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Report on the Annual Valuation of the Mississippi Highway Safety Patrol Retirement System

Prepared as of June 30, 2014



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October 21, 2014

Board of Trustees Public Employees' Retirement System of Mississippi 429 Mississippi Street Jackson, MS 39201-1005

Ladies and Gentlemen:

Presented in this report are the results of the <u>annual actuarial valuation</u> of the Mississippi Highway Safety Patrol Retirement System. The purpose of the valuation was to measure the System's funding progress and to determine the unfunded accrued liability amortization period beginning July 1, 2014. The results may not be applicable for other purposes.

The date of the valuation was June 30, 2014.

The valuation was based upon data, furnished by the Executive Director and the PERS staff, concerning active, inactive and retired members along with pertinent financial information. While not verifying data at the source, the actuary performed tests for consistency and reasonableness. The complete cooperation of the PERS staff in furnishing materials requested is hereby acknowledged with appreciation.

Your attention is directed particularly to the presentation of contribution rates on page 1 and the comments on page 8.

To the best of our knowledge, this report is complete and accurate. The valuation was performed by, and under the supervision of, independent actuaries who are members of the American Academy of Actuaries with experience in performing valuations for public retirement systems. The undersigned meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

The valuation was prepared in accordance with the principles of practice prescribed by the Actuarial Standards Board. We have reviewed the actuarial methods, including the asset valuation method, and continue to believe they are appropriate for the purpose of determining employer contribution levels.

Future actuarial results may differ significantly from the current results 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 system's funded status); and changes in plan provisions or applicable law. Since the potential impact of such factors is outside the scope of a normal annual actuarial valuation, an analysis of the range of results is not presented herein.

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The actuarial calculations were performed by qualified actuaries according to generally accepted actuarial procedures and methods. The calculations are based on the current provisions of the system, and on actuarial assumptions that are, in the aggregate, internally consistent and reasonably based on the actual experience of the system.

Respectfully submitted,

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#### REPORT ON THE ANNUAL VALUATION OF THE MISSISSIPPI HIGHWAY SAFETY PATROL RETIREMENT SYSTEM PREPARED AS OF JUNE 30, 2014

#### SECTION I – SUMMARY OF PRINCIPAL RESULTS

1. This report, prepared as of June 30, 2014, presents the results of the annual actuarial valuation of the System. For convenience of reference, the principal results of the valuation and a comparison with the preceding year's results are summarized below. The current valuation and reported benefits amount reflect any benefit increases granted to retirees as of July 1, 2014. Based on the funding policy adopted by the Board in 2012, the employer contribution rate is to be set at 37.00% of annual compensation and the amortization period calculated on an open basis.

## SUMMARY OF PRINCIPAL RESULTS

VALUATION DATE		June 30, 2014	June 30, 2013
Active members included in valuation			
Number		495	520
Annual compensation	\$	25,553,765	\$ 25,815,787
Retirees			
Number		720	713
Annual allowances	\$	26,966,360	\$ 25,835,619
Assets			
Market related actuarial value	\$	295,298,000	\$ 271,097,000
Market value	\$	326,032,000	\$ 287,456,000
Unfunded accrued liability	\$	150,524,072	\$ 160,477,971
Funded Ratio		66.2%	62.8%
Fiscal Year End		June 30, 2016	June 30, 2015
Employer contribution rate			
Normal Cost*		16.03%	16.15%
Accrued liability		20.97	20.85
Total		37.00%	37.00%
Anticipated accrued liability payment period		36.5 years	33.0 years
Unfunded accrued liability based on			
Market value of assets		119,790,072	\$ 144,118,971
Funded Ratio		73.1%	66.6%
Payment period		20.7 years	24.5 years

\* Includes load for administrative expenses. See page 10 for more contribution rate detail.



- 2. The valuation balance sheet showing the results of the valuation is given in Section III.
- Comments on the valuation results are given in Section IV, the derivation of the experience gains and losses during the valuation year are given in Section V and the rates of contribution payable by employers are given in Section VI.
- 4. There were no changes to the actuarial assumptions or methods since the last valuation.
- 5. There were no changes to the benefit provisions since the last valuation.
- 6. Due to Senate Bill No. 2659 enacted in 2004 and House Bill No. 1015 enacted April 25, 2013, additional contributions are being made to the System and are expected to continue in the future. We have reduced our expected contributions from these sources from \$4,600,000 to \$3,400,000 based on actual monies received for the fiscal year ending June 30, 2014. The employers are also required to contribute 37.00% of payroll. The funding period of the UAL of 36.5 years shown on the previous page reflects the additional contributions from Senate Bill No. 2659 and House Bill No. 1015. Without these additional contributions, the funding period would have been infinite. If the funding period was kept at 30 years, without the additional contributions the employer contribution rate would have been 48.45%.
- 7. Schedule A of this report presents the development of the actuarial value of assets. Schedule B details the actuarial assumptions and methods employed. Schedule C gives a summary of the benefit and contribution provisions of the System.
- 8. The table on page 3 provides a ten-year history of some pertinent figures.
- 9. The Governmental Accounting Standards Board issued Statement No. 67 (GASB 67) in June 2012 and is effective for plan years beginning after June 15, 2013, which is the year ending June 30, 2014 for the Retirement System. GASB 67 replaces GASB 25 for plans and a separate GASB 67 report will be prepared for the Board. However, GASB 27 is still in effect for employers and we have provided some supplemental disclosure information and tables in Section VIII.



## Mississippi Highway Safety Patrol Retirement System

## Comparative Schedule

	Active Members				Retired Lives				Valuation Results (\$ thousands)		
Valuation Date June 30	Number	Payroll (\$ thousands)	Average Salary	% increase from previous year	Number	Active/ Retired Ratio	Annual Benefits** (\$ thousands)	Benefits as % of Payroll	Accrued Liability	Valuation Assets	UAAL
2005	540	\$22,343	\$41,376	2.0%	621	0.9	\$17,189.8	76.9%	\$335,117	\$253,477	\$81,640
2006	564	24,499	43,438	5.0	625	0.9	17,821.8	72.7	350,638	265,637	85,001
2007	591	27,037	45,748	5.3	638	0.9	18,722.6	69.2	371,233	284,626	86,607
2008	626	29,597	47,280	3.3	651	1.0	19,798.7	66.9	381,578	298,630	82,948
2009	570	26,390	46,298	(2.1)	692	0.8	21,994.1	83.3	394,630	292,322	102,308
2010	542	26,353	48,623	5.0	696	0.8	22,899.7	86.9	411,277	281,088	130,189
2011	515	24,872	48,295	(0.7)	704	0.7	23,975.7	96.4	414,432	278,265	136,167
2012	547	25,670	46,929	(2.8)	713	0.8	25,167.9	98.0	421,415	268,424	152,991
2013	520	25,816	49,646	5.8	713	0.7	25,835.6	100.1	431,575	271,097	160,478
2014	495	25,554	51,624	4.0	720	0.7	26,966.4	105.5	445,822	295,298	150,524



## SECTION II – MEMBERSHIP DATA

Data regarding the membership of the System for use as a basis for the valuation were furnished by the System's office. The following tables summarize the membership of the System as of June 30, 2014 upon which the valuation was based. Detailed tabulations of the data are given in Schedule D.

## **Active Members**

	-		-		Gro	up Avera	ges
Employers	Number of Employers	Number		Payroll	Salary	Age	Benefit Service
State Agencies	1	495	\$	25,553,765	\$51,624	42.3	14.0

Of the 495 active members, 443 are vested and 52 are non-vested.

#### **Retired Lives**

			Group Averages		
Type of Benefit Payment	No.	Annual Benefits	Benefit	Age	
Retirement	516	\$22,632,674	\$43,862	65.7	
Disability	17	410,138	24,126	65.5	
Survivor	187	3,923,548	20,982	73.7	
Total in HSPRS	720	\$26,966,360	\$37,453	67.8	

#### **Deferred Vested/Inactive Lives**

Type of Member	No.	Deferred Benefits	Outstanding Balance
Deferred Vested – Benefit Included	33	\$464,209	N/A
Inactive	25	N/A	\$79,476
Total in HSPRS	58	\$464,209	\$79,476



#### **SECTION III – VALUATION BALANCE SHEET**

The following valuation balance sheet shows the assets and liabilities of the retirement system as of the current valuation date of June 30, 2014 and, for comparison purposes, as of the immediately preceding valuation date of June 30, 2013. The items shown in the balance sheet are present values actuarially determined as of the relevant valuation date. The development of the actuarial value of assets is presented in Schedule A.



#### VALUATION BALANCE SHEET SHOWING THE ASSETS AND LIABILITIES OF THE MISSISSIPPI HIGHWAY SAFETY PATROL RETIREMENT SYSTEM

	JUNE 30, 2014		JUNE 30, 2013	
ASSETS				
Current actuarial value of assets:				
Annuity Savings Account	\$	24,410,638	\$	23,706,361
Annuity Reserve		33,700,862		27,502,961
Employers' Accumulation Account		237,186,500		219,887,678
Total current assets	\$	295,298,000	\$	271,097,000
Future member contributions to Annuity Savings Account	\$	16,153,009	\$	16,914,745
Prospective contributions to Employer's Accumulation Account				
Normal contributions	\$	35,202,419	\$	37,142,446
Unfunded accrued liability contributions		150,524,072		160,477,971
Total prospective contributions	\$	185,726,491	<u>\$</u>	197,620,417
Total assets	<u>\$</u>	497,177,500	<u>\$</u>	485,632,162
LIABILITIE	S			
Present value of benefits payable on account of present retired members and beneficiaries	\$	317,825,045	\$	306,272,996
Present value of benefits payable on account of inactive members for service rendered before the valuation date		3,432,127		3,805,201
Present value of benefits payable on account of active members Total liabilities	<u>\$</u>	<u>175,920,328</u> 497,177,500	<u>\$</u>	<u>175,553,965</u> 485,632,162



#### BREAKDOWN OF TOTAL AND ACCRUED LIABILITIES AS OF JUNE 30, 2014

	Total Liability	-	Accrued Liability
Active Members			
Retirement	\$ 169,079,181	\$	121,995,968
Death	1,828,817		745,535
Disability	2,797,782		983,721
Termination	 2,214,548		839,676
Total	\$ 175,920,328	\$	124,564,900
Retirees			
Retirement	\$ 278,314,890	\$	278,314,890
Survivor	35,255,190		35,255,190
Disability	 4,254,965		4,254,965
Total	\$ 317,825,045	\$	317,825,045
Deferred Vested Members	3,273,175		3,273,175
Inactive Members	 158,952		158,952
Total Actuarial Values	\$ 497,177,500	\$	445,822,072
Actuarial Value of Assets			295,298,000
Unfunded Actuarial Accrued Liability		\$	150,524,072



#### SECTION IV - COMMENTS ON VALUATION

The valuation balance sheet gives the following information with respect to the funds of the System as of

June 30, 2014.

#### Total Assets

The Annuity Savings Account is the fund to which are credited contributions made by members together with interest thereon. When a member retires, the amount of his or her accumulated contributions is transferred from the Annuity Savings Account to the Annuity Reserve. The Employer's Accumulation Account is the fund to which are credited employer contributions and investment income, and from which are paid all employer-provided benefits under the system. The assets credited to the Annuity Savings Account as of the valuation date, which represent the accumulated contributions of members to that date, amounted to \$24,410,638. The assets credited to the Annuity Reserve were \$33,700,862 and the assets credited to the Employer's Accumulation Account totaled \$237,186,500. Current actuarial assets as of the valuation date equaled the sum of these three funds, \$295,298,000. Future member contributions to the Annuity Savings Account were valued to be \$16,153,009. Prospective contributions to the Employer's Accumulation Account were calculated to be \$185,726,491 of which \$35,202,419 is attributable to service rendered after the valuation date (normal contributions) and \$150,524,072 is attributable to service rendered before the valuation date (unfunded accrued liability contributions).

Therefore, the balance sheet shows the present value of current and future assets of the System to be \$497,177,500 as of June 30, 2014.

#### Total Liabilities

The present value of benefits payable on account of presently retired members and beneficiaries totaled \$317,825,045 as of the valuation date. The present value of future benefit payments on behalf of active members amounted to \$175,920,328. In addition, the present value of benefits for inactive members, due to service rendered before the valuation date, was calculated to be \$3,432,127.

Therefore, the balance sheet shows the present value for all prospective benefit payments under the System to be \$497,177,500 as of June 30, 2014.

Section 25-11-7 of State law requires that active members contribute the current rate of 7.25% of annual compensation to the System.

Section 25-11-123(c) requires that the State contribute a certain percentage of the annual compensation of members to cover the normal contributions and a certain percentage to cover the accrued liability contributions of the System. These individual contribution percentages are established in accordance with an actuarial valuation. Based on the funding policy adopted by the Board in October, 2012, the employer rate is set at 37.00% of annual compensation and the amortization period calculated on an open basis. Therefore, the amortization period for the June 30, 2014 valuation is 36.5 years, compared to 33.0 years for the last valuation.

The primary reason for the increase in the amortization period is the adjustment to expected contributions from Senate Bill No. 2659 and House Bill No. 1015. Previously, we expected \$4.6 million per year. We lowered our expectation to \$3.4 million per year based on actual receipts from the fiscal year ending June 30, 2014. This was offset by the recognition of the investment gains from four of the last five fiscal years.



#### SECTION V - DERIVATION OF EXPERIENCE GAINS AND LOSSES

Actual experience will never (except by coincidence) coincide exactly with assumed experience. It is assumed that gains and losses will be in balance over a period of years, but sizable year to year fluctuations are common. Detail on the derivation of the experience gain/(loss) for the year ended June 30, 2014 is shown below.

		<u>\$</u>	Thousands
(1)	UAAL* as of June 30, 2013	\$	160,478.0
(2)	Total normal cost from last valuation		5,981.5
(3)	Total contributions		15,463.0
(4)	Interest accrual: [[(1) + (2)] x .08] - [(3) x .04]		12,698.2
(5)	Expected UAAL before changes: $(1) + (2) - (3) + (4)$	\$	163,694.7
(6)	Change due to plan amendments		0.0
(7)	Change due to actuarial assumptions or methods		0.0
(8)	Expected UAAL after changes: $(5) + (6) + (7)$	\$	163,694.7
(9)	Actual UAAL as of June 30, 2014	\$	150,524.1
(10)	Gain/(loss): (8) – (9)	\$	13,170.7
(11)	Gain/(loss) as percent of actuarial accrued liabilities at start of year (\$431,575.0)		3.1%

\*Unfunded actuarial accrued liability.

Valuation Date June 30	Actuarial Gain/(Loss) as a % of Beginning Accrued Liabilities
2009	(4.3)%
2010	(6.6)
2011	(0.8)
2012	(3.5)
2013	(0.9)
2014	3.1



## SECTION VI - REQUIRED CONTRIBUTION RATES

The valuation balance sheet gives the basis for determining the percentage rates for contributions to be made by employers to the Retirement System. The following table shows the rates of contribution payable by employers as determined from the present valuation for the 2015/2016 fiscal year and a comparison to the previous valuation results.

Contribution for	2015/2016 Fiscal Year	2014/2015 Fiscal Year
Normal Cost:		
Service retirement benefits	21.22%	21.21%
Disability benefits	0.96	1.00
Survivor benefits	0.55	0.58
Total	22.73%	22.79%
Member Contributions:	7.25%	7.25%
Less future refunds	(0.32)	<u>(0.38)</u>
Available for benefits	6.93%	6.87%
Employer Normal Cost	15.80%	15.92%
Administrative Expense Load	0.23%	0.23%
Unfunded Actuarial Accrued Liabilities		
(36.5 year level % of payroll amortization*)	20.97%	20.85%
Total Computed Employer Contribution Rate	37.00%	37.00%

\*Amortization period a year ago was 33.0 years.

The components of the change in the computed unfunded accrued liability amortization period from 33.0 years to 36.5 years are as follows:

Previously Reported Period	33.0 years
Change due to:	
Normal amortization	(1.0)
Actuarial experience	(12.4)
Assumption changes	0.0
Plan amendments	0.0
Method Change	0.0
SB 2659 and HB 1015 changes	13.4
Payroll Growth experience	3.5
Computed Period	36.5 years



#### SECTION VII - CASH FLOW PROJECTION

Regular actuarial valuations measure the Retirement System's present financial position and contributions adequacy by calculating and financing the liabilities created by the present benefit program. This process involves discounting to present values the future benefit payments on behalf of present active and retired members and their survivors. However, valuations do not produce information regarding future changes in the makeup of the covered group or the amounts of benefits to be paid or investment income to be received – actuarial projections do.

Whereas valuations provide a snapshot of the retirement system as of a given date, projections provide a moving picture. Projected active and retired groups are developed from year to year by the application of assumptions regarding pre-retirement withdrawal from service, retirements, deaths, disabilities, and the addition of new members. Projected information regarding the retired life group leads to assumed future benefit payout. Combining future benefit payments with assumed contributions and expected investment earnings produces the net cash flow of the System each year, and thus end of year asset levels.

Projections are used for many purposes. Among them are (i) developing cash flow patterns for investment policy and asset mix consideration, (ii) exploring the effect of alternative assumptions about future experience, (iii) analyzing the impact on system funding progress of changes in the workforce, and (iv) examining the potential effect of changes in benefits on system financial activity.

Projection results are useful in demonstrating changing relationships among key elements affecting system financial activity. For example: how benefits payable and system assets will grow in future decades. Projections are not predictions of specific future events and do not provide numeric precision in absolute terms. For instance, cash flow projected to occur 10 years in the future will not be exact (except by coincidence), but understanding the changed relationship between future benefit payout and future investment income can be very useful.

The following projections assume an 8.00% investment return and salary increases of 4.25% each year in the future. Due to the new funding policy all future contribution rates are assumed to remain at 37.00% of payroll.



# Mississippi Highway Safety Patrol Retirement System

## Twenty-five Year Cash Flow Projection

	Voluction	Market Value of		Projected	Expected		Market Value of
Veer	Valuation		Contributions	Benefit	Investment	Cook Elow	Assets Balance
rear	Payroll	<u>July 1</u>	Contributions	Payments	Return	Cash Flow	<u>June 30</u>
004.4	<b>\$05 550 705</b>	\$000 000 000	<b><i><b>Ф</b>АА 707 <b>Г</b>АА</i></b>	<b>\$07.004.000</b>	<b>#05 550 704</b>	<b>\$40,404,055</b>	\$000 400 OFF
2014	\$25,553,765	\$326,032,000	\$14,707,541	\$27,801,680	\$25,558,794	\$12,464,655	\$338,496,655
2015	26,639,800	338,496,655	15,188,112	29,010,244	26,526,847	12,704,715	351,201,370
2016	27,771,992	351,201,370	15,689,106	30,323,051	27,510,752	12,876,807	364,078,177
2017	28,952,302	364,078,177	16,211,394	31,491,536	28,515,048	13,234,906	377,313,083
2018	30,182,775	377,313,083	16,755,878	32,754,101	29,545,118	13,546,895	390,859,978
2019	31,465,543	390,859,978	17,323,503	33,961,649	30,603,272	13,965,127	404,825,105
2020	32,802,829	404,825,105	17,915,252	35,075,355	31,699,604	14,539,501	419,364,606
2021	34,196,949	419,364,606	18,532,150	36,196,140	32,842,609	15,178,618	434,543,224
2022	35,650,319	434,543,224	19,175,266	37,386,766	34,034,998	15,823,497	450,366,722
2023	37,165,458	450,366,722	19,845,715	38,591,951	35,279,488	16,533,252	466,899,974
2024	38,744,990	466,899,974	20,544,658	39,720,080	36,584,981	17,409,559	484,309,532
2025	40,391,652	484,309,532	21,273,306	40,851,823	37,961,622	18,383,105	502,692,637
2026	42,108,297	502,692,637	22,032,921	41,959,569	39,418,345	19,491,697	522,184,334
2027	43,897,900	522,184,334	22,824,821	43,167,871	40,961,025	20,617,975	542,802,309
2028	45,763,561	542,802,309	23,650,376	44,547,195	42,588,312	21,691,493	564,493,802
2029	47,708,512	564,493,802	24,511,017	45,882,923	44,304,628	22,932,722	587,426,524
2030	49,736,124	587,426,524	25,408,235	47,183,518	46,123,111	24,347,828	611,774,352
2031	51,849,909	611,774,352	26,343,585	48,535,434	48,054,274	25,862,425	637,636,777
2032	54,053,530	637,636,777	27,318,687	49,592,867	50,119,975	27,845,795	665,482,572
2033	56,350,805	665,482,572	28,335,231	50,519,612	52,351,231	30,166,849	695,649,421
2034	58,745,714	695,649,421	29,394,978	51,339,440	54,774,175	32,829,713	728,479,134
2035	61,242,407	728,479,134	30,499,765	52,275,514	57,407,301	35,631,552	764,110,686
2036	63,845,209	764,110,686	31,651,505	52,943,664	60,277,169	38,985,009	803,095,695
2037	66,558,630	803,095,695	32,852,194	53,382,989	63,426,424	42,895,629	845,991,324
2038	69,387,372	845,991,324	34,103,912	53,596,154	66,899,616	47,407,375	893,398,699

\* Includes expected administrative expenses.

# Mississippi Highway Safety Patrol Retirement System





Projected Contributions and Benefits Expressed as Percents of Active Member Payroll







## SECTION VIII – SUPPLEMENTAL DISCLOSURE INFORMATION

 Statement Nos. 25 and 27 of the Governmental Accounting Standards Board (GASB) set forth certain items of information to be disclosed in the financial statements of the System and the employer. One such item is a distribution of the number of employees by type of membership, as follows:

#### NUMBER OF ACTIVE AND RETIRED PARTICIPANTS AS OF JUNE 30, 2014

GROUP	NUMBER
Retired participants and beneficiaries currently receiving benefits	720
Terminated participants and beneficiaries entitled to benefits but not yet receiving benefits	58
Active Participants	495
Total	1,273



2. Another such item is the schedule of funding progress as shown below.

Plan Year Ended	(1) Actuarial Value of Assets	(2) Actuarial Accrued Liability (AAL) Entry Age	(3) Percent Funded (1)/(2)	(4) Unfunded AAL (2) – (1)	(5) Annual Covered Payroll	(6) Unfunded AAL as a Percentage of Covered Payroll (4)/(5)
06/30/2005#	\$253,477	\$335,117	75.6%	\$81,640	\$22,343	365.4%
06/30/2006	265,637	350,638	75.8	85,001	24,499	347.0
06/30/2007#	284,626	371,233	76.7	86,607	27,037	320.3
06/30/2008*	298,630	381,578	78.3	82,948	29,597	280.3
06/30/2009#	292,322	394,630	74.1	102,308	26,390	387.7
06/30/2010	281,088	411,277	68.3	130,189	26,353	494.0
06/30/2011#	278,265	414,432	67.1	136,167	24,872	547.5
06/30/2012	268,424	421,415	63.7	152,991	25,670	596.0
06/30/2013#	271,097	431,575	62.8	160,478	25,816	621.6
06/30/2014	295,298	445,822	66.2	150,524	25,554	589.0

## SCHEDULE OF FUNDING PROGRESS (\$ Thousands)

\* After change in benefit provisions.

# After change in actuarial assumptions.

As can be seen from the table above, the steady decline in the funded ratio caused by the smoothing of the large asset losses of 2007/2008 and 2008/2009 has ended. The first increase in the funded ratio in six years was primarily because the recognition of those losses has been completed. In addition, estimated projection results using a fixed employer contribution rate of 37.00% of payroll shows improving funded ratios.



3. The annual required contribution (ARC) of the employer as a percentage of payroll, determined in accordance with the parameters of GASB 25/27, is shown below. The maximum allowable amortization period under GASB 27/27 is 30 years. As a result, the annual required contribution for accounting purposes is different than that for funding purposes. The accrued liability rate is based on amortization of the unfunded actuarial accrued liability of \$150,524,072 over a period of 30.0 years from the valuation date.

Annual Required Contribution (ARC)									
Valuation Date June 30	2014	2013							
For Fiscal Year	2015/2016	2014/2015							
Employer contribution rate									
Normal Cost*	16.03%	16.15%							
Accrued liability	23.27	<u>21.96</u>							
Total	39.30%	38.11%							
Anticipated accrued liability payment period	30.0 years	30.0 years							

Includes load for administrative expenses. See page 10 for more contribution rate detail.

#### 4. Additional information as of June 30, 2014 follows.

Valuation date	6/30/2014				
Actuarial cost method	Entry age				
Amortization method	Level percent open				
Remaining amortization period	30.0 years				
Asset valuation method	5-year smoothed market				
Actuarial assumptions:					
Investment rate of return*	8.00%				
Projected salary increases <sup>#</sup>	5.00% - 10.52%				
Cost-of-living adjustments	3.00%				
*Includes price inflation at	3.50%				
# Includes wage inflation at	4.25%				



#### Schedule of Employer Contributions

Fiscal Year Ending June 30	Valuation date June 30	Annual Required Contribution	Percentage Contributed
2006	2004	\$8,691,766 <sup>1</sup>	100.0%
2007	2005	10,023,287 <sup>2</sup>	100.0
2008	2006	10,492,230 <sup>3</sup>	100.0
2009	2007	11,668,004 4	100.0
2010	2008	11,096,1425	100.0
2011	2009	11,385,080 <sup>6</sup>	100.0
2012	2010	12,257,461 <sup>7</sup>	100.0
2013	2011	13,097,911 <sup>8</sup>	100.0
2014	2012	13,594,654 <sup>9</sup>	100.0
2015	2013	13,138,540 <sup>10</sup>	

- <sup>1</sup> An estimated additional contribution of \$2,400,000 (10.7% of payroll) was made to the System due to SB 2659
- <sup>2</sup> An estimated additional contribution of \$2,600,000 (10.6% of payroll) was made to the System due to SB 2659
- <sup>3</sup> An estimated additional contribution of \$2,300,000 (8.5% of payroll) was made to the System due to SB 2659
- <sup>4</sup> An estimated additional contribution of \$2,700,000 (9.1% of payroll) was made to the System due to SB 2659
- <sup>5</sup> An estimated additional contribution of \$3,100,000 (11.7% of payroll) was made to the System due to SB 2659
- <sup>6</sup> An estimated additional contribution of \$3,400,000 (12.9% of payroll) was made to the System due to SB 2659
- An estimated additional contribution of \$3,500,000 (14.1% of payroll) was made to the System due to SB 2659
- <sup>8</sup> An estimated additional contribution of \$3,600,000 (14.0% of payroll) was made to the System due to SB 2659
- <sup>9</sup> An estimated additional contribution of \$3,600,000 (14.0% of payroll) was made to the System due to SB 2659
- <sup>10</sup> An estimated additional contribution of \$4,600,000 (18.0% of payroll) was assumed to be made to the System due to SB 2659 and HB 1015



# Solvency Tests (\$ in Thousands)

	Actua	rial Accrued Liabilitie		Portions of Accrued Liabilities Covered by Assets			
Valuation Date	(1) Accumulated Employee Contributions Including Allocated Investment Earnings	(2) Retirees and Beneficiaries Currently Receiving Benefits	(3) Active and Inactive Members Employer Financed Portion	Net Assets Available for Benefits	(1)	(2)	(3)
6/30/2004	\$18,352	\$201,573	\$96,645	\$256,481	100%	100.0%	37.8%
6/30/2005	18,972	214,844	101,301	253,477	100	100.0	19.4
6/30/2006	19,906	222,281	108,451	265,637	100	100.0	21.6
6/30/2007	20,870	231,771	118,592	284,626	100	100.0	27.0
6/30/2008	21,371	242,265	117,942	298,630	100	100.0	29.7
6/30/2009	20,136	273,774	100,720	292,322	100	99.4	0.0
6/30/2010	20,658	284,106	106,513	281,088	100	91.7	0.0
6/30/2011	20,621	292,234	101,577	278,265	100	88.2	0.0
6/30/2012	20,760	300,753	99,902	268,424	100	82.3	0.0
6/30/2013	23,706	306,273	101,596	271,097	100	80.8	0.0
6/30/2014	24,411	317,825	103,586	295,298	100	85.2	0.0



		Active Members						
Valuation Date	Number of Employers	Number	Annual Payroll	Annual Average Pay	% Increase in Average Pay			
2005	1	540	\$22,342,918	\$41,376	2.0%			
2006	1	564	24,499,296	43,438	5.0			
2007	1	591	27,037,063	45,748	5.3			
2008	1	626	29,597,374	47,280	3.3			
2009	1	570	26,389,909	46,298	(2.1)			
2010	1	542	26,353,400	48,623	5.0			
2011	1	515	24,872,085	48,295	(0.7)			
2012	1	547	25,670,030	46,929	(2.8)			
2013	1	520	25,815,787	49,646	5.8			
2014	1	495	25,553,765	51,624	4.0			

#### Schedule of Active Member Valuation Data

## Schedule of Number of Retirants Added To and Removed From Rolls Last Ten Fiscal Years

	Fiscal Year Ended June 30									
Item	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Beginning of Year	605	621	625	638	651	692	696	704	713	713
Added	33	32	29	42	62	22	32	31	23	28
Removed	(17)	(28)	(16)	(29)	(21)	(18)	(24)	(22)	(23)	(21)
End of Year	621	625	638	651	692	696	704	713	713	720



## Schedule of Benefit Payments Added To and Removed From Rolls Last Seven Fiscal Years

Year Ending	2008	2009	2010	2011	2012	2013	2014
Beginning of Year	\$18,722,555	\$19,798,655	\$21,994,109	\$22,899,689	\$23,975,708	\$25,167,940 642 344	\$25,835,619
Removed	(739,677)	(556,046)	(450,658)	(609,133)	(574,614)	(596,871)	(661,028)
Benefit increase due to annual COLA	474,361	487,986	550,146	595,921	609,050	622,206	678,533
Benefit increase due to plan amendments	0	0	0	0	0	0	0
End of Year	\$19,798,655	\$21,994,109	\$22,899,689	\$23,975,708	\$25,167,940	\$25,835,619	\$26,966,360



## Schedule of Average Benefit Payments

				Years	of Credited Serv	vice			
	0-4	5-9	10-15	16-20	21-24	25	26-29	30	31+
July 1, 2013 to June 30, 2014 Average Monthly Benefit Average Final Salary Number of Active Retirants				\$401.76 \$15,019.06 1	\$2,013.42 \$54,344.38 5		\$2,756.37 \$51,232.69 8	\$3,898.78 \$69,760.18 5	\$4,528.45 \$68,010.73 9
July 1, 2012 to June 30, 2013 Average Monthly Benefit Average Final Salary Number of Active Retirants		\$661.61 \$21,843.63 1	\$710.09 \$36,998.42 2		\$1,172.98 \$31,851.99 3	\$1,696.31 \$28,672.69 2	\$2,859.71 \$54,157.79 11		\$3,269.65 \$54,646.02 4
July 1, 2011 to June 30, 2012 Average Monthly Benefit Average Final Salary Number of Active Retirants		\$1,648.69 \$39,568.45 1		\$2,340.93 \$58,021.27 1	\$982.05 \$39,971.01 1	\$1,568.62 \$28,716.82 1	\$2,267.88 \$46,824.02 10	\$4,335.37 \$71,048.35 5	\$3,798.92 \$62,979.14 12
July 1, 2010 to June 30, 2011 Average Monthly Benefit Average Final Salary Number of Active Retirants			\$716.18 \$28,057.78 1	\$1,020.55 \$26,202.46 2	\$2,433.84 \$60,342.83 3	\$1,896.54 \$43,144.33 2	\$2,408.76 \$50,019.57 11	\$3,791.81 \$52,042.20 4	\$3,296.52 \$51,855.68 9
July 1, 2009 to June 30, 2010 Average Monthly Benefit Average Final Salary Number of Active Retirants				\$1,405.04 \$37,962.84 4		\$3,155.49 \$59,219.21 2	\$3,024.51 \$47,430.92 5	\$3,461.46 \$30,160.22 2	\$2,973.70 \$41,004.34 9



## Schedule of Average Benefit Payments

	Years of Credited Service								
	0-4	5-9	10-15	16-20	21-24	25	26-29	30	31+
July 1, 2008 to June 30, 2009 Average Monthly Benefit Average Final Salary Number of Active Retirants		\$466.11 \$33,559.84 3		\$438.86 \$16,844.95 1	\$1,580.07 \$38,404.11 7	\$3,177.63 \$61,298.36 13	\$3,143.57 \$59,583.98 21	\$4, 604.35 \$75,125.92 7	\$3,055.97 \$52,752.04 10
July 1, 2007 to June 30, 2008 Average Monthly Benefit Average Final Salary Number of Active Retirants		\$346.95 \$13,030.50 1	\$1,157.63 \$46,554.36 1	\$407.81 \$12,949.33 3	\$1,778.14 \$48,156.36 9	\$3,442.30 \$64,164.63 2	\$2,411.10 \$45,198.00 9	\$4,364.71 \$73,561.75 5	\$3,034.57 \$54,588.25 12
July 1, 2006 to June 30, 2007 Average Monthly Benefit Average Final Salary Number of Active Retirants			\$213.25 \$4,971.00 1		\$2,107.95 \$42,893.86 7	\$2,246.68 \$48,745.57 3	\$2,536.45 \$47,312.51 13	\$1,044.36 \$29,283.33 1	\$2,257.21 \$40,152.62 4
July 1, 2005 to June 30, 2006 Average Monthly Benefit Average Final Salary Number of Active Retirants	\$129.75 \$5,260.50 1		\$193.87 \$5,119.56 1	\$831.37 \$21,650.66 2	\$2,364.17 \$53,948.96 6	\$1,547.62 \$35,031.14 4	\$2,080.44 \$42,378.93 10	\$1,802.57 \$39,574.31 2	\$2,447.36 \$45,797.02 6
July 1, 2004 to June 30, 2005 Average Monthly Benefit Average Final Salary Number of Active Retirants	\$1,150.68 \$27,616.23 1			\$138.07 \$6,627.65 1	\$1,558.09 \$37,085.48 6	\$2,117.73 \$43,821.52 5	\$1,585.17 \$36,481.94 10	\$1,410.24 \$29,669.04 3	\$2,819.25 \$48,744.72 7



-		<u> </u>	(\$ thousands)				
	Valuation Date June 30:	2013	2014	2015	2016	2017	2018
Α.	Actuarial Value Beginning of Year	\$268,424	\$271,097				
В.	Market Value End of Year	287,456	326,032				
C.	Market Value Beginning of Year	265,232	287,456				
D.	Cash Flow						
	D1. Contributions	11,903	11,966				
	D2. Other Revenue	3,414	3,497				
	D3. Benefit Payments	(27,164)	(28,262)				
	D4. Administrative Expenses	(199)	(200)				
	D5. Investment Expenses	(657)	(1079)				
	D6. Net	(12,703)	(14,078)				
Е.	Investment Income						
	E1. Market Total: BCD6.	34,927	52,654				
	E2. Assumed Rate	8.00%	8.00%				
	E3. Amount for Immediate Recognition	21,394	23,556				
	E4. Amount for Phased-In Recognition	13,533	29,098				
F.	Phased-In Recognition of Investment Income						
	F1. Current Year: 0.20*E4.	2,707	5,820				
	F2. First Prior Year	(4,212)	2,707	5,820			
	F3. Second Prior Year	7,758	(4,212)	2,707	5,820		
	F4. Third Prior Year	2,650	7,758	(4212)	2,707	5,820	
	F5. Fourth Prior Year	(14,921)	2,650	7,758	(4,212)	2,707	5,820
	F6. Total Recognized Investment Gain	(6,018)	14,723	12,073	4,315	8,527	5,820
G.	Actuarial Value End of Year:						
	A.+D6.+E3.+F6.	\$271,097	\$295,298				
Н.	Difference Between Market & Actuarial Values	\$16,359	\$30,734	\$18,661	\$14,346	\$5,819	\$(1)

SCHEDULE A Development of Actuarial Value of Assets (\$ thousands)

The Actuarial Valuation of Assets recognizes assumed investment income (line E3) fully each year. Differences between actual and assumed investment income (line E4) are phased in over a closed 5 year period. During periods when investment performance exceeds the assumed rate, Actuarial Value of Assets will tend to be less than market value. During periods when investment performance is less than the assumed rate, Actuarial Value of Assets will tend to be greater than market value. If assumed rates are exactly realized for 4 consecutive years, actuarial value will become equal to market value.



## Asset Summary June 30, 2014 (\$ in Thousands)

		Market Value	Book Value	Actuarial Value
1.	Assets at June 30, 2013	\$287,456	\$243,929	\$271,097
2.	Contributions and Misc. Revenue	15,463	15,463	15,463
3.	Investment Increment	52,654	24,978	38,279
4.	Benefit Payments	(28,262)	(28,262)	(28,262)
5.	Expenses	(1,279)	(1,279)	(1,279)
6.	Assets at June 30, 2014 (1) + (2) + (3) + (4) + (5)	\$326,032	\$254,829	\$295,298
7.	Investment Increment/Mean Assets*	18.8%	10.5%	14.5%

\*Based on the approximation formula:  $I/[.5 \times (A + B - I)]$ , where

L = Investment increment

A = Beginning of year asset value B = End of year asset value



## SCHEDULE B

#### STATEMENT OF ACTUARIAL ASSUMPTIONS AND METHODS

INTEREST RATE: 8.00% per annum, compounded annually (net of investment expenses only).

SEPARATIONS FROM ACTIVE SERVICE: Representative values of the assumed annual rates of separation from active service are as follows:

Disability						
Age	Withdrawal and Vesting*	Death	Non-Duty	Duty	Service	Service Retirement*
25	4.0%	.03%	.09%	.01%	5	5%
30	3.5	.04	.12	.02	10	5%
35	2.5	.05	.16	.04	15	5%
40	1.0	.07	.20	.07	20	10%
45	1.0	.11	.30	.06	25	15%
50	0.5	.16	.50	.05	30	25%
55	0.0	.21	.91	.02	35	25%

\* The annual rate of service retirement is 100% at age 60.

It is assumed that a member will be granted 1<sup>3</sup>/<sub>4</sub> years of service credit for unused leave at termination of employment. In addition, it is assumed that, on average, <sup>1</sup>/<sub>4</sub> year of service credit for peace-time military service will be granted to each member.

SALARY INCREASES: Representative values of the assumed annual rates of salary increases are as follows:

		Annual Rates of	
Age	Merit & Seniority	Base (Economy)	Increase Next Year
20	5.59%	4.25%	9.84%
25	2.32	4.25	6.57
30	1.50	4.25	5.75
35	1.50	4.25	5.75
40	1.50	4.25	5.75
45	1.00	4.25	5.25
50	0.50	4.25	4.75
55	0.50	4.25	4.75



PAYROLL GROWTH: 4.25% per annum, compounded annually.

PRICE INFLATION: 3.50% per annum, compounded annually.

ADMINISTRATIVE EXPENSES: 0.23% of payroll.

TIMING OF DECREMENT AND PAY INCREASES: Middle of Year.

DEATH AFTER RETIREMENT: The mortality table, for post-retirement mortality, used in evaluating allowances to be paid was the RP-2000 Combined Mortality Table Projected to 2025 by Scale AA (set forward 2 years for males). The RP-2000 Disabled Mortality Table (set back 3 years for males and set forward 2 years for females) was used for the period after disability retirement. This assumption is used to measure the probabilities of each benefit payment being made after retirement. Mortality improvement is anticipated under this assumption as recent mortality experience shows actual deaths 7% greater than expected under selected table.

MARRIAGE ASSUMPTION: 100% married with the husband three years older than his wife.

VALUATION METHOD: The valuation is prepared on the projected benefit basis, which is used to determine the present value of each member's expected benefit payable at retirement, disability or death. The calculations are based on the member's age, years of service, sex, compensation, expected future salary increases, and an assumed future interest earnings rate (currently 8.00%). The calculations consider the probability of a member's death or termination of employment prior to becoming eligible for a benefit and the probability of the member terminating with a service, disability, or survivor's benefit. The present value of the expected benefits payable to active members is added to the present value of the expected future payments to current benefit recipients to obtain the present value of all expected benefits payable to the present group of members and survivors.

The employer contributions required to support the benefits of HSPRS are determined following a level funding approach, and consist of a normal contribution and an accrued liability contribution.



The normal contribution is determined using the "entry age normal" method. Under this method, a calculation is made for pension benefits to determine the uniform and constant percentage rate of employer contribution which, if applied to the compensation of the average new member during the entire period of his anticipated covered service, would be required in addition to the contributions of the member to meet the cost of all benefits payable on his behalf.

The unfunded accrued liability is determined by subtracting the current assets and the present value of prospective employer normal contributions and member contributions from the present value of expected benefits to be paid from the HSPRS. The accrued liability contribution amortizes the balance of the unfunded accrued liability over a period of years from the valuation date.

ASSET VALUATION METHOD: Actuarial value, as developed in Schedule A. The actuarial value of assets recognizes a portion of the difference between the market value of assets and the expected market value of assets, based on the assumed valuation rate of return. The amount recognized each year is 20% of the difference between market value and expected market value.



## SCHEDULE C

#### SUMMARY OF MAIN BENEFIT AND CONTRIBUTION PROVISIONS

The following summary presents the main benefit and contribution provisions of the System in effect June 30, 2014, as interpreted in preparing the actuarial valuation.

## DEFINITIONS

Average Compensation	Average annual covered earnings of an employee during the four
	highest consecutive years of service.
Covered Earnings	Gross salary not in excess of the maximum amount on which
	contributions were required.
Fiscal Year	Year commencing on July 1 and ending June 30.
Credited Service	Service while a contributing member plus additional service as
	described below.
Unused Sick and Vacation Leave	Service credit is provided at no charge to members for unused
	sick and vacation time that has accrued at the time of retirement.
Additional Service	Additional service credit may be granted for service prior to
	July 1, 1958, active duty military service, and retroactive service



The maximum covered earnings for employers and employees over the years are as follows:

Fiscal Date From	Fiscal Date To	Employer Rate	Maximum Covered Earnings*	Employee Rate	Maximum Covered Earnings*
7/1/1958	6/30/1968	13.33%		5.00%	
7/1/1968	6/30/1971	15.33		5.00	
7/1/1971	6/30/1973	18.59		5.00	
7/1/1973	6/30/1975	20.77		5.00	
7/1/1975	6/30/1978	24.65		5.00	
7/1/1978	6/30/1980	26.16		6.00	
7/1/1980	6/30/1989	26.16		6.50	
7/1/1989	6/30/1990	27.97		6.50	
7/1/1990	6/30/2003	26.16		6.50	
7/1/2003	6/30/2006	28.16		6.50	
7/1/2006	6/30/2008	30.30		6.50	
7/1/2008	12/31/2011	30.30		7.25	
1/1/2012	6/30/2012	35.21		7.25	
7/1/2012	6/30/2015	37.00		7.25	

#### EMPLOYER AND EMPLOYEE RATES OF CONTRIBUTION AND MAXIMUM COVERED EARNINGS

\*Maximum covered earnings equal wages paid, not to exceed wages paid to the Commissioner of the Department of Public Safety (currently \$146,850).

Effective July 1, 2014, additional contributions from SB 2659 and HB 1015 are estimated to be \$3,400,000 combined.



#### BENEFITS

#### **Superannuation Retirement**

Condition for Retirement

(a) A retirement allowance is payable to any member who retires and has attained age 55 and completed at least five years of membership service, or has attained age 45 and completed at least 20 years of creditable service, or has completed 25 years of creditable service regardless of age.

> Any member who has attained age 63 shall be retired forthwith. Effective July 1, 2011, the Commissioner of Public Safety is authorized to allow a member who has attained age 63 to continue in active service. Such continued service may be authorized annually until the member attains age 65.

(b) Any member who withdraws from service prior to his or her attainment of age 55 but after having completed five or more years of creditable service is entitled to receive, in lieu of a refund of his or her accumulated contributions, a retirement allowance commencing at age 55.

The annual retirement allowance payable to a retired member is equal to:

- 1. A member's annuity which is the actuarial equivalent of the member's accumulated contributions at the time of his or her retirement, plus
- 2. An employer's annuity which, together with the member's annuity, is equal to 2-1/2% of his or her average compensation for each year of membership service, plus
- 3. A prior service annuity equal to 2-1/2% of average compensation for each year of prior service.

The aggregate amounts of (2) and (3) above shall not exceed 100% of average compensation, regardless of service, for retirements on or after January 1, 2000; 85% for retirements prior to January 1, 2000.

The minimum allowance for both service and disability retirement based on the following table for each year of creditable service, reduced if necessary as indicated below.

Amount of Allowance



Service	Monthly Benefit
Less than 10 years	\$250
10-15 years	\$300
15 or more years	\$500

The annual retirement allowance payable to a member who retires under condition (a) above prior to age 55 is computed in accordance with the above formula except that the employer's annuity and prior service annuity are reduced 3% for each year of age below age 55, or 3% for each year of service below 25 years of creditable service, whichever is less.

#### **Disability Retirement**

Condition for Retirement	A retirement allowance is payable to any member who is not eligible for a service retirement benefit but who becomes totally and permanently disabled, either physically or mentally, regardless of creditable service, if the disability is due to causes in the performance of duty. If the disability is not in the performance of duty, the member must have completed at least 5 years of membership service to be eligible for retirement.
Amount of Allowance	The annual disability retirement allowance payable is

for the 2 years immediately preceding retirement, or a retirement allowance as calculated under the provisions for superannuation retirement.

Death Prior to Retirement Upon the death of a highway patrolman who is eligible for service retirement, family benefits are payable equal to those which would have been payable had he been retired on his or her date of death.

Upon the death of a highway patrolman either in the line of duty or as a result of an accident occurring in the line of duty, the following benefits are payable:

- a) a benefit to the spouse equal to one-half the member's average compensation.
- a benefit to a dependent child payable to age 19 (23 if a full-time student) equal to one-fourth of the member's average compensation for one child or one-half for two or more children.

Death After Retirement Upon the death of a highway patrolman who has retired for service or disability and who has not elected any other optional form of benefit, his widow or her widower is eligible for a benefit equal to 50% of his or her retirement allowance and each child (but not more than 2) who has not attained age 19 (23 if a full-time student) is eligible for a benefit to the widow is payable for life and to children until they attain age 19 (23 if a full-time student) or for life if they are totally and permanently disabled.



Refund of Contributions	Upon a member's termination of employment for any reason before retirement, his or her accumulated contributions, together with regular interest thereon, are refunded. Upon the death of a member who is not eligible for any other death benefit, his or her accumulated contributions, together with regular interest thereon, are paid to his or her beneficiary.
	Interact is surrently gradited to the member's account at

Interest is currently credited to the member's account at 3.50% per annum.

Normal Form of Benefit The normal form of benefit is an allowance payable during the life of the member. Upon death the benefits described above are payable.

Optional Benefits A member upon retirement may elect to receive his allowance in one of the following forms which are computed to be actuarially equivalent to the applicable retirement allowance.

Option 1. Reduced allowance with the provision that if the pensioner dies before he receives the value of the member's annuity as it was at the time of retirement, the balance shall be paid to his or her beneficiary.

Option 2. Upon his or her death, his or her reduced retirement allowance shall be continued throughout the life of, and paid to, his or her beneficiary.

Option 3. Upon his or her death, 50% of his or her reduced retirement allowance shall be continued throughout the life of, and paid to, a designated beneficiary and the other 50% of his or her reduced retirement allowance to some other designated beneficiary.

Option 4. Upon his or her death, 75% of his or her reduced retirement allowance shall be continued throughout the life of, and paid to, a designated beneficiary.

Option 4A. Upon his or her death, 50% of his or her reduced retirement allowance shall be continued throughout the life of, and paid to, a designated beneficiary.

Option 4B. A reduced retirement allowance shall be continued throughout the life of the pensioner, but with the further guarantee of payment to the pensioner or his or her beneficiary for a specified number of years certain.



Option 4C. A member may elect any option with the added provision that the member shall receive, so far as possible, the same total amount annually (considering both HSPRS and Social Security benefits) before and after the earliest age at which the member becomes eligible for a Social Security benefit. This option was only available to those who retired prior to July 1, 2004.

A member who elects Option 2, Option 4, or Option 4A, at retirement may revert to the normal form of benefit if the designated beneficiary predeceases the retired member or if the retired member divorces the designated beneficiary. A member who elects the normal form of benefit or Option 1 at retirement may select Option 2, Option 4, or Option 4A to provide beneficiary protection to a new spouse if married after retirement.

A member who qualifies for an unreduced retirement allowance may select a partial lump-sum option at retirement. Under this option, the retiree has the option of taking a partial lump-sum distribution equal to either 12, 24, or 36 times the base maximum monthly benefit. With each lump-sum amount, the base maximum monthly benefit will be actuarially reduced. A member selecting this option may also select any of the regular options except Option 1, the prorated single-life annuity, and Option 4-C, the Social Security leveling provision. The benefit is then calculated using the new reduced maximum benefit as a starting point in applying the appropriate option factors for the reduction.

The allowances of retired members are adjusted annually by an amount equal to (a) 3% of the annual retirement allowance for each full fiscal year of retirement prior to the year in which the member reaches age 60<sup>\*</sup>, plus (b) 3% compounded for each year thereafter beginning with the fiscal year in which the member turns age 60<sup>\*</sup>.

A prorated portion of the annual adjustment will be paid to the member, beneficiary, or estate of any member or beneficiary who is receiving the annual adjustment in a lump sum, but whose benefits are terminated between July 1 and December 1.

Those members who retired on or before July 1, 1999 received an ad hoc benefit increase in the amount of \$3.50 per month per each full fiscal year of retirement through June 30, 1999 plus \$1.00 per month for each year of credited service. The benefits were increased on July 1, 1999.

\*this age will be reduced in five phases to age 55 if the actuary certifies that reducing the age will not result in the amortization period of the unfunded accrued liability exceeding 20 years. CONTRIBUTIONS

Post-Retirement Adjustments In Allowances



Members contribute 7.25% of compensation and the employer contributes 37.00% of compensation. Funds from SB 2659 and HB 1015 are also provided.



## SCHEDULE D

## DETAILED TABULATIONS OF THE DATA

## Retirants & Beneficiaries as of June 30, 2014 Tabulated by Year of Retirement

Year of Retirement	No.	Total Annual Benefits, excluding COLA	COLA	Total Annual Benefits	Average Monthly Total Benefit
2014	7	\$368,491	\$0	\$368,491	\$4,387
2013	21	839,273	0	839,273	3,330
2012	17	735,320	18,715	754,035	3,696
2011	24	1,010,651	54,192	1,064,843	3,697
2010	16	661,458	58,523	719,981	3,750
2009	52	2,217,592	265,635	2,483,227	3,980
2008	20	790,917	117,259	908,176	3,784
2007	16	629,117	114,239	743,356	3,872
2006	21	720,355	145,604	865,959	3,436
2005	16	511,047	123,532	634,579	3,305
2004	27	934,644	260,775	1,195,419	3,690
2003	11	291,495	86,963	378,458	2,867
2002	25	707,184	250,630	957,814	3,193
2001	22	646,003	238,108	884,111	3,349
2000	15	487,448	197,717	685,165	3,806
1999	15	396,632	177,340	573,972	3,189
1998	20	570,039	275,376	845,415	3,523
1997	27	761,488	387,881	1,149,369	3,547
1996	33	902,382	507,727	1,410,109	3,561
1995	24	584,902	344,174	929,076	3,226
1994	9	231,886	151,512	383,398	3,550
1993	15	319,386	204,602	523,988	2,911
1992	14	301,053	208,411	509,464	3,033
1991	4	71,467	58,431	129,898	2,706
1990	12	193,701	158,717	352,418	2,447
1989	4	67,140	59,253	126,393	2,633
1988	6	98,282	90,857	189,139	2,627
1987	3	34,604	28,526	63,130	1,754
1986	118	2,110,991	2,054,029	4,165,020	2,941
1985	4	57,273	63,281	120,554	2,512
1984	13	177,669	206,125	383,794	2,460
1983	6	60,208	69,882	130,090	1,807
1982	13	136,224	182,325	318,549	2,042
1981	12	100,986	124,944	225,930	1,569
1980	12	112,339	168,950	281,289	1,953
1979	9	68,853	95,649	164,502	1,523
1978 & Prior	37	180,173	327,803	507,976	1,144
TOTAL	720	\$19,088,673	\$7,877,687	\$26,966,360	\$3,121



## Schedule of Retired Members by Type of Retirement

Amount of Monthly Benefit	Number of Rets.	Ret Type 1*	Ret Type 2*	Ret Type 3*
\$1 – \$100	1			1
101 – 200	4			4
201 – 300	5			5
301 – 400	22	1		21
401 – 500	13		3	10
501 – 600	19	3		16
601 – 700	15	2		13
701 – 800	21	2	1	18
801 – 900	26	3		23
901 – 1,000	23	1	1	21
Over 1,000	571	504	12	55
Totals	720	516	17	187

## Benefits Payable June 30, 2014

<u>\*Type of Retirement</u>
1 – Retirement for Age & Service
2 – Disability Retirement
3 – Survivor Payment



## Schedule of Retired Members by Type of Option

Amount of Monthly Benefit	Number of Rets.	Life	Option 1	Option 2	Option 3	Option 4	Option 4A	Option 4B	Option 4C**	Option 5	PLSO** 1 Year	PLSO** 2 Years	PLSO** 3 Years
\$1 – \$100	1	1											
101 – 200	4	4											
201 – 300	5	5											
301 – 400	22	21		1									
401 – 500	13	10					3						
501 – 600	19	16					3						
601 – 700	15	13					2						
701 – 800	21	18					3		1				
801 – 900	26	23			1		2					1	
901 – 1,000	23	21					2						
Over 1,000	571	61	2	45	3		445	15	10		37	20	107
Totals	720	193	2	46	4	0	460	15	11	0	37	21	107

Option Sele	ected	
Life	-	Return of Contributions
Opt. 1	-	Return of Member's Annuity
Opt. 2	-	100% Survivorship
Opt. 3	-	50%/50% Dual Survivorship
Opt. 4	-	75% Survivorship
Opt. 4A	-	50% Survivorship
Opt. 4B	-	Years Certain & Life
Opt. 4C	-	Social Security Leveling**
Opt. 5	-	Pop-Up
PLSO	-	Partial Lump Sum** (Reflects reduced monthly

Partial Lump Sum\*\* (Reflects reduced monthly benefit) -

\*\*Included in other options



## Mississippi Highway Safety Patrol Retirement System

## Retirant and Beneficiary Information June 30, 2014

Attained	Servic	e Retirement	Disabil	ity Retirement	Sur Bei	vivors and neficiaries	Total		
Attained Age	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits	
Under 20					6	\$42,784	6	\$42,784	
20 – 24					1	9,597	1	9,597	
25 – 29					1	15,698	1	15,698	
30 – 34					1	20,213	1	20,213	
35 – 39									
40 – 44					4	89,341	4	89,341	
45 – 49	3	\$127,675	2	\$62,120	2	41,725	7	231,520	
50 – 54	49	1,941,123	3	71,665	2	76,207	54	2,088,995	
55 – 59	112	5,035,116			4	101,953	116	5,137,069	
60 – 64	98	4,276,787	4	108,932	10	212,262	112	4,597,981	
65 – 69	99	4,414,199	1	29,397	21	547,350	121	4,990,946	
70 – 74	77	3,310,300	3	71,526	36	874,232	116	4,256,058	
75 – 79	40	1,771,770	2	40,313	23	458,062	65	2,270,145	
80 – 84	25	1,119,075	2	26,185	39	764,313	66	1,909,573	
85 – 89	11	559,076			18	364,957	29	924,033	
90 – 94	2	77,553			16	247,114	18	324,667	
95					2	36,922	2	36,922	
96					1	20,818	1	20,818	
97									
98									
99									
100 & Over									
Totals	516	\$22,632,674	17	\$410,138	187	\$3,923,548	720	\$26,966,360	

Average Age:67.8 yearsAverage Age at Retirement:49.9 years



#### Mississippi Highway Safety Patrol Retirement System

## Total Active Member Data as of June 30, 2014 Tabulated by Attained Ages and Years of Service

A			Totals						
Attained Age	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30+	No.	Valuation Payroll
Under 20									
20 – 24	2							2	\$75,058
25 – 29	20	13						33	1,319,058
30 – 34	22	55	4					81	3,513,580
35 – 39	3	41	36	7				87	4,164,702
40 – 44	3	26	36	42	12			119	6,180,926
45 – 49	1	5	15	21	28	4		74	4,127,440
50 – 54	1	1	4	12	11	23	6	58	3,487,384
55 – 59			1	3	1	15	15	35	2,289,034
60 – 64		1				3	2	6	396,583
65 – 69									
70 – 74									
75 – 79									
Totals	52	142	96	85	52	45	23	495	\$25,553,765

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

 Age:
 42.3 years

 Service:
 14.0 years

 Annual Pay:
 \$51,624



## SCHEDULE E

#### MISSISSIPPI HSPRS ANALYSIS OF FINANCIAL EXPERIENCE

#### Gains & Losses in Accrued Liabilities Resulting from Difference Between Assumed Experience & Actual Experience (\$ Thousands)

Type of Activity	\$ Gain (or Loss) For Year Ending 6/30/2014	\$ Gain (or Loss) For Year Ending 6/30/2013		
Age & Service Retirements. If members retire at older ages, there is a gain. If younger ages, a loss.	\$ (537.9)	\$ 904.3		
<b>Disability Retirements.</b> If disability claims are less than assumed, there is a gain. If more claims, a loss.	139.6	147.0		
<b>Death-in Service Benefits.</b> If survivor claims are less than assumed, there is a gain. If more claims, there is a loss.	(277.6)	40.6		
Withdrawal From Employment. If more liabilities are released by withdrawals than assumed, there is a gain. If smaller releases, a loss.	468.8	927.9		
<b>Pay Increases.</b> If there are smaller pay increases than assumed, there is a gain. If greater increases, a loss.	(630.0)	3,256.1		
<b>New Members.</b> Additional unfunded accrued liability will produce a loss.	0.0	0.0		
<b>Investment Income.</b> If there is a greater investment income than assumed, there is a gain. If less income, a loss.	15,824.2	(6,480.0)		
<b>Death After Retirement.</b> If retirants live longer than assumed, there is a loss. If not as long, a gain.	393.3	(384.8)		
<b>Other.</b> Miscellaneous gains and losses resulting from changes in valuation software, data adjustments, timing of financial transactions, etc.	(2,209.7)	<u>(2,164.2)</u>		
Gain (or Loss) During Year From Financial Experience	\$ 13,170.7	\$ (3,753.2)		
<b>Non-Recurring Items.</b> Adjustments for plan amendments, assumption changes, or method changes.	0.0	<u>(1,121.6)</u>		
Composite Gain (or Loss) During Year	<u>\$ 13,170.7</u>	<u>\$ (4,874.8)</u>		



## SCHEDULE F

#### GLOSSARY

<u>Actuarial Accrued Liability.</u> 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".

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

<u>Actuarial Assumptions.</u> 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.

<u>Actuarial Cost Method.</u> 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".

<u>Actuarial Equivalent.</u> A series of payments is called on actuarial equivalent of another series of payments if the two series have the same actuarial present value.

<u>Actuarial Present Value.</u> 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.

<u>Amortization</u>. 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.

<u>Experience Gain (Loss).</u> 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.

<u>Normal Cost.</u> 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.

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

<u>Unfunded Actuarial Accrued Liability.</u> The difference between the actuarial accrued liability and valuation assets. Sometimes referred to as "unfunded accrued liability".

<u>Valuation Assets.</u> The value of current plan assets recognized for valuation purposes. Generally based on book value plus a portion of unrealized appreciation or depreciation.