THE REPORT OF THE ANNUAL ACTUARIAL VALUATION

OF THE

MISSOURI DEPARTMENT OF TRANSPORTATION AND HIGHWAY PATROL EMPLOYEES' RETIREMENT SYSTEM

(MPERS)

JUNE 30, 2005

Gabriel, Roeder, Smith & Company

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September 14, 2005

The Retirement Board
Missouri Department of Transportation
and Highway Patrol Employees' Retirement System
Jefferson City, Missouri

Ladies and Gentlemen:

The results of the regular annual **actuarial valuation as of** June 30, 2005 of the Missouri Department of Transportation and Highway Patrol Employees' Retirement System, as established by Chapter 104 of the Missouri Revised Statutes, are presented in this report.

The member statistical data required for the valuation together with pertinent data on financial operations was furnished by your Executive Director and his staff. Data was reviewed for reasonableness, but was not audited by the actuary. The actuarial assumptions used in making the valuation are shown in Section E of this report.

Your attention is directed particularly to the summary of the results on pages 2-5.

The actuarial calculations were performed in accordance with accepted actuarial procedures. The calculations were based upon current plan provisions of the Retirement System, the plan provisions of the Missouri State Employees Year 2000 Plan and upon actuarial assumptions that are internally consistent and reasonable based upon the actual experience of the System.

The cooperation of the Executive Director and the staff in furnishing materials requested for this valuation, and the complete and excellent condition of the records, is acknowledged with appreciation.

Respectfully submitted,

KGA

Brian B. Murphy, F.S.A.

Kenneth G. Alberts

SUMMARY

This report contains the results of the June 30, 2005 valuation. The table below shows a summary of the data used in the valuation as well as the unfunded actuarial accrued liability for the two experience rated groups. This data was the basis for determining valuation results and recommended employer contribution rates.

	Non-Uniformed				
	Civilian Patrol Employees	**MoDOT Employees**	**Non-Uniformed Total**	**Uniformed Patrol**	**Total**
Participants					
Active Members					
Closed Plan	812	5,508	6,320	895	7,215
Year 2000 Plan	304	1,493	1,797	181	1,978
Total Active Members	1,116	7,001	8,117	1,076	9,193
Retiree -- Regular Pensioners					
Closed Plan	398	3,954	4,352	718	5,070
Year 2000 Plan	211	1,391	1,602	1	1,603
Total Regular Pensioners	609	5,345	5,954	719	6,673
Self Insured Disability Pensioners	10	133	143	6	149
Fully Insured Disability Pensioners	0	7	7	0	7
Terminated Vested Members	183	1,033	1,216	141	1,357
Total	1,918	13,519	15,437	1,942	17,379
Active Member Valuation Payroll	$35,727,675	$258,019,271	$293,746,946	$51,948,921	$345,695,867
Unfunded Actuarial Accrued Liability	N/A	N/A	$940,955,041	$269,105,002	$1,210,060,043

The June 30, 2005 valuation results are used to determine the contribution rate for the plan year beginning July 1, 2006. A summary of valuation results and recommended contribution rates follows.

Investment return was positive this year and above the assumed rate.

SUMMARY

The **total contribution rate** for the plan year beginning July 1, 2006 is shown below.

	Employer Contribution Rates Expressed as % of Active Payroll for Total Benefits			
	Non-Uniformed			
	Civilian Patrol Employees	**MoDOT Employees**	**Uniformed Patrol**	**Combined Rate**
Normal Cost	11.21%	11.21%	13.18%	11.51%
Unfunded Liability	18.28%	18.28%	29.49%	19.96%
Expenses	0.55%	0.55%	0.55%	0.55%
Disability Insurance*	0.56%	0.56%	0.56%	0.56%
Total	30.60%	30.60%	43.78%	32.58%
Illustrative $	$10,932,669	$78,953,897	$22,743,238	$112,629,804

** Actual charge by the insurance company is 0.60% of payroll. The difference of 0.04% of payroll is funding from a portion of the assets that were formerly held as a reserve for the LTD benefits.*

The dollar contribution amounts shown above are illustrated and based on the June 30, 2005 valuation payroll. Actual dollar contributions should be based on covered payroll for the fiscal year beginning July 1, 2006. (For the prior valuation, the total combined dollar contribution illustrated was $106,433,952. This represented a combined rate of 32.43%.) The combined rate of 32.58% is less than the actual benefit payout rate. The difference is intended to be made up by investment return. The ability to contribute less than the benefit payout is one of the advantages of a funded retirement plan. Unfunded Actuarial Accrued Liabilities were amortized over a 30-year closed period beginning July 1, 2006.

SUMMARY
(CONTINUED)

Assumption and Methods: Based upon the five year MPERS experience study, the Board adopted the following changes to methods and assumptions effective with this valuation:

- Increases in assumed rates of withdrawal
- Decreases in assumed rates of disability
- Increases in rates of retirement
- Increases in merit and longevity increases
- Reduction in the assumed rate of price inflation from 3.50% to 3.25%
- Adjustments to miscellaneous load
- Restarting of the actuarial value of asset method, as of the beginning of year

These changes resulted in an increase in accrued liability of approximately $3 million and an increase in the funding value of assets of approximately $21 million. Additional details are available in our experience study report dated March 29, 2005.

Experience: Aggregate experience during the year was less favorable than expected. Note that expectations are measured against the assumptions used in last year's valuation. Overall the difference between assumed experience and actual experience was consistent with the results of the experience study (rates of retirement greater than expected; rates of termination greater than expected; rates of disability less than expected; rates of salary increases greater than expected) and resulted in a liability loss of approximately 1.5% of beginning of year accrued liabilities. The losses were partially offset by gains on investments, but resulted in an increase in the combined computed contribution rate.

Looking at the two experience groups, individually, we see that there was a small net gain for the uniformed members and a net loss for non-uniformed members resulting in a decrease in the uniformed contribution rate and an increase in the non-uniformed contribution rate. The primary reason for this divergent experience appears to be in retirement experience (less uniformed members retired than expected, and more non-uniformed members retired than expected).

SUMMARY
(CONCLUDED)

Funding Policy: Currently the retiree and beneficiary liability is approximately 85% funded. This group has an approximate average life expectancy of 15 years. We therefore recommend that the Board fund the unfunded retiree and beneficiary liability over 15 years. This shorter period could be phased in. However, if it was adopted this year it would result in an approximate increase in the computed contribution rate of 2.3% of payroll.

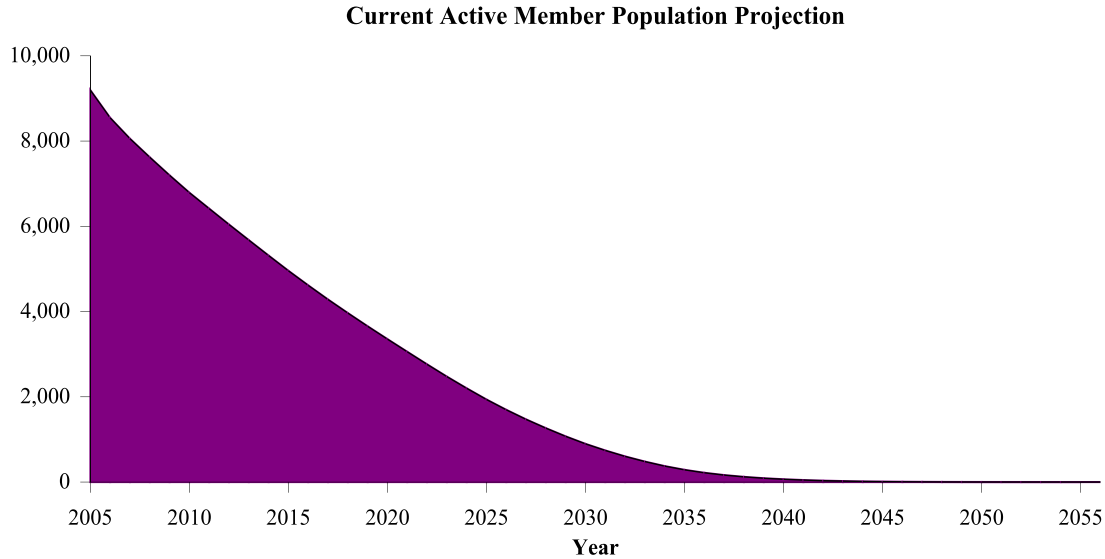
Recommendation: We remain concerned that the funding ratio is close to 50%. We recommend that the Board develop a policy calling for increased contributions should the funding ratio fall below 50%.

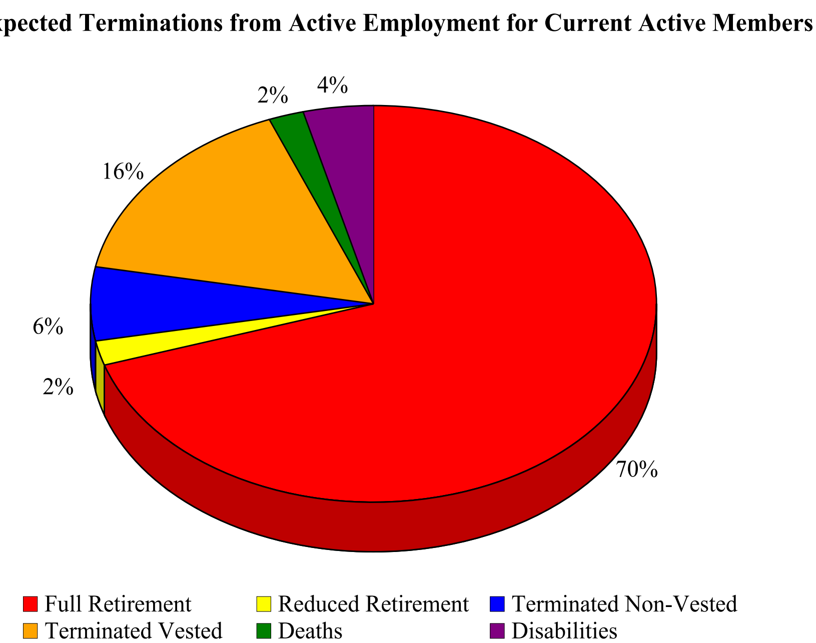
Conclusion: Based upon the results of the June 30, 2005 regular annual actuarial valuation, it is our opinion that the Missouri Department of Transportation and Highway Patrol Employees' Retirement System is in sound condition in accordance with actuarial principles of level percent of payroll financing. This statement is based upon the fact that the employer is contributing to the system based upon actuarially determined rates.

SUMMARY OF KEY VALUATION RESULTS

Actuarial Present Value	(1) Actuarial Present Value June 30, 2005	(2) Portion Covered By Future Normal Cost Contributions June 30, 2005	(3) Actuarial Accrued Liabilities (1) - (2) June 30, 2005	Actuarial Accrued Liabilities June 30, 2004
Active Members				
Service retirement benefits based on service rendered before and likely to be rendered after valuation date	$ 1,192,350,722	$ 329,036,965	$ 863,313,757	$ 767,887,645
Disability benefits likely to be paid to present active members who become totally and permanently disabled	32,555,101	13,235,021	19,320,080	24,560,120
Survivor benefits likely to be paid to windows and children of present active members who die before retiring	26,313,371	10,024,932	16,288,439	18,588,089
Separation benefits likely to be paid to present active members	50,449,886	28,567,319	21,882,567	18,362,159
Active Member Totals	$ 1,301,669,080	$ 380,864,237	$ 920,804,843	$ 829,398,013
Terminated Vested Members			37,293,046	32,468,071
Retired Lives			1,669,311,136	1,631,052,892
Total Actuarial Accrued Liability			$ 2,627,409,025	$ 2,492,918,976
Actuarial Value of Assets			1,417,348,982	1,331,588,207
Unfunded Actuarial Accrued Liability			$ 1,210,060,043	$ 1,161,330,769

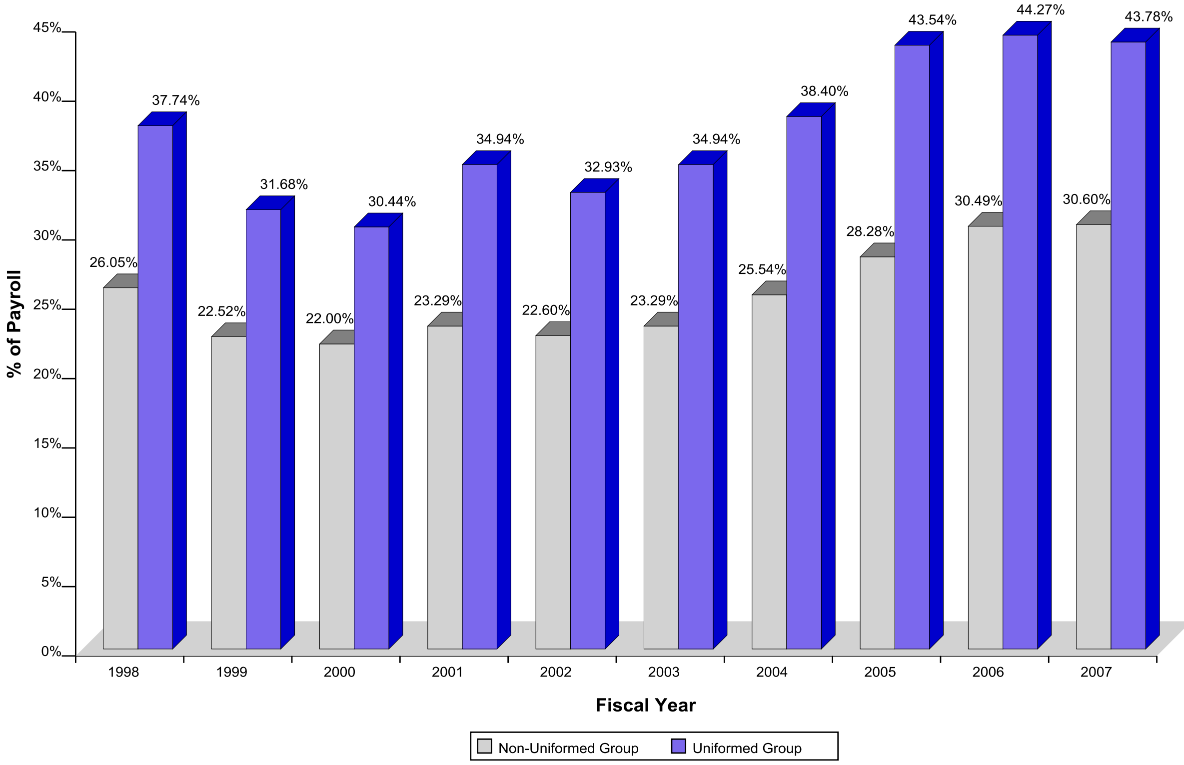
Expected Development of Present Population as of June 30, 2005



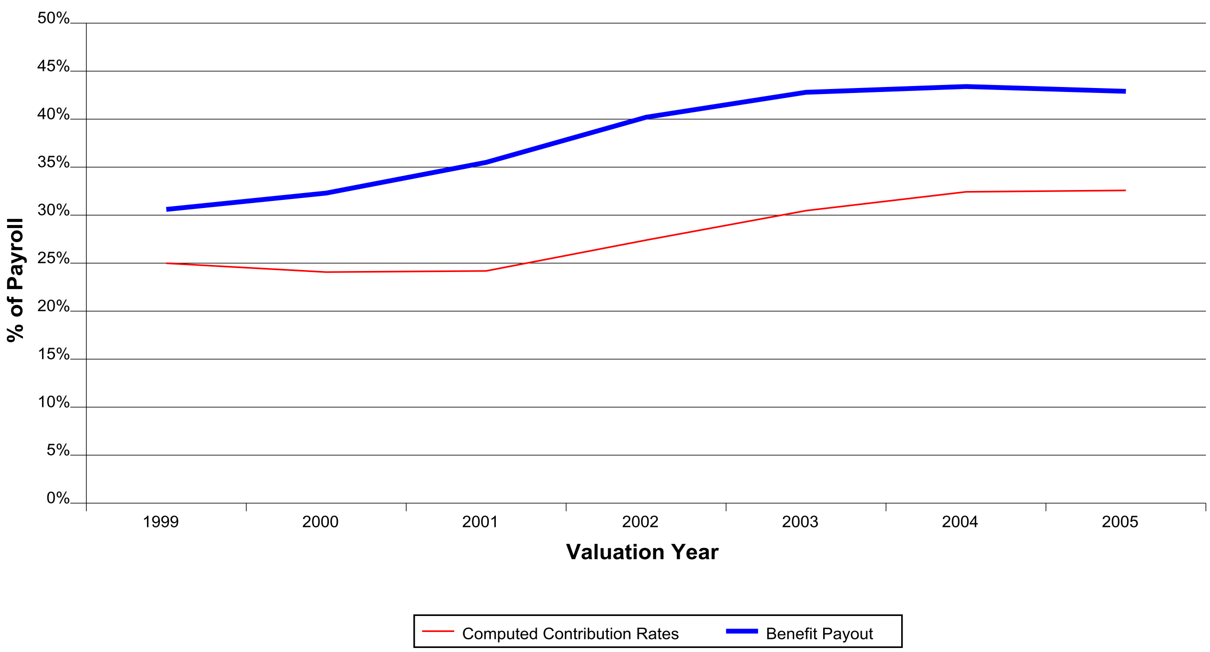


The charts show the expected future development of the present population in simplified terms. The retirement system presently covers 9,193 active members. Eventually, 6% of the population is expected to terminate covered employment prior to retirement and forfeit eligibility for an employer provided benefit. Of the present population, 88% is expected to receive monthly retirement benefits either by retiring directly from active service, or by separating from service with a vested benefit and 6% of the present population is expected to become eligible for death-in-service or disability benefits. Within 12 years, over half of the covered membership is expected to consist of new hires.

Computed Contribution Rates

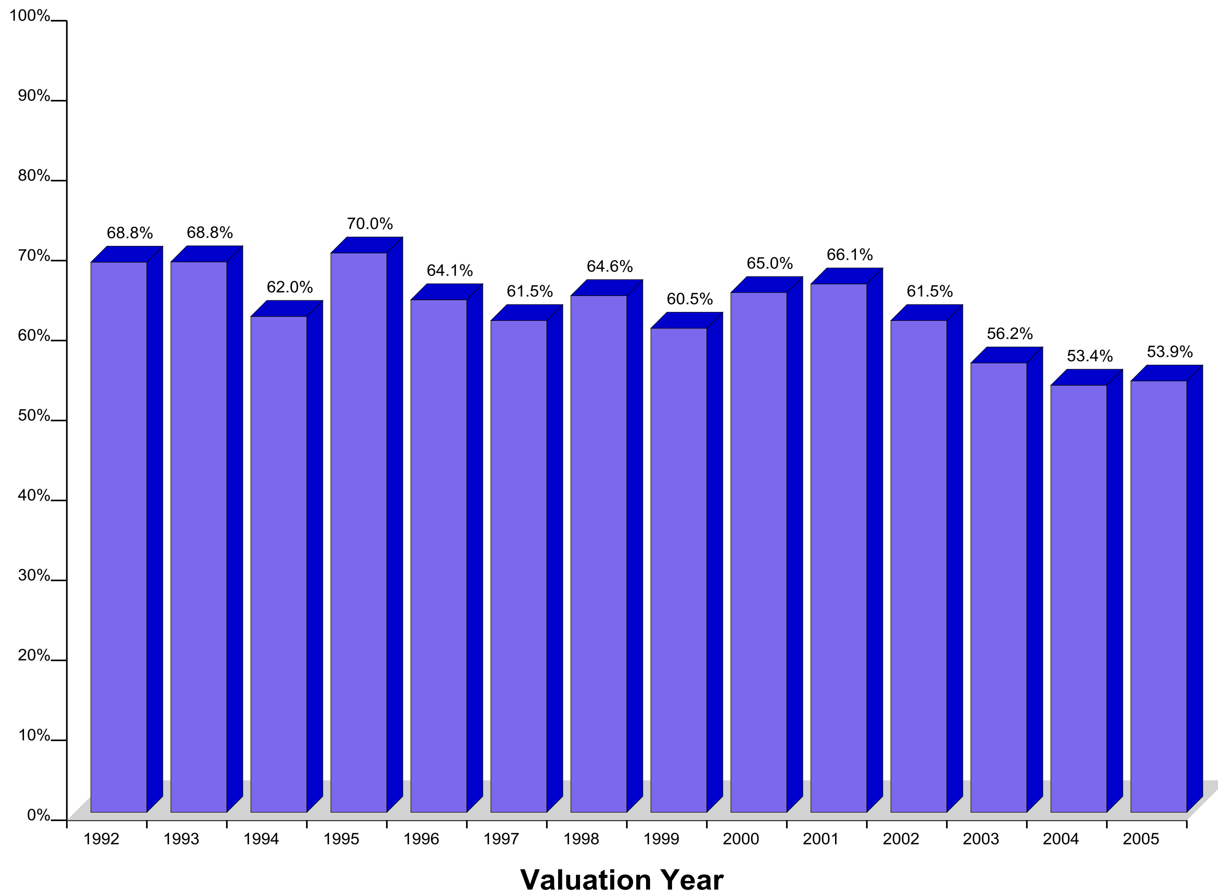


Contribution Rates vs. Benefit Payout



HISTORICAL FUNDED RATIOS

Actuarial Value of Assets as Percents of Accrued Liabilities
(Funded Ratio)



Section A

Valuation Results

COMPUTED CONTRIBUTIONS TO SUPPORT BENEFITS
FOR PLAN YEAR BEGINNING JULY 1, 2006
CONTRIBUTIONS COMPUTED AS OF JUNE 30, 2005

Contributions for	Non-Uniformed Employees	Uniformed Patrol	Total
Normal Cost			
Age & service benefits	9.63%	11.88%	9.97%
Disability benefits #	0.43%	0.15%	0.39%
Survivor benefits	0.30%	0.31%	0.31%
Separation benefits	0.85%	0.84%	0.85%
Total Normal Cost	11.21%	13.18%	11.51%
Unfunded Actuarial Accrued Liabilities*	18.28%	29.49%	19.96%
Expense Provision	0.55%	0.55%	0.55%
Disability Insurance	0.56%	0.56%	0.56%
Recommended Contribution Rate	30.60%	43.78%	32.58%
Illustrative Dollar Contribution	$ 89,886,566	$ 22,743,238	$112,629,804
Prior Year			
Recommended Contribution Rate	30.49%	44.27%	32.43%
Illustrative Dollar Contribution	$ 85,993,766	$ 20,440,186	$106,433,952

 # Includes costs for benefits payable after conversion to normal retirement and/or benefits payable to survivors. Costs for disability benefits payable prior to conversion are shown under Disability Insurance which is outsourced.

** Amortized as a level-percentage of payroll over 30 years from July 1, 2006.*

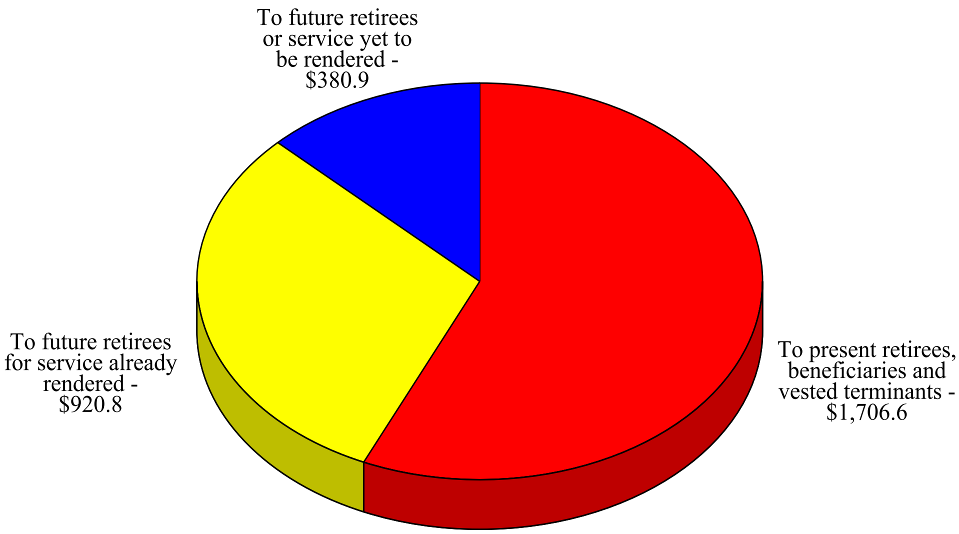
DEVELOPMENT OF LIABILITIES
AS OF JUNE 30, 2005

	Non-Uniformed Employees	Uniformed Patrol	Total
Present Value of Future Benefits - Inactives			
Retirees and Survivors	$ 1,275,055,580	$ 366,954,850	$ 1,642,010,430
Disability Pensioners	25,345,943	1,954,763	27,300,706
Vested Terminated Employees	29,943,833	7,349,213	37,293,046
Subtotal PVFB - Inactives	1,330,345,356	376,258,826	1,706,604,182
Present Value of Future Benefits - Actives			
Age & Service benefits	910,888,009	281,462,713	1,192,350,722
Normal and Work Related Disability benefits	30,209,806	2,345,295	32,555,101
Survivor benefits	21,182,745	5,130,626	26,313,371
Separation benefits	42,570,267	7,879,619	50,449,886
Subtotal PVFB - Actives	1,004,850,827	296,818,253	1,301,669,080
Total Present Value of Future Benefits	2,335,196,183	673,077,079	3,008,273,262
Less Present Value of Future Entry Age Normal Costs	308,986,520	71,877,717	380,864,237
Equals Actuarial Accrued Liability	2,026,209,663	601,199,362	2,627,409,025
Less Actuarial Value of Assets	1,085,254,622	332,094,360	1,417,348,982
Equals Unfunded Actuarial Accrued Liabilities	940,955,041	269,105,002	1,210,060,043
30-Year Amortization Payment on UAAL	$ 57,793,284	$ 16,490,208	$ 74,283,492
as a % of Projected Payroll	18.28%	29.49%	19.96%

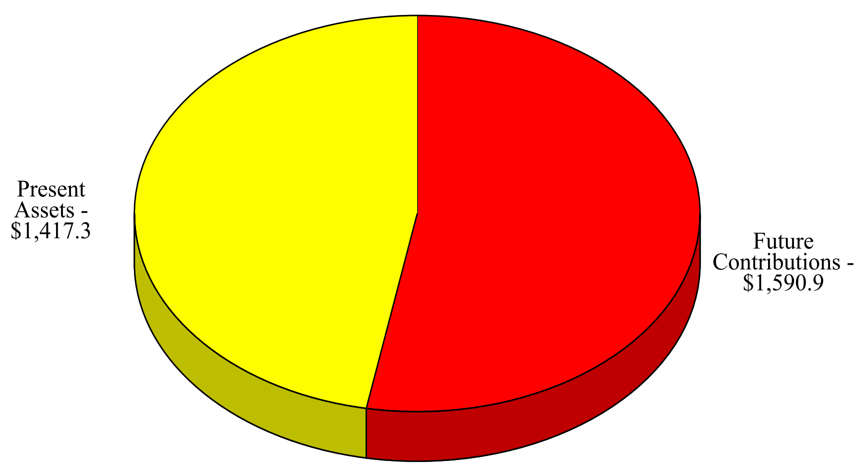
SYSTEM RESOURCES & OBLIGATIONS
SOURCES AND USES OF $3,008.3 MILLION
AS OF JUNE 30, 2005

($ Millions)

Uses of Funds



Sources of Funds



FINANCING UNFUNDED ACTUARIAL ACCRUED LIABILITIES (UAL) WHICH WERE CALCULATED USING A WAGE INFLATION ASSUMPTION OF 3.75% AND AN INVESTMENT RETURN ASSUMPTION OF 8.25% COMPOUNDED ANNUALLY

30-YEAR AMORTIZATION

Fiscal Year Ending June 30	Active Employee Payroll	Unfunded Actuarial Accrued Liability at End of Year	Annual UAAL Contributions During Fiscal Year		UAAL at Year End as % of Payroll
			Dollars	% of Payroll	
2005	$345,695,867	$1,210,060,043			350.0%
2006	358,659,462	1,234,285,066	$69,328,874	19.33%	344.1%
2007	372,109,192	1,258,995,067	74,272,995	19.96%	338.3%
2008	386,063,287	1,282,851,698	77,058,232	19.96%	332.3%
2009	400,540,660	1,305,676,109	79,947,916	19.96%	326.0%
2010	415,560,935	1,327,270,627	82,945,963	19.96%	319.4%
2011	431,144,470	1,347,417,051	86,056,436	19.96%	312.5%
2012	447,312,388	1,365,874,803	89,283,553	19.96%	305.4%
2013	464,086,603	1,382,378,914	92,631,686	19.96%	297.9%
2014	481,489,851	1,396,637,843	96,105,374	19.96%	290.1%
2015	499,545,720	1,408,331,108	99,709,326	19.96%	281.9%
2016	518,278,685	1,417,106,717	103,448,426	19.96%	273.4%
2017	537,714,136	1,422,578,375	107,327,742	19.96%	264.6%
2018	557,878,416	1,424,322,458	111,352,532	19.96%	255.3%
2019	578,798,857	1,421,874,729	115,528,252	19.96%	245.7%
2020	600,503,814	1,414,726,775	119,860,561	19.96%	235.6%
2021	623,022,707	1,402,322,141	124,355,332	19.96%	225.1%
2022	646,386,059	1,384,052,140	129,018,657	19.96%	214.1%
2023	670,625,536	1,359,251,305	133,856,857	19.96%	202.7%
2024	695,773,994	1,327,192,458	138,876,489	19.96%	190.8%
2025	721,865,519	1,287,081,366	144,084,358	19.96%	178.3%
2026	748,935,476	1,238,050,941	149,487,521	19.96%	165.3%
2027	777,020,556	1,179,154,957	155,093,303	19.96%	151.8%
2028	806,158,827	1,109,361,235	160,909,302	19.96%	137.6%
2029	836,389,783	1,027,544,256	166,943,401	19.96%	122.9%
2030	867,754,400	932,477,153	173,203,778	19.96%	107.5%
2031	900,295,190	822,823,033	179,698,920	19.96%	91.4%
2032	934,056,260	697,125,567	186,437,629	19.96%	74.6%
2033	969,083,370	553,798,796	193,429,041	19.96%	57.1%
2034	1,005,423,996	391,116,081	200,682,630	19.96%	38.9%
2035	1,043,127,396	207,198,125	208,208,228	19.96%	19.9%
2036	1,082,244,673	0	216,016,037	19.96%	0.0%

GASB No. 25
Schedule Of Funding Progress*
June 30, 2005

Year Ending June 30	Actuarial Asset Value	Accrued Liability – Entry Age	Unfunded Accrued Liability (UAAL)	Funded Ratio	Estimated Covered Payroll		UAAL as a Percentage of Covered Payroll
1991	$ 560,976,822	$ 841,195,967	$ 280,219,145	66.69%	$ 220,856,988	**	126.88%
1992	622,018,133	904,097,721	282,079,588	68.80%	220,919,382		127.68%
1993	688,963,225	1,000,704,491	311,741,266	68.85%	228,032,159		136.71%
1994	746,946,221	1,204,313,635	457,367,414	62.02%	236,748,214		193.19%
1995	931,031,253	1,330,909,279	499,878,026	69.95%	243,561,510		205.24%
1996	916,553,828	1,429,910,844	513,357,016	64.10%	254,712,739		201.54%
1997	1,015,906,708	1,651,811,690	635,904,982	61.50%	271,070,643		234.59%
1998	1,126,961,804	1,744,052,411	617,090,607	64.62%	278,690,426		221.43%
1999 +	1,242,744,403	2,052,700,427	809,956,023	60.54%	288,068,083	**	281.17%
2000 #	1,422,796,011	2,188,826,322	766,030,311	65.00%	301,421,805	**	254.14%
2001	1,520,800,409	2,301,402,527	780,602,118	66.08%	323,400,023	**	241.37%
2002	1,450,507,432	2,358,452,163	907,944,731	61.50%	308,654,239	**	294.16%
2003	1,363,952,522	2,418,145,741	1,054,193,219	56.20%	319,345,949	**	330.11%
2004	1,331,588,207	2,492,918,976	1,161,330,769	53.41%	316,224,468	**	367.25%
2005 #	1,417,348,982	2,627,409,025	1,210,060,043	53.94%	334,030,151	**	362.26%

* *Prior to 2003 this schedule was not required for the LTD Plan because it used the aggregate funding method. Therefore the assets and liabilities were excluded prior to 2003. In 2003 the LTD Plan was merged into the base plan. Assets and liabilities for existing LTD members are included beginning in 2003.*

** *Values are estimated from contribution rate and amount.*

\+ *Introduction of Year 2000 Plan; Change in Actuary.*

\# *New assumptions adopted.*

GASB No. 25
Schedule Of Employer Contributions*
Non-uniformed Group
June 30, 2005

Fiscal Year Ending June 30,		Estimated Covered Payroll			Actual Employer Contributions	Actual Employer Contribution %	Annual Required Contribution (ARC) %			Annual Pension Cost	Percentage of APC Contributed
1991	$	190,667,552	**	$	35,864,567	18.81%	18.81%		$	35,864,567	100.00%
1992		190,312,781			37,929,337	19.93%	19.93%			37,929,337	100.00%
1993		197,027,356			41,454,556	21.04%	21.04%			41,454,556	100.00%
1994		204,032,785			40,949,380	20.07%	20.07%			40,949,380	100.00%
1995		208,329,222			56,144,725	26.95%	26.95%			56,144,725	100.00%
1996		215,155,118			56,842,321	26.42%	26.42%			56,842,321	100.00%
1997		228,828,537			59,838,662	26.15%	26.15%			59,838,662	100.00%
1998		234,703,387			61,140,232	26.05%	26.05%			61,140,232	100.00%
1999 +		244,185,511	**		54,990,577	22.52%	22.52%			54,990,577	100.00%
2000 #		257,124,568	**		56,567,405	22.00%	22.00%			56,567,405	100.00%
2001		273,311,348	**		63,654,213	23.29%	23.29%			63,654,213	100.00%
2002		260,972,727	**		60,780,548	23.29%	23.29%	@		60,780,548	100.00%
2003		271,173,431	**		63,156,292	23.29%	23.29%	@		63,156,292	100.00%
2004		269,890,983	**		68,932,856	25.54%	25.54%			68,932,856	100.00%
2005		283,070,661	**		80,052,383	28.28%	28.28%			80,052,383	100.00%

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** *Values are estimated from contribution rate and amount.*

\+ *Introduction of Year 2000 Plan; Change in Actuary.*

\# *New assumptions adopted.*

@ *The ARC is the rate adopted by the Retirement Board. This rate exceeded the actuarially calculated rate.*

\## *Includes non-uniformed employees of MoDOT and MPERS.*

GASB No. 25
Schedule Of Employer Contributions*
Uniformed Patrol Group
June 30, 2005

Fiscal Year Ending June 30,	Estimated Covered Payroll		Actual Employer Contributions	Actual Employer Contribution %	Annual Required Contribution (ARC) %		Annual Pension Cost	Percentage of APC Contributed
1991	$ 30,189,436	**	$ 10,545,170	34.93%	34.93%		$ 10,545,170	100.00%
1992	30,606,601		11,101,014	36.27%	36.27%		11,101,014	100.00%
1993	31,004,803		9,868,829	31.83%	31.83%		9,868,829	100.00%
1994	32,715,429		9,739,383	29.77%	29.77%		9,739,383	100.00%
1995	35,232,287		14,462,854	41.05%	41.05%		14,462,854	100.00%
1996	39,557,621		15,743,114	39.80%	39.80%		15,743,114	100.00%
1997	42,242,106		16,546,233	39.17%	39.17%		16,546,233	100.00%
1998	43,987,039		16,600,708	37.74%	37.74%		16,600,708	100.00%
1999 +	43,882,573	**	13,901,999	31.68%	31.68%		13,901,999	100.00%
2000 #	44,297,237	**	13,484,079	30.44%	30.44%		13,484,079	100.00%
2001	50,088,675	**	17,500,983	34.94%	34.94%		17,500,983	100.00%
2002	47,681,512	**	16,659,920	34.94%	34.94%	@	16,659,920	100.00%
2003	48,172,519	**	16,831,478	34.94%	34.94%	@	16,831,478	100.00%
2004	46,333,484	**	17,792,058	38.40%	38.40%		17,792,058	100.00%
2005	50,959,490	**	22,187,762	43.54%	43.54%		22,187,762	100.00%

* *Prior to 2003 this schedule was not required for the LTD Plan because it used the aggregate funding method. Therefore the assets and liabilities were excluded prior to 2003. In 2003 the LTD Plan was merged into the base plan. Assets and liabilities for existing LTD members are included beginning in 2003.*

** *Values are estimated from contribution rate and amount.*

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\# *New assumptions adopted.*

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Development Of Gain/(Loss)
July 1, 2004 To June 30, 2005

	UAAL =	AAL -	Assets
Beginning of Year Values (at July 1)	$ 1,161,330,769	$ 2,492,918,976	$ 1,331,588,207
Asset Method Change	(21,607,966)	0	21,607,966
Values After Asset Method Change	1,139,722,803	2,492,918,976	1,353,196,173
Normal Cost	40,496,935	40,496,935	0
Contributions	(102,604,826)	0	102,604,826
Disbursements	0	(159,658,929)	(159,658,929)
Interest	91,445,353	200,750,383	109,305,030
Net Change in LTD Assets	(112,835)	0	112,835
Expected Value Before Any Changes	1,168,947,430	2,574,507,365	1,405,559,935
Effect of Changes in Assumptions & Methods	3,474,203	3,474,203	0
Expected Value After Changes	1,172,421,633	2,577,981,568	1,405,559,935
End of Year Values (at June 30)	1,210,060,043	2,627,409,025	1,417,348,982

Gain/(Loss) for Year	$ (37,638,410)	$ (49,427,457)	$ 11,789,047

Section B

Summary of Benefits

Missouri Department Of Transportation And Highway Patrol Employees' Retirement System

Summary Of Benefit Provisions Evaluated As Of June 30, 2005

Closed Plan

Participation

Participants include:
All MPERS active members, vested terminated members, disability recipients, retirees and survivors who first became members prior to July 1, 2000 and who do not elect to transfer to the Year 2000 Plan.

Normal Retirement Eligibility (unreduced benefit)

All Employees: The earlier of attaining:
1. Age 65 with at least 4 years of creditable service.
2. Age 60 with at least 15 years of creditable service.
3. Age 48 with age plus creditable service equal to 80 or more.

Uniformed Patrol Employees Only: The earlier of attaining:
1. Age 55 with at least 4 years of creditable service.
2. Mandatory retirement at age 60 with 5 or more years of creditable service.

Final Average Pay Used for Benefit Determination

Final Average Pay is the average annual pay of a member for the three consecutive years of service during which pay was highest (overtime pay is included for purposes of determining average pay). Employees retiring from active service will receive 1/12 of a year of creditable service for every 168 hours of unused sick leave (usable only for benefit computation, not eligibility).

Year 2000 Plan

Participation

Participants include:
1. All new employees who first become members on or after July 1, 2000.
2. MPERS active members and vested former members who elect to transfer to the Year 2000 Plan at retirement.
3. MPERS retirees who elected to transfer to the Year 2000 Plan during the election window from July 1, 2000 through July 1, 2001, and their survivors.
4. MPERS members who left state employment prior to becoming vested (not eligible for a future retirement benefit) and return to work in a benefit eligible position on or after July 1, 2000.

Normal Retirement Eligibility (unreduced benefit)

All Employees: The earlier of attaining:
1. Age 62 with at least 5 years of creditable service.
2. Age 48 with age plus creditable service equal to 80 or more.

Uniformed Patrol Employees Only:
1. Age 60 with at least 5 years of creditable service.

Final Average Pay Used for Benefit Determination

Final Average Pay is the average annual pay of a member for the three consecutive years of service during which pay was highest (overtime pay is included for purposes of determining average pay). All members will receive 1/12 of a year of creditable service for every 168 hours of unused sick leave (usable only for benefit computation, not eligibility).

Closed Plan

Normal Retirement Benefit Amount

Non-Uniformed Employees:

Life Benefit: 1.6% of final average pay times years of creditable service.

Uniformed Patrol Employees:

Life Benefit: 2.1333% of final average pay times years of creditable service.

Special Benefit: $90 per month payable until age 65. Offset by any amount earned from gainful employment. This benefit does not apply to uniformed members hired on or after January 1, 1995.

Early Retirement (reduced benefit)

Eligibility: Non-Uniformed Employees

Age 55 with at least 10 years of creditable service.

Amount:

Normal retirement amount reduced by 0.6% for each month that retirement precedes eligibility for normal retirement.

Uniformed Patrol members are not eligible for early retirement.

Vested Deferred Benefits

Eligibility: All Employees

Fully vested in accrued pension with 5 years of creditable service. The benefit will commence at the age the individual is for early or normal retirement, considering years of creditable service.

Year 2000 Plan

Normal Retirement Benefit Amount

All Employees:

Life Benefit: 1.7% of final average pay times years of creditable service.

Temporary Benefit: If member retires between ages 48 and 62 with age plus creditable service equal to 80 or more, a temporary benefit is payable in the amount of 0.8% of final average pay times years of creditable service until attainment of the minimum age at which reduced social security benefits are payable or death, whichever occurs first.

Early Retirement (reduced benefit)

Eligibility: All Employees

Age 57 with at least 5 years of creditable service.

Amount:

Normal retirement amount reduced by 0.5% for each month that retirement precedes eligibility for normal retirement.

Vested Deferred Benefits

Eligibility: All Employees

Fully vested in accrued pension with 5 years of creditable service. The benefit will commence at the age the individual is eligible for early or normal retirement considering years of creditable service.

Summary Of Benefit Provisions Evaluated As Of June 30, 2005 (CONTINUED)

Closed Plan

Death Prior to Retirement

A death benefit is payable to the surviving spouse or eligible children of the member who dies after earning 3 years of creditable service. The survivor annuity shall be the total monthly payment equal to twenty-five percent of the deceased member's accrued annuity calculated as if the member was of normal retirement age as of the date of death.

The spouse of the member who dies after accruing 5 years of creditable service may elect to receive an annuity as if the employee had retired on the date of death and elected a joint and 100% survivor annuity.

If no eligible spouse survives or upon the death of the spouse, 80% of the member's accrued annuity will be paid to eligible children until age 21.

If the death is duty-related, there is no service requirement and the minimum annuity is 50% of the final average pay (FAP) to the surviving spouse or eligible children.

Death After Retirement

The benefit payable is 50% of the benefit the retired member was receiving on the date of death (the normal form of payment), or the benefit payable under the joint and survivor or period certain form of payment, if the member elected an optional form of payment at time of retirement.

A member who is not married at retirement but marries thereafter may designate a spouse as beneficiary within one year of the marriage. Additionally, a member may designate a new spouse as beneficiary in the event of the death of the spouse the member was married to at the date of retirement.

For period certain annuities, beneficiaries may be changed at any time.

Year 2000 Plan

Death Prior to Retirement

The spouse of the member who dies after accruing 5 years of creditable service may elect to receive an annuity as if the employee had retired on the date of death and elected a joint and 100% survivor annuity.

If no eligible spouse survives or upon the death of the spouse, 80% of the member's accrued annuity will be paid to eligible children until age 21.

If the death is duty related, there is no service requirement and the minimum annuity is 50% of the final average pay (FAP) to the surviving spouse or eligible children.

Death After Retirement

The benefit payable under the joint and survivor or period certain form of payment, if the member elected an optional form of payment at time of retirement.

A member who is not married at retirement but marries thereafter may designate a spouse as beneficiary. Additionally, a member may designate a new spouse as beneficiary in the event of the death of the spouse the member was married to at the date of retirement. The election must be completed within one year of the date of marriage.

For period certain annuities, beneficiaries may be changed at any time.

Closed Plan	Year 2000 Plan
Pop-Up Provision Benefits to members who choose a reduced survivor form of payment and whose spouse precedes the member in death, will "pop-up" or revert to the amount the member would have received had he/she not elected a reduced survivor option.	**Pop-Up Provision** Same.
$5,000 Death Benefit MPERS provides a $5,000 death benefit for a designated beneficiary(ies) of members who retire from service or elect normal or work-related disability benefits after September 28, 1985.	**$5,000 Death Benefit** MPERS provides a $5,000 death benefit for a designated beneficiary(ies) of members who retire from service or elect work-related disability benefits.
Purchase of Service **Military:** Prior to retirement, qualifying members may purchase up to a maximum of 4 years military service that includes active service, and/or active and inactive duty training from which they were honorably discharged. All months the member is eligible for must be purchased. This service credit ***can*** be used to satisfy the vesting requirement. Periods of military service cannot coincide with employment in a state agency.	**Purchase of Service** **Military:** Prior to retirement, qualifying members may purchase up to a maximum of 4 years military service that includes active service from which they were honorably discharged. All months the member is eligible for must be purchased. This service credit ***cannot*** be used to satisfy the vesting requirement. Periods of military service cannot coincide with employment in a state agency.
Police Service: Prior to retirement, uniformed patrol members only, may purchase up to a maximum of 4 years police service. Members must purchase all months of service they are eligible for.	**Police Service:** Not available.
Portability: Section 105.691 allows vested members to acquire (purchase/transfer) service credit for any non-federal, full-time public sector employment within Missouri. Service may be purchased/transferred by using the member's own money and/or using the value of the retirement benefit in the prior retirement plan if that plan has an agreement with MPERS. Any non-federal public employment **not covered** by a retirement plan must be purchased.	**Portability:** Same as Closed Plan Section 105.691. In addition, Section 104.1090 provides that in-state vested service with another retirement system may be granted after 10 years of state service if the other retirement plan agrees to transfer assets equal to the accrued liability to MPERS.
Full-time Non-federal public service: Allows patrol members to purchase a maximum of 4 years public service. Members must purchase all months of service they are eligible for and the purchase cost will be figured as a military purchase calculation.	**Full-time Non-federal public service:** Not available

SUMMARY OF BENEFIT PROVISIONS EVALUATED
AS OF JUNE 30, 2005
(CONTINUED)

Closed Plan

Disability

Benefits that may be payable during the period of disability (whether Normal, Work-related, or LTD) are administered through a separate program and were not considered for purposes of the valuation.

Normal retirement benefits become payable at the time a disabled member becomes eligible for normal retirement, and are computed based on: i) the service that would have accrued to the member if active employment had continued; and ii) the member's rate of pay at the time of disability.

Post-Retirement Benefit Adjustments

For active and inactive employees hired prior to August 28, 1997 and current retirees, the benefits of pensioners and their beneficiaries are increased annually by 80% of the increase in the Consumer Price Index (subject to a maximum increase of 5% and a minimum of 4%). These increases are made until the total of the increases reaches 65% of initial benefit at which time the increases will have the minimum removed.

For employees hired on or after August 28, 1997 the annual percentage increase is equal to the lesser of:

i) 80% of the CPI-U increase, or
ii) 5%.

Member Contributions

None

Year 2000 Plan

Disability

Same.

Post-Retirement Benefit Adjustments

Benefits are increased to retired members (including survivors) annually in accordance with the following:

Annual benefit percentage increase equal to the lesser of:

i) 80% of the CPI-U increase, or
ii) 5%.

Member Contributions

None

The Closed Plan & Year 2000 Plan
BackDROP Option

Legislation effective January 1, 2002 provides a Deferred Retirement Option Provision (BackDROP) to members of MPERS. It is available in both the Closed Plan and the Year 2000 Plan.

To be eligible to participate in the BackDROP, a member must have been eligible to retire under normal age and/or service conditions for at least two years. A retroactive starting date is established for BackDROP purposes which is the later of: 1) the member's normal retirement date, or 2) five years prior to the annuity starting date under the retirement plan selected by the member.

The BackDROP period for the accumulation of the BackDROP account is from the retroactive starting date to the annuity starting date. This results in a BackDROP period of one to five years depending upon the individual situation.

A theoretical BackDROP account is accumulated that includes 90% of the value of the benefit payments that would have been paid during the BackDROP period had the member retired at the retroactive starting date. These payments include applicable post-retirement benefit increases. These payments do not include any reduction for spouse options during the BackDROP period. The member may choose the BackDROP period in twelve-month increments or their maximum period, not to exceed 60 months.

The member is paid the resulting lump sum value of the BackDROP account as of the annuity starting date or as three equal annual installments beginning at the annuity starting date.

The annuity benefit payable from the actual retirement date is computed with years of service and final average pay as of the retroactive starting date for the BackDROP. Post-retirement benefit increases that occurred during the BackDROP period are applied in the calculation of the monthly annuity.

SAMPLE BENEFIT COMPUTATION FOR CLOSED PLAN MEMBERS
RETIRING JULY 1, 2005
NON-UNIFORMED EMPLOYEE

	Data	Description
A.	$40,000	Final Average Pay
B.	20	Years of Creditable Service
C.	60	Age of Retiree
D.	50%	Automatic percentage to continue to spouse after retirant's death

Sample Computation Steps

E. Retirement Benefit Formula: 0.016 x 20 x $40,000 = $12,800

Benefit payable to:

F.	Retiree while spouse is alive (E)	$ 12,800
G.	Spouse after retiree's death (D x E)	$ 6,400
H.	Retiree after spouse's death	$ 12,800

Year Ended June 30	Annual Amount Payable if Price Inflation is 3.25% and Post-Retirement Increases are 2.6%
2006	$12,800
2007	13,133
2008	13,474
2009	13,825
2010	14,184
2011	14,553
2012	14,931
2013	15,319
2014	15,718
2015	16,126

Sample Benefit Computation For Closed Plan Members
Retiring July 1, 2005
Uniformed Patrol

	Data	Description
A.	$40,000	Final Average Pay
B.	20	Years of Creditable Service
C.	60	Age of Retiree
D.	50%	Automatic percentage to continue to spouse after retirant's death

Sample Computation Steps

E. Retirement Benefit Formula: 0.021333 x 20 x $40,000 = $17,066

Benefit payable to:

F.	Retiree while spouse is alive (E)	$ 17,066
G.	Spouse after retiree's death (D x E)	$ 8,533
H.	Retiree after spouse's death	$ 17,066

Amounts shown below do not include the $1,080 annual supplementary benefit payable to age 65.

Year Ended June 30	Annual Amount Payable if Price Inflation is 3.25% and Post-Retirement Increases are 2.6%
2006	$17,066
2007	17,510
2008	17,965
2009	18,432
2010	18,912
2011	19,403
2012	19,908
2013	20,426
2014	20,957
2015	21,501

Sample Benefit Computation For Year 2000 Plan Members Retiring July 1, 2005

	Data	Description
A.	$40,000	Final Average Pay
B.	20	Years of Creditable Service
C.	60	Age of Retiree
D.	0%	Automatic percentage to continue to spouse after retirant's death

E1. Retirement Benefit Formula:	0.017 x 20 x $40,000 = $13,600
E2. Supplemental Benefit Formula:	.008 x 20 x $40,000 = $6,400

Benefit payable to:

F1. Retiree prior to age 62 (E1+E2)	$ 20,000
F2. Retiree after age 62 (E1)	$ 13,600
G. Spouse after retiree's death (D x E)	$ 0

Year Ended June 30	**Annual Amount Payable if Price Inflation is 3.25% and Post-Retirement Increases are 2.6%**
2006	$20,000
2007	20,520
2008	14,316
2009	14,689
2010	15,071
2011	15,462
2012	15,864
2013	16,277
2014	16,700
2015	17,134

Section C

Financial Information

SUMMARY OF FUND OPERATIONS

	2005	2004
Market Value of Fund Beginning of Fiscal Year	$ 1,353,136,400	$ 1,241,550,328
Post Valuation Audit Adjustment	300,105	0
Contributions		
Employer	102,240,145	86,724,914
Transfer from MOSERS	0	174,140
Service Purchase (Employee)	364,681	668,524
Total Contributions	$ 102,604,826	$ 87,567,578
Investment Return		
Interest	$ 12,784,637	$ 20,103,834
Dividends	12,028,955	7,876,950
Realized Capital Gains	126,010,671	182,126,399
Realized Capital Losses	(30,584,853)	(33,761,897)
Miscellaneous Income	9,500	0
Securities Lending Income	506,687	333,367
Other	344,492	104,384
Total Investment Return	$ 121,100,089	$ 176,783,037
Other Income (Rental Income and Misc)	31,104	33,853
Increase (Decrease) in Unrealized Appreciation	31,809,291	7,988,530
Benefit Payments		
Retirement Payments	$ 146,132,833	$ 139,702,971
Retirement Payments - BackDROP	8,880,770	14,318,622
Death Benefits	415,000	410,000
Long-Term Disability Payments	475,948	555,434
Insured Disability Program	1,837,786	152,896
Refund and Final Settlement	0	0
Total Benefits Payments	$ 157,742,337	$ 155,139,923
Expenses		
Investment	$ 8,268,303	$ 4,007,870
Actuarial	75,800	117,937
Other	1,840,792	1,521,196
Total Expenses	$ 10,184,895	$ 5,647,003
Market Value of Fund End of Fiscal Year	$ 1,441,054,574	$ 1,353,136,400

MISSOURI MPERS
DEVELOPMENT OF ACTUARIAL VALUE OF ASSETS

	Valuation Date of June 30	2002	2003	2004	2005		2006	2007
A.	**Actuarial value at beginning of year**	$ 1,529,835,552	$ 1,458,914,009	$ 1,364,305,996	$ 1,353,436,505	#		
B.	**Market value at end of year**	1,268,150,170	1,241,550,328	1,353,136,400	1,441,054,574			
C.	**Market value at beginning of year**	1,413,243,545	1,268,238,498	1,241,550,328	1,353,436,505			
D.	**Cash flow**							
	D1. Contributions	77,440,468	79,987,770	87,567,578	102,604,826			
	D2. Benefit Payments	(133,498,815)	(144,334,345)	(155,139,923)	(157,742,337)			
	D3. Administrative Expenses	(1,415,592)	(1,451,855)	(1,639,133)	(1,916,592)			
	D4. Non-Investment Net Cash Flow	(57,473,939)	(65,798,430)	(69,211,478)	(57,054,103)			
E.	**Investment income**							
	E1. Market total (B - C - D4)	(87,619,436)	39,110,260	180,797,550	144,672,172			
	E2. Assumed Rate of Return	8.25%	8.25%	8.25%	8.25%			
	E3. Amount for Immediate Recognition (A+.5xD4)xE2	123,840,633	117,646,221	109,700,271	109,305,030			
	E4. Amount for Phased-In Recognition	(211,460,069)	(78,535,961)	71,097,279	35,367,142			
F.	**Phased in recognition of investment income**							
	F1. F1. Current Year (33 1/3% of E4)	(70,486,690)	(26,178,654)	23,699,093	11,789,047			
	F2. First Prior Year	(49,790,460)	(70,486,690)	(26,178,654)	0	$	11,789,047	
	F3. Second Prior Year	(17,011,087)	(49,790,460)	(70,486,689)	0		0	$ 11,789,048
	F4. Total Recognized Investment Gain (F1 + F2 + F3)	(137,288,237)	146,455,804	(72,966,250)	11,789,047		11,789,047	11,789,048
	F5. Phase-In of Initial (BOY) difference between MVA and AVA	0	0	0	0			
G.	**Actuarial value at end of year (A + D4 + E3 + F4)**	1,458,914,009	1,364,305,996	1,331,828,539	1,417,476,479			
	Less LTD Assets	8,406,577	353,474	240,332	127,497		0	0
H.	**Preliminary Plan AVA**	1,450,507,432	1,363,952,522	1,331,588,207	1,417,348,982			
I.	**Corridor (Maximum of 120% of Market Value)**	N/A	N/A	N/A	1,729,265,489			
J.	**Corridor Minimum of 80% of Market Value)**	N/A	N/A	N/A	1,152,843,659			
K.	**Final Plan AVA after corridor adjustment, if any**	1,450,507,432	1,363,952,522	1,331,588,207	1,417,348,982			
	Difference between market and actuarial values	(190,763,839)	(122,755,668)	21,307,861	23,578,095			
	Recognized actuarial rate of return	(0.90)%	(2.02)%	2.76%	9.14%			
	Market Rate of Return	(6.33)%	3.17%	14.98%	10.92%			
	Ratio of Funding Value to Market Value	114.38%	109.86%	98.41%	98.35%			

Actuarial value reset to market value as of the beginning of year, including a post 6/30/2004 valuation audit adjustment.

ALLOCATION OF ASSETS BETWEEN GROUPS

The division between the Uniformed Patrol and Non-Uniformed Employee groups is in proportion to their market value of assets, as shown below:

	as of June 30	
	2005	**2004**
1. Other Income	$ 31,104	$ 33,853
2. Investment Income		
a) Uniformed Patrol	28,217,691	39,665,335
b) Non-Uniformed Employees	92,921,549	137,106,614
c) Total	121,139,140	176,771,949
3. Other Income Split		
a) Uniformed Patrol		
(2a) / (2c) x (1)	7,245	7,596
b) Non-Uniformed Employees		
(2b) / (2c) x (1)	23,859	26,257
c) Total	31,104	33,853
4. Funding Value of Assets	1,417,348,982	1,331,588,207
5. Market Value of Assets (less LTD assets)		
a) Uniformed Patrol	337,550,739	313,136,636
b) Non-Uniformed Employees	1,103,085,396	1,039,646,291
c) Total	1,440,636,135	1,352,782,927
6. Funding Value of Assets Split		
a) Uniformed Patrol		
(5a) / (5c) x (4)	332,094,360	308,230,569
b) Non-Uniformed Employees		
(5b) / (5c) x (4)	1,085,254,622	1,023,357,638
Total Assets Allocated	$ 1,417,348,982	$ 1,331,588,207

Section D

Summary of Member Data

CIVILIAN PATROL CLOSED ACTIVE MEMBERS
AS OF JUNE 30, 2005
BY ATTAINED AGE AND YEARS OF SERVICE

Attained Age	Count by Complete Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30+	No.	Valuation Payroll
Under 20									
20-24	9							9	$ 160,221
25-29	5	28	1					34	930,693
30-34	6	42	19					67	2,076,509
35-39	5	46	34	22	2			109	3,540,140
40-44	3	31	38	29	31	2		134	4,547,792
45-49	4	31	21	38	34	41	8	177	6,380,135
50		7	6	8	2	9	3	35	1,295,411
51		4	3	3	6	7	2	25	993,381
52		7	3	8	5	3	8	34	1,310,184
53		5	2	4	5	3	7	26	966,891
54		3	7	5	3	5	7	30	1,073,946
55		1	2	5	4	3	10	25	990,438
56		6	8	2	3	6	1	26	830,895
57	1	3	1	11	6	4	1	27	910,636
58	1	2	3	3	3		2	14	445,600
59		4	1	3				8	227,932
60		4	4	3	1			12	321,350
61		2	1	1	1			5	184,044
62			1	1	2		1	5	161,607
63			2					2	78,473
64				1		1		2	55,821
65				1				1	30,740
66				1				1	39,112
67							1	1	28,016
68									
69					1			1	30,989
70									
Over 70				1			1	2	60,343
Totals	**34**	**226**	**157**	**150**	**109**	**84**	**52**	**812**	**$ 27,671,299**

Average Age: 45.8 years
Average Service: 15.5 years
Average Pay: $34,078

Civilian Patrol Year 2000 Active Members
as of June 30, 2005
by Attained Age and Years of Service

Attained Age	Count by Complete Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30+	No.	Valuation Payroll
Under 20									
20-24	45							45	$ 1,076,079
25-29	63							63	1,681,038
30-34	43							43	1,231,249
35-39	34							34	933,496
40-44	38							38	1,034,938
45-49	24							24	602,760
50	6							6	162,679
51	7							7	184,622
52	7							7	204,359
53	4							4	100,915
54	3							3	65,775
55	6							6	146,506
56	7							7	207,543
57	2							2	39,209
58	4							4	114,122
59	2							2	62,272
60	2							2	45,424
61	4							4	98,889
62									
63	2							2	44,669
64									
65									
66									
67									
68									
69	1							1	19,832
70									
Over 70									
Totals	**304**	**0**	**0**	**0**	**0**	**0**	**0**	**304**	**$ 8,056,376**

Average Age: 37.4 years
Average Service: 2.6 years
Average Pay: $26,501

MoDOT Closed Active Members
as of June 30, 2005
by Attained Age and Years of Service

Attained Age	Count by Complete Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30+	No.	Valuation Payroll
Under 20	20							20	$ 462,152
20-24	148	13						161	5,115,429
25-29	95	206	3					304	11,041,499
30-34	104	301	172	5				582	21,533,450
35-39	78	235	310	121	17			761	28,969,350
40-44	80	253	203	266	221	12		1,035	41,006,746
45-49	82	166	187	195	225	279	22	1,156	46,023,250
50	10	32	31	28	23	55	17	196	7,704,430
51	16	21	30	24	30	46	24	191	7,447,294
52	12	29	25	32	31	27	24	180	7,373,195
53	11	21	26	24	23	18	20	143	5,575,925
54	6	18	19	21	30	23	23	140	5,715,453
55	6	18	20	21	16	15	17	113	4,390,673
56	8	16	13	21	13	7	24	102	4,241,545
57	6	11	20	14	20	11	18	100	4,112,078
58	5	13	17	18	11	10	14	88	3,518,973
59	3	11	9	10	7	7	13	60	2,412,501
60	4	9	5	11	3	1	5	38	1,431,054
61	7	4	6	12	10	4	14	57	2,350,947
62	1	4	3	4	4	1	5	22	906,184
63		10	1	3	3	3	3	23	891,877
64	1	1	2	1	1	1	1	8	304,222
65	1		3				1	5	252,994
66	2		1	2	1	1	1	8	384,270
67			1				2	3	106,273
68			2	1				3	116,283
69	3							3	164,695
70			1					1	32,720
Over 70		2	1		1	1		5	181,294
Totals	**709**	**1,394**	**1,111**	**834**	**690**	**522**	**248**	**5,508**	**$ 213,766,756**

Average Age: 43.8 years
Average Service: 13.8 years
Average Pay: $38,810

MoDOT Year 2000 Active Members
as of June 30, 2005
by Attained Age and Years of Service

Attained Age	Count by Complete Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30+	No.	Valuation Payroll
Under 20	2							2	$ 33,526
20-24	166							166	4,686,291
25-29	328							328	10,907,744
30-34	268							268	7,796,295
35-39	202							202	5,786,966
40-44	221							221	6,123,935
45-49	136							136	3,834,917
50	22							22	728,391
51	22							22	638,723
52	20							20	617,096
53	18							18	488,540
54	16							16	446,437
55	15							15	394,038
56	7							7	185,395
57	9							9	266,378
58	14							14	461,871
59	4							4	94,839
60	5							5	212,365
61	5							5	160,951
62	4							4	102,437
63	2							2	90,832
64	4							4	131,506
65	1							1	27,057
66	1							1	13,059
67	1							1	22,926
68									
69									
70									
Over 70									
Totals	**1,493**	**0**	**0**	**0**	**0**	**0**	**0**	**1,493**	**$ 44,252,515**

Average Age: 36.4 years
Average Service: 2.7 years
Average Pay: $29,640

Uniformed Patrol Closed Active Members
as of June 30, 2005
by Attained Age and Years of Service

Attained Age	Count by Complete Years of Service to Valuation Date 0-4	5-9	10-14	15-19	20-24	25-29	30+	Totals No.	Valuation Payroll
Under 20									
20-24	21							21	$ 42,106
25-29	5	42						47	1,764,824
30-34	6	127	49					182	7,832,605
35-39	1	78	133	30				242	11,403,500
40-44		19	36	90	19			164	8,633,442
45-49		5	3	36	31	44	3	122	7,323,185
50				4	3	10	2	19	1,271,141
51				1	1	15	7	24	1,596,427
52					1	10	9	20	1,381,766
53					3	4	9	16	1,141,032
54					2	3	7	12	847,307
55					2	2	8	12	870,454
56							9	9	699,178
57							2	2	145,515
58							2	2	152,422
59									
60							1	1	72,410
61									
62									
63									
64									
65									
66									
67									
68									
69									
70									
Over 70									
Totals	**33**	**271**	**221**	**161**	**62**	**88**	**59**	**895**	**$ 45,177,314**

Average Age: 40.0 years
Average Service: 15.0 years
Average Pay: $50,477

UNIFORMED PATROL YEAR 2000 ACTIVE MEMBERS
AS OF JUNE 30, 2005
BY ATTAINED AGE AND YEARS OF SERVICE

Attained Age	Count by Complete Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30+	No.	Valuation Payroll
Under 20									
20-24	32							32	$ 1,116,940
25-29	94							94	3,545,001
30-34	39							39	1,506,900
35-39	10							10	381,883
40-44	4							4	141,856
45-49	1							1	39,140
50	1							1	39,887
51									
52									
53									
54									
55									
56									
57									
58									
59									
60									
61									
62									
63									
64									
65									
66									
67									
68									
69									
70									
Over 70									
Totals	**181**	**0**	**0**	**0**	**0**	**0**	**0**	**181**	**$ 6,771,607**

Average Age: 28.9 years
Average Service: 2.7 years
Average Pay: $37,412

Growth Of Active Member Payroll

Actuarial Valuation for June 30,	Number	Covered Payroll	Average Pay	% Change in Average Pay from Prior Year
1989	8,181	$194,452,400	$23,769	(0.5)%
1990	8,256	211,414,753	25,607	7.7%
1991	8,308	220,856,988	26,584	3.8%
1992	8,591	228,503,592	26,598	0.1%
1993	8,658	236,236,082	27,285	2.6%
1994	8,849	242,864,780	27,445	0.6%
1995	8,904	250,529,253	28,137	2.5%
1996	9,023	264,196,115	29,280	4.1%
1997	8,997	280,209,116	31,145	6.4%
1998	8,871	284,889,796	32,115	3.1%
1999	9,140	298,673,247	32,678	1.8%
2000	9,171	312,532,009	34,078	4.3%
2001	9,087	327,049,257	35,991	5.6%
2002	8,695	312,747,492	35,969	(0.1)%
2003	8,892	318,744,192	35,846	(0.3)%
2004	9,002	328,210,887	36,460	1.7%
2005	9,193	345,695,867	37,604	3.1%
			Ten-Year Average	2.9%

Count and Total Monthly Benefits of Civilian Patrol Closed Retired (Non-Disabled) Members and Survivors as of June 30, 2005 by Attained Age

Age	Number	Monthly Benefit Amount
Less than 20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49	2	$ 1,290
50-54	4	6,866
55-59	12	14,952
60-64	42	63,213
65-69	98	140,932
70-74	106	161,923
75-79	71	88,648
80-84	41	38,243
85-89	17	19,748
90 & Over	5	4,960
TOTAL	**398**	**$ 540,775**

COUNT AND TOTAL MONTHLY BENEFITS OF CIVILIAN PATROL YEAR 2000 RETIRED (NON-DISABLED) MEMBERS AND SURVIVORS AS OF JUNE 30, 2005 BY ATTAINED AGE

Age	Number	Monthly Benefit Amount
Less than 20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54	36	$ 88,285
55-59	60	146,369
60-64	84	151,275
65-69	10	4,935
70-74	4	4,829
75-79	5	6,401
80-84	9	11,027
85-89		
90 & Over	3	3,110
TOTAL	**211**	**$ 416,231**

COUNT AND TOTAL MONTHLY BENEFITS OF MODOT CLOSED RETIRED (NON-DISABLED) MEMBERS AND SURVIVORS AS OF JUNE 30, 2005 BY ATTAINED AGE

Age	Number	Monthly Benefit Amount
Less than 20	12	$ 2,919
20-24	2	842
25-29		
30-34	3	842
35-39	6	4,646
40-44	8	6,543
45-49	23	17,886
50-54	30	26,525
55-59	95	87,361
60-64	383	572,116
65-69	885	1,684,958
70-74	848	1,525,306
75-79	692	1,104,618
80-84	502	549,387
85-89	255	171,726
90 & Over	210	110,726
TOTAL	**3,954**	**$ 5,866,401**

Count and Total Monthly Benefits of MoDOT Year 2000 Retired (Non-Disabled) Members and Survivors as of June 30, 2005 by Attained Age

Age	Number	Monthly Benefit Amount
Less than 20	3	$ 900
20-24		
25-29		
30-34		
35-39		
40-44	1	1,171
45-49	5	8,534
50-54	155	389,095
55-59	505	1,282,859
60-64	447	887,437
65-69	72	83,973
70-74	33	44,423
75-79	53	90,545
80-84	55	62,653
85-89	44	50,432
90 & Over	18	19,850
TOTAL	**1,391**	**$ 2,921,872**

Count and Total Monthly Benefits of Uniformed Patrol Closed Retired (Non-Disabled) Members and Survivors as of June 30, 2005 by Attained Age

Age	Number	Monthly Benefit Amount
Less than 20	1	$ 1,869
20-24		
25-29		
30-34	1	1,594
35-39		
40-44	3	4,242
45-49	3	6,527
50-54	40	120,582
55-59	135	458,458
60-64	154	596,051
65-69	118	473,026
70-74	88	362,732
75-79	69	257,093
80-84	48	114,753
85-89	26	46,039
90 & Over	32	40,100
TOTAL	**718**	**$ 2,483,066**

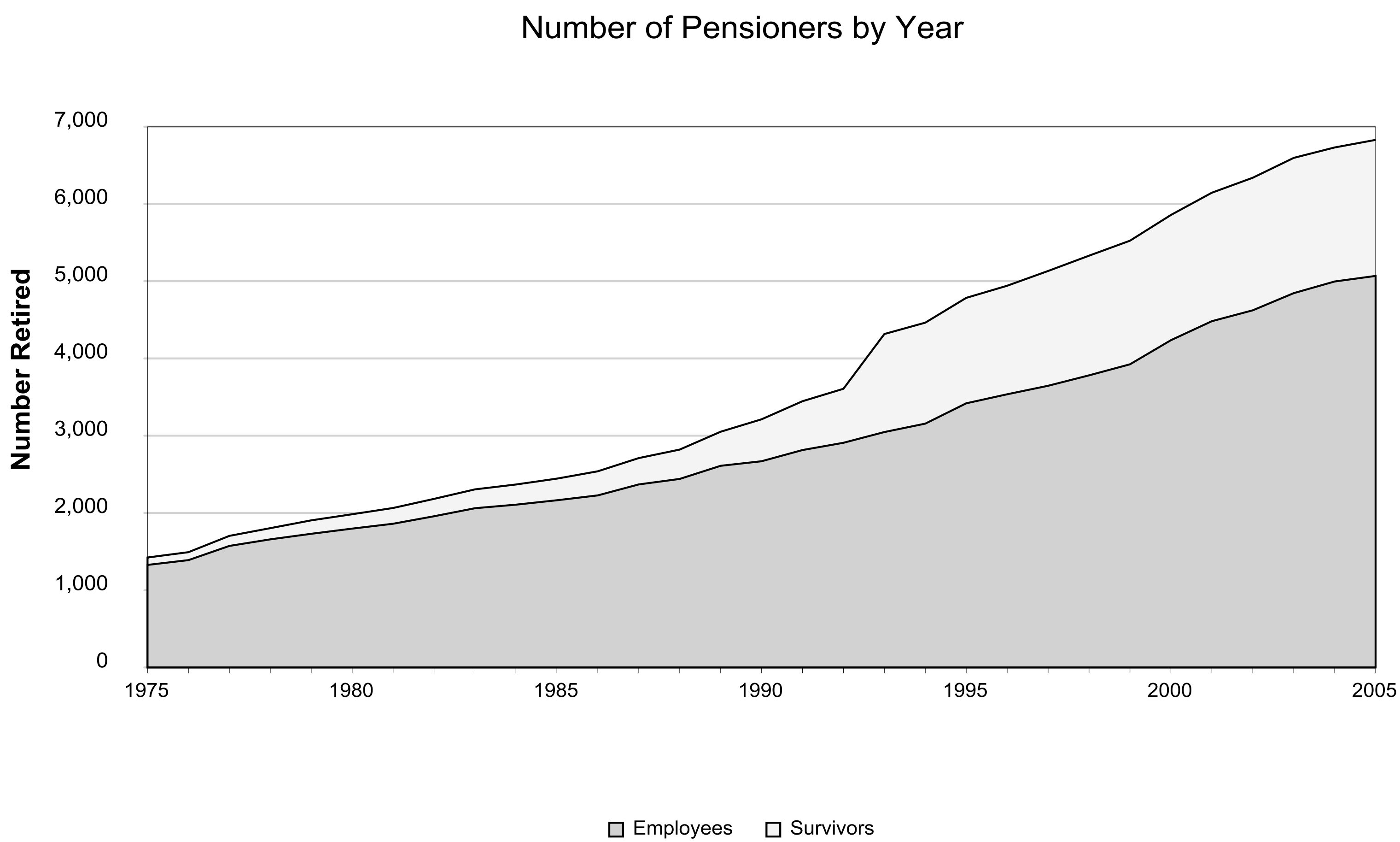
COUNT AND TOTAL MONTHLY BENEFITS OF UNIFORMED PATROL YEAR 2000 RETIRED (NON-DISABLED) MEMBERS AND SURVIVORS AS OF JUNE 30, 2005 BY ATTAINED AGE

Age	Number	Monthly Benefit Amount
Less than 20		
20-24		
25-29	1	$ 1,383
30-34		
35-39		
40-44		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75-79		
80-84		
85-89		
90 & Over		
TOTAL	**1**	**$ 1,383**

GROWTH OF PENSION POPULATION BY YEAR

Year	Retired Employees	Survivors	Total	% Increase	Annual Benefits	Active Payroll	Benefits as a % of Payroll
1975	1,327	96	1,423	7.2%			
1976	1,389	103	1,492	4.8%			
1977	1,573	130	1,703	14.1%			
1978	1,658	145	1,803	5.9%			
1979	1,730	174	1,904	5.6%			
1980	1,797	186	1,983	4.1%			
1981	1,860	204	2,064	4.1%			
1982	1,957	225	2,182	5.7%			
1983	2,061	244	2,305	5.6%			
1984	2,107	261	2,368	2.7%			
1985	2,164	280	2,444	3.2%			
1986	2,227	312	2,539	3.9%			
1987	2,369	341	2,710	6.7%			
1988	2,440	380	2,820	4.1%			
1989	2,610	441	3,051	8.2%			
1990	2,669	543	3,212	5.3%			
1991	2,814	632	3,446	7.3%			
1992	2,908	699	3,607	4.7%			
1993	3,047	1,269	4,316	19.7%			
1994	3,156	1,307	4,463	3.4%			
1995	3,419	1,365	4,784	7.2%			
1996	3,536	1,405	4,941	3.3%			
1997	3,646	1,486	5,132	3.9%			
1998	3,781	1,549	5,330	3.9%	$80,686,152	$284,889,796	28.3%
1999	3,924	1,600	5,524	3.6%	91,512,311	298,673,247	30.6%
2000	4,236	1,621	5,857	6.0%	100,794,676	312,532,009	32.3%
2001	4,482	1,663	6,145	4.9%	115,998,915	327,049,257	35.5%
2002	4,623	1,716	6,339	3.2%	125,623,460	312,747,492	40.2%
2003	4,845	1,751	6,596	4.1%	136,320,125	318,744,192	42.8%
2004	4,996	1,735	6,731	2.0%	142,359,307	328,210,887	43.4%
2005	5,068	1,761	6,829	1.5%	148,340,170	345,695,867	42.9%

GROWTH OF PENSION POPULATION BY YEAR



SELF INSURED DISABLED RETIRED MEMBERS
AS OF JUNE 30, 2005

Age	Number	Monthly Benefit Amount
Less than 20		
20-24		
25-29	1	$ 429
30-34	3	4,608
35-39	7	5,345
40-44	17	9,719
45-49	24	21,836
50-54	30	28,159
55-59	32	28,283
60-64	16	10,454
65-69	9	8,928
70-74	2	1,343
75-79	3	2,975
80-84	2	1,359
85-89	2	477
90 & Over	1	545
TOTAL	**149**	**$ 124,460**

These members became disabled prior to outsourcing disability claims. Liabilities for these members include benefits payable during and after the period of disability.

FULLY INSURED DISABLED RETIRED MEMBERS
AS OF JUNE 30, 2005

Age	Number	Monthly Benefit Amount
Less than 20		
20-24		
25-29		
30-34		
35-39	1	$ 601
40-44	1	1,772
45-49		
50-54	3	4,420
55-59		
60-64	2	732
65-69		
70-74		
75-79		
80-84		
85-89		
90 & Over		
TOTAL	**7**	**$ 7,525**

These members became disabled after disability claims became outsourced. Liabilities for these members during the period of disability are an obligation of the insurance company and not included in this valuation. Liabilities for these members after the period of disability are included in the valuation.

Section E

Assumptions Used in the Valuation

APPENDIX
SUMMARY OF VALUATION METHOD AND ASSUMPTIONS
JUNE 30, 2005

The actuarial assumptions used in the valuation are shown in this Appendix of the report. The assumptions were established for the June 30, 2005 actuarial valuation, following a five-year actuarial investigation. They were adopted by the Board after obtaining the advice of the Actuary and other professionals.

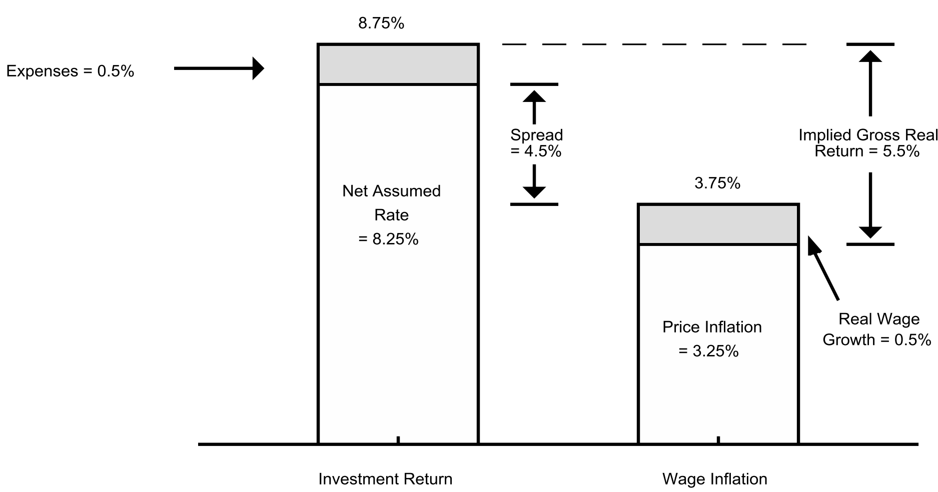
Economic Assumptions

The investment return rate used in making the valuations was 8.25% per year, compounded annually (net after investment expenses). The ***wage inflation rate*** was assumed to be 3.75%. The real rate of return over wage growth is defined to be the portion of total investment return, which is more than the rate of wage inflation. The 8.25% investment return rate and 3.75% wage inflation rate translates to an assumed real rate of return over wage growth net of expenses of 4.50%. Based upon other assumptions, the real rate of return over price inflation is 5%.

Pay increase assumptions for merit and seniority for individual active members are shown on page E-3. Part of the total assumed pay increase at each age is for merit and/or seniority, and the other 3.75% recognizes wage inflation. ***The active member payroll*** is assumed to increase 3.75% annually.

The price inflation rate is assumed to be 3.25% annually. This is the inflation rate upon which the post-retirement increases are based. The difference between wage and price inflation of 0.5% is attributable to overall productivity increases and macro economic factors.

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



Non-Economic Assumptions

The mortality tables, for post-retirement mortality, used in evaluating allowances to be paid to non-disabled pensioners were the 1971 Group Annuity Mortality Tables projected to the year 2000 set back 1 year for males and 7 years for females. Pre-retirement mortality used was 50% of the 71GAM2000 tables set back 1 year for males and 7 years for females. Disabled pension mortality was based on PBGC Disabled Mortality tables. Related values are shown on page E-4.

The probabilities of age and service retirement are shown on page E-6.

The probabilities of withdrawal from service are shown on pages E-8 and E-9. ***The probabilities of disability*** are shown on page E-7.

The entry age normal actuarial cost method of valuation was used in determining liabilities and normal cost. The normal cost was calculated as if everyone were in the Year 2000 Plan.

> Differences in the past between assumed experience and actual experience ("actuarial gains and losses") become part of actuarial accrued liabilities.
>
> Unfunded actuarial accrued liabilities are amortized to produce payments (principal & interest) which are level percents of payroll contributions.

Employer contributions were assumed to be ***paid in equal installments*** throughout the employer fiscal year.

Present assets (cash & investments) were used with a market value adjustment. Assets may be used in the valuation prior to the final audit. The exact method is shown on page C-2.

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.

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.

Age Based Salary Scale

Age	Salary Increase Assumptions for an Individual Member					
	Non-Uniformed			Uniformed		
	Merit & Seniority	Base (Economic)	Increase Next Year	Merit & Seniority	Base (Economic)	Increase Next Year
20	8.00%	3.75%	11.75%	6.00%	3.75%	9.75%
21	8.00%	3.75%	11.75%	6.00%	3.75%	9.75%
22	8.00%	3.75%	11.75%	6.00%	3.75%	9.75%
23	7.30%	3.75%	11.05%	5.80%	3.75%	9.55%
24	6.52%	3.75%	10.27%	5.60%	3.75%	9.35%
25	5.66%	3.75%	9.41%	5.40%	3.75%	9.15%
26	4.72%	3.75%	8.47%	5.20%	3.75%	8.95%
27	4.50%	3.75%	8.25%	5.00%	3.75%	8.75%
28	4.10%	3.75%	7.85%	4.50%	3.75%	8.25%
29	3.70%	3.75%	7.45%	4.00%	3.75%	7.75%
30	3.30%	3.75%	7.05%	3.50%	3.75%	7.25%
31	2.90%	3.75%	6.65%	3.00%	3.75%	6.75%
32	2.50%	3.75%	6.25%	2.50%	3.75%	6.25%
33	2.35%	3.75%	6.10%	2.25%	3.75%	6.00%
34	2.20%	3.75%	5.95%	2.00%	3.75%	5.75%
35	2.05%	3.75%	5.80%	1.75%	3.75%	5.50%
36	1.90%	3.75%	5.65%	1.50%	3.75%	5.25%
37	1.75%	3.75%	5.50%	1.25%	3.75%	5.00%
38	1.65%	3.75%	5.40%	1.20%	3.75%	4.95%
39	1.55%	3.75%	5.30%	1.15%	3.75%	4.90%
40	1.45%	3.75%	5.20%	1.10%	3.75%	4.85%
41	1.35%	3.75%	5.10%	1.05%	3.75%	4.80%
42	1.25%	3.75%	5.00%	1.00%	3.75%	4.75%
43	1.15%	3.75%	4.90%	0.88%	3.75%	4.63%
44	1.05%	3.75%	4.80%	0.76%	3.75%	4.51%
45	0.95%	3.75%	4.70%	0.64%	3.75%	4.39%
46	0.85%	3.75%	4.60%	0.52%	3.75%	4.27%
47	0.75%	3.75%	4.50%	0.40%	3.75%	4.15%
48	0.70%	3.75%	4.45%	0.39%	3.75%	4.14%
49	0.65%	3.75%	4.40%	0.38%	3.75%	4.13%
50	0.60%	3.75%	4.35%	0.37%	3.75%	4.12%
51	0.55%	3.75%	4.30%	0.36%	3.75%	4.11%
52	0.50%	3.75%	4.25%	0.35%	3.75%	4.10%
53	0.46%	3.75%	4.21%	0.33%	3.75%	4.08%
54	0.42%	3.75%	4.17%	0.31%	3.75%	4.06%
55	0.38%	3.75%	4.13%	0.29%	3.75%	4.04%
56	0.34%	3.75%	4.09%	0.27%	3.75%	4.02%
57	0.30%	3.75%	4.05%	0.25%	3.75%	4.00%
58	0.30%	3.75%	4.05%	0.00%	3.75%	3.75%
59	0.30%	3.75%	4.05%	0.00%	3.75%	3.75%
60	0.30%	3.75%	4.05%	0.00%	3.75%	3.75%

POST-RETIREMENT MORTALITY

Age	Regular		Disabled		Age	Regular		Disabled	
	Male	Female	Male	Female		Male	Female	Male	Female
21	0.00042	0.00035	0.04830	0.02630	61	0.01086	0.00646	0.06240	0.03390
22	0.00043	0.00036	0.04830	0.02630	62	0.01195	0.00705	0.06430	0.03470
23	0.00045	0.00037	0.04830	0.02630	63	0.01313	0.00767	0.06570	0.03550
24	0.00047	0.00038	0.04830	0.02630	64	0.01441	0.00831	0.06680	0.03620
25	0.00049	0.00039	0.04830	0.02630	65	0.01593	0.00901	0.06780	0.03700
26	0.00051	0.00040	0.04610	0.02570	66	0.01770	0.00987	0.06870	0.03780
27	0.00054	0.00042	0.04360	0.02530	67	0.01974	0.01086	0.06970	0.03860
28	0.00057	0.00043	0.04110	0.02470	68	0.02204	0.01195	0.07090	0.03940
29	0.00060	0.00045	0.03880	0.02420	69	0.02451	0.01313	0.07230	0.04020
30	0.00063	0.00047	0.03620	0.02370	70	0.02740	0.01441	0.07390	0.04110
31	0.00067	0.00049	0.03390	0.02320	71	0.03068	0.01593	0.07570	0.04210
32	0.00071	0.00051	0.03200	0.02270	72	0.03419	0.01770	0.07760	0.04330
33	0.00076	0.00054	0.03020	0.02220	73	0.03768	0.01974	0.07960	0.04470
34	0.00081	0.00057	0.02880	0.02180	74	0.04106	0.02204	0.08180	0.04650
35	0.00087	0.00060	0.02780	0.02140	75	0.04455	0.02451	0.08420	0.04920
36	0.00093	0.00063	0.02720	0.02120	76	0.04837	0.02740	0.08690	0.05290
37	0.00100	0.00067	0.02710	0.02100	77	0.05286	0.03068	0.09080	0.05780
38	0.00107	0.00071	0.02730	0.02080	78	0.05835	0.03419	0.09620	0.06310
39	0.00116	0.00076	0.02760	0.02080	79	0.06463	0.03768	0.10430	0.06860
40	0.00125	0.00081	0.02820	0.02090	80	0.07136	0.04106	0.11280	0.07460
41	0.00135	0.00087	0.02880	0.02100	81	0.07875	0.04455	0.12210	0.08130
42	0.00148	0.00093	0.02970	0.02130	82	0.08647	0.04837	0.13220	0.08850
43	0.00166	0.00100	0.03050	0.02160	83	0.09449	0.05286	0.14320	0.09620
44	0.00187	0.00107	0.03140	0.02190	84	0.10293	0.05835	0.15510	0.10430
45	0.00213	0.00116	0.03220	0.02240	85	0.11166	0.06463	0.16810	0.11280
46	0.00242	0.00125	0.03300	0.02290	86	0.12064	0.07136	0.18250	0.12210
47	0.00275	0.00135	0.03400	0.02350	87	0.12994	0.07875	0.19800	0.13220
48	0.00311	0.00148	0.03530	0.02420	88	0.13951	0.08647	0.21500	0.14320
49	0.00350	0.00166	0.03670	0.02490	89	0.14955	0.09449	0.23300	0.15510
50	0.00392	0.00187	0.03830	0.02570	90	0.16012	0.10293	0.25250	0.16820
51	0.00437	0.00213	0.04010	0.02640	91	0.17131	0.11166	0.27390	0.18250
52	0.00486	0.00242	0.04200	0.02720	92	0.18291	0.12064	0.29720	0.19800
53	0.00536	0.00275	0.04390	0.02810	93	0.19478	0.12994	0.32260	0.21500
54	0.00590	0.00311	0.04600	0.02880	94	0.20689	0.13951	0.34950	0.23300
55	0.00646	0.00350	0.04820	0.02950	95	0.22134	0.14955	0.37890	0.25250
56	0.00705	0.00392	0.05060	0.03010	96	0.23700	0.16012	0.41090	0.27390
57	0.00767	0.00437	0.05310	0.03070	97	0.25325	0.17131	0.44580	0.29720
58	0.00831	0.00486	0.05550	0.03150	98	0.27090	0.18291	0.48380	0.32260
59	0.00901	0.00536	0.05810	0.03230	99	0.29016	0.19478	0.52430	0.34950
60	0.00987	0.00590	0.06030	0.03310	100	0.30913	0.20689	0.56840	0.37890

Pre-Retirement mortality is 50% of the regular post-retirement mortality values.

JOINT LIFE RETIREMENT VALUES
(8.25% INTEREST)

Sample Attained	Present Value of $1 Monthly for Life		Future Life Expectancy (years)	
Ages	Men	Women	Men	Women
50	$178.33	$180.48	29.17	34.67
55	166.67	168.83	24.82	30.06
60	152.89	155.18	20.70	25.67
65	137.02	139.27	16.82	21.50
70	119.73	121.57	13.32	17.57
75	101.90	103.24	10.36	13.99
80	84.30	85.23	7.83	10.91

The present values shown above are for illustrative purposes only and include the value of future post-retirement increases at 2.6% per year and a 50% survivor benefit. Males are assumed to be 3 years older than their spouse.

Age	Non-Uniformed				Uniformed	
	Male		Female		Male	Female
	Normal	Early	Normal	Early	Normal	
50	0.1800		0.1800		0.5000	0.5000
51	0.1800		0.1800		0.2500	0.2500
52	0.1800		0.1800		0.2000	0.2000
53	0.1800		0.1800		0.2000	0.2000
54	0.1800		0.1800		0.2000	0.2000
55	0.1800	0.0400	0.1800	0.0400	0.2500	0.2500
56	0.1800	0.0400	0.1800	0.0400	0.3000	0.3000
57	0.1800	0.0400	0.1800	0.0400	0.3500	0.3500
58	0.1800	0.0400	0.1800	0.0400	0.3500	0.3500
59	0.1800	0.0400	0.2000	0.0400	0.3500	0.3500
60	0.1800	0.0400	0.2000	0.0400	1.0000	1.0000
61	0.1800	0.0400	0.2000	0.0400	1.0000	1.0000
62	0.5000	0.3500	0.2500	0.4000	1.0000	1.0000
63	0.4000	0.0400	0.2000	0.3000	1.0000	1.0000
64	0.3000	0.0400	0.2000	0.3000	1.0000	1.0000
65	0.4500		0.4000		1.0000	1.0000
66	0.4000		0.4000		1.0000	1.0000
67	0.3500		0.4000		1.0000	1.0000
68	0.3500		0.4000		1.0000	1.0000
69	0.3500		0.4000		1.0000	1.0000
70	1.0000		1.0000		1.0000	1.0000

RATES OF DISABILITY

Age	Non-Uniformed		Uniformed		Age	Non-Uniformed		Uniformed	
	Male	Female	Male	Female		Male	Female	Male	Female
21	0.0001	0.0005	0.0002	0.0002	51	0.0042	0.0050	0.0017	0.0017
22	0.0001	0.0005	0.0002	0.0002	52	0.0048	0.0058	0.0019	0.0019
23	0.0001	0.0005	0.0002	0.0002	53	0.0054	0.0069	0.0022	0.0022
24	0.0001	0.0005	0.0002	0.0002	54	0.0060	0.0082	0.0025	0.0025
25	0.0001	0.0006	0.0003	0.0003	55	0.0066	0.0054	0.0000	0.0000
26	0.0001	0.0006	0.0003	0.0003	56	0.0066	0.0067	0.0000	0.0000
27	0.0001	0.0006	0.0003	0.0003	57	0.0066	0.0083	0.0000	0.0000
28	0.0001	0.0006	0.0003	0.0003	58	0.0066	0.0099	0.0000	0.0000
29	0.0001	0.0007	0.0003	0.0003	59	0.0066	0.0115	0.0000	0.0000
30	0.0001	0.0007	0.0003	0.0003	60	0.0000	0.0000	0.0000	0.0000
31	0.0002	0.0008	0.0003	0.0003	61	0.0000	0.0000	0.0000	0.0000
32	0.0003	0.0008	0.0004	0.0004	62	0.0000	0.0000	0.0000	0.0000
33	0.0004	0.0009	0.0004	0.0004	63	0.0000	0.0000	0.0000	0.0000
34	0.0005	0.0010	0.0004	0.0004	64	0.0000	0.0000	0.0000	0.0000
35	0.0006	0.0010	0.0004	0.0004	65	0.0000	0.0000	0.0000	0.0000
36	0.0007	0.0011	0.0005	0.0005	66	0.0000	0.0000	0.0000	0.0000
37	0.0007	0.0012	0.0005	0.0005	67	0.0000	0.0000	0.0000	0.0000
38	0.0008	0.0013	0.0005	0.0005	68	0.0000	0.0000	0.0000	0.0000
39	0.0008	0.0015	0.0005	0.0005	69	0.0000	0.0000	0.0000	0.0000
40	0.0009	0.0016	0.0006	0.0006	70	0.0000	0.0000	0.0000	0.0000
41	0.0011	0.0018	0.0006	0.0006	71	0.0000	0.0000	0.0000	0.0000
42	0.0014	0.0020	0.0007	0.0007	72	0.0000	0.0000	0.0000	0.0000
43	0.0016	0.0023	0.0008	0.0008	73	0.0000	0.0000	0.0000	0.0000
44	0.0019	0.0026	0.0008	0.0008	74	0.0000	0.0000	0.0000	0.0000
45	0.0021	0.0029	0.0009	0.0009	75	0.0000	0.0000	0.0000	0.0000
46	0.0024	0.0032	0.0010	0.0010	76	0.0000	0.0000	0.0000	0.0000
47	0.0027	0.0035	0.0011	0.0011	77	0.0000	0.0000	0.0000	0.0000
48	0.0030	0.0038	0.0013	0.0013	78	0.0000	0.0000	0.0000	0.0000
49	0.0033	0.0041	0.0014	0.0014	79	0.0000	0.0000	0.0000	0.0000
50	0.0036	0.0045	0.0015	0.0015	80	0.0000	0.0000	0.0000	0.0000

Rates Of Separation From Active Employment
Less Than 5 Years Of Service

	Non-Uniformed		Uniformed	
Service	**Male**	**Female**	**Male**	**Female**
0-1	0.2500	0.1800	0.0800	0.0800
1-2	0.1200	0.1100	0.0600	0.0600
2-3	0.0700	0.0900	0.0450	0.0450
3-4	0.0600	0.0700	0.0300	0.0300
4-5	0.0500	0.0600	0.0200	0.0200

	Non-Uniformed		Uniformed	
Age	**Male**	**Female**	**Male**	**Female**
25	0.0470	0.0625	0.0450	0.0450
26	0.0470	0.0609	0.0450	0.0450
27	0.0470	0.0593	0.0450	0.0450
28	0.0426	0.0580	0.0426	0.0426
29	0.0402	0.0568	0.0402	0.0402
30	0.0378	0.0555	0.0378	0.0378
31	0.0354	0.0543	0.0354	0.0354
32	0.0340	0.0530	0.0330	0.0330
33	0.0322	0.0514	0.0294	0.0294
34	0.0304	0.0498	0.0258	0.0258
35	0.0286	0.0482	0.0222	0.0222
36	0.0268	0.0466	0.0186	0.0186
37	0.0250	0.0450	0.0150	0.0150
38	0.0232	0.0426	0.0140	0.0140
39	0.0214	0.0402	0.0130	0.0130
40	0.0196	0.0378	0.0120	0.0120
41	0.0178	0.0354	0.0110	0.0110
42	0.0160	0.0330	0.0100	0.0100
43	0.0150	0.0324	0.0094	0.0094
44	0.0140	0.0318	0.0088	0.0088
45	0.0130	0.0312	0.0082	0.0082
46	0.0120	0.0306	0.0076	0.0076
47	0.0110	0.0300	0.0070	0.0070
48	0.0106	0.0300	0.0062	0.0062
49	0.0102	0.0300	0.0054	0.0054
50	0.0098	0.0300	0.0046	0.0046
51	0.0094	0.0300	0.0038	0.0038
52	0.0090	0.0300	0.0030	0.0030
53	0.0082	0.0250	0.0026	0.0026
54	0.0074	0.0200	0.0022	0.0022
55	0.0066	0.0150	0.0018	0.0018
56	0.0058	0.0100	0.0014	0.0014
57	0.0050	0.0050	0.0010	0.0010
58	0.0040	0.0050	0.0010	0.0010
59	0.0030	0.0050	0.0010	0.0010
60	0.0021	0.0050	0.0010	0.0010

MISCELLANEOUS AND TECHNICAL ASSUMPTIONS

Administrative Expenses:	0.55% of payroll, based upon actual results from previous year.
Disability Expenses:	0.56% of payroll included in contribution. Retirement system pays premium directly to an outside insurance company or TPA.
Marriage Assumption:	90% of participants are assumed to be married for purposes of death-in-service benefits. Applies to disabled members entitled to future retirement benefits also.
Pay Increase Timing:	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.
Decrement Timing:	Decrements of all types are assumed to occur mid-year.
Eligibility Testing:	Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.
Benefit Service:	Exact fractional service is used to determine the amount of benefit payable.
Decrement Relativity:	Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.
Normal Form of Benefit:	The assumed normal form of benefit is a 50% joint & survivor benefit for married members in the Closed Plan and a straight life for all other members.
Optional Benefit Factors:	Optional Benefit Factors are in accordance with tables adopted by the Board. The Normal Cost and Actuarial Accrued Liability for the normal, early, and vesting decrements were increased by 1.5% for Uniformed Year 2000 Plan members and 1.0% for Non-Uniformed Year 2000 Plan members to account for subsidized option factors codified in the Statute.
Other:	Disability and turnover decrements do not operate during retirement eligibility.
Miscellaneous Loading Factors:	The calculated normal and early retirement benefits were increased by 4.3% for Uniformed and 2.6% for Non-Uniformed to account for the inclusion of unused sick leave in the calculation of Average Pay.

Method Of Financing Future Benefits For Present Active Members

The valuation was prepared in accordance with Section 104.1066 of the Missouri Revised Statutes, which requires the use of the entry-age normal actuarial cost method for determining normal cost and level percent-of-payroll financing of unfunded actuarial accrued liabilities. Details of the application of these methods are described below.

Normal cost and the allocation of 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 date of employment to the date of retirement, are sufficient to accumulate the value of the member's benefit at the time of retirement.

(ii) for the purposes of determining the normal cost, the benefits of the Year 2000 Plan were used. This creates a normal cost that is a constant percentage of the member's year-by-year projected covered pay even as members transition from the current plan benefits to the Year 2000 Plan benefits.

The ***Value of Future Benefits*** was calculated using the benefits assumed to be payable in the future to current active, terminated vested and retired members. It was assumed that current active and retired Uniformed Patrol members hired prior to July 1, 2000 would elect to retain the benefits under the current plan. Computed costs were increased in accordance with the loads described on page E-10.

Method Of Financing Future Benefits For Present Active Members (concluded)

The ***Present Value of Future Normal Costs*** was defined as the average normal cost rate multiplied by the present value of future payroll for the group.

The ***Actuarial Accrued Liabilities*** were defined as the difference between the present value of future benefits and the present value of future normal costs.

Actuarial Accrued Liabilities, less pension assets as of June 30, 2005 resulted in ***Unfunded Actuarial Accrued Liabilities*** which were amortized as a level percent of payroll over a period of 31 years. Continued yearly reductions in the amortization period will result in a 30-year period being used for the June 30, 2006 valuation. This is consistent with GASB amortization period requirements.

GLOSSARY

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

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

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

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

Actuarial Equivalent. A series of payments is called an actuarial equivalent of another series of payments if the two series have the same actuarial present value.

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

Actuarial value of assets. Also referred to as funding value of assets, smoothed market value of assets, or valuation assets.

Valuation assets recognize assumed investment return fully each year. Differences between actual and assumed investment return are phased in over a closed 3-year period. This treatment helps remove the timing of investment activities from the valuation process. 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 4 consecutive years, valuation assets will become equal to market value.

Actuary. A person who is trained in the applications of probability and compound interest to problems in business and finance that involve payment of money in the future, contingent upon the occurrence of future events. Most actuaries in the United States are Members of the American Academy of Actuaries. The Society of Actuaries is an international research, education and membership organization for actuaries in the life and health insurance, employee benefits, and pension fields. It administers a series of examinations leading initially to Associateship and the designation A.S.A. and ultimately to Fellowship with the designation F.S.A.

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

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

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

Plan Termination Liability. The actuarial present value of future plan benefits based on the assumption that there will be no further accruals for future service and salary. The termination liability will generally be less than the liabilities computed on a "going concern" basis and is not normally determined in a routine actuarial valuation.

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

Unfunded Actuarial Accrued Liability. The difference between the actuarial accrued liability and actuarial value of assets. Sometimes referred to as "unfunded accrued liability."

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 Payroll. Active member payroll that is intended to reflect the annual salary considered as covered compensation for Retirement System benefits.

Section F

Financial Principles and Operational Techniques

FINANCIAL PRINCIPLES AND OPERATIONAL TECHNIQUES OF THE RETIREMENT SYSTEM

Promises Made, and To Be Paid For. As each year is completed, the Retirement System in effect hands an "IOU" to each member then acquiring a year of service credit -- the "IOU" says: "The Missouri Department of Transportation and Highway Patrol Employees' Retirement System owes you one year's worth of retirement benefits, payments in cash commencing when you qualify for retirement."

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?

The objective of level percent-of-payroll financing is that this year's taxpayers contribute the money to cover the IOUs being handed out this year. By following this objective, ***the employer contribution rate will remain approximately level from year to year*** --- and will not have to be increased for future generations of taxpayers. However, "Level percent-of-payroll" does NOT mean "Fixed percent-of-payroll". The level percent of payroll is an estimate that may change from one year to the next.

(There are systems which have a design for deferring contributions to future taxpayers, lured by a lower contribution rate now and putting aside the consequence that the contribution rate must then relentlessly grow much greater over decades of time.)

An inevitable by-product of the level-cost design is the accumulation of reserve assets, for decades, and the income produced when the assets are invested. ***Invested assets are a by-product and not the objective.*** Investment income becomes the 3rd contributor for benefits to employees, and is interlocked with the contribution amounts required from employees and employer.

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Translated to actuarial terminology, this level-cost objective means that the contribution rates must total at least the following:

> ***Normal Cost*** (the value assigned to service being rendered this year)
>
> . . . plus . . .
>
> ***Interest on Unfunded Actuarial Accrued Liabilities*** (the difference between liabilities for service already rendered and the accrued assets of the Retirement System).

Computing Contributions To Support System Benefits From a given schedule of benefits and from the employee data and asset data furnished by the system, the actuary determines the contribution rates to support the benefits, by means of ***an actuarial valuation.***

An actuarial valuation has a number of ingredients such as: the rate of investment return which plan assets will earn; the rates of withdrawal of active members who leave covered employment; the rates of mortality; the rates of disability; the rates of pay increases and the assumed age or ages at actual retirement.

In an actuarial valuation the actuary must assume what the above rates will be, for the next year and for decades in the future. Only the subsequent actual experience of the plan can indicate the degree of accuracy of the assumptions.

Reconciling Differences Between Assumed Experience and Actual Experience Once actual experience has occurred and has been observed, it will not coincide exactly with assumed experience, regardless of the skill of the actuary and the many calculations made. Most retirement systems cope with such differences by having annual actuarial valuations. Each actuarial valuation is a complete recalculation of assumed future experience, taking into account all past differences between assumed and actual experience. The result is ***continuing adjustments to the financial position.***

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

A. ***Covered people data*** furnished by plan administrator, including:

Retired lives now receiving benefits

Former employees with vested benefits not yet payable

Active employees

B. + ***Asset data*** (cash & investments), furnished by the plan administrator

C. + ***Benefit provisions*** which specify eligibility and amounts of pensions

D. + ***Assumptions concerning future experience in various risk areas,*** which are established by the Retirement Board after consulting with the actuary

E. + ***The funding method*** for employer contributions (the long-term, planned pattern for employer contributions)

F. + ***Mathematically combining the assumptions, the funding method, and the data***

G. = Determination of:

Plan Financial Position and/or

New Employer Contribution Rate

Meaning Of "unfunded Actuarial Accrued Liabilities"

"Actuarial accrued liabilities" are the portion of the present value of plan promises to pay benefits in the future that are not covered by future normal cost contributions. A liability has been established ("accrued") because the service has been rendered but the resulting monthly cash benefit may not be payable until years in the future. Actuarial accrued liabilities are the result of complex mathematical calculations, which are made by the plan's actuary.

If "actuarial accrued liabilities" exceed the plan's accrued assets (cash & investments), the difference is ***"unfunded actuarial accrued liabilities."*** This is the usual condition. If the plan's assets equaled the plan's "actuarial accrued liabilities," then the plan would be termed "fully funded." This is an unusual condition.

Each time a plan adds a new benefit, which applies to service already rendered, an "actuarial accrued liability" is created, which is also an "unfunded actuarial accrued liability" because the plan can't print instant cash to cover the value of the new benefit promises. Payment for such unfunded actuarial accrued liabilities is spread over a period of years, commonly in the 20-50 year range.

Unfunded actuarial accrued liabilities can occur in another way: if actual plan experience is less favorable than assumed plan experience, the difference is added to unfunded actuarial accrued liabilities. In plans where benefits are directly related to an employee's pay near time of retirement, unfunded actuarial accrued liabilities rose dramatically during the 1970's. Unexpected rates of pay increase created additional actuarial accrued liabilities, which could not be matched by reasonable investment results. More recent experience has generally been more favorable with some reductions in unfunded actuarial accrued liabilities.

The existence of unfunded actuarial accrued liabilities is not bad, but the changes from year to year in the amount of unfunded actuarial accrued liabilities are important, --- "bad" or "good" or somewhere in between.

Even though unfunded actuarial accrued liabilities don't constitute a bill payable immediately, it is important that policy-makers prevent the amount from becoming unreasonably high and ***it is vital for plans to have a sound method for making payments toward them*** so that they are controlled.