Gabriel Roeder Smith & Company
Consultants & Actuaries

MISSOURI DEPARTMENT OF TRANSPORTATION AND HIGHWAY PATROL EMPLOYEES' RETIREMENT SYSTEM (MPERS)

ACTUARIAL VALUATION REPORT

AS OF JUNE 30, 2012

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GRS
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October 22, 2012

The Retirement Board
Missouri Department of Transportation
and Highway Patrol Employees' Retirement System
1913 William Street
Jefferson City, Missouri 65102-1930

Ladies and Gentlemen:

The results of the regular annual actuarial valuation as of June 30, 2012 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 purposes of this valuation were:

- to measure the System's funding progress;
- to determine the employer contribution rate for Fiscal Year 2014;
- to determine actuarial information for reporting purposes in compliance with Governmental Accounting Standards Statements No. 25 and No. 43 for the 2012 Fiscal Year.

Your attention is directed particularly to the summary of the results on pages 3-13.

This report was prepared at the request of the Board and is intended for use by the Retirement System and those designated or approved by the Board. This report may be provided to parties other than the System only in its entirety and only with the permission of the Board. This report should not be relied on for any purpose other than the purpose described.

The member statistical data required for the valuation together with pertinent data on financial operations was furnished by your Executive Director and her staff. Member data was reviewed for reasonableness, but was not audited by the actuary. Financial data was received in aggregate and reviewed for reasonableness. Individual investments were not reviewed. Assets are not audited by the actuary. We are not responsible for the accuracy or completeness of the data provided by MPERS.

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.

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

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements; and changes in plan provisions or applicable law. This report does not contain an analysis of the potential range of such future measurements.

To the best of our knowledge, this report is complete and accurate and was made in accordance with standards of practice promulgated by the Actuarial Standards Board of the American Academy of Actuaries. The actuarial assumptions used for the valuation produce results which, individually and in the aggregate, are reasonable. The actuarial assumptions used in making the valuation are shown in Section E of this report.

This report has been prepared by actuaries who have substantial experience valuing public employee retirement systems. Heidi Barry is a Member of the American Academy of Actuaries (MAAA) and meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

We would like to acknowledge Brian B. Murphy, FSA, MAAA as the Peer Review Actuary.

Respectfully submitted,

Heidi G Barry

Kenneth G. Alberts

Heidi G. Barry, ASA, MAAA

Kenneth G. Alberts

SUMMARY

This report contains the results of the June 30, 2012 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			Uniformed Patrol	Total
	Civilian Patrol Employees	MoDOT Employees	Non-Uniformed Total		
Participants					
Active Members					
Closed Plan	499	2,822	3,321	721	4,042
Year 2000 Plan (also closed)	538	2,287	2,825	413	3,238
Year 2011 Tier (open)	91	6	97	81	178
Total Active Members	1,128	5,115	6,243	1,215	7,458
Total Active Members Prior Year	*1,146*	*5,872*	*7,018*	*1,213*	*8,231*
Retiree -- Regular Pensioners					
Closed Plan	437	3,701	4,138	825	4,963
Year 2000 Plan (also closed)	413	2,502	2,915	1	2,916
Year 2011 Tier (open)	0	0	0	0	0
Total Regular Pensioners	850	6,203	7,053	826	7,879
Self Insured Disability Pensioners	5	58	63	3	66
Fully Insured Disability Pensioners	12	95	107	3	110
Terminated Vested Members	225	1,641	1,866	159	2,025
Total	2,220	13,112	15,332	2,206	17,538
Active Member Valuation Payroll	$42,605,045	$213,982,134	$256,587,179	$72,705,989	$329,293,168
Active Mem. Val. Payroll Prior Year	*$42,793,273*	*$246,425,127*	*$289,218,400*	*$72,420,601*	*$361,639,001*
Unfunded Actuarial Accrued Liability	N/A	N/A	$1,362,414,960	$412,830,098	$1,775,245,058

The June 30, 2012 valuation results are used to determine the contribution rate for the plan year beginning July 1, 2013. A summary of valuation results and recommended contribution rates follows.

The **total contribution rate** for the plan year beginning July 1, 2013 is shown below.

	FY 2014 Employer Contribution Rates Expressed As % of Active Payroll For Total Benefits				
	Non-Uniformed				
	Civilian Patrol Employees	MoDOT Employees	Total	Uniformed Patrol Total	Combined Rate (MPERS Total)
Normal Cost	11.07%	11.07%	11.07%	17.34%	12.47%
Unfunded Liability	41.75%	41.75%	41.75%	36.46%	40.54%
Expenses	0.90%	0.90%	0.90%	0.90%	0.90%
Subtotal	53.72%	53.72%	53.72%	54.70%	53.91%
Disability Insurance	0.53%	0.53%	0.53%	0.53%	0.53%
Total	54.25%	54.25%	54.25%	55.23%	54.44%
Projected $	$24,879,233	$116,085,308	$140,964,541	$43,223,651	$184,188,191
Prior Year Projected $	*$22,607,473*	*$125,479,675*	*$148,087,148*	*$42,898,080*	*$190,985,228*

The projected dollar amounts are the total employer rate multiplied by the valuation payroll projected to the fiscal year the rate is effective. The projection factor is 1.0379 for Non-Uniformed and 1.0764 for Uniformed. Actual contributions will be based on the actual payroll during the 2014 Fiscal Year. The total contribution is based on a 12-year amortization period for unfunded retiree liabilities and a 27-year amortization period for other unfunded liabilities from July 1, 2013 in accordance with Board policy adopted September 17, 2009.

The contributions above are Employer contributions only. In addition, Employee contributions are estimated to be (on average) 0.04% for Non-Uniformed members and 0.16% for Uniformed members.

The combined contribution rate 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.

Prior year projected dollars are based on rates of 50.92% for Non-Uniform and 55.03% for Uniform.

Assumptions and Methods for the June 30, 2012 valuation: The Governmental Accounting Standards Board (GASB) has adopted its revised statements No. 67 and No. 68. The use of the ultimate normal cost method will not be acceptable for accounting purposes (many public sector actuaries believe it is still acceptable under actuarial standards for funding). To minimize the differences between what is used for funding and what is used for reporting, the Board adopted the traditional entry age normal cost method for future valuations beginning with the June 30, 2012 valuation (which will use a blended normal cost between the Closed Plan, the Y2K plan and the 2011 Tier). While this change does not affect the total cost of the plan, it does affect the breakdown between normal costs and accrued liability. Since the difference in the two plans is minor for non-uniformed members and a reduction in benefits for uniformed members the change results in almost no change in contributions for non-uniformed members and an increase in contributions for uniformed members.

There were some other minor technical changes in methods for the June 30, 2012 valuation that were identified in the 2011 actuarial audit, such as more precisely modeling:

- The marriage assumption;
- The salary increase assumption for members expected to become disabled in the future;
- The temporary benefit for 2011 Tier members.

The funding value of assets was split between the Uniform and Non-Uniform groups based on the relative values of the groups' market values (this was temporarily changed for 2011 due to a large asset transfer from MOSERS on behalf of the water patrol on the last day of the plan year). The effect of these changes decreased the Non-Uniform contribution rate by 0.04% and increased the Uniform contribution rate by 3.33%. Most of the increase in the Uniform rate was offset by other factors. See page 7 for additional details.

The amortization of unfunded actuarial accrued liability was revised pursuant to the revised MoDOT estimates of future payroll (see comment on amortization method for further details).

Experience: System assets earned a 2.8% return on a market basis, although the fund recognized an 11.5% rate of return on an actuarial basis after accounting for the smoothing of this year's loss and the prior gains (please see page C-2). In aggregate, there was an experience gain of $107 million (approximately 3.2% of beginning of year liabilities). This gain was made up of a $45 million investment gain and a $62 million liability gain and resulted in the funding status increasing from 43.3% to 46.0%, before reflecting the changes in the method. In addition to the gains related to pay increases, there were gains and losses related to demographic experience (things happening to members). The table on the following page shows a comparison of actual activity versus expected activity (based on valuation assumptions):

Demographic Experience

	Non-Uniformed				Uniformed			
	Number Count			General	Number Count			General
	Actual	Expected	A/E%	Direction	Actual	Expected	A/E%	Direction
Retirement	320	262.6	122%	Loss	28	32.6	86%	Gain
Death	0	8.6	0%	Gain	0	1.0	0%	Gain
Disability	28	21.6	130%	Loss	2	1.1	182%	Loss
Vested Terminations	247	123.2	200%	Gain	6	13.0	46%	Loss
Other Terminations	250	106.0	236%	Gain	24	10.0	240%	Gain

In light of the recent changes in the economy and the recent downsizing of MoDOT, the Board has authorized GRS to perform the 5-year experience study following the June 30, 2012 valuation to review the assumptions and methods. This study is expected to be presented in spring, 2013. Any changes in assumptions or methods resulting from this study will be included in the June 30, 2013 actuarial valuation and will not affect the contribution rates established from this valuation.

Funding Policy:

Permanent Policy: The total contribution will be based on normal cost plus a 23-year amortization of unfunded actuarial accrued liabilities. The amortization period is a closed 23-year period starting July 1, 2013.

Temporary Accelerated Policy: The total contribution is based on normal cost plus a 12-year amortization period for unfunded retiree liabilities and a 27-year amortization period for other unfunded liabilities. Both amortization periods are closed periods starting July 1, 2013.

In accordance with RSMo 105.684 an accelerated amortization schedule was prepared and presented to the Board. This temporary accelerated policy was adopted by the Retirement Board on September 17, 2009 and will remain in effect until such time as the retiree liability becomes 100% funded or the permanent policy produces a higher contribution rate.

Rate Reconciliation: The table below shows the computed rate last year and the approximate effect of the changes that occurred during the year.

	Non-Uniform	Uniform
Computed employer contribution rate, prior valuation	50.92%	55.03%
Effects of:		
Change in disability premiums	0.00%	0.00%
Change in methods	(0.04%)	3.33%
Phase-in of 2011 Tier members	(0.03%)	(0.08%)
11/12 recognized investment loss (gain)	(0.58%)	(2.22%)
11/12 liability experience loss (gain)	(1.58%)	(0.70%)
Change in administrative expenses	0.17%	0.17%
Change due to payroll increase less than expected	5.26%	1.37%
Misc (demographic, payroll weighting, component interaction, etc.)	1.05%	(1.67%)
Computed employer contribution rate, current valuation	55.17%	55.23%
Revised amortization method (based on updated MoDOT projections)	(0.92%)	0.00%
Computed employer contribution rate, current valuation	54.25%	55.23%

Funded Status of Retiree Liability: The chart below indicates the funding status of retiree liabilities on a funding value asset basis and a market value asset basis:

	June 30, 2012			June 30, 2011
Asset Basis	Non-Uniformed	Uniformed	Total	Total
Funding Value	68.0%	84.3%	71.8%	69.8%
Market Value	68.4%	84.8%	72.1%	75.9%

2011 Tier: Legislation passed in the summer of 2010 which effective closed the Y2K Plan benefits to new hires and opened a new tier known as the 2011 Tier. All new hires after January 1, 2011 will enter the 2011 Tier. The 2011 Tier includes the following:

- 4% employee contribution rate;
- 10-year vesting;
- later retirement eligibility;
- no DROP eligibility.

There were 178 members covered under this Tier as of June 30, 2012.

Amortization Method Change: At the December 2011 Board meeting, the Board adopted a change in the computation of the amortization of UAAL to recognize the short term downsizing plan of MoDOT. As a result of projections provided to GRS, we used the following assumed payroll growth for the Non-Uniform group (which includes MoDOT and civilian patrol) 0.57% for FY 2013; 0.59% for FY 2014; 3.75% for 2015 and beyond (3.75% was used for all years for the Uniform group). We understand that MoDOT is ahead of schedule and we have been provided the following revised projections:

FY13	$229 million	Target headcount at 6/30/12	5,106
FY14	$229 million	Target headcount at 6/30/13	5,106
FY15	$236 million	Target headcount at 6/30/14	5,106
FY16	$236 million	Target headcount at 6/30/15	5,106
FY17	$243 million	Target headcount at 6/30/16	5,106

As a result of this projection, we revised our calculations to reflect the following payroll growth for the non-uniform group (of which MoDOT represents the majority):

FY 13: 1.87%
FY 14: 1.88%
FY 15 and later: 3.75% per annum

This change essentially smoothes out the payroll increases that MoDOT projects to occur every other year and continues to assume the other groups incur payroll growth of 3.75% annually.

This change was applied to the expected contributions from the previously adopted employer rates as well as the factors used to finance the UAAL. Liabilities were not affected by this change. Should the future pay increases for individuals result in lower than assumed pay increases, those gains will materialize in the following valuation. **Results are shown on page 4**.

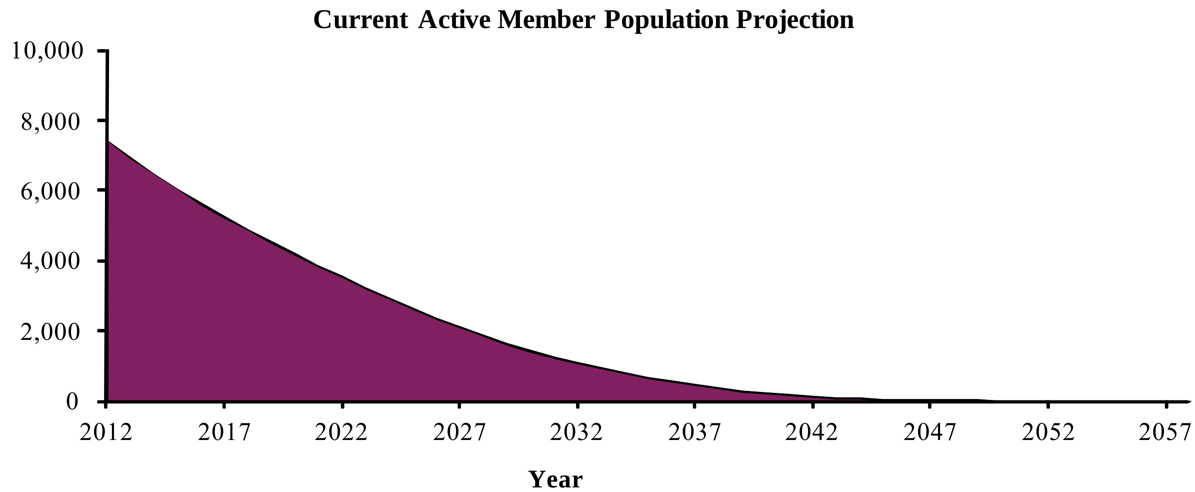
Recommendation for June 30, 2012 valuation: We recommend adopting the employer contribution rates shown herein and continue with the plan of performing the experience study early.

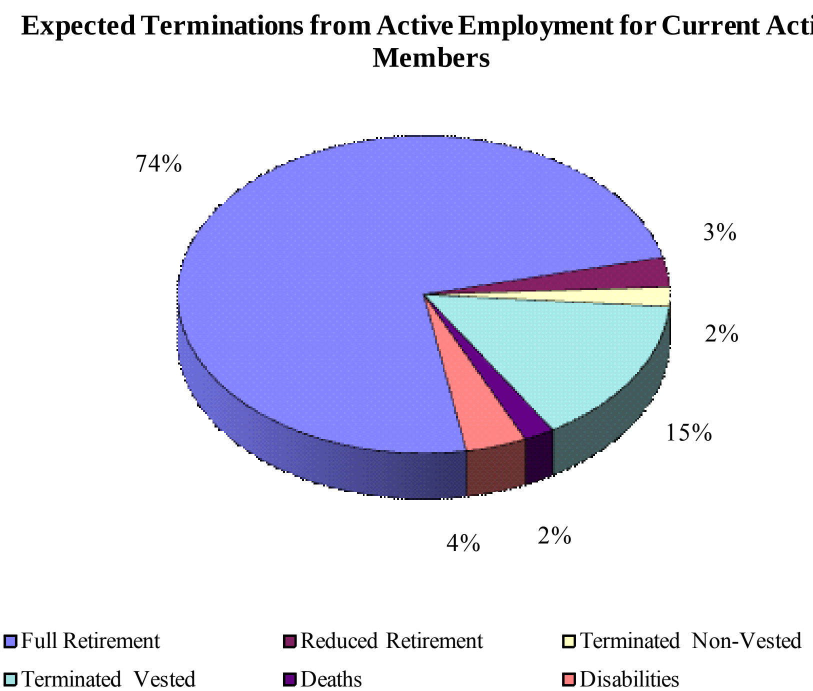
Conclusion: Based upon the results of the June 30, 2012 regular annual actuarial valuation, it is our opinion that the Missouri Department of Transportation and Highway Patrol Employees' Retirement System continues to be financed in accordance with actuarial principles of level percent of payroll financing. This statement is based upon the fact that the employer is contributing to the system based upon actuarially determined rates and presumes a continuation of payment of actuarially determined contributions. In addition, we commend the 2009 Board in its decision to more aggressively address the unfunded retiree liability issue and the 2011 Board in its decision to reflect the near term downsizing of MoDOT.

SUMMARY OF KEY VALUATION RESULTS (CONTINUED)

Actuarial Present Value	June 30, 2012 (1) Actuarial Present Value	June 30, 2012 (2) Portion Covered By Future Normal Cost Contributions	June 30, 2012 (3) Actuarial Accrued Liabilities (1) - (2)	June 30, 2011 Actuarial Accrued Liabilities
Active Members				
Service retirement benefits based on service rendered before and likely to be rendered after valuation date	$ 1,349,017,412	$308,210,872	$ 1,040,806,540	$ 1,113,228,634
Disability benefits likely to be paid to present active members who become totally and permanently disabled	53,780,899	17,498,128	36,282,771	41,207,050
Survivor benefits likely to be paid to widows and children of present active members who die before retiring	23,723,391	8,090,478	15,632,913	17,491,578
Separation benefits likely to be paid to present active members	39,924,902	23,283,281	16,641,621	22,561,941
Active Member Totals	$ 1,466,446,604	$357,082,759	$ 1,109,363,845	$ 1,194,489,203
Terminated Vested Members			64,201,828	57,976,898
Retired Lives			2,132,712,998	2,045,123,768
Total Actuarial Accrued Liability			$ 3,306,278,671	$ 3,297,589,869
Actuarial Value of Assets			1,531,033,613	1,427,290,718
Unfunded Actuarial Accrued Liability			$ 1,775,245,058	$ 1,870,299,151

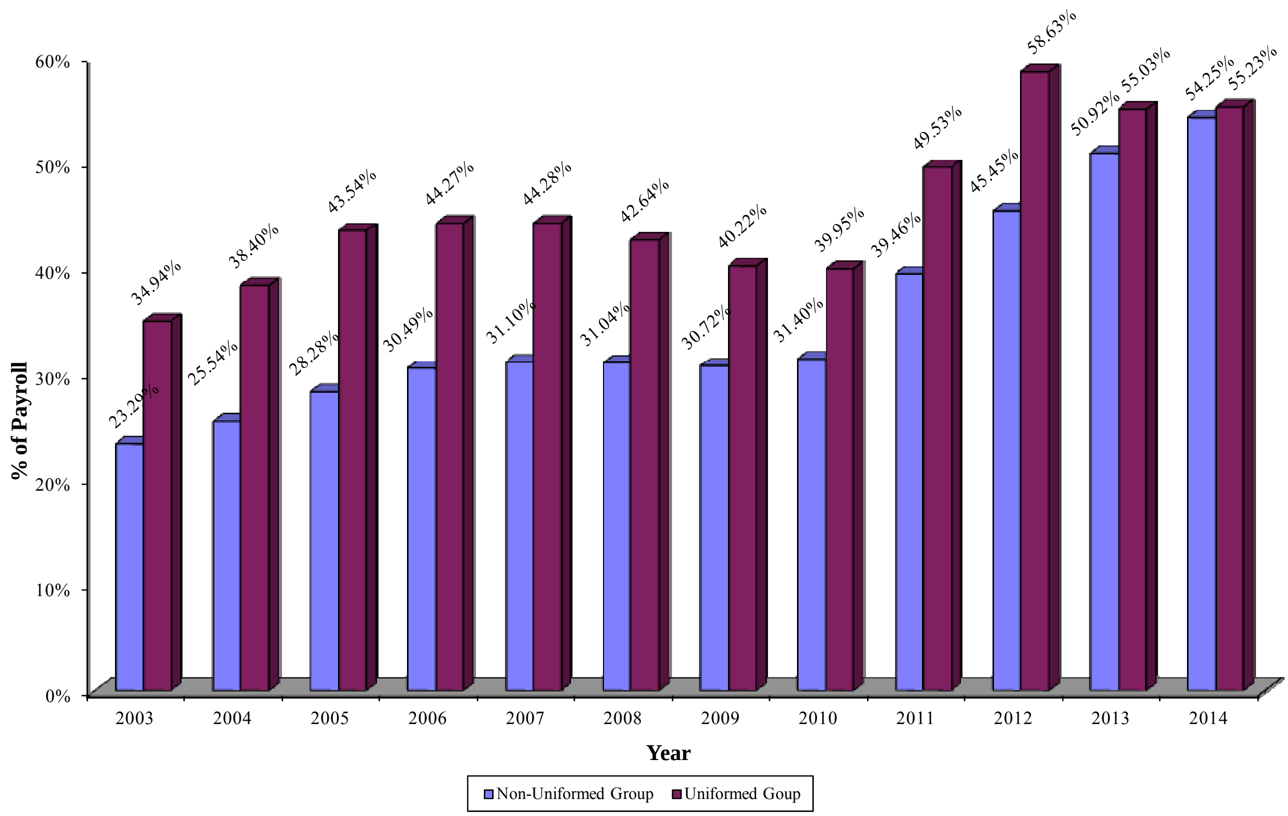
EXPECTED DEVELOPMENT OF PRESENT POPULATION AS OF JUNE 30, 2012 (CONTINUED)



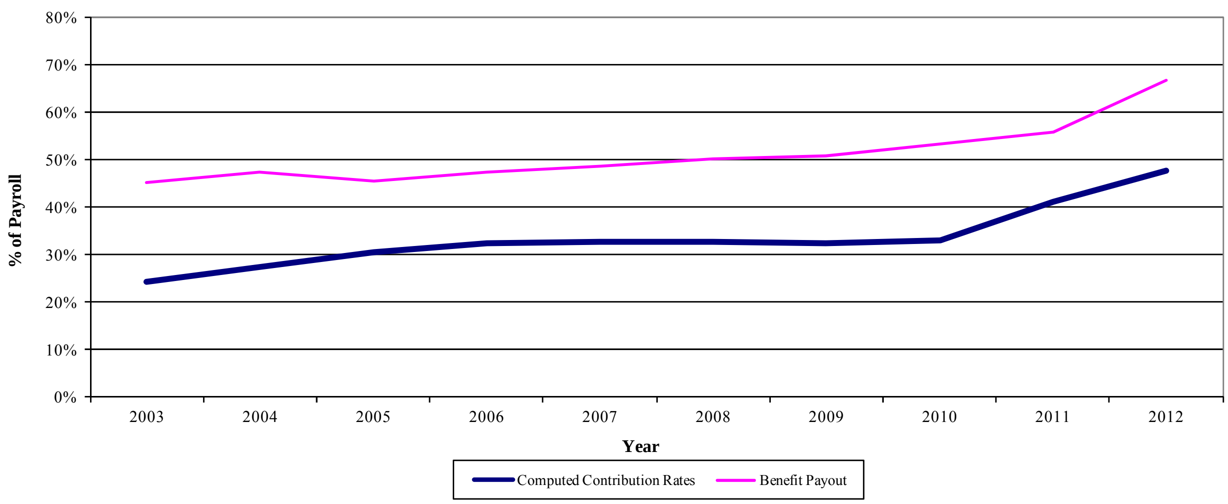


The charts above show the expected future development of the present population in simplified terms. The retirement system presently covers 7,458 active members. Eventually, 2% of the population is expected to terminate covered employment prior to retirement and forfeit eligibility for an employer provided benefit. Of the present population, 92% 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 11 years, over half of the covered membership is expected to consist of new hires.

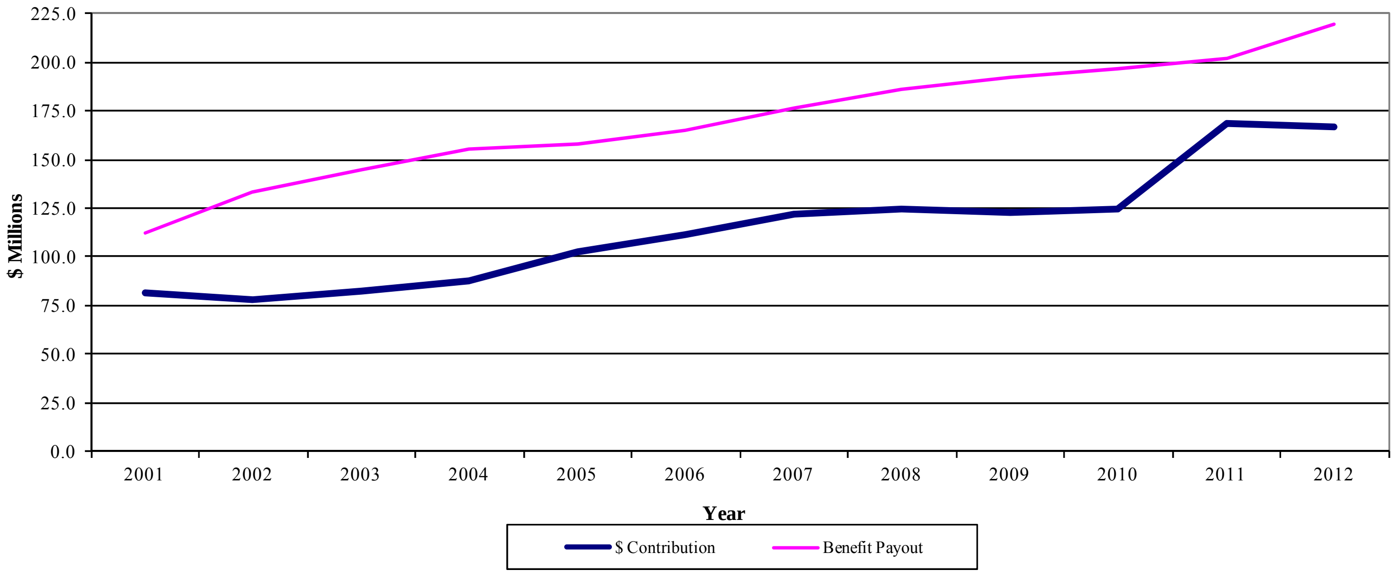
Computed Contribution Rates



Contribution Rates vs. Benefit Payout

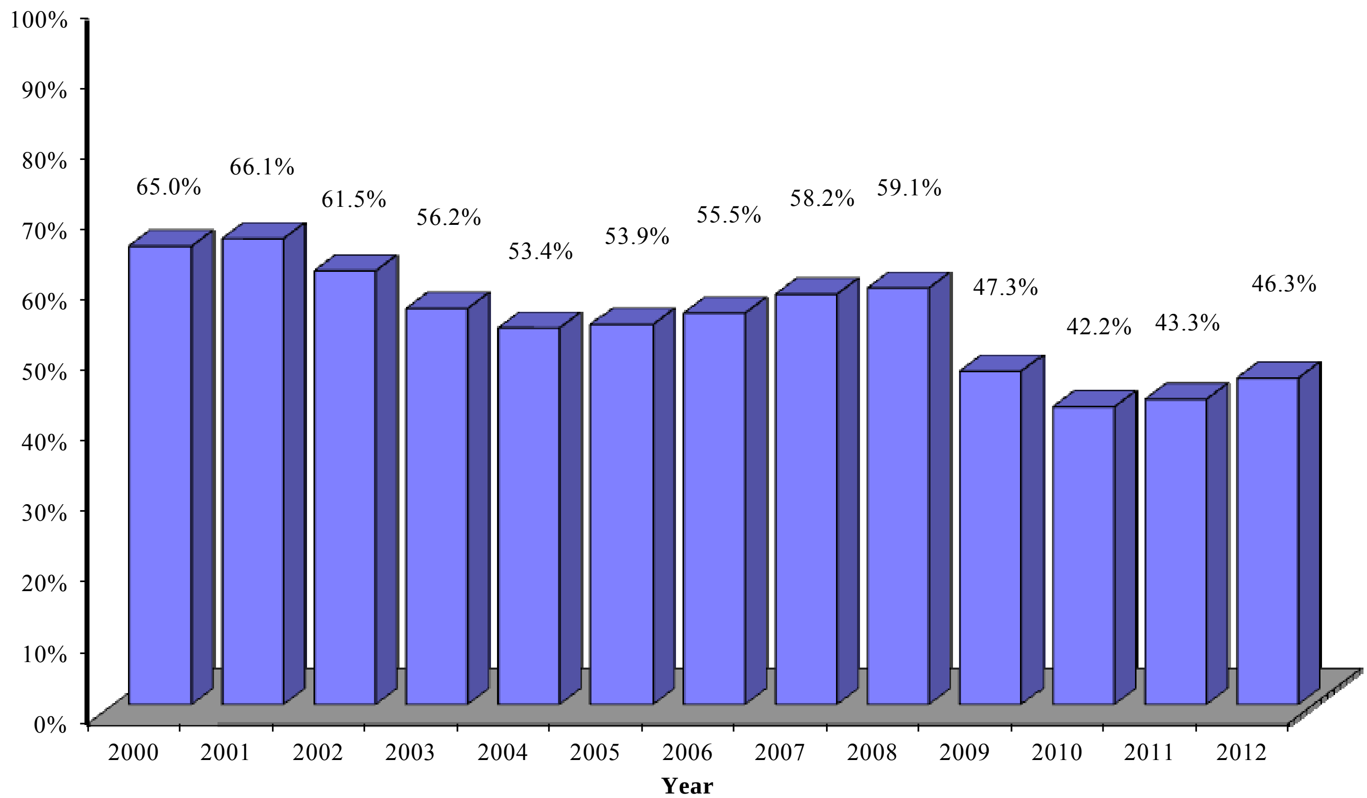


Contribution Dollars vs. Benefit Payout Dollars
(in millions)



HISTORICAL FUNDED RATIOS

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



SECTION A

VALUATION RESULTS

COMPUTED CONTRIBUTIONS TO SUPPORT BENEFITS
FOR FISCAL YEAR 2014
CONTRIBUTIONS COMPUTED AS OF JUNE 30, 2012

	Non-Uniformed Employees			Uniformed Patrol			
Contributions for	**Closed & Year 2000**	**2011 Tier**	**Total**	**Closed & Year 2000**	**2011 Tier**	**Total**	**Total**
Normal Cost							
Age & service benefits	9.38%	7.14%	9.35%	15.83%	12.43%	15.69%	10.77%
Disability benefits #	0.72%	0.64%	0.72%	0.48%	0.29%	0.47%	0.66%
Survivor benefits	0.26%	0.26%	0.26%	0.38%	0.27%	0.38%	0.29%
Separation benefits	0.78%	0.93%	0.78%	0.96%	0.94%	0.96%	0.82%
Total Normal Cost	11.14%	8.97%	11.11%	17.65%	13.93%	17.50%	12.54%
Member Contributions	0.00%	4.00%	0.04%	0.00%	4.00%	0.16%	0.07%
Employer Normal Cost	11.14%	4.97%	11.07%	17.65%	9.93%	17.34%	12.47%
Unfunded Actuarial Accrued Liabilities*			41.75%			36.46%	40.54%
Expense Provision			0.90%			0.90%	0.90%
Subtotal			53.72%			54.70%	53.91%
Disability Insurance			0.53%			0.53%	0.53%
Total Contribution Rate			54.25%			55.23%	54.44%
Projected Dollar Contribution			$140,964,541			$43,223,651	$184,188,191
Prior Year							
Total Contribution Rate			50.92%			55.03%	51.79%
Projected Dollar Contribution			$148,087,148			$42,898,080	$190,985,228

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 a 12-year amortization period for unfunded retiree liabilities and a 27-year amortization period for other unfunded liabilities from July 1, 2013.*

DEVELOPMENT OF LIABILITIES
AS OF JUNE 30, 2012

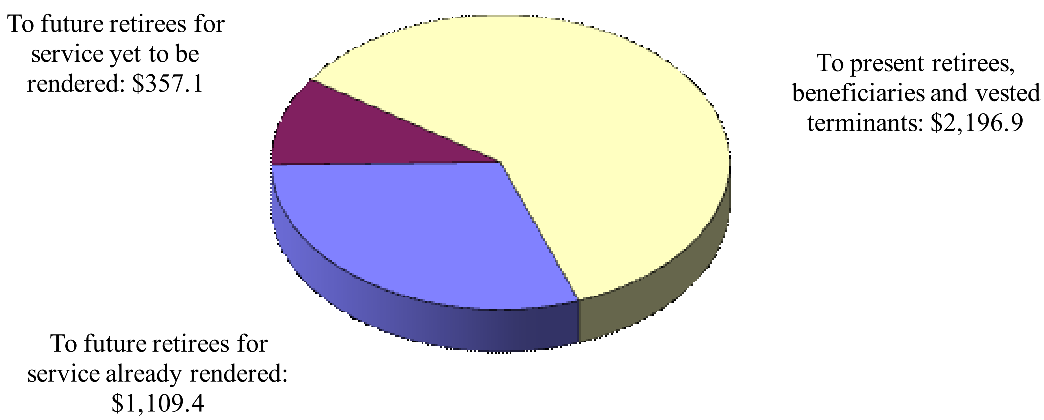
	Non-Uniformed Employees	Uniformed Patrol	Total
Present Value of Future Benefits - Inactives			
Retirees and Survivors	$ 1,619,434,329	$ 490,529,943	$ 2,109,964,272
Disability Pensioners	20,168,325	2,580,401	22,748,726
Vested Terminated Employees	55,109,976	9,091,852	64,201,828
Subtotal PVFB - Inactives	1,694,712,630	502,202,196	2,196,914,826
Present Value of Future Benefits - Actives			
Age & Service benefits	920,306,836	428,710,576	1,349,017,412
Normal and Work Related Disability benefits	43,578,924	10,201,975	53,780,899
Survivor benefits	16,686,450	7,036,941	23,723,391
Separation benefits	30,988,334	8,936,568	39,924,902
Subtotal PVFB - Actives	1,011,560,544	454,886,060	1,466,446,604
Total Present Value of Future Benefits	2,706,273,174	957,088,256	3,663,361,430
Less Present Value of Future Entry Age Normal Costs	228,668,151	128,414,608	357,082,759
Equals Actuarial Accrued Liability	2,477,605,023	828,673,648	3,306,278,671
Less Actuarial Value of Assets	1,115,190,063	415,843,550	1,531,033,613
Equals Unfunded Actuarial Accrued Liability	1,362,414,960	412,830,098	1,775,245,058
Amortization Payment on UAAL*	$ 111,171,811	$ 28,535,933	$ 139,707,744
as a % of Projected Payroll	41.75%	36.46%	40.54%

**Amortized as a level-percentage of payroll over a 12-year amortization period for unfunded retiree liabilities and a 27-year amortization period for other unfunded liabilities from July 1, 2013.*

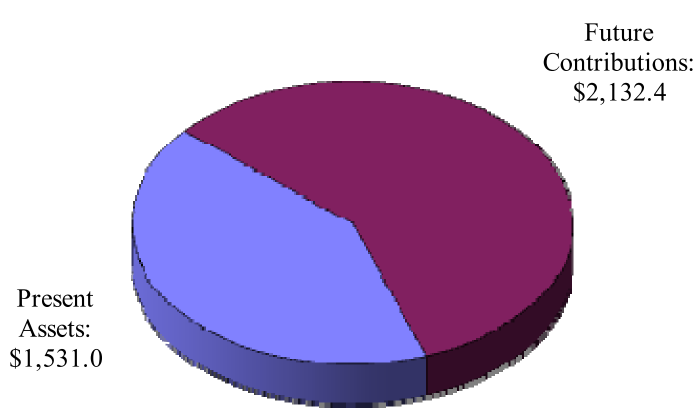
SYSTEM RESOURCES & OBLIGATIONS
SOURCES AND USES OF $3,663.4 MILLION
AS OF JUNE 30, 2012

($ Millions)

Uses of Funds



Sources of Funds



FINANCING UNFUNDED ACTUARIAL ACCRUED LIABILITIES (UAAL) WHICH WERE CALCULATED USING A WAGE INFLATION ASSUMPTION OF 3.75% AND AN INVESTMENT RETURN ASSUMPTION OF 8.25% COMPOUNDED ANNUALLY 12/27 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	
2012	$ 329,293,168	$ 1,775,245,058			
2013	341,641,662	1,782,647,873	$ 133,616,054	39.11%	521.8%
2014	354,453,224	1,780,171,859	143,695,337	40.54%	502.2%
2015	367,745,220	1,771,883,657	149,083,912	40.54%	481.8%
2016	381,535,666	1,757,093,463	154,674,559	40.54%	460.5%
2017	395,843,253	1,735,046,681	160,474,855	40.54%	438.3%
2018	410,687,375	1,704,918,277	166,492,662	40.54%	415.1%
2019	426,088,152	1,665,806,664	172,736,137	40.54%	391.0%
2020	442,066,458	1,616,727,067	179,213,742	40.54%	365.7%
2021	458,643,950	1,556,604,329	185,934,257	40.54%	339.4%
2022	475,843,098	1,484,265,113	192,906,792	40.54%	311.9%
2023	493,687,214	1,398,429,446	200,140,797	40.54%	283.3%
2024	512,200,485	1,297,701,554	207,646,077	40.54%	253.4%
2025	531,408,003	1,180,559,924	215,432,804	40.54%	222.2%
2026	551,335,803	1,165,179,128	108,365,948	19.66%	211.3%
2027	572,010,896	1,144,300,279	112,429,671	19.66%	200.0%
2028	593,461,305	1,117,311,195	116,645,784	19.66%	188.3%
2029	615,716,104	1,083,543,243	121,020,000	19.66%	176.0%
2030	638,805,458	1,042,266,455	125,558,250	19.66%	163.2%
2031	662,760,663	992,684,240	130,266,685	19.66%	149.8%
2032	687,614,188	933,927,647	135,151,686	19.66%	135.8%
2033	713,399,720	865,049,146	140,219,874	19.66%	121.3%
2034	740,152,210	785,015,887	145,478,119	19.66%	106.1%
2035	767,907,918	692,702,390	150,933,549	19.66%	90.2%
2036	796,704,465	586,882,631	156,593,557	19.66%	73.7%
2037	826,580,882	466,221,453	162,465,815	19.66%	56.4%
2038	857,577,665	329,265,266	168,558,283	19.66%	38.4%
2039	889,736,827	174,431,963	174,879,219	19.66%	19.6%
2040	923,101,958	0	181,437,189	19.66%	0.0%

* *Amortized as a level-percentage of payroll over a 12-year amortization period for unfunded retiree liabilities and a 27-year amortization period for other unfunded liabilities from July 1, 2013.*

GASB No. 25
Schedule of Funding Progress*
June 30, 2012

Year Ending June 30	Actuarial Asset Value	Entry Age Accrued Liability	Unfunded Accrued Liability (UAAL)	Funded Ratio	Estimated Covered Payroll		UAAL as a Percentage of Covered Payroll
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	56.40%	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%
2006	1,521,142,953	2,740,437,837	1,219,294,884	55.51%	341,227,890	**	357.33%
2007#	1,685,807,004	2,897,267,409	1,211,460,405	58.19%	365,012,472	**	331.90%
2008	1,783,902,280	3,019,633,781	1,235,731,501	59.08%	375,600,448	**	329.00%
2009	1,471,496,660	3,113,393,645	1,641,896,985	47.26%	379,590,273	**	432.54%
2010#	1,375,844,573	3,258,866,925	1,883,022,352	42.22%	378,063,006	**	498.07%
2011	1,427,290,718	3,297,589,869	1,870,299,151	43.28%	362,654,376	**	515.72%
2012#	1,531,033,613	3,306,278,671	1,775,245,058	46.31%	341,637,559	**	519.63%

* *Prior to 2003 this schedule was not required for the LTD Plan because it used the aggregate funding method. Therefore the LTD Plan 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 and/or methods adopted.*

GASB No. 25
Schedule of Employer Contributions*
Non-Uniformed Group
June 30, 2012

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
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%
2006	286,784,251	**	87,440,518	30.49%	30.49%	87,440,518	100.00%
2007#	302,223,556	**	93,991,526	31.10%	31.10%@	93,991,526	100.00%
2008	307,243,438	**	95,368,363	31.04%	31.04%	95,368,363	100.00%
2009	311,718,239	**	95,759,843	30.72%	30.72%	95,759,843	100.00%
2010#	310,637,016	**	97,540,023	31.40%	31.40%	97,540,023	100.00%
2011	294,637,164	**	116,263,825	39.46%	39.46%	116,263,825	100.00%
2012#	268,722,565	**	122,134,406	45.45%	45.45%	122,134,406	100.00%

* *Prior to 2003 this schedule was not required for the LTD Plan because it used the aggregate funding method. Therefore the LTD Plan 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 and/or methods adopted.*

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

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

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

GASB No. 25
Schedule of Employer Contributions*
Uniformed Patrol Group
June 30, 2012

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
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%
2006	54,443,639	**	24,102,199	44.27%	44.27%	24,102,199	100.00%
2007#	62,788,916	**	27,802,932	44.28%	44.28%@	27,802,932	100.00%
2008	68,357,010	**	29,147,429	42.64%	42.64%	29,147,429	100.00%
2009	67,872,034	**	27,298,132	40.22%	40.22%	27,298,132	100.00%
2010#	67,425,990	**	26,936,683	39.95%	39.95%	26,936,683	100.00%
2011	68,017,212	**	33,688,925	49.53%	49.53%	33,688,925	100.00%
2012#	72,914,994	**	42,750,061	58.63%	58.63%	42,750,061	100.00%

* *Prior to 2003 this schedule was not required for the LTD Plan because it used the aggregate funding method. Therefore the LTD Plan 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 and/or methods adopted.*

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

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

DEVELOPMENT OF GAIN/(LOSS)
JULY 1, 2011 TO JUNE 30, 2012

	UAAL =	AAL -	Assets
Beginning of Year Values (at July 1)	$ 1,870,299,151	$ 3,297,589,869	$ 1,427,290,718
Normal Cost	47,546,183	47,546,183	0
Contributions	(166,261,417)	0	166,261,417
Disbursements	0	(222,906,160)	(222,906,160)
Interest	149,402,678	264,817,566	115,414,888
Expected Value Before Any Changes	1,900,986,595	3,387,047,458	1,486,060,863
Effect of Changes in Assumptions & Methods	(18,879,244)	(18,879,244)	0
Effect of Adjustment	0	0	0
Expected Value After Changes	1,882,107,351	3,368,168,214	1,486,060,863
End of Year Values (at June 30)	1,775,245,058	3,306,278,671	1,531,033,613
Gain/(Loss) for Year	$ 106,862,293	$ 61,889,543	$ 44,972,750

DEVELOPMENT OF GAIN/(LOSS)
JULY 1, 2011 TO JUNE 30, 2012

	Total	Non-Uniform	Uniform
Beginning of Year UAAL (at July 1)	$ 1,870,299,151	$ 1,405,157,141	$ 465,142,010
Normal Cost	47,546,183	37,538,018	10,008,165
Contributions	(166,261,417)	(123,147,012)	(43,114,405)
Interest	149,402,678	112,394,094	37,008,584
Net Change in LTD Assets	0	0	0
Expected Value Before Any Changes	1,900,986,595	1,431,942,241	469,044,354
Effect of Changes in Assumptions & Methods	(18,879,244)	4,196,036	(23,075,280)
Effect of Adjustment	0	0	0
Expected Value After Changes	1,882,107,351	1,436,138,277	445,969,074
End of Year UAAL (at June 30)	1,775,245,058	1,362,414,960	412,830,098

Aggregate Gain/(Loss) for Year	$ 106,862,293	$ 73,723,317	$ 33,138,976
Gain/(Loss) as a % of Beginning of Year Liabilities	3.24%	2.99%	4.00%

Asset Gain/(Loss) for Year	$ 44,972,750	$ 19,806,436	$ 25,166,314
Liability Gain/(Loss) for Year	61,889,543	53,916,881	7,972,662
Aggregate Gain/(Loss) for Year	$ 106,862,293	$ 73,723,317	$ 33,138,976

SECTION B

SUMMARY OF BENEFITS

MISSOURI DEPARTMENT OF TRANSPORTATION AND HIGHWAY PATROL EMPLOYEES' RETIREMENT SYSTEM SUMMARY OF BENEFIT PROVISIONS EVALUATED AS OF JUNE 30, 2012

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.

Year 2000 Plan

Participation

Participants include:

1. All active employees who first became members on or after July 1, 2000 but prior to January 1, 2011.
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.

2011 Tier

Participation

Participants include:

1. All employees who first become members on or after January 1, 2011.

Closed Plan

Normal Retirement Eligibility (unreduced benefit)

Non-Uniformed 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.
3. Age 48 with age plus creditable service equal to 80 or more.

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

Normal Retirement Eligibility (unreduced benefit)

Non-Uniformed 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: The earlier of attaining:

1. Mandatory retirement at age 60 with at least 5 years of creditable service.
2. Age 48 with age plus creditable service equal to 80 or more.

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).

2011 Tier

Normal Retirement Eligibility (unreduced benefit)

Non-Uniformed Employees: The earlier of attaining:

1. Age 67 with at least 10 years of creditable service.
2. Age 55 with age plus creditable service equal to 90 or more.

Uniformed Patrol Employees Only: The earlier of attaining:

1. Age 55 with at least 10 years of creditable service.
2. Mandatory retirement at age 60.

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	Year 2000 Plan	2011 Tier
Normal Retirement Benefit Amount	**Normal Retirement Benefit Amount**	**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.	***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. All Uniformed Patrol members are eligible for the temporary benefit.	***All Employees:*** Life Benefit: 1.7% of final average pay times years of creditable service. Temporary Benefit: If member retires between ages 55 and 62 with age plus creditable service equal to 90 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. All Uniformed Patrol members are eligible for the temporary benefit.
Early Retirement (reduced benefit)	**Early Retirement (reduced benefit)**	**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.	***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.	***Eligibility: All Employees*** Age 62 with at least 10 years of creditable service. ***Amount:*** Normal retirement amount reduced by 0.5% for each month that retirement precedes eligibility for normal retirement.

Closed Plan	Year 2000 Plan	2011 Tier
Vested Deferred Benefits	**Vested Deferred Benefits**	**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.	***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.	***Eligibility: All Employees*** Fully vested in accrued pension with 10 years of creditable service. The benefit will commence at age 67 for non-uniformed individuals and at age 55 for uniformed individuals.
Minimum Base Benefit	**Minimum Base Benefit**	**Minimum Base Benefit**
Receive a monthly base benefit of no less than $15 for each full year of creditable service. Must be eligible to receive a normal or early retirement benefit the first of the month immediately following the date you leave state employment. Not required to immediately start drawing a benefit.	Same.	Same.
Death Prior to Retirement	**Death Prior to Retirement**	**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.	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.	The spouse of the member who dies after accruing 10 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.

Closed Plan

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. 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.

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.

Year 2000 Plan

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.

Pop-Up Provision

Same.

2011 Tier

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.

Pop-Up Provision

Same.

Closed Plan	Year 2000 Plan	2011 Tier
$5,000 Death Benefit	**$5,000 Death Benefit**	**$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. Members who die while on terminated vested status or long-term disability status do not qualify for this benefit. Long-term disability recipients who retire on or after September 28, 1985 are eligible to receive this 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. Members who die while on terminated vested status or long-term disability status do not qualify for this benefit. Long-term disability recipients who retire on or after September 28, 1985 are eligible to receive this 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. Members who die while on terminated vested status or long-term disability status do not qualify for this benefit. Long-term disability recipients who retire on or after September 28, 1985 are eligible to receive this benefit.
Purchase of Service	**Purchase of Service**	**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.	**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.	**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.	**Police Service:** Not available.

Closed Plan	Year 2000 Plan	2011 Tier
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. 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. 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.
Public Employment Prior Service (Subsidized purchase):	**Public Employment Prior Service (Subsidized purchase):**	**Public Employment Prior Service (Subsidized purchase):**
Section 104.040.6 allows, prior to retirement, uniformed patrol members only, may purchase up to a maximum of 4 years full-time "public employment". Public employment refers to employment with a city, county, municipality, public school, or other political subdivision. Federal and out-of-state employment is not eligible. Members must purchase all months of service they are eligible for up to 4 years.	Not available.	Not available.
Disability	**Disability**	**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.	Same.	Same.

Closed Plan

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

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.

2011 Tier

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:

iii) 80% of the CPI-U increase, or
iv) 5%.

Member Contributions

4% contributions with interest credited to the account annually at 4%. The state of Missouri employer shall pick up and pay the contributions. A deduction shall be made from each member's compensation equal to the amount of the member's contributions picked up by the employer.

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, 2012 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%
2012	$12,800
2013	13,133
2014	13,474
2015	13,825
2016	14,184
2017	14,553
2018	14,931
2019	15,319
2020	15,718
2021	16,126

SAMPLE BENEFIT COMPUTATION FOR CLOSED PLAN MEMBERS RETIRING JULY 1, 2012 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%
2012	$17,066
2013	17,510
2014	17,965
2015	18,432
2016	18,912
2017	19,403
2018	19,908
2019	20,426
2020	20,957
2021	21,501

SAMPLE BENEFIT COMPUTATION FOR YEAR 2000 PLAN MEMBERS RETIRING JULY 1, 2012

	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%
2012	$20,000
2013	20,520
2014	14,316
2015	14,689
2016	15,071
2017	15,462
2018	15,864
2019	16,277
2020	16,700
2021	17,134

SECTION C

FINANCIAL INFORMATION

SUMMARY OF FUND OPERATIONS

	2012	2011
Market Value of Fund (Beginning of Fiscal Year)	$1,552,347,992	$1,309,502,954
Post Valuation Audit Adjustment	3,332,684	3,214,356
Contributions		
Employee	202,749	45,361
Employer	164,884,467	149,952,750
Transfer from MOSERS	265,253	17,609,276
Service Purchase (Employee)	908,948	453,985
Total Contributions	$ 166,261,417	$ 168,061,372
Investment Return		
Interest	$ 18,741,892	$ 15,839,447
Dividends	5,892,801	4,821,145
Real Estate	12,130,170	5,399,849
Realized Capital Gains	88,933,340	122,341,759
Realized Capital Losses	(36,776,086)	(67,339,564)
Miscellaneous Income	0	0
Securities Lending Income	210,034	109,966
Other	17,966	187,212
Total Investment Return	$ 89,150,117	$ 81,359,814
Other Income (Rental Income and Misc)	11,008	33,141
Increase (Decrease) in Unrealized Appreciation	(32,284,245)	213,935,299
Benefit Payments		
Retirement Payments	$ 196,760,645	$ 188,987,116
Retirement Payments - BackDROP	18,138,891	10,792,932
Death Benefits	660,000	575,000
Long-Term Disability Payments	85,240	101,875
Insured Disability Program	1,592,734	1,696,845
Employee Contribution Refunds	373	0
Service Transfer Payments - Employer	2,475,144	0
Total Benefit Payments	$ 219,713,027	$ 202,153,768
Expenses		
Investment	$ 17,259,856	$ 18,770,289
Other	3,193,133	2,834,887
Total Expenses	$ 20,452,989	$ 21,605,176
Market Value of Fund (End of Fiscal Year)	$1,538,652,957	$1,552,347,992

MISSOURI MPERS
DEVELOPMENT OF ACTUARIAL VALUE OF ASSETS

Valuation Date of June 30	2008	2009	2010	2011	2012	2013	2014
A. Actuarial value at beginning of year	$1,685,807,004	$1,783,902,280	$1,471,496,660	$1,375,844,573	$1,427,290,718		
B. Market value at end of year	1,717,754,176	1,226,247,217	1,309,502,954	1,552,347,992	1,538,652,957		
C. Market value at beginning of year	1,825,204,289	1,717,754,176	1,226,247,217	1,309,502,954	1,552,347,992		
D. Cash flow							
D1. Contributions	124,515,792	123,057,975	124,476,706	168,061,372	166,261,417		
D2. Benefit Payments	(185,801,362)	(192,014,685)	(196,721,274)	(202,153,768)	(219,713,027)		
D3. Administrative Expenses	(3,262,533)	(2,603,223)	(2,413,554)	(2,834,887)	(3,193,133)		
D4. Non-Investment Net Cash Flow	(64,548,103)	(71,559,933)	(74,658,122)	(36,927,283)	(56,644,743)		
E. Investment income							
E1. Market Total (B - C - D4)	(42,902,010)	(419,947,026)	157,913,859	279,772,321	42,949,708		
E2. Assumed Rate of Return	8.25%	8.25%	8.25%	8.25%	8.25%		
E3. Amount for Immediate Recognition (A+.5xD4)xE2	136,416,469	144,220,091	118,318,827	111,983,927	115,414,889		
E4. Amount for Phased-In Recognition	(179,318,479)	(564,167,117)	39,595,032	167,788,394	(72,465,181)		
F. Phased-in recognition of investment income							
F1. Current Year (33 1/3% of E4)	(59,772,826)	(188,055,706)	13,198,344	55,929,465	(24,155,060)		
F2. First Prior Year	53,397,549	(59,772,826)	(92,738,309)	13,198,344	55,929,465	$(24,155,060)	
F3. Second Prior Year	32,602,187	53,397,549	(59,772,827)	(92,738,308)	13,198,344	55,929,464	$(24,155,060)
F4. Total Recognized Investment Gain (F1 + F2 + F3)	26,226,910	(194,430,983)	(139,312,792)	(23,610,499)	44,972,749	31,774,404	(24,155,060)
G. Actuarial value at end of year (A + D4 + E3 + F4)	1,783,902,280	1,662,131,455	1,375,844,573	1,427,290,718	1,531,033,613		
Less LTD Assets	0	0	0	0	0		
H. Preliminary Plan AVA	1,783,902,280	1,662,131,455	1,375,844,573	1,427,290,718	1,531,033,613		
I. Corridor (Maximum of 120% of Market Value)	2,061,305,011	1,471,496,660	1,571,403,545	1,862,817,590	1,846,383,548		
J. Corridor (Minimum of 80% of Market Value)	1,374,203,341	980,997,774	1,047,602,363	1,241,878,394	1,230,922,366		
K. Additional Investment Gain/(Loss) recognized due to corridor		190,634,795	0	0	0		
L. Final Plan AVA after corridor adjustment, if any	1,783,902,280	1,471,496,660	1,375,844,573	1,427,290,718	1,531,033,613		
Difference between market and actuarial values	(66,148,104)	(245,249,443)	(66,341,619)	125,057,274	7,619,344		
Market Rate of Return	(2.39)%	(24.97)%	13.28%	21.67%	2.82%		
Ratio of Funding Value to Market Value	103.85%	120.00%	105.07%	91.94%	99.50%		
Funding Value Rate of Return	9.84%	(3.04)%	(1.46)%	6.51%	11.46%		

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:

	June 30	
Allocation of Other Income	**2012**	**2011**
1. Other Income	$ 11,008	$ 33,141
2. Investment Income		
a) Uniformed Patrol	23,862,539	20,992,660
b) Non-Uniformed Employees	65,287,578	60,367,154
c) Total	89,150,117	81,359,814
3. Other Income Split		
a) Uniformed Patrol		
(2a) / (2c) x (1)	2,946	8,551
b) Non-Uniformed Employees		
(2b) / (2c) x (1)	8,062	24,590
c) Total	11,008	33,141

	June 30	
Allocation of Funding Value of Assets	**2012**	**2011**
1. Funding Value of Assets	1,531,033,613	1,427,290,718
2. Market Value of Assets		
a) Uniformed Patrol	417,913,038	409,227,547
b) Non-Uniformed Employees	1,120,739,919	1,143,120,445
c) Total	1,538,652,957	1,552,347,992
3. Funding Value of Assets Split		
a) Uniformed Patrol		
(2a) / (2c) x (1)	415,843,550	363,627,238
b) Non-Uniformed Employees		
(2b) / (2c) x (1)	1,115,190,063	1,063,663,480
4. Total Assets Allocated	1,531,033,613	1,427,290,718

SECTION D

SUMMARY OF MEMBER DATA

CIVILIAN PATROL CLOSED ACTIVE MEMBERS
AS OF JUNE 30, 2012
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									
25-29									
30-34			5	2				7	$ 226,184
35-39			20	20				40	1,751,089
40-44		2	20	33	15			70	3,034,986
45-49			23	40	27	18	3	111	4,762,313
50-54			19	26	32	36	14	127	5,432,679
55-59			10	27	14	14	17	82	3,444,580
60			3	4	2	2	4	15	747,139
61			1	3	5	1	5	15	638,635
62			2	3	2		1	8	302,872
63				2	3	1	1	7	246,362
64			1	3	1	2	1	8	295,386
65				1	4			5	216,527
66				2				2	65,323
67									
68									
69				1				1	31,058
70									
Over 70					1			1	34,238
Totals		**2**	**104**	**167**	**106**	**74**	**46**	**499**	**$21,229,371**

Average Age: 50.2 years
Average Service: 20.6 years
Average Pay: $42,544

CIVILIAN PATROL YEAR 2000 ACTIVE MEMBERS AS OF JUNE 30, 2012 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	7							7	$ 201,108
25-29	56	23						79	2,797,705
30-34	30	71	14					115	4,554,209
35-39	21	23	19					63	2,256,186
40-44	23	37	14					74	2,486,389
45-49	14	29	14					57	2,029,249
50-54	17	25	16	1				59	2,003,543
55-59	13	18	8					39	1,221,316
60	2	4	1					7	245,286
61	1	1	2					4	118,476
62	1	3	3					7	228,599
63	1	3	1					5	165,437
64	1	2	2					5	157,970
65		1	3					4	115,032
66	3	1						4	121,066
67			1					1	41,712
68		3						3	95,598
69			1					1	28,524
70		3						3	75,732
Over 70			1					1	25,049
Totals	**190**	**247**	**100**	**1**				**538**	**$18,968,186**

Average Age: 41.5 years
Average Service: 6.6 years
Average Pay: $35,257

CIVILIAN PATROL 2011 TIER ACTIVE MEMBERS AS OF JUNE 30, 2012 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	13							13	$ 301,068
25-29	34							34	921,156
30-34	10							10	291,097
35-39	10							10	244,250
40-44	8							8	237,232
45-49	7							7	209,573
50-54	2							2	36,537
55-59	5							5	117,479
60									
61	2							2	49,096
62									
63									
64									
65									
66									
67									
68									
69									
70									
Over 70									
Totals	**91**							**91**	**$ 2,407,488**

Average Age: 33.7 years
Average Service: 0.9 years
Average Pay: $26,456

MoDOT Closed Active Members
as of June 30, 2012
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									
25-29									
30-34			51	1				52	$ 1,933,634
35-39			161	96				257	11,461,755
40-44		1	122	294	93	3		513	24,086,778
45-49		3	104	191	221	139	4	662	31,383,665
50-54			93	163	169	265	62	752	35,791,361
55-59			54	112	107	75	48	396	17,934,832
60		1	8	21	15	8	3	56	2,364,250
61			10	14	6	10	3	43	1,979,589
62			9	8	7	5	5	34	1,584,691
63			6	2	4		2	14	657,979
64			1	5	2	2	2	12	612,449
65			1	5	7		1	14	611,096
66			2	2	3	1	2	10	408,864
67						1		1	50,568
68						1		1	40,024
69									
70			1					1	32,161
Over 70					3		1	4	202,915
Totals		**5**	**623**	**914**	**637**	**510**	**133**	**2,822**	**$131,136,611**

Average Age: 48.7 years
Average Service: 20.2 years
Average Pay: $46,469

MODOT YEAR 2000 ACTIVE MEMBERS AS OF JUNE 30, 2012 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	29	3						32	$ 933,149
25-29	146	127						273	9,956,494
30-34	88	267	86					441	17,205,801
35-39	110	176	92					378	13,943,277
40-44	102	141	70					313	10,863,494
45-49	70	136	78					284	9,990,440
50-54	78	139	75	1	1			294	10,181,006
55-59	42	104	41	1	1			189	6,656,037
60	2	13	5	1				21	718,687
61	1	14	4					19	655,877
62	4	5	2					11	347,791
63		5						5	177,065
64	2	2	3					7	242,834
65	2	5	2					9	336,469
66		1	1	1				3	150,667
67		2		1				3	115,323
68		1	2					3	119,631
69		1						1	46,908
70									
Over 70		1						1	29,418
Totals	**676**	**1,143**	**461**	**5**	**2**			**2,287**	**$82,670,368**

Average Age: 41.1 years
Average Service: 7.1 years
Average Pay: $36,148

MoDOT 2011 Tier Active Members
as of June 30, 2012
by Attained Age and Years of Service

Attained Age	0-4	5-9	10-14	15-19	20-24	25-29	30+	Totals No.	Totals Valuation Payroll
Under 20									
20-24	2							2	$ 65,195
25-29	2							2	54,787
30-34									
35-39									
40-44	1							1	27,508
45-49	1							1	27,665
50-54									
55-59									
60									
61									
62									
63									
64									
65									
66									
67									
68									
69									
70									
Over 70									
Totals	**6**							**6**	**$175,155**

Count by Complete Years of Service to Valuation Date

Average Age: 31.7 years
Average Service: 1.3 years
Average Pay: $29,193

UNIFORMED PATROL CLOSED ACTIVE MEMBERS AS OF JUNE 30, 2012 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									
25-29									
30-34			8					8	$ 447,743
35-39			50	47				97	5,748,006
40-44	1	1	30	190	20			242	15,794,305
45-49			9	66	88	22		185	13,510,612
50-54			1	14	31	73	18	137	10,628,133
55-59				2	2	16	29	49	3,939,945
60							3	3	274,938
61									
62									
63									
64									
65									
66									
67									
68									
69									
70									
Over 70									
Totals	**1**	**1**	**98**	**319**	**141**	**111**	**50**	**721**	**$50,343,682**

Average Age: 45.5 years
Average Service: 20.3 years
Average Pay: $69,825

UNIFORMED PATROL YEAR 2000 ACTIVE MEMBERS AS OF JUNE 30, 2012 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	11							11	$ 470,127
25-29	96	37						133	5,988,357
30-34	27	92	14					133	6,438,604
35-39	8	54	35					97	4,711,396
40-44	4	12	11					27	1,268,075
45-49	3	4	3					10	472,024
50-54		1						1	51,983
55-59			1					1	49,592
60									
61									
62									
63									
64									
65									
66									
67									
68									
69									
70									
Over 70									
Totals	**149**	**200**	**64**					**413**	**$19,450,158**

Average Age: 32.3 years
Average Service: 6.7 years
Average Pay: $47,095

UNIFORMED PATROL 2011 TIER ACTIVE MEMBERS
AS OF JUNE 30, 2012
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	33							33	$ 1,136,991
25-29	36							36	1,362,555
30-34	8							8	266,884
35-39	3							3	105,781
40-44	1							1	39,938
45-49									
50-54									
55-59									
60									
61									
62									
63									
64									
65									
66									
67									
68									
69									
70									
Over 70									
Totals	**81**							**81**	**$2,912,149**

Average Age: 25.8 years
Average Service: 1.0 years
Average Pay: $35,952

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 %
2006	9,033	348,614,699	38,593	2.6 %
2007	8,640	360,842,421	41,764	8.2 %
2008	8,599	369,424,653	42,961	2.9 %
2009	8,784	377,652,245	42,993	0.1 %
2010	8,457	369,911,252	43,740	1.7 %
2011	8,231	361,639,001	43,936	0.4 %
2012	7,458	329,293,168	44,153	0.5 %
			Ten-Year Average:	2.1 %

COUNT AND TOTAL MONTHLY BENEFITS OF CIVILIAN PATROL CLOSED RETIRED (NON-DISABLED) MEMBERS AND SURVIVORS AS OF JUNE 30, 2012 BY ATTAINED AGE

Age	Number	Monthly Amount
Less than 20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54	6	$ 7,494
55-59	20	23,914
60-64	40	54,017
65-69	54	62,836
70-74	82	165,774
75-79	103	164,111
80-84	75	109,402
85-89	35	43,759
90 & Over	22	17,870
TOTAL	**437**	**$ 649,177**

COUNT AND TOTAL MONTHLY BENEFITS OF CIVILIAN PATROL YEAR 2000 RETIRED (NON-DISABLED) MEMBERS AND SURVIVORS AS OF JUNE 30, 2012 BY ATTAINED AGE

Age	Number	Monthly Amount
Less than 20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54	24	$ 63,685
55-59	92	222,158
60-64	135	243,854
65-69	116	174,074
70-74	35	40,386
75-79	2	704
80-84	4	3,572
85-89	3	5,445
90 & Over	2	936
TOTAL	**413**	**$ 754,814**

COUNT AND TOTAL MONTHLY BENEFITS OF MODOT CLOSED RETIRED (NON-DISABLED) MEMBERS AND SURVIVORS AS OF JUNE 30, 2012 BY ATTAINED AGE

Age	Number	Monthly Amount
Less than 20	11	$ 4,437
20-24	3	530
25-29		
30-34		
35-39	3	1,763
40-44	9	6,584
45-49	22	20,110
50-54	43	43,736
55-59	126	148,295
60-64	260	315,215
65-69	381	599,880
70-74	754	1,655,798
75-79	855	1,851,812
80-84	673	1,297,969
85-89	356	547,657
90 & Over	205	179,859
TOTAL	**3,701**	**$ 6,673,645**

COUNT AND TOTAL MONTHLY BENEFITS OF MODOT YEAR 2000 RETIRED (NON-DISABLED) MEMBERS AND SURVIVORS AS OF JUNE 30, 2012 BY ATTAINED AGE

Age	Number	Monthly Amount
Less than 20	9	$ 1,348
20-24		
25-29		
30-34		
35-39	1	1,120
40-44	2	1,389
45-49	4	9,146
50-54	220	622,793
55-59	542	1,385,161
60-64	765	1,453,504
65-69	643	1,078,329
70-74	193	304,465
75-79	28	38,094
80-84	33	57,056
85-89	34	45,665
90 & Over	28	41,038
TOTAL	**2,502**	**$ 5,039,108**

Count and Total Monthly Benefits of Uniformed Patrol Closed Retired (Non-Disabled) Members and Survivors as of June 30, 2012 by Attained Age

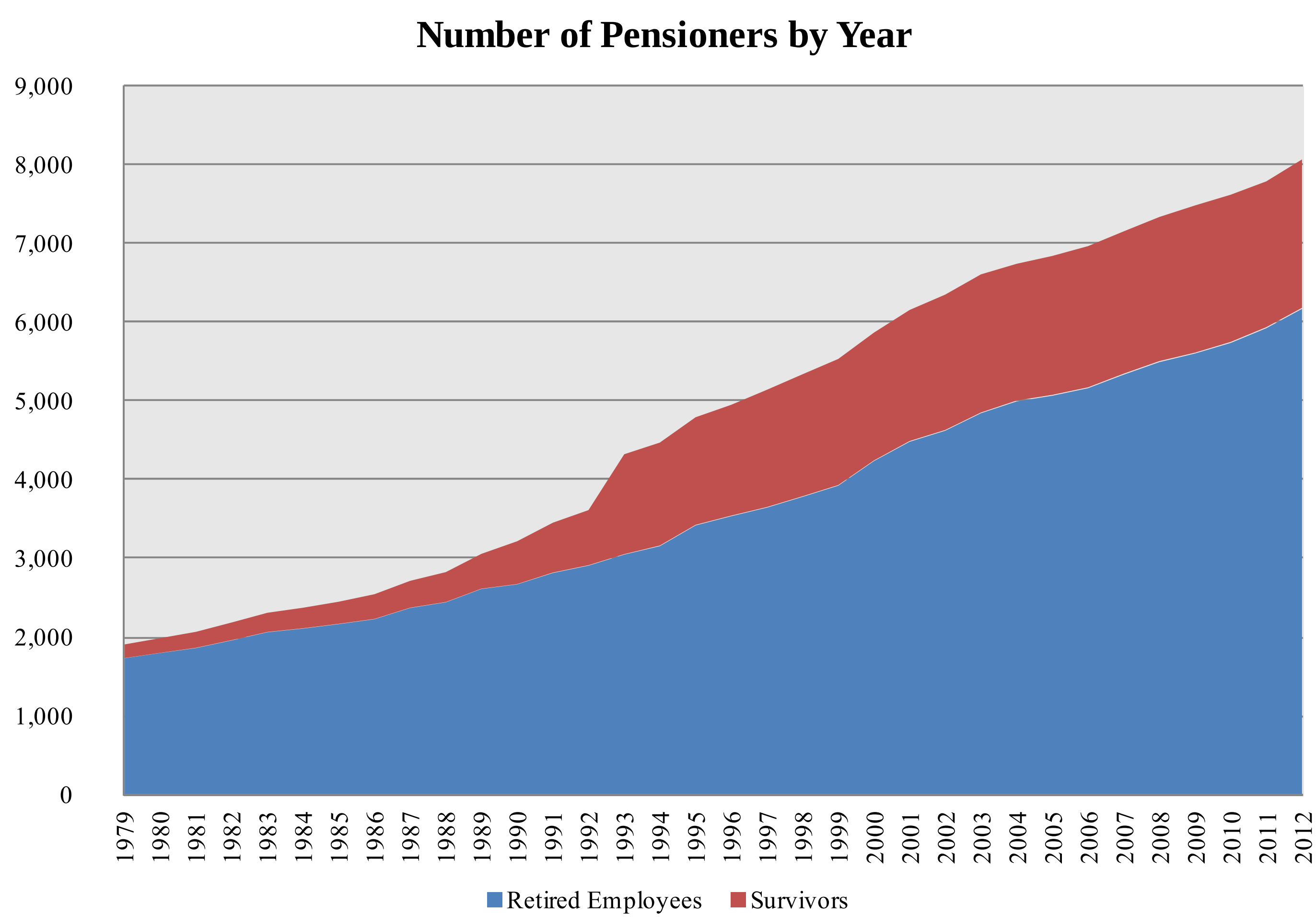
Age	Number	Monthly Amount
Less than 20	1	$ 2,459
20-24		
25-29	1	1,069
30-34	1	1,405
35-39	5	11,144
40-44	3	5,945
45-49	3	8,281
50-54	22	78,209
55-59	109	437,270
60-64	158	663,385
65-69	176	804,134
70-74	129	591,878
75-79	86	395,997
80-84	70	306,232
85-89	42	118,536
90 & Over	19	47,387
TOTAL	**825**	**$ 3,473,331**

COUNT AND TOTAL MONTHLY BENEFITS OF UNIFORMED PATROL YEAR 2000 RETIRED (NON-DISABLED) MEMBERS AND SURVIVORS AS OF JUNE 30, 2012 BY ATTAINED AGE

Age	Number	Monthly Amount
Less than 20		
20-24		
25-29		
30-34		
35-39	1	$ 1,556
40-44		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75-79		
80-84		
85-89		
90 & Over		
TOTAL	**1**	**$ 1,556**

GROWTH OF PENSION POPULATION BY YEAR

Year	Retired Employees	Survivors	Total	% Increase	Annual Benefits	Active Payroll	Benefits as a % of Payroll
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%
2006	5,164	1,790	6,954	1.8%	155,230,301	348,614,699	44.5%
2007	5,336	1,805	7,141	2.7%	164,048,455	360,842,421	45.5%
2008	5,496	1,829	7,325	2.6%	172,112,941	369,424,653	46.6%
2009	5,604	1,866	7,470	2.0%	179,850,466	377,652,245	47.6%
2010	5,739	1,867	7,606	1.8%	187,267,535	369,911,252	50.6%
2011	5,926	1,849	7,775	2.2%	191,892,660	361,639,001	53.1%
2012	6,172	1,883	8,055	3.6%	201,906,768	329,293,168	61.3%


Number of Pensioners by Year
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
Retired Employees
Survivors

SELF INSURED DISABLED RETIRED MEMBERS
AS OF JUNE 30, 2012

Age	Number	Monthly Amount
Less than 20		
20-24		
25-29		
30-34		
35-39	2	$ 4,508
40-44	4	5,464
45-49	8	3,759
50-54	18	20,412
55-59	10	16,661
60-64	11	11,339
65-69	7	9,609
70-74	2	2,413
75-79	2	2,480
80-84	1	103
85-89	1	609
90 & Over		
TOTAL	**66**	**$ 77,357**

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, 2012

Age	Number	Monthly Amount
Less than 20		
20-24		
25-29	1	$ 2,119
30-34	1	2,390
35-39	10	23,162
40-44	7	14,379
45-49	14	25,979
50-54	34	53,738
55-59	32	29,512
60-64	11	5,297
65-69		
70-74		
75-79		
80-84		
85-89		
90 & Over		
TOTAL	**110**	**$ 156,576**

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 AND GLOSSARY

SUMMARY OF VALUATION METHOD AND ASSUMPTIONS
JUNE 30, 2012

The actuarial assumptions used in the valuation are shown in this Section of the report unless stated otherwise. The assumptions were established for the June 30, 2010 actuarial valuation, following a five-year actuarial investigation. They were adopted by the Board after obtaining the advice of the Actuary and other professionals.

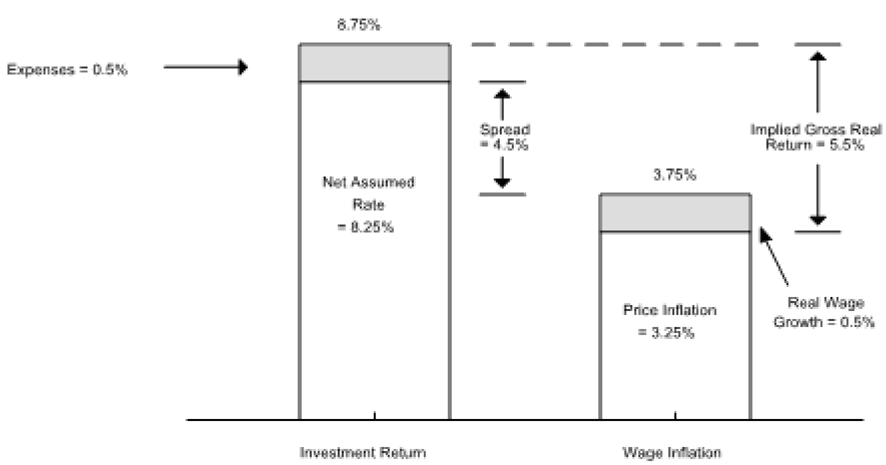
Economic Assumptions

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 4.5%. Based upon other assumptions, the net real rate of return over price inflation is 5%.

Pay increase assumptions for merit and seniority for individual active members are shown on pages E-3 and E-4. 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*** for MoDOT members is assumed to increase 0.00% annually in each of the first three years and 3.75% annually thereafter. The active member payroll for all other members is assumed to increase 3.75% annually for all years.

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 1994 Group Annuity Mortality Tables projected to the year 2002 set forward 2 years for males and set back 3 years for females. Pre-retirement mortality used was 70% for males and 50% for females of the post-retirement tables set forward 2 years for males and set back 3 years for females. Disabled pension mortality was based on PBGC Disabled Mortality tables. Related values are shown on page E-5. There is no margin for future mortality improvements in the rates.

The probabilities of age and service retirement are shown on page E-7. Upon retirement, members are assumed to pick the BackDROP period that when combined with the remaining annuity produces the highest liability.

The probabilities of withdrawal from service are shown on pages E-9 and E-10. ***The probabilities of disability*** are shown on page E-8.

The entry age normal actuarial cost method of valuation was used in determining liabilities and normal cost.

> 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. Data was furnished as of May 31 and assumed to be statistically equivalent to June 30.

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

All Plan Participants

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%	8.50%	3.75%	12.25%
21	8.00%	3.75%	11.75%	8.50%	3.75%	12.25%
22	8.00%	3.75%	11.75%	8.50%	3.75%	12.25%
23	7.30%	3.75%	11.05%	7.80%	3.75%	11.55%
24	6.52%	3.75%	10.27%	7.02%	3.75%	10.77%
25	5.66%	3.75%	9.41%	6.16%	3.75%	9.91%
26	4.72%	3.75%	8.47%	5.22%	3.75%	8.97%
27	4.50%	3.75%	8.25%	5.00%	3.75%	8.75%
28	4.10%	3.75%	7.85%	4.60%	3.75%	8.35%
29	3.70%	3.75%	7.45%	4.20%	3.75%	7.95%
30	3.30%	3.75%	7.05%	3.80%	3.75%	7.55%
31	2.90%	3.75%	6.65%	3.40%	3.75%	7.15%
32	2.50%	3.75%	6.25%	3.00%	3.75%	6.75%
33	2.35%	3.75%	6.10%	2.85%	3.75%	6.60%
34	2.20%	3.75%	5.95%	2.70%	3.75%	6.45%
35	2.05%	3.75%	5.80%	2.55%	3.75%	6.30%
36	1.90%	3.75%	5.65%	2.40%	3.75%	6.15%
37	1.75%	3.75%	5.50%	2.25%	3.75%	6.00%
38	1.65%	3.75%	5.40%	2.15%	3.75%	5.90%
39	1.55%	3.75%	5.30%	2.05%	3.75%	5.80%
40	1.45%	3.75%	5.20%	1.95%	3.75%	5.70%
41	1.35%	3.75%	5.10%	1.85%	3.75%	5.60%
42	1.25%	3.75%	5.00%	1.75%	3.75%	5.50%
43	1.15%	3.75%	4.90%	1.65%	3.75%	5.40%
44	1.05%	3.75%	4.80%	1.55%	3.75%	5.30%
45	0.95%	3.75%	4.70%	1.45%	3.75%	5.20%
46	0.85%	3.75%	4.60%	1.35%	3.75%	5.10%
47	0.75%	3.75%	4.50%	1.25%	3.75%	5.00%
48	0.70%	3.75%	4.45%	1.20%	3.75%	4.95%
49	0.65%	3.75%	4.40%	1.15%	3.75%	4.90%
50	0.60%	3.75%	4.35%	1.10%	3.75%	4.85%
51	0.55%	3.75%	4.30%	1.05%	3.75%	4.80%
52	0.50%	3.75%	4.25%	1.00%	3.75%	4.75%
53	0.46%	3.75%	4.21%	0.96%	3.75%	4.71%
54	0.42%	3.75%	4.17%	0.92%	3.75%	4.67%
55	0.38%	3.75%	4.13%	0.88%	3.75%	4.63%
56	0.34%	3.75%	4.09%	0.84%	3.75%	4.59%
57	0.30%	3.75%	4.05%	0.80%	3.75%	4.55%
58	0.30%	3.75%	4.05%	0.80%	3.75%	4.55%
59	0.30%	3.75%	4.05%	0.80%	3.75%	4.55%
60	0.30%	3.75%	4.05%	0.80%	3.75%	4.55%
Ref.	161			161 +.50%		

Non-Uniformed Plan Participants

% Merit Increases in Salaries Next Year*	
Service Index	Rate
1	11.0%
2	10.5%
3	5.0%
4	4.5%
Ref	339

* For Non-Uniformed members with 4 or less years of service, the service based table overwrites the age based table on page E-3.

POST-RETIREMENT MORTALITY

Age	Regular Male	Regular Female	Disabled Male	Disabled Female	Age	Regular Male	Regular Female	Disabled Male	Disabled Female
21	0.00042	0.00034	0.04589	0.02630	61	0.00896	0.00471	0.05928	0.03390
22	0.00044	0.00036	0.04589	0.02630	62	0.01015	0.00535	0.06109	0.03470
23	0.00047	0.00037	0.04589	0.02630	63	0.01144	0.00606	0.06242	0.03550
24	0.00050	0.00038	0.04589	0.02630	64	0.01287	0.00691	0.06346	0.03620
25	0.00052	0.00040	0.04589	0.02630	65	0.01429	0.00785	0.06441	0.03700
26	0.00054	0.00042	0.04380	0.02570	66	0.01561	0.00896	0.06527	0.03780
27	0.00056	0.00044	0.04142	0.02530	67	0.01700	0.01015	0.06622	0.03860
28	0.00059	0.00047	0.03905	0.02470	68	0.01840	0.01144	0.06736	0.03940
29	0.00061	0.00050	0.03686	0.02420	69	0.02003	0.01287	0.06869	0.04020
30	0.00063	0.00052	0.03439	0.02370	70	0.02203	0.01429	0.07021	0.04110
31	0.00065	0.00054	0.03221	0.02320	71	0.02419	0.01561	0.07192	0.04210
32	0.00066	0.00056	0.03040	0.02270	72	0.02658	0.01700	0.07372	0.04330
33	0.00068	0.00059	0.02869	0.02220	73	0.02931	0.01840	0.07562	0.04470
34	0.00070	0.00061	0.02736	0.02180	74	0.03239	0.02003	0.07771	0.04650
35	0.00073	0.00063	0.02641	0.02140	75	0.03629	0.02203	0.07999	0.04920
36	0.00077	0.00065	0.02584	0.02120	76	0.04064	0.02419	0.08256	0.05290
37	0.00082	0.00066	0.02575	0.02100	77	0.04546	0.02658	0.08626	0.05780
38	0.00088	0.00068	0.02594	0.02080	78	0.05080	0.02931	0.09139	0.06310
39	0.00094	0.00070	0.02622	0.02080	79	0.05666	0.03239	0.09909	0.06860
40	0.00101	0.00073	0.02679	0.02090	80	0.06306	0.03629	0.10716	0.07460
41	0.00108	0.00077	0.02736	0.02100	81	0.06948	0.04064	0.11600	0.08130
42	0.00115	0.00082	0.02822	0.02130	82	0.07654	0.04546	0.12559	0.08850
43	0.00122	0.00088	0.02898	0.02160	83	0.08413	0.05080	0.13604	0.09620
44	0.00131	0.00094	0.02983	0.02190	84	0.09269	0.05666	0.14735	0.10430
45	0.00142	0.00101	0.03059	0.02240	85	0.10301	0.06306	0.15970	0.11280
46	0.00155	0.00108	0.03135	0.02290	86	0.11443	0.06948	0.17338	0.12210
47	0.00170	0.00115	0.03230	0.02350	87	0.12693	0.07654	0.18810	0.13220
48	0.00187	0.00122	0.03354	0.02420	88	0.14065	0.08413	0.20425	0.14320
49	0.00207	0.00131	0.03487	0.02490	89	0.15466	0.09269	0.22135	0.15510
50	0.00230	0.00142	0.03639	0.02570	90	0.17019	0.10301	0.23988	0.16820
51	0.00257	0.00155	0.03810	0.02640	91	0.18663	0.11443	0.26021	0.18250
52	0.00285	0.00170	0.03990	0.02720	92	0.20352	0.12693	0.28234	0.19800
53	0.00320	0.00187	0.04171	0.02810	93	0.22212	0.14065	0.30647	0.21500
54	0.00361	0.00207	0.04370	0.02880	94	0.24023	0.15466	0.33203	0.23300
55	0.00412	0.00230	0.04579	0.02950	95	0.25938	0.17019	0.35996	0.25250
56	0.00471	0.00257	0.04807	0.03010	96	0.27894	0.18663	0.39036	0.27390
57	0.00535	0.00285	0.05045	0.03070	97	0.29761	0.20352	0.42351	0.29720
58	0.00606	0.00320	0.05273	0.03150	98	0.31663	0.22212	0.45961	0.32260
59	0.00691	0.00361	0.05520	0.03230	99	0.33876	0.24023	0.49809	0.34950
60	0.00785	0.00412	0.05729	0.03310	100	0.35883	0.25938	0.53998	0.37890
Ref	#303sb-2x1	#303sb3x1	#250sb0x0.95	#251sb0x1		#303sb-2x1	#303sb3x1	#250sb0x0.95	#251sb0x1

Pre-Retirement mortality is 70% of the regular post-retirement mortality values for males and 50% of the regular post-retirement mortality values for females.

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	$138.16	$139.94	30.74	35.46
55	132.93	135.21	26.15	30.74
60	126.10	128.78	21.80	26.15
65	117.68	120.49	17.81	21.80
70	107.46	110.39	14.17	17.81
75	95.15	98.34	10.86	14.17
80	81.33	84.21	8.04	10.86
Ref:	#303sb-2x1	#303sb3x1		

The present values shown above are for illustrative purposes only and include a 50% survivor benefit but do not include the value of future post-retirement increases. Males are assumed to be 3 years older than their spouses.

	Closed and Year 2000 Plans					2011 Tier			
	Non-Uniformed				Uniformed	Non-Uniformed			Uniformed
	Male		Female			Normal			
Age	Normal	Early	Normal	Early	Normal	Age & Service	Rule of 90	Early	Normal
50	0.3000		0.3000		0.4000				
51	0.2500		0.1800		0.2000				
52	0.2500		0.1800		0.1500				
53	0.2000		0.1800		0.1500				
54	0.2000		0.2500		0.1500				
55	0.2000	0.0300	0.3000	0.0300	0.2500		0.3000		0.3000
56	0.3000	0.0300	0.3000	0.0300	0.2500		0.3000		0.3000
57	0.2500	0.0400	0.3000	0.0300	0.3000		0.3000		0.3000
58	0.2000	0.0400	0.3000	0.0300	0.3500		0.3000		0.3000
59	0.2500	0.0500	0.3000	0.0300	0.5000		0.3000		0.3000
60	0.2000	0.1000	0.2000	0.0500	1.0000		0.3000		0.3000
61	0.1500	0.0400	0.2000	0.0600	1.0000		0.3000		0.3000
62	0.5000	0.4000	0.3500	0.4000	1.0000		0.3000	0.1000	0.3000
63	0.4000	0.4000	0.2500	0.3000	1.0000		0.3000	0.1000	0.3000
64	0.3000	0.4000	0.2500	0.3000	1.0000		0.3000	0.1000	0.3000
65	0.4000		0.4000		1.0000		0.3000	0.1000	0.3000
66	0.4500		0.4000		1.0000		0.3000	0.1000	0.3000
67	0.2500		0.4000		1.0000	0.5000	0.3000		0.3000
68	0.2500		0.4000		1.0000	0.5000	0.3000		0.3000
69	0.2500		0.4000		1.0000	0.5000	0.3000		0.3000
70	0.5000		0.5000		1.0000	1.0000	1.0000		1.0000
71	0.5000		0.5000		1.0000	1.0000	1.0000		1.0000
72	1.0000		1.0000		1.0000	1.0000	1.0000		1.0000
Ref	1822	1824	1823	1825	1826	1873	1875	1262	1875

All Plan Participants

Age	Non-Uniformed		Uniformed		Age	Non-Uniformed		Uniformed	
	Male	Female	Male	Female		Male	Female	Male	Female
21	0.0002	0.0003	0.0000	0.0000	51	0.0043	0.0045	0.0022	0.0022
22	0.0002	0.0003	0.0000	0.0000	52	0.0044	0.0048	0.0024	0.0024
23	0.0002	0.0003	0.0000	0.0000	53	0.0047	0.0053	0.0028	0.0028
24	0.0002	0.0005	0.0000	0.0000	54	0.0050	0.0059	0.0031	0.0031
25	0.0002	0.0005	0.0001	0.0001	55	0.0054	0.0066	0.0035	0.0035
26	0.0002	0.0005	0.0001	0.0001	56	0.0059	0.0070	0.0039	0.0039
27	0.0003	0.0006	0.0002	0.0002	57	0.0064	0.0077	0.0043	0.0043
28	0.0003	0.0008	0.0002	0.0002	58	0.0073	0.0082	0.0048	0.0048
29	0.0003	0.0010	0.0002	0.0002	59	0.0083	0.0085	0.0052	0.0052
30	0.0003	0.0010	0.0002	0.0002	60	0.0100	0.0090	0.0058	0.0058
31	0.0004	0.0011	0.0002	0.0002	61	0.0129	0.0091	0.0063	0.0063
32	0.0004	0.0013	0.0002	0.0002	62	0.0000	0.0094	0.0070	0.0070
33	0.0005	0.0014	0.0002	0.0002	63	0.0000	0.0098	0.0077	0.0077
34	0.0005	0.0014	0.0002	0.0002	64	0.0000	0.0101	0.0077	0.0077
35	0.0006	0.0014	0.0002	0.0002	65	0.0000	0.0000	0.0000	0.0000
36	0.0006	0.0016	0.0002	0.0002	66	0.0000	0.0000	0.0000	0.0000
37	0.0006	0.0016	0.0003	0.0003	67	0.0000	0.0000	0.0000	0.0000
38	0.0007	0.0018	0.0003	0.0003	68	0.0000	0.0000	0.0000	0.0000
39	0.0008	0.0018	0.0004	0.0004	69	0.0000	0.0000	0.0000	0.0000
40	0.0010	0.0019	0.0005	0.0005	70	0.0000	0.0000	0.0000	0.0000
41	0.0013	0.0022	0.0006	0.0006	71	0.0000	0.0000	0.0000	0.0000
42	0.0015	0.0024	0.0006	0.0006	72	0.0000	0.0000	0.0000	0.0000
43	0.0016	0.0027	0.0007	0.0007	73	0.0000	0.0000	0.0000	0.0000
44	0.0019	0.0029	0.0008	0.0008	74	0.0000	0.0000	0.0000	0.0000
45	0.0023	0.0032	0.0009	0.0009	75	0.0000	0.0000	0.0000	0.0000
46	0.0028	0.0035	0.0011	0.0011	76	0.0000	0.0000	0.0000	0.0000
47	0.0033	0.0037	0.0012	0.0012	77	0.0000	0.0000	0.0000	0.0000
48	0.0037	0.0038	0.0014	0.0014	78	0.0000	0.0000	0.0000	0.0000
49	0.0040	0.0040	0.0016	0.0016	79	0.0000	0.0000	0.0000	0.0000
50	0.0042	0.0042	0.0019	0.0019	80	0.0000	0.0000	0.0000	0.0000
Ref	#188x1.1	#503x1.6	#19x0.75	#19x0.75		#188x1.1	#503x1.6	#19x0.75	#19x0.75

All Plan Participants

	Non-Uniformed		Uniformed	
Service	**Male**	**Female**	**Male**	**Female**
0-1	0.3000	0.1900	0.1400	0.1400
1-2	0.1600	0.1300	0.0650	0.0650
2-3	0.0800	0.0900	0.0350	0.0350
3-4	0.0650	0.0800	0.0300	0.0300
4-5	0.0500	0.0500	0.0300	0.0300
Ref	631	632	633	633

This assumption was first used in the June 30, 2010 valuation.

Rates of Separation from Active Employment
More Than 5 Years of Service

All Plan Participants

	Non-Uniformed		Uniformed	
Age	Male	Female	Male	Female
25	0.0493	0.0510	0.0314	0.0314
26	0.0493	0.0510	0.0308	0.0308
27	0.0493	0.0510	0.0303	0.0303
28	0.0475	0.0510	0.0297	0.0297
29	0.0457	0.0510	0.0286	0.0286
30	0.0439	0.0510	0.0275	0.0275
31	0.0422	0.0510	0.0264	0.0264
32	0.0404	0.0510	0.0248	0.0248
33	0.0387	0.0493	0.0237	0.0237
34	0.0370	0.0476	0.0220	0.0220
35	0.0353	0.0459	0.0209	0.0209
36	0.0337	0.0442	0.0193	0.0193
37	0.0321	0.0425	0.0182	0.0182
38	0.0305	0.0408	0.0165	0.0165
39	0.0290	0.0391	0.0154	0.0154
40	0.0275	0.0374	0.0143	0.0143
41	0.0260	0.0357	0.0132	0.0132
42	0.0246	0.0340	0.0121	0.0121
43	0.0232	0.0323	0.0110	0.0110
44	0.0219	0.0306	0.0099	0.0099
45	0.0206	0.0289	0.0088	0.0088
46	0.0194	0.0272	0.0077	0.0077
47	0.0182	0.0255	0.0066	0.0066
48	0.0171	0.0238	0.0055	0.0055
49	0.0161	0.0221	0.0050	0.0050
50	0.0151	0.0204	0.0044	0.0044
51	0.0142	0.0187	0.0039	0.0039
52	0.0133	0.0170	0.0033	0.0033
53	0.0125	0.0153	0.0028	0.0028
54	0.0117	0.0136	0.0022	0.0022
55	0.0110	0.0119	0.0017	0.0017
56	0.0105	0.0102	0.0011	0.0011
57	0.0100	0.0085	0.0011	0.0011
58	0.0095	0.0068	0.0011	0.0011
59	0.0092	0.0051	0.0011	0.0011
60	0.0089	0.0034	0.0011	0.0011
61	0.0087	0.0017		
62	0.0086	0.0000		
63	0.0086	0.0000		
64	0.0087	0.0000		
65	0.0089	0.0000		
66	0.0092	0.0000		
67	0.0095	0.0000		
68	0.0095	0.0000		
69	0.0095	0.0000		
Ref	#63x0.6	#684x0.85	#387x0.55	#387x0.55

MISCELLANEOUS AND TECHNICAL ASSUMPTIONS

Administrative Expenses:	0.90% of payroll, based upon actual results from previous year.
Disability Expenses:	0.53% 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 benefit for all other members.
Optional Benefit Factors:	Optional Benefit Factors are in accordance with tables adopted by the Board.
Active Member Data:	Actual census date of data was May 31. Data was assumed to be statistically equivalent to June 30.
Other:	Turnover decrements do not operate during retirement eligibility.
Miscellaneous Loading:	The calculated normal and early retirement benefits for the Closed and Year 2000 plans were increased by 3.0% for Uniformed and 2.6% for Non-Uniformed to account for the inclusion of unused sick leave in the calculation of Average Pay. The calculated normal and early retirement benefits for the 2011 Tier plan were increased by 1.5% for Uniformed and 1.0% for Non-Uniformed to account for the inclusion of unused sick leave in the calculation of Average Pay. Post disability benefit liabilities were loaded by 150% for all future disabilities to account for potential survivor benefits payable by the retirement system during the period of disability. Current self-insured disability retirant liabilities are loaded by 23% to account for future survivor benefits.

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 cost for each individual active member, payable from the date of employment to the date of retirement, is sufficient to accumulate the value of the member's benefit at the time of retirement

(ii) each annual normal cost is a constant percentage of the member's year by year projected covered pay.

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-11.

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, 2012, resulted in ***Unfunded Actuarial Accrued Liabilities*** which were amortized using the following funding policy.

Permanent Policy: The total contribution will be based on normal cost plus a 23-year amortization of unfunded actuarial accrued liabilities. The amortization period is a closed 23-year period starting July 1, 2013.

Temporary Accelerated Policy: The total contribution is based on normal cost plus a 12-year amortization period for unfunded retiree liabilities and a 27-year amortization period for other unfunded liabilities. Both amortization periods are closed periods starting July 1, 2013.

This temporary accelerated policy was adopted by the Retirement Board on September 17, 2009 and will remain in effect until such time as the retiree liability becomes 100% funded or the permanent policy produces a higher contribution rate.

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.

(Concluded on Next Page)

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 PROCESS

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.

SECTION G

SUPPLEMENTAL INFORMATION FOR COMPREHENSIVE ANNUAL FINANCIAL REPORTING

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October 22, 2012

The Retirement Board
Missouri Department of Transportation
and Highway Patrol Employees' Retirement System
P.O. Box 1930
Jefferson City, Missouri 65102-1930

Dear Board Members:

This report was prepared at the request of the Board and is intended for use by the Retirement System and those designated or approved by the Board. This report may be provided to parties other than the System only in its entirety and only with the permission of the Board. This report should not be relied on for any purpose other than the purpose described.

The basic financial objective of the Missouri Department of Transportation and Highway Patrol Employees' Retirement System (MPERS) is to establish and receive contributions which:

(1) when expressed in terms of percents of active member payroll, will remain approximately level from generation to generation of Missouri citizens, and

(2) when combined with present assets and future investment returns, will be sufficient to meet the present and future financial obligations of MPERS.

In order to measure progress toward this fundamental objective, MPERS has annual actuarial valuations performed. The valuations (i) measure present financial position, and (ii) establish contribution rates that provide for the current cost and level percent-of-payroll amortization of unfunded actuarial liabilities over a reasonable period. An actuarial valuation was performed based upon benefit conditions, data and assumptions as of June 30, 2012. This valuation indicates that contribution rates for the period beginning July 1, 2013 that are at least equal to the calculated contributions rates will meet the Board's financial objective. The calculated contribution rates are 54.25% of payroll for the 6,243 Non-Uniformed employees and 55.23% of payroll for the 1,215 Uniformed patrol employees.

The plan administrative staff provides the actuary with data for the actuarial valuation. The actuary relies on the data after reviewing it for internal and year to year consistency. The actuary summarizes and tabulates population data in order to analyze longer term trends.

Actuarial valuations are based upon assumptions regarding future activity in specific risk areas including the rates of investment return and payroll growth, eligibility for the various classes of benefits, and longevity among retired lives. These assumptions are adopted by the Board after considering the advice of the actuary and other professionals. The assumptions and the methods comply with the requirements of Statements No. 25 and No. 43 of the Governmental Accounting Standards Board. Each actuarial valuation takes into account all prior differences between actual and assumed experience in each risk area and adjusts the contribution rates as needed. Actuarial methods and assumptions were adopted by the Board pursuant to the June 30, 2009 Experience Study.

To the best of our knowledge, this report is complete and accurate and was made in accordance with standards of practice promulgated by the Actuarial Standards Board of the American Academy of Actuaries. The actuarial assumptions used for the valuation produce results which, individually and in the aggregate, are reasonable.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law.

This report has been prepared by actuaries who have substantial experience valuing public employee retirement systems. Heidi Barry is a Member of the American Academy of Actuaries (MAAA) and meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Based upon the valuation results, it is our opinion that the Missouri Department of Transportation and Highway Patrol Employees' Retirement System continues to operate in accordance with actuarial principles of level percent-of-payroll financing. It is important to the well-being of the system that it continues to receive contributions at the actuarially determined levels. It is also important to continue to monitor both the total funded status and the funded status of the retiree liabilities to ensure that the funding policy is consistent with the expected life span of the respective unfunded obligation.

Respectfully submitted,

Heidi G Barry   Kenneth G. Alberts

Heidi G. Barry, ASA, MAAA   Kenneth G. Alberts

SOLVENCY TEST

The MPERS funding objective is to meet long term benefit promises through contributions that remain approximately level from year to year as a percent of member payroll. If the contributions to the System are level in concept and soundly executed, the System will ***pay all promised benefits when due – the ultimate test of financial soundness.***

A solvency test is one means of checking a system's progress under its funding program. In a solvency test for a non-contributory plan, the plan's present assets (cash and investments) are compared with: 1) The liabilities for future benefits to present retired lives and 2) The liabilities for service already rendered by members. In a system that has been following the discipline of level percent of payroll financing, the liabilities for future benefits to present retired lives (liability 1) will be fully covered by present assets (except in rare circumstances). In addition, the liabilities for service already rendered by members (liability 2) will be partially covered by the remainder of present assets. The larger the funded portion of liability 2, the stronger the condition of the system.

The schedule below illustrates the history of liability 2 of the System.

Val. Date June 30	(1) Member Contributions	(2) Retirees and Benef.	(3) Active and Inactive Members	Present Valuation Assets	Portion of Present Values Covered by Present Assets (1)	(2)	(3)	Total
	--------------------$ Millions	------------------------						
1999	0	1,132	921	1,243	100%	100%	12%	61%
2000	0	1,238	951	1,423	100%	100%	19%	65%
2001	0	1,375	926	1,521	100%	100%	16%	66%
2002#	0	1,470	888	1,451	100%	99%	0%	62%
2003	0	1,555	863	1,364	100%	88%	0%	56%
2004	0	1,626	867	1,332	100%	82%	0%	53%
2005	0	1,669	958	1,417	100%	85%	0%	54%
2006	0	1,734	1,007	1,521	100%	88%	0%	56%
2007	0	1,810	1,087	1,686	100%	93%	0%	58%
2008	0	1,873	1,147	1,784	100%	95%	0%	59%
2009	0	1,947	1,166	1,471	100%	76%	0%	47%
2010#	0	2,034	1,225	1,376	100%	68%	0%	42%
2011	0	2,045	1,253	1,427	100%	70%	0%	43%
2012#	0	2,133	1,173	1,531	100%	72%	0%	46%

\# *New assumptions and/or methods adopted.*

DERIVATION OF EXPERIENCE GAIN (LOSS)

Actual experience will never coincide exactly with assumed experience (except by coincidence). Gains and losses may offset each other over a period of years, but sizeable year-to-year variations from assumed experience are common. Detail on the derivation of the experience gain (loss) is shown below.

	$ Millions
UAAL Beginning of Year (at July 1)	$ 1,870,299,151
Normal Cost	47,546,183
Contributions	(166,261,417)
Interest	149,402,678
Net Change in LTD Assets	-
Expected UAAL Before Any Changes	1,900,986,595
Effect of Changes in Assumptions & Methods	(18,879,244)
Effect of Adjustment	-
Expected UAAL After Changes	1,882,107,351
End of Year UAAL (at June 30)	$ 1,775,245,058
Gain/(Loss) for Year	$ 106,862,293
Gain/(Loss) as a percent of actuarial accrued liabilities at start of year ($3,297.6 million)	3.2%

Valuation Date June 30	Experience Gain (Loss) as % of Beginning Accrued Liability
1999	(7.7)%
2000	(0.1)%
2001	(9.3)%
2002	(4.5)%
2003	(5.2)%
2004	(2.9)%
2005	(1.5)%
2006	1.4 %
2007	1.1 %
2008	(0.2)%
2009	(12.6)%
2010	(3.8)%
2011	2.2 %
2012	**3.2 %**

SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

Valuation Date:	June 30, 2012
Actuarial Cost Method:	Entry Age
Amortized Method:	Closed, level percent of payroll
Remaining Amortization Period:	20-years#
Asset Valuation Method:	3-year smoothing
Actuarial Assumptions:	
Investment Rate of Return:	8.25%
Projected Salary Increase:	3.75% to 12.25%
Cost-of-Living Adjustments:	2.6% Compound
Includes Wage Inflation at:	3.75%

 # Single equivalent period.

An actuarial valuation is based upon an actuarial cost method, an asset valuation method, and actuarial assumptions. These methods and assumptions are chosen by the Board of Trustees after consultation with the Actuary and other advisors.

The actuarial cost method is called the Entry Age Actuarial Cost Method. This method is consistent with the Board's level percent of payroll funding objective. With this method, the level percent of payroll is determined that will fund a member's retirement benefit over the member's entire working lifetime, from date of hire (Entry Age) to date of exit from the active member population. Differences in the past between assumed and actual experience become part of unfunded actuarial accrued liabilities and are amortized with level percent of payroll contributions. This cost method was first used in the ***June 30, 1999*** valuation.

The asset valuation method is a three year smoothed market value method in which assumed investment return is recognized immediately each year and differences between actual and assumed investment return are phased in over a closed three year period. This asset valuation method is intended to give recognition to the long term accuracy of market values while filtering out and dampening short term market swings. This method was first used in the ***June 30, 1999*** valuation.

The actuarial assumptions used in producing the valuation fall into two broad classes: economic assumptions, and demographic assumptions. Economic assumptions refer to long term rates of investment return, wage growth, covered population growth, and inflation. Demographic assumptions refer to retirement rates, turnover rates, disability rates, merit and seniority pay increases, and mortality rates. The current assumptions are based upon a 2004-2009 study of experience of the MPERS. The assumptions are reviewed from time to time to keep them reasonably current with expected experience.

Economic Assumptions

The investment return rate used in making the valuation was 8.25% per year, compounded annually (net after administrative expenses). This rate of return is not the assumed real rate of return. The real rate of return over wage inflation is defined to be the portion of investment return which is more than the wage inflation rate. Considering wage inflation recognition of 3.75%, the 8.25% rate translates to an assumed real rate of return over wage inflation of 4.5%. This rate was first used for the ***June 30, 2005*** valuation.

SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS (CONCLUDED)

Pay increase assumptions for individual active members are shown on Tables VI and VII. Part of the assumption for each age is for a merit and/or seniority increase, and the other 3.75% recognizes wage inflation. These rates were first used for the **June 30, 2010** valuation.

Price Inflation is assumed to be 3.25%. This results in a 2.6% annual COLA assumption. It is assumed that the 2.6% COLA will always be paid.

The Active Member Group size is assumed to remain constant at its present level.

The active member payroll for MoDOT members is assumed to increase 0.00% annually in each of the first two years and 3.75% annually thereafter. The active member payroll for all other members is assumed to increase 3.75% annually for all years.

Non Economic Assumptions

The mortality table used to measure retired life mortality was the 1994 Group Annuity Mortality Tables projected to the year 2002 set forward 2 years for males and set back 3 years for females. Related values are shown on Table I. This table was first used for the **June 30, 2010** valuation. Disabled pension mortality was based on PBGC Disabled Mortality tables. There is no margin for future mortality improvements in the rates.

The probabilities of retirement for members eligible to retire are shown on Table II. The rates for full retirement were first used in the **June 30, 2010** valuation. The rates for reduced retirement were first used in the **June 30, 2010** valuation. Upon retirement, members are assumed to pick the BackDROP period that when combined with the remaining annuity produces the highest liability.

The probabilities of disability for members eligible to retire are shown on Table III. The rates for disability were first used in the **June 30, 2010** valuation.

The probabilities of withdrawal from service, death in service and disability are shown for sample ages on Tables IV and V. The death-in-service and disability rates were first used in the **June 30, 2010** valuation. The withdrawal rates were first used in the **June 30, 2010** valuation.

The data about persons now covered and about present assets was furnished by the System's administrative staff. Although examined for general reasonableness, the data was not audited by the Actuary. Data was furnished as of May 31 and assumed to be statistically equivalent to June 30.

The actuarial valuation computations were made by or under the supervision of a Member of the American Academy of Actuaries (MAAA).

TABLE I
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	$138.16	$139.94	30.74	35.46
55	132.93	135.21	26.15	30.74
60	126.10	128.78	21.80	26.15
65	117.68	120.49	17.81	21.80
70	107.46	110.39	14.17	17.81
75	95.15	98.34	10.86	14.17
80	81.33	84.21	8.04	10.86
Ref:	#303sb-2x1	#303sb3x1		

The present values shown above are for illustrative purposes only and include a 50% survivor benefit but do not include the value of future post-retirement increases. Males are assumed to be 3 years older than their spouses.

TABLE II
RATES OF RETIREMENT

	Closed and Year 2000 Plans					2011 Tier			
	Non-Uniformed				Uniformed	Non-Uniformed			Uniformed
	Male		Female			Normal			
Age	Normal	Early	Normal	Early	Normal	Age & Service	Rule of 90	Early	Normal
50	0.3000		0.3000		0.4000				
51	0.2500		0.1800		0.2000				
52	0.2500		0.1800		0.1500				
53	0.2000		0.1800		0.1500				
54	0.2000		0.2500		0.1500				
55	0.2000	0.0300	0.3000	0.0300	0.2500		0.3000		0.3000
56	0.3000	0.0300	0.3000	0.0300	0.2500		0.3000		0.3000
57	0.2500	0.0400	0.3000	0.0300	0.3000		0.3000		0.3000
58	0.2000	0.0400	0.3000	0.0300	0.3500		0.3000		0.3000
59	0.2500	0.0500	0.3000	0.0300	0.5000		0.3000		0.3000
60	0.2000	0.1000	0.2000	0.0500	1.0000		0.3000		0.3000
61	0.1500	0.0400	0.2000	0.0600	1.0000		0.3000		0.3000
62	0.5000	0.4000	0.3500	0.4000	1.0000		0.3000	0.1000	0.3000
63	0.4000	0.4000	0.2500	0.3000	1.0000		0.3000	0.1000	0.3000
64	0.3000	0.4000	0.2500	0.3000	1.0000		0.3000	0.1000	0.3000
65	0.4000		0.4000		1.0000		0.3000	0.1000	0.3000
66	0.4500		0.4000		1.0000		0.3000	0.1000	0.3000
67	0.2500		0.4000		1.0000	0.5000	0.3000		0.3000
68	0.2500		0.4000		1.0000	0.5000	0.3000		0.3000
69	0.2500		0.4000		1.0000	0.5000	0.3000		0.3000
70	0.5000		0.5000		1.0000	1.0000	1.0000		1.0000
71	0.5000		0.5000		1.0000	1.0000	1.0000		1.0000
72	1.0000		1.0000		1.0000	1.0000	1.0000		1.0000
Ref	1822	1824	1823	1825	1826	1873	1875	1262	1875

TABLE III
RATES OF DISABILITY

All Plan Participants

	Non-Uniformed		Uniformed			Non-Uniformed		Uniformed	
Age	Male	Female	Male	Female	Age	Male	Female	Male	Female
21	0.0002	0.0003	0.0000	0.0000	51	0.0043	0.0045	0.0022	0.0022
22	0.0002	0.0003	0.0000	0.0000	52	0.0044	0.0048	0.0024	0.0024
23	0.0002	0.0003	0.0000	0.0000	53	0.0047	0.0053	0.0028	0.0028
24	0.0002	0.0005	0.0000	0.0000	54	0.0050	0.0059	0.0031	0.0031
25	0.0002	0.0005	0.0001	0.0001	55	0.0054	0.0066	0.0035	0.0035
26	0.0002	0.0005	0.0001	0.0001	56	0.0059	0.0070	0.0039	0.0039
27	0.0003	0.0006	0.0002	0.0002	57	0.0064	0.0077	0.0043	0.0043
28	0.0003	0.0008	0.0002	0.0002	58	0.0073	0.0082	0.0048	0.0048
29	0.0003	0.0010	0.0002	0.0002	59	0.0083	0.0085	0.0052	0.0052
30	0.0003	0.0010	0.0002	0.0002	60	0.0100	0.0090	0.0058	0.0058
31	0.0004	0.0011	0.0002	0.0002	61	0.0129	0.0091	0.0063	0.0063
32	0.0004	0.0013	0.0002	0.0002	62	0.0000	0.0094	0.0070	0.0070
33	0.0005	0.0014	0.0002	0.0002	63	0.0000	0.0098	0.0077	0.0077
34	0.0005	0.0014	0.0002	0.0002	64	0.0000	0.0101	0.0077	0.0077
35	0.0006	0.0014	0.0002	0.0002	65	0.0000	0.0000	0.0000	0.0000
36	0.0006	0.0016	0.0002	0.0002	66	0.0000	0.0000	0.0000	0.0000
37	0.0006	0.0016	0.0003	0.0003	67	0.0000	0.0000	0.0000	0.0000
38	0.0007	0.0018	0.0003	0.0003	68	0.0000	0.0000	0.0000	0.0000
39	0.0008	0.0018	0.0004	0.0004	69	0.0000	0.0000	0.0000	0.0000
40	0.0010	0.0019	0.0005	0.0005	70	0.0000	0.0000	0.0000	0.0000
41	0.0013	0.0022	0.0006	0.0006	71	0.0000	0.0000	0.0000	0.0000
42	0.0015	0.0024	0.0006	0.0006	72	0.0000	0.0000	0.0000	0.0000
43	0.0016	0.0027	0.0007	0.0007	73	0.0000	0.0000	0.0000	0.0000
44	0.0019	0.0029	0.0008	0.0008	74	0.0000	0.0000	0.0000	0.0000
45	0.0023	0.0032	0.0009	0.0009	75	0.0000	0.0000	0.0000	0.0000
46	0.0028	0.0035	0.0011	0.0011	76	0.0000	0.0000	0.0000	0.0000
47	0.0033	0.0037	0.0012	0.0012	77	0.0000	0.0000	0.0000	0.0000
48	0.0037	0.0038	0.0014	0.0014	78	0.0000	0.0000	0.0000	0.0000
49	0.0040	0.0040	0.0016	0.0016	79	0.0000	0.0000	0.0000	0.0000
50	0.0042	0.0042	0.0019	0.0019	80	0.0000	0.0000	0.0000	0.0000
Ref	#188x1.1	#503x1.6	#19x0.75	#19x0.75		#188x1.1	#503x1.6	#19x0.75	#19x0.75

TABLE IV
RATES OF SEPARATION FROM ACTIVE EMPLOYMENT
LESS THAN 5 YEARS OF SERVICE

All Plan Participants

	Non-Uniformed		Uniformed	
Service	Male	Female	Male	Female
0-1	0.3000	0.1900	0.1400	0.1400
1-2	0.1600	0.1300	0.0650	0.0650
2-3	0.0800	0.0900	0.0350	0.0350
3-4	0.0650	0.0800	0.0300	0.0300
4-5	0.0500	0.0500	0.0300	0.0300
Ref	631	632	633	633

TABLE V
RATES OF SEPARATION FROM ACTIVE EMPLOYMENT
MORE THAN 5 YEARS OF SERVICE

All Plan Participants

	Non-Uniformed		Uniformed	
Age	Male	Female	Male	Female
25	0.0493	0.0510	0.0314	0.0314
26	0.0493	0.0510	0.0308	0.0308
27	0.0493	0.0510	0.0303	0.0303
28	0.0475	0.0510	0.0297	0.0297
29	0.0457	0.0510	0.0286	0.0286
30	0.0439	0.0510	0.0275	0.0275
31	0.0422	0.0510	0.0264	0.0264
32	0.0404	0.0510	0.0248	0.0248
33	0.0387	0.0493	0.0237	0.0237
34	0.0370	0.0476	0.0220	0.0220
35	0.0353	0.0459	0.0209	0.0209
36	0.0337	0.0442	0.0193	0.0193
37	0.0321	0.0425	0.0182	0.0182
38	0.0305	0.0408	0.0165	0.0165
39	0.0290	0.0391	0.0154	0.0154
40	0.0275	0.0374	0.0143	0.0143
41	0.0260	0.0357	0.0132	0.0132
42	0.0246	0.0340	0.0121	0.0121
43	0.0232	0.0323	0.0110	0.0110
44	0.0219	0.0306	0.0099	0.0099
45	0.0206	0.0289	0.0088	0.0088
46	0.0194	0.0272	0.0077	0.0077
47	0.0182	0.0255	0.0066	0.0066
48	0.0171	0.0238	0.0055	0.0055
49	0.0161	0.0221	0.0050	0.0050
50	0.0151	0.0204	0.0044	0.0044
51	0.0142	0.0187	0.0039	0.0039
52	0.0133	0.0170	0.0033	0.0033
53	0.0125	0.0153	0.0028	0.0028
54	0.0117	0.0136	0.0022	0.0022
55	0.0110	0.0119	0.0017	0.0017
56	0.0105	0.0102	0.0011	0.0011
57	0.0100	0.0085	0.0011	0.0011
58	0.0095	0.0068	0.0011	0.0011
59	0.0092	0.0051	0.0011	0.0011
60	0.0089	0.0034	0.0011	0.0011
61	0.0087	0.0017		
62	0.0086	0.0000		
63	0.0086	0.0000		
64	0.0087	0.0000		
65	0.0089	0.0000		
66	0.0092	0.0000		
67	0.0095	0.0000		
68	0.0095	0.0000		
69	0.0095	0.0000		
Ref	#63x0.6	#684x0.85	#387x0.55	#387x0.55

TABLE VI
AGE BASED SALARY SCALE

All Plan Participants

	Salary Increase Assumptions for an Individual Member					
	Non-Uniformed			Uniformed		
Age	Merit & Seniority	Base (Economic)	Increase Next Year	Merit & Seniority	Base (Economic)	Increase Next Year
20	8.00%	3.75%	11.75%	8.50%	3.75%	12.25%
21	8.00%	3.75%	11.75%	8.50%	3.75%	12.25%
22	8.00%	3.75%	11.75%	8.50%	3.75%	12.25%
23	7.30%	3.75%	11.05%	7.80%	3.75%	11.55%
24	6.52%	3.75%	10.27%	7.02%	3.75%	10.77%
25	5.66%	3.75%	9.41%	6.16%	3.75%	9.91%
26	4.72%	3.75%	8.47%	5.22%	3.75%	8.97%
27	4.50%	3.75%	8.25%	5.00%	3.75%	8.75%
28	4.10%	3.75%	7.85%	4.60%	3.75%	8.35%
29	3.70%	3.75%	7.45%	4.20%	3.75%	7.95%
30	3.30%	3.75%	7.05%	3.80%	3.75%	7.55%
31	2.90%	3.75%	6.65%	3.40%	3.75%	7.15%
32	2.50%	3.75%	6.25%	3.00%	3.75%	6.75%
33	2.35%	3.75%	6.10%	2.85%	3.75%	6.60%
34	2.20%	3.75%	5.95%	2.70%	3.75%	6.45%
35	2.05%	3.75%	5.80%	2.55%	3.75%	6.30%
36	1.90%	3.75%	5.65%	2.40%	3.75%	6.15%
37	1.75%	3.75%	5.50%	2.25%	3.75%	6.00%
38	1.65%	3.75%	5.40%	2.15%	3.75%	5.90%
39	1.55%	3.75%	5.30%	2.05%	3.75%	5.80%
40	1.45%	3.75%	5.20%	1.95%	3.75%	5.70%
41	1.35%	3.75%	5.10%	1.85%	3.75%	5.60%
42	1.25%	3.75%	5.00%	1.75%	3.75%	5.50%
43	1.15%	3.75%	4.90%	1.65%	3.75%	5.40%
44	1.05%	3.75%	4.80%	1.55%	3.75%	5.30%
45	0.95%	3.75%	4.70%	1.45%	3.75%	5.20%
46	0.85%	3.75%	4.60%	1.35%	3.75%	5.10%
47	0.75%	3.75%	4.50%	1.25%	3.75%	5.00%
48	0.70%	3.75%	4.45%	1.20%	3.75%	4.95%
49	0.65%	3.75%	4.40%	1.15%	3.75%	4.90%
50	0.60%	3.75%	4.35%	1.10%	3.75%	4.85%
51	0.55%	3.75%	4.30%	1.05%	3.75%	4.80%
52	0.50%	3.75%	4.25%	1.00%	3.75%	4.75%
53	0.46%	3.75%	4.21%	0.96%	3.75%	4.71%
54	0.42%	3.75%	4.17%	0.92%	3.75%	4.67%
55	0.38%	3.75%	4.13%	0.88%	3.75%	4.63%
56	0.34%	3.75%	4.09%	0.84%	3.75%	4.59%
57	0.30%	3.75%	4.05%	0.80%	3.75%	4.55%
58	0.30%	3.75%	4.05%	0.80%	3.75%	4.55%
59	0.30%	3.75%	4.05%	0.80%	3.75%	4.55%
60	0.30%	3.75%	4.05%	0.80%	3.75%	4.55%
Ref.	161			161 +.50%		

TABLE VII
SERVICE BASED SALARY SCALE

Non-Uniformed Plan Participants

% Merit Increases in Salaries Next Year*	
Service Index	**Rate**
1	11.0%
2	10.5%
3	5.0%
4	4.5%
Ref	339

* For Non-Uniformed members with 4 or less years of service, the service based table overwrites the age based table on page G-10.