

**CITY OF MANCHESTER EMPLOYEES' CONTRIBUTORY RETIREMENT SYSTEM**  
**ANNUAL ACTUARIAL VALUATION REPORT**  
**DECEMBER 31, 2012**

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April 9, 2013

Board of Trustees  
City of Manchester Employees'  
Contributory Retirement System  
Manchester, New Hampshire 03101-1829

Dear Board Members:

The results of the December 31, 2012 **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 2014;
- to determine actuarial information for reporting purposes in compliance with Governmental Accounting Standards Statements No. 25 and No. 43 for the Plan's 2012 fiscal year.

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. The actuarial assumptions used for this valuation were adopted by the Board pursuant to a review of methods and assumptions dated August, 2012. We certify that the information contained in this report is accurate and fairly presents the actuarial position of MECRS as of December 31, 2012.

One or more of the undersigned 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 and is independent of the plan sponsors.

Respectfully submitted,



Kenneth G. Alberts



Mark Buis, FSA, EA, MAAA

KGA/MB:mrb

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**SECTION A**

**VALUATION RESULTS**

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## EXECUTIVE SUMMARY

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### 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 2014 is 20.03% of covered payroll.

*The computed health subsidy contribution rate* for the City's fiscal year 2014 is 0.93% 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 27 years for pension benefits, and 27 years for health subsidy benefits.

**SUMMARY STATEMENT OF SYSTEM RESOURCES AND OBLIGATIONS**  
**DECEMBER 31, 2012**

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*Present Resources and Expected Future Resources*

	<b>Pension</b>	<b>Health</b>
A. Actuarial value of System assets:		
1. Net assets from System financial statements	\$ 159,822,311	\$ 6,783,397
2. Funding value adjustment	2,042,626	86,696
3. Valuation assets	161,864,937	6,870,093
B. Present value of expected future employer contributions:		
1. For normal costs	37,402,233	0
2. For unfunded actuarial accrued liabilities	100,817,105	8,501,480
3. Totals	138,219,338	8,501,480
C. Present value of expected future member contributions:	18,138,625	6,046,208
<b>D. Total Present and Expected Future Resources</b>	<b>\$318,222,900</b>	<b>\$21,417,781</b>

*Actuarial Present Value of Expected Future Benefit Payments*

	<b>Pension</b>	<b>Health</b>
A. To retirees and beneficiaries:	\$108,349,843	\$ 6,019,550
B. To vested terminated members:	5,826,174	331,274
C. To present active members:		
1. Allocated to service rendered prior to valuation date	148,506,025	10,244,799
2. Allocated to service likely to be rendered after valuation date	55,540,858	4,822,158
3. Total	204,046,883	15,066,957
<b>D. Total Actuarial Present Value of Expected Future Benefit Payments</b>	<b>\$318,222,900</b>	<b>\$21,417,781</b>

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

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*Balance Sheet*

<b>Reported Assets - Actuarial Value as of December 31</b>		
	<b>2012</b>	<b>2011</b>
Cash & Equivalents	\$ 10,143,097	\$ 7,118,096
Investments	156,693,589	138,664,790
Receivables	132,546	549,555
Property, Plant, Equipment	169,533	215,204
Accrued Interest & Dividends	13,913	22,023
Receivable for Add'l Contribution Calculator	2,850	4,300
Payable for Investments Purchased	(71,064)	0
Accounts Payable	(155,575)	(114,004)
Benefits Payable	(878,553)	(798,399)
Additional Contribution Account	555,372	316,902
Funding Value Adjustment	2,129,322	12,892,155
<b>Total Valuation Assets</b>	<b>\$168,735,030</b>	<b>\$158,870,622</b>

*Revenues and Expenditures*

	<b>2012</b>	<b>2011</b>
Funding Value - January 1	\$158,870,622	\$150,808,878
Revenues		
Employees' Contributions	2,776,414	2,823,019
Employer Contributions	11,211,891	9,707,093
Recognized Investment Income	7,985,417	6,646,869
Total	21,973,722	19,176,981
Expenditures		
Benefit Payments	10,370,397	9,477,335
Refund of Member Contributions	183,505	298,007
Expenses and Fees	1,555,413	1,339,895
Total	12,109,314	11,115,237
Funding Value - December 31	\$168,735,030	\$158,870,622
Rate of Return Recognized	3.8 %	3.5 %



## DEVELOPMENT OF FUNDING VALUE OF ASSETS

Year Ended December 31:	2010	2011	2012	2013	2014	2015	2016
A. Funding Value Beginning of Year	\$138,530,845	\$150,808,878	\$158,870,622				
B. Market Value End of Year	149,093,366	145,978,467	166,605,708				
C. Market Value Beginning of Year	128,943,851	149,043,186	145,912,243				
D. Non-Investment Net Cash Flow	3,105,071	2,754,770	3,828,334				
D1. Post-Valuation Adjustment	55,586	50,180	66,224				
E. Investment Income							
E1. Market Total: B - C - D - D1	16,988,858	(5,869,669)	16,798,907				
E2. Amount for Immediate Recognition (7.5%)	10,506,254	11,413,970	12,058,859				
E3. Amount for Phased-In Recognition: E1-E2	6,482,604	(17,283,639)	4,740,048				
F. Phased-In Recognition of Investment Income							
F1. Current Year: 0.20 x E3	1,296,521	(3,456,728)	948,010				
F2. First Prior Year	1,855,781	1,296,521	(3,456,728)	\$ 948,010			
F3. Second Prior Year	(6,666,368)	1,855,781	1,296,521	(3,456,728)	\$ 948,010		
F4. Third Prior Year	863,797	(6,666,368)	1,855,781	1,296,521	(3,456,728)	\$ 948,010	
F5. Fourth Prior Year	1,316,977	863,798	(6,666,369)	1,855,782	1,296,520	(3,456,727)	\$948,008
F6. Total Recognized Investment Gain	(1,333,292)	(6,106,996)	(6,022,785)	643,585	(1,212,198)	(2,508,717)	948,008
G. Preliminary Funding Value End of Year: A + D + E2 + F6	150,808,878	158,870,622	168,735,030				
H. Actuarial Value after Application of 20% Corridor Limit	150,808,878	158,870,622	168,735,030				
I. Difference between Market & Funding Value	(1,715,512)	(12,892,155)	(2,129,322)				
J. Recognized Rate of Return	6.6 %	3.5 %	3.8 %				
K. Market Rate of Return	13.1 %	(3.9)%	11.4 %				
L. Ratio of Funding Value to Market Value	101.2 %	108.8 %	101.3 %				

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, 2012**

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(A) Total Market Value	\$166,605,708
(B) Pension Market Value	\$159,822,311
(C) Ratio: (B)/(A)	95.9285%
(D) Total Funding Value	\$168,735,030
<b>(E) Pension Funding Value: (D) x (C)</b>	<b>\$161,864,937</b>
<b>(F) Health Funding Value: (D) - (E)</b>	<b>\$ 6,870,093</b>

**DEVELOPMENT OF UNFUNDED ACTUARIAL ACCRUED LIABILITY  
YEAR ENDED DECEMBER 31, 2012**

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	<b>Pension</b>	<b>Health</b>
Present Value of Future Benefits - Retirees	\$108,349,843	\$ 6,019,550
Present Value of Future Benefits - Deferreds	5,826,174	331,274
Present Value of Future Benefits - Actives	204,046,883	15,066,957
Total Present Value of Future Benefits	\$318,222,900	\$21,417,781
Present Value of Future Normal Cost	55,540,858	4,822,158
<b>Actuarial Accrued Liability</b>	<b>\$262,682,042</b>	<b>\$16,595,623</b>
Actuarial Value of Assets	161,864,937	6,870,093
<b>Unfunded Actuarial Accrued Liability</b>	<b>\$100,817,105</b>	<b>\$ 9,725,530</b>
<b>Funded Ratio</b>	<b>61.6%</b>	<b>41.4%</b>

**DERIVATION OF EXPERIENCE GAIN (LOSS)  
YEAR ENDED DECEMBER 31, 2012**

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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.

	<b>Pension</b>	<b>Health</b>
(1) UAAL* at start of year	\$95,407,752	\$9,763,341
(2) Total normal cost from last valuation	6,159,665	587,852
(3) Actual contributions (employer & employee)	12,973,524	1,211,746
(4) Interest accrual: [(1) + 1/2 ((2) - (3))] x .075	6,900,062	708,855
(5) Expected UAAL before changes: (1) + (2) - (3) + (4)	95,493,955	9,848,302
(6) Change from new assumptions and methodology	(3,760,147)	(600,709)
(7) Change from ad-hoc COLA increases (above or below assumed)	(1,704,580)	N/A
(8) Change from Chapter 159 service upgrade	376,519	N/A
(9) Expected UAAL after changes: (5) + (6) + (7) + (8)	90,405,747	9,247,593
(10) Actual UAAL at end of year	100,817,105	9,725,530
(11) Gain (loss): (9) - (10)	(10,411,358)	(477,937)
(12) Gain (loss) as percent of actuarial accrued liabilities at start of year	(4.2)%	(3.1)%

\* *Unfunded actuarial accrued liabilities.*

<b>Valuation Date</b>	<b>Experience Gain (Loss)</b>	
	<b>As % of Beginning Accrued Liability</b>	
<b>December 31</b>	<b>Pension</b>	<b>Health</b>
2003	(4.0)%	N/A
2004	0.5 %	N/A
2005	(2.9)%	N/A
2006	0.1 %	N/A
2007	2.3 %	2.4 %
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)%

## COMPUTED CONTRIBUTIONS FOR THE CITY'S FISCAL YEAR 2014

Contributions For	Contributions Expressed as % of Active Member Payroll
Total Normal Cost	12.30%
Member Contributions	3.75%
Employer Normal Cost	8.55%
Unfunded Actuarial Accrued Liabilities*	11.48%
<b>Employer Pension Total</b>	<b>20.03%</b>
Health Contribution**	0.93%
Employer Total	20.96%
Valuation Payroll	\$ 51,881,338
Projected Payroll	\$ 54,233,421
Estimated Contribution Dollars	\$ 11,367,325
<u>Pension</u>	
Unfunded Actuarial Accrued Liabilities	\$100,817,105
Funded Status	61.6%
<u>Health</u>	
Unfunded Actuarial Accrued Liabilities	\$ 9,725,530
Funded Status	41.4%

\* Unfunded actuarial accrued liabilities for pension are currently financed as a level percent of payroll over a remaining period of 27 years.

\*\* Currently based on a remaining 27-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 \$1,083,500 and the employer contribution rate will increase by approximately 0.13% (based on current payroll and a 27-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 12/31/2012 and the additional liability would be amortized over 27 years. It was also assumed that the increase would be effective on 1/1/2013.

Contribution Rate Reconciliation	% of Payroll		
	Pension	Health	Total
Last Year's Rate	18.75 %	0.97 %	19.72 %
Normal Cost Change	0.09 %	0.02 %	0.11 %
Miscellaneous Changes in Group Demographics	0.05 %	0.01 %	0.06 %
Assumption and Methodology Changes#	0.12 %	(0.13)%	(0.01)%
Employer Portion of SB 402 Purchases	0.02 %	0.00 %	0.02 %
COLA (portion above the assumption)	(0.20)%	0.00 %	(0.20)%
Other	0.00 %	0.00 %	0.00 %
Experience (Gain) Loss	1.20 %	0.06 %	1.26 %
This Year's Rate	20.03%	0.93%	20.96%

# See Comments.

**MECRS AND CITY  
COMPUTED CONTRIBUTIONS FOR THE  
CITY'S FISCAL YEAR 2014**

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<b>Contributions For</b>	<b>Contributions Expressed as % of Active Member Payroll</b>		
	<b>City# Non EPD and Parking</b>	<b>City# EPD and Parking</b>	<b>Other MECRS Employers</b>
Employer Pension Total	20.03%	20.03%	20.03%
Health Contribution	0.93%	0.93%	0.93%
<b>Employer Total</b>	<b>20.96%</b>	<b>20.96%</b>	<b>20.96%</b>
Valuation Payroll	\$28,184,453	\$2,492,210	\$21,204,675
<b>Projected Payroll City's FY 2014##</b>	<b>29,462,218</b>	<b>2,605,196</b>	<b>22,166,007</b>
<b>Estimated Annual Dollar Contributions</b>			
Pension	\$ 5,901,282	\$ 521,821	\$ 4,439,851
Health	273,999	24,228	206,144
Total	\$ 6,175,281	\$ 546,049	\$ 4,645,995
<b>Semi-Annual Dollar Contribution Payable on July 1 and December 31</b>			
Pension	\$ 2,899,016	\$ 256,346	N/A
Health	134,603	11,902	N/A
Total	\$ 3,033,618	\$ 268,248	N/A

# Assuming contributions continuously throughout the year.

## Current projection factor is 1.04534 (1.03<sup>1.5</sup>).

**FY 2012 CITY TRUE-UP CONTRIBUTIONS PAYABLE  
DURING CITY'S FISCAL YEAR 2014**

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	City True-Up		
	City Non EPD and Parking	City EPD and Parking	Total City
<b>(1) Projected Fiscal Year 2012 Payroll</b>	\$30,601,173	\$2,972,309	\$33,573,482
<b>(2) Actual Fiscal Year 2012 Payroll #</b>	30,239,194	2,908,965	33,148,159
<b>(3) True-Up Rate (2)/(1) - 1</b>	(1.18)%	(2.13)%	(1.27)%
<b>(4) FY 2012 Semi-Annual Contribution</b>			
Pension	\$ 2,660,747	\$ 258,440	\$ 2,919,187
Health	130,709	12,696	143,405
Total	\$ 2,791,456	\$ 271,136	\$ 3,062,592
<b>(5) Semi-Annual Shortfall/(Overage)</b>			
Pension	\$ (31,474)	\$ (5,508)	\$ (36,982)
Health	(1,546)	(271)	(1,817)
Total	\$ (33,020)	\$ (5,779)	\$ (38,799)
<b>(6) Fiscal Year 2012 True-Up as of July 1, 2013</b>			
(5) x 1.0725 + (5) x 1.03625			
Pension	\$ (66,371)	\$ (11,615)	\$ (77,986)
Health	(3,260)	(571)	(3,831)
Total	\$ (69,631)	\$ (12,186)	\$ (81,817)

# 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

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**COMMENT A – RESULTS:** The Retirement System is 61.6% funded for pension benefits and 41.4% funded for health subsidy benefits as of December 31, 2012. The pension Unfunded Actuarial Accrued Liability (UAAL) of \$100,817,105 is amortized over a 27-year period; the health subsidy UAAL of \$9,725,530 is amortized over a 27-year period.

**COMMENT B – EXPERIENCE:** Experience during 2012 was less favorable than expected, resulting in an experience loss of \$10,411,358 for pension benefits. The primary source of this loss was investment return (7.5% assumed versus 3.8% recognized). In addition to the investment return loss, there were liability losses due to mortality (fewer benefits removed due to death, than expected) and reserve transfers (benefits for members who actually retired were greater than expected). The liability losses were partially offset by gains due to pay increases (average pays increased less than assumed) and turnover (more members quit than assumed). It is important to note the experience is measured against the assumptions from the December 31, 2011 valuation (prior to the changes adopted as a result of the Experience Study). Overall, the pension funding status remained the same at 61.6%.

**COMMENT C – BENEFIT CHANGES:** The adoption of SB402 allowed for members to upgrade their benefit multiplier under Chapter 159 from 1.5% to 2.0% per year of service rendered prior to 1999. Liabilities increased approximately \$753,038 as a result of members electing to purchase this benefit during 2012. An additional \$376,519 in member contributions was contributed as a result of these elections.

**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.

## COMMENTS

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The health care contribution rate was determined to pass the 25% test for the 2014 City fiscal year as follows:

Employer Pension Rate (not more than normal cost)	8.55%
Employee Pension Rate	3.75%
Total Pension Rate*	12.30%
Maximum Health Rate (1/3 x Pension Rate)	4.10%
Employee Health Rate	1.25%
Maximum Employer Health Rate	2.85%
Actual Employer Health Rate	0.93%

\* *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.

**COMMENT E – ASSUMPTION CHANGES:** Demographic assumptions were adopted by the Board pursuant to an Experience Study completed in August, 2012. Final economic assumptions were adopted by the Board pursuant to the December 31, 2012 preliminary report: 7.25% investment return, 3.00% wage inflation, and 1.25% post-retirement COLA.

**COMMENT F – HEALTH VALUATION:** Post-retirement health subsidy valuation results were included in this valuation. 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%



## COMMENTS

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**COMMENT G – HEALTH VALUATION:** The methods and assumptions used in this valuation, in our opinion, satisfy the parameters of GASB 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 No. 45 and should not be used for that purpose.

**COMMENT H – ASSET FUNDING VALUE:** The funding value of assets is now 101.2% of market value. However, bases from the last several years could continue to generate large gains and losses in the short term. If it is believed that market volatility in the near future will be less than the volatility that generated the current basis, then the Board may wish to consider combining the remaining bases for the 2013 valuation.

**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
			\$	Average	
2004	1,344	2.59	\$ 45,027,930	\$ 33,503	5.0%
2005	1,354	2.55	47,233,321	34,884	4.1%
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%

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	
2005	531	\$ 5,803,185	12.3%	81	\$ 49,124	0.1%	3.75%	1.25%	10.63%	1.41%	17.04%
2006#	544	6,515,157	13.7%	152	178,152	0.4%	3.75%	1.25%	13.27%	1.24%	19.51%
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%

# After changes in methods and/or assumptions.

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

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<b>Valuation Date December 31</b>	<b>Actuarial Accrued Liability (AAL)</b>	<b>Valuation Assets</b>	<b>Unfunded Actuarial Accrued Liability (UAAL)</b>	<b>Ratio of Present Assets to AAL</b>	<b>Ratio of UAAL to Valuation Payroll</b>
2004#	\$ 126,346,993	\$ 103,826,765	\$ 22,520,228	82.2 %	50.0 %
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	184,843,427	125,991,904	58,851,523	68.2 %	121.2 %
2007#	187,625,784	139,240,661	48,385,123	74.2 %	99.6 %
2008	203,993,405	125,991,904	78,001,501	61.8 %	153.7 %
2008#	201,439,017	125,991,904	75,447,113	62.5 %	148.7 %
2009	212,198,533	134,782,503	77,416,030	63.5 %	153.2 %
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 %

# After changes in methods and/or assumptions.

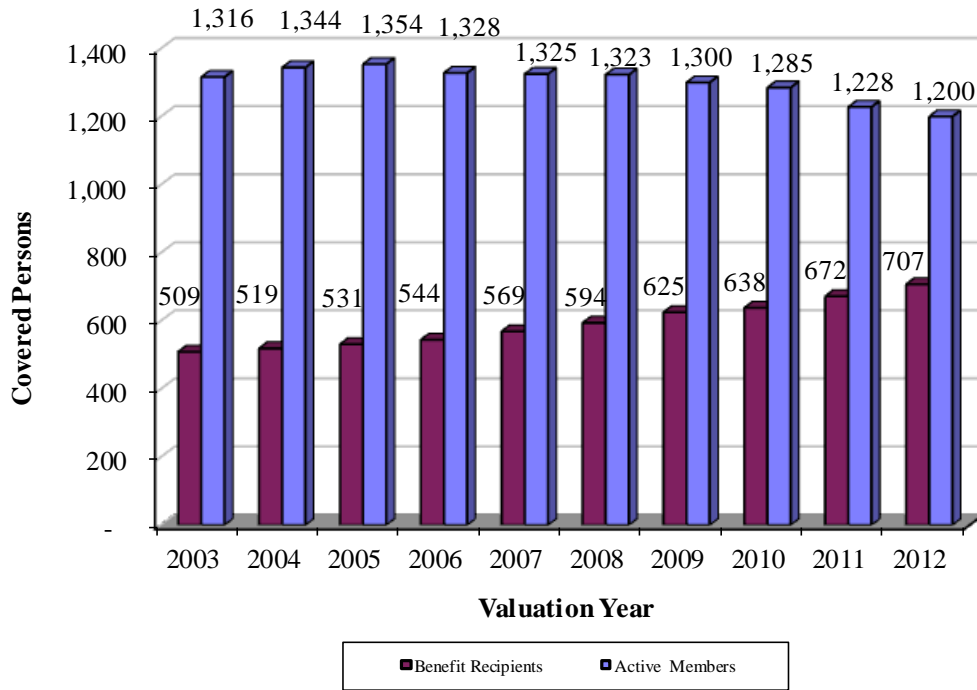
**ACTUARIAL ACCRUED LIABILITIES & VALUATION ASSETS  
COMPARATIVE STATEMENT – HEALTH SUBSIDY ONLY**

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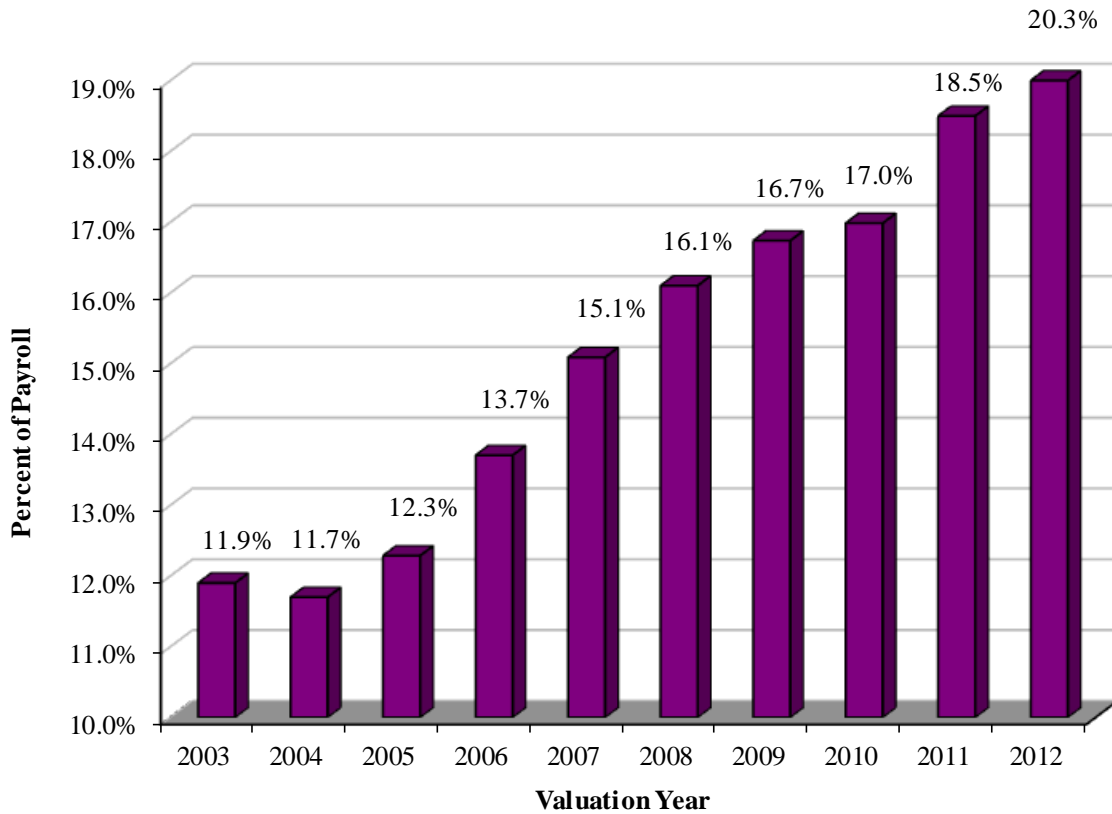
Valuation Date December 31	Actuarial Accrued Liability (AAL)	Valuation Assets	Unfunded Actuarial Accrued Liability (UAAL)	Ratio of Present Assets to AAL	Ratio of UAAL to Valuation Payroll
2006	\$ 11,744,315	\$ 782,281	\$10,962,034	6.7 %	23.1 %
2007#	11,306,516	1,908,457	9,398,059	16.9 %	19.4 %
2008	12,425,929	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 %

# After changes in methods and/or assumptions.

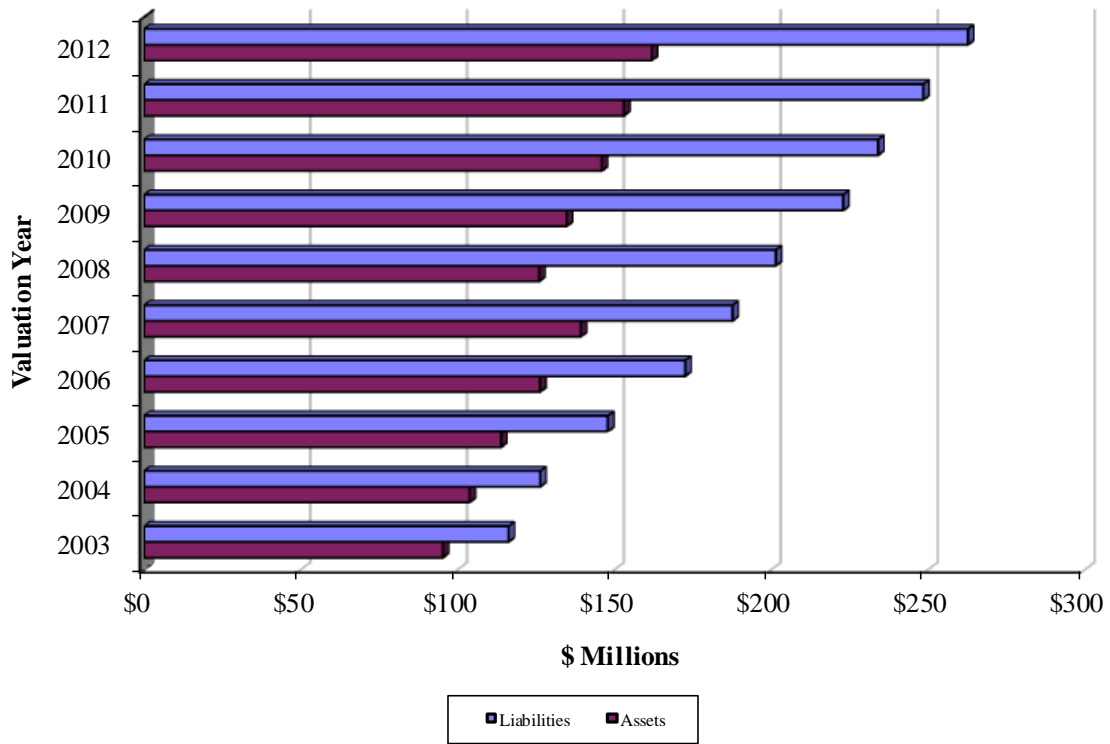
### Active Members & Benefit Recipients



### 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

# 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
2013*	18.75%	8.30%	10.45%	\$ 52,653,807	\$100,817,105	61.6%
2014	20.03%	8.55%	11.48%	54,233,421	101,608,058	61.5%
2015	20.03%	8.55%	11.48%	55,860,424	102,526,902	63.0%
2016	20.03%	8.55%	11.48%	57,536,236	103,318,929	64.5%
2017	20.03%	8.55%	11.48%	59,262,324	103,969,144	65.8%
2018	20.03%	8.55%	11.48%	61,040,193	104,461,287	67.1%
2019	20.03%	8.55%	11.48%	62,871,399	104,777,742	68.3%
2020	20.03%	8.55%	11.48%	64,757,541	104,899,430	69.5%
2021	20.03%	8.55%	11.48%	66,700,267	104,805,699	70.6%
2022	20.03%	8.55%	11.48%	68,701,275	104,474,205	71.7%
2023	20.03%	8.55%	11.48%	70,762,313	103,880,781	72.8%
2024	20.03%	8.55%	11.48%	72,885,183	102,999,299	73.8%
2025	20.03%	8.55%	11.48%	75,071,738	101,801,524	74.9%
2026	20.03%	8.55%	11.48%	77,323,891	100,256,954	75.9%
2027	20.03%	8.55%	11.48%	79,643,607	98,332,647	77.0%
2028	20.03%	8.55%	11.48%	82,032,915	95,993,040	78.1%
2029	20.03%	8.55%	11.48%	84,493,903	93,199,749	79.2%
2030	20.03%	8.55%	11.48%	87,028,720	89,911,362	80.4%
2031	20.03%	8.55%	11.48%	89,639,582	86,083,205	81.7%
2032	20.03%	8.55%	11.48%	92,328,769	81,667,105	83.0%
2033	20.03%	8.55%	11.48%	95,098,632	76,611,124	84.5%
2034	20.03%	8.55%	11.48%	97,951,591	70,859,279	86.0%
2035	20.03%	8.55%	11.48%	100,890,139	64,351,240	87.6%
2036	20.03%	8.55%	11.48%	103,916,843	57,022,009	89.3%
2037	20.03%	8.55%	11.48%	107,034,348	48,801,567	91.1%
2038	20.03%	8.55%	11.48%	110,245,379	39,614,507	92.9%
2039	20.03%	8.55%	11.48%	113,552,740	29,379,631	94.9%
2040	20.03%	8.55%	11.48%	116,959,322	18,009,517	97.0%
2041	20.03%	8.55%	11.48%	120,468,102	5,410,067	99.1%
2042	20.03%	8.55%	11.48%	124,082,145	-	100.0%

\* Represents a 6-month period from December 31, 2012 through June 30, 2013.



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**SECTION B**

**BENEFIT PROVISIONS AND VALUATION DATA**

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**SUMMARY OF BENEFIT PROVISIONS  
AS OF DECEMBER 31, 2012**

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**Eligibility**

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**Amount**

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**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, 2012**

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**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, 2012

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### 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

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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	
2003	36	\$ 320,042	26	\$210,619	509	\$4,981,710	\$ 9,787
2004	26	417,907	16	131,448	519	5,268,169	10,151
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

\* Includes adjustments due to COLA.

**RETIREES AND BENEFICIARIES DECEMBER 31, 2012**  
**TABULATED BY TYPE OF PENSIONS BEING PAID**

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Type of Pensions Being Paid	Number	Annual Pensions
<b>Age and Service Pensions</b>		
Regular Pension - Benefit terminating at death of retiree	361	\$ 4,626,111
For life of member, but not less than 10 years	60	825,707
100% Joint & Survivor	124	2,121,956
66 2/3% Joint & Survivor	35	827,114
50% Joint & Survivor	44	816,859
Survivor Beneficiary	40	529,024
Total age and service pensions	664	\$ 9,746,770
<b>Casualty Pensions</b>		
Duty Disability	25	\$ 475,911
Non-Duty Disability	11	190,132
Duty Death - Survivor Benefits	0	0
Non-Duty Death - Survivor Benefits	7	113,882
Total casualty pensions	43	\$ 779,926
<b>Total Pensions Being Paid</b>	<b>707</b>	<b>\$10,526,696</b>

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, 2012**  
**PENSION BENEFITS TABULATED BY ATTAINED AGES**

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Attained Age	Age and Service		Casualty		Totals	
	Number	Annual Pensions	Number	Annual Pensions	Number	Annual Pensions
20-24	1	\$ 469			1	\$ 469
25-29			2	\$ 30,032	2	30,032
30-34	2	7,358			2	7,358
40-44			1	15,755	1	15,755
45-49	3	25,707	2	38,854	5	64,561
50-54	4	99,677	5	98,556	9	198,233
55-59	23	597,576	13	275,255	36	872,831
60-64	109	2,162,223	7	135,198	116	2,297,421
65-69	136	2,267,851	3	51,529	139	2,319,380
70-74	120	1,753,947	7	95,270	127	1,849,217
75-79	102	1,263,744	1	11,153	103	1,274,897
80-84	72	707,064			72	707,064
85-89	57	558,404	2	28,324	59	586,728
90-94	34	297,721			34	297,721
95-100	1	5,029			1	5,029
<b>Totals</b>	<b>664</b>	<b>\$ 9,746,770</b>	<b>43</b>	<b>\$ 779,926</b>	<b>707</b>	<b>\$ 10,526,696</b>

Average Age at Retirement: 61.8 years  
Average Age Now: 72.2 years

**RETIREES AND BENEFICIARIES DECEMBER 31, 2012**  
**HEALTH SUBSIDY BENEFITS TABULATED BY ATTAINED AGES**

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Attained Age	Health Subsidy	
	Number	Annual Amount
45-49	1	\$ 2,278
50-54	3	9,110
55-59	15	38,719
60-64	48	121,089
65-69	58	136,655
70-74	28	60,357
75-79	25	35,685
80-84	17	24,296
85-89	14	18,222
90-94	9	11,768
<b>Totals</b>	<b>218</b>	<b>\$458,179</b>

Average Age at Retirement: 62.6 years  
Average Age Now: 70.6 years



**RETIREES AND BENEFICIARIES DECEMBER 31, 2012**  
**TABULATED BY YEAR OF RETIREMENT**

Year of Retirement	Number	Annual Pensions	
		Totals	Average
1977	1	\$ 8,138	\$ 8,138
1980	2	1,945	973
1981	3	36,081	12,027
1982	4	22,039	5,510
1983	6	46,845	7,808
1984	5	28,143	5,629
1985	7	38,624	5,518
1986	3	29,500	9,833
1987	9	140,123	15,569
1988	7	56,468	8,067
1989	11	145,930	13,266
1990	15	216,499	14,433
1991	15	108,563	7,238
1992	13	178,278	13,714
1993	21	297,746	14,178
1994	27	241,463	8,943
1995	23	238,274	10,360
1996	26	365,277	14,049
1997	18	234,483	13,027
1998	14	171,346	12,239
1999	32	515,749	16,117
2000	25	386,077	15,443
2001	20	293,788	14,689
2002	33	340,628	10,322
2003	18	235,913	13,106
2004	25	191,010	7,640
2005	35	539,965	15,428
2006	39	724,734	18,583
2007	43	921,766	21,436
2008	40	897,555	22,439
2009	30	388,292	12,943
2010	35	572,657	16,362
2011	51	826,631	16,208
2012	51	1,086,168	21,297
<b>Totals</b>	<b>707</b>	<b>\$10,526,696</b>	<b>\$ 14,889</b>

Average Age at Retirement: 61.8 years

Average Age Now: 72.2 years

**INACTIVE VESTED MEMBERS DECEMBER 31, 2012**  
**TABULATED BY ATTAINED AGE**

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<b>Attained Age</b>	<b>Number</b>	<b>Estimated Annual Pensions</b>
30-34	3	\$ 13,642
35-39	2	29,020
40-44	12	97,849
45-49	13	91,828
50-54	28	255,487
55-59	39	307,428
<b>Totals</b>	<b>97</b>	<b>\$795,254</b>

Average Age at Termination: 45.8 years

Average Age Now: 51.8 years

## ACTIVE MEMBERS ADDED TO AND REMOVED FROM ROLLS

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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	A	A	E	
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
5-Year Totals	439	564	162	264.7	8	4.6	7	12.0	54	333	387	340.5	

*A = Actual*

*E = Expected*

**ACTIVE MEMBERS DECEMBER 31, 2012**  
**BY ATTAINED AGE AND YEARS OF SERVICE**

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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	19							19	\$ 485,663
25-29	37	15						52	1,479,829
30-34	36	28	5					69	2,438,360
35-39	27	32	23	2				84	3,487,712
40-44	29	33	22	18	8			110	4,874,910
45-49	48	50	45	19	12	14		188	7,979,218
50-54	35	59	64	28	18	33	8	245	10,973,508
55-59	26	26	45	41	24	18	31	211	10,081,037
60-64	16	18	33	17	20	19	26	149	7,172,768
65-69	7	12	12	8	1	4	8	52	2,243,861
70-74	1	3	2	1	1	1	2	11	393,000
75 & over	1		1	2		1	5	10	271,472
<b>Totals</b>	<b>282</b>	<b>276</b>	<b>252</b>	<b>136</b>	<b>84</b>	<b>90</b>	<b>80</b>	<b>1,200</b>	<b>\$51,881,338</b>

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

Age: 49.7 years  
Service: 12.7 years  
Annual Pay: \$43,234

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## **SECTION C**

### **VALUATION METHODS AND ASSUMPTIONS**

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## ACTUARIAL COST METHOD

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*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;
- 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.**

*Financing of Unfunded Actuarial Accrued Liabilities.* Unfunded actuarial accrued liabilities were amortized by level (principal and interest combined) percent of payroll contributions over 27 future years for pension benefits, and over 27 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

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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,
- 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.

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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). 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.

## VALUATION ASSUMPTIONS

**The rate of investment return was 7.25% per year**, compounded annually (net of administrative and 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
	2012	2011	2010	2009	2008	
1) Nominal rate of return#	3.8 %	3.5 %	6.6 %	5.5 %	(10.1)%	1.7 %
2) Increase in CPI	1.7 %	1.5 %	1.5 %	2.7 %	0.1 %	1.5 %
3) Average salary increase (ASI)	3.9 %	4.1 %	2.9 %	1.4 %	4.7 %	3.4 %
4) Real Return						
- Total: CPI (1) - (2)						0.2 %
- Total: ASI (1) - (3)						(1.7)%
- Assumption	4.25 %	4.0 %	4.0 %	4.0 %	3.5 %	3.9 %

# 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. Based upon experience, GRS believes this table has a margin for mortality improvement of approximately 15% for post-retirement mortality.

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%				

## VALUATION ASSUMPTIONS

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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%
	5 & Up (Men)		
30	6 & Up (Women)	5.14%	5.30%
35		3.80%	4.45%
40		3.00%	3.85%
45		2.57%	3.40%
50		2.40%	2.95%
Ref.		830 77x0.45	831 37x1

*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, 2012

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<b>Marriage Assumption:</b>	100% of males and 100% of females are assumed to be married for purposes of death-in-service benefits. Male spouses are assumed to be three years older than female spouses.
<b>Pay Increase Timing:</b>	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.
<b>Decrement Timing:</b>	Decrements of all types are assumed to occur mid-year.
<b>Eligibility Testing:</b>	Eligibility for benefits is determined based upon the age nearest birthday and exact fractional service on the date the decrement is assumed to occur.
<b>Decrement Relativity:</b>	Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.
<b>Decrement Operation:</b>	Disability and withdrawal decrements do not operate after member reaches retirement eligibility.
<b>Expense Load:</b>	0.50% of payroll.
<b>Normal Form of Benefit:</b>	The assumed normal form of benefit is the straight life form.
<b>Benefit Service:</b>	Exact fractional service as of the valuation date is used to determine the amount of benefit payable.
<b>Incidence of Contributions:</b>	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.
<b>COLA Assumption:</b>	1.25% compounded annually.
<b>Adjustments:</b>	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.
<b>Post-Retirement Subsidy:</b>	55% of current actives and 25% of current terminated vested members were assumed to elect to receive the post-retirement health subsidy upon retirement.

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## **SECTION D**

### **GASB STATEMENTS NO. 25 AND NO. 43**

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**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.**

**GASB STATEMENT NO. 25**  
**REQUIRED SUPPLEMENTARY INFORMATION**

*Schedule of Funding Progress for Pension Benefits*

<b>Actuarial Valuation Date</b>	<b>(a) Actuarial Value of Assets \$Millions</b>	<b>(b) Actuarial Accrued Liability (AAL) Entry Age \$Millions</b>	<b>(b) - (a) Unfunded AAL (UAAL) \$Millions</b>	<b>Funded Ratio (a)/(b)</b>	<b>Covered Payroll (\$ Millions) (c)</b>	<b>UAAL as a Percent of Covered Payroll [(b) - (a)] / (c)</b>
12/31/2002	\$ 89.7	\$ 106.1	\$ 16.4	84.5 %	\$38.9	42.0 %
12/31/2003	95.3	116.3	21.0	81.9 %	42.0	50.0 %
12/31/2004	103.8	126.3	22.5	82.2 %	45.0	50.0 %
12/31/2005	113.9	147.9	34.0	77.0 %	47.2	72.0 %
12/31/2006#	126.3	172.5	46.2	73.2 %	47.5	97.3 %
12/31/2007#	139.2	187.6	48.4	74.2 %	48.6	99.6 %
12/31/2008#	126.0	201.4	75.4	62.6 %	50.7	148.7 %
12/31/2009#	134.8	222.9	88.1	60.5 %	50.5	174.3 %
12/31/2010	145.9	234.0	88.1	62.4 %	51.4	171.4 %
12/31/2011	153.0	248.4	95.4	61.6 %	51.1	186.6 %
12/31/2012#	161.9	262.7	100.8	61.6 %	51.9	194.3 %

# After assumption changes.

*Schedule of Employer Contributions for Pension Benefits*

<b>City Fiscal Year Ended June 30*</b>	<b>Annual Required Contribution (ARC) as a Percent of Valuation Payroll</b>	<b>Plan Fiscal Year/ Valuation Year Ended December 31</b>	<b>Actual Contributions</b>
2004	N/A	2002	\$ 1,794,576
2005	8.76%	2003	3,323,023
2006	8.72%	2004	3,950,981
2007	10.63%	2005	5,413,826
2008	13.27%	2006	6,760,377
2009	13.84%	2007	6,646,801
2010	17.17%	2008	7,062,994
2011	17.65%	2009	8,508,451
2012	17.71%	2010	9,471,499
2013	18.75%	2011	9,255,971
2014	20.03%	2012	10,685,570

\* Effective January 1, 2004, contributions were determined on a percent-of-payroll basis by multiplying the ARC rate by the actual payroll.

**GASB STATEMENT NO. 25**  
**REQUIRED SUPPLEMENTARY INFORMATION – PENSION BENEFITS**

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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:

Valuation date	December 31, 2012
Actuarial cost method	Entry Age Normal
Amortization method	Level percent of payroll
Remaining amortization period	27 years
Asset valuation method	5-year smoothed market
Actuarial assumptions:	
Investment net rate of return*	7.25%
Projected salary increases*	3.0%-7.93%
*Includes price inflation at	2.75%

Membership of the plan consisted of the following at December 31, 2012, the date of the latest actuarial valuation:

Retirees and Beneficiaries receiving benefits	707
Terminated plan members entitled to but not yet receiving benefits	97
Active plan members	<u>1,200</u>
Total	2,004

**GASB STATEMENT NO. 43**  
**REQUIRED SUPPLEMENTARY INFORMATION**

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**Schedule of Funding Progress for Health Subsidy Program**

<b>Actuarial Valuation Date</b>	<b>(a) Actuarial Value of Assets \$Millions</b>	<b>(b) Actuarial Accrued Liability (AAL) Entry Age \$Millions</b>	<b>(b) - (a) Unfunded AAL (UAAL) \$Millions</b>	<b>Funded Ratio (a)/(b)</b>	<b>Covered Payroll (\$ Millions) (c)</b>	<b>UAAL as a Percent of Covered Payroll [(b) - (a)] / (c)</b>
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 %

# 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**

<b>City Fiscal Year Ended June 30</b>	<b>Annual Required Contribution (ARC) as a Percent of Valuation Payroll</b>	<b>Plan Fiscal Year/ Valuation Year Ended December 31</b>	<b>Actual Contributions</b>
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

**GASB STATEMENT NO. 43**  
**REQUIRED SUPPLEMENTARY INFORMATION – HEALTH SUBSIDY**

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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, 2012
Actuarial cost method	Entry Age Normal
Amortization method	Level percent of payroll, closed
Remaining amortization period	27 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, 2012, the date of the latest actuarial valuation:

Retirees and Beneficiaries receiving benefits	218
Terminated plan members entitled to but not yet receiving benefits	97
Active plan members	<u>1,200</u>
Total	1,515



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**SECTION E**

**OPERATION OF THE RETIREMENT SYSTEM**

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## BASIC FINANCIAL OBJECTIVE AND OPERATION OF THE RETIREMENT SYSTEM

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***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

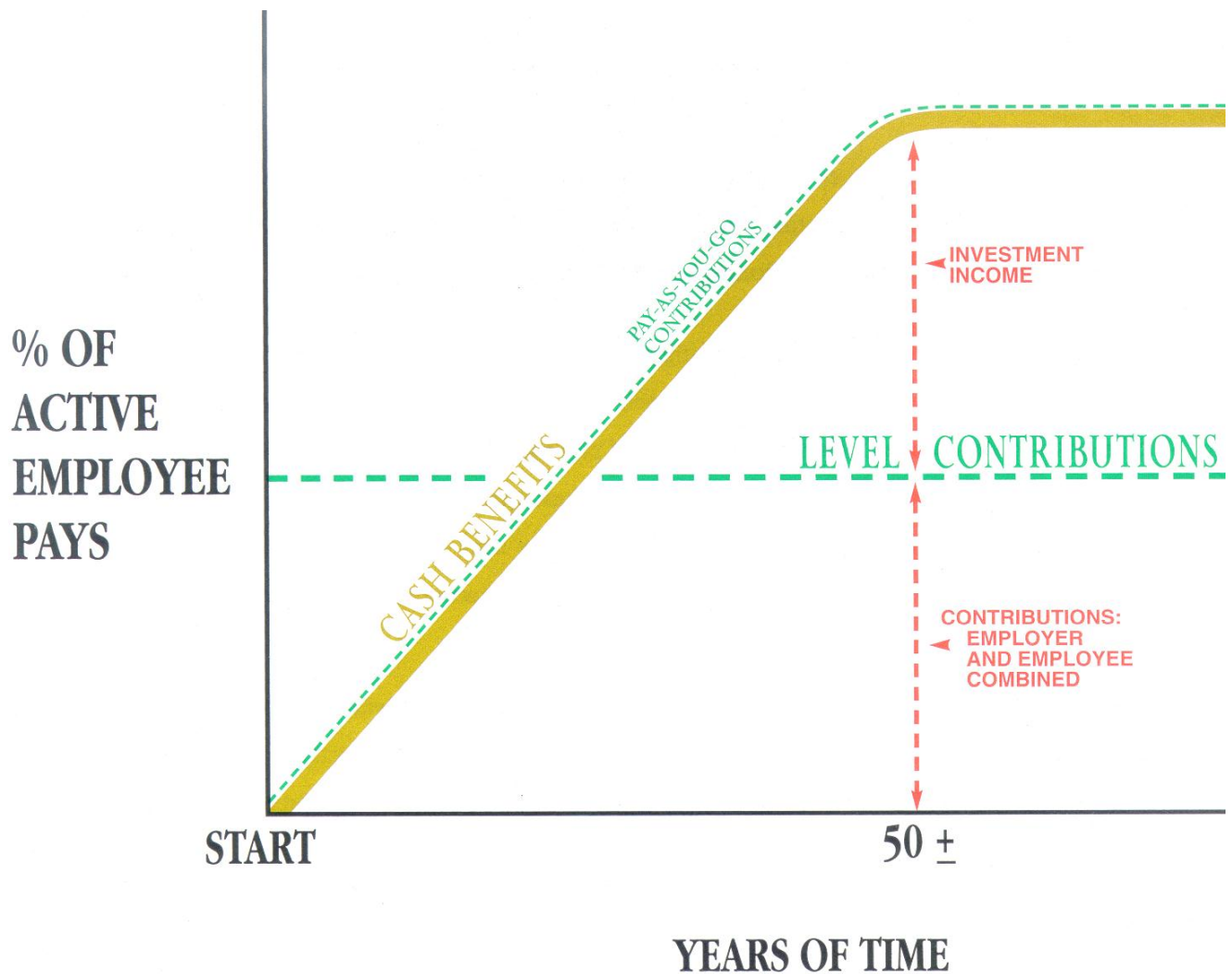
... minus ...

**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:

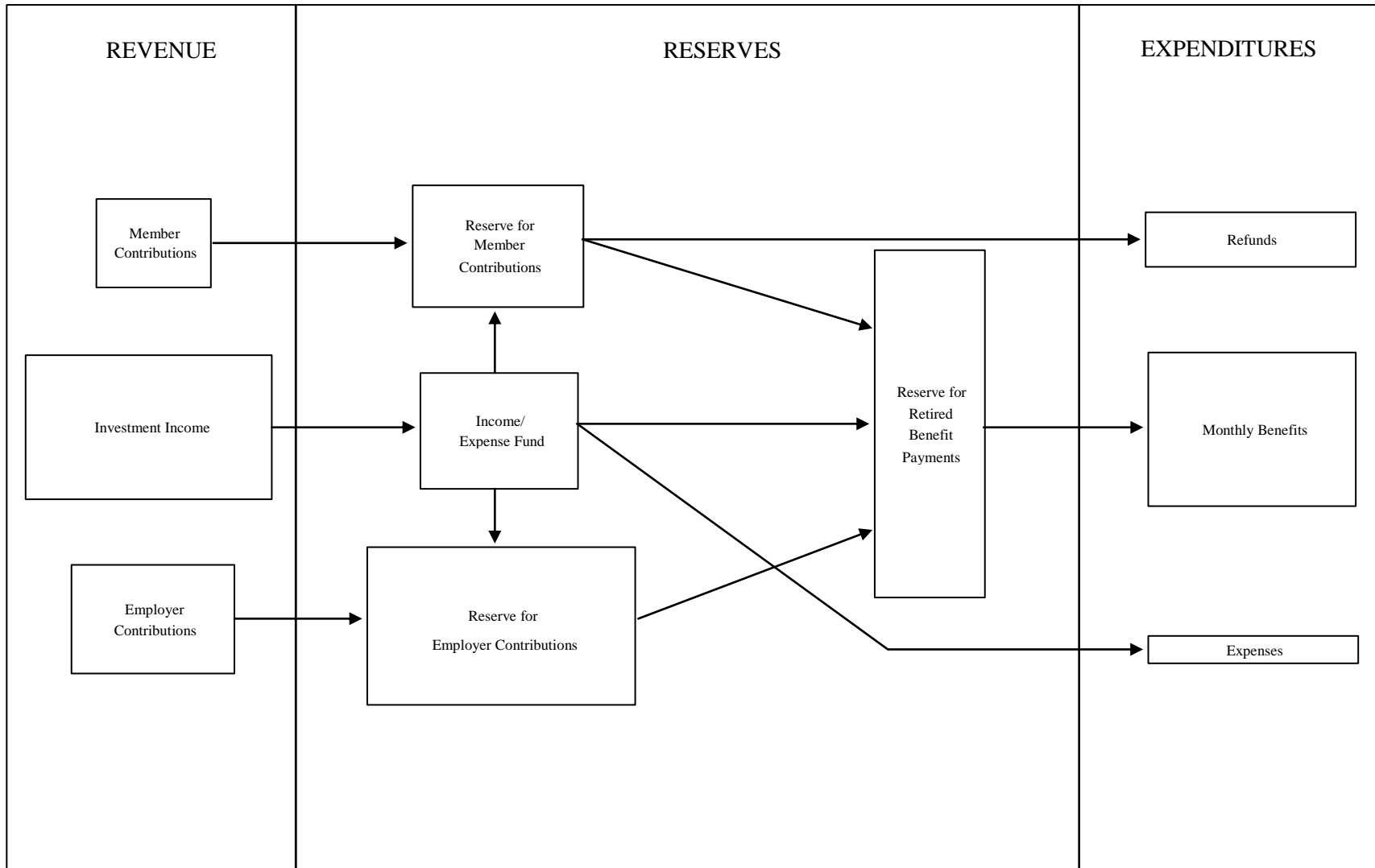
Economic Risk Areas

- 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

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***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)**

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***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.

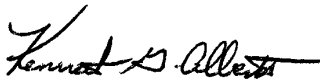
April 9, 2013

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:mr  
Enclosures