

The Report of the Annual Actuarial Valuation  
of the  
Police Retirement System of Kansas City, Missouri

April 30, 2006

Submitted to  
The Retirement Board  
Police Retirement System of  
Kansas City, Missouri

GRS

Gabriel Roeder Smith & Company



# OUTLINE OF CONTENTS

<b>Page</b>	<b>Items</b>
--	<i>Cover Letter</i>
	<i>Valuation Results, Comments and Recommendations</i>
A-1	Financial Objective
A-2	Computed City Contributions
A-4	Amortization Schedule for the Unfunded Accrued Liability
A-5	Comparative Statements
A-7	Membership Information
A-8	Expected Development of Present Population
A-9	Comments, Recommendations, and Conclusions
A-11	Development of Unfunded Actuarial Accrued Liabilities
A-12	Actuarial Balance Sheet
A-13	Gain/Loss Development
	<i>Summary of Benefit Provisions and Valuation Data Submitted by the Retirement System</i>
B-1	Summary of Benefit Provisions
B-4	Reported Asset Information
B-7	Retired Life Data
B-9	Vested Terminated Member Data
B-10	Active Member Data
	<i>Financial Principles, Actuarial Valuation Process, Actuarial Cost Methods, Actuarial Assumptions and Definitions of Technical Terms</i>
C-1	Financial Principles
C-4	Actuarial Valuation Process
C-5	Actuarial Cost Method
C-6	Actuarial Assumptions in the Valuation Process
C-9	Actuarial Assumptions used for the Valuation
C-15	Definitions of Technical Terms
	<i>Actuarial Schedules Required by Statements No. 25 and No. 27 of the Governmental Accounting Standards Board</i>
D-1	Schedule of Funding Progress
D-2	Schedule of Employer Contributions
D-3	Development of Annual Pension Cost and Net Pension Obligation
D-4	Required Supplementary Information

September 14, 2006

The Retirement Board  
Police Retirement System of  
Kansas City, Missouri

Dear Board Members:

Submitted in this report are the results of the Annual Actuarial Valuation of the assets, actuarial values, and contribution requirements associated with benefits provided by the Police Retirement System of Kansas City, Missouri.

The date of the valuation was April 30, 2006.

Valuation results, comments and conclusions are contained in Section A.

The valuation was based upon information concerning Retirement System benefits, financial transactions, and individual members, terminated members, retirants and beneficiaries. Data was checked for year-to-year consistency but was not otherwise audited by us. This information is summarized in Section B.

Descriptions of the actuarial cost methods and actuarial assumptions are contained in Section C, along with a glossary of technical terms.

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 we believe are reasonable.

Respectfully submitted,

Brian B. Murphy, F.S.A.

Mita D. Drazilov, A.S.A.

MDD:bd

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Valuation Results, Comments,  
and Recommendations

## **FINANCIAL OBJECTIVE**

The financial objective of the Retirement System is 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 citizens.

## **CONTRIBUTION RATES**

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

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

- (1) cover the actuarial present value of benefits assigned to the current year by the actuarial cost methods described in Section C (the normal cost); and
- (2) amortize 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).

Contribution requirements for the fiscal year beginning May 1, 2007 are shown on page A-2.

## CONTRIBUTIONS COMPUTED TO MEET THE FINANCIAL OBJECTIVE OF THE RETIREMENT SYSTEM

<u>Contributions for Fiscal Year Beginning May 1</u>	<u>Contributions Expressed as Percents of Payroll</u>	
	<u>2007</u>	<u>2006</u>
<b>Normal Cost</b>		
Age & service benefits	19.88 %	19.89 %
Death and disability benefits	3.31	3.30
Termination benefits		
Deferred age & service benefits	0.79	0.79
Refunds of member contributions	1.24	1.25
Supplemental retirement benefit	0.83	0.83
Assumed rate for administrative expenses	0.40	0.40
Total Normal Cost	<u>26.45</u>	<u>26.46</u>
<b>Amortization Payment</b>		
Scheduled amortization of UAAL*	13.10	13.15
<b>Total Required Contribution</b>	39.55	39.61
Member portion	10.55	10.55
City portion	29.00	29.06
<b>Total Reported Contribution</b>		30.25
Member portion		10.55
City portion#		19.70

\* *Unfunded Actuarial Accrued Liabilities.*

# *It was reported that the City is contributing 19.70% for the fiscal year beginning May 1, 2006.*

Unfunded actuarial accrued liabilities were amortized as a level percent of active member payroll. A description of the method may be found on page C-1.

Procedures for determining dollar contribution amounts are described on page A-3.

Comparative contribution amounts for prior fiscal years are shown on page A-5.

## **DETERMINING DOLLAR CONTRIBUTIONS**

For any period of time, the percent-of-payroll contribution rate needs to be converted to dollar amounts. We recommend one of the following procedures.

- (1) Contribute dollar amounts at the end of each payroll period which are equal to the City's required computed percent-of-payroll contribution rate of 29.00% shown on page A-2, multiplied by the covered active member payroll for the period. Adjustments should be made as necessary to exclude items of pay that are not covered compensation for Retirement System benefits and to include special payments that are covered compensation.
  
- (2) Contribute \$22,749,385 on October 31, 2007, based upon the required City contribution rate of 29.00%. This dollar amount was derived by multiplying the percent-of-payroll contribution requirement by the April 30, 2006 valuation payroll, projected to the fiscal year beginning May 1, 2007, using a 1.092 projection factor. If contributions are made on a later schedule, interest should be added at the rate of 0.65% per month.

These two methods are essentially equivalent, and will produce the same result in the long term.

## AMORTIZATION SCHEDULE FOR THE UNFUNDED ACCRUED LIABILITY

	Balances				2006/2007 Amortization	2007/2008 Amortization
	Date Created	Last Payment	Initial	Outstanding		
05/01/1998 Base	05/01/1998	FY 2022	\$ 60,092,542	\$ 63,601,419	\$ 5,139,164	\$ 5,370,426
05/01/1999 Base	05/01/1999	FY 2023	(23,794,584)	(25,249,006)	(1,947,304)	(2,034,933)
05/01/2000 Base	05/01/2000	FY 2024	(15,860,433)	(16,816,260)	(1,242,094)	(1,297,988)
05/01/2001 Base	05/01/2001	FY 2025	(6,685,610)	(7,061,460)	(501,030)	(523,576)
05/01/2002 Base	05/01/2002	FY 2026	12,470,529	13,085,971	894,317	934,561
05/01/2003 Base	05/01/2003	FY 2027	43,654,725	45,401,088	2,995,862	3,130,676
05/01/2004 Base	05/01/2004	FY 2029	36,731,553	40,352,105	2,498,227	2,610,647
05/01/2005 Base	05/01/2005	FY 2030	24,225,252	25,944,940	1,560,251	1,630,462
05/01/2006 Base	05/01/2006	FY 2031	391,606	<u>391,606</u>	<u>307,436</u>	<u>6,179</u>
<b>Total Unfunded Actuarial Accrued Liability</b>				<b>\$ 139,650,403</b>	<b>\$ 9,704,829</b>	<b>\$ 9,826,454</b>
Expected Contribution						
Shortfall in FY 2007	05/01/2006	FY 2031	6,907,172	6,907,172	<u>-</u>	<u>447,568</u>
<b>Total Amortization Payment Including Shortfall</b>					<b>\$ 9,704,829</b>	<b>\$ 10,274,022</b>
						<b>19.55 years</b>



## COMPUTED AND ACTUAL CITY CONTRIBUTIONS COMPARATIVE STATEMENT

Fiscal Year Beg. May 1	Valuation Date April 30	Projected Annual Payroll	Fiscal Year Contributions				
			as a % of Projected Pay		\$ Contributions		
			Annual Required Contrib.	Reported FY City Contrib.	Annual Required Contrib.	Projected FY City Contrib.	Actual Dollar Contrib.
1997	1997	\$48,173,740	19.42 %	20.60 %	\$ 9,355,956	\$ 9,923,790	\$ 9,978,462
1998	1998	49,872,090	19.81	20.60	9,880,286	10,273,651	10,318,583
1999	1999	51,963,858	17.65	20.60	9,172,029	10,704,555	10,789,963
2000	2000	57,791,028	18.66	20.60	10,785,784	11,904,952	11,392,871
2001	2001	57,505,238	18.85	19.70	10,837,294	11,328,532	11,312,754
2002	2002	59,228,848	19.55	19.70	11,579,240	11,668,083	12,017,801
2003	2003	65,234,614	23.12	19.70	15,082,243	12,851,219	-
2003@	2003	65,234,614	23.14	19.70	15,095,290	12,851,219	12,817,176
2004	2003	68,170,172	23.14	19.70	15,774,578	13,429,524	13,297,605
2005	2004	72,325,478	26.26	19.70	18,992,671	14,248,119	13,729,225
2006	2005	73,794,574	29.06	19.70	21,444,703	14,537,531	
2007	2006	78,446,156	29.00		22,749,385		

@ After changes in actuarial assumptions or methods.

## ACTUARIAL ACCRUED LIABILITIES & VALUATION ASSETS COMPARATIVE STATEMENT

Valuation Date April 30	Actuarial Accrued Liability (AAL)	Valuation Assets	Unfunded Actuarial Accrued Liability (UAAL)	Ratio of Present Assets to AAL	Ratio of UAAL to Annual Payroll
1997	\$ 456,218,854	\$ 388,984,781	\$ 67,234,073	85.3 %	140.0 %
1998	493,183,065	433,090,523	60,092,542	87.8	120.0
1999	521,600,003	484,396,958	37,203,045	92.9	72.0
2000	589,566,248	584,514,972	5,051,276	99.1	9.0
2001	615,291,156	600,051,893	15,239,263	97.5	27.0
2002	648,632,789	620,948,986	27,683,803	95.7	48.8
2003@	682,690,968	611,246,928	71,444,040	89.5	114.4
2004	712,273,616	603,418,620	108,854,996	84.7	164.4
2005	741,001,020	604,560,607	136,440,413	81.6	201.9
2006	775,271,985	635,621,582	139,650,403	82.0	194.4

@ After changes in actuarial assumptions or methods.

*The Ratio of Valuation Assets to AAL* is a traditional measure of a system's funding progress. Except in years when the system is amended or actuarial assumptions are revised, this ratio can be expected to move gradually toward 100%.

*The Ratio of UAAL to Valuation Payroll* is another relative index of condition. Actuarial unfunded liabilities represent debt, while active member payroll represents the system's capacity to collect contributions to pay toward debt. The lower the ratio, the greater the financial strength - and vice-versa.

## SHORT CONDITION TEST COMPARATIVE STATEMENT

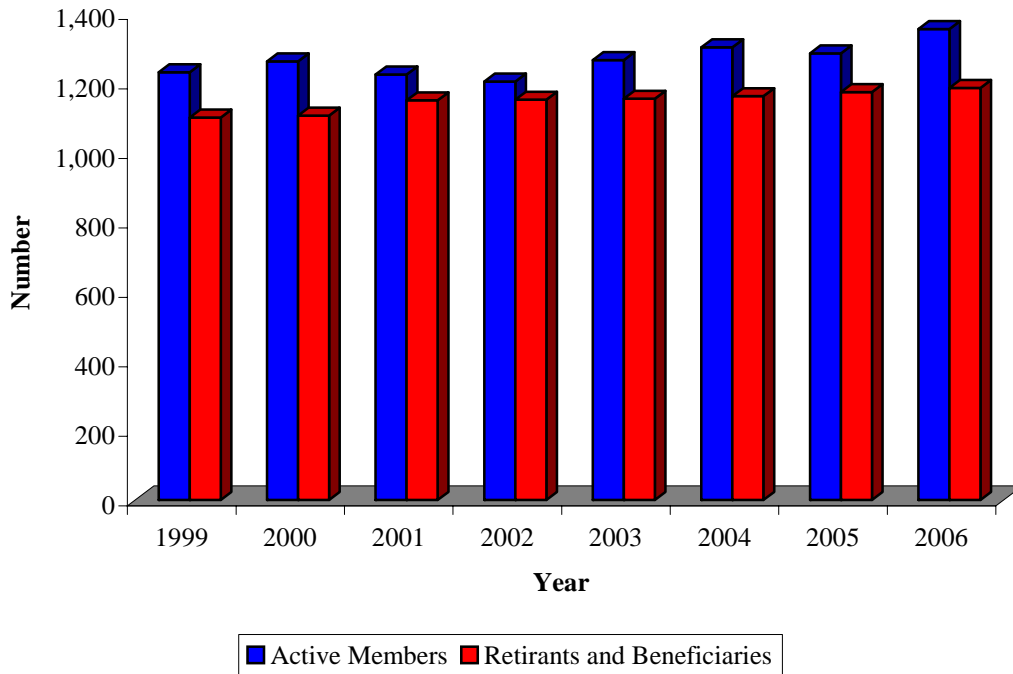
Valuation Date April 30	Entry Age Accrued Liabilities			Valuation Assets	Portion of Accrued Liabilities Covered by Assets		
	(1) Active Member Contributions	(2) Retirants and Beneficiaries	(3) Active Members (Employer Financed Portion)		(1)	(2)	(3)
2002	\$41,661,164	\$424,565,985	\$182,405,640	\$620,948,986	100 %	100 %	85 %
2003@	46,015,271	436,805,624	199,870,073	611,246,928	100	100	64
2004	50,340,747	448,521,694	213,411,175	603,418,620	100	100	49
2005	55,220,395	460,235,649	225,544,976	604,560,607	100	100	40
2006	59,717,930	476,677,326	238,876,729	635,621,582	100	100	42

@ After changes in actuarial assumptions or methods.

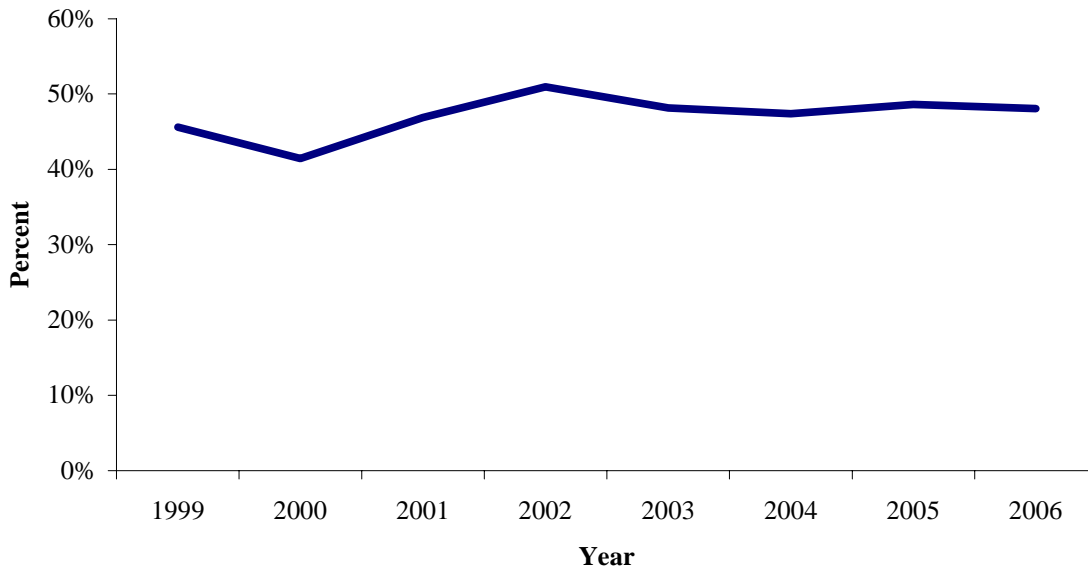
# MEMBERSHIP INFORMATION

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## Active and Retired Members



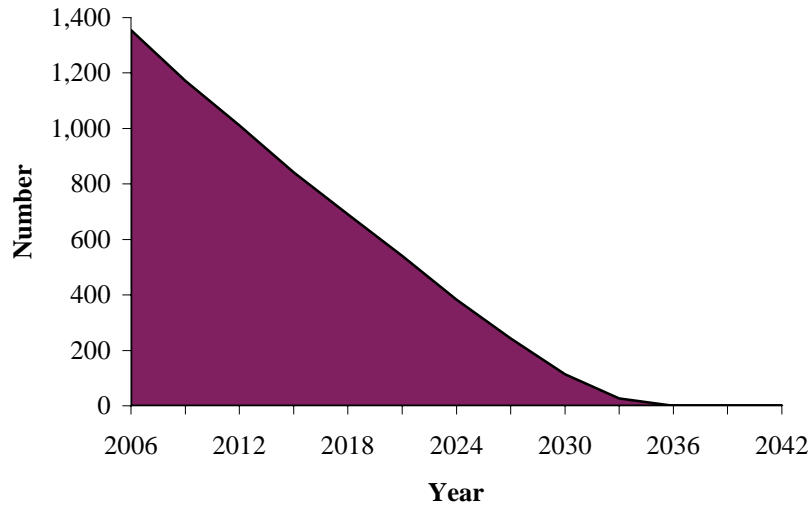
## Benefits as a Percent-of-Payroll



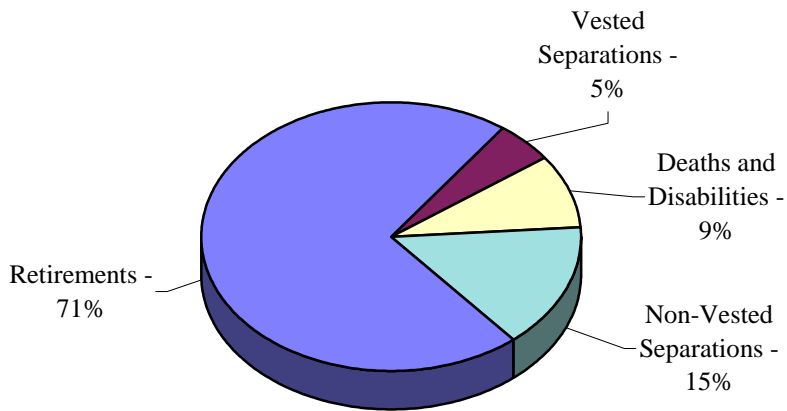
# EXPECTED DEVELOPMENT OF PRESENT POPULATION

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## Closed Group Population Projection



## Expected Terminations from Active Employment for Current Active Members



## COMMENTS, RECOMMENDATIONS, AND CONCLUSION

**Comment A:** Based on the results of this valuation and the current procedure of amortizing the unfunded actuarial accrued liability, the computed employer contribution rate is 29.00% of pay for the fiscal year beginning May 1, 2007, a small decrease from 29.06% last year. This decrease is related to the emerging effects of investment gains offset by the fact that the City is not scheduled to contribute at the recommended level for the fiscal year beginning May 1, 2006. For the long term well being of the retirement system, it is important that actuarially required contributions be received.

**Comment B:** Board Policy #018 as amended March 14, 2006 provides the following definition of actuarial soundness:

A retirement plan shall be considered actuarially sound for purposes described in the statutes, provided that at least one of the three following conditions is met:

- 1) The plan's funded ratio (actuarial value of assets/actuarial accrued liability) measured in accordance with GASB Statement 25, rounded to the nearest whole percentage, is 75% or greater.
- 2) For each of the three most recently completed plan years, the plan has received a combination of employer and employee contributions that in total are, rounded to the nearest whole percentage, 90% or greater of the plan's required contributions (defined to be the sum of the Annual Required Contribution as defined by GASB Statement 25 and any required employee contributions).
- 3) For at least three out of the last five completed plan years, the plan has received employer contributions that equal or exceed the plan's Annual Required Contribution as defined by GASB Statement 25.

Based upon the policy and the results of this valuation, the plan will be able to pay a COLA.

## **COMMENTS, RECOMMENDATIONS, AND CONCLUSION (CONTINUED)**

**Comment C:** As of April 30, 2006, actuarial accrued liabilities were \$775,271,985 while valuation assets were \$635,621,582, resulting in a funded ratio of 82%. The funded ratio may drop next year if City contributions continue to fall short of the required rate. A declining funded ratio indicates a weakening of the System's financial position, which could among other things, result in an inability to pay future cost-of-living adjustments (COLAs) and in the long term an inability to pay basic benefits.

**Comment D:** On a market value basis, the System earned 18.1% return on investments this year. The asset smoothing method smoothes gains and losses over 4-year periods. The market value of assets currently exceeds the funding value of assets by approximately 9%. This allows for some cushion against potential adverse market returns in the future or will provide downward pressure on future computed employer contribution rates if future market returns are at or above assumed levels.

**Conclusion:** Although City contribution rates have been above the computed rates in some prior years, the system is currently being affected by City contributions that are below the computed rate. Two things are important for the continued well being of this system. First, investment return needs to be at or above assumed levels. While the system cannot control investment return, the importance of a sound, well executed investment program cannot be overemphasized. Second, a plan should be instituted for receiving contributions at the levels recommended in the actuarial valuation. Absent such a plan, the day will come when COLAs cannot be paid or when benefit levels will need to be reconsidered.

**DEVELOPMENT OF UNFUNDED ACTUARIAL ACCRUED LIABILITIES**  
**APRIL 30, 2006**

Actuarial Present Value	(1) Total Actuarial Present Value	Allocation by Entry Age	
		(2) Portion Covered By Future Normal Cost Contributions	(3) Actuarial Accrued Liabilities (1)-(2)
Allowances currently being paid to current retirees and beneficiaries:			
Pension	\$418,399,832	\$ -	\$418,399,832
Supplemental Retirement Benefit	58,277,494	-	58,277,494
Allowances likely to be paid to members with deferred benefits:			
Pension	1,513,090	-	1,513,090
Supplemental Retirement Benefit	317,117	-	317,117
Age and service allowances due to retirement or vested withdrawals based on service rendered before and likely to be rendered after the valuation date	422,964,593	161,538,271	261,426,322
Disability allowances likely to be paid present active members who become permanently disabled	36,815,248	21,521,862	15,293,386
Survivor benefits likely to be paid to spouses and children of present active members who die before retiring	7,187,708	4,740,283	2,447,425
Return of member contributions	6,622,503	9,547,309	(2,924,806)
Supplemental retirement benefit likely to be paid to present active members	27,183,881	6,661,756	20,522,125
<b>Total</b>	<b>\$979,281,466</b>	<b>\$204,009,481</b>	<b>\$775,271,985</b>
Actuarial Value of Assets			635,621,582
<b>Unfunded Actuarial Accrued Liability</b>			<b>\$139,650,403</b>

## ACTUARIAL BALANCE SHEET

<b>Present Resources and Expected Future Resources</b>	<b>Measured on April 30</b>	
	<b>2006</b>	<b>2005</b>
A. Valuation assets:		
1. Net assets from system financial statements (market value)	\$ 692,539,940	\$ 604,107,701
2. Valuation adjustment	(56,918,358)	452,906
3. Valuation assets	635,621,582	604,560,607
B. Actuarial present value of expected future employer contributions:		
1. For normal costs	124,566,271	117,609,562
2. For unfunded actuarial accrued liabilities	139,650,403	136,440,413
3. Total	264,216,674	254,049,975
C. Actuarial present value of expected future member contributions	82,573,977	77,987,754
D. Total actuarial present value of present and expected future resources	\$ 982,412,233	\$ 936,598,336
<b>Actuarial Present Value of Expected Future Benefit Payments and Reserves</b>		
A. To retirants and beneficiaries	\$ 476,677,326	\$ 460,235,649
B. To vested terminated members	1,830,207	2,004,259
C. To present active members:		
1. Allocated to service rendered prior to valuation date	296,764,452	278,761,112
2. Allocated to service likely to be rendered after valuation date	204,009,481	192,640,434
3. Total	500,773,933	471,401,546
D. Total actuarial present value of expected future benefit payments	979,281,466	933,641,454
E. Present value of assumed future administrative expenses	3,130,767	2,956,882
F. Total actuarial present value of expected future benefit payments and reserves	\$ 982,412,233	\$ 936,598,336



## DERIVATION OF ACTUARIAL GAIN (LOSS)

The actuarial gains or losses realized in the operation of the Retirement System provide an experience test. Actual experience will never (except by coincidence) coincide exactly with assumed experience. It is expected that gains and losses will cancel each other over a period of years, but sizable year-to-year fluctuations are common. Details on the derivation of the actuarial gain (loss) is shown below, along with a year-by-year comparative schedule.

<b>Measurements for Fiscal Year Ended April 30</b>	<b><u>2006</u></b>	<b><u>2005</u></b>
(1) UAAL* at start of year	\$136,440,413	\$108,854,996
(2) Employer normal cost from last valuation	10,481,022	10,285,613
(3) Actual employer contributions	13,729,225	13,297,605
(4) Interest accrual: $(1) \times 0.0775 + [(2) - (3)] / 2 \times 0.0775$	10,448,264	8,319,548
(5) Expected UAAL before changes: $(1) + (2) - (3) + (4)$	143,640,474	114,162,552
(6) Change from benefit changes	none	none
(7) Change from revised actuarial assumptions and miscellaneous	none	none
(8) Expected UAAL after changes: $(5) + (6) + (7)$	143,640,474	114,162,552
(9) Actual UAAL at end of year	139,650,403	136,440,413
(10) Gain (loss) $(8) - (9)$	3,990,071	(22,277,861)
(11) Gain (loss) as percent of actuarial accrued liabilities at start of year (\$741,001,020)	0.5%	(3.1%)

\* *Unfunded actuarial accrued liability (UAAL).*

<b>Year Ended April 30</b>	<b>Actuarial Gain (Loss) As % of Beginning Accrued Liabilities</b>
2002	(2.0) %
2003	(6.5)
2004	(5.1)
2005	(3.1)
2006	0.5

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**Summary of Benefit Provisions and  
Valuation Data Submitted by the  
Retirement System**

**BRIEF SUMMARY OF BENEFIT CONDITIONS EVALUATED  
(APRIL 30, 2006)**

**Eligibility**

**Amount**

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**SERVICE RETIREMENT**

Age 60 with 10 or more years of service or 25 years of service regardless of age. Members must retire at the completion of 30 years of creditable service, or after attaining age 60, whichever occurs first. The Board of Police Commissioners may, however, with the recommendation of the Chief of Police, permit a member to continue in service until age 65, at which time the member must retire.

For a member retiring prior to August 28, 2000, straight life pension equals 2.0% of Final Compensation times years of service, subject to a maximum benefit of 60% of Final Compensation. For a member retiring on or after August 28, 2000, straight life pension equals 2.5% of Final Compensation times years of service, subject to a maximum benefit of 75% of Final Compensation. Final Compensation is the average annual compensation during the two years of service with the highest salary, whether consecutive or otherwise, or during the entire period of service if less than two years. Pensions are payable monthly at one-twelfth of the annual rate.

**DEFERRED RETIREMENT**

15 or more years of creditable service.

Computed as service retirement but based upon service, Final Compensation and benefit in effect at termination. Benefit begins at age 55.

**DEATH AFTER RETIREMENT SURVIVOR'S PENSION**

Payable to a surviving spouse, if any, upon the death of a retired member who was receiving a straight life pension. Benefit is payable until death.

Spouse's pension equals 80% of the straight life pension the deceased retirant was receiving. The 80% benefit amount calculated under this provision is in addition to the Supplemental Retirement Benefit.

Payable at death.

A funeral benefit of \$1,000.

**BRIEF SUMMARY OF BENEFIT CONDITIONS EVALUATED  
(CONTINUED)  
(APRIL 30, 2006)**

**Eligibility**

**Amount**

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**NON-DUTY DEATH IN SERVICE SURVIVOR'S PENSION**

Payable to a surviving spouse, if any, upon death of a member. Benefit is payable until death. If there is no qualified surviving spouse, payable to qualified child or children in equal shares until age 18.	40% of Final Compensation.
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Payable to each child under age 18, if any, until the child attains age 18, or, if mentally or physically incapacitated from wage earnings, until the incapacity no longer exists, or age 21 if a full time student.	\$600 annually.
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Payable at death.	A funeral benefit of \$1,000.
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**DUTY DEATH IN SERVICE SURVIVOR'S PENSION**

Payable to the surviving spouse, or if there is no surviving spouse, to children under age 21 or to children over age 21 if mentally or physically incapacitated, of a member who died in the line of duty.	In addition to the benefits payable under non-duty death, a lump sum of \$50,000.
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**NON-DUTY DISABILITY**

Payable to a member with 10 or more years of service who has become permanently unable to perform the full and unrestricted duties of a police officer as established by the Board of Police Commissioners.	2.5% of Final Compensation multiplied by years of creditable service payable for the remainder of the officer's life, or as long as the permanent disability continues.
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**DUTY DISABILITY**

Payable to a member as a result of an accident or disease occurring in the line of duty who has become permanently unable to perform the full and unrestricted duties of a police officer as established by the Board of Police Commissioners.	75% of Final Compensation payable for the remainder of the officer's life, or as long as the permanent disability continues. The pension may be subject to offset or reduction by amounts paid or payable under any Workers' Compensation law.
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**BRIEF SUMMARY OF BENEFIT CONDITIONS EVALUATED  
(CONTINUED)  
(APRIL 30, 2006)**

**Eligibility**

**Amount**

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**MINIMUM PENSION BENEFIT**

Any member who retired entitled to a pension benefit and who either has at least 25 years of creditable service or is retired as a result of an injury or illness occurring in the line of duty or course of employment. A surviving spouse qualifies for the minimum monthly benefit if the officer had at least 25 years of creditable service or was retired or died as a result of an injury or illness occurring in the line of duty or course of employment.

Minimum monthly benefit of not less than \$600 in combined pension benefit and cost-of-living adjustments. The minimum monthly pension benefit is in addition to the Supplemental Retirement Benefit.

**POST-RETIREMENT BENEFIT INCREASES**

Any member may receive during each year, in addition to the officer's base pension, a cost of living adjustment in an amount not to exceed 3% of the officer's base pension. Base pension is the pension computed under the provisions of the law at the date of retirement, without regard to the cost of living adjustment. The cost of living adjustment also applies to benefits being paid to a surviving spouse. The adjustment is normally effective with the May 30<sup>th</sup> benefit payment.

**MEMBER CONTRIBUTIONS**

10.55% of compensation. No contributions are required for members after they retire or complete 30 years of service. Effective 8/31/03, member contributions are deducted on a pre-tax basis.

**SUPPLEMENTAL RETIREMENT BENEFIT**

Current and future retired and disabled members and their surviving spouses are eligible to receive \$420 per month in addition to pension benefits.

**OPTIONAL FORM OF BENEFIT PAYMENT**

Members retiring with at least 26 or more years of service may elect to take a portion of their benefit as a lump-sum distribution (PLOP). Members electing PLOP will receive an actuarially reduced monthly benefit for their lifetime.

## DERIVATION OF FUNDING VALUE OF ASSETS

Valuation Date April 30,	2004	2005	2006	2007	2008	2009
A. Funding Value Beginning of Year	\$611,246,928	\$603,418,620	\$604,560,607			
B. Market Value End of Year	577,093,152	604,107,701	692,539,940			
C. Market Value Beginning of Year	502,971,920	577,093,152	604,107,701			
D. Non-Investment Net Cash Flow	(17,191,993)	(18,323,596)	(19,195,028)			
E. Investment Return:						
E1. Market Total: B-C-D	91,313,225	45,338,145	107,627,267			
E2. Assumed Rate	7.75%	7.75%	7.75%			
E3. Amount for Immediate Recognition	46,713,734	46,063,736	46,118,892			
E4. Amount for Phased In Recognition	44,599,491	(725,591)	61,508,375			
F. Phased-In Recognition of Investment Return:						
F1. Current Year: 0.25 x E4	11,149,873	(181,398)	15,377,094			
F2. First Prior Year	(22,208,458)	11,149,873	(181,398)	\$15,377,094		
F3. Second Prior Year	(15,358,170)	(22,208,458)	11,149,873	(181,398)	\$15,377,094	
F4. Third Prior Year	<u>(10,933,294)</u>	<u>(15,358,170)</u>	<u>(22,208,458)</u>	<u>11,149,872</u>	<u>(181,397)</u>	<u>\$15,377,093</u>
F5. Total Recognized Phase-in	(37,350,049)	(26,598,153)	4,137,111	26,345,568	15,195,697	15,377,093
G. Funding Value End of Year: A+D+E3+F5	603,418,620	604,560,607	635,621,582			
H. Difference Between Funding & Market Values	26,325,468	452,906	(56,918,358)			
I. Recognized Rate of Return	1.6%	3.3%	8.4%			
J. Market Rate of Return	18.5%	8.0%	18.1%			
K. Ratio of Funding Value to Market Value	104.6%	100.1%	91.8%			

*Effective with the 2004 valuation, the funding value of assets is constrained to fall within a corridor of 80% to 120% of market value. The Funding Value of Assets recognizes assumed investment return (line E3) fully each year. Differences between actual and assumed investment return (line E4) are phased in over a closed 4-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. If assumed rates are exactly realized for 3 consecutive years, funding value will become equal to market value.*

**SUMMARY OF CURRENT ASSET INFORMATION  
REPORTED FOR VALUATION**

	<b>Market Value</b>	
	<b>April 30, 2006</b>	<b>April 30, 2005</b>
Cash & Equivalents	\$ 23,117,140	\$ 24,526,561
Receivables	4,099,559	4,027,003
Stocks: Common Corporate	333,593,252	286,765,762
Foreign	110,809,454	86,702,482
Bonds: U.S Government	93,898,773	80,484,393
Corporate	76,962,619	94,999,731
Municipal/Provincial	400,000	899,870
Asset Backed Securities	8,356,125	8,292,203
Real Estate	16,505,915	1,668,622
Mortgages	24,947,174	16,514,356
Private Equity	664,118	0
Building and Other Property Used in Plan Operations	6,488	216
Total Assets	\$693,360,617	\$604,881,199
Accounts Payable	(820,677)	(773,498)
Net Assets Available for Benefits	\$692,539,940	\$604,107,701

**Additions and Deductions**

	<b>Year Ended April 30</b>	
	<b>2006</b>	<b>2005</b>
Market Value - Balance - Beginning of Year	\$604,107,701	\$577,093,152
Additions:		
Employees' Contributions	7,472,503	7,212,990
Employer Contributions	13,729,225	13,297,605
Investment Return	110,480,491	47,898,272
Miscellaneous	0	0
Deductions:		
Retirement Benefit Payments	39,428,788	37,741,187
Death Benefit Payments	15,000	13,000
Refunds of Member Contributions	457,355	609,138
Investment Expenses	2,853,224	2,560,127
Administrative Expenses	495,613	470,866
Market Value - Balance - End of Year	\$692,539,940	\$604,107,701

## ASSET INFORMATION REPORTED FOR VALUATION COMPARATIVE STATEMENT

Year Ended April 30	Assets BOY	Additions				Deductions					Assets Year-End
		Employee Contrib.	Employer Contrib.	Investment Return	Misc. Income	Ret. Benefits	Death Benefits	Contrib. Refunds	Inv. Exp.	Admin. Exp.	
2001	\$638,358,684	\$5,958,321	\$11,392,871	\$(26,895,447)	\$0	\$30,446,870	\$72,066	\$514,571	\$2,385,480	\$541,539	\$594,853,903
2002	594,853,903	6,158,020	11,312,754	(13,129,283)	0	33,374,972	71,000	1,075,649	2,469,079	449,532	561,755,162
2003	561,755,162	6,551,628	12,017,801	(39,270,821)	0	34,867,077	13,000	618,418	2,106,780	476,575	502,971,920
2004	502,971,920	6,972,986	12,817,176	93,730,555	0	36,039,330	22,000	442,327	2,417,330	478,498	577,093,152
2005	577,093,152	7,212,990	13,297,605	47,898,272	0	37,741,187	13,000	609,138	2,560,127	470,866	604,107,701
2006	604,107,701	7,472,503	13,729,225	110,480,491	0	39,428,788	15,000	457,355	2,853,224	495,613	692,539,940



## RETIRANTS AND BENEFICIARIES ADDED TO AND REMOVED FROM ROLLS COMPARATIVE STATEMENT

Year Ended April 30	Added to Rolls		Removed from Rolls		Rolls End of Year		% Incr. Annual Benefits	Average Annual Benefit	Annual Benefits as a % of Active Payroll	Number of Active Members per Retired Members
	No.	Annual Benefits	Post-Ret. Increases	No.	Annual Benefits	No.				
2001						1,132	\$26,964,694	\$23,820	50.4 %	1.1
2002	51	\$1,571,767	\$711,249	31	\$355,257	1,152	28,892,453	25,080	71.0	1.0
2003	29	922,116	683,715	27	445,922	1,154	30,052,362	26,042	48.1	1.1
2004	38	1,214,976	697,043	30	582,329	1,162	31,382,052	27,007	47.4	1.1
2005	36	1,194,013	707,544	24	420,756	1,174	32,862,853	27,992	48.6	1.1
2006	37	1,317,604	750,987	25	407,332	1,186	34,524,112	29,110	48.1	1.1

\* Does not include supplemental retirement benefits.

**RETIRANTS AND BENEFICIARIES - APRIL 30, 2006**  
**TABULATED BY ATTAINED AGES \***

Attained Ages	Age & Service Retirants		Disability Retirants		Survivor Beneficiaries	
	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits
0-4					1	\$ 6,512
5-9					4	36,926
10-14					6	33,184
15-19					12	26,640
20-24					1	600
25-29			1	\$ 35,936		
30-34			5	160,218	1	29,844
35-39			6	242,598	1	6,889
40-44	1	\$ 42,089	11	345,454	1	23,535
45-49	6	254,877	12	381,698	6	153,693
50-54	45	1,915,409	16	509,170	11	199,481
55-59	201	7,668,202	46	1,344,434	17	330,005
60-64	174	6,097,677	31	826,061	18	407,301
65-69	164	5,285,483	17	398,280	28	582,951
70-74	102	2,909,343	13	312,416	33	559,017
75-79	65	1,569,533	7	142,297	33	481,285
80-84	27	520,706	1	15,081	29	332,728
85-89	8	133,001			15	131,163
90 & Over					10	72,395
<b>Totals</b>	<b>793</b>	<b>\$26,396,320</b>	<b>166</b>	<b>\$4,713,643</b>	<b>227</b>	<b>\$3,414,149</b>

\* *Benefit amounts do not include supplemental retirement benefits.*

**VESTED TERMINATED MEMBERS - APRIL 30, 2006**  
**TABULATED BY ATTAINED AGES**

<b>Attained Ages</b>	<b>No.</b>	<b>Annual Benefits*</b>
40-44	4	102,183
50-54	4	71,657
55-59	1	12,962
<b>Totals</b>	<b>9</b>	<b>\$186,802</b>

*\* Benefit amounts do not include supplemental retirement benefits.*

**ACTIVE MEMBERS INCLUDED IN APRIL 30, 2006 VALUATION  
COMPARATIVE SCHEDULE**

Valuation Date April 30	Active Members	Annual Payroll	Average Age	Average Service	Pay	% Inc. Avg. Pay
1999	1,231	\$51,963,858	35.6 yrs.	9.6 yrs.	\$42,213	
2000	1,262	57,791,028	35.9	9.8	45,793	8.5 %
2001	1,224	57,505,238	36.0	9.8	46,981	2.6
2001 *	1,224	53,489,585	36.0	9.8	43,701	
2002	1,204	56,678,323	36.1	9.9	47,075	7.7
2003	1,266	62,425,468	36.2	9.9	49,309	4.7
2004	1,303	66,230,606	36.4	10.1	50,829	3.1
2005	1,285	67,575,902	37.2	10.7	52,588	3.5
2006	1,355	71,835,495	37.2	10.6	53,015	0.8

\* Payroll reported in data. For valuation years 2001 and prior, valuation payroll includes projected salary increases for year following valuation. For valuation years 2002 and greater, valuation payroll is payroll reported in data after annualization of pays for new hires.

**ADDITIONS TO AND REMOVALS FROM ACTIVE MEMBERSHIP  
ACTUAL AND EXPECTED NUMBERS**

Year Ended April 30	Number Added During Year		Terminations During Year								Active Members End of Year	
	A	E	Normal Retirement		Disability Retirement		Died-In Service		Other Terminations			
			A	E	A	E	A	E	A	E		
2001												1,224
2002	72	92	36	29.9	3	5.0	2	1.2	51	31.9		1,204
2003	114	52	12	17.1	5	5.0	1	1.2	34	31.3		1,266
2004	86	49	16	20.9	9	3.1	0	1.0	24	38.4		1,303
2005	33	51	13	19.1	5	3.4	1	1.0	32	38.9		1,285
2006	119	49	17	24.2	9	3.6	1	1.1	22	36.1		1,355
5-Year Totals	424	293	94	111.2	31	20.1	5	5.5	163	176.6		

*A represents actual number.*

*E represents number based on assumptions outlined in Section C.*

**ACTIVE MEMBERS – APRIL 30, 2006**  
**ATTAINED AGE AND YEARS OF SERVICE**

Attained Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Annual Payroll
Under 20									
20-24	37							37	\$ 1,368,360
25-29	193	19						212	8,675,209
30-34	94	154	33					281	13,304,085
35-39	49	103	153	32				337	18,315,068
40-44	12	27	58	119	22			238	14,253,039
45-49	3	6	11	52	51	11		134	8,314,061
50-54		4	3	26	27	35	1	96	6,369,042
55-59			2	3	5	8		18	1,073,275
60-64						2		2	163,356
<b>Totals</b>	<b>388</b>	<b>313</b>	<b>260</b>	<b>232</b>	<b>105</b>	<b>56</b>	<b>1</b>	<b>1,355</b>	<b>\$ 71,835,495</b>

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

Age: 37.2 years  
Service: 10.6 years  
Annual Pay: \$53,015

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Financial Principles,  
Actuarial Valuation Process,  
Actuarial Cost Methods,  
Actuarial Assumptions and  
Definitions of Technical Terms

## **BASIC FINANCIAL PRINCIPLES AND OPERATION OF THE RETIREMENT SYSTEM**

***Benefit Promises Made Which Must Be Paid For.*** A retirement program is an orderly means of handing out, keeping track of, and financing pension promises to a group of employees. As each member of the retirement program acquires a unit of service credit the member is, in effect, handed an "IOU" which reads: "The Police Retirement System of Kansas City, Missouri 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?

A Retirement System meets this requirement by having as its ***financial objective the establishment and receipt of 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 present value of future benefits assigned to 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).



The accumulation of invested assets *is a by-product of level percent-of-payroll contributions, not the objective*. Investment income becomes the 3rd major contributor to the retirement program, and the amount is directly related to the amount of contributions and investment performance.

If contributions to the retirement program 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 programs must operate:

$$B = C + I - E$$

The aggregate amount of **B**enefit payments to any group of members and their beneficiaries cannot exceed the sum of:

The aggregate amount of **C**ontributions received on behalf of the group

. . . plus . . .

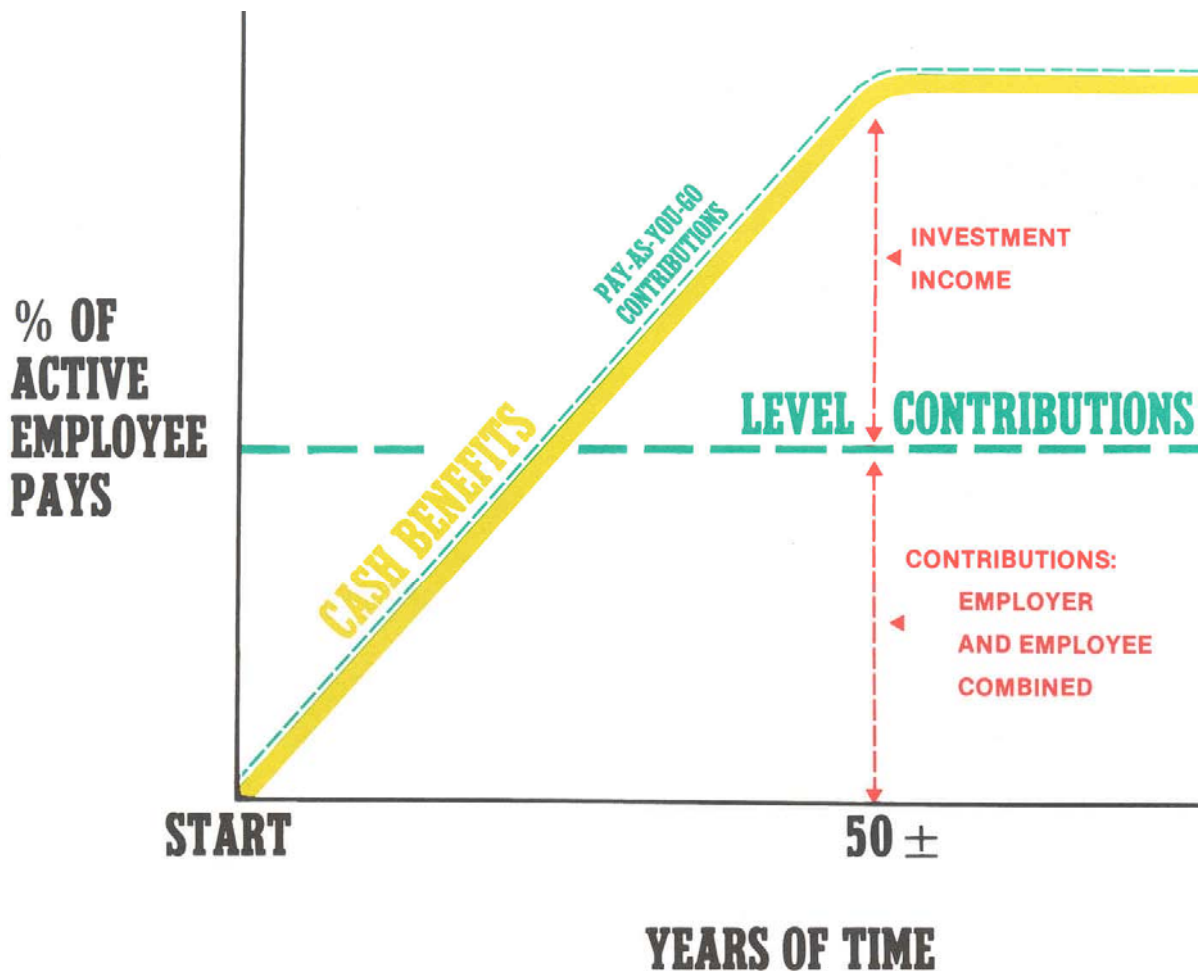
**I**nvestment earnings on contributions received and not required for immediate cash payments of benefits

. . . minus . . .

The **E**xpenses of operating the program.

There are retirement programs designed to defer the bulk of contributions far into the future. The present contribution rate for such systems is *artificially low*. The fact that the contribution rate is destined to increase relentlessly to a much higher level, is often ignored.

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



**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

## THE ACTUARIAL VALUATION PROCESS

*The financing diagram* on the previous page shows the relationship between the two fundamentally different philosophies of paying for retirement benefits: the method where contributions match cash benefit payments (or barely exceed cash benefit payments, as in the Federal Social Security program) which is an *increasing contribution method*; and the *level contribution method* which equalizes contributions between the generations.

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*The actuarial valuation* is the mathematical process by which the level contribution rate is determined, and the flow of activity constituting the valuation may be summarized as follows:

- A. ***Covered Person Data***, furnished by plan administrator.
  - Retired lives now receiving benefits
  - Former employees with vested benefits not yet payable
  - Active employees
  
- B. + ***Asset data*** (cash & investments), furnished by plan administrator
  
- C. + ***Assumptions concerning future financial experience in various risk areas***, which assumptions are established by the Retirement Board after consulting with the actuary
  
- D. + ***The funding method*** for employer contributions (the long-term, planned pattern for employer contributions)
  
- E. + ***Mathematically combining the assumptions, the funding method, and the data***
  
- F. = Determination of:
  - Plan financial position
  
  - and/or New Employer Contribution Rate

## ACTUARIAL COST METHODS USED FOR THE VALUATION

*Age and Service Benefits, Death and Disability Benefits.* Normal cost and the allocation of actuarial present values between service rendered before and after the valuation date were determined using an individual entry-age actuarial cost method having the following characteristics:

- (i) the annual normal costs for each individual active member, payable from the member's date of employment to the member's projected date of retirement, are sufficient to accumulate the actuarial present value of the member's future service benefit at time of retirement;
- (ii) each annual normal cost is a constant percentage of the member's year-by-year projected covered pay.

*Amortization of Unfunded Actuarial Accrued Liabilities.* Unfunded actuarial accrued liabilities were amortized by level percent-of-payroll contributions (principal and interest combined) over a closed initial period of 24 years. Beginning in 1998, a new basis is created as of each valuation date. The single equivalent amortization period is 19.55 years.

Active member payroll was assumed to increase 4.5% a year for the purpose of determining the level percent contributions.

## ACTUARIAL ASSUMPTIONS IN THE VALUATION PROCESS

The actuary calculates contribution requirements and actuarial present values for a retirement system by applying actuarial assumptions to the benefit provisions and people information of the system, using the actuarial cost methods described on page C-5.

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

- (i) long-term rates of investment return to be generated by the assets of the system
- (ii) patterns of pay increases to members
- (iii) rates of mortality among members, retirants and beneficiaries
- (iv) rates of withdrawal of active members
- (v) rates of disability among active members
- (vi) the age patterns of actual retirements

In making a valuation, the actuary calculates the monetary effect of each assumption 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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The employer contribution rate has been computed to remain level from year-to-year so long as benefits and the basic experience and make-up of members do not change. Examples of favorable experience, which would tend to reduce the employer contribution rate are:

- (1) Investment returns in excess of 7.75 percent per year.
- (2) Member non-vested terminations at a higher rate than outlined on page C-11.
- (3) Mortality among retirants and beneficiaries at a higher rate than indicated by the 1983 Group Annuity Mortality Table.

Examples of unfavorable experience, which would tend to increase the employer contribution rate are:

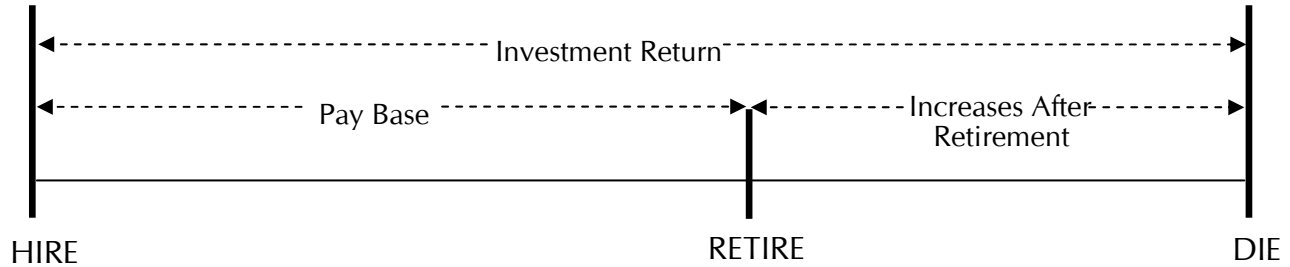
- (1) Pay increases in excess of the rates outlined on page C-9.
- (2) An acceleration in the rate of retirement from the rates outlined on page C-12.
- (3) A pattern of hiring employees at older ages than in the past.

---

Actual experience of the system will not coincide exactly with assumed experience, regardless of the choice of the assumptions, or the skill of the actuary or the precision of the calculations. 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 one or more of the assumptions is modified to reflect experience trends (but not random or temporary year-to-year fluctuations).

## Relationship of Economic Assumptions In Computing Contributions to a Retirement System



### Investment Return

An increase in this assumption reduces computed contributions. The assumption operates over all parts of an employee's lifetime.

### Pay Base

An increase in this assumption increases computed contributions. However, a 1% increase in this assumption, coupled with a 1% increase in Investment Return reduces computed contributions. This is because the Pay Base assumption operates only over an employee's working lifetime, while the Investment Return assumption operates over the employee's entire lifetime, and therefore has a greater effect.

### Increases After Retirement

An increase in this element increases computed contributions.

---

If Investment Return, Pay Base, and Increases After Retirement are each increased by equal amounts, computed contributions remain the same (except in plans using Final Average Pay as a factor in computing benefits; the multi-year average used for Final Average Pay causes computed contributions to decrease slightly).

If Investment Return and Pay Base are increased by equal amounts, with no change in Increases After Retirement, computed contributions decrease - sometimes significantly. The decreases represent the projected devaluation of an employee's benefits following retirement.

## ACTUARIAL ASSUMPTIONS USED FOR THE VALUATION

The assumptions and the methods comply with the requirements of Statement No. 25 of the Governmental Accounting Standards Board. The April 30, 2006 actuarial valuation includes assumptions and methods resulting from the experience study covering the 5-year period from May 1, 1997 to April 30, 2002.

### Economic Assumptions

*The investment return rate* used in making the valuations was 7.75% per year, compounded annually. The real rate of return is defined to be the portion of total investment return which is more than the wage inflation rate. Considering other financial assumptions, the 7.75% investment return rate translates to an assumed real rate of return of 3.25%. In order to assume a 3.25% real return over wage growth, it would be necessary to realize about a 4.25% real return over price inflation, after accounting for differences between wage increases and price increases.

*Pay increase assumptions* for individual active members are shown below. Part of the assumed increase at each age is for merit and/or seniority, and the other 4.5% recognizes changes in wage levels due to broad economic effects, including inflation and real wage growth.

Sample Ages	Annual Rate of Pay Increase for Sample Ages		
	Base (Economic)	Merit and Longevity	Total
20	4.5%	4.4%	8.9%
25	4.5%	3.8%	8.3%
30	4.5%	3.3%	7.8%
35	4.5%	2.8%	7.3%
40	4.5%	1.6%	6.1%
45	4.5%	0.7%	5.2%
50	4.5%	0.5%	5.0%
55	4.5%	0.5%	5.0%
60	4.5%	0.5%	5.0%

*Price inflation* of 3.5% per year would be consistent with the above assumptions. (This assumption is not utilized in the valuation process.)

*The active member payroll* is assumed to increase 4.5% annually, which is the portion of the individual pay increase assumptions attributable to broad economic effects.

*The number of active members* is assumed to continue at the present number.



## Non-Economic Assumptions

**Mortality Tables.** For healthy lives, the 1983 Group Annuity Mortality Table, set back 0 years for males and 0 years for females. Male and female officers still in employment are assumed to be subject to 75% of the previously described mortality tables. Sample values follow:

Sample Ages	Actuarial Present Value of \$1 Monthly for Life		Future Life Expectancy (years)	
	Male	Female	Male	Female
50	\$135.06	\$143.84	29.18	34.92
55	127.14	137.81	24.82	30.24
60	117.18	129.90	20.64	25.67
65	104.97	119.83	16.69	21.29
70	91.48	107.29	13.18	17.13
75	77.33	92.89	10.15	13.37
80	63.28	78.10	7.64	10.20

For disabled lives, the 1983 Group Annuity Mortality Table, set forward 10 years for males and 10 years for females was used. Sample values follow:

Sample Ages	Actuarial Present Value of \$1 Monthly for Life		Future Life Expectancy (years)	
	Male	Female	Male	Female
50	\$117.18	\$129.90	20.64	25.67
55	104.97	119.83	16.69	21.29
60	91.48	107.29	13.18	17.13
65	77.33	92.89	10.15	13.37
70	63.28	78.10	7.64	10.20
75	51.01	63.62	5.73	7.58
80	40.59	49.36	4.28	5.40

These assumptions are used to measure the probabilities of members dying before retirement and the probabilities of each benefit payment being made after retirement.

It was assumed that 20% of deaths-in-service would be duty related.

**Rates of separation from active membership.** The 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.

<b>Sample Ages</b>	<b>% of Active Members Separating within Next Year</b>	
	<b>Male</b>	<b>Female</b>
25	6.4%	6.7%
30	4.5%	5.6%
35	2.8%	4.2%
40	2.0%	2.0%
45	1.1%	0.5%
50	0.7%	0.0%

**Rates of Disability.** These assumptions represent the probabilities of active members becoming disabled. It was assumed that 55% of disabilities would be duty related.

<b>Sample Ages</b>	<b>Percent Becoming Disabled within Next Year</b>	
	<b>Male</b>	<b>Female</b>
30	0.000%	0.000%
35	0.240%	0.480%
40	0.320%	0.640%
45	0.336%	0.672%
50	0.584%	1.168%
55	1.120%	2.240%
60	1.984%	3.968%

**Rates of Retirement.** These rates are used to measure the probabilities of an eligible member retiring during the next year.

<b>Active Members Retiring Within Next Year</b>	
<b>Years of Service</b>	<b>Percent Retiring</b>
25	30%
26	30%
27	30%
28	25%
29	40%
30	100%

**Present assets (cash & investments)** were used with a market value adjustment that spreads differences between actual and assumed return over a closed four-year period. Details of the method may be found in the body of the report on page B-4. Assets may be used in the valuation prior to the final audit.

**The data about persons now covered and about present assets** were furnished by the System's administrative staff. Although examined for general reasonableness, the data was not audited by the Actuary.

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The actuarial valuation computations were made by or under the supervision of a Member of the American Academy of Actuaries (M.A.A.A.) who has experience performing public plan valuations.

**SUMMARY OF ASSUMPTIONS USED  
APRIL 30, 2006**

*Pensions in an Inflationary Environment*

**Value of \$1,000/month Retirement Benefit  
To an Individual Who Retires at Age 50  
In an Environment of 3.5% Inflation with a 3% Simple COLA**

Age	Value
50	\$1,000
51	995
52	990
53	983
54	976
55	968
60	922
65	865
70	804
75	741
80	677
85	615

The life expectancy of a 50 year old male retiree is age 79. The life expectancy for a 50 year old female retiree is age 85. Approximately half of the people will outlive their life expectancy. The effects of even moderate amounts of inflation can be significant for those who live to an advanced age.

**SUMMARY OF ASSUMPTIONS USED**  
**APRIL 30, 2006**  
**MISCELLANEOUS AND TECHNICAL ASSUMPTIONS**

<b>Marriage Assumption.</b>	85% of males and 55% of females are assumed to be married for purposes of death-in-service benefits and death-after-retirement benefits. Males are assumed to be 3 years older than their spouses. Actual reported data is utilized for retirees and beneficiaries.
<b>Pay Increase Timing.</b>	Beginning of (Fiscal) 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 service nearest whole year on the date of decrement.
<b>Benefit Service.</b>	Exact fractional service is used to determine the amount of benefit payable.
<b>Decrement Relativity.</b>	Decrement rates are used without adjustment for multiple decrement table effects.
<b>Decrement Operation.</b>	Withdrawal does not operate during retirement eligibility.
<b>Normal Form of Benefit.</b>	The assumed normal form of benefit is 80% joint and survivor.
<b>Cost of Living.</b>	It was assumed that the Retirement Board will grant the full 3.0% cost of living adjustment each year as allowed by the plan.
<b>Loads.</b>	0.4% of payroll each year for administrative expenses. Administrative and investment expenses above and beyond this allocation are assumed to be funded by investment return in excess of the actuarial assumed rate.
<b>Incidence of Contributions.</b>	Contributions are assumed to be received continuously throughout the year based upon the computed percent-of-payroll shown in this report, and the actual payroll payable at the time contributions are made. New entrant normal cost contributions are applied to the funding of new entrant benefits.
<b>Pay Annualization.</b>	Reported pays for members with less than 1 year of service were annualized for valuation purposes.

## DEFINITIONS OF TECHNICAL TERMS

**Accrued Service.** Service credited under the system, which was rendered before the date of the actuarial valuation.

**Actuarial Accrued Liability.** The difference between the actuarial present value of system benefits and the actuarial present value of future normal costs. Also referred to as "past service liability."

**Actuarial Assumptions.** Estimates of future 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 benefits" between future normal costs and actuarial accrued liability. Sometimes referred to as the "actuarial funding method."

**Actuarial Equivalent.** One series of payments is said to be actuarially equivalent to another series of payments if the two series have the same actuarial present value.

**Actuarial Gain (Loss).** The difference between actual unfunded actuarial accrued liabilities and anticipated unfunded actuarial accrued liabilities -- during the period between two valuation dates. It is a measurement of the difference between actual and expected experience.

**Actuarial Present Value.** The amount of funds currently required to provide a payment or series of payments in the future. It is determined by discounting future payments at predetermined rates of interest, and by probabilities of payments.

**Amortization.** Paying off an interest-discounted amount with periodic payments of interest and (generally) principal -- as opposed to paying off with a lump sum payment.

**Normal Cost.** The portion of the actuarial present value of future benefits that is assigned to the current year by actuarial cost method. Sometimes referred to as "current service cost."

**Unfunded Actuarial Accrued Liabilities.** The difference between actuarial accrued liabilities and valuation assets. Sometimes referred to as "unfunded past service liability" or "unfunded supplemental present value."

Most retirement systems have unfunded actuarial accrued liabilities. They arise each time new benefits are added and each time an actuarial loss occurs.

The existence of unfunded actuarial accrued liabilities is not in itself bad, any more than a mortgage on a house is bad. Unfunded actuarial accrued liabilities do not represent a debt that is payable today. What is important is the ability to amortize the unfunded actuarial accrued liabilities and the trend in their amount (after due allowance for devaluation of the dollar).

**Valuation Assets.** Also referred to as actuarial value of assets, funding value of assets, or smoothed market value of assets.

Valuation assets recognize assumed investment return fully each year. Differences between actual and assumed investment return are phased in over a closed 4-year period. During periods when investment performance exceeds the assumed rate, valuation assets will tend to be less than market value. During periods when investment performance is less than the assumed rate, valuation assets will tend to be greater than market value. If assumed rates are exactly realized for 3 consecutive years, valuation assets will become equal to market value.

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**Actuarial Schedules Required by  
Statements No. 25 and No. 27 of the  
Governmental Accounting  
Standards Board**



**GASB STATEMENTS NO. 25 AND NO. 27 REQUIRED  
ACTUARIAL INFORMATION  
SCHEDULE OF FUNDING PROGRESS**

Actuarial Valuation Date	(a) Actuarial Value of Assets	(b) Entry Age Actuarial Accrued Liability	(b-a) Unfunded Accrued Liability (UAL)	(a/b) Funded Ratio	(c) Annual Payroll#	[(b-a)/c] UAL as a Percentage of Annual Payroll
4/30/1997	\$388,984,781	\$456,218,854	\$67,234,073	85 %	\$48,173,740	140 %
4/30/1998	433,090,523	493,183,065	60,092,542	88	49,872,090	120
4/30/1999	484,396,958	521,600,003	37,203,045	93	51,963,858	72
4/30/2000	584,514,972	589,566,248	5,051,276	99	57,791,028	9
4/30/2001	600,051,893	615,291,156	15,239,263	98	57,505,238	27
4/30/2002	620,948,986	648,632,789	27,683,803	96	56,678,323	49
4/30/2003@	611,246,928	682,690,968	71,444,040	90	62,425,468	114
4/30/2004	603,418,620	712,273,616	108,854,996	85	66,230,606	164
4/30/2005	604,560,607	741,001,020	136,440,413	82	67,575,902	202
4/30/2006	635,621,582	775,271,985	139,650,403	82	71,835,495	194

@ After changes in actuarial assumptions or methods.

# For valuation years 2001 and prior, valuation payroll includes projected salary increases for year following valuation. For valuation years 2002 and greater, valuation payroll is payroll reported in data after annualization of pays for new hires.

**GASB STATEMENTS NO. 25 AND NO. 27 REQUIRED  
ACTUARIAL INFORMATION  
SCHEDULE OF EMPLOYER CONTRIBUTIONS**

<b>Fiscal Year Ending April 30</b>	<b>Annual Required Contribution</b>	<b>Percent Contributed</b>
1996	\$ 9,013,550	105 %
1997	8,716,539	112
1998	9,355,956	107
1999	9,880,286	104
2000	9,172,029	118
2001	10,785,784	106
2002	10,837,294	104
2003	11,579,240	104
2004@	15,095,290	85
2005	15,774,578	84
2006	18,992,671	72
2007	21,444,703	
2008	22,749,385	

@ *After changes in actuarial assumptions or methods.*

## DEVELOPMENT OF ANNUAL PENSION COST AND NET PENSION OBLIGATION

Fiscal Year	(a) Annual Required Contribution (ARC)	(b) Interest on Net Pension Obligation (Asset) (NPO (NPA))	(c) ARC Adjustment	(d) = (a) + (b) – (c) Annual Pension Cost	(e) Actual Contribution	(f) = (d) – (e) Change in NPO (NPA)	(g) = sum of (f) Net Pension Obligation (Asset) at End of Year
1998	\$ 9,355,956	\$ (759,648)	\$(491,915)	\$ 9,088,223	\$ 9,978,462	\$ (890,239)	\$(10,692,143)
1999	9,880,286	(828,641)	(619,583)	9,671,228	10,318,583	(647,355)	(11,339,498)
2000	9,172,029	(878,811)	(657,096)	8,950,314	10,789,963	(1,839,649)	(13,179,147)
2001	10,785,784	(1,021,384)	(763,699)	10,528,099	11,392,871	(864,772)	(14,043,919)
2002	10,837,294	(1,088,404)	(813,810)	10,562,700	11,312,754	(750,054)	(14,793,973)
2003	11,579,240	(1,146,533)	(889,665)	11,322,372	12,017,801	(695,429)	(15,489,402)
2004	15,095,290	(1,200,429)	(931,486)	14,826,347	12,817,176	2,009,171	(13,480,231)
2005	15,774,578	(1,044,718)	(810,661)	15,540,521	13,297,605	2,242,916	(11,237,315)
2006	18,992,671	(870,892)	(675,778)	18,797,557	13,729,225	5,068,332	(6,168,983)
2007	21,444,703	(478,096)	(370,984)	21,337,591			
2008	22,749,385						

This information is presented in draft form for review by the City's auditor. Please let us know if there are any items that the auditor changes so that we may maintain consistency with the City's financial statements.

**GASB STATEMENTS NO. 25 AND NO. 27  
REQUIRED SUPPLEMENTARY INFORMATION**

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 valuation date follows:

Valuation date	April 30, 2006
Actuarial cost method	Individual entry age
Amortization method for unfunded actuarial accrued liabilities	Level percent closed
Equivalent single amortization period	19.55 years
Asset valuation method	4-year smoothed market
Actuarial assumptions:	
Investment rate of return	7.75%
Projected salary increases including wage inflation at 4.5%	4.5% - 8.9%
Cost-of-living adjustments	3.0% simple

Membership of the plan consisted of the following at April 30, 2006, the date of the latest actuarial valuation:

Retirees and beneficiaries receiving benefits	1,186
Terminated plan members entitled to but not yet receiving benefits	9
Active plan members	<u>1,355</u>
Total	2,550

September 14, 2006

Mr. James J. Pyle  
Pension Systems Manager  
Kansas City Police Employees'  
Retirement Systems  
1328 Agnes  
Kansas City, Missouri 64127

Dear Jim:

Enclosed are twenty report copies of the April 30, 2006 Actuarial Valuation of the Police Retirement System of Kansas City, Missouri. A copy will be forwarded to your auditor.

Please call if you have any questions or comments.

Sincerely,

Mita D. Drazilov

MDD:bd

cc: Ted Hempy, BKD