

**NORTH DAKOTA PUBLIC EMPLOYEES  
RETIREMENT SYSTEM**

*Actuarial Valuation Reports as of July 1, 2005*

**Copyright © 2005**

**The Segal Group, Inc.,  
The Parent of The Segal Company  
All Rights Reserved**

**NORTH DAKOTA PUBLIC EMPLOYEES  
RETIREMENT SYSTEM**

*Actuarial Valuation Report as of July 1, 2005*

**Copyright © 2005**

**The Segal Group, Inc.,  
The Parent of The Segal Company  
All Rights Reserved**



THE SEGAL COMPANY

6300 S. Syracuse Way Suite 750 Englewood, CO 80111-7302  
T 303.714.9900 F 303.714.9990 www.segalco.com

October 11, 2005

Board Members  
North Dakota Public Employees Retirement System  
Bismarck, North Dakota

Members of the Board:

It is a pleasure to submit this report that presents the results of our actuarial valuation of the North Dakota Public Employees Retirement System as of July 1, 2005.

The report's actuarial content was prepared in accordance with generally accepted actuarial principles under our direction. The valuation was:

- Prepared by qualified actuaries who are members of the American Academy of Actuaries and who have experience in performing valuations for public retirement systems;
- Prepared in accordance with standards of practice prescribed by the Actuarial Standards Board; and
- Composed of actuarial calculations that were performed by qualified actuaries in accordance with accepted procedures as defined by the Actuarial Standards Board, based on the current provisions of the Retirement System and on actuarial assumptions and methods that are internally consistent and reasonably based on the actual experience of the System.

We wish to thank the Retirement Office staff for their cooperation in providing us with the participant census data and financial information necessary to prepare the valuation.

Benefits, Compensation and HR Consulting ATLANTA BOSTON CHICAGO CLEVELAND DENVER HARTFORD HOUSTON LOS ANGELES MINNEAPOLIS  
NEW ORLEANS NEW YORK PHILADELPHIA PHOENIX SAN FRANCISCO SEATTLE TORONTO WASHINGTON, DC



Multinational Group of Actuaries and Consultants AMSTERDAM BARCELONA GENEVA HAMBURG JOHANNESBURG LONDON MELBOURNE  
MEXICO CITY OSLO PARIS

October 11, 2005

Page 2

We look forward to meeting with you to review this report and to answering any questions you may have.

Sincerely,



Leslie L. Thompson, FSA, MAAA, EA  
Senior Vice President and Actuary



Brad Ramirez, ASA, MAAA  
Actuarial Associate

cc: Sparb Collins

## TABLE OF CONTENTS

	<b>Page</b>
I. INTRODUCTION .....	1
II. HIGHLIGHTS .....	2
III. MEMBER CHARACTERISTICS .....	4
IV. BENEFIT EXPERIENCE .....	6
V. ASSETS .....	7
VI. RESULTS OF ACTUARIAL VALUATION .....	18
VII. FUNDING STATUS .....	26
VIII. ACTUARIAL ASSUMPTIONS AND COST METHODS .....	29
 APPENDICES	
A. ACTUARIAL VALUATION CERTIFICATE .....	A-1
B. CENSUS TABLES .....	B-1

## I. INTRODUCTION

This report summarizes the results of our actuarial valuation as of July 1, 2005. The employer contribution requirements presented in Section VI of the report are based on:

1. The present provisions of the North Dakota Public Employees Retirement System;
2. The characteristics of covered active members, inactive non-retired members, pensioners and beneficiaries as of July 1, 2005;
3. The assets of the System as of June 30, 2005; and
4. Actuarial assumptions regarding investment earnings, salary increases, and rates of retirement, disability, death, etc.

The purpose of the actuarial valuation is to determine the contribution sufficient to meet the long-term obligations to the members covered by the North Dakota Public Employees Retirement System in accordance with the benefit provisions of the System.

If each of the actuarial assumptions is exactly fulfilled, the true actuarial cost of the System will equal the cost projected by the actuarial calculations. However, this result is never achieved because of the length of time over which projections are made and because of the great number of variables that can affect the emerging costs. The cost, expressed as a percentage of payroll, will increase if the System experiences net actuarial losses and will decrease if the System experiences net actuarial gains.

## II. HIGHLIGHTS

- The present rate of contributions is not sufficient to meet the actuarially determined requirement for 2005-2006, based upon the actuarial assumptions and financing objectives approved by the Board.
- The PERS Board should continue to review these results and projected future performance to determine appropriate measures to mitigate the difference between the actuarial and statutory contribution rates.
- The employer actuarial contribution requirements for 2005-2006 are as follows:

	Amount	Percentage of Payroll	Statutory/ Approved Rate
Main System	\$30,892,319	6.03%	4.12%
Judges	510,791	11.62	14.52
National Guard	8,612	1.58	8.33
Law Enforcement with prior Main service	464,965	12.03	8.31
Law Enforcement without prior Main service	29,415	7.61	6.43

- A comparison of this year's actuarial contribution rates to last year's rates as a percent of payroll are as follows:

	2005-2006	2004-2005
Main System	6.03%	6.30%
Judges	11.62	12.44
National Guard	1.58	3.25
Law Enforcement with prior Main service	12.03	7.88
Law Enforcement without prior Main service	7.61	8.35

- The Main System statutory rate of 4.12% of payroll is less than the actuarially determined rate of 6.03% of payroll by 1.91% of payroll. Last year, the Main System statutory rate was less than the actuarially determined rate by 2.18% of payroll. The contribution rate deficit this year is primarily attributable to the accumulated investment losses in 2001 and 2002.

- The return on the market value of assets for 2004-2005 for the PERS Fund was 14.17%, and was 16.64% for the preceding year.
- The return on the actuarial value of assets for 2004-2005 for the PERS Fund was 4.36% compared to the investment return assumption of 8.00%. As a result, the PERS Fund experienced an investment loss on an actuarial value basis of approximately \$45 million.
- The ratio of the actuarial value of assets to the market value of assets for the PERS Fund is 86.3%. Last year, this ratio was 94.4%.
- A comparison of this year's funded ratio for PERS to the prior year is as follows:

	July 1, 2005	July 1, 2004
Actuarial Value of Assets	\$1,236,114,135	\$1,196,533,100
Actuarial Accrued Liability	1,361,154,300	1,272,857,600
Funded Ratio	90.8%	94.0%

- Table 6 details actuarial gains and losses in the Main System for many of the measured demographic assumptions. The gain/(loss) by source is measured each year, and a detailed analysis of the System's demographic assumptions is reviewed every fourth or fifth year by the completion of an experience study. Changes to the assumptions based on the 2005 experience study will be made beginning with the July 1, 2006 valuation. The costs for those assumption changes will be reflected in the next valuation. The next experience study for the System will be completed in 2010.
- There were no changes in the plan provisions, actuarial assumptions since the preceding valuation.
- As a result of the actuarial audit by GRS, the board adopted a change in normal cost methodology. The actuarial accrued liability and present value of benefits were unaffected by this change. Under the prior method, the actuarially determined contribution rate would have been 6.91%.



### III. MEMBER CHARACTERISTICS

Detailed information for all non-retired members as of July 1, 2005 was provided by the Retirement Office. The data included name, sex, date of birth, months of service, members' accumulated account balances, and annual salary rate.

#### *Active Members*

The age, service, compensation and account balance data for active members as of July 1, 2005 is summarized below:

	<u>Main System</u>	<u>Judges</u>	<u>National Guard</u>	<u>Law Enforcement with prior Main service</u>	<u>Law Enforcement without prior Main service</u>	<u>Total</u>
Number of active members	17,745	46	14	113	13	17,931
Average age	46.6	54.7	36.9	41.9	37.8	46.6
Average years of service	10.5	10.1	7.2	14.1	1.2	10.5
Total annual salary	\$511,941,896	\$4,396,635	\$543,991	\$3,863,445	\$386,382	\$521,132,349
Average annual salary	\$28,850	\$95,579	\$38,857	\$34,190	\$29,722	\$29,063
Total accumulated member contribution account balances	\$367,219,793	\$2,416,569	\$225,435	\$3,154,841	\$92,964	\$373,109,602

For the Main System, the number of active members represents an increase of 1.3% over the 17,522 active members last year. Among the members continuing in active service since the prior valuation, and have two or more years of full-time service, salaries increased by an average of 3.2%. Total payroll increased 3.5%, which was less than assumed.

Distributions of the active members by sex, age, and service are presented in Tables 8-A, 8-B and 8-C of the Appendix. Tables 9-A, 9-B and 9-C present a distribution of these same members by sex, age, and actual salary. The table on the following page shows a breakdown of the active members who are currently eligible for benefits, as well as those who have not yet met the vesting requirements.

There are 24 members originally from the Main System that continue to be active members in the Judges System; one member from the Judges System is active in the Main System; 14 members originally from the Main System are active members in the Highway Patrol System; four members from the Highway Patrol System continue to be active members in the Main System. Liabilities for these members are carried in each system based on their service in that system.

The following table shows the number of active participants eligible for retirement:

<u>Active Members Eligible for:</u>	<u>Main System</u>	<u>Judges</u>	<u>National Guard</u>	<u>Law Enforcement with prior Main service</u>	<u>Law Enforcement without prior Main service</u>	<u>Total</u>
Retirement:						
Normal	481	1	2	32	0	516
Rule of 85	619	1	N/A	0	0	620
Early Retirement	<u>2,662</u>	<u>19</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>2,682</u>
Total Retirement	3,762	21	3	32	0	3,818
Deferred Retirement	<u>9,850</u>	<u>17</u>	<u>4</u>	<u>46</u>	<u>0</u>	<u>9,917</u>
Total vested	13,612	38	7	78	0	13,735
Nonvested	<u>4,133</u>	<u>8</u>	<u>7</u>	<u>35</u>	<u>13</u>	<u>4,196</u>
Total	17,745	46	14	113	13	17,931

### ***Inactive Members***

There were 1,189 inactive members (including one from Judges, seven from National Guard and three from Law Enforcement with prior Main service) as of July 1, 2005 with vested rights to deferred retirement benefits. The average deferred monthly benefit for this group was \$407. There were also 29 members on leave of absence from the Main System. For these groups, a liability is carried for their deferred retirement benefits.

#### IV. BENEFIT EXPERIENCE

##### *New Awards*

During the fiscal year ended in June 2005, 374 pensions became effective. The average monthly benefit for these pensioners was \$974 and their average age at retirement was 62.4. Last year, the average benefit among new pensioners was \$995. The new pensioners are presented in Tables 10-A, 10-B, 10-C, 11-A, 11-B and 11-C in Appendix B by sex, type of pension, monthly benefit and age on retirement date.

A breakdown of the new pension awards by type compared to last year is as follows:

	<u>July 1, 2005</u>	<u>July 1, 2004</u>
Normal	91	110
Rule of 85	143	122
Early	116	82
Disability	<u>24</u>	<u>25</u>
Total	374	339

##### *Pensioners*

Since benefits became payable under the current retirement program, a total of 7,121 retirement pensions have been awarded, of which 5,301 remained on the June 2005 rolls (including 19 retired Judges and four retired members of the National Guard). In addition, 35 pensions were in suspended status as of June 30, 2005. Distributions of the pensioners are presented in Tables 12-A, 12-B, 12-C, 13-A, 13-B and 13-C in Appendix B by sex, type of pension, monthly benefit amount and current age.

For the pensions in force on July 1, 2005, the average monthly benefit was \$779, an increase from \$754 a year earlier. The average age of these pensioners on the valuation date was 71.9 years.

##### *Beneficiaries*

As of July 1, 2005, monthly benefit payments were being made to 586 beneficiaries, including six beneficiaries of Judges. The monthly payments to beneficiaries in payment status total \$298,222.

##### *Prior Service Pensioners*

As of July 1, 2005, there were 63 pensioners receiving monthly benefits of \$3,018 under the Special Prior Service Pension provisions of the System. The current average age of Prior Service pensioners was 93.7 years, and the average monthly benefit was \$48. Because of the relatively high average age and low benefits, the liability for the Special Prior Service Pensioners represented only about 0.01% of the total actuarial accrued liability for the System. Tables 14-A, 14-B, 14-C, 15-A, 15-B, and 15-C in Appendix B provide a breakdown of these pensioners by sex, type of pension, monthly benefit amount, and current age.

## V. ASSETS

### *Market Value of Assets*

As shown in the draft financial statements as of June 30, 2005, the combined market value of net assets of the North Dakota Public Employees Retirement System (PERS) and Highway Patrolmen's Retirement System (HPRS) was \$1,480,185,590 compared to \$1,309,271,534 a year earlier. This year's combined market value represents an increase of 13.05% over the market value one year earlier.

Based on schedules provided by the Retirement Office, the breakdown of the market value of net assets allocated to North Dakota PERS follows:

	<u>July 1, 2005</u>	<u>July 1, 2004</u>
Main System	\$1,403,066,411	\$1,241,258,383
Judges	25,165,175	21,987,431
National Guard	1,693,912	1,465,277
Law Enforcement with prior Main service	3,032,184	2,239,134
Law Enforcement without prior Main service	<u>48,711</u>	<u>12,058</u>
Total	\$1,433,006,393	\$1,266,962,283

The rate of return on the market value basis for the PERS Fund was 14.17% for the year ended June 30, 2005.

### *Actuarial Value of Assets*

The actuarial value of assets is determined as follows:

Market appreciation and depreciation are spread over five years beginning with the year of occurrence. Interest and dividends are recognized immediately. This procedure results in recognition of all changes in market value over five years.

The above procedure is applied to the combined assets of PERS and HPRS Retirement Income Funds to determine the combined actuarial value of the Systems. The combined actuarial value was \$1,276,811,003 as of June 30, 2005. The determination of the combined actuarial asset value is shown in Table 1. This table shows that there is approximately \$203 million of appreciation that will be recognized in future years.

Table 2 summarizes the combined investment results over the previous ten-year period. Over this period, the earnings of \$763,753,100 on an actuarial value basis represented an average annual return of 8.91%. For the 2004-2005 year, the actuarial rate of return on the combined assets was 4.36%.

The total actuarial value of assets is allocated to PERS (Main System, Judges, National Guard and Law Enforcement) and HPRS in proportion to the reported market value of assets. This allocation is illustrated in Table 3 and summarized below for the PERS Fund alone.

	<u>July 1, 2005</u>	<u>July 1, 2004</u>
Main System	\$1,210,287,848	\$1,172,258,036
Judges	21,707,529	20,765,171
National Guard	1,461,172	1,383,824
Law Enforcement with prior Main service	2,615,568	2,114,663
Law Enforcement without prior Main service	<u>42,018</u>	<u>11,388</u>
Total	\$1,236,114,135	\$1,196,533,082

Chart 1 on page 13 is a graph showing the historical asset values for the PERS Fund on both an actuarial and market value basis. This graph illustrates that the market value of assets is now greater than the actuarial value.

Income and disbursements for 2005 and 2004 on an actuarial value basis are summarized in Table 4 for the PERS Fund. The progress of the PERS Fund for the last ten years is provided in Table 5. It shows that assets have increased consistently from year to year, although the amount of the increase has varied with fluctuations in investment income. Benefit payments have also increased consistently over the period, with the exception of one year.

A picture of the financial development of the PERS Fund over the last ten years is provided in Chart 2 on page 16. It shows that benefit payments and expenses continue to exceed contributions. However, over the long term, the excess of contributions over benefit payments and expenses, along with net investment income, served to increase the assets of the System.

Investment results on the actuarial basis are used to determine whether investment experience is meeting the System's actuarially assumed return. They do not, however, necessarily indicate the relative success of the System's investment program. Comparisons of performance with other funds, investment institutions, and market indices are generally based on rates of return that recognize market changes in full.

### ***Investment Return***

The investment returns for the last ten years for the combined fund are as follows:

<b><u>Year Ending June 30</u></b>	<b><u>Market Value</u></b>	<b><u>Actuarial Value</u></b>
1996	15.78%	11.65%
1997	19.90	13.14
1998	15.65	14.02
1999	10.88	14.73
2000	9.43	13.71
2001	(4.47)	9.36
2002	(6.94)	3.91
2003	5.19	2.18
2004	16.65	3.16
2005	14.17	4.36

The above values demonstrate the fact that the volatility of market value returns is reduced by using an actuarial value of assets. Chart 3 on page 17 illustrates the smoothing effect that results from using an actuarial value of assets. By using an actuarial value that reduces the year-to-year fluctuations in investment return, year-to-year fluctuations in contribution requirements are reduced.

Investment return rates on the market value basis include all capital appreciation and depreciation. The returns on the actuarial value reflect only a portion of the capital appreciation and depreciation based on the adopted valuation method.

**TABLE 1**

*Determination of Actuarial Value of Assets  
(for PERS and HPRS) as of June 30, 2005 and 2004*

<u>Year Ending</u>	<u>Total Appreciation (Depreciation)</u>	<u>Of Total Appreciation</u>			
		<u>Percent Deferred</u>	<u>Amount Deferred</u>	<u>Percent Deferred</u>	<u>Amount Deferred</u>
June 30, 2001	\$(96,066,919)	0%	\$0	20%	\$(19,213,384)
June 30, 2002	(115,940,982)	20%	(23,188,196)	40%	(46,376,393)
June 30, 2003	22,232,141	40%	8,892,856	60%	13,339,285
June 30, 2004	156,289,529	60%	93,773,717	80%	125,031,623
June 30, 2005	154,870,262	80%	<u>123,896,210</u>	N/A	<u>0</u>
(a) Total Deferred as of Valuation Date			\$203,374,587		\$72,781,131
(b) Total Appreciation (Depreciation) for last five Plan Years			121,384,031		36,990,976
(c) Write-Up/(Down) Amount for the year - equals 20% of (b)			24,276,806		7,398,195
			<u>July 1, 2005</u>		<u>July 1, 2004</u>
Market Value of Assets			\$1,480,185,590		\$1,309,271,534
Less: Deferred Appreciation (Depreciation)			<u>203,374,587</u>		<u>72,781,131</u>
Actuarial Value of Assets			\$1,276,811,003		\$1,236,490,403
Actuarial Value as a Percent of Market Value			86.26%		94.44%

**TABLE 2***Summary of Combined Investment Results for PERS and HPRS on Actuarial Value of Assets*

Year Ended June 30	Net Interest and Dividend Income*		Other Income**		Total Net Investment Income	
	Amount	Yield	Amount	Yield	Amount	Yield
1996	\$24,776,500	4.32%	\$42,002,100	7.33%	\$66,778,600	11.65%
1997	23,919,600	3.73	60,428,700	9.41	84,348,300	13.14
1998	29,988,300	4.13	71,787,700	9.89	101,776,000	14.02
1999	31,722,100	3.84	89,864,100	10.89	121,586,200	14.73
2000	36,367,600	3.88	92,244,700	9.83	128,612,300	13.71
2001	41,086,800	3.89	57,734,900	5.47	98,821,700	9.36
2002	35,077,400	3.06	9,694,500	0.85	44,771,900	3.91
2003	33,595,900	2.84	(7,793,200)	(0.66)	25,802,700	2.18
2004	30,464,800	2.54	7,398,200	0.62	37,863,000	3.16
2005	29,115,600	2.38	24,276,800	1.98	53,392,400	4.36
Total for Last Ten Years	\$316,114,600		\$447,638,500		\$763,753,100	
Average Yield for last Ten Years***				4.36%		

\* Net of investment expenses.

\*\* Includes write-up (down).

\*\*\* Each year's yield weighted by average fund value in that year.



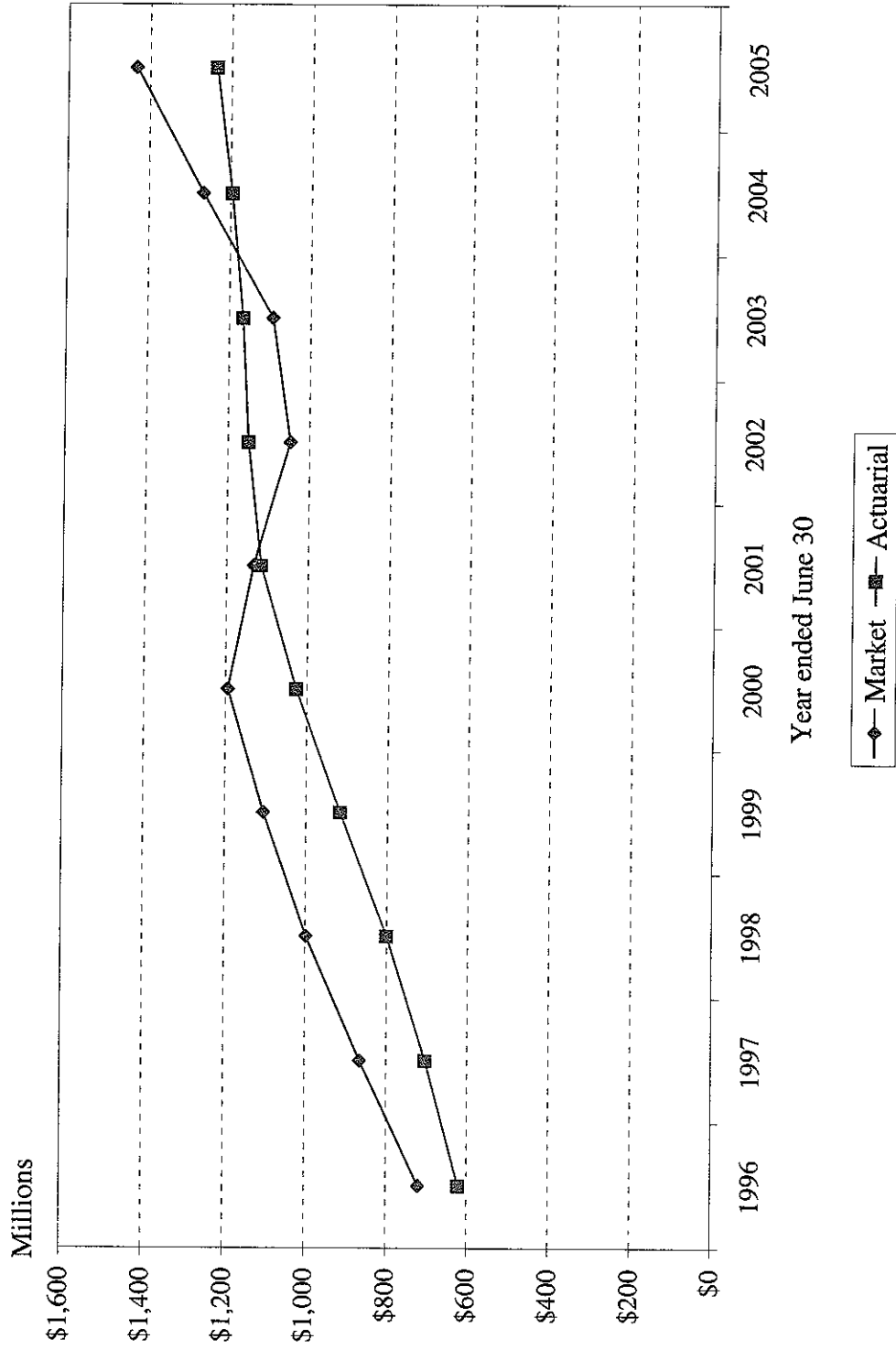
TABLE 3

Allocation of Combined (PERS and HPRS) Actuarial Value of Assets

	July 1, 2005		July 1, 2004	
	<u>Market Value</u>	<u>Actuarial Value</u>	<u>Market Value</u>	<u>Actuarial Value</u>
PERS Main System	\$1,403,066,411	\$1,210,287,848	\$1,241,258,383	\$1,172,258,036
PERS Judges	25,165,175	21,707,529	21,987,431	20,765,171
PERS National Guard	1,693,912	1,461,172	1,465,277	1,383,824
PERS Law Enforcement with prior Main service	3,032,184	2,615,568	2,239,134	2,114,663
PERS Law Enforcement without prior Main service	<u>48,711</u>	<u>42,018</u>	<u>12,058</u>	<u>11,388</u>
PERS Combined	\$1,433,006,393	\$1,236,114,135	\$1,266,962,283	\$1,196,533,082
Highway Patrol	<u>47,179,197</u>	<u>40,696,868</u>	<u>42,309,251</u>	<u>39,957,321</u>
Total	\$1,480,185,590	\$1,276,811,003	\$1,309,271,534	\$1,236,490,403

Note: Allocation of the actuarial value of assets is in proportion to the market value of assets.

Chart 1  
Value of Assets for PERS



**TABLE 4**

*Summary Statement of Income and Disbursements for PERS  
for the Years Ended June 30, 2005 and 2004  
(Actuarial Value Basis)*

	<u>June 30, 2005</u>	<u>June 30, 2004</u>
Contribution Income:		
Employer Contributions	\$20,704,241	\$19,732,842
Member Contributions	19,671,214	18,754,814
Service Credit Repurchases	<u>4,426,282</u>	<u>3,397,231</u>
Total Contribution Income	\$44,801,737	\$41,884,887
Less: Administrative Expenses	<u>(1,072,277)</u>	<u>(995,879)</u>
Net Contribution Income	<u>\$43,729,460</u>	<u>\$40,889,008</u>
Teacher's Retirement Plan Transfer	\$0	\$3,789,350
Investment Income:		
Interest and Dividends	\$35,260,205	\$34,066,356
Miscellaneous Income	13,399	6,299
Less: Investment Expenses	<u>(7,095,993)</u>	<u>(4,603,885)</u>
Net Interest and Dividends	\$28,177,611	\$29,468,770
Write-up of Assets	<u>23,415,095</u>	<u>7,126,192</u>
Net Investment Income	<u>\$51,592,706</u>	<u>\$36,594,962</u>
Total Income Available for Benefit Payments and Reserves	<u>\$95,322,166</u>	<u>\$81,273,320</u>
Benefit Payments:		
Pension Benefits	\$(51,286,688)	\$(47,515,319)
Transfers to Other Plans	(21,131)	(17,587)
Refunds	<u>(4,433,294)</u>	<u>(3,659,450)</u>
Total Benefit Payments	<u>\$(55,741,113)</u>	<u>\$(51,192,356)</u>
Addition to Reserve for Future Benefit Payments	\$39,581,053	\$30,080,964
Actuarial Value of Assets, Start of Year	<u>1,196,533,082</u>	<u>1,166,452,118</u>
Actuarial Value of Assets, End of Year	<u>\$1,236,114,135</u>	<u>\$1,196,533,082</u>

**TABLE 5**

*Progress of the PERS Fund through June 30, 2005  
(Actuarial Value Basis)*

Year Ended June 30	Employer Contributions	Member Contributions*	Administrative Expenses	Net Investment Income	Benefit Payments	Fund at End Of Year
1995	-	-	-	-	-	\$554,643,141
1996	\$13,815,784	\$13,831,828	\$555,421	\$64,398,234	\$24,470,794	621,662,772
1997	14,435,989	14,320,237	565,778	81,409,263	26,791,639	704,470,844
1998	15,078,427	15,061,818	605,241	98,273,502	30,988,902	801,290,448
1999	15,873,917	16,152,785	718,396	117,425,238	33,070,715	916,953,277
2000	16,521,248	16,618,771	800,529	124,281,079	46,572,021	1,027,001,825
2001	17,101,628	17,353,268	894,868	95,499,825	40,727,282	1,115,334,396
2002	18,244,655	18,439,125	983,258	43,304,595	44,338,684	1,150,000,829
2003	19,212,733	19,758,764	1,068,803	25,009,784	46,461,189	1,166,452,118
2004	23,522,192	22,152,045	995,879	36,594,962	51,192,356	1,196,533,082
2005	20,704,241	24,097,496	1,072,277	51,592,706	55,741,113	1,236,114,135
Total for Last Ten Years	\$174,510,814	\$177,786,137	\$8,260,450	\$737,789,188	\$400,354,695	

\* Includes repurchases of service credit.

Chart 2  
Income and Disbursements for PERS

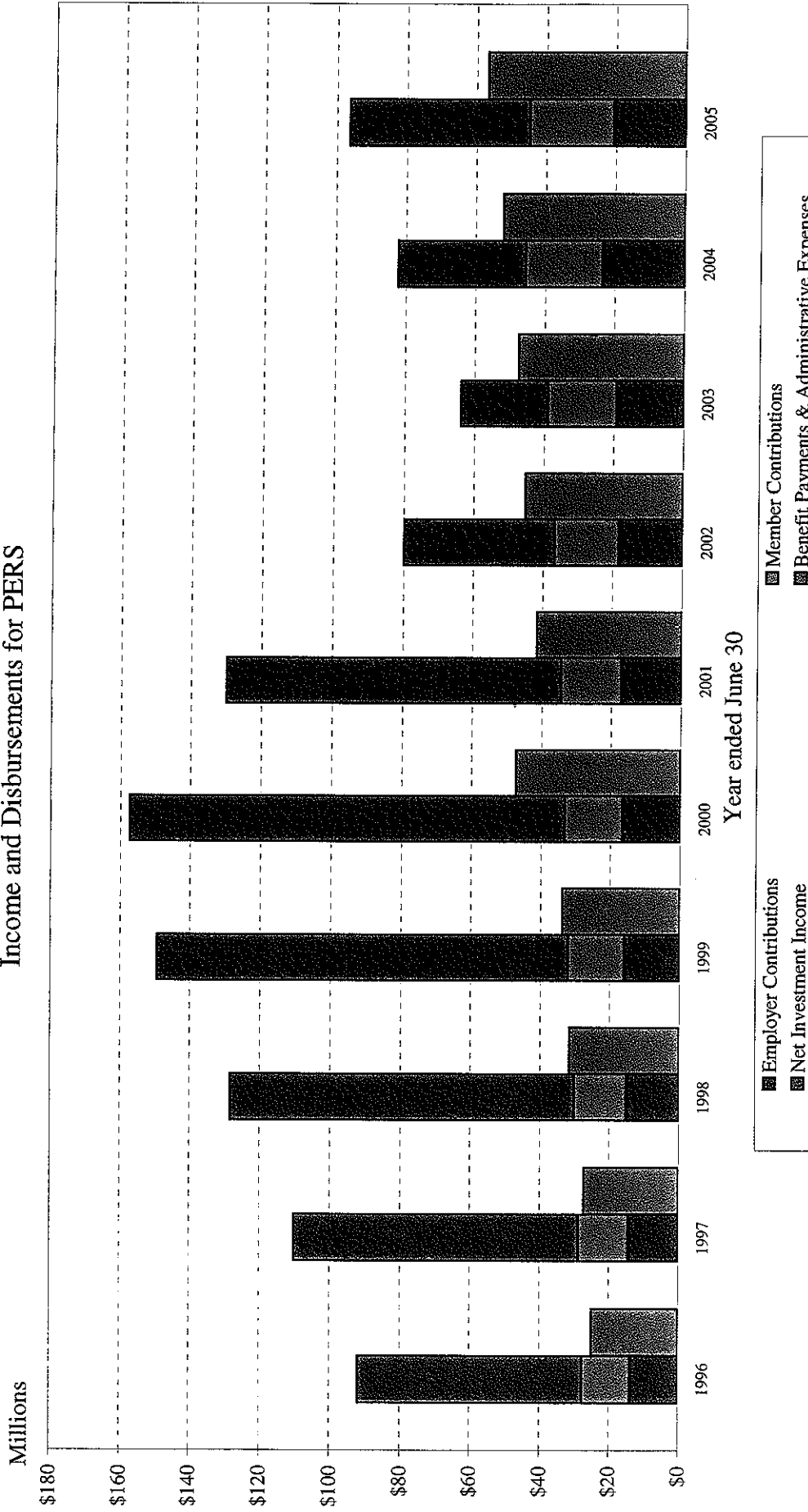
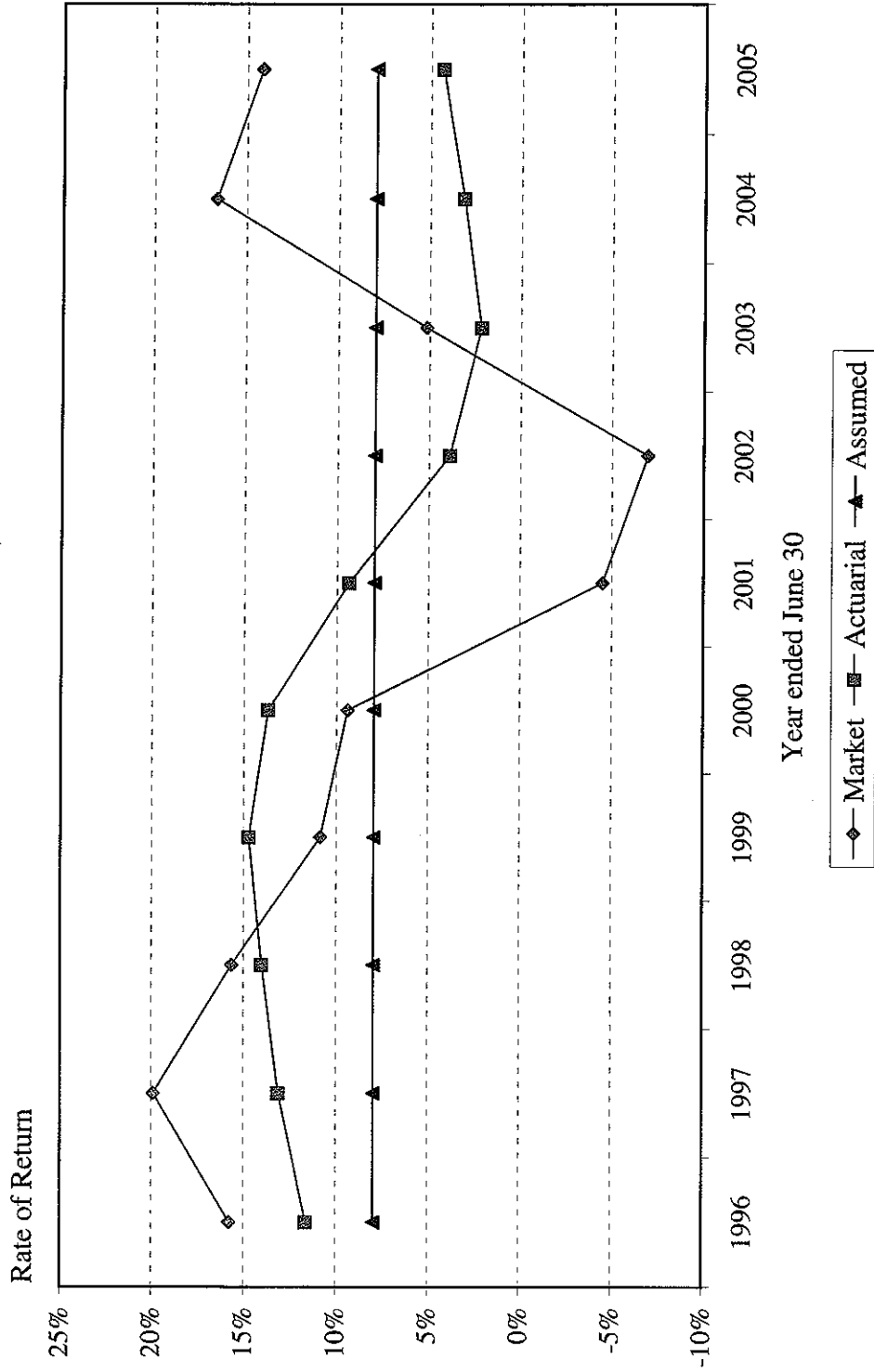


Chart 3  
 Investment Returns  
 (PERS and HPRS Combined)



## VI. RESULTS OF ACTUARIAL VALUATION

The contribution requirement consists of the normal cost, administrative expense allowance, plus the cost of amortizing the unfunded actuarial accrued liability over a scheduled period of years. The Board has adopted an open amortization schedule of 20 years with increasing payments. The calculated employer contribution requirements on this basis for fiscal year 2005-2006 are shown below as a dollar amount and as a percentage of the covered payroll of contributing employees.

### *Main System*

The components of the actuarial contribution requirements are shown below:

	<u>Amount for 2005 - 2006</u>	<u>Percentage of Payroll</u>
Total normal cost	\$42,061,590	8.22%
Less: Member contributions	<u>(20,477,676)</u>	<u>(4.00)</u>
Net employer normal cost	\$21,583,914	4.22%
Administrative expense allowance	710,000	0.14
Amortization payment (credit)	<u>8,598,405</u>	<u>1.68</u>
Total employer contribution requirement	\$30,892,319	6.03%

Covered payroll is \$511,941,896.

The statutory contribution rate is 4.12% of payroll. Hence, statutory contributions are less than the actuarial contribution requirement shown above by 1.91% of payroll.

The total employer actuarial contribution requirement was 6.30% of payroll last year. Since then, actual experience of the System during 2004-2005 has changed the actuarial contribution requirement. Table 6 presents a detailed explanation of the factors that changed the contribution requirement from July 1, 2004 to July 1, 2005.

*Judges*

The components of the actuarial contribution requirement are shown below:

	<u>Amount for 2005 - 2006</u>	<u>Percentage of Payroll</u>
Total normal cost	\$860,578	19.57%
Less: Member contributions	<u>(219,832)</u>	<u>(5.00)</u>
Net employer normal cost	\$640,746	14.57%
Administrative expense allowance	5,000	0.11
Amortization payment (credit)	<u>(134,955)</u>	<u>(3.07)</u>
Total employer contribution requirement	\$510,791	11.62%

Covered payroll is \$4,396,635.

The statutory contribution rate is 14.52% of payroll. Hence, statutory contributions exceed the actuarial contribution requirement shown above by 2.90% of payroll.

The net employer normal cost plus the administrative expense allowance is 14.68% of payroll. This should be viewed as the ultimate plan cost rate, since the total employer contribution requirement of 11.62% of payroll reflects an amortization credit. By this measure, statutory contributions are less than the ultimate plan cost rate of 14.68% of payroll by 0.16% of payroll.

A reconciliation of the change in the cost rate since the previous valuation follows:

	<u>Percentage of Payroll</u>
Employer cost rate as of July 1, 2004	12.44%
Change in normal cost method	(2.05)
Plan experience during the year	1.12
Effect of maintaining 20-year amortization schedule	<u>0.11</u>
Employer cost rate as of July 1, 2005	11.62%



*National Guard*

The components of the actuarial contribution requirement are shown below:

	<u>Amount for 2005 - 2006</u>	<u>Percentage of Payroll</u>
Total normal cost	\$36,870	6.78%
Less: Member contributions	<u>21,760</u>	<u>(4.00)</u>
Net employer normal cost	\$15,110	2.78%
Administrative expense allowance	812	0.15
Amortization payment (credit)	<u>(7,310)</u>	<u>(1.34)</u>
Total employer contribution requirement	\$8,612	1.58%

Covered payroll is \$543,991.

The statutory contribution rate is 8.33% of payroll. Hence, statutory contributions exceed the actuarial contribution requirement shown above by 6.75% of payroll.

The net employer normal cost plus the administrative expense allowance is 2.93% of payroll. This should be viewed as the ultimate plan cost rate, since the total employer contribution requirement of 1.58% of payroll reflects an amortization credit. By this measure, statutory contributions are greater than the ultimate plan cost rate of 2.93% of payroll by 5.40% of payroll.

A reconciliation of the change in the cost rate since the previous valuation follows:

	<u>Percentage of Payroll</u>
Employer cost rate as of July 1, 2004	3.25%
Change in normal cost method	(3.01)
Plan experience during the year	1.29
Effect of maintaining 20-year amortization schedule	<u>0.05</u>
Employer cost rate as of July 1, 2005	1.58%

***Law Enforcement with prior Main service***

The components of the actuarial contribution requirement are shown below:

	<u>Amount for 2005 - 2006</u>	<u>Percentage of Payroll</u>
Total normal cost	\$351,769	9.11%
Less: Member contributions	<u>(154,538)</u>	<u>(4.00)</u>
Net employer normal cost	\$197,231	5.11%
Administrative expense allowance	3,766	0.10
Amortization payment (credit)	<u>263,968</u>	<u>6.83</u>
Total employer contribution requirement	\$464,965	12.03%

Covered payroll is \$3,863,445.

The statutory contribution rate is 8.31% of payroll. Hence, statutory contributions exceed the actuarial contribution requirement shown above by 3.72% of payroll.

The net employer normal cost plus the administrative expense allowance is 5.21% of payroll. This should be viewed as the ultimate plan cost rate, since the total employer contribution requirement of 12.03% of payroll reflects an amortization credit. By this measure, statutory contributions are greater than the ultimate plan cost rate of 5.21% of payroll by 3.10% of payroll.

A reconciliation of the change in the cost rate since the previous valuation follows:

	<u>Percentage of Payroll</u>
Employer cost rate as of July 1, 2004	7.88%
Change in normal cost method	(1.17)
Plan experience during the year	5.06
Effect of maintaining 20-year amortization schedule	<u>0.26</u>
Employer cost rate as of July 1, 2005	12.03%

***Law Enforcement without prior Main service***

The components of the actuarial contribution requirement are shown below:

	<u>Amount for 2005 - 2006</u>	<u>Percentage of Payroll</u>
Total normal cost	\$41,316	10.69%
Less: Member contributions	<u>(15,455)</u>	<u>(4.00)</u>
Net employer normal cost	\$25,861	6.69%
Administrative expense allowance	422	0.11
Amortization payment (credit)	<u>3,132</u>	<u>(0.81)</u>
Total employer contribution requirement	\$29,415	7.61%

Covered payroll is \$386,382.

The statutory contribution rate is 6.43% of payroll. Hence, statutory contributions are less than the actuarial contribution requirement shown above by 1.18% of payroll.

The net employer normal cost plus the administrative expense allowance is 6.80% of payroll. This should be viewed as the ultimate plan cost rate, since the total employer contribution requirement of 7.61% of payroll reflects an amortization credit. By this measure, statutory contributions are less than the ultimate plan cost rate of 6.80% of payroll by 0.37% of payroll.

A reconciliation of the change in the cost rate since the previous valuation follows:

	<u>Percentage of Payroll</u>
Employer cost rate as of July 1, 2004	8.35%
Change in normal cost method	(1.67)
Plan experience during the year	0.90
Effect of maintaining 20-year amortization schedule	<u>0.03</u>
Employer cost rate as of July 1, 2005	7.61%

*Main System, Judges, National Guard and Law Enforcement Combined*

The components of the actuarial contribution requirement are shown below.

	<u>Amount for 2005 - 2006</u>	<u>Percentage of Payroll</u>
Total normal cost	\$43,352,123	8.32%
Less: Member contributions	<u>(20,889,261)</u>	<u>(4.01)</u>
Net employer normal cost	\$22,462,862	4.31%
Administrative expense allowance	720,000	0.14
Amortization payment (credit)	<u>8,723,240</u>	<u>1.67</u>
Total employer contribution requirement	\$31,906,102	6.12%

Covered payroll is \$521,132,349.

**TABLE 6**

*Main System*  
*Explanation of Change in Employer Cost Rate*

	Percent of Payroll
<b>Employer Cost Rate as of July 1, 2004</b>	<b>6.30%</b>
<i>Retired Life Mortality</i>	0.11%
The release of liability due to deaths among retirees and beneficiaries was less than expected, increasing the employer cost rate.	
<i>Active Life Mortality</i>	0.02%
The release of liability due to deaths among active members was less than expected, increasing the employer cost rate.	
<i>Disability Incidence</i>	0.00%
The net change in liability due to disability retirements was nearly equal to that expected.	
<i>Withdrawal</i>	0.07%
The release of liability due to withdrawals prior to retirement was less than expected, increasing the employer cost rate.	
<i>Retirement</i>	(0.17)%
The actual liability due to non-disabled retirements was less than expected, decreasing the employer cost rate.	
<i>Investments</i>	0.54%
On an actuarial value basis, the rate of return on assets was less than the assumed rate of return, increasing the employer cost rate.	
<i>Salary Scale</i>	(0.19)%
Salaries increased less than expected, decreasing the employer cost rate.	
<i>Contributions</i>	0.17%
Actual contributions received by the System were less than the actuarially determined amount, increasing the required contributions in future years.	

**TABLE 6**

*Main System  
Explanation of Change in Employer Cost Rate (continued)*

	Percent of Payroll
<i>Administrative Expenses</i>	0.01%
Actual expenses were nearly equal to that expected.	
<i>New and Reinstated Members</i>	0.09%
The addition of new and reinstated members increases the employer cost rate.	
<i>Part-Time Experience</i>	(0.13)%
Some continuing active members earned less than one year of service during the current year, decreasing the employer cost rate.	
<i>Change in Size and Composition of Active Membership and Miscellaneous Experience</i>	0.16%
The demographic characteristics of the active membership changed during the year, increasing the employer cost rate.	
<i>Plan Provision Changes</i>	0.00%
There were no plan provisions changes.	
<i>Assumption Changes</i>	0.00%
There were no assumption changes.	
<i>Normal Cost Calculation Method Change</i>	(0.88)%
The board adopted a change in normal cost methodology, decreasing the employer cost rate.	
<i>Funding Schedule</i>	(0.07)%
The effect of maintaining a 20-year funding schedule results in a small decrease in cost.	
<b>Employer Cost Rate as of July 1, 2005</b>	<b>6.03%</b>

## VII. FUNDING STATUS

The calculation of funded ratios provides one measure of the progress of funding a retirement plan. The funded ratio is the percentage of plan liabilities covered by plan assets. The greater the ratio, the better funded the retirement plan is. This ratio can be calculated using different measures of the retirement plan's liabilities.

### *Funding Basis - Actuarial Accrued Liability*

This measure of liabilities is used in calculating pension costs. It uses the Entry Age Normal Actuarial Cost Method that spreads costs as a level percentage of payroll over a member's working career.

For determining plan costs, a smoothed value of assets (called the actuarial value) is used. Hence, the actuarial value of assets was used to calculate the funded ratios.

### *Disclosure Basis*

The accounting standard for disclosure of liabilities and funding status of the System is based on GASB Statement No. 25 (Financial Reporting for Defined Benefit Pension Plans and Note Disclosures for Defined Contribution Plans). GASB Statement No. 25 allows the System to disclose its liabilities and funding status on the same bases used for funding the System. The actuarial value of assets is used for comparing assets and liabilities.

### *Historical Results*

The funded ratios (under the GASB Statement No. 25 standard) for the last ten years are developed in Table 7. These ratios are graphed in Chart 4 on page 28. They show that the funded ratio has generally improved during the beginning of this period, but has deteriorated since July 1, 2000.

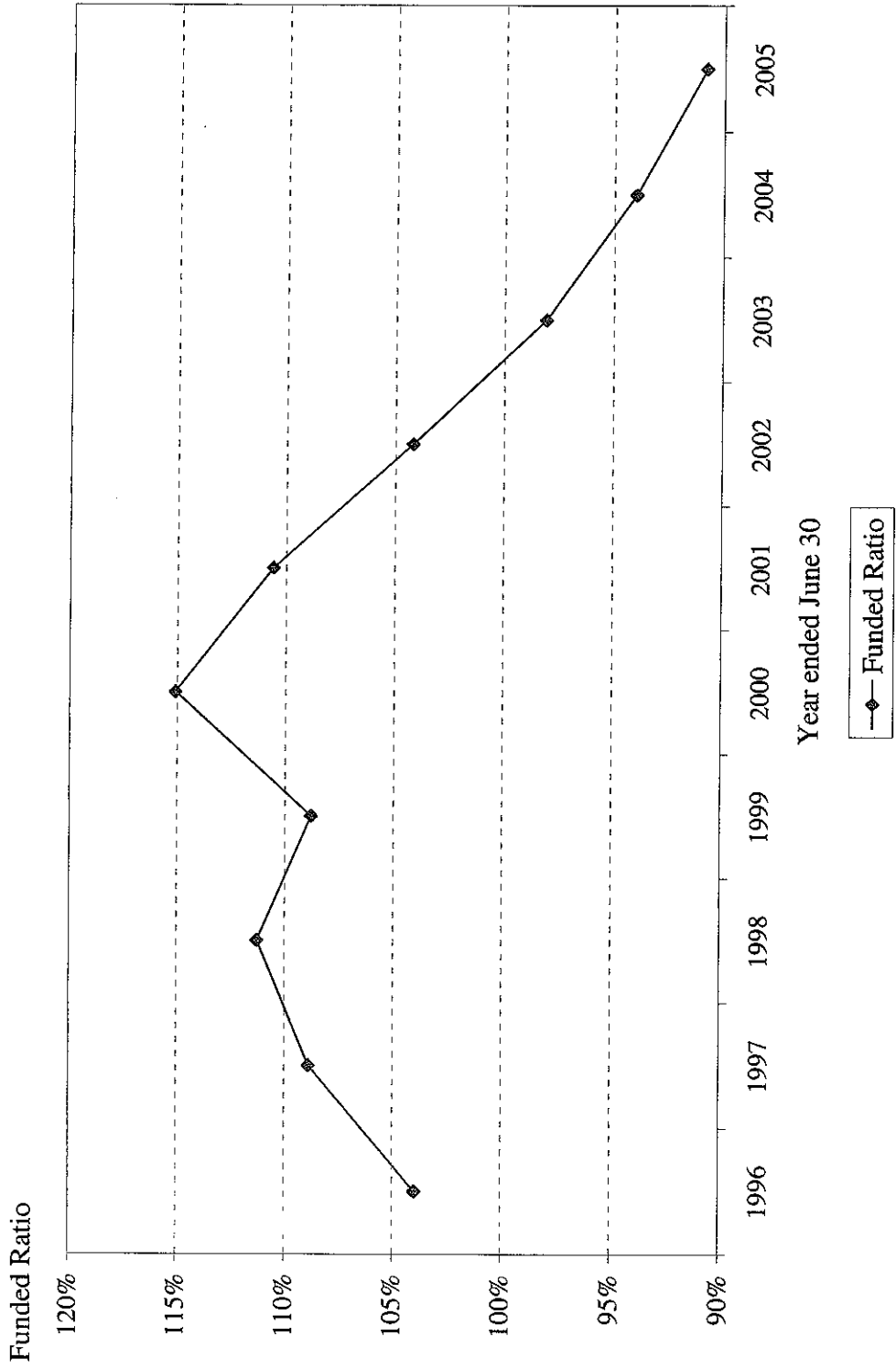
Funded ratios change over time due to several factors. These factors include the level of contributions, actual experience (including investment returns), plan amendments and changes in assumptions. In particular, we observe that in 1995, 1999 and 2001 benefit improvements were effective, decreasing the funded ratio from what it would have been otherwise. Also, the actuarial assumptions were changed in 1995 and 2000, changing the funded ratio from what it would have been otherwise.

**TABLE 7*****Funded Ratio for PERS***

As of July 1	Actuarial Accrued Liability	Actuarial Value of Assets	Funded Ratio
1996	597,870,000	621,662,800	104.0
1997	646,902,000	704,470,800	108.9
1998	720,093,400	801,290,400	111.3
1999	842,717,700	916,953,300	108.8
2000	891,889,000	1,027,001,800	115.1
2001	1,008,722,500	1,115,334,400	110.6
2002	1,103,460,900	1,150,000,800	104.2
2003	1,188,830,500	1,166,452,100	98.1
2004	1,272,857,600	1,196,533,100	94.0
2005	1,361,182,100	1,236,114,100	90.8



Chart 4  
Funded Ratio (PERS)



## VIII. ACTUARIAL ASSUMPTIONS AND COST METHODS

The actuarial assumptions and cost methods used in the actuarial valuation as of July 1, 2005 are the same as those used in the previous valuation. A summary of the actuarial assumptions and cost methods follows. Details can be found in Exhibit II of Appendix A.

### *Investment Return*

The actuarial calculations are based on the assumption that the investment return on the actuarial value of assets of the System will be 8.00% per year, net of investment expenses.

### *Salary Increases*

Because the retirement benefits provided by the plan are based on a member's final average salary, increases in salaries affect the employer's contribution requirements. A salary scale is used in an actuarial valuation to project each member's future salary increases.

For the Main System, National Guard and Law Enforcement, the assumed salary increase is 7.00% during each of the first five years of service. After five years of service, salary increases are age-related. Sample age-related annual salary rate increases are as follows:

<u>Age</u>	<u>Increase</u>
25	5.90%
30	5.60
35	5.30
40	5.10
45	4.90
50	4.80
55	4.70
60	4.70

For Judges, the assumed salary increase is 5.50% per year for all years of service.

Actuarial assumptions should be reasonable over the long term and should not be unduly influenced by transitory deviations. Actual salary increases that are greater than assumed produce actuarial losses that, if not offset by actuarial gains from other sources (such as investment gains), result in increasing future employer costs. On the other hand, salary increases that are less than projected produce actuarial gains, which can result in lowering future employer costs.

### ***Payroll Growth***

For the Main System, National Guard and Law Enforcement, the assumed payroll growth rate is 4.50% per annum. For Judges, the assumed payroll growth rate is 4.00% per annum.

### ***Mortality Rates***

The reserve required to pay a member's retirement benefits depends on the period over which payments will be received. The valuation uses the 1983 Group Annuity Mortality Table for healthy members and the Pension Benefit Guaranty Corporation Disabled Life Mortality Table for Individuals Receiving Social Security Disability Benefits for disabled members. The table below shows sample mortality rates and life expectancies underlying the healthy mortality tables.

<u>Retired Members</u>				
	<u>Males</u>		<u>Females</u>	
<u>Age</u>	<u>Deaths per 1,000 Lives</u>	<u>Expected Number of Years of Life Remaining</u>	<u>Deaths per 1,000 Lives</u>	<u>Expected Number of Years of Life Remaining</u>
55	6.1	24.8	2.5	30.3
60	9.2	20.6	4.2	25.7
65	15.6	16.7	7.1	21.3
70	27.5	13.2	12.4	17.2
75	44.6	10.2	24.0	13.4
80	74.1	7.6	42.9	10.2
85	114.8	5.7	69.9	7.6

### ***Disability Incidence Rates Before Retirement***

A percentage of members are assumed to become disabled while in active service. The incidence rates used are based on a study of disability incidence under the Social Security program. To reflect actual experience under the retirement system, 42% of the Social Security disability incidence rates are used for males and 30% are used for females.

### ***Withdrawal Rates Before Retirement***

The withdrawal rates used in this actuarial valuation reflect the expected percentage of members who will leave service at each age before retirement for reasons other than death or disability.

For the Main System, National Guard and Law Enforcement, special withdrawal rates are applied during the first five years of service to recognize higher turnover for short service members.

During the first five years of service, withdrawal rates vary with age and service as follows:

<u>Age</u>	<u>Years of Service</u>				
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
29 & Under	23%	20%	17%	16%	15%
30 - 39	17	15	13	12	11
40 & Over	15	12	10	8	6

After five years of service, withdrawal rates vary with age and gender as follows:

<u>Age</u>	<u>Male</u>	<u>Female</u>
20 - 24	12%	12%
25 - 29	8	10
30 - 34	5	8
35 - 39	4	6
40 - 44	3	5
45 - 49	3	4
50 & Over	2	3

For Judges, withdrawal rates at each age are one-half of the rates for members of the Main System, National Guard, and Law Enforcement with at least five years of service.

Withdrawal rates end upon the earlier of early retirement and Rule of 85 (Main System and Judges) eligibility.

## ***Retirement***

The retirement rates reflect the expected percentage of members who will retire at each age. For Main System members, the rates vary with age, as follows:

<u>Age</u>	<u>Rate</u>
55	4%
56	6
57	6
58	6
59	6
60	8
61	15
62	35
63	25
64	25
65	40
66	20
67	20
68	20
69	20
70	100

The retirement rates for Judges begin at age 62. Thirty-five percent of Judges are assumed to retire at each age from 62 to 64, 50% are assumed to retire at each age from 65 to 69, and 100% of the remaining Judges are assumed to retire at age 70.

Retirement for members of the National Guard and Law Enforcement is assumed to occur at age 60.

Retirement for inactive vested members of the Main System and Judges is assumed to occur at the earlier of age 65 and Rule of 85. Retirement for inactive vested members of the National Guard is assumed to occur at age 55. Retirement for inactive vested members of the Law Enforcement is assumed to occur at the earlier of age 55 and Rule of 85.

Fifty percent of inactive vested Main System and Judges and 100% of inactive vested National Guard and Law Enforcement are assumed to elect a refund of employee contributions in lieu of a pension benefit.

## ***Annual Administrative Expenses***

Annual administrative expenses for all Systems combined are assumed to be \$720,000.

### ***Marital Status for Non-Retired Members***

At death, 75% of male members and 60% of female members are assumed to have spouses. Males are assumed to be five years older than their female spouses.

### ***Valuation of Assets***

Investments are valued at an adjusted market value. Interest and dividends are recognized immediately. The net market appreciation (depreciation) is spread over five years in equal dollar amounts, beginning with the year of occurrence. The actuarial value of assets is the market value less deferred appreciation (depreciation).

### ***Actuarial Cost Method***

The System is funded using the Entry Age Normal Actuarial Cost Method. This method produces costs that remain relatively level as a percentage of covered payroll.

Under the Entry Age Normal Method, the total contribution requirement has three components - an annual normal cost, an allowance for administrative expenses and a payment with respect to the unfunded/(surplus) actuarial accrued liability. The annual normal cost is calculated for each member as the level percentage of pay required over the member's period of covered employment to pay the total expected benefits. The normal cost is determined as if the current benefit accrual rate had always been in effect. If the actuarial assumptions are met, the total normal cost rate will remain level as a percentage of payroll.

The normal cost payments are sufficient to finance the benefit program only if there are no changes in plan design and all actuarial assumptions are realized. To the extent that actual experience is less favorable than assumed, additional liabilities not funded through normal cost payments arise. Also, benefit liberalizations that improve earned benefits or benefit eligibility produce additional liabilities. The Board has adopted a schedule of amortizing this unfunded/(surplus) actuarial accrued liability over an open period of 20 years. The annual payments are determined as a level percent of payroll, with payroll expected to increase 4.5% per year for the Main System, National Guard and Law Enforcement, and for Judges payroll is expected to increase 4.0% per year. This method provides payment in constant, or real, dollars.

**APPENDIX A**

October 11, 2005

**NORTH DAKOTA PUBLIC EMPLOYEES RETIREMENT SYSTEM**  
**ACTUARIAL VALUATION CERTIFICATE**

This is to certify that we have prepared an Actuarial Valuation of the System as of July 1, 2005 in accordance with generally accepted actuarial principles and practices.

The certificate contains the following attached exhibits:

- I. Actuarial Valuation Results
- II. Actuarial Assumptions and Cost Methods
- III. Changes in Actuarial Assumptions and Cost Methods
- IV. Changes in Plan Provisions
- V. Summary of Plan Provisions

The valuation was based on information supplied by the Retirement Office with respect to member and financial data. We have not verified, and customarily would not verify, such information but we have no reason to doubt its substantial accuracy.

To the best of our knowledge, the information supplied in this actuarial valuation is complete and accurate and in our opinion each individual assumption used (a) is reasonably related to the experience of the System and to reasonable expectations and (b) represents our best estimate of anticipated experience under the System.

The undersigned are available to provide further information or to answer any questions regarding the report.



Leslie L. Thompson, FSA, MAAA, EA  
Senior Vice President and Actuary



Brad Ramirez, ASA, MAAA  
Actuarial Associate

**EXHIBIT I-A**

**ACTUARIAL VALUATION RESULTS**

**MAIN SYSTEM**

1.	Actuarial accrued liability on July 1, 2005:	
	a. Active members .....	\$847,371,892
	b. Special prior service pensions .....	109,991
	c. Retired members and beneficiaries .....	442,527,618
	d. Inactive non-retired members .....	<u>43,481,840</u>
	e. Total .....	\$1,333,491,341
2.	Assets at actuarial value (\$1,403,066,411 at market value) .....	1,210,287,848
3.	Unfunded/(Surplus) actuarial accrued liability - equals (1) minus (2) .....	123,203,493
4.	Member and employer normal cost for ensuing year* .....	42,061,590
5.	Estimated annual salaries of covered members .....	511,941,896
6.	Member normal cost - equals 4% of (5) .....	20,477,676
7.	Employer normal cost for ensuing year - equals (4) minus (6) .....	21,583,914
8.	Amortization payment - equals 20-year amortization of item (3) as a level percent of aggregate salary* .....	8,598,405
9.	Administrative expenses .....	710,000
10.	Total employer cost for ensuing year - equals (7) plus (8) plus (9) .....	30,892,319
11.	Total employer cost as percentage of payroll - equals (10) divided by (5) .....	6.03%

---

\* Adjusted for interest to recognize payments through the year.



**EXHIBIT I-B**

**ACTUARIAL VALUATION RESULTS**

**JUDGES**

1.	Actuarial accrued liability on July 1, 2005:		
	a. Active members .....	\$11,146,326	
	b. Retired members and beneficiaries .....	8,499,311	
	c. Inactive non-retired members .....	<u>203,942</u>	
	d. Total .....		\$19,849,579
2.	Assets at actuarial value (\$25,165,175 at market value) .....		21,707,529
3.	Unfunded/(Surplus) actuarial accrued liability - equals (1) minus (2) .....		(1,857,950)
4.	Member and employer normal cost for ensuing year* .....		860,578
5.	Estimated annual salaries of covered members .....		4,396,635
6.	Member normal cost - equals 5% of (5) .....		219,832
7.	Employer normal cost for ensuing year - equals (4) minus (6) .....		640,746
8.	Amortization payment - equals 20-year amortization of item (3) as a level percent of aggregate salary* .....		(134,955)
9.	Administrative expenses .....		5,000
10.	Total employer cost for ensuing year - equals (7) plus (8) plus (9) .....		510,791
11.	Total employer cost as percentage of payroll - equals (10) divided by (5) .....		11.62%

---

\* Adjusted for interest to recognize payments through the year.

**EXHIBIT I-C**

**ACTUARIAL VALUATION RESULTS**

**NATIONAL GUARD**

1.	Actuarial accrued liability on July 1, 2005:		
	a. Active members .....	\$641,489	
	b. Retired members and beneficiaries .....	569,739	
	c. Inactive non-retired members .....	<u>145,203</u>	
	d. Total .....		\$1,356,431
2.	Assets at actuarial value (\$1,693,912 at market value) .....		1,461,172
3.	Unfunded/(Surplus) actuarial accrued liability - equals (1) minus (2) .....		(104,741)
4.	Member and employer normal cost for ensuing year* .....		36,870
5.	Estimated annual salaries of covered members .....		543,991
6.	Member normal cost - equals 4% of (5) .....		21,760
7.	Employer normal cost for ensuing year - equals (4) minus (6) .....		15,110
8.	Amortization payment - equals 20-year amortization of item (3) as a level percent of aggregate salary* .....		(7,310)
9.	Administrative expenses .....		812
10.	Total employer cost for ensuing year - equals (7) plus (8) plus (9) .....		8,612
11.	Total employer cost as percentage of payroll - equals (10) divided by (5) .....		1.58%

---

\* Adjusted for interest to recognize payments through the year.

**EXHIBIT I-D**

**ACTUARIAL VALUATION RESULTS**

**LAW ENFORCEMENT WITH PRIOR MAIN SERVICE**

1.	Actuarial accrued liability on July 1, 2005:		
	a. Active members .....	\$6,295,236	
	b. Retired members and beneficiaries .....	0	
	c. Inactive non-retired members .....	<u>102,633</u>	
	d. Total .....		\$6,397,869
2.	Assets at actuarial value (\$3,032,184 at market value) .....		2,615,568
3.	Unfunded/(Surplus) actuarial accrued liability - equals (1) minus (2) .....		3,782,301
4.	Member and employer normal cost for ensuing year* .....		351,769
5.	Estimated annual salaries of covered members .....		3,863,445
6.	Member normal cost - equals 4% of (5) .....		154,538
7.	Employer normal cost for ensuing year - equals (4) minus (6) .....		197,231
8.	Amortization payment - equals 20- year amortization of item (3) as a level percent of aggregate salary* .....		263,968
9.	Administrative expenses .....		3,766
10.	Total employer cost for ensuing year - equals (7) plus (8) plus (9) .....		464,965
11.	Total employer cost as percentage of payroll - equals (10) divided by (5) .....		12.03%

---

\* Adjusted for interest to recognize payments through the year.

**EXHIBIT I-E**

**ACTUARIAL VALUATION RESULTS**

**LAW ENFORCEMENT WITHOUT PRIOR MAIN SERVICE**

1.	Actuarial accrued liability on July 1, 2005:		
	a. Active members .....	\$86,899	
	b. Retired members and beneficiaries.....	0	
	c. Inactive non-retired members .....	<u>0</u>	
	d. Total .....		\$86,899
2.	Assets at actuarial value (\$48,711 at market value) .....		42,018
3.	Unfunded/(Surplus) actuarial accrued liability - equals (1) minus (2).....		44,881
4.	Member and employer normal cost for ensuing year* .....		41,316
5.	Estimated annual salaries of covered members .....		386,382
6.	Member normal cost - equals 4% of (5) .....		15,455
7.	Employer normal cost for ensuing year - equals (4) minus (6) .....		25,861
8.	Amortization payment - equals 20-year amortization of item (3) as a level percent of aggregate salary* .....		3,132
9.	Administrative expenses .....		422
10.	Total employer cost for ensuing year - equals (7) plus (8) plus (9) .....		29,415
11.	Total employer cost as percentage of payroll - equals (10) divided by (5).....		7.61%

---

\* Adjusted for interest to recognize payments through the year.

**EXHIBIT I-F**

**ACTUARIAL VALUATION RESULTS**

**MAIN SYSTEM, JUDGES, NATIONAL GUARD AND  
LAW ENFORCEMENT PLAN COMBINED**

1.	Actuarial accrued liability on July 1, 2005:	
	a. Active members .....	\$865,541,842
	b. Special prior service pensions .....	109,991
	c. Retired members and beneficiaries .....	451,596,668
	d. Inactive non-retired members .....	<u>43,933,618</u>
	e. Total .....	\$1,361,182,119
2.	Assets at actuarial value (\$1,433,006,393 at market value) .....	1,236,114,135
3.	Unfunded/(Surplus) actuarial accrued liability - equals (1) minus (2) .....	125,067,984
4.	Member and employer normal cost for ensuing year* .....	43,352,123
5.	Estimated annual salaries of covered members .....	521,132,349
6.	Member normal cost .....	20,889,261
7.	Employer normal cost for ensuing year - equals (4) minus (6) .....	22,462,862
8.	Amortization payment - equals 20-year amortization of item (3) as a level percent of aggregate salary* .....	8,723,240
9.	Administrative expenses .....	720,000
10.	Total employer cost for ensuing year - equals (7) plus (8) plus (9) .....	31,906,102
11.	Total employer cost as percentage of payroll - equals (10) divided by (5) .....	6.12%

---

\* Adjusted for interest to recognize payments through the year.

## EXHIBIT II

### ACTUARIAL ASSUMPTIONS AND COST METHODS

#### 1. Mortality Tables:

Healthy: 1983 Group Annuity Mortality Table.

Disabled: Pension Benefit Guaranty Corporation Disabled Life Mortality Table for Individuals Receiving Social Security Disability Benefits.

#### 2. Disability Incidence Rates:

Before age 65:      Males      42% of OASDI disability incidence rates.  
                                          Females      30% of OASDI disability incidence rates.

Age 65 and later:      Males      0.25% per year.  
                                          Females      0.35% per year.

Sample rates are as follows:

<u>Age</u>	<u>Male</u>	<u>Female</u>
20	0.03%	0.02%
30	0.05	0.03
40	0.09	0.07
50	0.25	0.18
60	0.68	0.49

#### 3. Annual Withdrawal Rates:

*Main System, National Guard and Law Enforcement:*

First five years of service:

<u>Age</u>	<u>Years of Service</u>				
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
29 & Under	23%	20%	17%	16%	15%
30 - 39	17	15	13	12	11
40 & Over	15	12	10	8	6

**EXHIBIT II (continued)**

Ultimate withdrawal rates after five years service:

<u>Age</u>	<u>Male</u>	<u>Female</u>
20 - 24	12%	12%
25 - 29	8	10
30 - 34	5	8
35 - 39	4	6
40 - 44	3	5
45 - 49	3	4
50 & Over	2	3

*Judges:*

One-half of the Main System ultimate rates.

Withdrawal rates end upon eligibility for early retirement. Early retirement eligibility is as follows:

*Main System:*

Earlier of (i) age 55 and 3 years of service, and (ii) eligibility for Rule of 85.

*Judges:*

Earlier of (i) age 55 and 5 years of service, and (ii) eligibility for Rule of 85.

*National Guard and Law Enforcement:*

Age 50 and 3 years of service.

EXHIBIT II (continued)

4. Retirement Rates for Active Members:

*Main System:*

<u>Age</u>	<u>Rate</u>
55	4%
56	6
57	6
58	6
59	6
60	8
61	15
62	35
63	25
64	25
65	40
66	20
67	20
68	20
69	20
70	100

*Judges:*

<u>Age</u>	<u>Rate</u>
62	35%
63	35
64	35
65	50
66	50
67	50
68	50
69	50
70	100

*National Guard and Law Enforcement:*

<u>Age</u>	<u>Rate</u>
60	100%



**EXHIBIT II (continued)**

**5. Retirement Age for Inactive Vested Members:**

*Main System and Judges:*

The earlier of:

- Age 65.
- Unreduced retirement date for each individual.

*National Guard:*

Age 55.

*Law Enforcement:*

The earlier of:

- Age 55.
- Unreduced retirement date for each individual.

**6. Interest Rate:**

8.00% per annum, net of investment expenses.

**7. Annual Administrative Expenses:**

*Main System:* \$ 710,000.

*Judges:* \$ 5,000.

*National Guard and Law Enforcement combined:* \$ 5,000.

**8. Salary Scale:**

*Main System, National Guard and Law Enforcement:*

Less than five years of service: 7.00% per annum.

Five or more years of service (sample rates are as follows):

<u>Age</u>	<u>Percentage Increase</u>	<u>Age</u>	<u>Percentage Increase</u>
25	5.90%	45	4.90%
30	5.60	50	4.80
35	5.30	55	4.70
40	5.10	60	4.70

*Judges:*

5.50% per annum for all years of service.

**EXHIBIT II (continued)**

**9. Payroll Growth:**

*Main System, National Guard and Law Enforcement:* 4.50% per annum.  
*Judges:* 4.00% per annum.

**10. Marital Status:**

At death, 75% of active male members and 60% of active female members are assumed to have spouses. Males are assumed to be five years older than their female spouses.

**11. Part-Time Employees:**

One full year of service is credited for each future year of service.

**12. Split Service:**

Liabilities are held in both plans based on service in each plan and are based on the actuarial assumptions of the plan in which they are currently active.

**13. Actuarial Cost Method:**

Entry Age Normal Actuarial Cost Method. The unfunded actuarial accrued liability is amortized in installments increasing by the payroll growth assumption each year over an open 20-year period.

**14. Actuarial Value of Assets:**

Adjusted market value that immediately recognizes interest and dividends. The procedure recognizes 20% of each year's total appreciation (depreciation) beginning with the year of occurrence. After five years, the appreciation (depreciation) is fully recognized.

**15. Social Security Disability (for Judges' disability benefit offset):**

Eligibility: 50%

Consumer Price Index Increases: 4.5% per annum

Wage Base Increases: 5.0% per annum

**16. Workers' Compensation (for Judges' disability benefit offset):**

None assumed.



## **EXHIBIT III**

### **CHANGES IN ACTUARIAL ASSUMPTIONS AND COST METHODS**

There were no changes in actuarial assumptions since the preceding valuation.

As a result of the actuarial audit by GRS, the board adopted a change in normal cost methodology. The actuarial accrued liability and present value of benefits were unaffected by this change.

**EXHIBIT IV**  
**CHANGES IN PLAN PROVISIONS**

There were no changes in the plan provisions since the preceding valuation.

## EXHIBIT V

### SUMMARY OF PLAN PROVISIONS

This exhibit summarizes the major benefit provisions of the North Dakota Public Employees Retirement System as included in the valuation. It is not intended to be, nor should it be, interpreted as a complete statement of all plan provisions.

#### 1. Normal Service Retirement:

##### Eligibility:

###### *Main System and Judges:*

Attainment of age 65, or age plus service equal to at least 85 (Rule of 85).

###### *National Guard:*

Attainment of age 55 and three consecutive years of service.

###### *Law Enforcement:*

Attainment of age 55 and three consecutive years of service, or age plus service equal to at least 85 (Rule of 85).

##### Benefit:

###### *Main System, National Guard and Law Enforcement:*

2.00% of final average salary multiplied by service.

###### *Judges:*

3.50% of final average salary for each of the first ten years of service, 2.80% for each of the next ten years of service, and 1.25% for service in excess of twenty years.

#### 2. Early Service Retirement:

##### Eligibility:

###### *Main System:*

Attainment of age 55 with three years of service.

###### *Judges:*

Attainment of age 55 with five years of service.

## EXHIBIT V (continued)

### *National Guard and Law Enforcement:*

Attainment of age 50 with three years of service.

#### Benefit:

##### *Main System:*

The Normal Service Retirement Benefit as determined above. A benefit that begins before age 65 (or Rule of 85, if earlier) is reduced by one-half of one percent for each month before the earlier of age 65 or the age at which the Rule of 85 is met.

##### *Judges:*

The Normal Service Retirement Benefit as determined above. A benefit that begins before age 65 (or Rule of 85, if earlier) is reduced by one-half of one percent for each month before age 65.

##### *National Guard:*

The Normal Service Retirement Benefit as determined above. A benefit that begins before age 55 is reduced by one-half of one percent for each month before age 55.

##### *Law Enforcement:*

The Normal Service Retirement Benefit as determined above. A benefit that begins before age 55 (or Rule of 85, if earlier) is reduced by one-half of one percent for each month before age 55.

### **3. Disability Benefit:**

#### Eligibility:

Six months of service and inability to engage in any substantial gainful activity.

#### Benefit:

##### *Main System, National Guard and Law Enforcement:*

25% of the member's final average salary at disability, with a minimum of \$100 per month.

##### *Judges:*

70% of the member's final average salary at disability minus Social Security and Workers' Compensation benefits paid.

## EXHIBIT V (continued)

### 4. Deferred Vested Retirement:

Eligibility:

*Main System, National Guard and Law Enforcement:*

Three years of service.

*Judges:*

Five years of service.

Benefit:

*Main System and Judges:*

The Normal Service Retirement Benefit payable at age 65 or the Rule of 85, if earlier. Reduced early retirement benefits can be elected upon attainment of age 55.

*National Guard:*

The Normal Service Retirement Benefit payable at age 55. Reduced early retirement benefits can be elected upon attainment of age 50.

*Law Enforcement:*

The Normal Service Retirement Benefit payable at age 55 or the Rule of 85, if earlier. Reduced early retirement benefit can be selected upon attainment of age 50.

### 5. Pre-Retirement Death Benefits:

Eligibility:

*Main System, National Guard and Law Enforcement:*

Three years of service.

*Judges:*

Five years of service.



## EXHIBIT V (continued)

### Benefit:

#### *Main System, National Guard and Law Enforcement:*

One of the following options:

- Lump sum payment of member's accumulated contributions with interest.
- The member's accrued benefit payable for 60 months to the surviving spouse.
- 50% of the member's accrued benefit (not reduced on account of age) payable for the surviving spouse's lifetime.
- Continuation portion of 100% joint and survivor annuity (only if participant was eligible for normal retirement).

#### *Judges:*

One of the following options:

- Lump sum payment of member's accumulated contributions with interest.
- 100% of the member's accrued benefit (not reduced on account of age) payable for the spouse's lifetime.

### Eligibility:

#### *Main System, Judges, National Guard and Law Enforcement:*

Not vested nor a surviving spouse.

### Benefit:

#### *Main System, Judges, National Guard and Law Enforcement:*

Lump sum payment of member's accumulated contributions with interest.

## **6. Refund of Member Contributions:**

Paid to terminated non-vested members and terminated vested members who chose refund in lieu of a monthly retirement benefit.

**EXHIBIT V (continued)**

**7. Accumulated Member Contributions:**

Member contributions accumulate with interest at the following rates:

<u>Time Period</u>	<u>Per Annum Interest Rate</u>
Through June 30, 1981	5.0%
July 1, 1981 to June 30, 1986	6.0%
After June 30, 1986	0.5% less than the actuarial interest rate assumption

**8. Standard and Optional Forms of Payment:**

Standard form of payment:

*Main System, National Guard and Law Enforcement:*

Monthly benefit for life with a refund to beneficiary at death of the remaining balance (if any) of accumulated member contributions.

*Judges:*

Monthly benefit for life, with 50% payable to an eligible survivor.

Optional forms of payment:

Life annuity (for Judges), 50% joint and survivor annuity (for Main System, National Guard and Law Enforcement), 100% joint and survivor annuity (with pop-up feature), five-year certain and life annuity, ten-year certain and life annuity, or a level Social Security income annuity.

**9. Final Average Salary:**

Average of the highest salary received by the member for any 36 consecutive months employed during the last 120 months of employment.

## EXHIBIT V (continued)

### 10. Contributions:

Contribution rates specified in the Century Code (except employer rate for National Guard and Law Enforcement); differ between permanent full-time employees and part-time temporary employees. Rates are as follows:

	<u>Full-Time Employees</u>	<u>Employer</u>
Main System	4.00%	4.12%
Judges	5.00%	14.52%
National Guard	4.00%	8.33%
Law Enforcement with prior Main service	4.00%	8.31%
Law Enforcement without prior Main service	4.00%	6.43%

Part-time employees in the Main System contribute 8.12%, with no employer contributions.

Effective January 1, 2000:

A member's account balance includes vested employer contributions equal to the member's contributions to the deferred compensation Plan under chapter 54-52.2. The vested employer contribution may not exceed:

1. For months one through 12 of service credit, \$25 or 1% of the member's monthly salary, whichever is greater.
2. For months 13 through 24 of service credit, \$25 or 2% of the member's monthly salary, whichever is greater.
3. For months 25 through 36 of service credit, \$25 or 3% of the member's monthly salary, whichever is greater.
4. For service exceeding 36 months, \$25 or 4% of the member's monthly salary, whichever is greater.
5. The vested employer contribution may not exceed 4% of the member's monthly salary.

Vested employer contributions are credited monthly to the member's account balance.

### 11. Rollovers:

The fund may accept rollovers from other qualified plans under rules adopted by the Board for the purchase of additional service credit.

## APPENDIX B: CENSUS TABLES

	Table
	<u>Designation</u>
I. Active Members	
(A) Number of active members grouped by nearest age and years of employment:	
Males	8-A
Females	8-B
All	8-C
(B) Number of active members grouped by nearest age and salary:	
Males	9-A
Females	9-B
All	9-C
II. Current Plan Pensions	
(A) Distribution of pensions awarded during the year by amount of benefit and type of pension:	
Males	10-A
Females	10-B
All	10-C
(B) Distribution of pensions awarded during the year by nearest age and type of pension:	
Males	11-A
Females	11-B
All	11-C
(C) Distribution of pensions in force by amount of benefit and type of pension:	
Males	12-A
Females	12-B
All	12-C
(D) Distribution of pensions in force by nearest age and type of pension:	
Males	13-A
Females	13-B
All	13-C
III. Special Prior Service Pensions	
(A) Distribution of pensions in force by amount of benefit:	
Males	14-A
Females	14-B
All	14-C
(B) Distribution of pensions in force by nearest age:	
Males	15-A
Females	15-B
All	15-C

TABLE 8-A

*Census of Members in Active Service on July 1, 2005  
by Nearest Age and Years of Employment in PERS*

*(Males - Main System, Judges, National Guard, and Law Enforcement)*

Nearest Age	Total	Under 5	Years of Employment										
			5-9	10-14	15-19	20-24	25-29	30-34	35 & Over				
Total	7,054	2,376	1,455	992	765	708	478	189	91				
Under 20	3	3	-	-	-	-	-	-	-	-	-	-	-
20-24	150	150	-	-	-	-	-	-	-	-	-	-	-
25-29	449	372	77	-	-	-	-	-	-	-	-	-	-
30-34	585	327	223	35	-	-	-	-	-	-	-	-	-
35-39	663	264	192	162	45	-	-	-	-	-	-	-	-
40-44	870	304	203	173	132	56	2	-	-	-	-	-	-
45-49	1,125	292	211	168	166	188	97	3	-	-	-	-	-
50-54	1,235	244	214	171	172	182	185	66	1	-	-	-	-
55-59	1,129	237	172	145	134	167	150	86	38	-	-	-	-
60-64	581	114	103	90	87	83	34	26	44	-	-	-	-
65-69	188	47	45	30	21	28	6	5	6	-	-	-	-
70-74	54	11	13	14	7	3	3	2	1	-	-	-	-
75 & Over	22	11	2	4	1	1	1	1	1	-	-	-	-

TABLE 8-B

*Census of Members in Active Service on July 1, 2005  
by Nearest Age and Years of Employment in PERS*

*(Females - Main System, Judges, National Guard, and Law Enforcement)*

Nearest Age	Total	Years of Employment									
		Under 5	5-9	10-14	15-19	20-24	25-29	30-34	35 & Over		
Total	10,877	4,100	2,407	1,484	1,184	903	540	189	70		
Under 20	2	2	-	-	-	-	-	-	-	-	-
20-24	205	203	2	-	-	-	-	-	-	-	-
25-29	674	589	85	-	-	-	-	-	-	-	-
30-34	803	506	263	33	1	-	-	-	-	-	-
35-39	980	502	253	162	62	1	-	-	-	-	-
40-44	1,624	647	397	236	194	142	8	-	-	-	-
45-49	2,021	630	506	297	205	219	157	7	-	-	-
50-54	2,057	523	433	349	289	184	177	99	3	-	-
55-59	1,488	300	282	237	255	199	124	50	41	-	-
60-64	739	130	120	121	138	130	57	25	18	-	-
65-69	201	43	49	40	22	24	12	6	5	-	-
70-74	69	21	14	8	17	2	3	1	3	-	-
75 & Over	14	4	3	1	1	2	2	1	1	-	-

**TABLE 8-C**

*Census of Members in Active Service on July 1, 2005  
by Nearest Age and Years of Employment in PERS*

*(All Members - Main System, Judges, National Guard, and Law Enforcement)*

Nearest Age	Total	Years of Employment									
		Under 5	5-9	10-14	15-19	20-24	25-29	30-34	35 & Over		
Total	17,931	6,476	3,862	2,476	1,949	1,611	1,018	378	161		
Under 20	5	5	-	-	-	-	-	-	-	-	-
20-24	355	353	2	-	-	-	-	-	-	-	-
25-29	1,123	961	162	-	-	-	-	-	-	-	-
30-34	1,388	833	486	68	1	-	-	-	-	-	-
35-39	1,643	766	445	324	107	1	-	-	-	-	-
40-44	2,494	951	600	409	326	198	10	-	-	-	-
45-49	3,146	922	717	465	371	407	254	10	-	-	-
50-54	3,292	767	647	520	461	366	362	165	4	-	-
55-59	2,617	537	454	382	389	366	274	136	79	-	-
60-64	1,320	244	223	211	225	213	91	51	62	-	-
65-69	389	90	94	70	43	52	18	11	11	-	-
70-74	123	32	27	22	24	5	6	3	4	-	-
75 & Over	36	15	5	5	2	3	3	2	1	-	-

TABLE 9-A

*Census of Members in Active Service on July 1, 2005  
by Nearest Age and Salary*

*(Males - Main System, Judges, National Guard, and Law Enforcement)*

Nearest Age	Total	Salary												
		Less than \$10,000	\$10,000- \$14,999	\$15,000- \$19,999	\$20,000- \$24,999	\$25,000- \$29,999	\$30,000- \$34,999	\$35,000- \$39,999	\$40,000- \$44,999	\$45,000- \$49,999	\$50,000 & Over			
Total	7,054	185	253	584	1,201	1,390	1,186	743	518	355	639			
Under 20	3	1	-	2	-	-	-	-	-	-	-	-	-	-
20-24	150	7	20	28	43	33	11	7	-	1	-	-	-	-
25-29	449	5	13	59	106	100	85	50	21	6	4			
30-34	585	6	13	55	117	141	113	56	42	22	20			
35-39	663	7	11	45	118	153	113	84	45	46	41			
40-44	870	21	24	72	156	191	130	77	72	44	83			
45-49	1,125	27	29	77	177	212	193	139	90	64	117			
50-54	1,235	18	26	89	190	235	233	137	90	81	136			
55-59	1,129	33	37	85	163	199	193	112	97	61	149			
60-64	581	21	35	45	92	97	90	65	46	23	67			
65-69	188	18	24	19	29	24	22	14	14	5	19			
70-74	54	11	17	4	8	4	2	2	1	2	3			
75 & Over	22	10	4	4	2	1	1	-	-	-	-			



**TABLE 9-B**

*Census of Members in Active Service on July 1, 2005  
by Nearest Age and Salary*

*(Females - Main System, Judges, National Guard, and Law Enforcement)*

Nearest Age	Total	Salary												
		Less than \$10,000	\$10,000-\$14,999	\$15,000-\$19,999	\$20,000-\$24,999	\$25,000-\$29,999	\$30,000-\$34,999	\$35,000-\$39,999	\$40,000-\$44,999	\$45,000-\$49,999	\$50,000 & Over			
Total	10,877	515	1,428	2,071	2,218	1,851	1,245	684	363	228	274			
Under 20	2	-	1	1	-	-	-	-	-	-	-	-	-	-
20-24	205	34	42	66	39	16	7	1	-	-	-	-	-	-
25-29	674	36	86	160	168	115	66	25	14	3	1			
30-34	803	45	83	129	168	158	111	51	25	20	13			
35-39	980	48	139	174	194	169	106	71	33	24	22			
40-44	1,624	88	225	298	320	265	204	95	56	29	44			
45-49	2,021	79	298	395	397	301	223	143	72	48	65			
50-54	2,057	84	230	370	407	361	273	132	80	54	66			
55-59	1,488	41	147	285	327	282	159	113	61	34	39			
60-64	739	26	110	133	146	152	78	44	16	15	19			
65-69	201	15	48	42	38	29	12	7	5	1	4			
70-74	69	16	14	15	12	3	6	2	-	-	1			
75 & Over	14	3	5	3	2	-	-	-	1	-	-			

**TABLE 9-C**

***Census of Members in Active Service on July 1, 2005  
by Nearest Age and Salary***

***(All Members - Main System, Judges, National Guard, and Law Enforcement)***

Nearest Age	Total	Salary													
		Less than \$10,000	\$10,000-700	\$10,000-1,681	\$15,000-2,655	\$20,000-3,419	\$25,000-3,241	\$30,000-2,431	\$35,000-1,427	\$40,000-881	\$45,000-583	\$50,000-913			
Total	17,931	700	1,681	2,655	3,419	3,241	2,431	1,427	881	583	913				
Under 20	5	1	1	3	-	-	-	-	-	-	-	-	-	-	-
20-24	355	41	62	94	82	49	18	8	-	-	-	8	-	1	-
25-29	1,123	41	99	219	274	215	151	75	35	9	5	75	35	9	5
30-34	1,388	51	96	184	285	299	224	107	67	42	33	107	67	42	33
35-39	1,643	55	150	219	312	322	219	155	78	70	63	172	128	73	127
40-44	2,494	109	249	370	476	456	334	172	128	73	127	282	162	112	182
45-49	3,146	106	327	472	574	513	416	282	162	112	182	269	170	135	202
50-54	3,292	102	256	459	597	596	506	269	170	135	202	225	158	95	188
55-59	2,617	74	184	370	490	481	352	225	158	95	188	109	62	38	86
60-64	1,320	47	145	178	238	249	168	109	62	38	86	21	19	6	23
65-69	389	33	72	61	67	53	34	21	19	6	23	4	1	2	4
70-74	123	27	31	19	20	7	8	4	1	2	4	-	-	-	-
75 & Over	36	13	9	7	4	1	1	-	1	-	-	-	1	-	-

**TABLE 10-A**

*Pensions Awarded During the Year Ended June 30, 2005  
by Type of Pension and Monthly Amount*

*(Males - Main System, Judges, National Guard, and Law Enforcement)*

Monthly Amount	Type of Pension				
	Total	Normal	Early	Disability	Rule of 85
Total	179	62	38	10	69
Under \$200	28	16	10	1	1
200-399	25	11	9	5	-
400-599	17	6	8	2	1
600-799	11	5	3	2	1
800-999	9	3	2	-	4
1,000-1,199	10	3	4	-	3
1,200-1,399	15	4	-	-	11
1,400-1,599	9	4	1	-	4
1,600-1,799	7	4	-	-	3
1,800-1,999	8	1	-	-	7
2,000-2,199	4	-	-	-	4
2,200-2,399	5	-	-	-	5
2,400-2,599	5	-	-	-	5
2,600-2,799	7	-	1	-	6
2,800-2,999	4	2	-	-	2
3,000-3,199	4	-	-	-	4
3,200-3,399	3	-	-	-	3
3,400-3,599	-	-	-	-	-
3,600-3,799	1	-	-	-	1
3,800-3,999	1	1	-	-	-
4,000-4,199	-	-	-	-	-
4,200-4,399	2	-	-	-	2
4,400-4,599	1	1	-	-	-
4,600-4,799	1	1	-	-	-
4,800-4,999	1	-	-	-	1
5,000 & Over	1	-	-	-	1

**TABLE 10-B**

*Pensions Awarded During the Year Ended June 30, 2005  
by Type of Pension and Monthly Amount*

*(Females - Main System, Judges, National Guard, and Law Enforcement)*

Monthly Amount	Type of Pension				
	Total	Normal	Early	Disability	Rule of 85
Total	195	55	54	10	76
Under \$200	33	20	12	-	1
200-399	31	8	18	4	1
400-599	31	12	15	3	1
600-799	18	5	5	3	5
800-999	19	7	2	-	10
1,000-1,199	14	1	1	-	12
1,200-1,399	10	-	-	-	10
1,400-1,599	11	1	1	-	9
1,600-1,799	9	-	-	-	9
1,800-1,999	9	-	-	-	9
2,000-2,199	3	1	-	-	2
2,200-2,399	2	-	-	-	2
2,400-2,599	-	-	-	-	-
2,600-2,799	1	-	-	-	1
2,800-2,999	2	-	-	-	2
3,000-3,199	-	-	-	-	-
3,200-3,399	1	-	-	-	1
3,400-3,599	-	-	-	-	-
3,600-3,799	-	-	-	-	-
3,800-3,999	1	-	-	-	1
4,000-4,199	-	-	-	-	-
4,200-4,399	-	-	-	-	-
4,400-4,599	-	-	-	-	-
4,600-4,799	-	-	-	-	-
4,800-4,999	-	-	-	-	-
5,000 & Over	-	-	-	-	-

TABLE 10-C

*Pensions Awarded During the Year Ended June 30, 2005  
by Type of Pension and Monthly Amount*

*(All Members - Main System, Judges, National Guard, and Law Enforcement)*

Monthly Amount	Type of Pension				
	Total	Normal	Early	Disability	Rule of 85
Total	374	117	92	20	145
Under \$200	61	36	22	1	2
200-399	56	19	27	9	1
400-599	48	18	23	5	2
600-799	29	10	8	5	6
800-999	28	10	4	-	14
1,000-1,199	24	4	5	-	15
1,200-1,399	25	4	-	-	21
1,400-1,599	20	5	2	-	13
1,600-1,799	16	4	-	-	12
1,800-1,999	17	1	-	-	16
2,000-2,199	7	1	-	-	6
2,200-2,399	7	-	-	-	7
2,400-2,599	5	-	-	-	5
2,600-2,799	8	-	1	-	7
2,800-2,999	6	2	-	-	4
3,000-3,199	4	-	-	-	4
3,200-3,399	4	-	-	-	4
3,400-3,599	-	-	-	-	-
3,600-3,799	1	-	-	-	1
3,800-3,999	2	1	-	-	1
4,000-4,199	-	-	-	-	-
4,200-4,399	2	-	-	-	2
4,400-4,599	1	1	-	-	-
4,600-4,799	1	1	-	-	-
4,800-4,999	1	-	-	-	1
5,000 & Over	1	-	-	-	1

**TABLE 11-A**

*Pensions Awarded During the Year Ended June 30, 2005  
by Type of Pension and Nearest Age*

*(Males - Main System, Judges, National Guard, and Law Enforcement)*

Nearest Age	Total	Type of Pension			
		Normal	Early	Disability	Rule of 85
Total	179	62	38	10	69
Under 50	-	-	-	-	-
50-54	5	-	-	-	5
55-59	34	-	8	5	21
60-64	73	-	30	4	39
65-69	48	45	-	-	3
70-74	14	13	-	-	1
75 & Over	5	4	-	1	-

**TABLE 11-B**

*Pensions Awarded During the Year Ended June 30, 2005  
by Type of Pension and Nearest Age*

*(Females - Main System, Judges, National Guard, and Law Enforcement)*

Nearest Age	Total	Type of Pension			
		Normal	Early	Disability	Rule of 85
Total	195	55	54	10	76
Under 50	3	-	-	2	1
50-54	11	-	-	1	10
55-59	35	-	7	6	22
60-64	87	-	47	1	39
65-69	43	39	-	-	4
70-74	13	13	-	-	-
75 & Over	3	3	-	-	-

**TABLE 11-C**

*Pensions Awarded During the Year Ended June 30, 2005  
by Type of Pension and Nearest Age*

*(All Members - Main System, Judges, National Guard, and Law Enforcement)*

Nearest Age	Total	Type of Pension			
		Normal	Early	Disability	Rule of 85
Total	374	117	92	20	145
Under 50	3	-	-	2	1
50-54	16	-	-	1	15
55-59	69	-	15	11	43
60-64	160	-	77	5	78
65-69	91	84	-	-	7
70-74	27	26	-	-	1
75 & Over	8	7	-	1	-



TABLE 12-A

*Current Plan Pensions in Force on July 1, 2005  
by Type of Pension and Monthly Amount*

*(Males - Main System, Judges, National Guard, and Law Enforcement)*

Monthly Amount	Total	Type of Pension			
		Normal	Early	Disability	Service*
Total	2,385	821	577	149	838
Under \$200	268	154	94	12	8
200-399	410	173	167	62	8
400-599	342	133	150	48	11
600-799	216	99	82	15	20
800-999	175	59	37	8	71
1,000-1,199	191	57	20	2	112
1,200-1,399	167	33	9	-	125
1,400-1,599	109	22	5	1	81
1,600-1,799	100	21	2	-	77
1,800-1,999	79	15	3	-	61
2,000-2,199	66	9	1	1	55
2,200-2,399	65	8	4	-	53
2,400-2,599	47	4	-	-	43
2,600-2,799	43	8	1	-	34
2,800-2,999	24	8	-	-	16
3,000-3,199	20	1	-	-	19
3,200-3,399	18	1	1	-	16
3,400-3,599	7	-	1	-	6
3,600-3,799	5	2	-	-	3
3,800-3,999	8	2	-	-	6
4,000-4,199	4	1	-	-	3
4,200-4,399	9	4	-	-	5
4,400-4,599	2	1	-	-	1
4,600-4,799	4	3	-	-	1
4,800-4,999	2	1	-	-	1
5,000 & Over	4	2	-	-	2

\* Includes Rule of 85, Rule of 88, and Rule of 90.

**TABLE 12-B**

*Current Plan Pensions in Force on July 1, 2005  
by Type of Pension and Monthly Amount*

*(Females - Main System, Judges, National Guard, and Law Enforcement)*

Monthly Amount	Type of Pension				
	Total	Normal	Early	Disability	Service*
Total	2,916	966	1,163	176	611
Under \$200	532	199	315	14	4
200-399	846	297	473	74	2
400-599	530	205	248	58	19
600-799	305	121	82	25	77
800-999	231	57	27	4	143
1,000-1,199	155	35	13	1	106
1,200-1,399	104	24	3	-	77
1,400-1,599	68	11	1	-	56
1,600-1,799	55	8	1	-	46
1,800-1,999	29	1	-	-	28
2,000-2,199	28	3	-	-	25
2,200-2,399	11	1	-	-	10
2,400-2,599	4	-	-	-	4
2,600-2,799	6	-	-	-	6
2,800-2,999	4	-	-	-	4
3,000-3,199	1	1	-	-	-
3,200-3,399	3	1	-	-	2
3,400-3,599	1	-	-	-	1
3,600-3,799	1	1	-	-	-
3,800-3,999	2	1	-	-	1
4,000-4,199	-	-	-	-	-
4,200-4,399	-	-	-	-	-
4,400-4,599	-	-	-	-	-
4,600-4,799	-	-	-	-	-
4,800-4,999	-	-	-	-	-
5,000 & Over	-	-	-	-	-

\* Includes Rule of 85, Rule of 88, and Rule of 90.

TABLE 12-C

*Current Plan Pensions in Force on July 1, 2005  
by Type of Pension and Monthly Amount*

*(All Members - Main System, Judges, National Guard, and Law Enforcement)*

Monthly Amount	Type of Pension				
	Total	Normal	Early	Disability	Service*
Total	5,301	1,787	1,740	325	1,449
Under \$200	800	353	409	26	12
200-399	1,256	470	640	136	10
400-599	872	338	398	106	30
600-799	521	220	164	40	97
800-999	406	116	64	12	214
1,000-1,199	346	92	33	3	218
1,200-1,399	271	57	12	-	202
1,400-1,599	177	33	6	1	137
1,600-1,799	155	29	3	-	123
1,800-1,999	108	16	3	-	89
2,000-2,199	94	12	1	1	80
2,200-2,399	76	9	4	-	63
2,400-2,599	51	4	-	-	47
2,600-2,799	49	8	1	-	40
2,800-2,999	28	8	-	-	20
3,000-3,199	21	2	-	-	19
3,200-3,399	21	2	1	-	18
3,400-3,599	8	-	1	-	7
3,600-3,799	6	3	-	-	3
3,800-3,999	10	3	-	-	7
4,000-4,199	4	1	-	-	3
4,200-4,399	9	4	-	-	5
4,400-4,599	2	1	-	-	1
4,600-4,799	4	3	-	-	1
4,800-4,999	2	1	-	-	1
5,000 & Over	4	2	-	-	2

\* Includes Rule of 85, Rule of 88, and Rule of 90.

**TABLE 13-A**

*Current Plan Pensions in Force on July 1, 2005  
by Type of Pension and Nearest Age*

*(Males - Main System, Judges, National Guard, and Law Enforcement)*

Nearest Age	Total	Type of Pension			
		Normal	Early	Disability	Service*
Total	2,385	821	577	149	838
Under 50	16	-	-	16	-
50-54	31	-	-	18	13
55-59	132	-	16	33	83
60-64	285	-	81	24	180
65-69	519	119	124	20	256
70-74	516	181	130	22	183
75-79	405	206	110	8	81
80-84	281	166	67	7	41
85-89	151	106	43	1	1
90 & Over	49	43	6	-	-

\* Includes Rule of 85, Rule of 88, and Rule of 90.

\* Includes Rule of 85, Rule of 88, and Rule of 90.

**TABLE 13-B**

*Current Plan Pensions in Force on July 1, 2005  
by Type of Pension and Nearest Age*

*(Females - Main System, Judges, National Guard, and Law Enforcement)*

Nearest Age	Total	Type of Pension			
		Normal	Early	Disability	Service*
Total	2,916	966	1,163	176	611
Under 50	27	-	-	26	1
50-54	41	-	-	24	17
55-59	124	-	34	33	57
60-64	347	-	157	30	160
65-69	689	144	308	30	207
70-74	596	203	264	20	109
75-79	492	228	217	4	43
80-84	336	193	117	9	17
85-89	197	139	58	-	-
90 & Over	67	59	8	-	-

\* Includes Rule of 85, Rule of 88, and Rule of 90.

**TABLE 13-C**

*Current Plan Pensions in Force on July 1, 2005  
by Type of Pension and Nearest Age*

*(All Members - Main System, Judges, National Guard, and Law Enforcement)*

Nearest Age	Total	Type of Pension			
		Normal	Early	Disability	Service*
Total	5,301	1,787	1,740	325	1,449
Under 50	43	-	-	42	1
50-54	72	-	-	42	30
55-59	256	-	50	66	140
60-64	632	-	238	54	340
65-69	1,208	263	432	50	463
70-74	1,112	384	394	42	292
75-79	897	434	327	12	124
80-84	617	359	184	16	58
85-89	348	245	101	1	1
90 & Over	116	102	14	-	-

\* Includes Rule of 85, Rule of 88, and Rule of 90.

**TABLE 14-A**

*Special Prior Service Pensions in Force on July 1, 2005  
by Monthly Amount*

*(Males)*

Monthly Amount	Total
Total	15
Under \$20	2
20-39	5
40-59	1
60-79	2
80-99	3
100-119	1
120-139	1
140-159	-
160 & Over	-

**TABLE 14-B**

*Special Prior Service Pensions in Force on July 1, 2005  
by Monthly Amount*

*(Females)*

Monthly Amount	Total
Total	48
Under \$20	9
20-39	16
40-59	10
60-79	7
80-99	3
100-119	1
120-139	1
140-159	-
160 & Over	1



**TABLE 14-C**

*Special Prior Service Pensions in Force on July 1, 2005  
by Monthly Amount*

*(All Members)*

<u>Monthly Amount</u>	<u>Total</u>
Total	<u>63</u>
Under \$20	11
20-39	21
40-59	11
60-79	9
80-99	6
100-119	2
120-139	2
140-159	-
160 & Over	1

**TABLE 15-A**

*Special Prior Service Pensions in Force on July 1, 2005  
by Nearest Age*

*(Males)*

---

Nearest Age	Total
Total	15
85-89	3
90-94	4
95-99	8
100 & Over	-

---

**TABLE 15-B**

*Special Prior Service Pensions in Force on July 1, 2005  
by Nearest Age*

*(Females)*

---

<u>Nearest Age</u>	<u>Total</u>
Total	48
85-89	4
90-94	24
95-99	19
100 & Over	1

---

**TABLE 15-C**

***Special Prior Service Pensions in Force on July 1, 2005  
by Nearest Age***

***(All Members)***

---

<u>Nearest Age</u>	<u>Total</u>
Total	63
85-89	7
90-94	28
95-99	27
100 & Over	1

---

**NORTH DAKOTA HIGHWAY PATROLMEN'S  
RETIREMENT SYSTEM**

*Actuarial Valuation Report as of July 1, 2005*

**Copyright © 2005**

**The Segal Group, Inc.,  
The Parent of The Segal Company  
All Rights Reserved**



**THE SEGAL COMPANY**

6300 S. Syracuse Way Suite 750 Englewood, CO 80111-7302  
T 303.714.9900 F 303.714.9990 www.segalco.com

October 11, 2005

**Board Members**

North Dakota Public Employees Retirement System  
Bismarck, North Dakota

**Members of the Board:**

It is a pleasure to submit this report that presents the results of our actuarial valuation of the North Dakota Highway Patrolmen's Retirement System as of July 1, 2005.

The report's actuarial content was prepared in accordance with generally accepted actuarial principles under our direction. The valuation was:

- Prepared by qualified actuaries who are members of the American Academy of Actuaries and who have experience in performing valuations for public retirement systems;
- Prepared in accordance with standards of practice prescribed by the Actuarial Standards Board; and
- Composed of actuarial calculations that were performed by qualified actuaries in accordance with accepted procedures as defined by the Actuarial Standards Board, based on the current provisions of the Retirement System and on actuarial assumptions and methods that are internally consistent and reasonably based on the actual experience of the System.

We wish to thank the Retirement Office staff for their cooperation in providing us with the participant census data and financial information necessary to prepare the valuation.

**Benefits, Compensation and HR Consulting** ATLANTA BOSTON CHICAGO CLEVELAND DENVER HARTFORD HOUSTON LOS ANGELES MINNEAPOLIS  
NEW ORLEANS NEW YORK PHILADELPHIA PHOENIX SAN FRANCISCO SEATTLE TORONTO WASHINGTON, DC



**Multinational Group of Actuaries and Consultants** AMSTERDAM BARCELONA GENEVA HAMBURG JOHANNESBURG LONDON MELBOURNE  
MEXICO CITY OSLO PARIS

North Dakota Highway Patrolmen's Retirement System  
October 11, 2005  
Page 2

We look forward to meeting with you to review this report and to answering any questions you may have.

Sincerely,



Leslie L. Thompson, FSA, MAAA, EA  
Senior Vice President and Actuary



Brad Ramirez, ASA, MAAA  
Actuarial Associate

cc: Sparb Collins

143364/01640.001

## TABLE OF CONTENTS

	<b>Page</b>
I. INTRODUCTION .....	1
II. HIGHLIGHTS .....	2
III. MEMBER CHARACTERISTICS.....	3
IV. BENEFIT EXPERIENCE .....	6
V. ASSETS.....	9
VI. RESULTS OF ACTUARIAL VALUATION .....	19
VII. FUNDING STATUS .....	21
VIII. ACTUARIAL ASSUMPTIONS AND COST METHODS .....	24
ACTUARIAL VALUATION CERTIFICATE.....	(i)



## I. INTRODUCTION

This report summarizes the results of our actuarial valuation as of July 1, 2005. The employer contribution requirements presented in Section VI of the report are based on:

1. The present provisions of the North Dakota Highway Patrolmen's Retirement System;
2. The characteristics of covered active members, inactive non-retired members, pensioners and beneficiaries as of July 1, 2005;
3. The assets of the System as of June 30, 2005; and
4. Actuarial assumptions regarding investment earnings, salary increases, and rates of retirement, disability, death, etc.

The purpose of the actuarial valuation is to determine the contribution sufficient to meet the long-term obligations to the members covered by the North Dakota Highway Patrolmen's Retirement System in accordance with its benefit provisions.

If each of the actuarial assumptions is exactly fulfilled, the true actuarial cost of the System will equal the cost projected by the actuarial calculations. However, this result is never achieved because of the length of time over which projections are made and because of the great number of variables that can affect the emerging costs. The cost, expressed as a percentage of payroll, will increase if the System experiences net actuarial losses and will decrease if the System experiences net actuarial gains.

## II. HIGHLIGHTS

- The present rate of contributions is not sufficient to meet the actuarially determined requirement for 2005-2006, based upon the actuarial assumptions and financing objectives approved by the Board.
- The PERS Board should continue to review these results and projected future performance to determine appropriate measures to mitigate the difference between the actuarial and statutory contribution rates.
- The employer actuarial contribution requirement for 2005-2006 is \$933,347, or 17.61% of payroll. The statutory rate of 16.70% of payroll is less than the actuarially determined rate by 0.91% of payroll. Last year, the actuarially determined rate of 19.03% exceeded the statutory rate of payroll by 2.33% of payroll. The contribution rate deficit this year is primarily attributable to the accumulated investment losses in 2001 and 2002.
- The return on the market value of assets for 2004-2005 was 14.25%, and was 16.77% for the previous year.
- The return on the actuarial value of assets for 2004-2005 was 4.58% compared to the investment return assumption of 8.00%. As a result, the System experienced an investment loss of approximately \$1.3 million.
- The ratio of the actuarial value of assets to the market value of assets was 86.3%. Last year, this ratio was 94.4%.
- A comparison of this year's funded ratio to the prior year is as follows:

	July 1, 2005	July 1, 2004
Actuarial Value of Assets	\$40,696,900	\$39,957,300
Actuarial Accrued Liability	46,284,400	44,468,700
Funded Ratio	87.9%	89.9%

- There were no changes in actuarial assumptions since the preceding valuation.
- There were no changes in plan provisions since the preceding valuation.
- As a result of the actuarial audit by GRS, the Board adopted a change in normal cost methodology that matches the method used by GRS. The actuarial accrued liability and present value of benefits were unaffected by this change. Under the prior method, the actuarially determined contribution rate would have been 20.44%.
- If the Board accepts the experience study recommendations for the next valuation, there may be an increase in plan costs.

### III. MEMBER CHARACTERISTICS

Last year, as of July 1, 2004, there were 132 covered active members, two terminated members eligible for a deferred vested benefit, and three terminated members eligible for a refund of their accumulated contributions. During the year, five members terminated employment, one member on a leave of absence returned to work, and four members retired (including one disabled). There was one new member in fiscal year 2004-2005. Hence, there were 125 active Highway Patrolmen covered under the provisions of the System as of July 1, 2005. The significant age, service, salary and accumulated contribution information for these members is summarized below along with comparative figures from the preceding actuarial valuation.

	<u>As of July 1, 2005</u>	<u>As of July 1, 2004</u>
Number of active members		
Eligible for immediate retirement benefits	16	16
Vested (not eligible for immediate retirement)	56	49
Non-vested	<u>53</u>	<u>67</u>
Total*	125	132
Average age	38.4	37.7
Average years of service (excluding service before transfer)	12.3	11.6
Average annual salary	\$42,393	\$40,857
Average accumulated contributions	77,837	70,464

The average service increased by 0.7 years since last year. For the 123 members continuing in active service from last year, average salaries increased by 3.3%. Distributions of active employees by age, service (excluding service before transfer), and salary are presented in Tables 1 and 2.

Four members from the Highway Patrol continue to be active in the Main System; 14 members from the Main System are active members in the Highway Patrol. Liabilities for these members are carried in both systems based on their service in that system.

Two terminated members are eligible for a deferred vested benefit and two terminated members are due a refund.

---

\* Excludes four members with split service in the Highway Patrolmen's System and the Main System, and currently in the Main System.

**TABLE I**

***Census of Members in Active Service on July 1, 2005  
by Nearest Age and Years of Employment***

Nearest Age	Total	Years of Employment									
		Under 5	5 - 9	10 - 14	15 - 19	20 - 24	25 & Over				
Total	125	34	23	24	17	12	15				
20 - 24	7	7	-	-	-	-	-				
25 - 29	18	14	4	-	-	-	-				
30 - 34	24	9	12	3	-	-	-				
35 - 39	22	2	6	13	1	-	-				
40 - 44	22	1	-	7	12	2	-				
45 - 49	17	1	-	-	4	8	4				
50 - 54	15	-	1	1	-	2	11				
55 & over	-	-	-	-	-	-	-				

TABLE 2

*Census of Members in Active Service on July 1, 2005  
by Nearest Age and Actual Salary*

Nearest Age	Total	Actual Salary													
		Less than \$30,000	\$30,000- \$32,999	\$33,000- \$35,999	\$36,000- \$38,999	\$39,000- \$41,999	\$42,000- \$44,999	\$45,000- \$47,999	\$48,000 & Over						
Total	125	2	20	13	19	33	15	7	16						
20 - 24	7	-	7	-	-	-	-	-	-	-	-	-	-	-	-
25 - 29	18	-	9	5	4	-	-	-	-	-	-	-	-	-	-
30 - 34	24	-	2	7	10	4	1	-	-	-	-	-	-	-	-
35 - 39	22	1	1	1	3	11	3	1	1	1	1	1	1	1	1
40 - 44	22	-	1	-	1	7	4	5	4	5	4	5	4	4	4
45 - 49	17	1	-	-	-	6	3	1	1	1	1	1	1	1	1
50 - 54	15	-	-	-	1	5	4	-	-	-	-	-	-	-	-
55 & over	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

#### IV. BENEFIT EXPERIENCE

There were 71 pensioners (including two disableds) and 19 surviving spouses receiving benefits as of July 1, 2004. During the year ended June 30, 2005, four members were awarded retirement pensions (including one disability), four retirees with beneficiaries died, and one beneficiary died. Therefore, there were 70 pensioners (including three disableds) and 22 surviving spouses receiving benefits as of July 1, 2005. Key statistics on pensioners and beneficiaries are shown below.

	<u>July 1, 2005</u>	<u>July 1, 2004</u>
Number of pensioners and beneficiaries	92	90
Annualized benefits in force	\$2,451,578	\$2,328,444
Average monthly benefit	\$2,221	\$2,156
Average age*	64.3	66.3

Tables 3 and 4 summarize the census data for pensioners and beneficiaries. In the year ended June 30, 2005, benefit payments totaled \$2,447,165, including refund payments of \$95,601. In the year ended June 30, 2004, benefit payments were \$2,222,645, including refund payments of \$34,411.

---

\* July 1, 2005 amount calculated using beneficiary date of birth, where applicable. July 1, 2004 amount calculated using pensioner date of birth for all participants.

**TABLE 3**

*Pensions in Force on July 1, 2005  
by Type of Recipient and Monthly Amount*

Monthly Amount	Total	Pensioner	Beneficiary	Disabled
Total	92	67	22	3
Under \$ 200	3	-	3	-
200 - 399	7	1	6	-
400 - 599	2	2	-	-
600 - 799	2	-	2	-
800 - 999	6	-	6	-
1,000 - 1,199	4	1	3	-
1,200 - 1,399	2	1	1	-
1,400 - 1,599	2	-	1	1
1,600 - 1,799	2	2	-	-
1,800 - 1,999	1	1	-	-
2,000 - 2,199	6	5	-	1
2,200 - 2,399	7	6	-	1
2,400 - 2,599	10	10	-	-
2,600 - 2,799	11	11	-	-
2,800 - 2,999	5	5	-	-
3,000 - 3,199	7	7	-	-
3,200 - 3,399	2	2	-	-
3,400 - 3,599	5	5	-	-
3,600 - 3,799	1	1	-	-
3,800 & over	7	7	-	-

**TABLE 4**

*Pensions in Force on July 1, 2005  
by Type of Recipient and Nearest Age*

Nearest Age	Total	Pensioner	Beneficiary	Disabled
Total	92	67	22	3
Under 55	11	7	1	3
55 - 59	17	15	2	-
60 - 64	14	12	2	-
65 - 69	19	15	4	-
70 - 74	13	9	4	-
75 - 79	12	6	6	-
80 - 84	4	2	2	-
85 - 89	2	1	1	-
90 & over	-	-	-	-



## V. ASSETS

### *Market Value of Assets*

The combined market value of net assets of the North Dakota Public Employees Retirement System (PERS) and the Highway Patrolmen's Retirement System (HPRS) was \$1,480,185,590 as of June 30, 2005, compared to \$1,309,271,534 last year. This year's combined market value represents an increase of 13.05% over the market value one year earlier.

The market value of net assets attributable to the Highway Patrolmen's Retirement System as of July 1, 2005 was \$47,179,197 compared to \$42,309,251 as of July 1, 2004. The rate of return on the market value basis for the HPRS Fund was 11.51% for the year ended June 30, 2005.

### *Actuarial Value of Assets*

The actuarial value of assets are determined as follows:

Market appreciation and depreciation are spread over five years beginning with the year of occurrence. Interest and dividends are recognized immediately. This procedure results in recognition of all changes in market value over a five-year period.

The above procedure is applied to the combined assets of PERS and HPRS Retirement Income Funds to determine the combined actuarial value of assets. The combined actuarial value was \$1,276,811,003 as of June 30, 2005. The determination of the combined actuarial asset value is shown in Table 5. This table shows that there is approximately \$203 million of appreciation that will be recognized in future years.

Table 6 summarizes the combined investment results over the previous ten-year period. Over this period, the earnings of \$763,753,100 on an actuarial value basis represented an average annual return of 8.91%. For the 2004-2005 year, the actuarial rate of return on the combined assets was 4.36%.

The total actuarial value of assets is allocated to PERS and HPRS in proportion to the reported market value of assets. This allocation is illustrated in Table 7 and results in an actuarial value of assets for HPRS as of July 1, 2005 of \$40,696,868. Last year's actuarial value of assets was \$39,957,321. On an actuarial basis, the rate of return on the HPRS Fund was 4.58% for the year ended June 30, 2005.

Chart 1 on page 12 is a graph showing the historical asset values for the HPRS Fund on both an actuarial and market value basis. A summary of income and disbursements for 2005 and 2004 on the actuarial value basis are given in Table 8 for HPRS. The progress of the HPRS Fund for the last ten years is provided in Table 9. It shows that assets have increased from year to year, although the amount of the increase has varied with fluctuations in investment income. Contributions and benefit payments have increased consistently over the period.

A picture of the financial development of the HPRS Fund over the last ten years is provided in Chart 2 on page 17. It shows that benefit payments and expenses continue to grow at a faster pace than contributions. However, over the long term, the excess of contributions over benefit payments and expenses, along with net investment income, served to increase the assets of the System.

Investment results on the actuarial basis are used to determine whether investment experience is meeting the System's actuarially assumed return. They do not, however, necessarily indicate the relative success of the System's investment program. Comparisons of performance with other funds, investment institutions, and market indices are generally based on rates of return that reflect market changes in full.

***Investment Return***

The investment returns for the last ten years for the combined fund are as follows:

<b>Year Ending June 30</b>	<b>Market Value</b>	<b>Actuarial Value</b>
1996	15.78	11.65
1997	19.90	13.14
1998	15.65	14.02
1999	10.88	14.73
2000	9.43	13.71
2001	(4.47)	9.36
2002	(6.94)	3.91
2003	5.19	2.18
2004	16.65	3.16
2005	14.17	4.36

The above values demonstrate the fact that the volatility of market value returns is reduced by using an actuarial value of assets. Chart 3 on page 18 illustrates this smoothing effect. By using an actuarial value that reduces the year-to-year fluctuations in investment return, year-to-year fluctuations in contribution requirements are minimized.

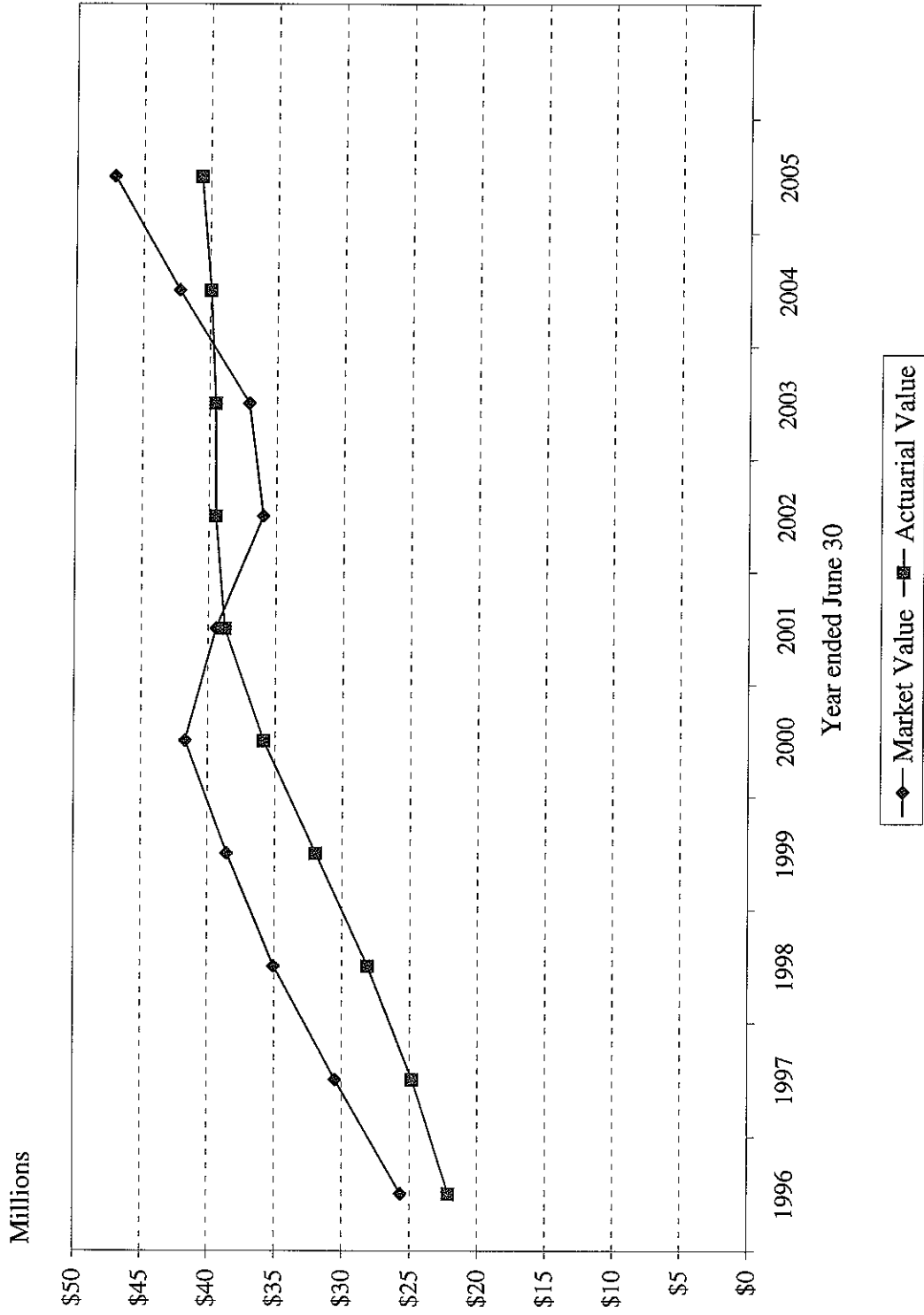
Investment return rates on the market value basis included all capital appreciation and depreciation. The returns on the actuarial value reflect only a portion of the capital appreciation and depreciation based on the adopted asset valuation method.

**TABLE 5**

*Determination of Actuarial Value of Assets  
(for PERS and HPRS) as of June 30, 2005 and 2004*

<u>Year Ending</u>	<u>Total Appreciation (Depreciation)</u>	<u>Of Total Appreciation</u>			
		<u>Percent Deferred</u>	<u>Amount Deferred</u>	<u>Percent Deferred</u>	<u>Amount Deferred</u>
June 30, 2001	\$(96,066,919)	0%	\$0	20%	\$(19,213,384)
June 30, 2002	(115,940,982)	20%	(23,188,196)	40%	(46,376,393)
June 30, 2003	22,232,141	40%	8,892,856	60%	13,339,285
June 30, 2004	156,289,529	60%	93,773,717	80%	125,031,623
June 30, 2005	154,870,262	80%	<u>123,896,210</u>	N/A	<u>0</u>
(a) Total Deferred as of Valuation Date			\$203,374,587		\$72,781,131
(b) Total Appreciation (Depreciation) for last five Plan Years			121,384,031		36,990,976
(c) Write-Up/(Down) Amount for the year - equals 20% of (b)			24,276,806		7,398,195
			<u>July 1, 2005</u>		<u>July 1, 2004</u>
Market Value of Assets			\$1,480,185,590		\$1,309,271,534
Less: Deferred Appreciation (Depreciation)			<u>203,374,587</u>		<u>72,781,131</u>
Actuarial Value of Assets			\$1,276,811,003		\$1,236,490,403
Actuarial Value as a Percent of Market Value			86.26%		94.44%

Chart 1  
Value of Assets (HPRS)



**TABLE 6***Summary of Combined Investment Results for PERS and HPRS on Actuarial Value of Assets*

Year Ended June 30	Net Interest and Dividend Income*		Other Income**		Total Net Investment Income	
	Amount	Yield	Amount	Yield	Amount	Yield
1996	\$24,776,500	4.32%	\$42,002,100	7.33%	66,778,600	11.65%
1997	23,919,600	3.73	60,428,700	9.41	84,348,300	13.14
1998	29,988,300	4.13	71,787,700	9.89	101,776,000	14.02
1999	31,722,100	3.84	89,864,100	10.89	121,586,200	14.73
2000	36,367,600	3.88	92,244,700	9.83	128,612,300	13.71
2001	41,086,800	3.89	57,734,900	5.47	98,821,700	9.36
2002	35,077,400	3.06	9,694,500	0.85	44,771,900	3.91
2003	33,595,900	2.84	(7,793,200)	(0.66)	25,802,700	2.18
2004	30,464,800	2.54	7,398,200	0.62	37,863,000	3.16
2005	29,115,600	2.38	24,276,800	1.98	53,392,400	4.36
<b>Total for Last Ten Years</b>	<b>\$316,114,600</b>		<b>\$447,638,500</b>		<b>\$763,753,100</b>	
<b>Average Yield for last Ten Years***</b>				<b>8.91%</b>		

\* Net of investment expenses.

\*\* Includes write-up (down).

\*\*\* Each year's yield weighted by average fund value in that year.

**TABLE 7**

*Allocation of Combined (PERS and HPRS) Actuarial Value of Assets*

	July 1, 2005		July 1, 2004	
	<u>Market Value</u>	<u>Actuarial Value</u>	<u>Market Value</u>	<u>Actuarial Value</u>
PERS Main System	\$1,403,066,411	\$1,210,287,848	\$1,241,258,383	\$1,172,258,036
PERS Judges	25,165,175	21,707,529	21,987,431	20,765,171
PERS National Guard	1,693,912	1,461,172	1,465,277	1,383,824
PERS Law Enforcement with prior Main service	3,032,184	2,615,568	2,239,134	2,114,663
PERS Law Enforcement without prior Main service	<u>48,711</u>	<u>42,018</u>	<u>12,058</u>	<u>11,388</u>
PERS Combined	\$1,433,006,393	\$1,236,114,135	\$1,266,962,283	\$1,196,533,082
Highway Patrol	<u>47,179,197</u>	<u>40,696,868</u>	<u>42,309,251</u>	<u>39,957,321</u>
Total	\$1,480,185,590	\$1,276,811,003	\$1,309,271,534	\$1,236,490,403

*Note:* Allocation of the actuarial value of assets is in proportion to the market value of assets.

**TABLE 8**

*Summary Statement of Income and Disbursements (HPRS Fund)  
for the Years Ended June 30, 2005 and 2004  
(Actuarial Value Basis)*

	<u>June 30, 2005</u>	<u>June 30, 2004</u>
Contribution Income:		
Employer Contributions	\$ 867,803	\$ 844,241
Member Contributions	<u>535,233</u>	<u>520,700</u>
Total Contribution Income	\$ 1,403,036	\$ 1,364,941
Less: Administrative Expenses	<u>(16,058)</u>	<u>(16,562)</u>
Net Contribution Income	<u>\$ 1,386,978</u>	<u>\$ 1,348,379</u>
Investment Income:		
Interest and Dividends	\$ 1,174,622	\$ 1,151,807
Less: Investment Expenses	<u>(236,599)</u>	<u>(155,729)</u>
Net Interest and Dividends	\$ 938,023	\$ 996,078
Write-up of Assets	<u>861,711</u>	<u>272,002</u>
Net Investment Income	<u>\$ 1,799,734</u>	<u>\$ 1,268,080</u>
Total Income Available for Benefit Payments and Reserves	<u>\$ 3,186,712</u>	<u>\$ 2,616,459</u>
Benefit Payments:		
Pension Benefits	\$ (2,351,564)	\$ (2,188,234)
Refunds	<u>(95,601)</u>	<u>(34,411)</u>
Total Benefit Payments	<u>\$ (2,447,165)</u>	<u>\$ (2,222,645)</u>
Addition to Reserve for Future Benefit Payments	\$ 739,547	\$ 393,814
Actuarial Value of Assets, Start of Year	<u>39,957,321</u>	<u>39,563,507</u>
Actuarial Value of Assets, End of Year	<u>\$ 40,696,868</u>	<u>\$ 39,957,321</u>

**TABLE 9**

***Progress of the HPRS Fund through June 30, 2005***  
*(Actuarial Value Basis)*

Year Ended June 30	Employer Contributions	Member Contributions	Administrative Expenses	Net Investment Income	Benefit Payments	Fund at End of Year
1995	-	-	-	-	-	\$19,968,250
1996	\$621,080	\$383,061	\$15,161	\$2,380,413	\$1,181,311	22,156,332
1997	641,179	395,459	15,710	2,939,053	1,257,853	24,858,460
1998	698,132	430,585	12,989	3,502,484	1,329,615	28,147,057
1999	717,357	442,441	12,966	4,161,006	1,458,424	31,996,471
2000	741,089	457,079	13,821	4,331,244	1,635,596	35,876,466
2001	788,125	486,332	14,482	3,321,908	1,671,297	38,787,052
2002	814,035	501,850	15,919	1,467,287	2,050,607	39,503,698
2003	833,074	513,812	16,469	792,875	2,063,483	39,563,507
2004	844,241	520,700	16,562	1,268,080	2,222,645	39,957,321
2005	867,803	535,233	16,058	1,799,734	2,447,165	40,696,868
Total for last ten years	\$7,566,115	\$4,666,552	\$150,137	\$25,964,084	\$17,317,996	



Chart 2  
Income and Disbursements for HPRS

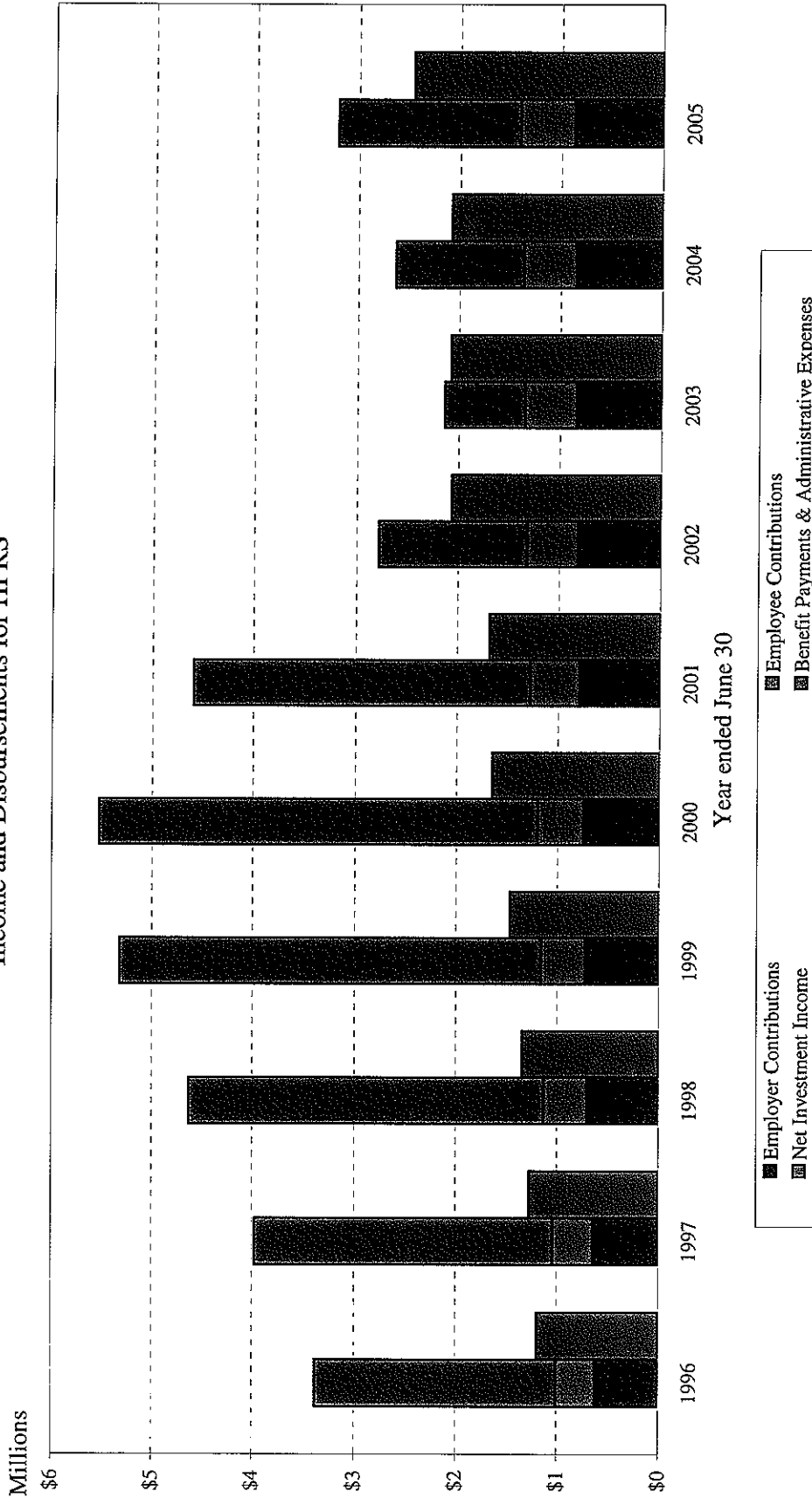
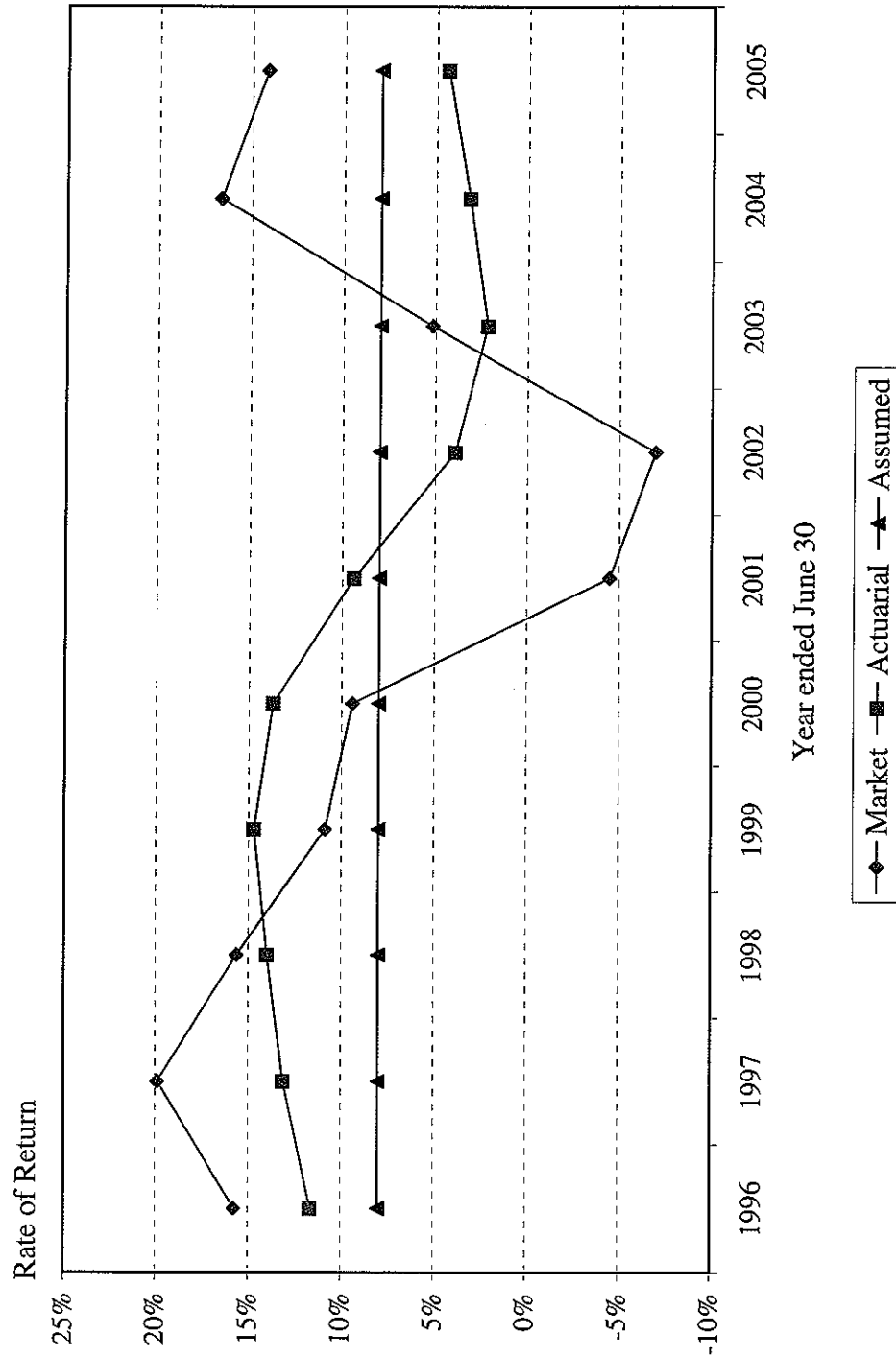


Chart 3  
 Investment Returns  
 (PERS and HPRS Combined)



## VI. RESULTS OF ACTUARIAL VALUATION

The contribution requirement consists of the normal cost, administrative expense allowance, plus the cost of amortizing the unfunded actuarial accrued liability over a scheduled period of years. The Board has adopted an open amortization period of 20 years with increasing payments. The calculated employer contribution requirements on this basis for fiscal year 2005-2006 are shown below as a dollar amount and as a percentage of the covered payroll of contributing participants.

The components of the actuarial contribution requirement are as follows:

	<u>Amount for 2005 - 2006</u>	<u>Percentage of Payroll</u>	<u>Cost per Participant</u>
Total normal cost	\$ 1,073,200	20.25%	\$ 8,586
Less: member contributions	<u>545,811</u>	<u>(10.30)</u>	<u>(4,366)</u>
Net employer normal cost	\$ 527,389	9.95%	\$ 4,220
Administrative expense allowance	16,000	0.30	128
Amortization payment	<u>389,958</u>	<u>7.36</u>	<u>3,119</u>
Total employer contribution	\$ 933,347	17.61%	\$ 7,467

Covered payroll is \$5,299,134 for 125 active members.

The statutory contribution rate is 16.70% of payroll. Hence actual contributions for 2005-2006 are less than the actuarial contribution requirement shown above by 0.91% of payroll.

A reconciliation of the change in cost rate since the previous valuation follows:

	<u>As a Percentage of Payroll</u>
Employer cost rate as of July 1, 2004	19.03%
Plan experience during the year	1.68
Change in Normal Cost Method	(2.83)
Effect of maintaining 20-year amortization schedule	<u>(0.27)</u>
Employer cost rate as of July 1, 2005	17.61%

The development of the unfunded/(surplus) actuarial accrued liability for the year ended June 30, 2005, is as follows:

1. Unfunded/(Surplus) actuarial accrued liability as of July 1, 2004.....	\$4,511,396
2. Normal cost at beginning of year .....	1,203,801
3. Contributions.....	(1,403,036)
4. Administrative expenses .....	16,000
5. Interest.....	<u>401,735</u>
6. Expected unfunded/(surplus) actuarial accrued liability - equals sum of (1) through (5) .....	\$4,729,896
7. Changes due to:	
(a) (Gain)/Loss on investments .....	\$1,371,144
(b) (Gain)/Loss on demographics .....	<u>(513,477)</u>
(c) Total changes – equals (7a) plus (7b) .....	<u>857,667</u>
8. Unfunded/(Surplus) actuarial accrued liability as of July 1, 2005 - equals (6) plus (7c).....	\$5,587,563

## VII. FUNDING STATUS

The calculation of funded ratios provides one measure of the progress of funding a retirement plan. The funded ratio is the percentage of plan liabilities covered by plan assets. The greater the ratio, the better funded is the retirement plan. This ratio can be calculated using different measures of the retirement plan's liabilities.

### *Funding Basis – Actuarial Accrued Liability*

This measure of liabilities is used in calculating pension costs. It uses the Entry Age Normal Actuarial Cost method that spreads costs as a level percentage of payroll over a member's working career.

For determining plan costs a smoothed value of assets (called actuarial value) was used. Hence, the actuarial value of assets was used to calculate the funded ratios.

### *Disclosure Basis*

The accounting standard for disclosure of liabilities and funding status of the System is based on Governmental Accounting Standards Board (GASB) Statement No. 25, Financial Reporting for Defined Benefit Pension Plans and Note Disclosures for Defined Contribution Plans. GASB Statement Number 25 allows the System to disclose its liabilities and funding status on the same basis used for funding the System. The actuarial value of assets is used for comparing assets and liabilities.

### *Historical Results*

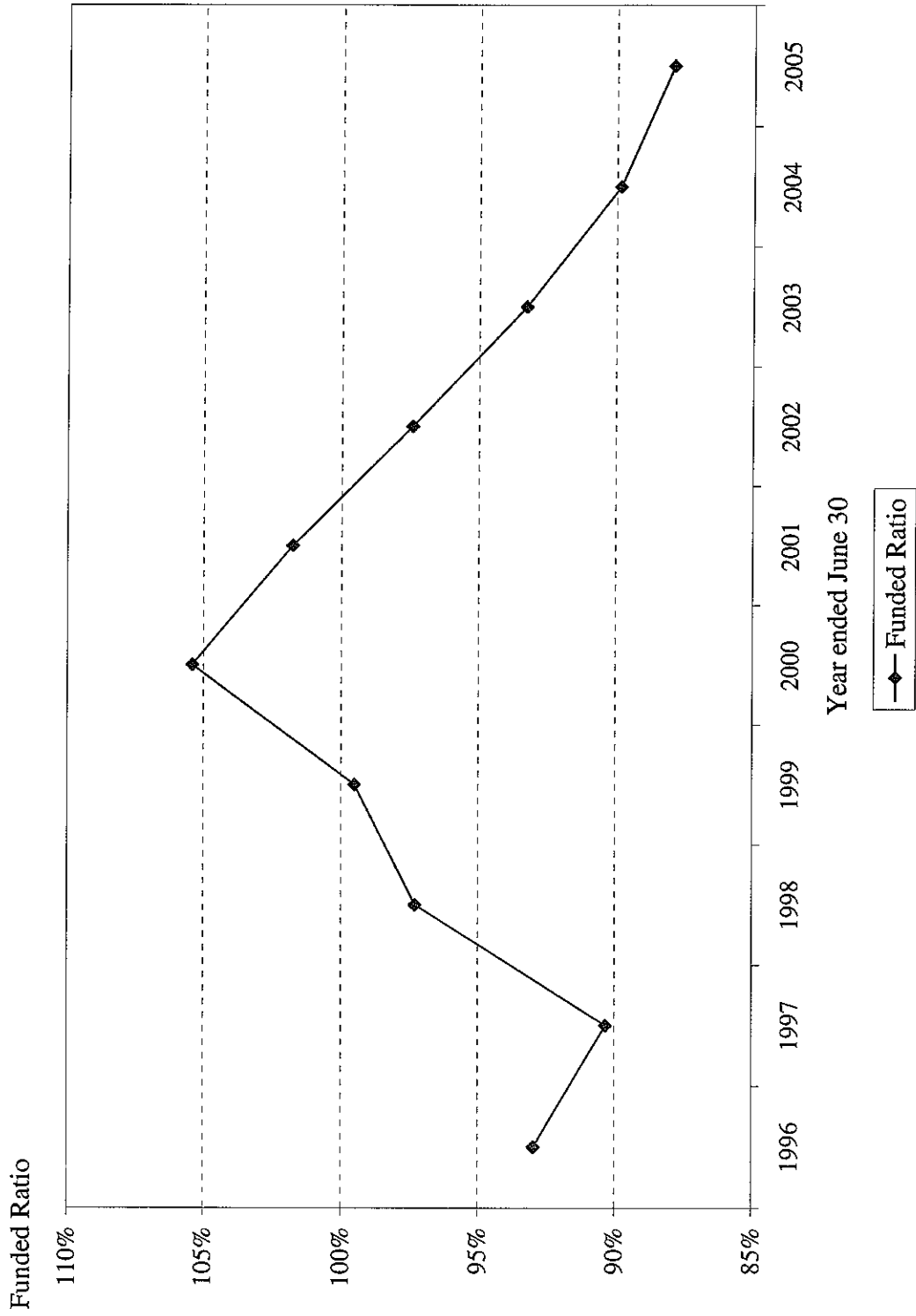
The funded ratios under the GASB Statement No. 25 standard for the last ten years are developed in Table 10. These ratios are graphed in Chart 4 on page 22. They show that, on a funding basis, the funded ratio has generally improved during the beginning of this period, but deteriorated in recent years.

Funded ratios change over time due to several factors. These factors include the level of contributions, actual experience (including investment returns), plan amendments, and changes in actuarial assumptions. In particular, we observe that in years when benefit improvements were effective, 1997 and 2001, the funded ratio was lower than what it would have been otherwise.

**TABLE 10***Funded Ratio*

As of July 1	Actuarial Accrued Liability	Actuarial Value of Assets	Funded Ratio
1996	\$23,832,800	\$22,156,300	93.0%
1997	27,518,300	24,858,500	90.3
1998	28,925,500	28,147,100	97.3
1999	32,153,000	31,996,500	99.5
2000	34,034,200	35,876,500	105.4
2001	38,112,100	38,787,100	101.8
2002	40,542,300	39,503,700	97.4
2003	42,417,300	39,563,500	93.3
2004	44,468,700	39,957,300	89.9
2005	46,284,400	40,696,900	87.9

Chart 4  
Funded Ratio (HPRS)



## VIII. ACTUARIAL ASSUMPTIONS AND COST METHODS

The actuarial assumptions and cost methods used in the actuarial valuation as of July 1, 2005 are summarized below.

### *Investment Yield*

The actuarial calculations are based on the assumption that the investment return on the actuarial value of assets of the System will be 8.00% per year, net of investment expenses.

### *Salary Increases*

Because the retirement benefits provided by the System are based on a member's final average salary, increases in salaries affect the employer's contribution requirements. A salary scale is used in an actuarial valuation to project each member's future salary increases.

During each of the first five years of service, the assumed salary increase is 7.00% per year. After five years of service, salary increases are age-related. Sample age-related salary increases are as follows:

<u>Age</u>	<u>Percentage Increase In Year</u>
25	5.90%
30	5.60
35	5.30
40	5.10
45	4.90
50	4.80
55	4.70

Actuarial assumptions should be reasonable over the long term and should not be unduly influenced by transitory deviations. Actual salary increases that are greater than assumed produce actuarial losses which, if not offset by actuarial gains from other sources (such as investment gains), result in increasing future employer costs. On the other hand, salary increases that are less than projected produce actuarial gains that can result in lowering future employer costs.

### *Inflation*

The assumed inflation rate is 4.50% per annum.

### *Payroll Growth*

The assumed payroll growth rate is 4.50% per annum.



### ***Age at Retirement***

Retirement rates reflect the expected percentage of members who will retire at each age. From ages 50 to 54, 50% of the members who are not eligible for early retirement under the Rule of 80 are assumed to retire each year while 100% of the members who are eligible for the Rule of 80 are assumed to retire each year. One hundred percent of members aged 55 and over are assumed to retire.

Inactive vested members eligible for deferred benefits are assumed to retire at age 55.

### ***Withdrawal Rates Before Retirement***

Withdrawal rates used in this actuarial valuation are intended to reflect the percentage of employees who will leave service at each age prior to retirement for reasons other than death or disability.

The assumed withdrawal percentages are 5% per year for the first five years of a member's service. Thereafter, rates vary according to the age of the member. Two percent of members are assumed to terminate at each age under 35. One percent are assumed to terminate at each age 35 and over.

### ***Disability Incidence Rates Before Retirement***

Disability rates used in this actuarial valuation are intended to reflect the percentage of employees who will leave service at each age prior to retirement due to disability. The assumed disability incidence rates increase from 0.05% at age 25 to 0.55% at age 55.

### ***Mortality Rates***

The reserve required to pay a member's retirement benefits depends on the period over which payments will be received. The valuation uses the 1983 Group Annuity Mortality Table for healthy members and the Pension Benefit Guaranty Corporation Disabled Life Mortality Table for Individuals Receiving Social Security Disability Benefits for disabled members. The table below shows sample mortality rates and life expectancies underlying the healthy mortality tables.

<u>Age</u>	<u>Retired Members</u>			
	<u>Males</u>		<u>Females</u>	
	<u>Deaths per 1,000 Lives</u>	<u>Expected Number of Years of Life Remaining</u>	<u>Deaths per 1,000 Lives</u>	<u>Expected Number of Years of Life Remaining</u>
55	6.1	24.8	2.5	30.3
60	9.2	20.6	4.2	25.7
65	15.6	16.7	7.1	21.3
70	27.5	13.2	12.4	17.2
75	44.6	10.2	24.0	13.4
80	74.1	7.6	42.9	10.2
85	114.8	5.7	69.9	7.6

### ***Administrative Expenses***

Annual administrative expenses are assumed to be \$16,000.

### ***Marital Status for Non-Retired Members***

At death, 90% of non-retired members are assumed to have spouses. Males are assumed to be three years older than their female spouses.

### ***Valuation of Assets***

Investments are carried at an adjusted market value. The net market appreciation (depreciation) is spread over five years in equal dollar amounts, beginning with the year of occurrence. The actuarial value of assets is the market value less deferred appreciation (depreciation).

### ***Actuarial Cost Method***

The System is funded using the Entry Age Normal Actuarial Cost Method. This method produces costs that will remain relatively level as a percentage of covered payroll.

Under the Entry Age Normal Method, the total contribution requirement has three components - an annual normal cost, an allowance for administrative expenses and a payment with respect to the unfunded actuarial accrued liability. The annual normal cost is calculated for each member as the level percentage of pay required over the member's period of covered employment to pay the total expected benefits, with the normal cost determined as if the current benefit accrual rate had always been in effect. If the actuarial assumptions are met, the total normal cost rate will remain level as a percentage of payroll.

The normal cost payments are sufficient to finance the benefit program only if there are no changes in plan design and all actuarial assumptions are realized. To the extent that actual experience is less favorable than assumed, additional liabilities not funded through normal cost payments arise. Also, benefit liberalizations that improve earned benefits or benefit eligibility produce additional liabilities. The Board has adopted a schedule of amortizing this unfunded actuarial accrued liability over an open period of 20 years. The annual payments are determined as a level percent of payroll, with payroll expected to increase 4.50% per year.

October 11, 2005

**NORTH DAKOTA HIGHWAY PATROLMEN'S RETIREMENT SYSTEM**

*Actuarial Valuation Certificate*

This is to certify that we have prepared an Actuarial Valuation of the System as of July 1, 2005 in accordance with generally accepted actuarial principles and practices.

The certificate contains the following attached exhibits:

- I. Actuarial Valuation Results
- II. Actuarial Assumptions and Cost Methods
- III. Changes in Actuarial Assumptions and Cost Methods
- IV. Changes in Plan Provisions
- V. Summary of Plan Provisions

The valuation was based on information supplied by the Retirement Office with respect to member and financial data. We have not verified, and customarily would not verify, such information but we have no reason to doubt its substantial accuracy.

To the best of our knowledge, the information supplied in this actuarial valuation is complete and accurate and in our opinion each individual assumption used (a) is reasonably related to the experience of the System and to reasonable expectations and (b) represents our best estimate of anticipated experience under the System.

The undersigned are available to provide further information or to answer any questions regarding the report.



Leslie L. Thompson, FSA, MAAA, EA  
Senior Vice President and Actuary



Brad Ramirez, ASA, MAAA  
Actuarial Associate

## EXHIBIT I

### ACTUARIAL VALUATION RESULTS

1.	Actuarial accrued liability on July 1, 2005:		
	a. Active members .....	\$21,278,874	
	b. Retired members and beneficiaries .....	24,217,708	
	c. Inactive non-retired members .....	<u>787,849</u>	
	d. Total .....		\$46,284,431
2.	Assets at actuarial value (\$47,179,197 at market value) .....		40,696,868
3.	Unfunded (Surplus) actuarial accrued liability - equals (1) minus (2) .....		5,587,563
4.	Member and employer normal cost for ensuing year* .....		1,073,200
5.	Estimated annual salaries of covered members .....		5,299,134
6.	Member normal cost equals - 10.3% of (5) .....		545,811
7.	Employer normal cost for ensuing year - equals (4) minus (6) .....		527,389
8.	Amortization payment - equals 20-year amortization of item (3) as a level percent of aggregate salary* .....		389,958
9.	Administrative expenses .....		16,000
10.	Total employer cost for ensuing year - equals (7) plus (8) plus (9) .....		933,347
11.	Total employer cost as percentage of payroll - equals (10) divided by (5) .....		17.61%

---

\* Adjusted for interest to recognize payments through the year.

## EXHIBIT II

### ACTUARIAL ASSUMPTIONS AND COST METHODS

#### 1. Mortality Tables:

Healthy: 1983 Group Annuity Mortality Table.

Disabled: Pension Benefit Guaranty Corporation Disabled Life Mortality Table for Individuals Receiving Social Security Disability Benefits.

#### 2. Annual Withdrawal Rates:

First five years of service: 5% per year.

After five years of service:

Under age 35: 2% at each age.

Age 35 and older: 1% at each age.

Withdrawal rates end upon eligibility for early retirement (age 50 and 5 years of service).

#### 3. Disability Incidence Rates:

Age based rates. Sample rates:

<u>Age</u>	<u>Rate</u>
25	0.05%
30	0.12
35	0.20
40	0.30
45	0.37
50	0.38
55	0.55

#### 4. Retirement Rates:

The following annual rates apply for active members:

<u>Age</u>	<u>Eligible for Rule of 80</u>	<u>Not Eligible for Rule of 80</u>
50 - 54	100%	50%
55+	100	100

Inactive vested members eligible for deferred benefits are assumed to retire at age 55.

**EXHIBIT II (continued)**

**5. Interest Rate:**

8.00% per annum, net of investment expenses.

**6. Annual Administrative Expenses:**

\$16,000.

**7. Salary Scale:**

Less than five years of service: 7.00% per annum.

Five or more years of service (for selected ages):

<u>Age</u>	<u>Annual Increase</u>
25	5.90%
30	5.60
35	5.30
40	5.10
45	4.90
50	4.80
55	4.70

**8. Inflation:**

4.50% per annum.

**9. Payroll Growth:**

4.50% per annum.

**10. Marital Status:**

At death, 90% of all members are assumed to have spouses. Males are assumed to be three years older than their female spouses.

**11. Workers' Compensation:**

None assumed for disability benefit offset.

**12. Indexing for Benefits of Inactive Vested Members:**

5.00% per annum.

## EXHIBIT II (continued)

### 13. Split Service:

Liabilities held in both plans based on service in each plan; based on actuarial assumptions of the plan in which currently active.

### 14. Transfers to Main System:

Annual withdrawal, disability incidence and retirement rate assumptions for members who have transferred to the Main System follow those specified in the Main System, and are applied to the benefits held in the HPRS.

### 15. Actuarial Cost Method:

Entry Age Normal Actuarial Cost Method. The unfunded actuarial accrued liability is amortized in installments assuming a 4.50% payroll growth assumption and an open 20-year period.

### 16. Actuarial Value of Assets:

Adjusted market value that immediately recognizes interest and dividends. The procedure recognizes 20% of each Plan Year's total appreciation (depreciation) beginning with the year of occurrence. After five years, the appreciation (depreciation) is fully recognized.



## **EXHIBIT III**

### **CHANGES IN ACTUARIAL ASSUMPTIONS AND COST METHODS**

There were no changes in actuarial assumptions since the preceding valuation.

The actuarial cost method was changed so that decrements assumed to occur in the valuation year are reflected when determining the current year payroll for the purposes of calculating normal cost. The actuarial accrued liability and present value of benefits were unaffected by this change.

**EXHIBIT IV**

**CHANGES IN PLAN PROVISIONS**

There were no changes in plan provisions since the preceding valuation.

## EXHIBIT V

### SUMMARY OF PLAN PROVISIONS

This exhibit summarizes the major benefit provisions of the North Dakota Highway Patrolmen's Retirement System as included in the valuation. It is not intended to be, nor should it be, interpreted as a complete statement of all plan provisions.

#### 1. Normal Service Retirement:

Eligibility:

Attainment of age 55 with at least 10 years of eligible employment or with age plus service equal to at least 80 (Rule of 80).

Benefit:

3.60% of final average salary for each of the first 25 years of service plus 1.75% of final average salary for service in excess of 25 years.

#### 2. Early Service Retirement:

Eligibility:

Attainment of age 50 with 10 years of eligible employment.

Benefit:

The Normal Service Retirement Benefit as determined above. A benefit that begins before age 55 (or Rule of 80, if earlier) is reduced by one-half of one percent for each month before age 55.

#### 3. Disability Benefit:

Eligibility:

Accumulation of six months of service and inability to engage in substantial gainful activity.

Benefit:

70% of the member's final average salary at disability minus workers' compensation, with a minimum of \$100 per month.

**EXHIBIT V (continued)**

**4. Deferred Retirement:**

Eligibility:

Ten years of eligible employment.

Benefit:

The Normal Service Retirement Benefit payable at age 55 or the Rule of 80, if earlier. Vested benefits are indexed at a rate set by the Retirement Board based on the increase in final average salary from date of termination to benefit commencement date, as follows

<u>Year Beginning</u>	<u>Average Monthly Increase</u>	<u>Three-Year Average Increase</u>	<u>Cumulative Salary Increase</u>
7/1/1994	3.00%	3.01%	3.01%
7/1/1995	2.00	2.86	5.95
7/1/1996	2.00	2.33	8.42
7/1/1997	3.00	2.33	10.95
7/1/1998	1.80	2.27	13.47
7/1/1999	1.26	2.02	15.76
7/1/2000	2.00	1.69	17.71
7/1/2001	1.81	1.69	19.70
7/1/2002	1.73	1.85	21.91
7/1/2003	0.00	1.18	23.35
7/1/2004	0.00	0.58	24.06

Reduced early retirement benefits can be elected upon attainment of age 50.

**5. Pre-Retirement Death Benefits:**

Eligibility:

Ten years of eligible employment.

Benefit:

One of the following options:

- Lump sum payment of member's accumulated contributions with interest.
- Monthly payment of the member's accrued benefit for 60 months to the surviving spouse.

- 50% of the member's accrued benefit (not reduced on account of age) for the surviving spouse's lifetime.

**EXHIBIT V (continued)**

Eligibility:

Less than 10 years of service nor a surviving spouse.

Benefit:

Lump sum payment of member's accumulated contributions with interest.

**6. Normal and Optional Forms of Payment:**

Normal form of payment:

Monthly benefit for life with 50% of the benefit continuing for the life of the surviving spouse (if any).

Optional forms of payment:

100% joint and survivor annuity, five-year certain and life annuity and ten-year certain and life annuity.

**7. Final Average Salary:**

Average of the highest salary received by the member for any 36 consecutive months employed during the last 120 months of employment.

**8. Contributions:**

Members:

10.30% of monthly salary.

State of North Dakota:

16.70% of the monthly salary for each participating member.

Member's contributions earn interest at an annual rate of 7.50% compounded monthly.

**RETIREMENT PLAN FOR EMPLOYEES  
OF JOB SERVICE NORTH DAKOTA**

**Actuarial Valuation Report as of July 1, 2005**

**Copyright © 2005**

**The Segal Group, Inc.,  
The Parent of The Segal Company  
All Rights Reserved**



**THE SEGAL COMPANY**

6300 S. Syracuse Way Suite 750 Englewood, CO 80111-7302  
T 303.714.9900 F 303.714.9990 www.segalco.com

October 11, 2005

**Board Members**  
North Dakota Public Employees Retirement System  
Bismarck, North Dakota

**Members of the Board:**

We are pleased to submit our report on the actuarial valuation of the Retirement Plan for Employees of Job Service North Dakota as of July 1, 2005. The report includes an analysis of last year's actuarial experience as well as the contribution requirements for the year beginning July 1, 2005.

The report's actuarial content was prepared in accordance with generally accepted actuarial principles under our direction. The valuation was:

- Prepared by qualified actuaries who are members of the American Academy of Actuaries and who have experience in performing valuations for public retirement systems;
- Prepared in accordance with standards of practice prescribed by the Actuarial Standards Board; and
- Composed of actuarial calculations that were performed by qualified actuaries in accordance with accepted procedures as defined by the Actuarial Standards Board, based on the current provisions of the Retirement System and on actuarial assumptions and methods that are internally consistent and reasonably based on the actual experience of the System.

We wish to thank the Retirement Office staff for their cooperation in providing us with the participant census data and financial information necessary to prepare the valuation.

Benefits, Compensation and HR Consulting ATLANTA BOSTON CHICAGO CLEVELAND DENVER HARTFORD HOUSTON LOS ANGELES MINNEAPOLIS  
NEW ORLEANS NEW YORK PHILADELPHIA PHOENIX SAN FRANCISCO SEATTLE TORONTO WASHINGTON, DC



Multinational Group of Actuaries and Consultants AMSTERDAM BARCELONA GENEVA HAMBURG JOHANNESBURG LONDON MELBOURNE  
MEXICO CITY OSLO PARIS



October 11, 2005  
Board Members  
Page Two

We would be pleased to answer any questions you may have regarding the report.

Sincerely,

A handwritten signature in cursive script, appearing to read "Leslie Thompson".

Leslie L. Thompson, FSA, MAAA, EA  
Senior Vice President and Actuary

A handwritten signature in cursive script, appearing to read "Brad Ramirez".

Brad Ramirez, ASA, MAAA  
Actuarial Associate

143442/01641.001

**TABLE OF CONTENTS**

	<b><u>Page</u></b>
<b>I. INTRODUCTION AND SUMMARY.....</b>	<b>1</b>
<b>II. VALUATION RESULTS .....</b>	<b>2</b>
<b>III. ACTUARIAL METHODS AND ACTUARIAL ASSUMPTIONS .....</b>	<b>11</b>
<b>IV. SUMMARY OF PLAN PROVISIONS .....</b>	<b>14</b>

## I. INTRODUCTION AND SUMMARY

This report presents the results of the actuarial valuation of the Retirement Plan for Employees of Job Service North Dakota as of July 1, 2005.

The following table is a summary of significant results of this year's valuation compared with the results of the last valuation.

<u>Valuation Results</u>	<u>July 1, 2005</u>	<u>July 1, 2004</u>
Scheduled contribution at end of year	\$0	\$0
Contribution as a percentage of payroll	0.00%	0.00%
Total payroll of employees included in cost calculations	\$2,226,912	\$2,459,508
Normal cost	\$0	\$0
Actuarial present value of projected benefits	\$63,324,714	\$61,845,450
Actuarial value of assets	\$69,294,225	\$67,505,163
Market value of assets	\$81,508,999	\$73,302,185

Effective July 1, 1999, the "scheduled contribution" will be zero as long as the plan's actuarial value of assets exceeds the actuarial present value of projected benefits. If, in the future, the liabilities of the plan exceed its assets, a "scheduled contribution" will be determined based on the funding policy adopted by the Employer.

## II. VALUATION RESULTS

The valuation was made with respect to the following data supplied to us by the Retirement Office staff.

1.	Employees active as of July 1, 2005, with total annual salaries of \$2,226,912.	
a.	Fully vested	52
b.	Not vested	<u>0</u>
c.	Total	52
2.	Employees inactive as of July 1, 2005 with vested rights	5
3.	Pensioners (including disableds) and beneficiaries as of July 1, 2005	108
4.	Pensioners and beneficiaries receiving annuities from The Travelers as of July 1, 2005	<u>109</u>
5.	Total Plan participants as of July 1, 2005	274

The actuarial liabilities as of the valuation date are as follows:

1.	Actuarial present value of benefits:	
a.	Active employees	\$18,834,820
b.	Inactive vested employees not in pay status	219,073
c.	Pensioners (including disableds) and beneficiaries*	<u>44,270,821</u>
d.	Total	\$63,324,714
2.	Actuarial value of assets (\$81,508,999 at market value)	69,294,225
3.	Outstanding balance as of July 1, 2005 of frozen initial liability	<u>0</u>
4.	Actuarial present value of future normal costs (item 1 – item 2 – item 3, not less than \$0)	\$0
5.	Actuarial present value of future salaries	\$8,747,863
6.	Normal cost percentage (item 4 divided by item 5)	0.00%
7.	Total salaries of employees below the assumed retirement age	\$2,226,912
8.	Normal cost (item 6 x item 7)	\$0

---

\* Including value of Cost-of-Living adjustments (COLAs) for pensioners with annuities from The Travelers.

The actuarial assumptions and benefit provisions are the same as those in the preceding valuation.

### **Actuarial Experience**

Since July 1, 2004, there was a net actuarial loss. The total actuarial loss for the plan was \$0.3 million, which is comprised of a demographic gain of \$0.5 million and an asset loss of \$0.8 million. An analysis of experience in key areas for the year ended June 30, 2005 follows.

### **Salary Increases**

The average salary increase for participants as of July 1, 2005 who were included in the last valuation was 4.6% compared to the 5.0% salary scale assumption. The result is an actuarial gain.

### **Post-Retirement Cost-of-Living Adjustment (COLA)**

The average COLA for participants and beneficiaries paid by the retirement plan as of July 1, 2005 who were included in the last valuation was 1.3% compared to the 5.0% COLA assumption. The result is an actuarial gain.

### **Rate of Return**

The investment rate of return on an actuarial basis was approximately 7.1% for the year ended June 30, 2005. This return is lower than the assumed rate of return of 8.0%, resulting in an actuarial loss. The rate of return on a market value basis was approximately 15.1%.

Table 1 summarizes demographic characteristics for plan participants.

Table 2 presents a distribution of active participants by age and credited service.

Table 3 presents a reconciliation of participant data.

Table 4 summarizes the changes in plan net assets.

Table 5 is a summary of plan assets on a market basis.

Table 6 shows the determination of the actuarial value of assets.

Table 7 shows the development of the NPO and ARC pursuant to GASB 27.

**Table 1**

**Plan Coverage and Selected Data  
This Year and Preceding Year**

<b>Category</b>	<b>July 1, 2005</b>	<b>July 1, 2004</b>	<b>Percent Change</b>
Active participants:			
Number	52	60	(13.3)%
Average age	54.5	54.0	--
Average service	29.8	29.0	--
Payroll	\$2,226,912	\$2,459,508	(9.5)
Average pay	\$42,825	\$40,992	4.5
Inactive participants with rights to immediate or deferred pension	5	5	--
Pensioners (including disableds) and beneficiaries:			
Number paid by retirement plan	108	100	8.0
Total annual benefits	\$2,456,937	\$2,292,841	7.2
Average annual benefit	\$22,749	\$22,928	(0.8)
Number of Travelers annuitants	109	113	(3.5)
Total annual benefits from plan (COLAs)	\$451,169	\$417,167	8.2
Average annual benefit from plan (COLAs)	\$4,139	\$3,692	12.1

**Table 2**

**Active Employees Included in the  
July 1, 2005 Valuation by Age and Credited Service**

Age	Total	Years of Credited Service			
		0 - 24	25 - 29	30 - 34	35 and Over
Total	52	-	31	17	4
45 - 49	5	-	4	1	-
50 - 54	24	-	15	9	-
55 - 59	19	-	10	6	3
60 - 64	4	-	2	1	1

**Table 3**

**Reconciliation of Participant Data**

	<b>Active Participants</b>	<b>Vested Former Participants</b>	<b>Pay Status Participants Paid From Plan Assets</b>	<b>Pay Status Participants Paid From The Travelers</b>	<b>Total</b>
Number as of July 1, 2004	60	5	100	113	278
Retirements	-8	0	8	0	0
Beneficiaries	0	0	2	1	3
Certain period expired	0	0	0	-1	-1
Died with beneficiary	0	0	-2	-1	-3
Died without beneficiary	<u>0</u>	<u>0</u>	<u>0</u>	<u>-3</u>	<u>-3</u>
Number as of July 1, 2005	52	5	108	109	274



**Table 4**

**Statement of Changes in Plan Net Assets (Market Value)**

	<b>July 1, 2005</b>	<b>July 1, 2004</b>
<b>1. Additions</b>		
(a) Contributions	\$163,594	\$192,129
(b) Investment Income		
(i) Interest and Dividends	\$1,682,114	\$2,659,962
(ii) Net Appreciation/(Depreciation)	9,452,747	5,800,720
(iii) Net Securities Lending Income	<u>17,556</u>	<u>14,833</u>
(iv) Total Investment Income	\$11,152,417	\$8,475,515
(v) Less Investment Expenses	<u>(268,358)</u>	<u>(161,600)</u>
(vi) Net Investment Income	\$10,884,059	\$8,313,915
(c) Repurchase Service Credit	\$1,143	\$25,272
(d) Total Additions	\$11,048,796	\$8,531,316
<b>2. Deductions</b>		
(a) Benefit Payments	\$(2,817,963)	\$(2,572,624)
(b) Administrative Expenses	<u>(24,019)</u>	<u>(24,174)</u>
(c) Total Deductions	\$(2,841,982)	\$(2,596,798)
<b>3. Net Increase</b>	\$8,206,814	\$5,934,518
<b>4. Net Assets Held in Trust for Pension Benefits</b>		
(a) Beginning of Year	<b>\$73,302,185</b>	<b>\$67,367,667</b>
(b) End of Year	<b>\$81,508,999</b>	<b>\$73,302,185</b>

**Table 5****Statement of Plan Net Assets**

	<b>July 1, 2005</b>	<b>July 1, 2004</b>
<b>1. Assets</b>		
(a) Cash and Cash Equivalents	\$451,414	\$61,307
(b) Receivables		
(i) Contributions	\$12,740	\$14,702
(ii) Interest	170,656	206,303
(iii) Due from Fiduciary Funds	<u>5,790</u>	<u>0</u>
(iv) Total Receivables	\$189,186	\$221,005
(c) Investments, At Fair Value		
(i) Equities	\$32,471,364	\$29,984,234
(ii) Fixed Income	48,406,756	43,050,393
(iii) Other	<u>10,604,707</u>	<u>10,104,182</u>
(iv) Total Investments	\$91,482,827	\$83,138,809
(d) Total Assets	\$92,123,427	\$83,421,121
<b>2. Liabilities</b>		
(a) Accounts Payable	\$(47,795)	\$(40,645)
(b) Due to Fiduciary Funds	0	(9,634)
(c) Due to Other State Agencies	(2,001)	(2,050)
(d) Securities Lending Collateral (SIB)	<u>(10,564,632)</u>	<u>(10,066,607)</u>
(e) Total Liabilities	\$(10,614,428)	\$(10,118,936)
<b>3. Net Assets for Pension Benefits</b>	<b>\$81,508,999</b>	<b>\$73,302,185</b>

**Table 6****Determination of the Actuarial Value of Assets as of July 1, 2005**

1. Actuarial Value of Assets as of July 1, 2004	\$67,505,163
2. Increases During the Year	
(a) Contributions	\$163,594
3. Decreases During the Year	
(a) Benefit Payments	\$(2,817,963)
(b) Administrative Expenses	(24,019)
(c) Investment Expenses	<u>(268,358)</u>
(d) Total Decreases During the Year	\$(3,110,340)
4. Actual Return – Interest and Dividends	\$1,682,114
5. Preliminary Actuarial Value at End of Year [(1) + (2) + (3) + (4)]	\$66,240,531
6. Market Value at End of Year	\$81,508,999
7. Adjustment Toward Market Value (20% of [(6) - (5)])	\$3,053,694
8. Adjustment to be Within 20% of Market Value	\$0
9. Actuarial Value of Assets as of July 1, 2005 [(5) + (7) + (8)]	\$69,294,225
10. Actuarial Value as a Percentage of Market Value [(9) / (6)]	85.0%

Table 7

Development of the Net Pension Obligation and the Annual Pension Cost Pursuant to GASB 27

Year Ended	Employer Annual Required Contribution (a)	Employer Amount Contributed (b)	Interest on NPO* (h) x 8% (c)	ARC Adjustment* (h) / (e) (d)	Amortization Factor** (e)	Pension Cost (a) + (c) - (d) (f)	Change in NPO (f) - (b) (g)	NPO Balance NPO + (g) (h)
06/30/1998	-	\$577,936	-	-	12.1584	-	\$(577,936)	\$(577,936)
06/30/1999	-	1,110,818	\$(46,235)	\$(47,534)	12.1584	\$1,299	(1,109,519)	(1,687,455)
06/30/2000	-	-	(134,996)	(138,789)	12.1584	3,793	3,793	(1,683,662)
06/30/2001	-	-	(134,693)	(138,477)	12.1584	3,784	3,784	(1,679,878)
06/30/2002	-	-	(134,390)	(138,166)	12.1584	3,776	3,776	(1,676,102)
06/30/2003	-	-	(134,088)	(137,855)	12.1584	3,767	3,767	(1,672,335)
06/30/2004	-	-	(133,787)	(137,546)	12.1584	3,759	3,759	(1,668,576)
06/30/2005	-	-	(133,486)	(137,236)	12.1584	3,750	3,750	(1,664,826)

\* Not applicable for the year ending June 30, 1998, since NPO as of July 1, 1997 is presumed to be \$0.

\*\* Amortization Factor for 30-year amortization, 8% interest.

The funding method used in this plan is the frozen initial liability method, which in accordance with GASB 25 does not require a Schedule of Funding Progress disclosure.

### III. ACTUARIAL METHODS AND ACTUARIAL ASSUMPTIONS

#### Actuarial Cost Method

There is a wide range of funding methods that are considered acceptable by the actuarial profession, which are recognized by accountants, and that meet government standards. The Frozen Initial Liability Actuarial Cost Method is the method currently used for the Retirement Plan for Employees of Job Service North Dakota.

The “annual contribution” under this method is the normal cost plus the payment required to amortize the unfunded initial actuarial accrued liability over a selected period of years. The normal cost is determined by calculating the total value of all future benefits, subtracting the outstanding balance (if any) of the unfunded initial actuarial accrued liability, subtracting the actuarial value of assets, and determining payments (not less than zero) that are a level percent of pay over the future working lifetime of all participants. In the absence of an unfunded initial actuarial accrued liability, The Frozen Initial Liability Actuarial Cost Method is the same as the Aggregate Cost Method.

The “scheduled contribution” will be determined when the plan is not in surplus and will be based on a funding policy adopted by the Employer.

#### Asset Valuation Method

The asset value indicates the portion of the benefits already funded. The method used to determine this value is called the actuarial asset valuation method. The actuarial asset valuation method is as follows:

The asset value is adjusted toward market value by adding to the “preliminary asset value”, 20% of the difference between the market value and the preliminary asset value. The preliminary asset value is the actuarial asset value at the beginning of the year plus net new money. Net new money is the sum of contributions, dividends, and interest, less the sum of benefit payments, administrative expenses and investment fees. If necessary, the actuarial value is further adjusted to be within 20% of market value.

## Actuarial Assumptions

### **Mortality tables:**

Healthy: 1994 Group Annuity Mortality Table (sample rates below).

Disabled: 1983 Railroad Retirement Board Disabled Life Mortality Table.

**Disability incidence:** Sample rates shown below.

**Withdrawal rates:** Sample rates shown below.

<u>Age</u>	<u>Rates (%)</u>			
	<u>Mortality</u>		<u>Disability</u>	<u>Withdrawal</u>
	<u>Male</u>	<u>Female</u>	<u>Incidence</u>	
20	0.05	0.03	0.06	5.44
25	0.07	0.03	0.09	5.29
30	0.08	0.04	0.11	5.07
35	0.09	0.05	0.15	4.70
40	0.11	0.07	0.22	4.19
45	0.16	0.10	0.36	3.54
50	0.26	0.14	0.61	2.48
55	0.44	0.23	1.01	0.94
60	0.80	0.44	1.63	0.09

Withdrawal rates end when first eligible for the earlier of optional or normal retirement.

### **Retirement age:**

75% of active participants are assumed to retire when first eligible for optional retirement, and the remaining participants retire at normal retirement. If currently older than first eligible optional retirement age, retirement assumed to occur at normal retirement, or current age, if older.

100% of inactive vested participants are assumed to retire at first optional retirement age.

<b>Salary scale:</b>	5.0% per year.
<b>Post-retirement cost-of-living adjustment:</b>	5.0% per year.
<b>Percent married:</b>	85% of all active and inactive vested participants are assumed to be married.
<b>Age of spouse:</b>	Females are assumed to be four years younger than males.
<b>Rate of return:</b>	8.0% per year, compounded annually, net of investment and administrative expenses.
<b>Future benefit accruals:</b>	One year of credited service per year per active employee included in the valuation.

#### IV. SUMMARY OF PLAN PROVISIONS

This section summarizes the major provisions of the plan as included in the valuation. It is not intended to be, nor should it be, interpreted as a complete description of all plan provisions.

##### Normal retirement

Age requirement:	65.
Service requirement:	None.
Benefit:	Average monthly earnings multiplied by the sum of: <ul style="list-style-type: none"><li>a. 1.50% times credited service up to five years, plus</li><li>b. 1.75% times credited service between six and ten years, plus</li><li>c. 2.00% times credited service in excess of ten years.</li></ul> Average monthly earnings - monthly average earnings during the highest three consecutive years of employment.

##### Optional retirement

Age and service requirements:	Age 62 with five years of credited service, or Age 60 with twenty years of credited service, or Age 55 with thirty years of credited service.
Benefit:	Accrued normal retirement benefit.

##### Early retirement

Age requirement:	Ten years before normal or optional retirement age.
Service requirement:	Same as optional retirement.
Benefit:	Accrued normal retirement benefit, reduced if payments begin before normal or optional retirement.



**Disability**

Age requirement:	None.
Service requirement:	Five years of credited service.
Benefit:	Greater of accrued normal retirement benefit or 40% of average monthly earnings.

**Vesting**

Age requirement:	None.
Service requirement:	Five years of credited service.
Benefit:	Accrued normal retirement benefit payable at normal or optional retirement. After attainment of early retirement age, reduced benefits may be paid.

Employees who meet the requirements for a vested benefit may elect to receive a return of their accumulated employee contributions (including interest at 4% per year) in lieu of all other benefits under the plan.

**Return of accumulated employee contributions**

Employees who do not meet the requirements for a vested benefit will receive a return of their accumulated employee contributions (including interest at 4% per year).

## **Pre-retirement death benefits**

### Married participants

Surviving spouse's benefit:

Age requirement:	None.
Service requirement:	None.
Benefit:	55% of the greater of (a) or (b).  (a) Accrued normal retirement benefit.  (b) The lesser of (1) or (2). (1) 40% of average monthly earnings. (2) Normal retirement benefit based on credited service to age 60.

Children's benefit: Provided for children under age 18 (age 22 if a full-time student) - note: the actuarial valuation does not consider benefits for expected surviving children.

### Single participants with no eligible children

120 payment guarantee:

Age requirement:	None.
Service requirement:	Five years of credited service.
Benefit:	Accrued normal retirement benefit payable for 120 months. Not payable if surviving spouse or children's benefit is payable.

Lump sum benefit:

Age requirement: None.  
Service requirement: None.  
Benefit: Accumulated employee contributions (including interest at 4% per year). Not payable if the surviving spouse, children's benefit or 120 payment guarantee is in effect.

**Post-retirement death benefits**

Based on form of payment elected by the pensioner.

**Post-retirement cost-of-living adjustment**

Based on the Consumer Price Index.

**Participation**

Plan participant before October 1, 1980.

**Credited service**

Monthly salaried employment in a probationary or permanent status including only: service for which contributions were made (including purchased service), eligible military service and unused sick leave.

**Contribution rate**

Employee: 7% of average monthly earnings (4% picked up by employer).  
Employer: remaining scheduled cost, if any.

143442/01641.001

**NORTH DAKOTA PUBLIC EMPLOYEES  
RETIREMENT SYSTEM**

**Retiree Health Insurance Credit Fund**

*Actuarial Valuation Report as of July 1, 2005*

**Copyright © 2005**

**The Segal Group, Inc.,  
The Parent of The Segal Company  
All Rights Reserved**



**THE SEGAL COMPANY**

6300 S. Syracuse Way Suite 750 Englewood, CO 80111-7302  
T 303.714.9900 F 303.714.9990 www.segalco.com

October 12, 2005

**Board Members**  
North Dakota Public Employees Retirement System  
Bismarck, North Dakota

**Members of the Board:**

It is a pleasure to submit this report that presents the results of our actuarial valuation of the North Dakota Public Employees Retirement System Retiree Health Insurance Credit Fund as of July 1, 2005.

The report's actuarial content was prepared in accordance with generally accepted actuarial principles under our direction. The valuation was:

- Prepared by qualified actuaries who are members of the American Academy of Actuaries and who have experience in performing valuations for public retirement systems;
- Prepared in accordance with standards of practice prescribed by the Actuarial Standards Board; and
- Composed of actuarial calculations that were performed by qualified actuaries in accordance with accepted procedures as defined by the Actuarial Standards Board, based on the current provisions of the Retirement System and on actuarial assumptions that are internally consistent and reasonably based on the actual experience of the System.

We wish to thank the Retirement Office staff for their cooperation in providing us with the participant census data and financial information necessary to prepare the actuarial valuation.

Benefits, Compensation and HR Consulting ATLANTA BOSTON CHICAGO CLEVELAND DENVER HARTFORD HOUSTON LOS ANGELES MINNEAPOLIS  
NEW ORLEANS NEW YORK PHILADELPHIA PHOENIX SAN FRANCISCO SEATTLE TORONTO WASHINGTON, DC



Multinational Group of Actuaries and Consultants AMSTERDAM BARCELONA GENEVA HAMBURG JOHANNESBURG LONDON MELBOURNE  
MEXICO CITY OSLO PARIS

North Dakota Retiree Health Insurance  
October 12, 2005  
Page 2

We look forward to meeting with you to review this report and to answering any questions you may have.

Sincerely,



Leslie L. Thompson, FSA, MAAA, EA  
Senior Vice President and Actuary



Brad Ramirez, ASA, MAAA  
Actuarial Associate

cc: Sparb Collins

143493/01640.001

## TABLE OF CONTENTS

	<b>Page</b>
I. INTRODUCTION .....	1
II. HIGHLIGHTS .....	2
III. MEMBER CHARACTERISTICS.....	3
IV. ASSETS .....	10
V. RESULTS OF ACTUARIAL VALUATION .....	13
VI. FUNDING STATUS .....	14
VII. ACTUARIAL ASSUMPTIONS AND COST METHODS .....	15
ATTACHMENT: ACTUARIAL VALUATION CERTIFICATE.....	(i)

## I. INTRODUCTION

This report summarizes the results of our actuarial valuation as of July 1, 2005. The employer contribution requirements presented in Section V of the report are based on:

1. The present provisions of the North Dakota Public Employees Retirement System Retiree Health Insurance Credit Fund;
2. The characteristics of covered active members, and pensioners and beneficiaries as of July 1, 2005;
3. The assets of the Fund as of June 30, 2005; and
4. Actuarial assumptions regarding investment earnings and rates of participation, retirement, disability, death, etc.

The purpose of the actuarial valuation is to determine the contribution sufficient to meet the long-term obligations to the members covered by the Fund in accordance with the benefit provisions of the North Dakota Public Employees Retirement System Retiree Health Insurance Credit Fund.

If each of the actuarial assumptions is exactly fulfilled, the true actuarial cost of the Fund will equal the cost projected by the actuarial calculations. However, this result is never achieved because of the length of time over which projections are made and because of the great number of variables that can affect the emerging costs. The cost, expressed as a percentage of payroll, will increase if the Fund experiences net actuarial losses and will decrease if the Fund experiences net actuarial gains.



## II. HIGHLIGHTS

- The present rate of contributions is sufficient to meet the actuarially determined requirement for 2005-2006, based upon the actuarial assumptions and financing objectives approved by the Board.
- The actuarial contribution requirement for 2005-2006 is \$5,396,153, or 1.00% of payroll. Since the statutory contribution rate is 1.00% of payroll, actual contributions almost exactly equal the actuarial requirement.
- As indicated on page 11 of this report, the total deferred appreciation as of June 30, 2005 is approximately \$3.0 million. This appreciation will be recognized in the determination of the actuarial value of assets for funding purposes in the next few years, to the extent it is not offset by recognition of losses derived from future experience.
- The return on the market value of assets for 2004-2005 was 8.90%, and was 15.19% for the preceding year.
- The return on the actuarial value of assets for 2004-2005 was 3.04% compared to the investment return assumption of 8.00%. As a result, the Fund experienced an investment loss on an actuarial basis of approximately \$1.4 million.
- The ratio of actuarial value of assets to the market value of assets is 91.1%. Last year, this ratio was 96.0%. This change is an expected result of the actuarial smoothing technique.
- Members of the optional defined contribution plan are also eligible to participate in the Retiree Health Insurance Credit Fund. We included 246 active members, 39 inactive vested members, and four retired members of the optional defined contribution plan in this actuarial valuation.
- There were no changes in actuarial assumptions or methods since the preceding valuation.
- There were no changes in plan provisions since the preceding valuation.

### III. MEMBER CHARACTERISTICS

#### *Nonretired Members*

Detailed information for 18,302 active members as of July 1, 2005 was provided by the Retirement Office. The data included name, sex, date of birth, date of hire, months of service, and annual earnings.

Age, service, and compensation data is summarized below:

	<u>Males</u>	<u>Females</u>	<u>Total</u>
Number of active members	7,287	11,015	18,302
Average age	46.7	46.4	46.5
Average years of service	11.3	10.0	10.5
Total annual compensation	\$250,837,613	\$287,716,282	\$538,553,895
Average annual compensation	\$34,423	\$26,120	\$29,426

Distributions of the active members by sex, age, and service as of July 1, 2005 are presented in Tables 1, 2 and 3.

#### *Retired Members*

Information regarding the Fund's pensioners and beneficiaries shows that benefits were being paid to 3,682 individuals on July 1, 2005. The average benefit paid to these retired members is \$96 per month. Their average age is 72.2 years. Distributions of the retired members are presented in Tables 4, 5 and 6 by sex, monthly amount, and current age.

TABLE 1

*Census of Members in Active Service on July 1, 2005  
by Nearest Age and Years of Employment  
(Males)*

Nearest Age	Total	Years of Employment									
		Under 5	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 & Over		
Total	7,287	2,441	1,509	1,037	789	728	500	192	91		
Under 20	3	3	-	-	-	-	-	-	-	-	-
20 - 24	155	155	-	-	-	-	-	-	-	-	-
25 - 29	470	389	81	-	-	-	-	-	-	-	-
30 - 34	613	340	236	37	-	-	-	-	-	-	-
35 - 39	712	270	211	183	48	-	-	-	-	-	-
40 - 44	908	312	206	182	145	61	2	-	-	-	-
45 - 49	1,169	300	218	174	174	197	103	3	-	-	-
50 - 54	1,265	246	219	175	172	186	200	66	1		
55 - 59	1,144	242	174	148	134	169	151	88	38		
60 - 64	584	115	104	90	87	83	34	27	44		
65 - 69	188	47	45	30	21	28	6	5	6		
70 - 74	54	11	13	14	7	3	3	2	1		
75 & Over	22	11	2	4	1	1	1	1	1		

**TABLE 2**

***Census of Members in Active Service on July 1, 2005  
by Nearest Age and Years of Employment  
(Females)***

Nearest Age	Total	Years of Employment										
		Under 5	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 & Over			
Total	11,015	4,144	2,466	1,507	1,193	905	540	190	70			
Under 20	2	2	-	-	-	-	-	-	-	-	-	-
20 - 24	205	203	2	-	-	-	-	-	-	-	-	-
25 - 29	678	591	87	-	-	-	-	-	-	-	-	-
30 - 34	830	518	275	36	1	-	-	-	-	-	-	-
35 - 39	1,019	514	271	170	63	1	-	-	-	-	-	-
40 - 44	1,647	655	402	241	198	143	8	-	-	-	-	-
45 - 49	2,045	636	519	299	208	219	157	7	-	-	-	-
50 - 54	2,070	526	441	350	290	184	177	99	3			
55 - 59	1,493	301	283	240	255	199	124	50	41			
60 - 64	741	130	120	122	138	131	57	25	18			
65 - 69	202	43	49	40	22	24	12	7	5			
70 - 74	69	21	14	8	17	2	3	1	3			
75 & Over	14	4	3	1	1	2	2	1	-			

TABLE 3

*Census of Members in Active Service on July 1, 2005  
by Nearest Age and Years of Employment  
(All Members)*

Nearest Age	Total	Years of Employment									
		Under 5	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 & Over		
Total	18,302	6,585	3,975	2,544	1,982	1,633	1,040	382	161		
Under 20	5	5	-	-	-	-	-	-	-	-	-
20 - 24	360	358	2	-	-	-	-	-	-	-	-
25 - 29	1,148	980	168	-	-	-	-	-	-	-	-
30 - 34	1,443	858	511	73	1	-	-	-	-	-	-
35 - 39	1,731	784	482	353	111	1	-	-	-	-	-
40 - 44	2,555	967	608	423	343	204	10	-	-	-	-
45 - 49	3,214	936	737	473	382	416	260	10	-	-	-
50 - 54	3,335	772	660	525	462	370	377	165	4		
55 - 59	2,637	543	457	388	389	368	275	138	79		
60 - 64	1,325	245	224	212	225	214	91	52	62		
65 - 69	390	90	94	70	43	52	18	12	11		
70 - 74	123	32	27	22	24	5	6	3	4		
75 & Over	36	15	5	5	2	3	3	2	1		

**TABLE 4**

***Distribution of Retired Members Receiving Benefits on July 1, 2005  
by Nearest Age and Monthly Amount***

**(Males)**

Nearest Age	Total	Monthly Amount										
		Under \$30	\$30 - \$59	\$60 - \$89	\$90 - \$119	\$120 - \$149	\$150 - \$179	\$180 & Over				
Total	1,599	73	216	295	291	406	253	65				
Under 50	6	-	4	2	-	-	-	-				
50 - 54	19	2	3	2	-	8	4	-				
55 - 59	77	5	7	4	4	43	14	-				
60 - 64	197	11	20	10	35	77	33	11				
65 - 69	361	9	37	50	78	93	71	23				
70 - 74	364	19	53	80	65	77	61	9				
75 - 79	280	20	49	67	45	50	37	12				
80 - 84	178	1	25	47	37	39	22	7				
85 & Over	117	6	18	33	27	19	11	3				

TABLE 5

*Distribution of Retired Members Receiving Benefits on July 1, 2005  
by Nearest Age and Monthly Amount*

(Females)

Nearest Age	Total	Monthly Amount										
		Under \$30	\$30 - \$59	\$60 - \$89	\$90 - \$119	\$120 - \$149	\$150 - \$179	\$180 & Over				
Total	2,083	127	487	565	441	293	129	41				
Under 50	21	10	5	4	2	-	-	-				
50 - 54	27	2	3	8	4	5	5	-				
55 - 59	83	8	20	9	6	25	15	-				
60 - 64	262	13	63	38	65	58	20	5				
65 - 69	482	35	111	116	121	72	23	4				
70 - 74	437	29	107	133	89	50	19	10				
75 - 79	368	14	101	116	74	38	15	10				
80 - 84	224	7	55	64	47	27	16	8				
85 & Over	179	9	22	77	33	18	16	4				

TABLE 6

*Distribution of Retired Members Receiving Benefits on July 1, 2005  
by Nearest Age and Monthly Amount*

*(All Retired Members)*

Nearest Age	Total	Monthly Amount									
		Under \$30	\$30 - \$59	\$60 - \$89	\$90 - \$119	\$120 - \$149	\$150 - \$179	\$180 & Over			
Total	3,682	200	703	860	732	699	382	106			
Under 50	27	10	9	6	2	-	-	-			
50 - 54	46	4	6	10	4	13	9	-			
55 - 59	160	13	27	13	10	68	29	-			
60 - 64	459	24	83	48	100	135	53	16			
65 - 69	843	44	148	166	199	165	94	27			
70 - 74	801	48	160	213	154	127	80	19			
75 - 79	648	34	150	183	119	88	52	22			
80 - 84	402	8	80	111	84	66	38	15			
85 & Over	296	15	40	110	60	37	27	7			



#### IV. ASSETS

##### *Market Value of Assets*

Financial information was provided by the North Dakota Public Employees Retirement System. Following is a comparison of the Retiree Health Insurance Credit Fund assets at market value:

	<u>June 30, 2005</u>	<u>June 30, 2004</u>
Investments	\$33,341,428	\$29,631,663
Cash	39,309	51,616
Contributions receivable	385,062	354,054
Interest receivable	291,578	223,498
Accounts payable	<u>(142,216)</u>	<u>(97,431)</u>
Net assets	\$33,915,161	\$30,163,400

The rate of return on the market value basis was 8.90% for the year ended June 30, 2005.

##### *Actuarial Value of Assets*

The actuarial value of assets are determined as follows:

Market appreciation and depreciation are spread over five years beginning with the year of occurrence. Interest and dividends are recognized immediately. This procedure results in recognition of all changes in market value over five years.

The actuarial value of assets as of June 30, 2005 was \$30,891,786 compared to \$28,949,719 as of June 30, 2004. On an actuarial basis, the rate of return was 3.04% for the year ended June 30, 2005.

Table 7 shows that there is approximately \$3.0 million of appreciation that will be recognized in future years. For the prior year, there was approximately \$1.2 million of appreciation recognized in future years.

Table 8 presents a statement of income and disbursements on an actuarial value basis for the past two years.

TABLE 7

*Determination of Actuarial Value of Assets  
as of June 30, 2005 and 2004*

<u>Year Ending</u>	Total Appreciation (Depreciation)	Of Total Appreciation			
		Percent Deferred	Amount Deferred	Percent Deferred	Amount Deferred
June 30, 2001	\$(2,759,737)	0%	\$0	20%	\$(551,947)
June 30, 2002	(2,467,469)	20%	(493,494)	40%	(986,988)
June 30, 2003	284,302	40%	113,721	60%	170,581
June 30, 2004	3,227,544	60%	1,936,526	80%	2,582,035
June 30, 2005	1,833,279	80%	<u>1,466,623</u>	N/A	<u>0</u>
(a) Total Deferred as of Valuation Date			\$3,023,376		\$1,213,681
(b) Total Appreciation (Depreciation) for last five Plan Years			117,919		(424,315)
(c) Write-Up/(Down) Amount for the year - equals 20% of (b)			23,584		(84,863)
			<u>July 1, 2005</u>		<u>July 1, 2004</u>
Market Value of Assets			\$33,915,161		\$30,163,400
Less: Deferred Appreciation (Depreciation)			<u>3,023,376</u>		<u>1,213,681</u>
Actuarial Value of Assets			\$30,891,785		\$28,949,719
Actuarial Value as a Percentage of Market Value			91.09%		95.98%

**TABLE 8**

*Summary Statement of Income and Disbursements  
for the Years Ended June 30, 2005 and 2004  
(Actuarial Value Basis)*

	<u>June 30, 2005</u>	<u>June 30, 2004</u>
<b>Contribution Income:</b>		
Employer Contributions	\$5,085,050	\$4,854,949
Member Contributions	7,061	4,597
Service Credit Repurchases	<u>246,500</u>	<u>210,547</u>
Total Contribution Income	\$5,338,611	\$5,070,093
Less: Administrative Expenses	<u>(85,262)</u>	<u>(81,269)</u>
Net Contribution Income	<u>\$5,253,349</u>	<u>\$4,988,824</u>
<b>Investment Income:</b>		
Interest and Dividends	\$922,864	\$690,015
Less: Investment Expenses	<u>(62,164)</u>	<u>(53,887)</u>
Net Interest and Dividends	\$860,700	\$636,128
Write-Up of Assets	<u>23,585</u>	<u>(84,863)</u>
Net Investment Income	<u>\$884,285</u>	<u>\$551,265</u>
Total Income Available for Benefit Payments and Reserves	<u>\$6,137,634</u>	<u>\$5,540,089</u>
<b>Benefit Payments:</b>		
Health Credit Benefits	\$(4,193,687)	\$(4,063,395)
Refunds	<u>(1,880)</u>	<u>(698)</u>
Total Benefit Payments	<u>\$(4,195,567)</u>	<u>\$(4,064,093)</u>
Addition to Reserve for Future Benefit Payments	\$1,942,067	\$1,475,996
Actuarial Value of Assets, Start of Year	<u>28,949,719</u>	<u>27,473,723</u>
Actuarial Value of Assets, End of Year	<u>\$30,891,786</u>	<u>\$28,949,719</u>

## V. RESULTS OF ACTUARIAL VALUATION

The contribution requirement consists of the normal cost, administrative expense allowance, plus the cost of amortizing the unfunded actuarial accrued liability over a scheduled period of years. The Board has adopted an amortization period of 40 years beginning July 1, 1990 (25 years remaining as of July 1, 2005). Amortization payments are based on a level percent of payroll. The calculated employer contribution requirements on this basis for fiscal year 2005-2006 are shown below as a dollar amount and as a percentage of the total compensation of contributing employees.

The components of the actuarial contribution requirement are as follows:

	<u>Amount for 2005 - 2006</u>	<u>Percentage of Payroll</u>	<u>Cost per Active Employee</u>
Normal cost	\$2,498,419	0.46%	\$137
Administrative expense allowance	65,000	0.01	4
Amortization payment	<u>2,832,734</u>	<u>0.53</u>	<u>155</u>
Total employer contributions	\$5,396,153	1.00%	\$295

Covered payroll is \$538,553,895 for 18,302 active employees.

The statutory contribution rate is 1.00% of payroll. Actual contributions for 2005-2006 closely match the actuarial contribution requirement.

A reconciliation of the change since the previous actuarial valuation is as follows:

	<u>As a Percentage of Payroll</u>
Employer cost rate as of July 1, 2004	0.99%
Plan experience during the year	<u>0.01</u>
Employer cost rate as of July 1, 2005	1.00%

## VI. FUNDING STATUS

The calculation of funded ratios provides one measure of the progress of funding a plan. The funded ratio is the percentage of plan liabilities covered by plan assets. The greater the ratio, the better funded the plan. This ratio can be calculated using different measures of the plan's liabilities.

The funded ratio shown below is based on assets and liabilities developed in the actuarial valuation. It uses the actuarial accrued liability developed by the projected unit credit actuarial cost method and the actuarial value of assets.

The funded ratio for the past five years is determined below. The progress of this ratio reveals overall improvement in the plan's funded condition.

As of July 1	Actuarial Accrued Liability	Actuarial Value of Assets	Funded Ratio
2001	\$65,467,465	\$24,776,548	37.8%
2002	68,988,084	26,402,058	38.3
2003	71,976,336	27,473,723	38.2
2004	74,589,006	28,949,719	38.8
2005	78,090,560	30,891,785	39.6

## **VII. ACTUARIAL ASSUMPTIONS AND COST METHODS**

The assumptions and cost methods used in the actuarial valuation as of July 1, 2005 are the same as those used in the previous valuation. A summary of the actuarial assumptions and cost methods follows. Details can be found in Exhibit III of the attachment.

### ***Investment Return***

The actuarial calculations are based on the assumption that the investment return on the actuarial value of assets will be 8.00% per year, net of investment expenses.

### ***Retirement Rates***

The retirement rates used in the valuation differ for active members of the Main System, Highway Patrol, Judges, National Guard and Law Enforcement. Rates for the Main System are described below. The retirement assumptions for members of the Highway Patrol, Judges, National Guard and Law Enforcement are detailed in the valuation reports for their retirement systems.

For members of the Main System, sample retirement rates are: 4% at age 55, 8% at age 60, 40% at age 65, and 100% at age 70.

### ***Withdrawal Rates before Retirement***

The withdrawal rates used in this actuarial valuation are intended to recognize the percentage of members who will leave service at each age prior to retirement for reasons other than death or disability. Withdrawal rates differ for active members of the Main System, Highway Patrol, Judges, National Guard and Law Enforcement. Rates for the Main System are described below. The withdrawal assumptions for members of the Highway Patrol, Judges, National Guard and Law Enforcement are detailed in the valuation report for their retirement systems.

Select and ultimate rates are used for the Main System. During the select period (first five years of employment), rates vary by year of service and age. During the ultimate period (after five years of employment), Main System rates vary by age and sex. The Main System rates are detailed in Exhibit III.

### ***Disability Rates***

Disability rates differ for active members of the Public Employees Retirement System (PERS) and the Highway Patrol. Rates for PERS are summarized below for selected ages. The disability assumptions for the Highway Patrol are detailed in the valuation report for their retirement system.

<u>Age</u>	<u>Males</u>	<u>Females</u>
20	0.03%	0.02%
30	0.05	0.03
40	0.09	0.07
50	0.25	0.18
60	0.68	0.49

### ***Mortality Rates***

The reserve required to pay a member's retirement benefits depends on the period over which payments will be received. The valuation is based on the 1983 Group Annuity Mortality Table for healthy members and the Pension Benefit Guaranty Corporation Disabled Life Mortality Table for Individuals Receiving Social Security Disability Benefits for disabled members. The schedule below shows the annual mortality rates and life expectancies underlying the healthy mortality tables.

<u>Retired Members</u>				
	<u>Males</u>		<u>Females</u>	
<u>Age</u>	<u>Deaths per 1,000 Lives</u>	<u>Expected Number of Years of Life Remaining</u>	<u>Deaths per 1,000 Lives</u>	<u>Expected Number of Years of Life Remaining</u>
55	6.1	24.8	2.5	30.3
60	9.2	20.6	4.2	25.7
65	15.6	16.7	7.1	21.3
70	27.5	13.2	12.4	17.2
75	44.6	10.2	24.0	13.4
80	74.1	7.6	42.9	10.2
85	114.8	5.7	69.9	7.6

### ***Administrative Expenses***

Annual administrative expenses are assumed to be \$65,000.

### ***Marital Status***

At death, 75% of male members of PERS and 60% of female members of PERS are assumed to have spouses. Males are assumed to be five years older than their female spouses.

For the Highway Patrol, 90% of all active members are assumed to have spouses. Males are assumed to be three years older than their female spouses.

### ***Valuation of Assets***

Investments are carried at an adjusted market value. The net market appreciation (depreciation) is spread over five years in equal dollar amounts, commencing with the year of occurrence. The actuarial value of assets is the market value less deferred appreciation (depreciation).

### ***Participation Rates***

Receipt of benefits from the Fund is contingent upon the member's election of participation in the North Dakota uniform group insurance program. The assumption concerning the percentage of active members participating in this program varies with the member's service at retirement. Assumed participation rates are as follows:

<u>Main System, National Guard and Law Enforcement</u>		<u>Judges and Highway Patrol</u>	
<u>Years of Service</u>	<u>Participation Rate</u>	<u>Years of Service</u>	<u>Participation Rate</u>
3 - 4	25%	5 - 9	50%
5 - 9	50%	10 - 14	70%
10 - 14	70%	15 - 19	80%
15 - 19	80%	20 - 24	95%
20 - 24	95%	25 and over	100%
25 and over	100%		

### ***Projected Unit Credit Actuarial Cost Method***

Under the Projected Unit Credit Actuarial Cost Method, benefits are projected to each assumed occurrence of decrement (death, disability, retirement) using service as of the valuation date. The normal cost is equal to the actuarial present value of the benefits allocated to the current year.

The actuarial accrued liability for active members is equal to the actuarial present value of the benefits allocated to all prior years. The actuarial assumptions used to determine the liabilities for members of the optional defined contribution plan are the same as those used for the Main System. The actuarial accrued liability for members currently receiving benefits and for participants entitled to deferred benefits is the actuarial present value of the benefits expected to be paid. The unfunded actuarial accrued liability is equal to the actuarial accrued liability minus the actuarial value of assets. This amount is amortized as a level percentage of payroll over a fixed period of years. Payroll is assumed to increase by an inflation assumption of 4.5% per year.



October 12, 2005

**NORTH DAKOTA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
RETIREE HEALTH INSURANCE CREDIT FUND**

*Actuarial Valuation Certificate*

This is to certify that we have prepared an Actuarial Valuation of the Fund as of July 1, 2005 in accordance with generally accepted actuarial principles and practices.

The certificate contains the following attached exhibits:

- I. Actuarial Valuation Results
- II. Changes in Plan Provisions, Actuarial Assumptions, and Cost Methods
- III. Actuarial Assumptions and Cost Methods
- IV. Summary of Plan Provisions

The valuation was based on information supplied by the Retirement Office with respect to member and financial data. We have not verified, and customarily would not verify, such information, but we have no reason to doubt its substantial accuracy.

To the best of our knowledge, the information supplied in this actuarial valuation is complete and accurate and in our opinion each individual assumption used (a) is reasonably related to the experience of the Fund and to reasonable expectations and (b) represents our best estimate of anticipated experience under the Fund.

The undersigned are available to provide further information or to answer any questions regarding the report.



Leslie L. Thompson, FSA, MAAA, EA  
Senior Vice President and Actuary



Brad Ramirez, ASA, MAAA  
Actuarial Associate

## EXHIBIT I

### ACTUARIAL VALUATION RESULTS

1. Actuarial accrued liability on July 1, 2005:	
a. Active members .....	\$ 44,111,463
b. Retired members and beneficiaries.....	<u>33,979,097</u>
c. Total.....	\$78,090,560
2. Assets at actuarial value (\$33,915,161 at market value) .....	30,891,785
3. Unfunded actuarial accrued liability - equals (1) minus (2).....	47,198,775
4. Normal cost for ensuing year* .....	2,498,419
5. Amortization payment - equals 25-year amortization of item (3) as a level percent of total payroll* .....	2,832,734
6. Administrative expenses .....	65,000
7. Total cost for ensuing year - equals (4) plus (5) plus (6) .....	5,396,153
8. Total payroll of covered members .....	538,553,895
9. Total employer cost as percentage of payroll - equals (7) divided by (8).....	1.00%

---

\* Adjusted for interest to recognize payments throughout the year.

## **EXHIBIT II**

### **CHANGES IN PLAN PROVISIONS, ACTUARIAL ASSUMPTIONS, AND COST METHODS**

There were no changes in plan provisions, actuarial assumptions, or the actuarial cost methods since the preceding valuation.

## EXHIBIT III

### ACTUARIAL ASSUMPTIONS AND COST METHODS

#### 1. Mortality Tables:

Healthy: 1983 Group Annuity Mortality Table.

Disabled: Pension Benefit Guaranty Corporation Disabled Life Mortality Table for Individuals Receiving Social Security Disability Benefits.

#### 2. Annual Withdrawal Rates:

Different withdrawal rates are applied to the active members of the Main System, Highway Patrol, Judges, National Guard and Law Enforcement. Rates for the Main System are detailed below. The withdrawal assumptions applied to the active members in the other groups are detailed in the valuation report for their retirement system.

Select and ultimate rates are used for active members of the Main System. During the select period (first five years of active employment) rates vary by entry age and year of employment. During the ultimate period (active employment after the first five years), rates vary by attained age and sex.

<i>Select Period</i>					
Age	Year of Employment				
	1	2	3	4	5
29 & Under	23%	20%	17%	16%	15%
30 - 39	17	15	13	12	11
40 & Over	15	12	10	8	6

<i>Ultimate Period</i>		
Age	Male	Female
20 - 24	12%	12%
25 - 29	8	10
30 - 34	5	8
35 - 39	4	6
40 - 44	3	5
45 - 49	3	4
50 & Over	2	3

**EXHIBIT III (continued)**

**3. Disability Incidence Rates:**

Different disability incidence rates are applied to the active members of PERS and the Highway Patrol. The disability rates applied to the Highway Patrol are described in the valuation report for their retirement system.

Sample rates for PERS are:

<u>Age</u>	<u>Males</u>	<u>Females</u>
20	0.03%	0.02%
30	0.05	0.03
40	0.09	0.07
50	0.25	0.18
60	0.68	0.49

**4. Retirement Rates for Active Members:**

Different retirement rates are applied to the active members of the Main System, Highway Patrol, Judges, National Guard and Law Enforcement. Retirement rates for the Main System are detailed below. The retirement rates applied to the active members of the other groups are detailed in the valuation report for their retirement system.

Annual rates for the Main System are as follows:

<u>Age</u>	<u>Rate</u>	<u>Age</u>	<u>Rate</u>
55	4%	63	25%
56	6	64	25
57	6	65	40
58	6	66	20
59	6	67	20
60	8	68	20
61	15	69	20
62	35	70	100

Age 64 and 20 years of service: 100%

### EXHIBIT III (continued)

#### 5. Participation Rates:

The percentage of eligible members electing coverage under the health insurance program and receiving the stipend varies with years of service. Rates are as follows:

<u>Main System, National Guard and Law Enforcement</u>		<u>Judges and Highway Patrol</u>	
<u>Years of Service</u>	<u>Participation Rate</u>	<u>Years of Service</u>	<u>Participation Rate</u>
3 - 4	25%	5 - 9	50%
5 - 9	50%	10 - 14	70%
10 - 14	70%	15 - 19	80%
15 - 19	80%	20 - 24	95%
20 - 24	95%	25 or more	100%
25 or more	100%		

#### 6. Joint and Survivor Option Election Rates:

Main System, Judges, National Guard and Law Enforcement:

65% of male retirees and 20% of female retirees will elect a joint and survivor form of pension from the retirement system in which they participated.

Highway Patrol:

90% of retirees will elect a joint and survivor form of pension from the retirement system.

#### 7. Interest Rate:

8.00% per annum, net of investment expenses.

#### 8. Annual Administrative Expenses:

\$65,000.

#### 9. Inflation:

4.50% per annum.

## **EXHIBIT III (continued)**

### **10. Marital Status:**

Main System, Judges, National Guard and Law Enforcement:

At death, 75% of active male members and 60% of active female members are assumed to have spouses. Males are assumed to be five years older than their female spouses.

Highway Patrol:

At death, 90% of all active members are assumed to have spouses. Males are assumed to be three years older than their female spouses.

### **11. Optional Defined Contribution Plan:**

The actuarial assumptions used to determine the liabilities for members of the optional defined contribution plan are the same as those used for the Main System.

### **12. Actuarial Cost Method:**

Projected Unit Credit Actuarial Cost Method. Unfunded actuarial accrued liability amortized in installments assuming 4.5% inflation assumption over a fixed period that ends on June 30, 2030.

### **13. Actuarial Value of Assets:**

Adjusted market value that immediately recognizes interest and dividends. The procedure recognizes 20% of each year's total appreciation (depreciation) beginning with the year of occurrence. After five years, the appreciation (depreciation) is fully recognized.

## EXHIBIT IV

### SUMMARY OF PLAN PROVISIONS

This appendix summarizes the major benefit provisions of the North Dakota Public Employees Retirement System Retiree Health Insurance Credit Fund as included in the valuation. It is not intended to be, nor should it be, interpreted as a complete statement of all plan provisions.

#### 1. Normal Retirement:

Age requirement:

Main System and Judges:	Age 65 or Rule of 85.
Highway Patrol:	Age 55 or Rule of 80.
National Guard:	Age 55.
Law Enforcement:	Age 55 or Rule of 85.

Service requirement:

Main System and Judges:	None.
Highway Patrol:	Ten years.
National Guard and Law Enforcement:	Three consecutive years.

Other requirements:

Participation in the North Dakota Uniform Group Insurance Program.

Benefit amount:

A monthly stipend equal to \$4.50 times service.

#### 2. Early Retirement:

Age requirement:

Main System and Judges:	Age 55.
Highway Patrol, National Guard and Law Enforcement:	Age 50.

Service requirement:

Highway Patrol, National Guard and Law Enforcement:	Three years.
Judges:	Five years.
Highway Patrol:	Ten years.



**EXHIBIT IV (continued)**

Benefit amount:

Main System and Judges:

The Normal Retirement Benefit reduced by 3% for retirements at age 64 and an additional 6% for each year by which retirement precedes age 64.

Benefits are unreduced upon the fulfillment of the Rule of 85.

Highway Patrol, National Guard and Law Enforcement:

The Normal Retirement Benefit reduced by 3% for retirements at age 54 and an additional 6% for each year by which retirement precedes age 54.

Benefits are unreduced upon the fulfillment of the Rule of 80.

**3. Disability Retirement:**

Age requirement:	None.
Service requirement:	Six months.
Other requirements:	As required by applicable pension plan.
Benefit amount:	Same as Normal Retirement Benefit.

**4. Pre-Retirement Death Benefit:**

Age requirement:	None.
Service requirement:	
Main System, National Guard and Law Enforcement:	Three years.
Judges:	Five years.
Highway Patrol:	Ten years.
Benefit amount:	Same as Normal Retirement Benefit accrued to the date of the member's death, payable for as long as benefits are payable to the spouse from the Retirement System under the standard option.

**EXHIBIT IV (continued)**

**5. Post-Retirement Death Benefit:**

Following a retired member's death, the Retiree Health Insurance Credit Fund will: (1) continue benefits to the member's spouse if the spouse continues to receive a monthly pension from member's Retirement System or (2) provide benefits to the member's spouse if the member selected a joint and survivor option from the Retiree Health Insurance Credit Fund.

**6. Alternative Options:**

If benefits from the member's Retirement System are paid under single life, level Social Security, or 5 or 10 year term certain options (without a continuation to the spouse after the certain period ends), actuarially reduced health credit benefits may be elected for the spouse. Alternative options in the Retiree Health Insurance Credit Fund include 50% and 100% joint and survivor annuities.

**7. Service:**

Members receive credit for each year and month of employment.

**8. Contributions:**

The employer contributes 1.00% of covered salaries and wages for participating employees.