



# **SUMMARY ACTUARIAL VALUATION REPORT**

*for the*

**City of Pittsburgh Pension Funds**

*as of*

**January 1, 2009**

**Report Date: August 27, 2010**

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## Section One: Introduction

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This report presents a summary of the results of the 2009 actuarial valuations of the City of Pittsburgh's Policemen's, Firemen's and Municipal Pension Funds. It is intended to serve as a quick reference and overview of the three valuations. Consult the individual reports for additional detail.

These valuations were prepared to satisfy the funding and disclosure requirements of Act 205 of 1984. Each year the City is required to budget its minimum contribution for the following year. Under Act 205, this budgeted amount is referred to as the Minimum Municipal Obligation (MMO). The calculation of the MMO depends upon the actuarial cost components that are determined by the actuarial valuations.

The use of pension bond proceeds to reduce the Unfunded Actuarial Accrued Liability has split the funding of the pension plan into debt service and actuarial costs. Debt service payments repay the money borrowed and subsequently deposited into the plan. Information concerning the annual debt service is contained in Section Six. Section Three of this report summarizes the development of the actuarial cost components. The City's MMO is determined by summing these components and deducting estimated employee contributions. The three components of the plan's annual actuarial requirement are normal cost, administrative expenses and an amortization amount.

*Normal cost* is the portion of cost that is allocated to the current year, if the cost of each employee's prospective pension is allocated over his or her expected total employment period.

*Administrative expenses* are based upon current expense amounts paid from the plans.

The *amortization amount* is contributed when current asset levels are less, to date, than the target specified by Act 205 for funding. In Act 205 and actuarial language, this target is termed Actuarial Accrued Liability. As the term *accrued* suggests, this amount represents the portion of pension benefit liabilities allocated to service performed before the valuation date.

The insufficiency of current assets compared to the Actuarial Accrued Liability is referred to as the *Unfunded Actuarial Accrued Liability*. This insufficiency developed over the years for a variety of reasons. Two significant reasons are benefit improvements made after retirement, and benefit improvements made before retirement, which are related to prior service. Prior funding would not have anticipated these improvements. Additionally, prior contributions may have been at less than actuarially sound levels.

Since 1985, the annual contribution requirements for the pension plans have been based upon actuarial standards set forth in Act 205 of 1984.

### 2009 Results

The actuarial cost components as of January 1, 2009 are as follows:

	Police	Fire	Municipal	Combined
Normal Cost as a % of Payroll	11.921%	12.080%	6.199%	9.694%
Admin. Expense as a % of Payroll	1.700%	2.400%	1.700%	1.880%
Gross Normal Cost %	13.621%	14.480%	7.899%	11.574%
Amortization Payment	\$19,754,275	\$16,021,969	\$ 11,168,516	\$46,944,760

Beginning with MMOs based on the 2009 valuations, the City adopted an alternate amortization payment basis for funding based on amortizing the unfunded actuarial accrued liability as of January 1, 2009 over a “fresh-start” 30-year period. This amount is higher than the Act 205 minimum. The alternate 30-year amortization payments are as follows:

	Police	Fire	Municipal	Combined
30-Yr Amortization Payment	\$23,217,898	\$17,746,343	\$12,525,752	\$53,489,993

Pension bonds were issued and deposited into the Municipal Plan in December 1996 and all three plans in March 1998. The annual debt service on these bonds is approximately \$21.5 million for 2009. Over time, the debt service and amortization schedules will allow the City to eliminate the Unfunded Actuarial Accrued Liability with payments that increase less and have a lower present value than the increasing amortization schedule included in prior actuarial valuations.

The ratios of assets to the Actuarial Accrued Liability, known as the funding ratios, as of January 1, 2009 are as follows:

	Police	Fire	Municipal	Combined
Actuarial Value of Assets	\$105,564,988	\$118,292,383	\$115,322,537	\$339,179,908
Actuarial Accrued Liability	\$387,857,613	\$334,059,624	\$267,615,711	\$989,532,948
Percentage Funded	27.2%	35.4%	43.1%	34.3%

The Act 205 Reports for the 2009 valuations were filed with the state by March 31, 2010.

## **Changes Since the 2007 Actuarial Valuation**

Actuarial costs for pension plans may change significantly from one valuation date to the next. These cost changes may be due to plan experience, changes in plan provisions, or changes in actuarial assumptions.

Normal costs, which are attributable to the current year's service, will usually change more moderately than the amortization amount. Unless plan provisions or assumptions change, normal costs as a percentage of payroll usually remain fairly stable over time. The changes that do occur are influenced by changes in the demographics of active plan participants.

The amortization amounts typically change by a greater amount from year to year. The total amortization payment is affected by changes in the Actuarial Accrued Liability due to experience gains and losses, contribution gains and losses, modifications in actuarial assumptions, and modifications in plan provisions.

Act 82 of 1998 also had an impact on the City's pension plans. Act 82 allowed the City to change the amortization schedule for its Unfunded Actuarial Accrued Liability because during 1998, pension bond proceeds were deposited into the pension plans that changed the ratio of the Actuarial Value of Assets to the Actuarial Accrued Liability by more than 25 percent.

Act 82 allows the City to amortize over a 40-year period each plan's January 1, 1998 Unfunded Actuarial Accrued Liability reduced by pension bond proceeds deposited during 1998. The annual amortization payment is calculated in several steps. An amortization payment is calculated that eliminates the Unfunded Actuarial Accrued Liability net of 1998 bond proceeds over a 40-year period using 8.75 percent interest. Next, the future value of these payments at the end of the 40-year period is calculated using 8.75 percent interest. Finally, an amortization payment is calculated using 10 percent interest that will have the same future value as the previous calculation. The 10 percent amortization amount becomes the amortization payment beginning in 1998.

Act 82 requires that each plan's valuation include a comparative interest rate tabulation. This annual tabulation compares the balance of the accumulated Act 82 amortization payments using the actual earnings of the fund during the year, with the balance assuming a 10 percent rate of return. If the fund earns more than 10 percent during the year, there will be an actuarial gain. If the fund earns less than 10 percent, there will be an actuarial loss. The gain or loss from the comparative interest rate tabulation will be combined with the other actuarial gains or losses for the year to determine the aggregate annual gain or loss.

## **Changes in Plan Provisions**

There have been no benefit changes since January 1, 2005 affecting current participants in either the Policemen's or Firemen's Plans.

## **Changes in Actuarial Assumptions**

Act 205 requires that the City have an experience study prepared every four years. The purpose of the experience study is to compare the plan's actual experience with the valuation assumptions. The comparison can indicate that actuarial assumptions should be changed. The most recent experience study was prepared as of January 1, 2009.

For 2009, the assumed interest rate for all plans was reduced from 8.75 percent to 8.00 percent per year. In addition, the actuarial value of assets (AVA) was changed to a tabular smoothing method.

A smoothing method for determining the actuarial value of assets is designed to lessen the year-to-year impact of large fluctuations in market value, while not deviating too greatly from fair market value. Normally, under Act 205, the smoothed value of assets is limited to no more than 20 percent over or under fair market value. For 2009 and additional years, if a municipality meets certain distress criteria, the "corridor" is extended to 30 percent.

The "tabular smoothing method" is one permissible actuarial asset valuation method for Act 205 valuations added by Act 44 of 2009. For the City's plans, the application of this method produces actuarial values of assets for the 2009 actuarial valuations equal to 130 percent of fair market value. The tabular smoothing method is likely to produce actuarial asset values that exceed market value for a relatively long period of time compared to more common smoothing methods that may typically yield higher values over a shorter period of three to five years.

For all plans combined, the interest change increased the unfunded actuarial accrued liability by \$61,112,317, and the change in the actuarial asset valuation method decreased the unfunded actuarial accrued liability by \$78,272,286. The results, separately by plan, are shown in Table 09-3. The increase in unfunded actuarial accrued liability from the interest rate reduction is generally proportional to the size of each plan's actuarial liabilities. On the other hand, the decrease in unfunded actuarial accrued liability from the asset valuation method change is proportional to each plan's share of the market value of assets.

## **Experience Changes**

The goal in selecting actuarial assumptions is to provide a reasonable estimate of actual experience over the long range. However, actual experience will always deviate somewhat from

expected experience, especially over the short run. These experience gains or losses reduce or increase, respectively, actuarial contribution requirements for the future. Actuarial gains or losses are amortized over a 15-year period.

A plan's ability to pay benefits depends, in large part, on its earnings on accumulated funds. What does not come from those earnings must arise from future contributions. Thus, favorable or unfavorable investment experience between valuations will often have the largest impact on the actuarial gain or loss from experience compared to actuarial assumptions for the period. These gains or losses will then decrease or increase, respectively, future contribution requirements.

For the period from January 1, 2007 to January 1, 2009, the combined actuarial loss for the three Pittsburgh plans was \$137,506,895. Table 09-3 shows each plan's portion of this loss. Loss from investment experience being less than the assumed rates of 8.75 percent, or 10 percent on the Act 82 balances, was \$118,286,563, approximately 86 percent of the total. The only other significant loss was the loss of \$15,937,264 from contributions in the Fire Plan.

Contribution gains or losses are a component of the total actuarial gain or loss, primarily because the actual amount of required contributions is determined by a budgeting process in advance of the year for which the contribution relates, using the most recent actuarial valuation report completed as of that time. For example, the 2007 Minimum Municipal Obligation was calculated based on components from the January 1, 2005 actuarial valuation because the budget process occurs in late 2006. The 2008 Minimum Municipal Obligation determination, completed in late 2007, was also based on the January 1, 2005 actuarial valuation, the latest actually completed at the time. On the other hand, the current valuation presumes that contributions in 2007 and 2008 were based on the results of the January 1, 2007 valuation. All three plans showed some contribution loss, but the loss from the Fire Plan was, by far, the greatest because the actuarial costs from 2005 to 2007 increased by the greatest degree in that Plan, as discussed in the January 1, 2007 Summary Report.

A more complete discussion of the actuarial gain or loss for each plan is included in the Introduction of the Plan's valuation report.

### **Normal Cost Changes**

All three plans experienced increases in the normal cost primarily because of the decrease in the assumed interest rate from 8.75 percent to 8.00 percent. Demographic factors account for the remainder.

## Section Two: Certification

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Complete summaries of the assumptions used for each valuation are set forth in the individual reports. The assumed interest rate used was 8.75 percent per annum. A 5.75 percent annual increase assumption was used to project salaries forward for the Fire Plan and Police Plan, and a 4.0 percent rate was used for the Municipal Plan. The retirement age assumption and the rates of mortality, turnover and disability are described in the individual reports.

In the actuary's opinion, the actuarial assumptions used in the valuation are reasonably related to the experience of the Plan and to reasonable expectations, and they represent his best estimate of anticipated experience under the Plan. To the best of our knowledge, the report is complete and accurate, based on the data outlined herein. We will be happy to answer any questions concerning this report and provide further information as needed.

### MOCKENHAUPT BENEFITS GROUP

Prepared and certified by:



G. Herbert Loomis, F.S.A., E.A., M.A.A.A.  
Consulting Actuary

## Section Three: Development of Contribution Requirements

**Table 09-1: Normal Cost**

	<u>Police</u>	<u>Fire</u>	<u>Municipal</u>	<u>Combined</u>
<b>Normal Cost</b>				
Retirement Benefits	\$ 4,792,956	\$ 3,728,755	\$ 2,875,265	\$ 11,396,976
Disability Benefits	2,322,675	1,724,167	549,249	4,596,091
Preretirement Death Benefits	149,333	174,349	44,900	368,582
Postretirement Death Benefits	0	2,746	0	2,746
Refund to Withdrawals	260,833	89,931	603,641	954,405
Medicare Premiums	0	0	76,367	76,367
Vested Benefits	<u>78,250</u>	<u>18,976</u>	<u>380,695</u>	<u>477,921</u>
<b>Total</b>	<b>\$ 7,604,047</b>	<b>\$ 5,738,924</b>	<b>\$ 4,530,117</b>	<b>\$17,873,088</b>
Covered Payroll (As reported on Form W-2)	\$63,787,288	\$47,509,475	\$73,072,430	\$184,369,193
<b>Normal Cost as % of Pay</b>				
Normal Cost	11.921%	12.080%	6.199%	9.694%
Expenses	<u>1.700%</u>	<u>2.400%</u>	<u>1.700%</u>	<u>1.880%</u>
Gross Normal Cost	13.621%	14.480%	7.899%	11.574%

**Table 09-2: Unfunded Actuarial Accrued Liability**

	<u>Police</u>	<u>Fire</u>	<u>Municipal</u>	<u>Combined</u>
<b>Actuarial Accrued Liability-Active</b>				
<i>Actuarial Present Value (APV) of Benefits at Attained Age - Active</i>				
Retirement Benefits	\$147,269,073	\$ 121,279,963	\$ 130,157,544	\$398,706,580
Disability Benefits	47,054,425	38,566,919	14,560,973	100,182,317
Preretirement Death Benefits	2,502,125	3,213,101	1,844,541	7,559,767
Postretirement Death Benefits	0	80,643	0	80,643
Refunds to Withdrawals	2,013,429	974,159	1,731,751	4,719,339
Medicare Premiums	0	0	10,713,454	10,713,454
Vested Benefits	<u>2,087,498</u>	<u>336,496</u>	<u>4,320,281</u>	<u>6,744,275</u>
Total	\$200,926,550	\$164,451,281	\$163,328,544	\$528,706,375
<i>APV of Future Normal Costs</i>	\$ (79,942,095)	\$ (68,892,295)	\$ (33,123,335)	\$ (181,957,725)
<b>Actuarial Accrued Liability-Total</b>				
Active	\$ 120,984,455	\$ 95,558,986	\$130,205,209	\$346,748,650
Deferred Inactive	1,386,127	397,331	7,294,851	9,078,309
In Payment-Retirement	155,178,117	164,904,993	97,974,767	418,057,877
In Payment-Disability	83,274,166	55,230,374	28,728,727	167,233,267
In Payment-Survivors	<u>27,034,748</u>	<u>17,967,940</u>	<u>3,412,157</u>	<u>48,414,845</u>
Total	\$387,857,613	\$334,059,624	\$267,615,711	\$989,532,948
<b>Unfunded Actuarial Accrued Liability</b>				
Total Actuarial Accrued Liability	\$387,857,613	\$334,059,624	\$267,615,711	\$989,532,948
Actuarial Value of Assets*	<u>(105,564,988)</u>	<u>(118,292,383)</u>	<u>(115,322,537)</u>	<u>(339,179,908)</u>
Unfunded Actuarial Accrued Liability	\$282,292,625	\$215,767,241	\$ 152,293,174	\$650,353,040

\*The Actuarial Value of Assets is now being determined using the tabular smoothing method permitted by Act 44 of 2009

**Table 09-3: Summary of Changes in Unfunded Actuarial Accrued Liability**

	<u>Police</u>	<u>Fire</u>	<u>Municipal</u>	<u>Combined</u>
<b>Expected Change in Unfunded Actuarial Accrued Liability</b>				
Normal Cost Assumed	\$14,134,875	\$11,341,824	\$9,704,229	\$35,180,928
Contributions Made	(46,791,738)	(21,951,358)	(26,973,287)	(95,716,383)
Interest Charged	<u>38,669,508</u>	<u>28,147,602</u>	<u>19,757,538</u>	<u>86,574,648</u>
Total	\$ 6,012,645	\$17,538,068	\$2,488,480	\$26,039,193
<b>Total Change in Unfunded Actuarial Accrued Liability</b>				
Expected Change	\$6,012,645	\$17,538,068	\$2,488,480	\$26,039,193
Plan Experience	38,191,277	39,761,840	39,640,845	117,593,962
Benefit Modification-Actives	0	0	0	0
Benefit Modifications-Retired	0	0	0	0
<b>Changes in Actuarial Assumptions</b>				
Asset Valuation Method	(24,361,151)	(27,298,242)	(26,612,893)	(78,272,286)
Interest Rate	<u>23,816,931</u>	<u>20,140,272</u>	<u>17,155,114</u>	<u>61,112,317</u>
Total Changes	\$43,659,702	\$50,141,938	\$32,671,546	\$126,473,186
<b>Summary</b>				
Unfunded AAL as of 01/01/07	\$238,632,923	\$165,625,303	\$119,621,628	\$523,879,854
Changes since prior Valuation	<u>43,659,702</u>	<u>50,141,938</u>	<u>32,671,546</u>	<u>126,473,186</u>
Unfunded AAL as of 01/01/09	\$282,292,625	\$215,767,241	\$152,293,174	\$650,353,040
<b>Gain and Loss to be Amortized</b>				
Contribution Loss (Gain)	\$ 2,766,533	\$ 15,937,264	\$ 1,209,136	\$ 19,912,933
Experience Loss (Gain)	<u>38,191,277</u>	<u>39,761,840</u>	<u>39,640,845</u>	<u>117,593,962</u>
Actuarial Loss (Gain) to be Amortized	\$40,957,810	\$55,699,104	\$40,849,981	\$ 137,506,895

**Table 09-4: Amortization of Unfunded Actuarial Accrued Liability**

	<u>Police</u>	<u>Fire</u>	<u>Municipal</u>	<u>Combined</u>
<b>Payment for Bases Established Prior to 01/01/09</b>				
Initial (Re-est. by Act 82 in 1998)	\$ 7,746,181	\$ 4,333,255	\$ 3,132,592	\$ 15,212,028
Other Changes Through 2007	<u>8,196,785</u>	<u>7,110,916</u>	<u>5,075,400</u>	<u>20,383,101</u>
Total for Previous Bases	\$ 15,942,966	\$ 11,444,171	\$ 8,207,992	\$ 35,595,129
<b>Payment for Changes as of 01/01/09</b>				
Actuarial Loss (Gain)	\$3,862,633	\$ 5,252,849	\$ 3,852,464	\$ 12,967,946
Benefit Modifications-Retired	0	0	0	0
Benefit Modifications-Active	0	0	0	0
Changes in Actuarial Assumptions	<u>(51,324)</u>	<u>(675,051)</u>	<u>(891,940)</u>	<u>(1,618,315)</u>
Total-New Bases	\$3,811,309	\$ 4,577,798	\$ 2,960,524	\$ 11,349,631
<b>Total Payments</b>				
Previous Bases	\$16,240,799	\$11,765,333	\$ 8,442,587	\$36,448,719
Change in Interest Rate	(297,833)	(321,162)	(234,595)	(853,590)
New Bases	<u>3,811,309</u>	<u>4,577,798</u>	<u>2,960,524</u>	<u>11,349,631</u>
Total	\$19,754,275	\$16,021,969	\$ 11,168,516	\$46,944,760

**Table 09-5: Actuarial Cost Components for Required Municipal Contributions**

	<u>Police</u>	<u>Fire</u>	<u>Municipal</u>	<u>Combined</u>
<b>Normal Cost Percentage (before expenses)</b>				
2007 Percentage	10.622%	9.210%	5.405%	8.111%
Change	<u>1.299%</u>	<u>2.870%</u>	<u>0.794%</u>	<u>1.583%</u>
2009 Percentage	11.921%	12.080%	6.199%	9.694%
<b>Summary of Normal Cost Percentage</b>				
Normal Cost Before Expenses	11.921%	12.080%	6.199%	9.694%
Administrative Expenses	<u>1.700%</u>	<u>2.400%</u>	<u>1.700%</u>	<u>1.880%</u>
Gross Normal Cost	13.621%	14.480%	7.899%	11.574%
<b>2009 Amortization Payment</b>				
2007 Level	\$15,942,966	\$ 11,444,171	\$ 8,207,992	\$35,595,129
Changes for Bases Fully Amortized	0	0	0	0
Changes for Bases Established 01/01/09 and Rounding Adjustments	<u>3,811,309</u>	<u>4,577,798</u>	<u>2,960,524</u>	<u>11,349,631</u>
Net Amortization Payment for 01/01/09	\$ 19,754,275	\$ 16,021,969	\$ 11,168,516	\$ 46,944,760

## Section Four: Participant Summaries

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### Active Members

	<u>Police</u>	<u>Fire</u>	<u>Municipal</u>	<u>Combined</u>
<b>Reconciliation from Prior Valuation</b>				
Active at 01/01/07	848	622	1,778	3,248
New Members	113	47	254	414
Status Change or Transfers In	2	5	1	8
Termination-Vested Benefits	(2)	(1)	(21)	(24)
Other Terminations/Transfers Out	(22)	(2)	(121)	(145)
Death	(1)	(2)	(4)	(7)
Disability	(14)	(12)	(18)	(44)
Regular Retirement	(26)	(15)	(86)	(127)
Data Adjustments (Net)	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Active at 01/01/09	898	642	1,783	3,323
<b>Current Membership Summary</b>				
Number Active at 01/01/09	898	642	1,783	3,323
Average Monthly Compensation	\$4,904	\$6,113	\$3,170	\$4,207
<b>Average Ages</b>				
At Hire	28.9	29.8	33.5	31.5
At Valuation Date	42.0	43.7	49.6	46.4
At Normal Retirement	51.9	53.3	60.2	56.6

## Inactive Members

	<u>Police</u>	<u>Fire</u>	<u>Municipal</u>	<u>Combined</u>
<b>Number as of 01/01/09</b>				
Regular Retirement	699	574	1,228	2,501
Disability Retirement	388	245	288	921
Survivors	<u>505</u>	<u>346</u>	<u>90</u>	<u>941</u>
Total in Payment	1,592	1,165	1,606	4,363
Deferred Vested	<u>4</u>	<u>1</u>	<u>77</u>	<u>82</u>
Total	1,596	1,166	1,683	4,445
<b>Average Monthly Benefits</b>				
Regular Retirement	\$1,940	\$2,129	\$ 857	\$1,452
Disability Retirement	\$2,207	\$2,673	\$ 966	\$1,943
Survivor	\$ 646	\$ 630	\$ 427	\$ 619
Deferred Vested	\$2,800	\$3,194	\$1,403	\$1,493
<b>Reconciliation from Prior Valuation - Number in Payment Status</b>				
As of 01/01/07	1,630	1,198	1,634	4,462
New Payees	91	68	129	288
Cessation of Benefits	(129)	(101)	(179)	(409)
Net Data Adjustments	<u>0</u>	<u>0</u>	<u>22</u>	<u>22</u>
As of 01/01/09	1,592	1,165	1,606	4,363

## Section Five: Plan Assets

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### Combined Municipal Pension Trust Fund Calendar Year 2007

#### Source of Asset Information

The assets of the Aggregated Trust for the City's pension plans are summarized in the following tables based on the information provided by the City and by Maher Duessel. Assets are shown at market value.

#### Summary of Values for Aggregated Trust

	<u>1/1/07</u>	<u>1/1/08</u>
Market Value of Assets - Cash Basis	\$377,673,832	\$386,897,374
Accrued Interest	1,187,226	1,074,391
Accrued Contributions	0	0
Other Receivables	55,719	0
Accrued Expenses and Other Payables	<u>(3,548,053)</u>	<u>(2,752,736)</u>
Market Value of Assets - Accrual Basis	\$375,368,724	\$385,219,029

#### Summary of Transactions for the Aggregated Trust

Balance as of January 1, 2007		\$375,368,724
Contributions Toward Pension Liability		
- Policemen's	\$23,158,196	
- Firemen's	10,806,773	
- Municipal	<u>13,393,760</u>	\$ 47,358,728
Miscellaneous Contributions and Pass Through Items		5,891,267
Miscellaneous City Contribution		48,078
Interest and Dividends		23,105,840
Net Appreciation (Decline) in Fair Value Of Investments		16,179,386
Payments to Participants		
- Policemen's	\$32,473,633	
- Firemen's	27,856,920	
- Municipal	<u>19,763,649</u>	(80,094,202)
Expenses		<u>(2,638,792)</u>
<b>Balance as of December 31, 2007</b>		<b>\$385,219,029</b>

**Undivided Participation Calculation Calendar Year 2007 - Accrual Basis**

	<u>Policemen's</u>	<u>Firemen's</u>	<u>Municipal</u>	<u>Total</u>
January 1, 2007 Market Value	\$114,889,067	\$142,787,099	\$117,692,558	\$375,368,724
Plan-Specific Contributions	24,488,010	11,447,972	15,366,173	51,302,155
Plan-Specific Distributions	<u>(32,809,375)</u>	<u>(28,092,508)</u>	<u>(20,197,616)</u>	<u>(81,099,499)</u>
Sub-Total	\$106,567,701	\$126,142,563	\$112,861,115	\$345,571,379
Sub-Total Percentages	30.84%	36.50%	32.66%	100.00%
Allocated Expenses	(503,770)	(596,226)	(533,499)	(1,633,495)
Allocated Investment Earnings	<u>12,731,105</u>	<u>15,067,618</u>	<u>13,482,421</u>	<u>41,281,144</u>
December 31, 2007 Market Value	\$118,795,037	\$140,613,955	\$125,810,037	\$385,219,029

**Contributions and Distributions for 2007 - Accrual Basis**

<b>Plan-Specific Contributions</b>	<u>Policemen's</u>	<u>Firemen's</u>	<u>Municipal</u>	<u>Total</u>
State Aid:				
General Municipal				
Pension System State Aid	\$5,470,103	\$4,014,402	\$5,697,757	\$15,182,262
Supplemental State Aid	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
<i>Total State Aid</i>	\$5,470,103	\$4,014,402	\$5,697,757	\$15,182,262
Member Contributions	3,234,709	2,955,857	3,010,554	9,201,120
City Contributions	14,453,383	3,836,514	4,685,449	22,975,346
Miscellaneous City Contribution	0	0	48,078	48,078
Pass Through Contributions	1,329,814	631,000	1,924,336	3,885,150
Miscellaneous Income	<u>0</u>	<u>10,199</u>	<u>0</u>	<u>10,199</u>
<b>Total Contributions</b>	<b>\$24,488,010</b>	<b>\$11,447,972</b>	<b>\$15,366,173</b>	<b>\$51,302,155</b>

**Plan-Specific Distributions**

Benefit Payments to Participants	\$32,212,494	\$27,721,407	\$19,160,847	\$79,094,748
Refunds to Participants	261,139	135,513	602,802	999,454
Administrative Expenses	<u>335,742</u>	<u>235,588</u>	<u>433,967</u>	<u>1,005,297</u>
<b>Total Distributions</b>	<b>\$32,809,375</b>	<b>\$28,092,508</b>	<b>\$20,197,616</b>	<b>\$81,099,499</b>

## Combined Municipal Pension Trust Fund Calendar Year 2008

### Source of Asset Information

The assets of the Aggregated Trust for the City's pension plans are summarized in the following tables based on the information provided by the City and by Maher Duessel. Assets are shown at market value.

### Summary of Values for the Aggregated Trust

	1/1/08	1/1/09
Market Value of Assets – Cash Basis	\$ 386,897,374	\$ 262,608,291
Accrued Interest	1,074,391	625,027
Accrued Contributions	0	0
Other Receivables	0	0
Accrued Expenses and other Payables	<u>(2,752,736)</u>	<u>(2,325,696)</u>
Market Value of Assets – Accrual Basis	\$ 385,219,029	\$ 260,907,622

### Summary of Transactions for the Aggregated Trust

Balance as of January 1, 2008		\$ 385,219,029
Contributions toward Pension Liability		
- Policemen's	\$ 23,633,543	
- Firemen's	11,144,586	
- Municipal	<u>13,579,527</u>	\$ 48,357,655
Miscellaneous and Pass Through Items		4,766,891
Interest and Dividends		14,075,930
Net Appreciation (Decline) in Fair Value of Investments		(106,596,461)
Payments to Participants		
- Policemen's	\$ 32,885,990	
- Firemen's	27,903,309	
- Municipal	<u>19,874,657</u>	(80,663,956)
Expenses		<u>(4,251,467)</u>
<b>Balance as of December 31, 2008</b>		<b>\$ 260,907,622</b>

**Undivided Participation Calculation Calendar Year 2008 - Accrual Basis**

	<u>Policemen's</u>	<u>Firemen's</u>	<u>Municipal</u>	<u>Total</u>
January 1, 2008 Market Value	\$118,795,037	\$140,613,955	\$125,810,037	\$385,219,029
Plan-Specific Contributions	25,132,047	11,703,289	15,484,933	52,320,268
Plan-Specific Distributions	<u>(33,118,250)</u>	<u>(28,141,153)</u>	<u>(20,240,535)</u>	<u>(81,499,938)</u>
Sub-Total	\$110,808,834	\$124,176,090	\$121,054,435	\$356,039,359
Sub-Total Percentages	31.12%	34.88%	34.00%	100.00%
Allocated Expenses	(1,062,899)	(1,191,321)	(1,161,265)	(3,415,485)
Allocated Investment Earnings	<u>(28,542,098)</u>	<u>(31,990,629)</u>	<u>(31,183,526)</u>	<u>(91,716,253)</u>
December 31, 2008 Market Value	\$ 81,203,837	\$ 90,994,141	\$ 88,709,644	\$260,907,622

**Contributions and Distributions for 2008 - Accrual Basis**

<b>Plan-Specific Contributions</b>	<u>Policemen's</u>	<u>Firemen's</u>	<u>Municipal</u>	<u>Total</u>
State Aid:				
General Municipal Pension System State Aid	\$ 5,442,251	\$ 4,059,384	\$ 5,646,176	\$15,147,812
Supplemental State Aid	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
<i>Total State Aid</i>	\$ 5,442,251	\$ 4,059,384	\$ 5,646,176	\$15,147,812
Member Contributions	3,501,221	3,189,198	3,133,640	9,824,059
City Contributions	14,690,070	3,896,003	4,799,711	23,385,784
Pass Through Contributions	1,498,504	548,700	1,872,500	3,919,704
Miscellaneous Income	<u>0</u>	<u>10,003</u>	<u>32,906</u>	<u>42,909</u>
<b>Total Contributions</b>	<b>\$25,132,047</b>	<b>\$11,703,289</b>	<b>\$15,484,933</b>	<b>\$52,320,268</b>
<b>Plan-Specific Distributions</b>				
Benefit Payments to Participants	\$32,679,764	\$27,876,680	\$19,438,287	\$ 79,994,731
Refunds to Participants	206,226	26,629	436,370	669,225
Administrative Expenses	<u>232,260</u>	<u>237,844</u>	<u>365,878</u>	<u>835,982</u>
<b>Total Distributions</b>	<b>\$33,118,250</b>	<b>\$28,141,153</b>	<b>\$20,240,535</b>	<b>\$81,499,938</b>

## Calculation of Actuarial Value of Assets: Description of Method

The Actuarial Value of Assets is determined by a Tabular Smoothing Method which takes the Actuarial Value of Assets from the prior valuation report and brings it forward using a specified interest rate. The Actuarial Value of Assets in the prior report, contributions by year, and annual disbursements are each credited with interest at a rate of 1 percent less than the prior valuation interest rate assumption. The resulting value is further subject to a minimum of 70 percent and a maximum of 130 percent of the market value of assets.

### Development of the Actuarial Value of Assets

	Police	Firemen	Municipal
Market Value of Assets at January 1, 2009	\$81,203,837	\$90,994,141	\$ 88,709,644
Actuarial Value of Assets at January 1, 2007	\$114,889,067	\$142,787,099	\$117,692,558
Contributions During 2007	24,488,010	11,437,773	15,318,096
Disbursements During 2007	(33,313,145)	(28,688,734)	(20,731,115)
Interest Credited During 2007	<u>8,003,899</u>	<u>10,211,006</u>	<u>8,657,050</u>
Tabular Smoothing Value of Assets at January 1, 2008	\$114,067,831	\$135,747,144	\$120,936,589
Tabular Smoothing Value of Assets at January 1, 2008	\$114,067,831	\$135,747,144	\$120,936,589
Contributions During 2008	25,132,047	11,693,286	15,452,027
Disbursements During 2008	(34,181,149)	(29,332,474)	(21,401,800)
Interest Credited During 2008	<u>8,237,775</u>	<u>9,747,542</u>	<u>9,012,275</u>
Tabular Smoothing Value of Assets at January 1, 2009	\$113,256,505	\$127,855,497	\$123,999,090
Low Limit: 70% of Market Value	\$56,842,686	\$63,695,899	\$62,096,751
High Limit: 130% of Market Value	\$105,564,988	\$118,292,383	\$115,322,537
<b>Actuarial Value of Assets at January 1, 2009</b>	<b>\$105,564,988</b>	<b>\$118,292,383</b>	<b>\$115,322,537</b>

## Section Six: Schedule of Debt Service Payments by Plan Arising from the Issuance of Pension Obligation Bonds

Year	1996 Issue Municipal	1998 Issue Municipal	Municipal Subtotal	1998 Issue Police	1998 Issue Fire	Total
1997	\$1,834,529.78		\$1,834,529.78			\$ 1,834,529.78
1998	3,089,976.25	\$1,873,403.84	4,963,380.09	\$3,921,658.75	\$2,531,176.79	11,416,215.63
1999	3,093,905.00	3,965,451.43	7,059,356.43	8,301,011.75	5,357,765.57	20,718,133.75
2000	3,089,965.00	3,952,795.18	7,042,760.18	8,274,518.00	5,340,665.57	20,657,943.75
2001	3,093,050.00	3,940,071.43	7,033,121.43	8,247,882.95	5,323,474.37	20,604,478.75
2002	3,093,065.00	3,927,111.43	7,020,176.43	8,220,753.35	5,305,963.97	20,546,893.75
2003	3,094,772.50	3,914,050.18	7,008,822.68	8,193,411.80	5,288,316.77	20,490,551.25
2004	3,092,930.00	3,900,853.93	6,993,783.93	8,165,787.65	5,270,487.17	20,430,058.75
2005	3,092,285.00	4,215,898.93	7,308,183.93	8,825,281.84	5,696,147.98	21,829,613.75
2006	3,092,631.25	4,141,574.68	7,234,205.93	8,669,696.42	5,595,727.65	21,499,630.00
2007	3,094,008.75	4,140,402.43	7,234,411.18	8,667,242.51	5,594,143.81	21,495,797.50
2008	3,091,210.00	4,129,471.22	7,220,681.22	8,644,359.86	5,579,374.54	21,444,415.62
2009	3,093,890.00	4,136,108.02	7,229,998.02	8,658,252.89	5,588,341.59	21,476,592.50
2010	3,091,950.00	4,147,130.21	7,239,080.21	8,681,326.00	5,603,233.79	21,523,640.00
2011	3,090,225.00	4,152,755.21	7,242,980.21	8,693,101.00	5,610,833.79	21,546,915.00
2012	3,093,220.00	5,122,623.89	8,215,843.89	10,723,359.45	6,921,234.16	25,860,437.50
2013	3,092,690.00	5,684,604.41	8,777,294.41	11,899,772.03	7,680,532.31	28,357,598.75
2014	3,092,940.00	5,679,272.19	8,772,212.19	11,888,609.92	7,673,327.89	28,334,150.00
2015	3,091,015.00	5,731,435.63	8,822,450.63	11,997,805.38	7,743,806.49	28,564,062.50
2016	3,091,390.00	5,729,424.69	8,820,814.69	11,993,595.82	7,741,089.49	28,555,500.00
2017	3,093,365.00	6,550,975.62	9,644,340.62	13,713,375.79	8,851,096.09	32,208,812.50
2018	3,091,415.00	5,193,528.14	8,284,943.14	10,871,785.68	7,017,033.68	26,173,762.50
2019	3,093,792.50	6,476,899.43	9,570,691.93	13,558,309.64	8,751,010.93	31,880,012.50
2020	3,094,545.00	6,477,531.68	9,572,076.68	13,559,633.15	8,751,865.17	31,883,575.00
2021	3,093,937.50	6,477,401.18	9,571,338.68	13,559,359.97	8,751,688.85	31,882,387.50
2022	3,091,260.00	6,478,435.06	9,569,695.06	13,561,524.21	8,753,085.73	31,884,305.00
2023	3,090,625.00	6,479,074.06	9,569,699.06	13,562,861.85	8,753,949.09	31,886,510.00
2024	3,090,967.50	6,478,846.81	9,569,814.31	13,562,386.14	8,753,642.05	31,885,842.50

## Section Seven: Historical Information

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The Act 205 of 1984 requirement that the City have annual actuarial valuations prepared for each of its defined benefit plans ended with the January 1, 2003 valuation. Actuarial information is included in the following charts for 2002 and then biennially thereafter. However, contribution information is included annually beginning with 2004.

The information contained elsewhere in this report provides detailed information on liabilities for each plan as of January 1, 2009 and the changes in the funding components during the year ending December 31, 2008. This section examines funding trends that emerged during the last five actuarial valuation periods. Also, a five-year review of contributions to fund the benefits has been included and a comparison of the actuarial value of assets for the last four valuations has been added.

The goal of the actuarial funding method is to accumulate enough assets by an employee's retirement date so that these assets and the interest they earn will pay benefits for the remainder of the employee's life, and possibly to a beneficiary. As active employees approach retirement, accumulated assets will increase each year. As retirement benefits are paid the accumulated assets will decrease. At any point in time, there is a theoretical asset level that should have been achieved, known as the Actuarial Accrued Liability.

A number of factors can have an impact on the Actuarial Accrued Liability. The January 1, 2009 valuation reports include assumption changes which have changed the actuarial accrued liability.

*Chart No. 1* shows the Actuarial Accrued Liability for each plan and the total for all plans from the actuarial valuations prepared in the period 2002 through 2009. Each of the Funds' Actuarial Accrued Liability increases over the period, which is the expected trend.

Comparing the assets and the Actuarial Accrued Liability as of a given date determines whether the funding is ahead of or behind schedule. Each of the City's plans is behind schedule because the Actuarial Accrued Liability is greater than the assets. This deficit is known as the Unfunded Actuarial Accrued Liability. Over time, annual amortization payments to the funds, calculated using the valuation interest rate will eliminate the Unfunded Actuarial Accrued Liability.

In 1996 and in 1998, the City issued pension obligation bonds and deposited the proceeds into the funds to reduce the gap between the Actuarial Accrued Liability and the assets. The debt service on the bonds is lower than the corresponding amortization payments because the interest rate on the bonds is lower than the valuation interest rate. As a result, the City is paying less money each year to provide pension benefits.

*Chart No. 2* shows the Unfunded Actuarial Accrued Liability for each plan and the total for all plans from the actuarial valuations prepared from 2002 through 2009. The increase in the Unfunded Actuarial Accrued Liability from 2001 to 2003 occurred because the return on investment in 2002 was significantly lower than the valuation interest assumption. A combination of investment gains and net experience gains in the Firemen's and Municipal Funds slowed the rate of growth in the Unfunded Actuarial Accrued Liability as of the 2005 valuation date. The January 1, 2007 actuarial valuations indicate that there was a substantial experience loss in the Firemen's Fund. The Municipal and Policemen's Funds had small experience gains. The January 1, 2009 valuation then showed a significant increase in the Unfunded Actuarial Accrued Liability due to the major investment losses of 2008.

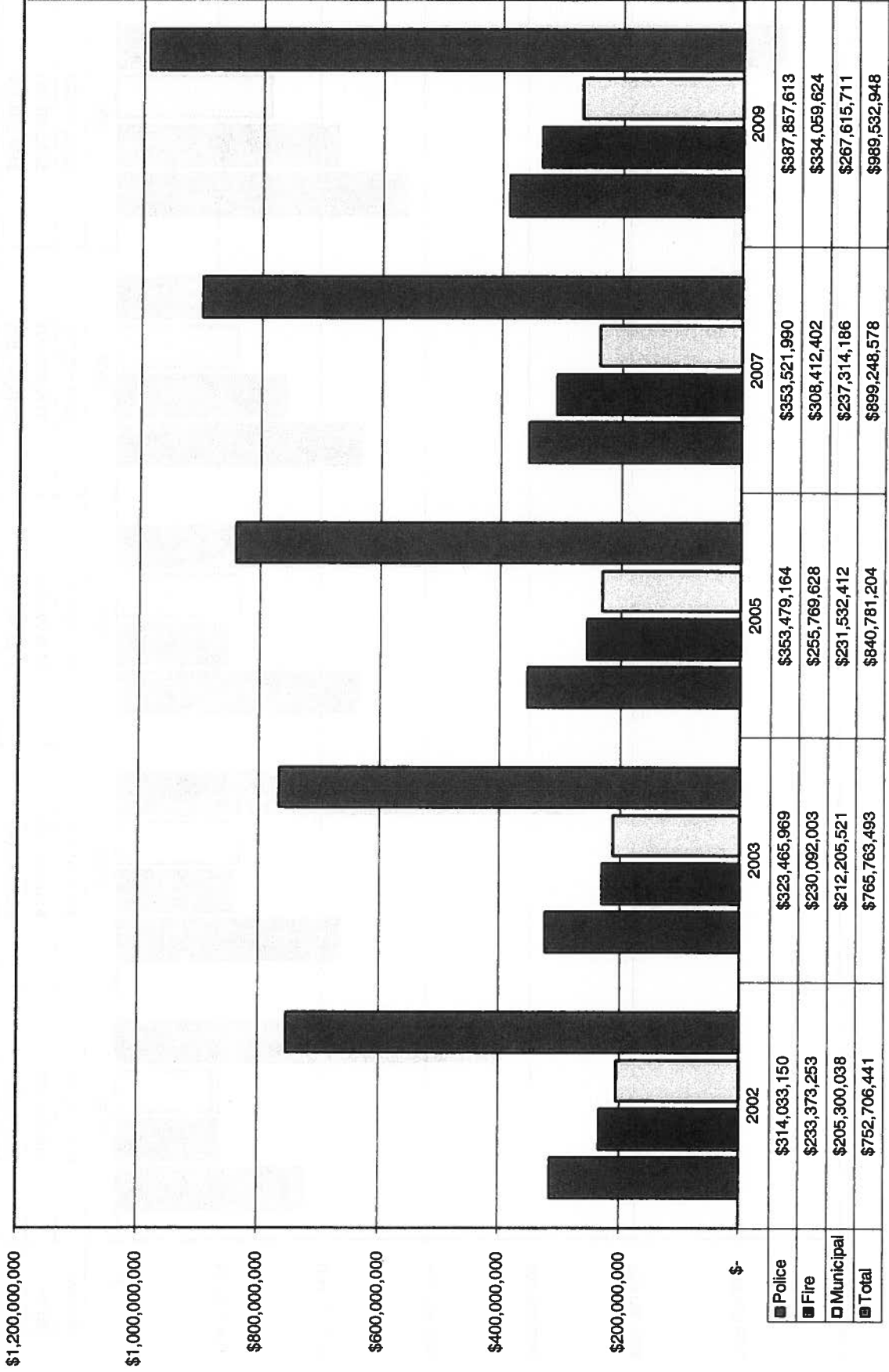
*Chart No. 3* provides the Funding Ratio for each fund and the average Funding Ratio for the 2002 through 2009 period. The Funding Ratio is the ratio of assets to the Actuarial Accrued Liability. In 1996, assets averaged 23.5 percent of the Actuarial Accrued Liability. Because of the pension obligation bonds, investment earnings in excess of the actuarial assumption and other changes noted above, the average peaked in 2000 at 67.0 percent. The return on investment in 2000, 2001, and 2002 and benefit improvements caused the average 2003 funding ratio to fall to 40.8 percent. The Funding Ratio increased slightly in 2005, but retracted by 2.7 percent in 2007, mostly due to experience losses in the Firemen's Fund. The ratio dropped by 7.4 percent to 34.3 percent in 2009 as a result of the large investment losses in 2008 and, to a lesser extent, by a decrease in the assumed interest rate from 8.75 percent to 8.0 percent. Funding ratios in 2009 would be even lower if the actuarial value of assets had not been changed to a value based on a tabular smoothing method, currently setting the actuarial value of assets at 130 percent of market value.

*Charts No. 4 through 7* provide information on the sources of the money to fund pension benefits on an individual and on an aggregate basis. Contributions for 2004 through 2008 are shown as a percentage of the total pay as reported on Form W-2 for each group. The City Contribution is the money paid by the City directly to the pension plans. Debt service is the annual payment made by the City to retire the pension obligation bonds.

The complete schedule of debt service payments is included in Section Six. The employees' contributions are withheld from employees' paychecks and paid directly to the pension plans. State Aid is the City's allocation from the 2 percent premium tax on foreign fire and casualty insurance, which the City deposits into the plans. State Aid could also be used to pay debt service, but the City would have to make additional contributions to the pension plans equal to the amount of State Aid used to pay debt service. In the future, if the City's Minimum Municipal Obligation falls below the State Aid allocation, the extra State Aid could be used to pay debt service.

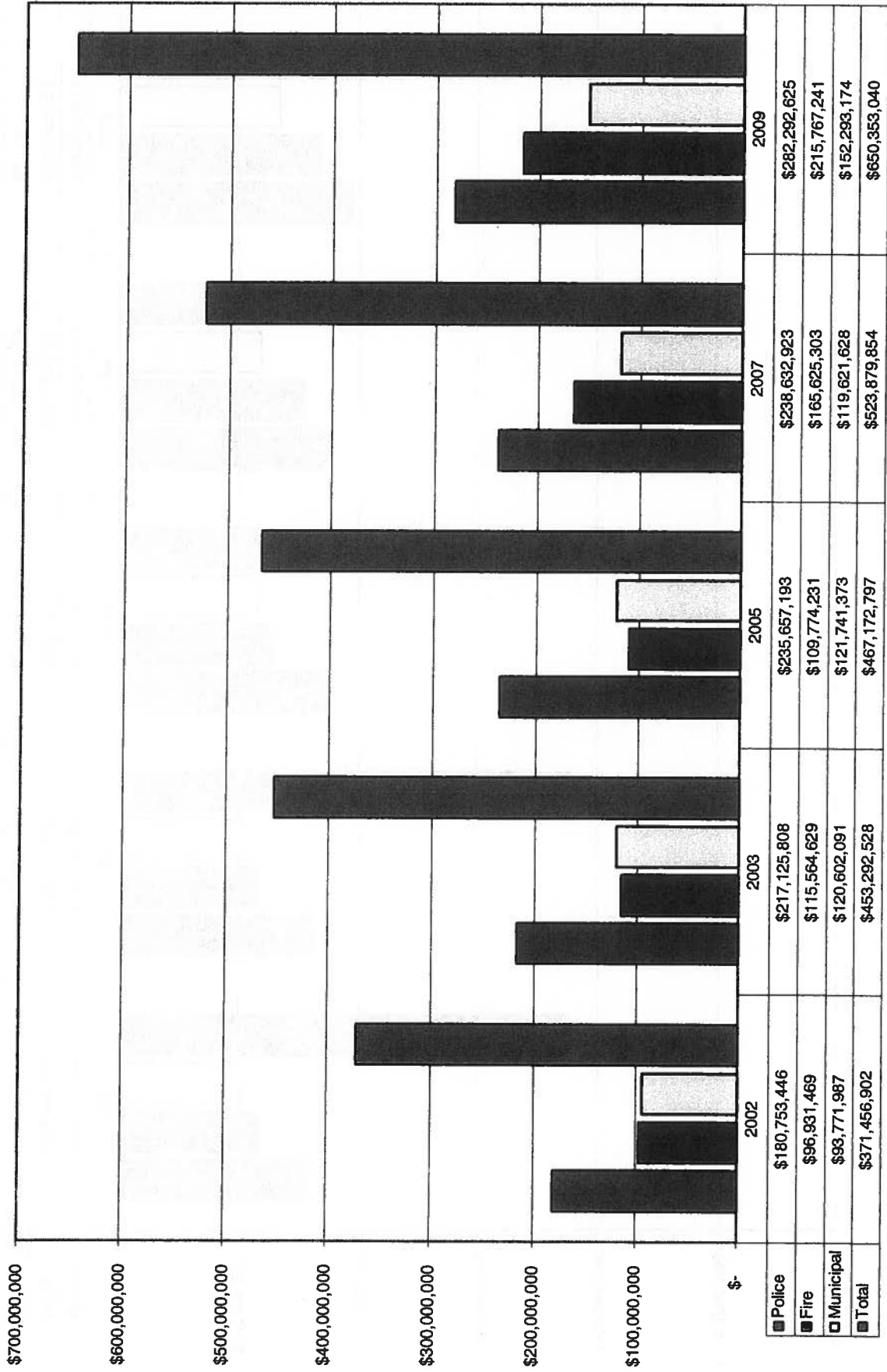
*Charts No. 8 through 11* provide information comparing the actuarial value and market value of assets by plan and for all plans combined as of biennial valuation dates from January 1, 2003 to January 1, 2009. For valuation years before 2009, market and actuarial value of assets match. However, in 2009, the tabular smoothing method results in the values differing, with the actuarial value of assets being higher.

**Chart No. 1**  
**Actuarial Accrued Liability**



Assumption changes in the 2003 valuations diminished the impact of other changes on the Actuarial Accrued Liability.  
The interest rate reduction in the 2009 valuation increased the Actuarial Accrued Liability.

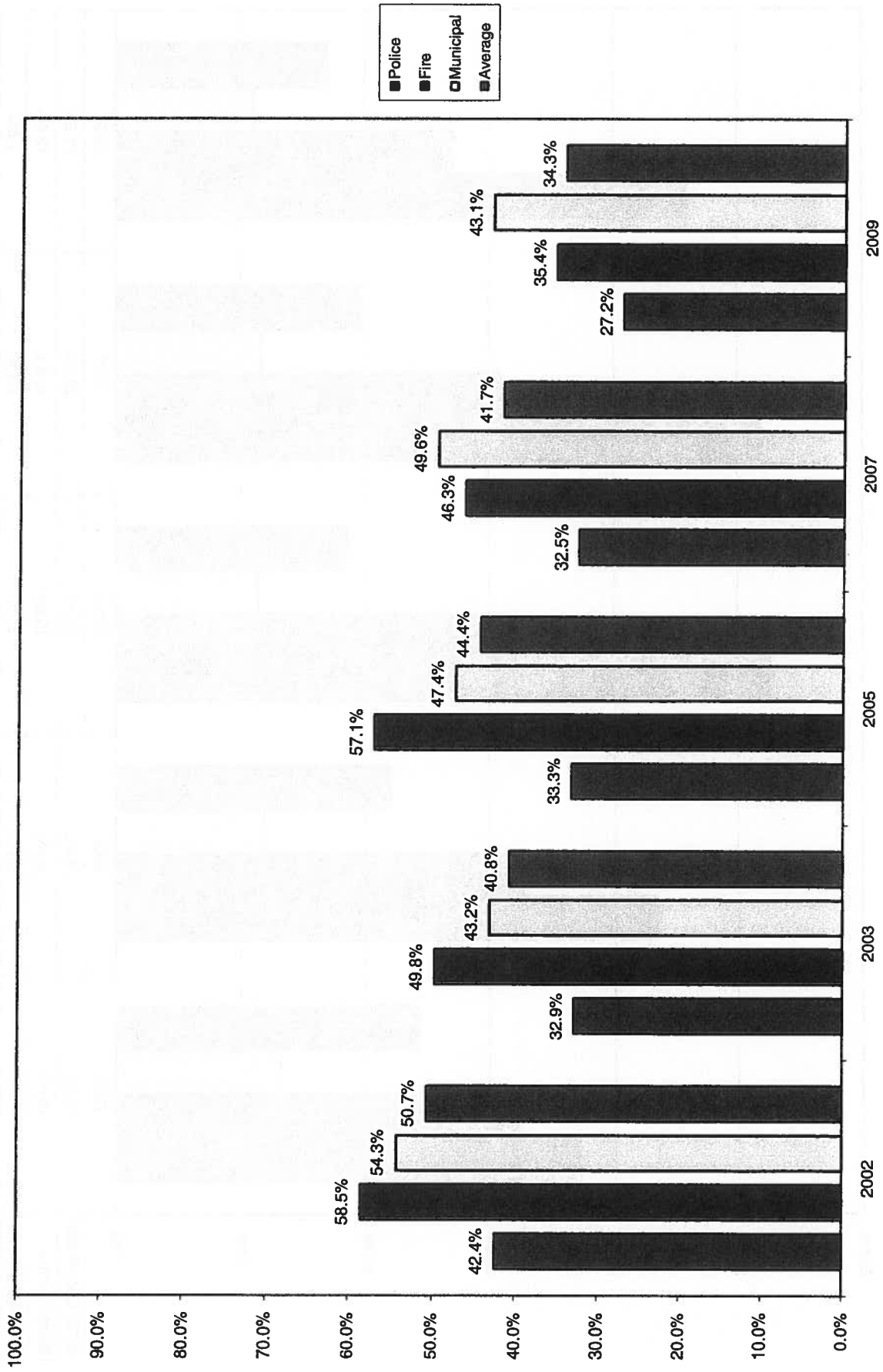
**Chart No. 2**  
**Unfunded Actuarial Accrued Liability**



Adoption of the tabular smoothing method and a decrease in the valuation interest rate in for the 2009valuation have an impact on the Unfunded Actuarial Accrued Liability.

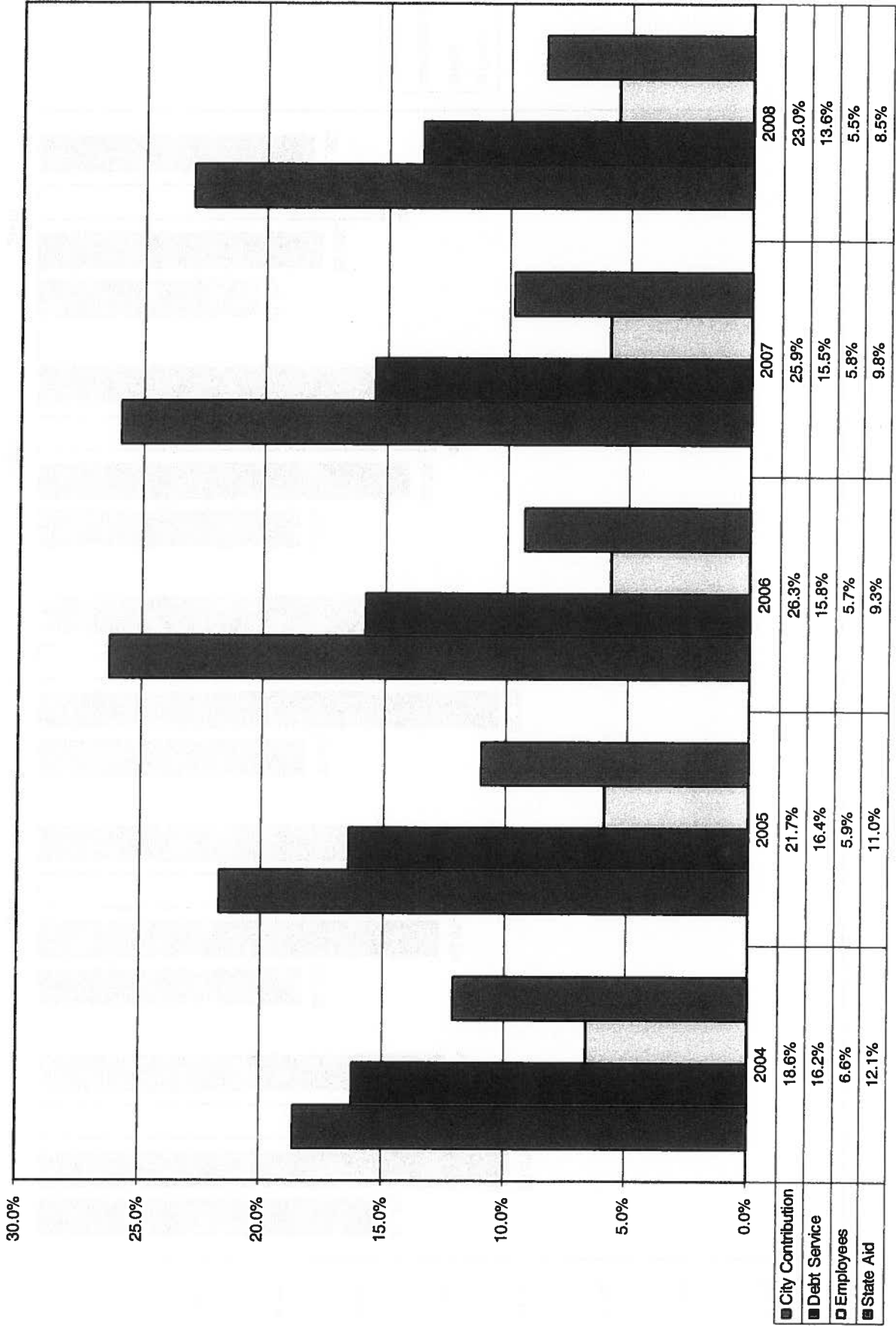
Chart No. 3

Funding Ratio

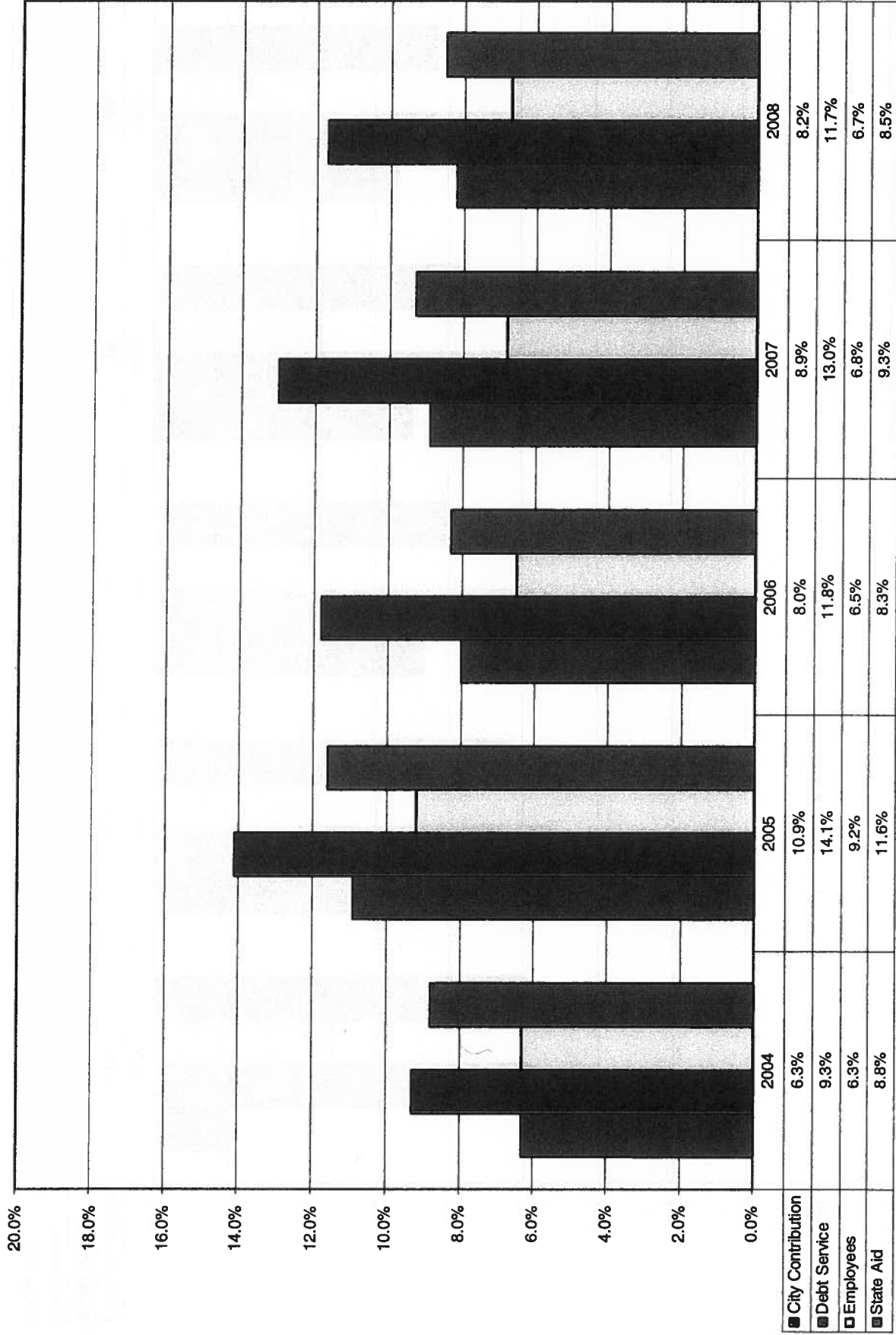


Funding Ratio is the actuarial value of assets divided by the actuarial accrued liability, expressed as a percentage.

**Chart No. 4  
City of Pittsburgh Police Relief and Pension Fund  
Pension Contributions as a Percent of Actual W-2 Pay**



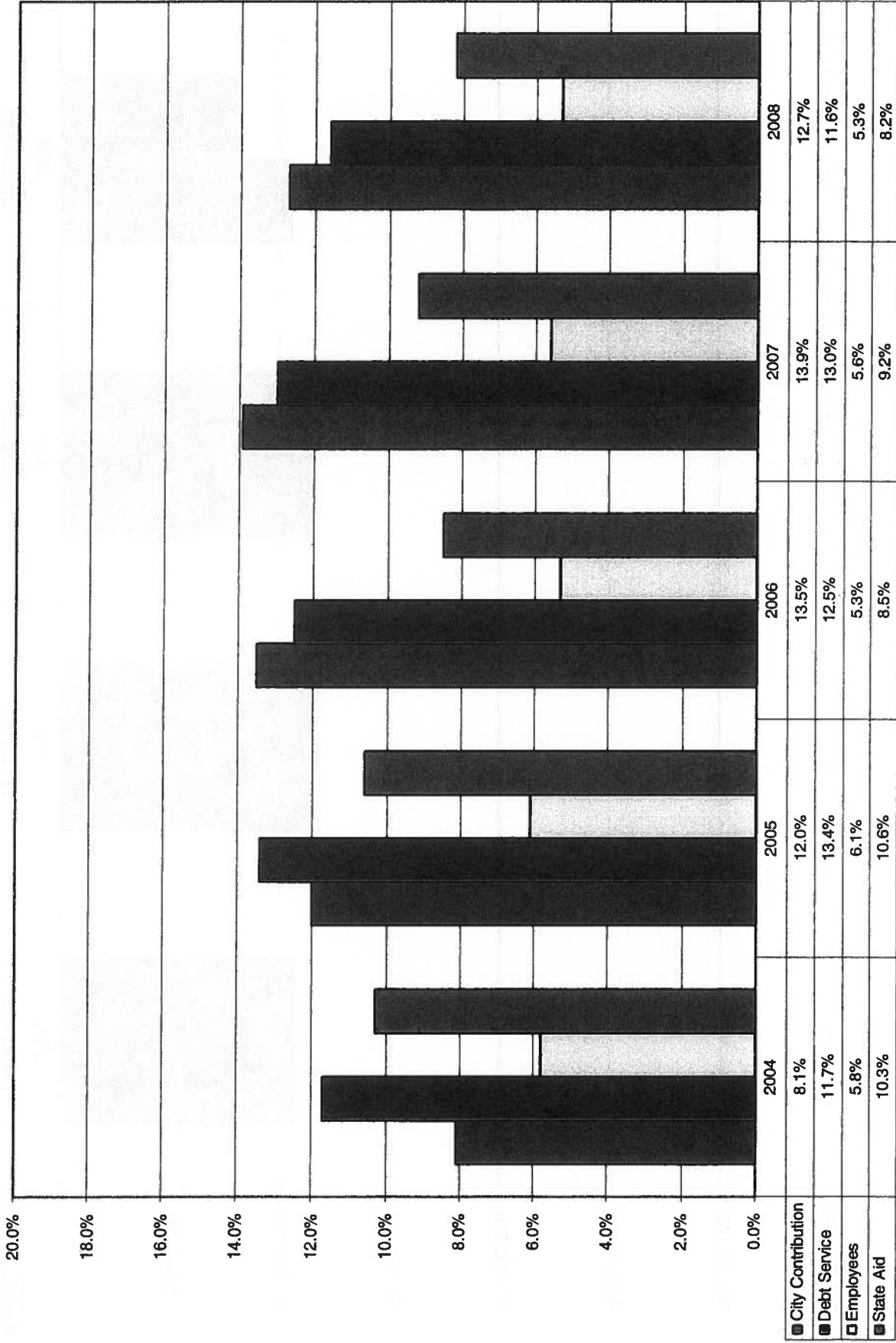
**Chart No. 5**  
**City of Pittsburgh Firemen's Relief and Pension Fund**  
**Pension Contributions as a Percentage of Actual W-2 Pay**



**Chart No. 6  
City of Pittsburgh Municipal Retirement Fund  
Pension Contributions as a Percentage of Actual W-2 Pay**



**Chart No. 7**  
**City of Pittsburgh - All Pension Funds**  
**Pension Contributions as a Percentage of Actual W-2**



**Chart No. 8**  
**City of Pittsburgh Police Relief and Pension Fund**  
**Comparison of Actuarial Value of Assets With Market Value of Assets**

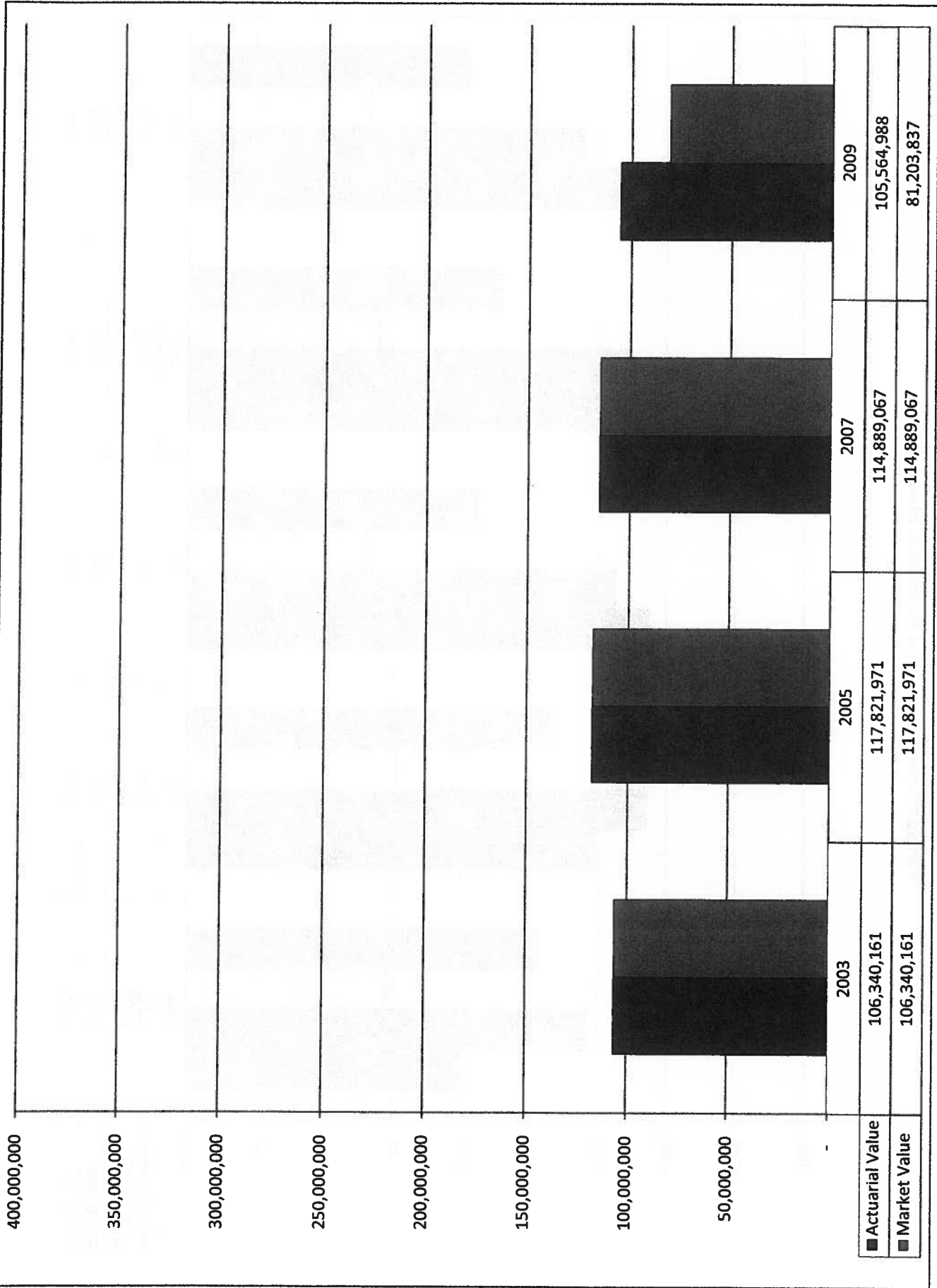


Chart No. 9  
 City of Pittsburgh Firemen's Relief and Pension Fund  
 Comparison of Actuarial Value of Assets with Market Value of Assets

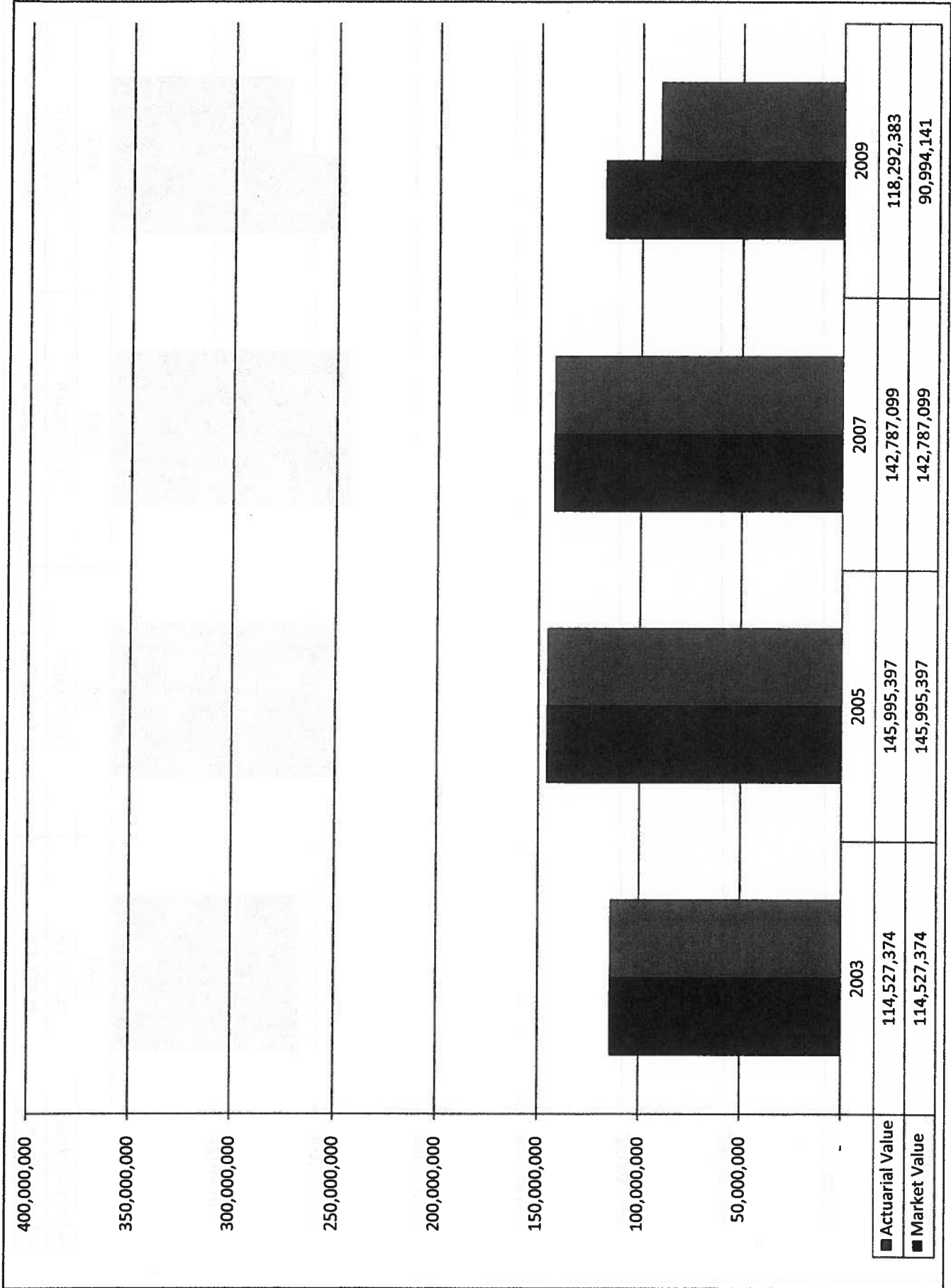
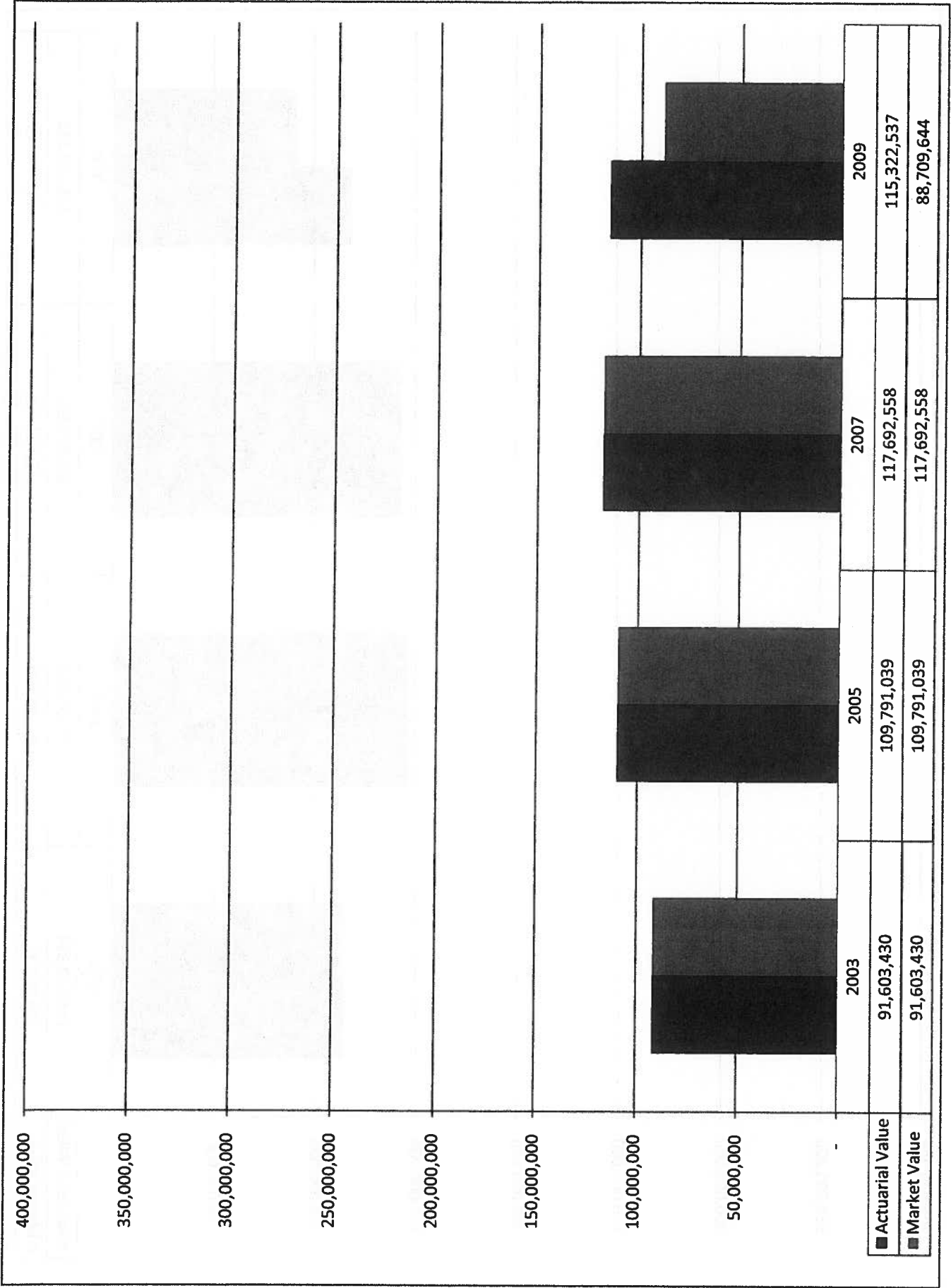
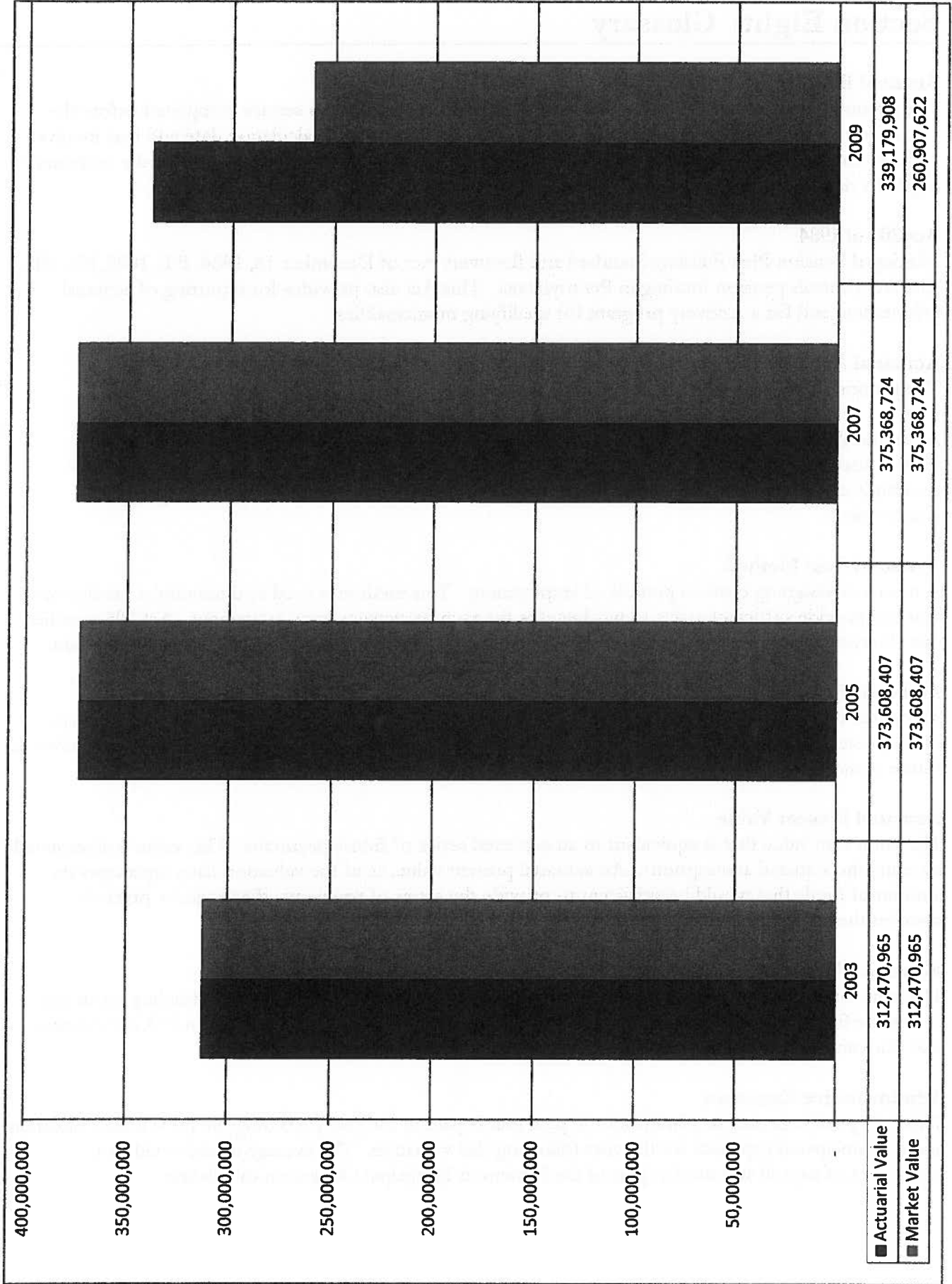


Chart No. 10  
 City of Pittsburgh Municipal Pension Fund  
 Comparison of Actuarial Value of Assets With Market Value of Assets



**Chart No. 11**  
**Total Pension Plan Assets**  
**Comparison of Actuarial Value of Assets With Market Value of Assets**



## Section Eight: Glossary

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### **Accrued Benefit**

The portion of the participant's retirement benefit that is attributable to service completed before the calculation date. The calculation typically uses actual service as of the calculation date and may involve other factors such as average pay at the determination date and projected service through the retirement eligibility date.

### **Act 205 of 1984**

Municipal Pension Plan Funding Standard and Recovery Act of December 18, 1984, P.L. 1005, No. 205. The Act controls pension funding in Pennsylvania. This Act also provides for reporting of actuarial information and for a recovery program for qualifying municipalities.

### **Actuarial Accrued Liability**

The portion of the actuarial cost assigned to prior years.

### **Actuarial Assumptions**

Factors used by the actuary to forecast future events. These factors include items relating to future economic conditions, the survival of the participants and their beneficiaries, and the length of employment.

### **Actuarial Cost Method**

A means of assigning costs to periods of employment. This method is used to determine a funding level that will provide sufficient assets to pay benefits for each participant upon retirement. Act 205 specifies that the entry age normal cost method, as described in the Act, should be used for this determination.

### **Actuarial Gain or Loss**

The effect on the actuarial accrued liability of differences between events as predicted by the actuarial assumptions and those that actually occurred. This difference can increase or decrease the contribution in future years.

### **Actuarial Present Value**

The lump sum value that is equivalent to an expected series of future payments. This value is determined by using the actuarial assumptions. An actuarial present value, as of the valuation date, represents the amount of funds that would be sufficient to provide the series of payments, if experience precisely matches the actuarial assumptions.

### **Actuarial Value of Assets**

The value of current plan assets which is used by the actuary to evaluate the current funding status and determine future funding requirements. Pennsylvania Code, Title 16, Part IV, Section 203.2(a) requires that this value be between 70 and 130 percent of the fair market value of the assets.

### **Administrative Expenses**

The average of expenses to administer the plan that is paid in the year preceding the most recent valuation and the anticipated expenses for the year following this valuation. The average is converted to a percentage of payroll and used as part of the Minimum Municipal Obligation calculation.

**Amortization Payment**

The annual payment required to eventually eliminate the unfunded actuarial accrued liability according to the schedule established in Act 205.

**Funding Adjustment**

Occurs when the actuarial value of assets exceeds the actuarial accrued liability; it is defined by Act 205 as 10 percent of the excess. This adjustment reduces the amount that must be contributed to the pension plan.

**General Municipal Pension System State Aid**

Annually municipalities receive a portion of the insurance premium tax levied on casualty insurance companies headquartered outside of Pennsylvania. If they have paid firefighters, they also receive a portion of the premium tax on out-of-state fire insurance companies. These taxes are distributed according to formula contained in Act 205.

**Minimum Municipal Obligation**

The amount that must be contributed to a pension plan by a municipality for a given year. The calculation of this amount uses the normal cost, anticipated administrative expenses, amortization payment or funding adjustment, and anticipated employee contributions to determine a municipality's contribution requirement. General Municipal Pension System State Aid may be used to reduce the contribution.

**Normal Cost**

The actuarial cost assigned to a given year to pay for the portion of the anticipated benefit derived from service during that year.

**Unfunded Actuarial Accrued Liability**

The amount by which the actuarial accrued liability exceeds the actuarial value of assets. A valuation will identify the value of changes in the unfunded actuarial accrued liability that result from changes in plan benefits, actuarial assumptions, or actuarial gains and losses.

**Vesting**

The participant's non-forfeitable right to receive a benefit, provided that the participant survives until benefit eligibility.

