Employee Pension Rate	3.75%
Total Pension Rate*	<u>12.45%</u>
Maximum Health Rate (1/3 x Pension Rate)	4.15%
Employee Health Rate	1.25%
Maximum Employer Health Rate	<u>2.90%</u>
Actual Employer Health Rate	1.26%

* *Smaller of actual contribution or projected unit credit normal cost rate.*

Although the IRC §401(h) allows for a much more complicated test, the results of the simplified approach illustrated above indicate that the more complicated test is not warranted.

COMMENTS

COMMENT E – There were no changes in actuarial assumptions for the December 31, 2015 valuation.

COMMENT F – HEALTH VALUATION: Post-retirement health subsidy valuation results were included in this valuation. Effective with the December 31, 2007 valuation, we set the utilization assumption at 60%. Effective with the December 31, 2012 valuation, this assumption is 55%.

New Retirements in Year	New Retirees	New Retirees	
		Electing Post-Ret. Health Care	Election %
2006	35	17	48.6%
2007	38	19	50.0%
2008	36	20	55.6%
2009	39	18	46.2%
2010	34	18	52.9%
2011	50	28	56.0%
2012	55	30	54.5%
2013	51	26	51.0%
2014	52	29	55.8%
2015	89	55	61.8%

COMMENT G – HEALTH VALUATION: The methods and assumptions used in this valuation, in our opinion, satisfy the parameters of GASB Statement No. 43 and adequately measure the Plan’s liability and required contribution. However, the calculations contained herein were not intended to satisfy the parameters of GASB Statement No. 45 and should not be used for that purpose.

COMMENT H – We understand that the City has had an Early Retirement Incentive Program (ERIP) running for two years. This program did not seem to have a material effect on System experience in prior years. However, this year the program ended during the 2015 plan year. It appears that the termination of the ERIP incentivized more members to retire. Although the ERIP was run outside of the Retirement System and no supplemental valuation was requested to analyze the impact on the System, it affected final average compensation levels. We strongly recommend programs that have the potential to affect System costs be analyzed prior to adoption with formal supplemental valuations.

CERTIFICATION: We certify that the valuation is complete and accurate and was made in accordance with generally recognized actuarial methods. The actuarial assumptions summarized in Section C are in aggregate a reasonable representation of the past and anticipated future experience of the System.

COMPARATIVE STATEMENT

Valuation Date December 31	Active Members				
	Number	Ratio to Retired	Valuation Payroll		% Increase
			Total	Average	
2006	1,328	2.44	\$ 47,537,456	\$ 35,796	2.6%
2007	1,325	2.33	48,556,218	36,646	2.4%
2008	1,323	2.23	50,740,516	38,353	4.7%
2009	1,300	2.08	50,547,690	38,883	1.4%
2010	1,285	2.01	51,399,670	40,000	2.9%
2011	1,228	1.83	51,117,552	41,627	4.1%
2012	1,200	1.70	51,881,338	43,234	3.9%
2013	1,194	1.64	53,315,564	44,653	3.3%
2014	1,200	1.59	54,267,183	45,223	1.3%
2015	1,195	1.46	52,953,903	44,313	(2.0)%

Valuation Date December 31	Retirees & Beneficiaries						Annual Contributions as a Percent of Payroll				
	Pension			Health			Member		Employer		Total
	Number	Annual Benefits	% of Payroll	Number	Annual Benefits	% of Payroll	Pension	Health	Pension	Health	
	2006#	544	\$ 6,515,157	13.7%	152	\$ 178,152	0.4%	3.75%	1.25%	13.27%	1.24%
2007#	569	7,327,439	15.1%	155	206,045	0.4%	3.75%	1.25%	13.84%	0.91%	19.75%
2008#	594	8,170,348	16.1%	162	245,670	0.5%	3.75%	1.25%	17.17%	0.93%	23.10%
2009#	625	8,460,381	16.7%	166	275,852	0.5%	3.75%	1.25%	17.65%	0.85%	23.50%
2010	638	8,730,024	17.0%	177	309,902	0.6%	3.75%	1.25%	17.71%	0.87%	23.58%
2011	672	9,551,437	18.7%	197	375,224	0.7%	3.75%	1.25%	18.75%	0.97%	24.72%
2012#	707	10,526,696	20.3%	218	458,179	0.9%	3.75%	1.25%	20.03%	0.93%	25.96%
2013	729	11,612,189	21.8%	232	529,007	1.0%	3.75%	1.25%	20.20%	0.93%	26.13%
2014	756	12,906,232	23.8%	242	607,239	1.1%	3.75%	1.25%	20.72%	0.99%	26.71%
2015	821	15,493,622	29.3%	291	791,658	1.5%	3.75%	1.25%	22.48%	1.26%	28.74%

After changes in methods and/or assumptions.

**ACTUARIAL ACCRUED LIABILITIES & VALUATION ASSETS
COMPARATIVE STATEMENT – PENSION ONLY**

Valuation Date December 31	Actuarial Accrued Liability (AAL)	Valuation Assets	Unfunded Actuarial Accrued Liability (UAAL)	Ratio of Present Assets to AAL*	Ratio of UAAL to Valuation Payroll
2005#	\$ 147,915,666	\$ 113,856,253	\$ 34,059,413	77.0 %	72.1 %
2006#	172,538,747	126,293,879	46,244,869	73.2 %	97.3 %
2007#	187,625,784	139,240,661	48,385,123	74.2 %	99.6 %
2008#	201,439,017	125,991,904	75,447,113	62.5 %	148.7 %
2009#	222,904,634	134,782,503	88,122,131	60.5 %	174.3 %
2010	234,039,084	145,933,282	88,105,802	62.4 %	171.4 %
2011	248,441,353	153,033,601	95,407,752	61.6 %	186.6 %
2012#	262,682,042	161,864,937	100,817,105	61.6 %	194.3 %
2013	280,332,480	177,961,782	102,370,698	63.5 %	192.0 %
2014	297,090,927	191,145,542	105,945,385	64.3 %	195.2 %
2015	314,355,740	198,932,682	115,423,058	63.3 %	218.0 %

After changes in methods and/or assumptions.

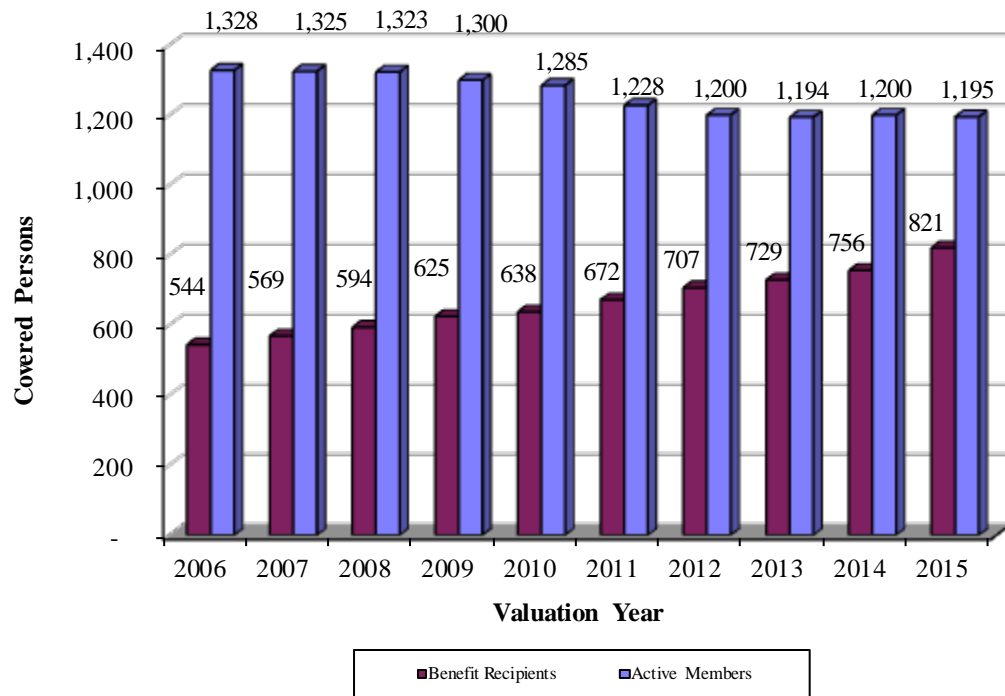
* The funded ratio shown herein is not appropriate for estimating the cost or ability to settle the Plan's obligations. A funded status of 100% or greater is not an indication of the need for future employer contribution. A funded status below 100% is an indication that future employer contributions are needed.

**ACTUARIAL ACCRUED LIABILITIES & VALUATION ASSETS
COMPARATIVE STATEMENT – HEALTH SUBSIDY ONLY**

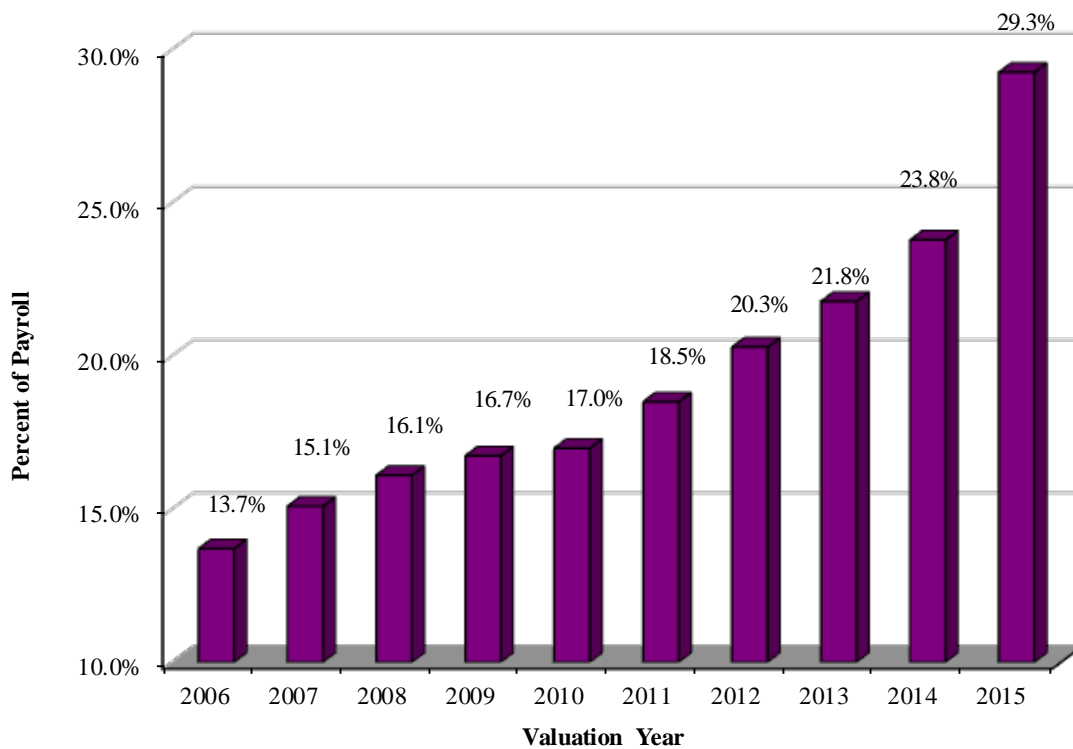
Valuation Date December 31	Actuarial Accrued Liability (AAL)	Valuation Assets	Unfunded Actuarial Accrued Liability (UAAL)	Ratio of Present Assets to AAL	Ratio of UAAL to Valuation Payroll
2007#	\$ 11,306,516	\$ 1,908,457	\$ 9,398,059	16.9 %	19.4 %
2008	12,425,929	2,605,141	9,820,788	21.0 %	19.4 %
2009#	13,090,488	3,748,342	9,342,146	28.6 %	18.5 %
2010	14,095,129	4,875,596	9,219,533	34.6 %	17.9 %
2011	15,600,362	5,837,021	9,763,341	37.4 %	19.1 %
2012#	16,595,623	6,870,093	9,725,530	41.4 %	18.7 %
2013	17,979,266	8,145,055	9,834,211	45.3 %	18.4 %
2014	19,426,059	9,433,100	9,992,959	48.6 %	18.4 %
2015	21,646,019	10,259,881	11,386,138	47.4 %	21.5 %

After changes in methods and/or assumptions.

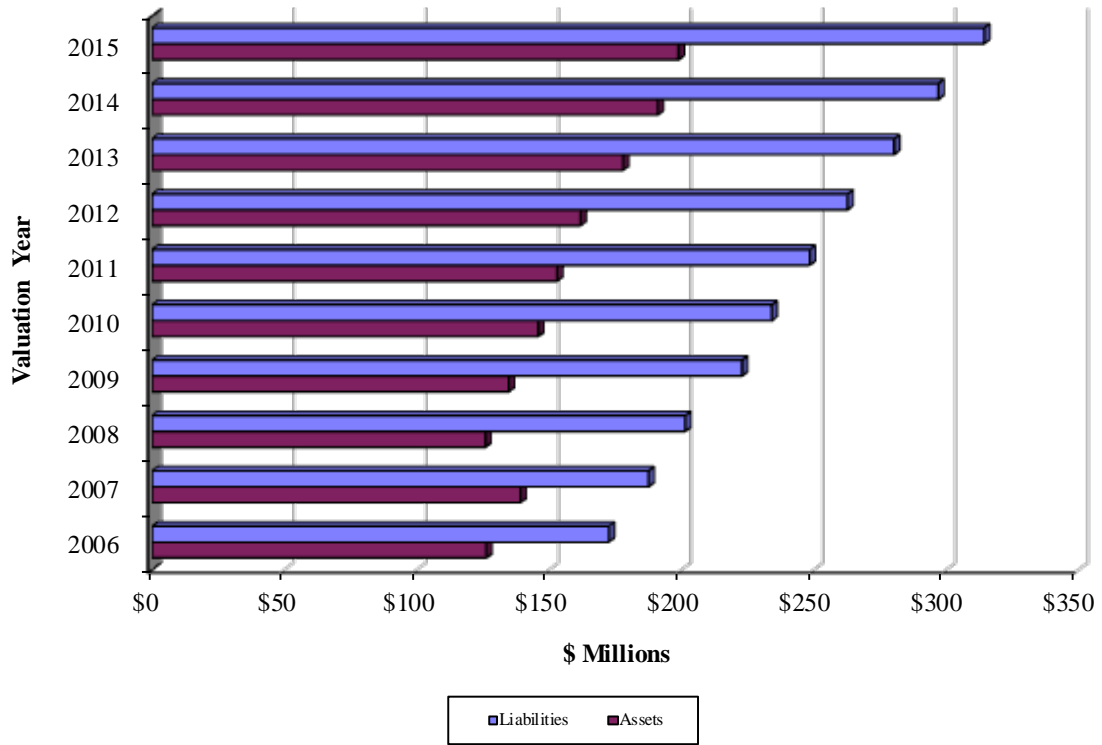
Active Members & Benefit Recipients



Pension Benefits as a Percent of Payroll



Assets & Accrued Liabilities (Pension Only)



SCHEDULE OF CHANGES IN UNFUNDED ACTUARIAL ACCRUED LIABILITY OTHER THAN ANNUAL GAINS (LOSSES)

Schedule of Changes in Pension UAAL Other than Gains (Losses)

Date Established	Original Amount	Description
01/01/1991	\$ 2,656,461	Initial Unfunded
01/01/1997	32,202	Plan Amendment
01/01/1997	588,165	1996 COLA
01/01/1998	602,888	1997 COLA
01/01/1999	4,750,497	Plan Amendment
01/01/1999	62,532	Assumption Change
01/01/1999	866,215	1998 COLA
01/01/2000	847,614	1999 COLA
01/01/2001	958,172	2000 COLA
01/01/2002	1,047,075	2001 COLA
01/01/2003	1,214,958	2002 COLA
01/01/2003	(3,319,777)	Assumption Change
01/01/2003	6,317,683	Plan Amendment
12/31/2004	231,803	Assumption Change
12/31/2004	1,809,405	2004 COLA
12/31/2005	1,310,995	2005 COLA
12/31/2005	5,368,777	Phase-in of COLA Assumption
12/31/2005	1,205,702	Chapter 159 Upgrade (Employer)
12/31/2006	787,237	2006 COLA
12/31/2006	7,794,903	Phase-in of COLA Assumption
12/31/2006	1,313,426	Chapter 159 Upgrade (Employer)
12/31/2006	2,025,864	Severance Load
12/31/2007	330,568	2007 COLA
12/31/2007	4,220,982	Phase-in of COLA Assumption
12/31/2007	223,538	Chapter 159 Upgrade (Employer)
12/31/2008	469,373	2008 COLA
12/31/2008	(839,918)	Miscellaneous Technical Change in Treatment of COLA Assumption
12/31/2008	193,614	Chapter 159 Upgrade (Employer)
12/31/2008	(122,243)	Retirement Eligibility Correction
12/31/2009	307,468	Chapter 159 Upgrade (Employer)
12/31/2009	10,706,101	Assumption and Methodology Change
12/31/2010	188,526	Chapter 159 Upgrade (Employer)
12/31/2010	(1,566,250)	No Ad-Hoc COLA this Year
12/31/2011	80,224	Chapter 159 Upgrade (Employer)
12/31/2012	(1,704,580)	No Ad-Hoc COLA this Year
12/31/2012	376,519	Chapter 159 Upgrade (Employer)
12/31/2012	(3,760,147)	Assumption and Methodology Change
12/31/2013	261,306	2013 COLA
12/31/2013	297,764	Chapter 159 Upgrade (Employer)
12/31/2014	293,410	2014 COLA
12/31/2014	373,599	Chapter 159 Upgrade (Employer)

Positive numbers indicate an increase in UAAL; negative numbers indicate a decrease in UAAL.

**SCHEDULE OF CHANGES IN UNFUNDED ACTUARIAL ACCRUED LIABILITY
OTHER THAN ANNUAL GAINS (LOSSES) – CONCLUDED**

**Schedule of Changes in Pension UAAL
Other than Gains (Losses) #**

Date Established	Original Amount	Description
12/31/2015	\$ 0	2015 COLA
12/31/2015	498,682	Chapter 159 Upgrade (Employer)
12/31/2015	0	Assumption and Methodology Change

Positive numbers indicate an increase in UAAL; negative numbers indicate a decrease in UAAL.

**UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)
AMORTIZATION SCHEDULE AND PROJECTED FUNDED STATUS**

Fiscal Year	Employer Contribution Rates			Projected Active Member Payroll	Beginning of Year	
	Total Contribution	Employer Normal Cost	UAAL Payment		UAAL	Funded Status
2016*	20.72%	8.67%	12.05%	\$ 53,742,342	\$115,423,058	63.3%
2017	22.48%	8.70%	13.78%	55,354,612	116,238,805	62.8%
2018	22.48%	8.70%	13.78%	57,015,251	116,766,580	64.0%
2019	22.48%	8.70%	13.78%	58,725,708	117,095,633	65.3%
2020	22.48%	8.70%	13.78%	60,487,479	117,204,447	66.5%
2021	22.48%	8.70%	13.78%	62,302,104	117,069,731	67.7%
2022	22.48%	8.70%	13.78%	64,171,167	116,666,288	68.9%
2023	22.48%	8.70%	13.78%	66,096,302	115,966,864	70.1%
2024	22.48%	8.70%	13.78%	68,079,191	114,942,000	71.3%
2025	22.48%	8.70%	13.78%	70,121,567	113,559,860	72.5%
2026	22.48%	8.70%	13.78%	72,225,214	111,786,052	73.7%
2027	22.48%	8.70%	13.78%	74,391,970	109,583,436	74.9%
2028	22.48%	8.70%	13.78%	76,623,729	106,911,917	76.2%
2029	22.48%	8.70%	13.78%	78,922,441	103,728,223	77.5%
2030	22.48%	8.70%	13.78%	81,290,114	99,985,667	78.8%
2031	22.48%	8.70%	13.78%	83,728,818	95,633,890	80.2%
2032	22.48%	8.70%	13.78%	86,240,682	90,618,588	81.7%
2033	22.48%	8.70%	13.78%	88,827,903	84,881,213	83.3%
2034	22.48%	8.70%	13.78%	91,492,740	78,358,662	85.0%
2035	22.48%	8.70%	13.78%	94,237,522	70,982,932	86.7%
2036	22.48%	8.70%	13.78%	97,064,648	62,680,761	88.6%
2037	22.48%	8.70%	13.78%	99,976,587	53,373,229	90.6%
2038	22.48%	8.70%	13.78%	102,975,885	42,975,344	92.6%
2039	22.48%	8.70%	13.78%	106,065,161	31,395,589	94.8%
2040	22.48%	8.70%	13.78%	109,247,116	18,535,438	97.0%
2041	22.48%	8.70%	13.78%	112,524,529	4,288,836	99.3%
2042	22.48%	8.70%	13.78%	115,900,265	-	100.0%

* Represents a 6-month period from December 31, 2015 through June 30, 2016.

SECTION B

BENEFIT PROVISIONS AND VALUATION DATA

**SUMMARY OF BENEFIT PROVISIONS
AS OF DECEMBER 31, 2015**

Eligibility

Amount

NORMAL RETIREMENT

Members are eligible to retire at age 60.

Straight life pension equals 2.0% of 3-year Final Average Earnings (FAE) times service on and after January 1, 1999 *plus* 1.5% of FAE times service before January 1, 1999.

Members with at least 20 years of service at retirement are eligible for a minimum benefit if employed on or before January 1, 1974.

Minimum benefit for eligible members is 50% of FAE.

EARLY RETIREMENT

Members are eligible to retire early if the sum of age and service is at least 80, or at age 55 with at least 20 years of service.

Computed as a normal retirement pension. If the early retirement occurs prior to the member attaining age 60, the benefit is reduced by 1/6 of 1% for each month that the early retirement precedes age 60.

DEFERRED RETIREMENT

Members are eligible to retire with a deferred benefit after attaining at least 5 years of service, provided they do not take a refund of member contributions.

Pension is computed as a normal retirement pension, based on service and FAE on date of termination. Commencement of benefits begins at age 60.

NON-DUTY DISABILITY

Members are eligible upon attainment of 15 years of service.

Pension is computed as a normal retirement pension based on service and FAE as of date of disability.

DUTY DISABILITY

No age or service requirement.

Pension is computed as a normal retirement pension based on service and FAE as of date of disability. Minimum duty disability benefit is 50% of FAE.

**SUMMARY OF BENEFIT PROVISIONS
AS OF DECEMBER 31, 2015**

Eligibility

Amount

ORDINARY DEATH-IN-SERVICE

- | | |
|--|--|
| (1) Any age with less than 5 years of service. | Beneficiary receives member's contributions and accumulated interest, and an additional lump sum equal to one year's salary. |
| (2) Any age with 5 or more years of service. | Beneficiary receives the option of (1) the greater of (a) 50% of the accrued service retirement benefit (without any early retirement reduction); or (b) pension computed as normal or early retirement benefit (depending on eligibility), actuarially reduced as if the member had elected the 100% Joint & Survivor benefit; or (2) lump sum equal to 100% of base salary plus the member's accumulated contributions (including interest). |

DUTY DEATH-IN-SERVICE

- | | |
|--|--|
| Death as a result of a work-related accident; not caused by willful neglect of the member. | The option of (1) the greater of (a) 50% of FAE, or (b) pension computed as an early retirement benefit actuarially reduced as if the member had elected the 100% Joint & Survivor benefit; or (2) a lump sum as described below; options payable to the spouse or child(ren) under age 18. If no spouse or child(ren) are alive at the time of the member's death, a lump sum is payable to the member's estate in the amount of 100% of base salary plus the member's accumulated contributions (including interest) plus accrued fringe benefits not paid at the time of death. |
|--|--|

MEMBER CONTRIBUTIONS

3.75% of pay for service on and after January 1, 1999. 2.5% of pay for service prior to January 1, 1999. Contributions are credited with 5.0% interest per annum. Members may elect to contribute additional contributions which are accounted for separately. At retirement, the additional contribution balance is annuitized to provide an additional benefit within certain limits.

**SUMMARY OF BENEFIT PROVISIONS
AS OF DECEMBER 31, 2015**

OPTIONAL FORMS OF PAYMENT

In lieu of the straight life benefit, a member may elect an actuarially reduced benefit in one of the following forms:

- 100% Joint & Survivor with pop-up
- 66 2/3 % Joint & Survivor with pop-up
- 50% Joint & Survivor with pop-up
- 10-year Certain & Life Option

The actuarial factors for optional forms of payment are based on the 1983 Group Annuity Mortality Table and 7.5% interest.

SERVICE UPGRADE

Members may elect to purchase an increase in their benefit multiplier for service rendered before 1999 under Chapter 159 (or Senate Bill 402). The cost to the member is ½ of the actuarially determined increase in System costs and results in a benefit based on 2% of FAE for the time purchased.

HEALTH SUBSIDY

Current and future retired members who are in receipt of an annuity benefit may elect to participate in a monthly health insurance subsidy. Spouses, dependents, and/or beneficiaries are not eligible for any subsidy. The full amount of the monthly health insurance subsidy is \$200 as of January 1, 2006 and increases by 4% annually beginning January 1, 2007. The full \$200 is prorated based on the member's service at retirement, as shown in the schedule below. Members who were already retired as of March 2006 are entitled to 50% of the subsidy available to members retired after March 2006. Active members must contribute 1.25% of pay. Member contributions for the health subsidy are non-refundable.

Service at Retirement	% of Full Subsidy Payable	
	Active on or after March 1, 2006	Terminated Vested or Retired on March 1, 2006
Less than 10 years	25.0%	12.5%
10 years or more, but less than 15 years	50.0%	25.0%
15 years or more, but less than 20 years	75.0%	37.5%
20 years or more	100.0%	50.0%

RETIREES AND BENEFICIARIES COMPARATIVE STATEMENT

Year Ended December 31	Added to Rolls		Removed from Rolls		Rolls End of Year		Average Pension
	No.	Annual Pensions*	No.	Annual Pensions	No.	Annual Pensions	
2005	31	\$ 683,071	19	\$148,055	531	\$ 5,803,185	\$ 10,929
2006	41	898,189	28	186,217	544	6,515,157	11,976
2007	49	1,109,288	24	297,006	569	7,327,439	12,878
2008	46	1,053,112	21	210,203	594	8,170,348	13,755
2009	47	511,404	16	221,371	625	8,460,381	13,537
2010	36	598,600	23	328,957	638	8,730,024	13,683
2011	63	914,086	29	92,673	672	9,551,437	14,213
2012	55	1,205,310	20	230,051	707	10,526,696	14,889
2013	51	1,416,661	29	331,168	729	11,612,189	15,929
2014	60	1,589,379	33	295,337	756	12,906,232	17,072
2015	89	2,910,593	24	323,204	821	15,493,622	18,872

* Includes adjustments due to COLA.

RETIREES AND BENEFICIARIES DECEMBER 31, 2015
TABULATED BY TYPE OF PENSIONS BEING PAID

Type of Pensions Being Paid	Number	Annual Pensions
Age and Service Pensions		
Regular Pension - Benefit terminating at death of retiree	411	\$ 6,601,398
For life of member, but not less than 10 years	71	1,123,122
100% Joint & Survivor	155	3,208,670
66 2/3% Joint & Survivor	54	1,810,275
50% Joint & Survivor	54	1,446,300
Survivor Beneficiary	38	561,959
Total age and service pensions	783	\$ 14,751,724
Casualty Pensions		
Duty Disability	24	\$ 479,058
Non-Duty Disability	10	216,403
Duty Death - Survivor Benefits	0	0
Non-Duty Death - Survivor Benefits	4	46,437
Total casualty pensions	38	\$ 741,898
Total Pensions Being Paid	821	\$ 15,493,622

Each member is counted only once in the above table. Members who have purchased an additional annuity may elect a different payment option for the additional purchased benefits. All benefit payments are included in the table.

RETIREES AND BENEFICIARIES DECEMBER 31, 2015
PENSION BENEFITS TABULATED BY ATTAINED AGES

Attained Age	Age and Service		Casualty		Totals	
	Number	Annual Pensions	Number	Annual Pensions	Number	Annual Pensions
20-24						
25-29	2	\$ 31,327			2	\$ 31,327
30-34	1	3,838			1	3,838
35-39	2	11,351			2	11,351
40-44			1	\$ 16,434	1	16,434
45-49						-
50-54	9	223,840	2	40,179	11	264,019
55-59	29	941,536	12	273,828	41	1,215,364
60-64	151	4,104,242	9	171,068	160	4,275,310
65-69	181	3,651,754	5	110,714	186	3,762,468
70-74	134	2,475,022	3	50,745	137	2,525,767
75-79	98	1,401,846	3	37,752	101	1,439,598
80-84	87	963,348	1	11,634	88	974,982
85-89	53	566,831	1	17,983	54	584,814
90-94	31	335,149	1	11,561	32	346,710
95-100	5	41,640			5	41,640
Totals	783	\$ 14,751,724	38	\$ 741,898	821	\$ 15,493,622

RETIREES AND BENEFICIARIES DECEMBER 31, 2015
HEALTH SUBSIDY BENEFITS TABULATED BY ATTAINED AGES

Attained Age	Health Subsidy	
	Number	Annual Amount
50-54	3	\$ 9,394
55-59	19	61,488
60-64	78	233,143
65-69	81	238,269
70-74	46	125,111
75-79	23	53,801
80-84	20	37,147
85-89	14	22,203
90-94	5	7,686
95+	2	3,416
Totals	291	\$791,658

Average Age at Retirement: 62.6 years

Average Age Now: 69.6 years

RETIREES AND BENEFICIARIES DECEMBER 31, 2015
TABULATED BY YEAR OF RETIREMENT

Year of Retirement	Number	Annual Pensions	
		Totals	Average
1980	1	\$ 453	\$ 453
1981	2	26,485	13,243
1982	2	17,612	8,806
1983	3	28,285	9,428
1984	3	23,476	7,825
1985	3	22,989	7,663
1986	2	27,491	13,746
1987	5	67,682	13,536
1988	5	54,349	10,870
1989	10	129,898	12,990
1990	10	146,459	14,646
1991	9	64,384	7,154
1992	11	152,133	13,830
1993	19	283,275	14,909
1994	22	209,787	9,536
1995	19	178,075	9,372
1996	23	318,188	13,834
1997	15	208,368	13,891
1998	11	139,058	12,642
1999	29	520,198	17,938
2000	25	396,141	15,846
2001	19	298,708	15,721
2002	31	347,991	11,226
2003	17	241,742	14,220
2004	24	186,970	7,790
2005	32	556,964	17,405
2006	36	729,080	20,252
2007	43	961,622	22,363
2008	40	939,308	23,483
2009	30	405,084	13,503
2010	35	597,340	17,067
2011	49	830,996	16,959
2012	50	1,105,239	22,105
2013	47	1,232,442	26,222
2014	53	1,367,048	25,793
2015	86	2,678,302	31,143
Totals	821	\$15,493,622	\$ 18,872

Average Age at Retirement: 61.7 years
Average Age Now: 71.7 years

INACTIVE VESTED MEMBERS DECEMBER 31, 2015
TABULATED BY ATTAINED AGE

Attained Age	Number	Estimated Annual Pensions
25-29	1	\$ 3,351
30-34	3	12,914
35-39	6	21,900
40-44	8	91,597
45-49	15	128,548
50-54	30	245,309
55-59	34	290,490
60	1	8,051
Totals	98	\$802,160

Average Age at Termination: 45.1 years

Average Age Now: 51.4 years

ACTIVE MEMBERS ADDED TO AND REMOVED FROM ROLLS

Valuation Date	Number Added During Year		Terminations During Year										Active Members End of Year
			Retirement		Disability		Died-in Service		Withdrawals				
	A	E	A	E	A	E	A	E	Vested	Other	Totals		
	A	E	A	E	A	E	A	A	A	A	E		
2006	140	166	34	52.6	0	1.1	1	2.0	15	116	131	66.5	1,328
2007	178	181	37	52.4	0	1.1	0	2.1	23	121	144	63.3	1,325
2008	128	130	35	53.9	1	1.1	0	2.1	9	85	94	65.3	1,323
2009	91	114	27	62.3	1	1.1	1	2.1	13	72	85	64.4	1,300
2010	87	102	25	45.7	2	1.0	0	2.5	9	66	75	77.7	1,285
2011	57	114	34	48.8	2	1.0	3	2.6	7	68	75	72.5	1,228
2012	76	104	41	54.0	2	0.4	3	2.7	16	42	58	60.6	1,200
2013	96	102	41	49.8	1	0.6	1	2.5	11	48	59	56.5	1,194
2014	113	107	44	53.9	0	0.6	0	2.6	15	48	63	58.5	1,200
2015	145	150	75	56.3	1	0.6	4	2.6	19	51	70	65.3	1,195
5-Year Totals	487	577	235	262.8	6	3.2	11	13.0	68	257	325	313.4	
10-Year Totals	1111	1270	393	529.7	10	8.6	13	23.8	137	717	854	650.6	
Since Last Exp. Study (4 years)	430	463	201	214.0	4	2.2	8	10.4	61	189	250	240.9	

A = Actual

E = Expected

27 retirees/beneficiaries and \$344,807 in benefits were expected to come off the rolls for the December 31, 2015 valuation; 24 retirees/beneficiaries and \$323,204 in benefits were actually removed from the rolls.

ACTIVE MEMBERS DECEMBER 31, 2015
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	Number	Valuation Payroll
20-24	34							34	\$ 909,730
25-29	73	8						81	2,651,513
30-34	47	29	9					85	3,092,106
35-39	31	26	24	7				88	3,830,792
40-44	35	20	21	11	3			90	4,005,332
45-49	37	38	24	26	20	8		153	7,597,679
50-54	43	50	46	41	14	26	9	229	10,767,558
55-59	31	35	34	60	14	22	24	220	10,450,230
60-64	13	19	26	33	23	16	17	147	7,368,356
65-69	10	11	9	10	9	1	5	55	1,873,992
70-74	1	2	1	1			1	6	121,123
75 & over		2	1	1		1	2	7	285,492
Totals	355	240	195	190	83	74	58	1,195	\$52,953,903

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

Age: 48.7 years
Service: 11.6 years
Annual Pay: \$44,313

SECTION C

VALUATION METHODS AND ASSUMPTIONS

ACTUARIAL COST METHOD

Normal cost and the allocation of benefit values between service rendered before and after the valuation date was determined using the *individual entry-age actuarial cost method* having the following characteristics:

- the annual normal cost for each individual active member, payable from the date of employment to the date of retirement, are sufficient to accumulate the value of the member's benefit at the time of retirement; and
- each annual normal cost is a constant percentage of the member's year-by-year projected covered pay.

MECRS currently has a tiered benefit structure with the ultimate tier being more costly than the initial tier. The normal cost is computed based on this tiered structure. As a result, the normal cost rate is expected to increase as the members affected by the initial tier are replaced by new members, or when members upgrade their prior service.

Financing of Unfunded Actuarial Accrued Liabilities. Unfunded Actuarial Accrued Liabilities were amortized by level (principal and interest combined) percent-of-payroll contributions over 24 future years for pension benefits, and over 24 future years for health subsidy benefits. The amortization period is closed for both pension benefits and health subsidy benefits.

Asset Valuation Method. Last year's valuation assets are increased by contributions and reduced by refunds, benefit payments and expenses. An amount equal to the assumed investment return for the year is then added. Differences between actual return on a market value basis and an assumed return are phased-in over a five-year period.

ACTUARIAL ASSUMPTIONS USED FOR THE VALUATION

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

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

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

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

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

From time to time it becomes appropriate to modify one or more of the assumptions, to reflect experience trends (but not random year-to-year fluctuations). The Board has established a policy of performing an Experience Study every 3-5 years to evaluate/modify valuation assumptions. Assumptions used in this report are based on the January 1, 2007 – December 31, 2011 experience study of the MECRS and were adopted by the Board. These assumptions were first used in the December 31, 2012 actuarial valuation. We believe the assumptions are reasonable individually and in the aggregate.

VALUATION ASSUMPTIONS

The rate of investment return was 7.25% per year, compounded annually (net of investment expenses). This assumption is used to make money payable at one point in time equal in value to a different amount of money payable at another point in time. The assumed real rate of return (the net return in excess of the wage inflation rate) is 4.25%. Experience over the last 5 years has been as follows:

	Year Ended December 31					5-Year Average
	2015	2014	2013	2012	2011	
1) Nominal rate of return#	4.8 %	7.4 %	9.3 %	3.8 %	3.5 %	5.7 %
2) Increase in CPI	0.7 %	0.8 %	1.5 %	1.7 %	1.5 %	1.2 %
3) Average Salary Increase (ASI)	(2.0)%	1.3 %	3.3 %	3.9 %	4.1 %	2.1 %
4) Real Return						
- Total: CPI (1) - (2)						4.5 %
- Total: ASI (1) - (3)						3.7 %
- Assumption	4.25 %	4.25 %	4.25 %	4.25 %	4.0 %	4.2 %

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

The rate of assumed price inflation was 2.75% per year. This results in a real rate of return over price inflation of 4.5%.

The rates of salary increase used for individual members are in accordance with the following table. This assumption is used to project a member's current salary to the salaries upon which benefit amounts will be based.

Service	Salary Increase Assumptions for an Individual Member		
	Merit & Seniority	Base (Economic)	Increase Next Year
1	3.96%	3.00%	6.96%
2	4.93%	3.00%	7.93%
3	4.72%	3.00%	7.72%
4	4.20%	3.00%	7.20%
5	3.88%	3.00%	6.88%
6	3.43%	3.00%	6.43%
7	3.05%	3.00%	6.05%
8	2.76%	3.00%	5.76%
9	2.56%	3.00%	5.56%
10	2.35%	3.00%	5.35%
15	1.58%	3.00%	4.58%
20	1.27%	3.00%	4.27%
25	1.25%	3.00%	4.25%
30	1.25%	3.00%	4.25%
35	1.25%	3.00%	4.25%
40	1.25%	3.00%	4.25%
Ref:	280		

If the number of active members remains constant, then the total active member payroll will increase 3.0% annually, the base portion of the individual salary increase assumptions. This increasing payroll was recognized in amortizing unfunded actuarial accrued liabilities.

VALUATION ASSUMPTIONS

The mortality table was the RP 2000 Mortality Table projected to 2020.

Sample Attained Ages	Single Life Retirement Values					
	Present Value of \$1 Monthly for Life		Percent Dying Next Year		Future Life Expectancy (years)	
	Men	Women	Men	Women	Men	Women
50	\$148.84	\$150.73	0.1487%	0.1189%	32.77	34.63
55	140.89	143.37	0.2469%	0.2314%	28.04	29.88
60	130.74	134.14	0.4887%	0.4573%	23.47	25.31
65	118.50	123.10	0.9607%	0.8780%	19.17	21.02
70	104.41	110.47	1.6413%	1.5145%	15.22	17.06
75	88.00	96.22	2.8538%	2.3935%	11.58	13.47
80	70.35	80.35	5.2647%	3.9866%	8.42	10.23
Ref:	454 x 1.00 sb 0	455 x 1.00 sb 0				

This assumption is used to measure the probabilities of members dying after retirement. Ninety percent of these rates are used to measure the probability of dying before retirement. The projection to 2020 is the margin for mortality improvement.

Post-retirement disabled mortality rates are based on the health mortality rates, set forward 10 years.

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

Active Members Retiring Next Year Under Normal Retirement			Active Members Retiring Next Year Under Early Retirement			
Ages	% Retiring		Ages	% Retiring		Rule of 80
	Men	Women		Age and Service		
	Men	Women	Men	Women		
60	10%	13%	50			5%
61	10%	15%	51			5%
62	20%	28%	52			5%
63	20%	15%	53			5%
64	15%	10%	54			5%
65	25%	25%	55	5%	7%	5%
66	20%	25%	56	5%	7%	5%
67	15%	25%	57	5%	7%	5%
68	15%	10%	58	5%	7%	5%
69	15%	20%	59	5%	7%	5%
70	15%	20%				
71	50%	20%				
72	50%	20%				
73	50%	20%				
74	50%	20%				
75	100%	20%				
76	100%	20%				
77	100%	20%				
78	100%	20%				
79	100%	20%				
80	100%	100%				
Ref.	2355	2356		2357	2358	2359

VALUATION ASSUMPTIONS

A member was assumed to be eligible for normal retirement after attaining age 60 regardless of service. A member was assumed to be eligible for early retirement after attaining age 55 with at least 20 years of service or if the sum of age and service is at least 80.

Rates of separation from active membership are 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	Service	% of Active Members Separating within Next Year	
		Men	Women
	0-1	20.00%	30.00%
	1-2	17.00%	20.00%
	2-3	11.50%	15.00%
	3-4	9.00%	12.50%
	4-5	8.00%	11.00%
	5-6	n/a	8.00%
30	5 & Up (Men)		
35	6 & Up (Women)	5.14%	5.30%
40		3.80%	4.45%
45		3.00%	3.85%
50		2.57%	3.40%
		2.40%	2.95%
Ref.		830 77 x 0.45	831 37 x 1

Rates of disability were divided equally between duty and non-duty disability and are as follows:

Sample Ages	% of Active Members Becoming Disabled within Next Year	
	Male	Female
20	0.002%	0.002%
25	0.002%	0.002%
30	0.002%	0.002%
35	0.011%	0.011%
40	0.043%	0.043%
45	0.088%	0.088%
50	0.144%	0.144%
55	0.214%	0.214%
60	0.318%	0.318%
Ref.	37 x 0.30	37 x 0.30

MISCELLANEOUS AND TECHNICAL ASSUMPTIONS

DECEMBER 31, 2015

Marriage Assumption:	100% of males and 100% of females are assumed to be married for purposes of death-in-service benefits. Male spouses are assumed to be three years older than female spouses.
Pay Increase Timing:	Beginning of the year. This is equivalent to assuming that reported pays represent amounts paid to members during the year ended on the valuation date.
Decrement Timing:	Decrements of all types are assumed to occur mid-year.
Eligibility Testing:	Eligibility for benefits is determined based upon the age nearest birthday and exact fractional service on the date the decrement is assumed to occur.
Decrement Relativity:	Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.
Decrement Operation:	Disability and withdrawal decrements do not operate after member reaches retirement eligibility.
Expense Load:	0.50% of payroll.
Normal Form of Benefit:	The assumed normal form of benefit is the straight life form.
Benefit Service:	Exact fractional service as of the valuation date is used to determine the amount of benefit payable.
Incidence of Contributions:	For Manchester School District and enterprise funds of the City (Airport, Water Works, and the MECRS), contributions are assumed to be received continuously throughout the year based upon the actual payroll payable at the time contributions are made. For the remaining City group, contributions are assumed to be received on a semiannual basis in December and July.
COLA Assumption:	1.25% compounded annually.
Adjustments:	Normal and Early retirement costs were increased by 9% to reflect lump sums that are payable at retirement but not available in the active data. Retiree liabilities were increased 1% to account for pop-up retiree benefits.
Post-Retirement Subsidy:	55% of current actives and 25% of current terminated vested members were assumed to elect to receive the post-retirement health subsidy upon retirement.

SECTION D

GASB STATEMENT NO. 43

This information is presented in draft form for review by the System's auditor. Please let us know if there are any items that the auditor changes so that we may maintain consistency with the System's financial statements. Information needed for compliance with GASB Statement No. 67 and No. 68 will be presented in a separate report.

GASB STATEMENT NO. 43
REQUIRED SUPPLEMENTARY INFORMATION

Schedule of Funding Progress for Health Subsidy Program

Actuarial Valuation Date	Actuarial Value of Assets \$Millions (a)	Actuarial Accrued Liability (AAL) Entry Age \$Millions (b)	Unfunded AAL (UAAL) \$Millions (b) - (a)	Funded Ratio (a)/(b)	Covered Payroll (\$ Millions) (c)	UAAL as a Percent of Covered Payroll [(b) - (a)] / (c)
12/31/2006	\$0.8	\$11.7	\$10.9	6.7 %	\$47.5	23.1 %
12/31/2007#	1.9	11.3	9.4	16.8 %	48.6	19.3 %
12/31/2008	2.6	12.4	9.8	21.0 %	50.7	19.3 %
12/31/2009#*	3.7	13.1	9.3	28.6 %	50.5	18.5 %
12/31/2010	4.9	14.1	9.2	34.6 %	51.4	17.9 %
12/31/2011	5.8	15.6	9.8	37.4 %	51.1	19.1 %
12/31/2012#	6.9	16.6	9.7	41.4 %	51.9	18.7 %
12/31/2013	8.1	18.0	9.8	45.3 %	53.3	18.4 %
12/31/2014	9.4	19.4	10.0	48.6 %	54.3	18.4 %
12/31/2015	10.3	21.6	11.4	47.4 %	53.0	21.5 %

After changes in methods and/or assumptions.

* Assets plus UAAL does not equal Accrued Liability in this exhibit due to rounding.

Schedule of Employer Contributions for Health Subsidy Program

City Fiscal Year Ended June 30	Annual Required Contribution (ARC) as a Percent of Valuation Payroll	Plan Fiscal Year/ Valuation Year Ended December 31	Actual Contributions
2008	1.24%	2006	\$ 333,028
2009	0.91%	2007	641,197
2010	0.93%	2008	487,909
2011	0.93%	2009	461,074
2012	0.87%	2010	457,292
2013	0.97%	2011	451,122
2014	0.93%	2012	526,321
2015	0.93%	2013	462,201
2016	0.99%	2014	613,606
2017	1.26%	2015	425,306

GASB STATEMENT NO. 43
REQUIRED SUPPLEMENTARY INFORMATION – HEALTH SUBSIDY

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

Health Subsidy Program implementation date	March 1, 2006
Valuation date	December 31, 2015
Actuarial cost method	Entry Age Normal
Amortization method	Level percent-of-payroll, closed
Remaining amortization period	24 years
Asset valuation method	5-year smoothed market
Actuarial assumptions:	
Investment net rate of return*	7.25%
Projected salary increases*	3.0%-7.93%
Future annual increases in subsidy amount	4.0%
*Includes price inflation at	2.75%

Membership of the plan consisted of the following at December 31, 2015, the date of the latest actuarial valuation:

Retirees and Beneficiaries receiving benefits	291
Terminated plan members entitled to but not yet receiving benefits	98
Active plan members	<u>1,195</u>
Total	1,584

SECTION E

OPERATION OF THE RETIREMENT SYSTEM

BASIC FINANCIAL OBJECTIVE AND OPERATION OF THE RETIREMENT SYSTEM

Benefit Promises Made Which Must Be Paid For. A retirement system is an orderly means of handing out, keeping track of, and financing contingent pension promises to a group of employees. As each member of the retirement system acquires a unit of service credit they are, in effect, handed an “IOU” which reads: “The Employees Retirement System promises to pay you one unit of retirement benefits, payments in cash commencing when you retire.”

The principal related financial question is: ***When shall the money required to cover the “IOU” be contributed?*** This year, when the benefit of the member’s service is received? Or, some future year when the “IOU” becomes a cash demand?

This Retirement System meets the requirement of funding future benefits during the year by having the following ***Financial Objective: To establish and receive contributions, expressed as percents of active member payroll, which will remain approximately level from year to year*** and will not have to be increased for future generations of taxpayers.

Translated into actuarial terminology, a level percent-of-payroll contribution objective means that the contribution rate must be at least:

Normal Cost (the current value of benefits likely to be paid on account of members’ service being rendered in the current year)

... plus ...

Interest on the Unfunded Actuarial Accrued Liability (the difference between the actuarial accrued liability and current system assets).

If contributions to the Retirement System are less than the preceding amount, the difference, plus investment earnings not realized thereon, will have to be contributed at some later time, or, benefits will have to be reduced, to satisfy the fundamental fiscal equation under which all retirement systems must operate; that is:

$$\mathbf{B = C + I - E}$$

Benefit payments to any group of members and their beneficiaries cannot exceed the sum of:

Contributions received on behalf of the group

... plus ...

Interest earnings on contributions received

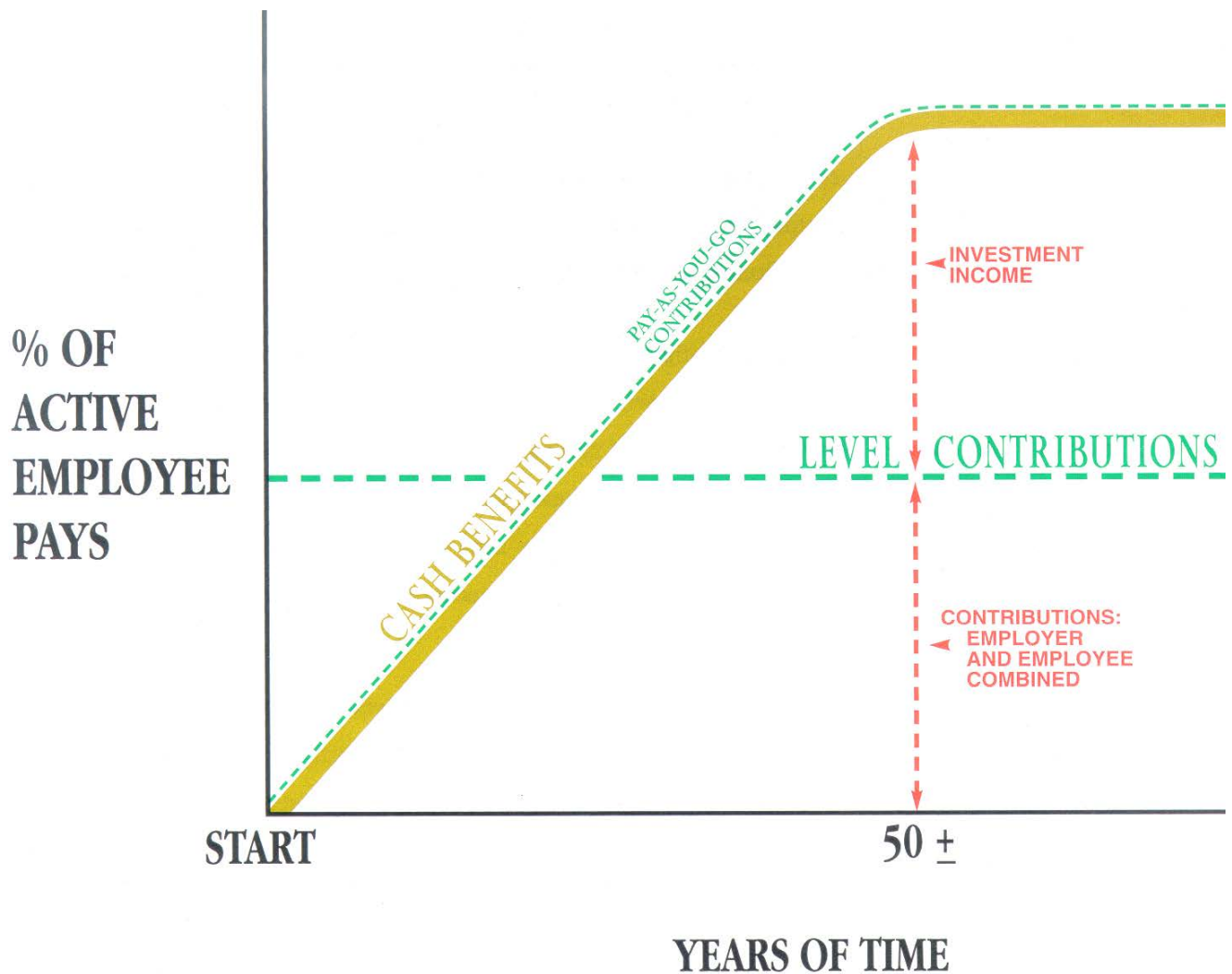
... minus ...

Expenses incurred in the operation of the system.

There are retirement systems designed to defer the bulk of contributions far into the future. They are lured by artificially low present contributions, but the inevitable consequence is a relentlessly increasing contribution rate to a level greatly in excess of the level percent-of-payroll rate.

A by-product of the level percent-of-payroll contribution objective is the accumulation of invested assets for varying periods of time. Investment income becomes a major contributor to the Retirement System and the amount is directly related to the amount of contributions and investment performance.

Computed Contribution Rate Needed to Finance Benefits. From a given schedule of benefits and from the data furnished, the contribution rate is calculated ***by means of an actuarial valuation*** - the technique of assigning monetary values to the risks assumed in operating a retirement system.



CASH BENEFITS LINE. This relentlessly increasing line is the fundamental reality of retirement plan financing. It happens each time a new benefit is added for future retirements (and happens regardless of the design for contributing for benefits).

LEVEL CONTRIBUTION LINE. Determining the level contribution line requires detailed assumptions concerning a variety of experiences in future decades, including:

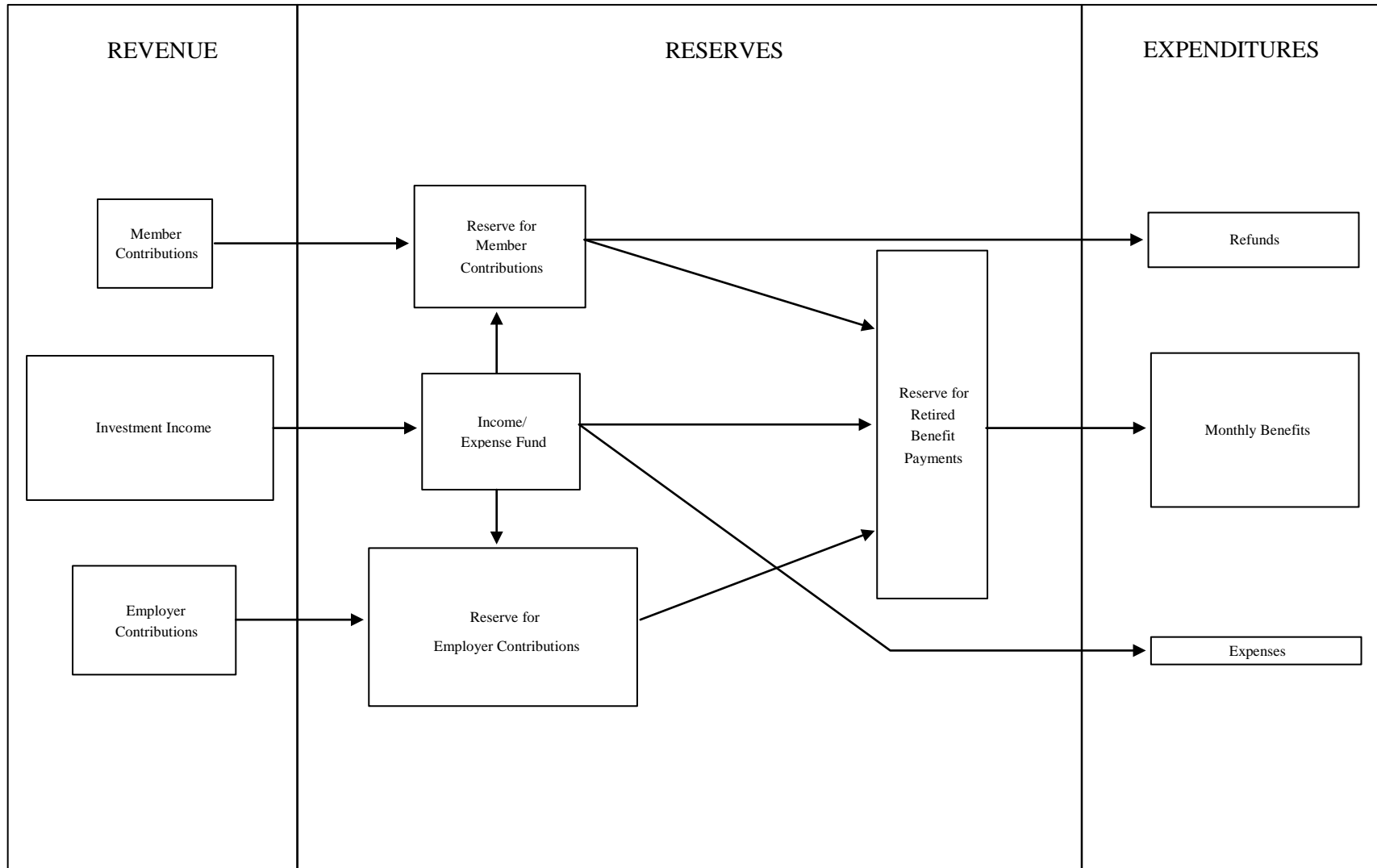
Economic Risk Areas

- Rates of investment return
- Rates of pay increase
- Changes in active member group size

Non-Economic Risk Areas

- Ages at actual retirement
- Rates of mortality
- Rates of withdrawal of active members (turnover)
- Rates of disability

FLOW OF MONEY THROUGH THE RETIREMENT SYSTEM



GLOSSARY

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

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

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

Actuarial Cost Method. A mathematical budgeting procedure for allocating the dollar amount of the “actuarial present value of future plan benefits” between the actuarial present value of future normal cost and the actuarial accrued liability. Sometimes referred to as the “actuarial funding method.”

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

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

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

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

GLOSSARY (CONCLUDED)

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

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

Unfunded Actuarial Accrued Liabilities. 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.


March 29, 2016

Mr. Gerard Fleury
Executive Director
City of Manchester Employees'
Contributory Retirement System
1045 Elm Street, Suite 403
Manchester, New Hampshire 03101-1824

Dear Mr. Fleury:

Please find enclosed 15 copies of the report of the Actuarial Valuation of the City of Manchester Employees' Contributory Retirement System.

Sincerely,



Kenneth G. Alberts

KGA:mrb:ah
Enclosures