



**Cavanaugh Macdonald**  
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***NEBRASKA PUBLIC EMPLOYEES  
RETIREMENT SYSTEM***

**STATE PATROL RETIREMENT SYSTEM**

**ACTUARIAL VALUATION REPORT  
AS OF JULY 1, 2013**

**Fifty-eighth Actuarial Report for  
State Fiscal Year Ending June 30, 2015  
and  
System Plan Year Beginning July 1, 2013**







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# Cavanaugh Macdonald

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November 18, 2013

Public Employees Retirement Board  
Nebraska Public Employees Retirement System  
Post Office Box 94816  
Lincoln, NE 68509

Dear Members of the Board:

At your request, we performed an actuarial valuation of the State Patrol Retirement System as of July 1, 2013 for purposes of determining the actuarial required contribution rate for the plan year ending June 30, 2014. It is our understanding that any required State contributions for this plan year will be made on July 1, 2014 (State fiscal year end 2015). The major findings of the valuation are contained in this report, which reflects the benefit provisions in place on July 1, 2013. Although there was no change to the actuarial assumptions from the prior valuation, there was one change to the actuarial methods. The amortization of the unfunded actuarial accrued liability was changed from a level dollar payment to a level percent of payroll in Legislative Bill 553. This change resulted in a lower contribution rate in the current valuation.

This is the first actuarial valuation report prepared by Cavanaugh Macdonald Consulting, LLC (CMC). As part of our transition work, we replicated the July 1, 2012 actuarial valuation. Results were within acceptable limits, but as is typical in a takeover situation, there were differences in the key valuation results. Based on our experience, these differences are neither unusual nor significant. The details of the replication results are discussed in the Board Summary of this report.

In preparing our report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, statutory provisions, member data and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete, our results may be different and our calculations may need to be revised.

We further certify that all costs, liabilities, rates of interest and other factors for the State Patrol Retirement System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer the best estimate of anticipated experience. Nevertheless, the emerging costs will vary from those presented in this report to the extent actual experience differs from that projected by the actuarial assumptions. The Public Employees Retirement Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in Appendix C.

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Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Due to the limited scope of our assignment, we did not perform an analysis of the potential range of future measurements.

Actuarial computations presented in this report are for purposes of determining the funding amounts for the System as set out in the Nebraska statutes. The computations presented in this report under GASB Statement Number 25 are for purposes of fulfilling financial accounting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals, and our understanding of GASB Statement Number 25. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

The consultants who worked on this assignment are pension actuaries. CMC's advice is not intended to be a substitute for qualified legal or accounting counsel.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein. We are available to answer any questions on the material contained in the report, or to provide explanations or further details as may be appropriate.

We respectfully submit the following report and look forward to discussing it with you.

Sincerely,

A handwritten signature in blue ink that reads 'Patrice Beckham'.

Patrice A. Beckham, FSA, EA, FCA, MAAA  
Principal and Consulting Actuary

A handwritten signature in blue ink that reads 'Brent A. Banister'.

Brent A. Banister Ph.D., FSA, EA, MAAA, FCA  
Chief Pension Actuary



## SECTION 1 – BOARD SUMMARY

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This report presents the results of the July 1, 2013 actuarial valuation of the State Patrol Retirement System. The primary purposes of performing actuarial valuations are to:

- Determine the level of State contributions for the plan year ending June 30, 2014 which are sufficient to meet the funding policy set out in Nebraska State Statutes.
- Disclose asset and liability measurements as well as the current funded status of the System on the valuation date.
- Compare actual and expected experience under the System during the plan year ended June 30, 2013.
- Analyze and report on trends in System contributions, assets and liabilities over the past several years.

The Nebraska statutes require the State to make an additional contribution if the regular, payroll-related contributions by members and the State are insufficient to meet the actuarial contribution for the plan year. Based on the results of the July 1, 2013 actuarial valuation, an additional State contribution of \$4,652,774 is required for the plan year ending June 30, 2014 (expected to be paid July 1, 2014).

The actuarial valuation results provide a “snapshot” view of the System’s financial condition on July 1, 2013. The System’s unfunded actuarial accrued liability (UAAL) increased from \$79.5 million last year to \$92.4 million this year and the funded ratio decreased from 78.1% to 76.1%. The actuarial required contribution rate decreased from 56.06% last year to 48.97% in this year’s valuation. Numerous factors impacted the July 1, 2013 actuarial valuation results, including:

- Differences in valuation procedures as identified in the letter to the Board about the replication of the July 1, 2012 actuarial valuation. These changes increased the UAAL by \$9.0 million, decreased the normal cost rate by 0.48% of pay, with a resulting decrease in the actuarial required contribution rate of 2.50%.
- Legislative Bill 553 (LB 553) changed the amortization of the unfunded actuarial accrued liability to be based on payments determined as a level percent of payroll instead of a level dollar amount. This change reduced the actuarial required contribution rate by 9.38% of pay.
- Actual experience on both System assets and liabilities resulted in an increase in the contribution rate. A significant factor in this increase was that the number of active members declined, resulting in less payroll over which to spread the amortization payments. The net impact of all experience was an increase in the actuarial required contribution rate of 4.79%.
- As scheduled in state statute, the employee and employer contribution rate each decreased from 19% of pay to 16%. Although this change was anticipated and did not impact the System’s liabilities, it decreased the statutory contribution rates as expected, resulting in an increase in the additional required contribution rate for the State in the current valuation.



## SECTION 1 – BOARD SUMMARY

The valuation results reflect net unfavorable experience for the past plan year as demonstrated by an UAAL that was higher than expected. The UAAL on July 1, 2013 is \$92.4 million as compared to an expected UAAL of \$91.3 million. The unfavorable experience was due to the net impact of an experience loss of \$6.5 million on the actuarial value of assets and an experience gain of about \$5.4 million on System liabilities. While there was a loss on the actuarial value of assets, it is worth noting that the investment return on a market value basis of 13% was high enough to move the System from a deferred loss of \$4.5 million last year to a deferred gain of \$15.1 million this year. This is a significant improvement which will be fully recognized in the asset smoothing method over the next four years.

This was the first actuarial valuation report prepared by Cavanaugh Macdonald Consulting, LLC (CMC). As part of our transition work, we replicated the July 1, 2012 actuarial valuation. Results were within acceptable limits, but as is typical in a takeover situation, there were differences in the key valuation results. Based on our experience, these differences are neither unusual nor significant. During the replication we identified several changes that we believe will result in a better estimate of future liabilities and costs. As a result of implementing these changes, our final liability measurements and normal cost rate were different than those in the 2012 valuation report. For additional information on the replication of the 2012 valuation, please refer to our letter to the Board dated September 6, 2013. A summary of the key actuarial measurements in the replication, using CMC’s preferred methodology, is shown in the following table:

	July 1, 2012 Valuation Results (\$M)		
	CMC	Buck	CMC/Buck
Present Value of Future Benefits	\$ 439.1	\$ 426.5	103.0%
Actuarial Accrued Liability	\$ 371.3	\$ 362.3	102.5%
Normal Cost Rate	28.62%	29.10%	98.3%
UAAL Contribution Rate	<u>24.95%</u>	<u>26.96%</u>	92.5%
Actuarial Contribution Rate	53.56%	56.06%	95.5%

Note: Numbers may not add due to rounding

There was no change in the actuarial assumptions since the last valuation, but there was one change to the actuarial methods. LB 553 changed the amortization of the unfunded actuarial accrued liability from a level dollar payment to a level percent of payroll payment. Under the new methodology, the dollar amount of the UAAL payment increases with the assumed payroll growth each year in the future so payments are lower in the earlier years of the amortization period and higher in the later years. This change lowered the UAAL payment in the current valuation from 29.66% of payroll to 20.28%, which lowered the actuarial required contribution by 9.38% of pay or about \$2.6 million.

A summary of the key results from the July 1, 2013 actuarial valuation is shown in the following table. As the table indicates, the statutory contribution rates are not sufficient to meet the actuarial required contribution rate and an additional State appropriation of 16.97% of pay is required.





## SECTION 1 – BOARD SUMMARY

	July 1, 2013 Valuation Results	July 1, 2012 Valuation Results
Unfunded Actuarial Accrued Liability	\$92,407,071	\$79,488,190
Funded Ratio (Actuarial Assets)	76.11%	78.10%
Normal Cost Rate	28.69%	29.10%
UAAL Amortization Rate	20.28%	26.96%
Total Actuarial Required Contribution	48.97%	56.06%
Member Contribution Rate	(16.00%)	(19.00%)
Employer Contribution Rate	(16.00%)	(19.00%)
LB 137 Contribution Rate	0.00%	(0.41%)
Additional Required State Contribution Rate	16.97%	18.06%
Additional Required State Contribution	\$4,652,774	\$4,552,680

### ***EXPERIENCE FOR THE LAST PLAN YEAR***

Numerous factors contributed to the change in the System's assets, liabilities, and actuarial contribution rate between July 1, 2012 and July 1, 2013. The components are examined in the following discussion.

### **ASSETS**

As of June 30, 2013, the System had net assets of \$309.6 million, when measured on a market value basis. This was an increase of about \$31.3 million from the prior year.

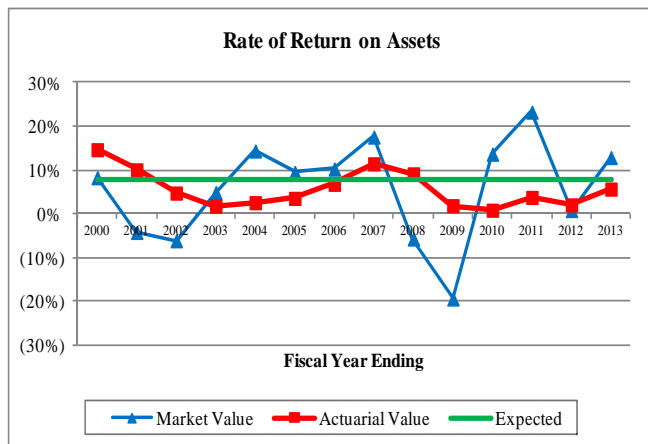
The market value of assets is not used directly in the calculation of the unfunded actuarial accrued liability and the actuarial required contribution rate. An asset valuation method, which smoothes the effect of market fluctuations, is used to determine the value of assets used in the valuation. The resulting amount is called the actuarial value of assets. In this year's valuation, the actuarial value of assets is \$294.5 million, an increase of about \$11.7 million from the prior year. The components of change in the asset values are shown in the following table:

	Market Value (\$M)	Actuarial Value (\$M)
<b>Net Assets, June 30, 2012</b>	\$ 278.31	\$ 282.81
- Employer and Member Contributions	+ 12.62	+ 12.62
- Benefit Payments and Administrative Expenses	- 16.98	- 16.98
- Investment Income	+ 35.64	+ 16.02
<b>Net Assets, June 30, 2013</b>	\$ 309.59	\$ 294.47
Rate of Return	12.9%	5.7%



## SECTION 1 – BOARD SUMMARY

The rate of return on the actuarial value of assets was 5.7%, less than the 8% assumption. As a result, there was an experience loss on assets of \$6.5 million. Please see Section 3 of this report for more detailed information on the market and actuarial value of assets.



*The rate of return of the actuarial value of assets has been less volatile than the market value return, illustrating the benefit of using an asset smoothing method.*

## LIABILITIES

The actuarial accrued liability is that portion of the present value of future benefits that will not be paid by future normal costs. The difference between this liability and the actuarial value of assets as of the valuation date is called the unfunded actuarial accrued liability (UAAL). The dollar amount of unfunded actuarial accrued liability is reduced if the contributions to the System exceed the normal cost for the year plus interest on the prior year's UAAL.

The unfunded actuarial accrued liability is shown as of July 1, 2013 in the following table:

	Actuarial Value of Assets	Market Value of Assets
Actuarial Accrued Liability	\$386,875,100	\$386,875,100
Value of Assets	<u>294,468,029</u>	<u>309,589,784</u>
Unfunded Actuarial Accrued Liability	\$92,407,071	\$77,285,316
Funded Ratio	76.11%	80.02%

See Section 4 of the report for the detailed development of the unfunded actuarial accrued liability.

The net change in the UAAL from July 1, 2012 to July 1, 2013 was \$12.9 million. The components of this net change are shown in the following table (in millions):

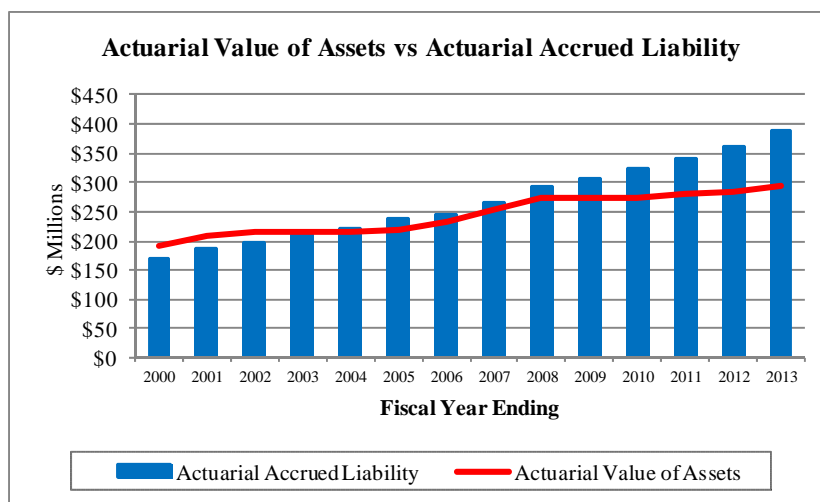


## SECTION 1 – BOARD SUMMARY

	(\$ Millions)
<b>Unfunded Actuarial Accrued Liability, July 1, 2012</b>	\$79.49
- Expected decrease from amortization method	(\$0.87)
- Actual versus expected contributions	\$1.84
- Investment experience	\$6.49
- Liability experience	(\$5.39)
- Other experience	\$1.82
- Changes identified in replication process	\$9.03
<b>Unfunded Actuarial Accrued Liability, July 1, 2013</b>	\$92.41

As shown above, various components impacted the UAAL. Actuarial gains (losses), which result from actual experience that is more (less) favorable than anticipated based on the actuarial assumptions, are reflected in the UAAL and are measured as the difference between the expected UAAL and the actual UAAL, taking into account any changes due to actuarial assumptions and methods, or benefit provision changes. Overall, the System experienced a net actuarial loss of \$1.1 million. The net actuarial loss may be explained by considering the separate experience of assets and liabilities. As noted earlier, there was a \$6.5 million loss on the actuarial value of assets. This loss was partially offset by a \$5.4 million experience gain on the System's liabilities. The liability gain was a result of various components of actuarial gains and losses, the largest of which were a gain from salary increases that were lower than expected and a gain from a cost of living adjustment that was lower than expected based on the actuarial assumptions.

As the following graph of historical actuarial assets and accrued liabilities shows, the State Patrol Retirement System liabilities have steadily increased while the assets, especially since the fiscal year 2009 investment experience, have grown more slowly. Since the assets are growing more slowly than the liabilities, the funded ratio has declined.



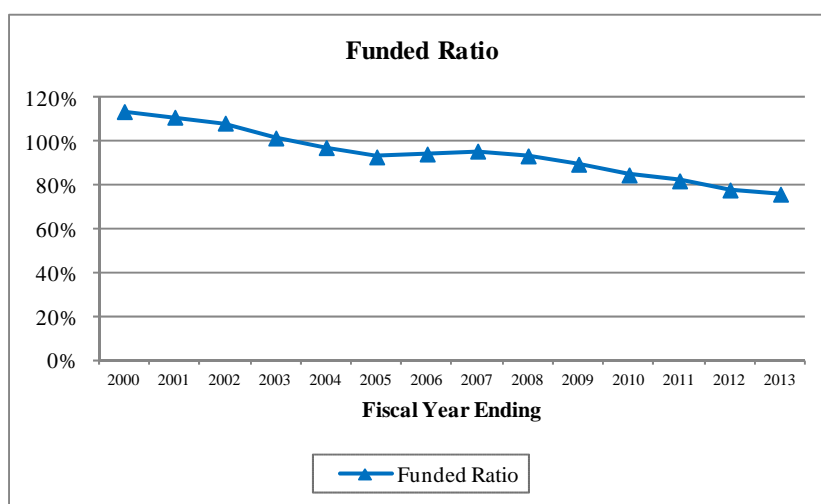


## SECTION 1 – BOARD SUMMARY

An evaluation of the UAAL on a pure dollar basis may not provide a complete analysis since only the difference between the assets and liabilities (which are both very large numbers) is reflected. Another way to evaluate the UAAL and the progress made in its funding is to track the funded ratio, the ratio of the actuarial value of assets to the actuarial accrued liability. The funded status information is shown below (in millions).

	7/1/2009	7/1/2010	7/1/2011	7/1/2012	7/1/2013
Funded Ratio	89.79%	84.91%	82.22%	78.06%	76.11%
Unfunded Actuarial Accrued Liability (\$M)	\$31.17	\$48.59	\$60.36	\$79.49	\$92.41

The funded ratio over a longer period of years is shown in the following graph:



### ACTUARIAL REQUIRED CONTRIBUTION RATE

The System is funded by statutory contribution rates for members (16.0% of pay) and the employer (16.0% of pay). State statutes require the State to make an additional contribution if the regular, payroll-related contributions by employees and employers are insufficient to meet the actuarial required contribution amount for the plan year. The State contributions for the plan year are made on the July 1 following the plan year end. Based on the results of the July 1, 2013 actuarial valuation, an additional State contribution of 16.97% of pay, or \$4,652,774, is necessary for the plan year ending June 30, 2014.

The actuarial contribution rate consists of two components:

- A “normal cost” for the portion of projected liabilities allocated by the actuarial cost method to service of members during the year following the valuation date.
- An “unfunded actuarial accrued liability contribution” for the excess of the portion of projected liabilities allocated to service to date over the actuarial value of assets.



## SECTION 1 – BOARD SUMMARY

As a result of LB 553, the UAAL contribution rate is now determined by calculating the amortization payments as a level percentage of payroll rather than as a level dollar amount. This change results in payments that are lower in the initial years of the amortization period, but increase each year in the future with the assumed payroll growth assumption of 4%. Because the UAAL contribution rate is determined as a level percent of payroll, the dollar amount of the UAAL contribution is scheduled to increase 4% each year in the future even if all actuarial assumptions are met. The actuarial required contribution rate was reduced by 9.38%, about \$2.6 million, due to this change in amortization methodology.

See Section 5 of the report for the detailed development of the actuarial contribution rate and amount, which are summarized in the following table:

<b>Contribution Rates</b>	<b>July 1, 2013</b>	<b>July 1, 2012</b>
Normal Cost Rate	28.69%	29.10%
UAAL Amortization Rate	20.28%	26.96%
Total Actuarial Required Contribution	48.97%	56.06%
Member Contribution Rate	(16.00%)	(19.00%)
Employer Contribution Rate	(16.00%)	(19.00%)
Expected State Appropriation for LB 137 COLA	0.00%	(0.41%)
Total Statutory Contribution Rate	(32.00%)	(38.41%)
Additional Required State Contribution Rate	16.97%	17.65%
Additional Required State Contribution	\$4,652,774	\$4,552,680

The actuarial required contribution rate for the plan year ending June 30, 2014 is 48.97%. The member contribution rate of 16.0% and the employer contribution rate of 16.0% result in a total statutory contribution rate of 32.00% of pay. As a result, there is a contribution shortfall of 16.97%, which is projected to be about \$4.7 million.

A history of expected employer contributions and any resulting additional State contributions is shown in the following table, whether or not actually contributed.



## SECTION 1 – BOARD SUMMARY

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History of Expected State Contributions			
Plan Year	State Contribution*	Additional Contributions	Total
2013/2014	\$ 4,386,823	\$ 4,652,774	\$ 9,039,597
2012/2013	5,005,482	4,552,680	9,558,162
2011/2012	5,291,940	2,255,430	7,547,370
2010/2011	4,597,331	2,770,262	7,367,593
2009/2010	4,203,166	1,801,610	6,004,776
2008/2009	4,361,746	812,087	5,173,833
2007/2008	4,225,729	365,020	4,590,749
2006/2007	3,942,430	813,159	4,755,589
2005/2006	3,766,098	1,080,050	4,846,148
2004/2005	3,050,645	948,654	3,999,299
2003/2004	2,745,970	434,202	3,180,172
2002/2003	2,413,762	0	2,413,762

\* Includes State Appropriations

Note: Information before Plan Year 2013/2014 was produced by prior actuary.

The actuarial required contribution rate, which is determined based on the snapshot of the System taken on the valuation date of July 1, 2013, will change each year as the deferred investment experience is recognized and other experience (both investment and demographic) impacts the System.



## SECTION 1 – BOARD SUMMARY

### SUMMARY OF PRINCIPAL RESULTS

	<u>7/1/2013 Valuation</u>	<u>7/1/2012 Valuation</u>	<u>% Change</u>
<b>1. PARTICIPANT DATA</b>			
Number of:			
Active Members	409	427	(4.22%)
Retired Members and Beneficiaries	375	370	1.35%
DROP Participants	51	40	27.50%
Disabled Members	12	12	0.00%
Inactive Members	<u>16</u>	<u>18</u>	(11.11%)
Total Members	863	867	(0.46%)
Projected Annual Salaries of Active Members	\$ 27,417,644	\$ 25,794,219	6.29%
Annual Retirement Payments for Retired Members and Beneficiaries	\$ 18,611,574	\$ 17,391,672	7.01%
<b>2. ASSETS AND LIABILITIES</b>			
a. Market Value of Assets	\$ 309,589,784	\$ 278,311,367	11.24%
b. Actuarial Value of Assets	294,468,029	282,810,785	4.12%
c. Total Actuarial Accrued Liability	386,875,100	362,298,975	6.78%
d. Unfunded Actuarial Accrued Liability [c - b]	\$ 92,407,071	\$ 79,488,190	16.25%
e. Funded Ratio (Actuarial Value of Assets) [b / c]	76.11%	78.06%	(2.49%)
f. Funded Ratio (Market Value of Assets) [a / c]	80.02%	76.82%	4.17%
<b>3. EMPLOYER CONTRIBUTION RATES AS A PERCENT OF PAYROLL</b>			
Normal Cost	28.69%	29.10%	(1.41%)
Amortization of Unfunded Actuarial Accrued Liability	<u>20.28%</u>	<u>26.96%</u>	(24.78%)
Actuarial Required Contribution Rate	48.97%	56.06%	(12.65%)
Member Contribution Rate	(16.00%)	(19.00%)	(15.79%)
Employer Contribution Rate	(16.00%)	(19.00%)	(15.79%)
LB 137 Contribution Rate	<u>0.00%</u>	<u>(0.41%)</u>	(100.00%)
Additional Required State Contribution Rate	16.97%	17.65%	(3.85%)
Additional Required State Contribution	\$ 4,652,774	\$ 4,552,680	2.20%

Note: Results for 7/1/12 were prepared by the prior actuary.



## SECTION 2 – SCOPE OF THE REPORT

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This report presents the actuarial valuation of the State Patrol Retirement System as of July 1, 2013. This valuation was prepared at the request of the Public Employees Retirement Board of the Nebraska Public Employees Retirement System.

Please pay particular attention to our actuarial certification letter, where the guidelines employed in the preparation of this report are outlined. We also comment on the sources and reliability of both the data and the actuarial assumptions upon which our findings are based. Those comments are the basis for our certification that this report is complete and accurate to the best of our knowledge and belief.

A summary of the findings which result from this valuation is presented in the previous section. Section 3 describes the assets and investment experience of the System. Sections 4 and 5 describe how the obligations of the System are to be met under the actuarial cost method in use. Section 6 includes the information required for the financial reporting standards established by the Governmental Accounting Standards Board (GASB).

This report includes several appendices:

- Appendix A Schedules of valuation data classified by various categories of members.
- Appendix B A summary of the current benefit structure, as determined by the provisions of governing law on July 1, 2013.
- Appendix C A summary of the actuarial methods and assumptions used to estimate liabilities and determine contribution rates.
- Appendix D A glossary of actuarial terms.





## SECTION 3 – ASSETS

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In many respects, an actuarial valuation can be thought of as an inventory process. The inventory is taken as of the actuarial valuation date, which for this valuation is July 1, 2013. On that date, the assets available for the payment of benefits are appraised. The assets are compared with the liabilities of the System, which are generally in excess of assets. The actuarial process then leads to a method of determining the contributions needed by members and the employer in the future to balance the System assets and liabilities.

### **Market Value of Assets**

The current market value represents the "snapshot" or "cash-out" value of System assets as of the valuation date. In addition, the market value of assets provides a basis for measuring investment performance from time to time. Table 1 is a comparison, at market values, of System assets as of July 1, 2013, and July 1, 2012, in total and by investment category. Table 2 summarizes the change in the market value of assets from July 1, 2012 to July 1, 2013.

### **Actuarial Value of Assets**

Neither the market value of assets, representing a "cash-out" value of System assets, nor the book values of assets, representing the cost of investments, may be the best measure of the System's ongoing ability to meet its obligations.

To arrive at a suitable value of assets for the actuarial valuation, a technique for determining the actuarial value of assets is used which dampens swings in the market value while still indirectly recognizing market values. Under the asset smoothing methodology, the difference between the actual and assumed investment return on the market value of assets is recognized evenly over a five year period.

Table 3 shows the development of the actuarial value of assets (AVA) as of the valuation date.



**SECTION 3 – ASSETS**

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**TABLE 1**  
**STATE PATROL RETIREMENT SYSTEM**  
**MARKET VALUE OF ASSETS**  
**by Investment Category**

	<u>June 30, 2013</u>	<u>June 30, 2012</u>
1. Cash and Equivalents	\$ 208,355	\$ 106,954
2. Investments*	312,439,812	279,756,573
3. Capital Assets	89	106
4. Receivables and Prepaids	23,477,800	20,279,404
5. Accounts Payable	<u>(26,536,272)</u>	<u>(21,831,670)</u>
6. Net Assets Available for Pension Benefits [1 + 2 + 3 + 4 + 5]	\$ 309,589,784	\$ 278,311,367

\* Includes DROP account balances.



## SECTION 3 – ASSETS

**TABLE 2**

**STATE PATROL RETIREMENT SYSTEM**

**CHANGE IN MARKET VALUE OF ASSETS**

	2013	2012
1. Market Value of Assets, Beginning of Year	\$ 278,311,367	\$ 278,146,750
2. Contributions		
(a) Member (includes purchased service)	\$ 5,106,556	\$ 5,209,321
(b) State	5,111,325	5,204,276
(c) State appropriations	2,404,580	2,570,230
(d) Total	\$ 12,622,461	\$ 12,983,827
3. Expenditures		
(a) Benefit payments	\$ 15,327,586	\$ 14,737,951
(b) Refunds	0	105,396
(c) DROP Disbursements	1,600,719	316,043
(d) Administrative expenses and fees	48,990	57,236
(e) Total	\$ 16,977,295	\$ 15,216,626
4. Investment Return, Net of Investment Expenses*		
(a) Investment income	\$ 4,326,945	\$ 3,288,669
(b) Securities lending income	101,423	93,789
(c) Securities lending expense	(24,492)	(20,521)
(d) Net appreciation/(depreciation) in fair value of investments	31,211,751	(977,279)
(e) Other	17,624	12,758
(f) Net investment return for 2012/2013 [(a) + (b) + (c) + (d) + (e)]	\$ 35,633,251	\$ 2,397,416
5. Market Value of Assets, End of Year [1 + 2(d) - 3(e) + 4(f)]	\$ 309,589,784	\$ 278,311,367
6. Approximate Rate of Return, Net of Expenses	12.9%	0.8%

\* Includes DROP account balances.



**SECTION 3 – ASSETS**

**TABLE 3**  
**STATE PATROL RETIREMENT SYSTEM**  
**DEVELOPMENT OF ACTUARIAL VALUE OF ASSETS**

	Year End			
	6/30/2010	6/30/2011	6/30/2012	6/30/2013
1. Actuarial Value of Assets, Beginning of Year	\$ 274,119,906	\$ 273,306,925	\$ 279,192,669	\$ 282,810,785
2. Unrecognized Return Beginning of Year	(69,086,430)	(43,732,285)	(1,045,919)	(4,499,418)
3. Contributions During Year				
(a) Member	\$ 4,143,743	\$ 4,476,933	\$ 5,209,321	\$ 5,106,556
(b) State	4,143,712	4,478,064	5,204,276	5,111,325
(c) State appropriations	2,116,410	1,478,683	2,570,230	2,404,580
(d) Total	\$ 10,403,865	\$ 10,433,680	\$ 12,983,827	\$ 12,622,461
4. Benefit Payments	13,646,360	14,139,558	14,737,951	16,928,305
5. Refund of Contributions/DROP disbursements	110,401	812,426	421,439	1,600,719
6. Expected Investment Income on (1), (2), (3), (4) and (5) at 8%	16,316,913	18,238,464	22,216,830	22,094,841
7. Actual Return on Market Value Net of All Expenses	27,894,060	53,090,414	2,340,180	35,584,261
8. Return to be Spread, End of Year	\$ 11,577,147	\$ 34,851,950	\$ (19,876,650)	\$ 13,489,420

[7 - 6]

Note: Information before 2013 was produced by the prior actuary.



**SECTION 3 – ASSETS**

---

**TABLE 3  
(continued)**

**STATE PATROL RETIREMENT SYSTEM**

9. Return to be Spread

<u>Plan Year</u> <u>Ending</u>	<u>Return to be</u> <u>Spread</u>	<u>Unrecognized</u> <u>Percent</u>	<u>Unrecognized</u> <u>Return</u>
2013	\$13,489,420	80%	\$10,791,536
2012	(19,876,650)	60%	(11,925,990)
2011	34,851,950	40%	13,940,780
2010	11,577,147	20%	2,315,429
			<hr/> \$15,121,755

10. Total Market Value of Assets as of July 1, 2013 \$309,589,784

11. Total Actuarial Value of Assets as of July 1, 2013 \$294,468,029  
[10 - 9]

12. Asset Ratios

(a) Actuarial Value to Market Value [11 / 10] 95.12%  
(b) Market Value to Actuarial Value [10 / 11] 105.14%



## SECTION 4 – SYSTEM LIABILITIES

---

In the previous section, an actuarial valuation was compared with an inventory process, and an analysis was given of the inventory of assets of the State Patrol System as of the valuation date, July 1, 2013. In this section, the discussion will focus on the commitments (future benefit payments) of the System, which are referred to as its liabilities.

Table 4 contains an analysis of the actuarial present value of all future benefits (PVFB) for contributing members, inactive members, retirees and their beneficiaries.

The liabilities summarized in Table 4 include the actuarial present value of all future benefits expected to be paid with respect to each member. For an active member, this value includes the measurement of both benefits already earned and future benefits to be earned. For all members, active and retired, the value extends over benefits earnable and payable for the rest of their lives and for the lives of the surviving beneficiaries.

All liabilities reflect the benefit provisions in place as of July 1, 2013.

### **Actuarial Accrued Liability**

A fundamental principle in financing the liabilities of a retirement program is that the cost of its benefits should be related to the period in which benefits are earned, rather than to the period of benefit distribution. An actuarial cost method is a mathematical technique that allocates the present value of future benefits into annual costs. In order to do this allocation, it is necessary for the funding method to "breakdown" the present value of future benefits into two components:

- (1) that which is attributable to the past and
- (2) that which is attributable to the future.

Actuarial terminology calls the part attributable to the past the "past service liability" or the "actuarial accrued liability." The portion allocated to the future is known as the present value of future normal costs, with the specific piece of it allocated to the current year being called the "normal cost." Table 5 contains the calculation of actuarial accrued liability for the System. The Entry Age Normal actuarial cost method is used to develop the actuarial accrued liability.



**SECTION 4 – SYSTEM LIABILITIES**

---

**TABLE 4**  
**STATE PATROL RETIREMENT SYSTEM**  
**PRESENT VALUE OF FUTURE BENEFITS (PVFB)**  
**AS OF JULY 1, 2013**

1. Active Employees	
(a) Retirement	\$ 188,114,499
(b) Disability	6,824,550
(c) Withdrawal	6,900,959
(d) Death	2,075,379
(e) Total	\$ <u>203,915,387</u>
2. Inactive Vested Members	1,129,704
3. Inactive Nonvested Members	173,743
4. DROP Account Balances	5,887,913
5. Disabled Members	4,828,910
6. Retirees	218,655,214
7. Beneficiaries	<u>17,277,356</u>
8. Total Present Value of Future Benefits [1(e) + 2 + 3 + 4 + 5 + 6 + 7]	\$ 451,868,227



**SECTION 4 – SYSTEM LIABILITIES**

---

**TABLE 5**  
**STATE PATROL RETIREMENT SYSTEM**  
**ACTUARIAL ACCRUED LIABILITY**  
**AS OF JULY 1, 2013**

1. Present Value of Future Benefits for Active Members	\$	203,915,387
2. Present Value of Future Normal Costs for Active Members		
(a) Retirement	\$	54,813,900
(b) Termination		4,649,030
(c) Disability		4,052,123
(d) Death		1,478,074
(e) Total	\$	<u>64,993,127</u>
3. Actuarial Accrued Liability for Active Members [1 - 2(e)]		138,922,260
4. Actuarial Accrued Liability for Inactive Members		247,952,840
5. Total Actuarial Accrued Liability [3 + 4]		386,875,100
6. Actuarial Value of Assets		294,468,029
7. Unfunded Actuarial Accrued Liability [5 - 6]	\$	92,407,071





**SECTION 4 – SYSTEM LIABILITIES**

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**TABLE 6**  
**STATE PATROL RETIREMENT SYSTEM**  
**ACTUARIAL BALANCE SHEET**

<u>ASSETS</u>	
Actuarial Value of Assets	\$ 294,468,029
Unfunded Actuarial Accrued Liability	92,407,071
Present Value of Future Normal Costs	<u>64,993,127</u>
Total Assets	\$ 451,868,227
<u>LIABILITIES</u>	
Present Value of Future Benefits	
Active members	
Retirement	\$ 188,114,499
Termination	6,824,550
Disability	6,900,959
Death	<u>2,075,379</u>
Total	\$ 203,915,387
Inactive members	1,303,447
Retirees, disabilities and beneficiaries*	<u>246,649,393</u>
Total	\$ 451,868,227

\* Includes DROP account balances.



## SECTION 4 – SYSTEM LIABILITIES

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**TABLE 7**  
**STATE PATROL RETIREMENT SYSTEM**  
**ACTUARIAL GAIN/(LOSS)**

**Liabilities**

1. Actuarial Accrued Liability as of July 1, 2012	\$ 362,298,975
2. Normal Cost for Plan Year Ending June 30, 2013	7,506,964
3. Benefit Payments During Plan Year Ending June 30, 2013	16,928,305
4. Changes Identified in Replication Process	9,029,757
5. Interest at 8.0%	<u>30,360,874</u>
6. Expected Actuarial Accrued Liability as of July 1, 2013 [1 + 2 - 3 + 4 + 5]	\$ 392,268,265
7. Actuarial Accrued Liability as of July 1, 2013	\$ 386,875,100

**Assets**

8. Actuarial Value of Assets as of July 1, 2012	\$ 282,810,785
9. Contributions During Plan Year Ending June 30, 2013	12,622,461
10. Benefit Payments During Plan Year Ending June 30, 2013	16,928,305
11. Interest at 8.0%	<u>22,455,942</u>
12. Expected Actuarial Value of Assets as of July 1, 2013 [8 + 9 - 10 + 11]	\$ 300,960,883
13. Actuarial Value of Assets as of July 1, 2013	\$ 294,468,029

**Gain / (Loss)**

14. Actuarial Gain / (Loss) on Liabilities [6 - 7]	\$ 5,393,165
15. Actuarial Gain / (Loss) on Assets [13 - 12]	(6,492,854)
16. Total Actuarial Gain / (Loss) for Plan Year Ending June 30, 2013 [14 + 15]	\$ (1,099,690)



**TABLE 8**  
**STATE PATROL RETIREMENT SYSTEM**  
**GAIN/(LOSS) ANALYSIS BY SOURCE**

<b>Liability Sources</b>	<b>Gain/(Loss)</b>
Retirement	\$ (89,161)
Termination	(738,280)
Disability	163,138
Mortality	(186,516)
Salary	5,115,912
New Entrants/Rehires	(315,411)
Miscellaneous/COLA	1,443,483
Total Liability Gain/(Loss)	\$ 5,393,165
Asset Gain/(Loss)	\$ (6,492,854)
Net Actuarial Gain/(Loss)	\$ (1,099,690)



**SECTION 4 – SYSTEM LIABILITIES**

**TABLE 9**  
**STATE PATROL RETIREMENT SYSTEM**  
**PROJECTED BENEFIT PAYMENTS**  
**AS OF JULY 1, 2013**

<u>Plan Year</u> <u>Ending June 30</u>	<u>Active</u> <u>Employees</u>	<u>Retired Members,</u> <u>DROP, Disabled</u> <u>Members and</u> <u>Beneficiaries</u>	<u>Total</u>
2014	\$ 1,143,000	\$ 18,535,000	\$ 19,678,000
2015	2,103,000	18,788,000	20,891,000
2016	2,914,000	19,037,000	21,951,000
2017	3,832,000	19,309,000	23,141,000
2018	4,384,000	19,559,000	23,943,000
2019	5,064,000	19,814,000	24,878,000
2020	6,529,000	20,054,000	26,583,000
2021	7,655,000	20,276,000	27,931,000
2022	8,998,000	20,479,000	29,477,000
2023	10,040,000	20,683,000	30,723,000
2024	11,680,000	20,842,000	32,522,000
2025	14,012,000	20,975,000	34,987,000
2026	16,110,000	21,082,000	37,192,000
2027	17,899,000	21,148,000	39,047,000
2028	21,886,000	21,189,000	43,075,000
2029	23,509,000	21,227,000	44,736,000
2030	25,164,000	21,213,000	46,377,000
2031	27,193,000	21,168,000	48,361,000
2032	28,598,000	21,044,000	49,642,000
2033	30,713,000	20,871,000	51,584,000
2034	32,385,000	20,647,000	53,032,000
2035	33,677,000	20,372,000	54,049,000
2036	35,044,000	20,041,000	55,085,000
2037	36,060,000	19,654,000	55,714,000
2038	37,922,000	19,211,000	57,133,000
2039	38,802,000	18,711,000	57,513,000
2040	39,776,000	18,155,000	57,931,000
2041	40,764,000	17,544,000	58,308,000
2042	41,529,000	16,880,000	58,409,000
2043	42,283,000	16,166,000	58,449,000

Note: Cash flows are the expected future non-discounted payments to current members. These numbers exclude refund payouts to any current nonvested inactive and assume future retirees elect the normal form of payment.



## SECTION 5 – EMPLOYER CONTRIBUTIONS

---

The previous two sections were devoted to a discussion of the assets and liabilities of the System. A comparison of Tables 3 and 4 indicates that current assets fall short of meeting the present value of future benefits (total liability). This is expected in all but a completely closed fund, where no further contributions are anticipated. In an active system, there will almost always be a difference between the actuarial value of assets and total liabilities. This deficiency has to be made up by future contributions and investment returns. An actuarial valuation sets out a schedule of future contributions that will deal with this deficiency in an orderly fashion.

The method used to determine the incidence of the contributions in various years is called the actuarial cost method. Under an actuarial cost method, the contributions required to meet the difference between current assets and current liabilities are allocated each year between two elements: (1) the normal cost rate and (2) the unfunded actuarial accrued liability contribution rate.

The term "fully funded" is often applied to a system in which contributions at the normal cost rate are sufficient to pay for the benefits of existing employees as well as for those of new employees. More often than not, systems are not fully funded, either because of past benefit improvements that have not been completely funded or because of actuarial deficiencies that have occurred because experience has not been as favorable as anticipated by the actuarial assumptions. Under these circumstances, an unfunded actuarial accrued liability (UAAL) exists. Likewise, when the actuarial value of assets is greater than the actuarial accrued liability, a surplus exists.

### **Description of Contribution Rate Components**

The Entry Age Normal (EAN) actuarial cost method is used for the valuation. Under that method, the normal cost for each year from entry age to assumed exit age is a constant percentage of the member's year by year projected compensation. The portion of the present value of future benefits not provided by the present value of future normal costs is the actuarial accrued liability. The unfunded actuarial accrued liability/(surplus) represents the difference between the actuarial accrued liability and the actuarial value of assets as of the valuation date. The unfunded actuarial accrued liability is calculated each year and reflects experience gains and losses.

In general, contributions are computed in accordance with a level percent-of-payroll funding objective. The contribution rate based on the July 1, 2013 actuarial valuation will be used to determine the actuarial required employer contribution rate to the Nebraska State Patrol Retirement System for the plan year ending June 30, 2014. The additional State contribution is expected to be deposited on July 1, 2014 (State fiscal year end 2015). In this context, the term "contribution rate" means the percentage, which is applied to a particular active member payroll to determine the actual employer contribution amount (i.e., in dollars) for the group.

### **Contribution Rate Summary**

In Table 10 the amortization payment related to the unfunded actuarial accrued liability/(surplus), as of July 1, 2013, is developed. Table 11 develops the actuarial required contribution rate for the System and the amount of the required state contribution.

The contribution rates shown in this report are based on the actuarial assumptions and cost methods described in Appendix C.



**SECTION 5 – EMPLOYER CONTRIBUTIONS**

**TABLE 10**  
**STATE PATROL RETIREMENT SYSTEM**  
**AMORTIZATION SCHEDULE FOR THE UNFUNDED ACTUARIAL**  
**ACCRUED LIABILITY**

<b>Amortization Bases</b>	<b>Original Amount</b>	<b>July 1, 2013 Remaining Payments</b>	<b>Date of Last Payment</b>	<b>Outstanding Balance as of July 1, 2013</b>	<b>Annual Contribution*</b>
2006 Unfunded Actuarial Accrued Liability Base	\$ 13,632,330	23	7/1/2036	\$ 12,558,571	\$ 833,095
2007 Unfunded Actuarial Accrued Liability Base	\$ (2,328,213)	24	7/1/2037	\$ (2,177,444)	\$ (140,675)
2008 Unfunded Actuarial Accrued Liability Base	\$ 7,528,427	25	7/1/2038	\$ 7,138,554	\$ 449,885
2009 Unfunded Actuarial Accrued Liability Base	\$ 12,752,991	26	7/1/2039	\$ 12,245,711	\$ 753,951
2010 Unfunded Actuarial Accrued Liability Base	\$ 17,735,331	27	7/1/2040	\$ 17,227,083	\$ 1,037,604
2011 Unfunded Actuarial Accrued Liability Base	\$ 12,260,750	28	7/1/2041	\$ 12,035,629	\$ 710,063
2012 Unfunded Actuarial Accrued Liability Base	\$ 19,767,597	29	7/1/2042	\$ 19,593,100	\$ 1,133,561
2013 Unfunded Actuarial Accrued Liability Base	\$ 13,785,867	30	7/1/2043	\$ 13,785,867	\$ 782,993
<b>Total</b>				<b>\$ 92,407,071</b>	<b>\$ 5,560,477</b>

\* Contribution amount reflects mid-year timing

- |                                     |               |
|-------------------------------------|---------------|
| 1. Total UAAL Amortization Payments | \$ 5,560,477  |
| 2. Projected Payroll for FY 2014    | \$ 27,417,644 |
| 3. UAAL Amortization Payment Rate   | 20.28%        |

Note: Beginning with the July 1, 2013 valuation, the payments on each UAAL base are determined as a level percent of payroll using a 4% payroll growth assumption.



## SECTION 5 – EMPLOYER CONTRIBUTIONS

---

**TABLE 11**  
**STATE PATROL RETIREMENT SYSTEM**  
**ACTUARIAL REQUIRED CONTRIBUTION RATE**

1. Normal Cost	
(a) Amount	\$ 7,333,763
(b) Expected pay for current actives	\$ 25,564,900
(c) Normal Cost Rate as % of pay	28.69%
2. UAAL Amortization Rate (see Table 10)	20.28%
3. Total Actuarial Required Contribution Rate [1(c) + 2]	48.97%
4. Statutory Member Contribution Rate	16.00%
5. Statutory Employer Contribution Rate	16.00%
6. Additional Required State Contribution Rate [3 - 4 - 5], but not less than 0%	16.97%
7. Projected Payroll for FY 2014	\$ 27,417,644
8. Additional Required State Contribution [6 * 7]	\$ 4,652,774
9. Total State Contributions	
(a) State statutory amount	\$ 4,386,823
(b) Additional State contribution	4,652,774
(c) Total	\$ <u>9,039,597</u>



## SECTION 6 – ACCOUNTING INFORMATION

---

The actuarial accrued liability is a measure intended to help the reader assess (i) a retirement system's funded status on a going concern basis and (ii) progress being made toward accumulating the assets needed to pay benefits as due. Allocation of the actuarial present value of projected benefits between past and future service was based on service using the Entry Age Normal actuarial cost method. Assumptions, including projected pay increases, were the same as used to determine the System's level percent of payroll annual required contribution between entry age and assumed exit age. Entry age was established by subtracting credited service from current age on the valuation date. The Entry Age Normal actuarial accrued liability was determined as part of an actuarial valuation of the plan as of July 1, 2013. The actuarial assumptions used in determining the actuarial accrued liability can be found in Appendix C.

The preceding methods comply with the financial reporting standards established by the Governmental Accounting Standards Board.

GASB Statement No. 25 establishes financial reporting standards for defined benefit pension plans. In addition to two required statements regarding plan assets, the statement requires two schedules and accompanying notes disclosing information relative to the funded status of the plan and historical contribution patterns.

- The Schedule of Funding Progress provides information about whether the financial strength of the Plan is improving or deteriorating over time.
- The Schedule of Employer Contributions provides historical information about the annual required contribution (ARC) and the percentage of the ARC that was actually contributed

In 2012, GASB issued the final version of GASB Statements Number 67 and 68 which will supersede GASB Statements Number 25 and 27. GASB 67, which applies to the retirement system, will be effective for the plan year ending June 30, 2014. GASB 68, which applies to employer reporting, is first effective for fiscal years beginning after June 15, 2014.





**SECTION 6 – ACCOUNTING INFORMATION**

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**TABLE 12**  
**STATE PATROL RETIREMENT SYSTEM**  
**SCHEDULE OF FUNDING PROGRESS**

<b>Actuarial Valuation Date</b>	<b>Actuarial Value of Assets (a)</b>	<b>Actuarial Accrued Liability (AAL) (b)</b>	<b>Unfunded Actuarial Liability (UAAL) (b - a)</b>	<b>Funded Ratio (a / b)</b>	<b>Covered Payroll (c)</b>	<b>UAAL as a % of Covered Payroll [(b - a) / c]</b>
June 30, 2013	\$294,468,029	\$386,875,100	\$92,407,071	76.1%	\$27,417,644	337.0%
June 30, 2012	282,810,785	362,298,975	79,488,190	78.1%	25,794,219	308.2%
June 30, 2011	279,192,669	339,554,456	60,361,787	82.2%	26,195,473	230.4%
June 30, 2010	273,306,925	321,901,446	48,594,521	84.9%	26,765,816	181.6%
June 30, 2009	274,119,906	305,291,065	31,171,159	89.8%	25,922,439	120.2%
June 30, 2008	273,393,928	291,996,719	18,602,791	93.6%	26,979,643	69.0%

Note: Information before 2013 was produced by the prior actuary.



**SECTION 6 – ACCOUNTING INFORMATION**

**TABLE 13**

**STATE PATROL RETIREMENT SYSTEM**

**SCHEDULE OF CONTRIBUTIONS FROM EMPLOYER  
AND OTHER CONTRIBUTING ENTITIES  
Disclosure Requirement under GASB No. 25**

<b>Plan Year Ending</b>	<b>Annual Required Contributions</b>	<b>Percent Contributed</b>
June 30, 2013	\$ 7,515,905	78%
June 30, 2012	7,774,506	100%
June 30, 2011	7,173,344	83%
June 30, 2010	6,260,122	100%
June 30, 2009	5,384,789	100%
June 30, 2008	4,855,700	100%

Note: Information prior to 2013 was produced by the prior actuary.

<u>Actuarial Assumptions and Methods</u>	
Valuation Date	June 30, 2013
Actuarial Cost Method	Entry Age
Amortization Method	Level dollar amount, closed for valuations before July 1, 2013. Level percent of payroll, closed effective July 1, 2013.
Equivalent Single Amortization Period	27 years
Asset Valuation Method	5 year smoothed market
Actuarial Assumptions	
Investment rate of return*	8.0%
Projected Salary increases*	4.0%
*Includes inflation at	3.25%
Cost-of-living adjustment	2.50% with a floor benefit equal to 60% purchasing power of original benefit.



**APPENDIX A – MEMBERSHIP DATA**

**MEMBER DATA RECONCILIATION**

	<b>Active Members</b>	<b>Members in DROP</b>	<b>Inactive Vested</b>	<b>Inactive Non-vested</b>	<b>Retirees and Beneficiaries</b>	<b>Disabled Members</b>	<b>Total</b>
As of July 1, 2012	427	40	10	8	370	12	867
Changes in status							
a) Retirement	(3)	(6)	0	0	9	0	0
b) DROP	(17)	17	0	0	0	0	0
c) Death	0	0	0	0	(9)	0	(9)
d) Non-vested terminations	(1)	0	0	1	0	0	0
e) Vested terminations	(1)	0	1	0	0	0	0
f) Contribution refund	0	0	0	0	0	0	0
g) Beneficiaries in receipt	0	0	0	0	5	0	5
h) Disability retirements	0	0	0	0	0	0	0
i) Return to active service	4	0	(2)	(2)	0	0	0
j) Expired benefits	0	0	0	0	0	0	0
Total changes in status	(18)	11	(1)	(1)	5	0	(4)
New entrants	0	0	0	0	0	0	0
Net Change	(18)	11	(1)	(1)	5	0	(4)
As of July 1, 2013	409	51	9	7	375	12	863



## APPENDIX A – MEMBERSHIP DATA

### SUMMARY OF MEMBERSHIP DATA

A. ACTIVE MEMBERS	July 1, 2013	July 1, 2012	% Change
1. Number of Active Members			
(a) Before assumed retirement age	397	416	(4.6%)
(b) Beyond assumed retirement age	12	11	9.1%
(c) Total	409	427	(4.2%)
2. Annual Considered Compensation			
(a) Before assumed retirement age	\$ 24,985,143	\$ 25,794,219	(3.1%)
(b) Beyond assumed retirement age	924,070	833,118	10.9%
(c) Total	\$ 25,909,213	\$ 26,627,337	(2.7%)
3. Accumulated Contributions	\$ 35,435,713	\$ 39,540,887	(10.4%)
4. Active Member Averages			
(a) Age	40.7	40.3	1.0%
(b) Service	13.4	12.7	5.5%
(c) Compensation	\$ 63,348	\$ 62,359	1.6%
(d) Accumulated contributions	86,640	92,602	(6.4%)
B. INACTIVE MEMBERS			
1. Number of Inactive Members	16	18	(11.1%)
2. Accumulated Member Contributions	\$ 778,559	\$ 883,516	(11.9%)
3. Inactive Members Averages			
(a) Age (vested members only)	43.6	41.8	4.3%
(b) Accumulated member contributions	\$ 48,660	\$ 49,084	(0.9%)
C. RETIREES, DISABLED, AND BENEFICIARIES			
1. Number of Members			
(a) Retired	301	297	1.3%
(b) Disabled	12	12	0.0%
(c) Beneficiaries	74	73	1.4%
(d) DROP	51	40	27.5%
(e) Total	438	422	3.8%
2. Annual Benefits			
(a) Retired	\$ 13,578,141	\$ 13,121,922	3.5%
(b) Disabled	394,001	387,225	1.7%
(c) Beneficiaries	1,772,002	1,679,198	5.5%
(d) DROP	2,867,430	2,203,327	30.1%
(e) Total	\$ 18,611,574	\$ 17,391,672	7.0%
3. Market Value of DROP Account Balances	\$ 5,887,913	\$ 4,605,395	27.8%

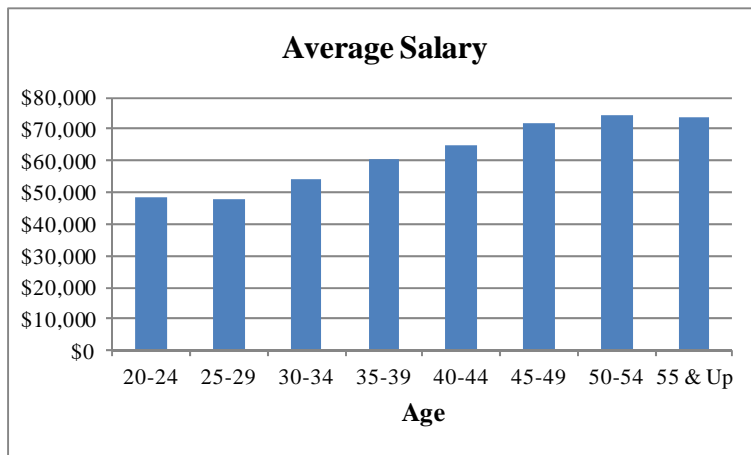
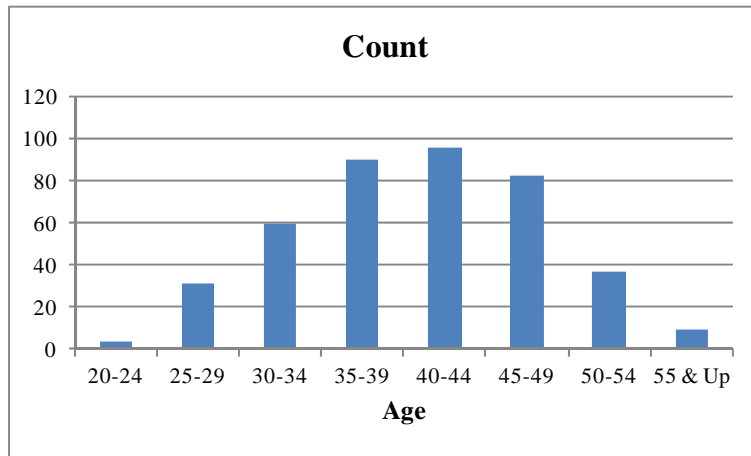
Note: Information prior to 2013 was produced by the prior actuary.



**APPENDIX A – MEMBERSHIP DATA**

**ACTIVE MEMBERS  
AS OF JULY 1, 2013**

Age	Count of Members			Reported Salary		
	Male	Female	Total	Male	Female	Total
20-24	3	1	4	\$ 141,818	\$ 51,489	\$ 193,307
25-29	28	3	31	1,338,742	142,199	1,480,941
30-34	57	3	60	3,071,635	162,380	3,234,015
35-39	86	4	90	5,238,417	216,107	5,454,524
40-44	91	5	96	5,917,888	298,885	6,216,773
45-49	79	3	82	5,679,465	235,809	5,915,274
50-54	34	3	37	2,534,116	218,448	2,752,564
55 & Up	7	2	9	511,137	150,678	661,815
<b>Total</b>	<b>385</b>	<b>24</b>	<b>409</b>	<b>\$ 24,433,218</b>	<b>\$ 1,475,995</b>	<b>\$ 25,909,213</b>





**APPENDIX A – MEMBERSHIP DATA**

**AGE AND SERVICE DISTRIBUTION  
AS OF JULY 1, 2013**

Age		0-4	5-9	10-14	15-19	20-24	Over 25	Total
<b>20-24</b>	Number	4	0	0	0	0	0	4
	Total Salary	\$ 193,307	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 193,307
	Average Sal.	\$ 48,327	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 48,327
<b>25-29</b>	Number	18	13	0	0	0	0	31
	Total Salary	\$ 847,520	\$ 633,421	\$ 0	\$ 0	\$ 0	\$ 0	\$ 1,480,941
	Average Sal.	\$ 47,084	\$ 48,725	\$ 0	\$ 0	\$ 0	\$ 0	\$ 47,772
<b>30-34</b>	Number	3	43	14	0	0	0	60
	Total Salary	\$ 139,144	\$ 2,293,067	\$ 801,804	\$ 0	\$ 0	\$ 0	\$ 3,234,015
	Average Sal.	\$ 46,381	\$ 53,327	\$ 57,272	\$ 0	\$ 0	\$ 0	\$ 53,900
<b>35-39</b>	Number	4	8	71	7	0	0	90
	Total Salary	\$ 173,626	\$ 423,081	\$ 4,375,390	\$ 482,427	\$ 0	\$ 0	\$ 5,454,524
	Average Sal.	\$ 43,406	\$ 52,885	\$ 61,625	\$ 68,918	\$ 0	\$ 0	\$ 60,606
<b>40-44</b>	Number	1	12	38	38	7	0	96
	Total Salary	\$ 48,768	\$ 645,803	\$ 2,394,066	\$ 2,598,121	\$ 530,015	\$ 0	\$ 6,216,773
	Average Sal.	\$ 48,768	\$ 53,817	\$ 63,002	\$ 68,372	\$ 75,716	\$ 0	\$ 64,758
<b>45-49</b>	Number	0	1	24	20	30	7	82
	Total Salary	\$ 0	\$ 36,032	\$ 1,566,270	\$ 1,388,015	\$ 2,269,626	\$ 655,331	\$ 5,915,274
	Average Sal.	\$ 0	\$ 36,032	\$ 65,261	\$ 69,401	\$ 75,654	\$ 93,619	\$ 72,137
<b>50-54</b>	Number	0	0	9	4	21	3	37
	Total Salary	\$ 0	\$ 0	\$ 593,757	\$ 287,849	\$ 1,608,703	\$ 262,255	\$ 2,752,564
	Average Sal.	\$ 0	\$ 0	\$ 65,973	\$ 71,962	\$ 76,605	\$ 87,418	\$ 74,394
<b>55 &amp; Up</b>	Number	0	0	4	2	3	0	9
	Total Salary	\$ 0	\$ 0	\$ 286,128	\$ 130,380	\$ 245,307	\$ 0	\$ 661,815
	Average Sal.	\$ 0	\$ 0	\$ 71,532	\$ 65,190	\$ 81,769	\$ 0	\$ 73,535
<b>Total</b>	Number	30	77	160	71	61	10	409
	Total Salary	\$ 1,402,365	\$ 4,031,404	\$ 10,017,415	\$ 4,886,792	\$ 4,653,651	\$ 917,586	\$ 25,909,213
	Average Sal.	\$ 46,746	\$ 52,356	\$ 62,609	\$ 68,828	\$ 76,289	\$ 91,759	\$ 63,348



**APPENDIX A – MEMBERSHIP DATA**

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**MEMBERS PARTICIPATING IN DROP  
AS OF JULY 1, 2013**

<u>Age</u>	<u>Count of Members</u>			<u>Monthly Benefits</u>		
	<u>Male</u>	<u>Female</u>	<u>Total</u>	<u>Male</u>	<u>Female</u>	<u>Total</u>
49 & Under	0	0	0	\$ 0	\$ 0	\$ 0
50-51	13	1	14	60,685	4,077	64,762
52-53	12	1	13	55,433	5,792	61,225
54-55	13	0	13	58,959	0	58,959
56-57	8	0	8	39,779	0	39,779
58-59	3	0	3	14,227	0	14,227
60 & Up	0	0	0	0	0	0
Total	49	2	51	\$ 229,083	\$ 9,869	\$ 238,952



**APPENDIX A – MEMBERSHIP DATA**

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**INACTIVE VESTED MEMBERS  
AS OF JULY 1, 2013**

<u>Age</u>	<u>Count of Members</u>			<u>Monthly Benefits</u>		
	<u>Male</u>	<u>Female</u>	<u>Total</u>	<u>Male</u>	<u>Female</u>	<u>Total</u>
20-24	0	0	0	\$ 0	\$ 0	\$ 0
25-29	0	0	0	0	0	0
30-34	0	0	0	0	0	0
35-39	3	0	3	4,725	0	4,725
40-44	2	0	2	2,935	0	2,935
45-49	2	0	2	1,765	0	1,765
50-54	2	0	2	3,518	0	3,518
55 & Up	0	0	0	0	0	0
Total	9	0	9	\$ 12,943	\$ 0	\$ 12,943

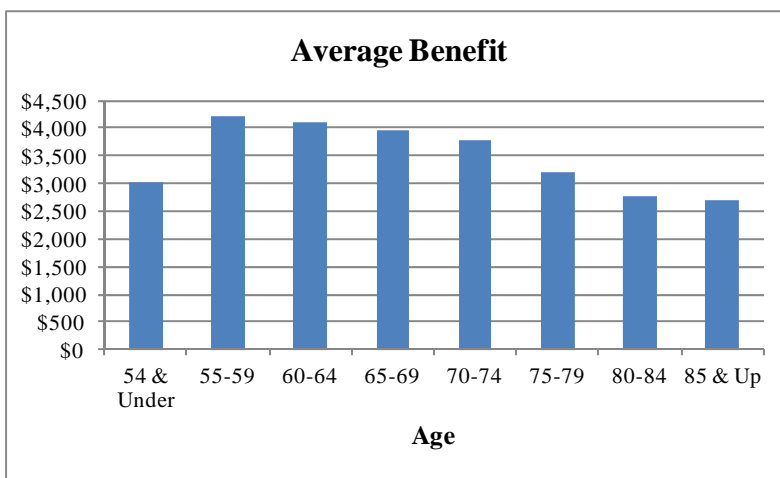
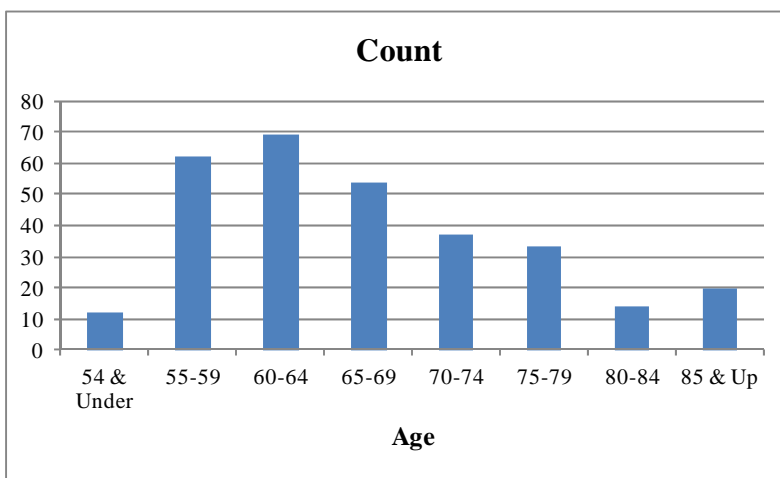




**APPENDIX A – MEMBERSHIP DATA**

**RETIRED MEMBERS  
AS OF JULY 1, 2013**

Age	Count of Members			Monthly Benefits		
	Male	Female	Total	Male	Female	Total
54 & Under	8	4	12	\$ 32,345	\$ 3,846	\$ 36,191
55-59	55	7	62	237,415	23,257	260,672
60-64	68	1	69	280,517	1,665	282,182
65-69	53	1	54	209,217	4,811	214,028
70-74	37	0	37	139,574	0	139,574
75-79	33	0	33	106,077	0	106,077
80-84	14	0	14	38,845	0	38,845
85 & Up	20	0	20	53,943	0	53,943
<b>Total</b>	<b>288</b>	<b>13</b>	<b>301</b>	<b>\$ 1,097,933</b>	<b>\$ 33,579</b>	<b>\$ 1,131,512</b>

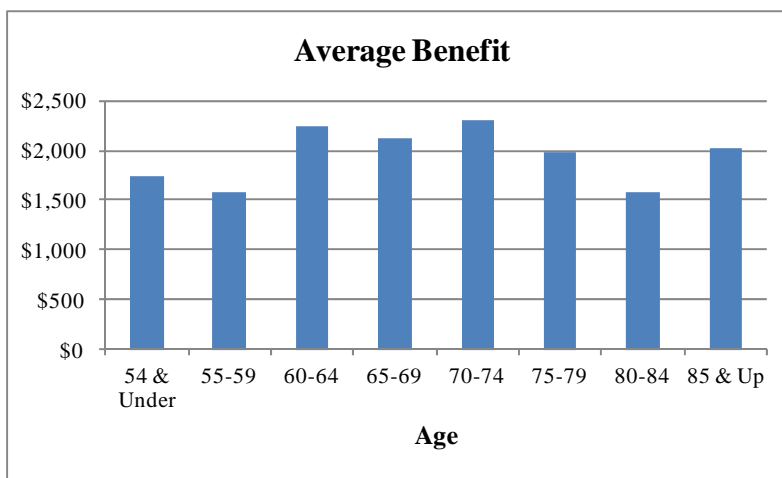
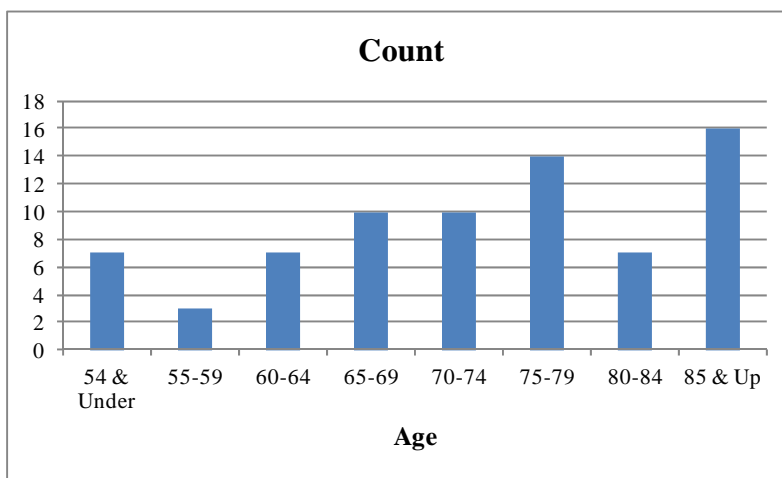




**APPENDIX A – MEMBERSHIP DATA**

**BENEFICIARIES  
AS OF JULY 1, 2013**

Age	Count of Members			Monthly Benefits		
	Male	Female	Total	Male	Female	Total
54 & Under	1	6	7	\$ 551	\$ 11,652	\$ 12,203
55-59	0	3	3	0	4,735	4,735
60-64	0	7	7	0	15,740	15,740
65-69	0	10	10	0	21,130	21,130
70-74	0	10	10	0	22,982	22,982
75-79	1	13	14	2,431	25,229	27,660
80-84	0	7	7	0	10,991	10,991
85 & Up	0	16	16	0	32,225	32,225
<b>Total</b>	<b>2</b>	<b>72</b>	<b>74</b>	<b>\$ 2,982</b>	<b>\$ 144,684</b>	<b>\$ 147,666</b>





## APPENDIX A – MEMBERSHIP DATA

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### DISABLED MEMBERS AS OF JULY 1, 2013

Age	Count of Members			Monthly Benefits		
	Male	Female	Total	Male	Female	Total
54 & Under	1	1	2	\$ 1,999	\$ 2,306	\$ 4,305
55-59	1	1	2	3,083	2,804	5,887
60-64	4	0	4	11,394	0	11,394
65-69	2	0	2	6,124	0	6,124
70-74	1	0	1	2,580	0	2,580
75-79	0	0	0	0	0	0
80-84	0	0	0	0	0	0
85 & Up	1	0	1	2,543	0	2,543
Total	10	2	12	\$ 27,723	\$ 5,110	\$ 32,833



## APPENDIX B – SUMMARY OF PLAN PROVISIONS

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<b>Member</b>	Any member of the Nebraska State Patrol, permanent force.
<b>Participation Date</b>	Date of becoming a member.
<b>Definitions</b>	
<i>Covered pay</i>	Gross annual earnings subject to contributions. For a patrol officer with service prior to January 4, 1979, total salary includes pay for unused sick leave accrued during his final three years of service, and pay for unused vacation leave (including leave not allowed to be carried over).
<i>Final average earnings</i>	The average of the highest three 12-month periods of covered pay, ending on the earlier of the participant's termination date or retirement date. For a patrol officer with service prior to January 4, 1979, it includes pay for 25% of unused sick leave accrued during his final three years of service, and pay for unused vacation leave (including leave not allowed to be carried over).
<i>Fiscal year</i>	Twelve month period ending June 30.
<i>Member and employer contributions</i>	16% of monthly salary plus 16% of pay received at termination for unused sick leave and vacation leave for a patrol officer with service prior to January 4, 1979. Such contributions are credited with interest based on the 1-year treasury yield curve on July 1 of each year, as determined by State Statutes. Employer contributions are 16% of monthly salary. The State makes any additional contributions that are actuarially required. (Prior to July 1, 2013, employee and employer contribution rates were 19% of pay.)
<i>Pension benefit</i>	3% of final average salary times pension service. The benefit is subject to a maximum of 75% of Final Average Salary. Effective July 1, 2001, an automatic annual cost-of-living adjustment (COLA) equal to the CPI-W index, with a maximum increase of 2.5% in any one year is provided for current and future retirees by LB 711. Also provided is a minimum floor benefit equal to 60% of the purchasing power of the original benefit.
<i>Normal Retirement Date (NRD)</i>	First of month coinciding with or next following (a) the completion of 25 years of service and attaining age 50, (b) the completion of ten years of service and attaining age 55, or (c) attaining age 60 regardless of service.
<i>Pension service</i>	Length of service includes all service with the Nebraska State Patrol, permanent force, computed to the nearest one-twelfth year, plus declared emergency service in the armed forces.



## APPENDIX B – SUMMARY OF PLAN PROVISIONS

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### Eligibility for Benefits

<i>Deferred vested</i>	Termination for reasons other than death, disability, or retirement after completing at least six years of pension service.
<i>Disability retirement</i>	Retirement by reason of disability as defined by statute.
<i>Early retirement</i>	Retirement before NRD and on or after both attaining age 50 and completing ten years of pension service.
<i>Normal retirement</i>	Retire on NRD.
<i>Postponed retirement</i>	Retire after NRD.
<i>Post-retirement death benefit</i>	Death after retirement with surviving spouse or dependent children under age 19. For non-disability retirement, the surviving spouse must have been married to the member at the date of retirement.
<i>Pre-retirement death benefit</i>	Death prior to retirement.

### Monthly Benefits Paid Upon the Following Events

<i>Normal retirement</i>	Pension benefit determined as of NRD.
<i>Early retirement</i>	Pension benefit determined as of early retirement date, reduced by 5/9% for each month that commencement (which must be after age 50 and ten years of service) of payment precedes the earlier of age 55 or completion of 25 years of service. No reduction is made after 25 years of service.
<i>Postponed retirement</i>	Monthly pension benefit determined as of actual retirement date.
<i>Termination with deferred vested benefit</i>	Refund of contributions with regular interest <u>or</u> a percentage of the pension benefit determined as of termination date, reduced by 5/9% for each month that commencement (which must be after age 50 and ten years of service) of payment precedes the earlier of age 55 or completion of 25 years of service. This percentage is based upon completed years of pension service as follows:

<u>Years</u>	<u>Vested Percentage</u>
5 and under	0%
6	20
7	40
8	60
9	80
10 or more	100



## APPENDIX B – SUMMARY OF PLAN PROVISIONS

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*Disability retirement* A monthly benefit equal to 50% of current monthly salary at the date of disablement for members with less than 17 years of service.

For members with more than 17 years of service, a monthly benefit equal to the product of 3% of final monthly salary, times total years of service subject to a maximum of 75% of final average monthly salary.

*Pre-retirement death benefits*

**Surviving spouse or dependent children under age 19:**

Benefit is computed as if member retired for disability on the date of death. This benefit is payable to the surviving spouse as long as spouse has dependent children under age 19. If spouse dies or remarries, 75% of this benefit continues to children until the youngest attains age 19. If there are no dependent children under age 19, 75% of this benefit is payable to the surviving spouse until death or remarriage.

**No surviving spouse or dependent children under age 19:**

A lump sum equal to the member's contributions plus regular interest.

*Post-retirement death benefits*

100% of member's annuity is payable to the surviving spouse provided spouse has dependent children under 19. If there is no surviving spouse or spouse dies or remarries, 75% of member's annuity continues to children until the youngest attains age 19. If there are no dependent children under age 19, 75% of member's annuity continues to surviving spouse.

*Forms of payment*

Normal form is 75% Joint and Survivor benefit. Members may also elect a refund of contributions. If there is no surviving spouse or dependent children under age 19, the member's accumulated contributions with interest are paid to the beneficiary or estate.

*Deferred Retirement Option Plan (DROP)*

A member may elect to participate in the DROP after they attain age 50 with 25 years of service. A member can continue to work while participating in the DROP, but must terminate employment within 5 years of entry into the DROP. The member's retirement benefits would be calculated as of the DROP entry date. The monthly payments that begin at entry into the DROP are accumulated until the member terminates service, at which time the DROP accumulated benefits and investment income can be paid as a lump sum, rollover or annuity. The COLA for retirees would not apply to the member during participation in the DROP and both the member and employer contributions cease upon entry into the DROP.

### State Appropriations

LB 137 provides cost-of-living benefits for members who retired prior to 1985. This benefit was funded by an annual state appropriation, which ceased in fiscal year ending June 30, 2013.



## **APPENDIX B – SUMMARY OF PLAN PROVISIONS**

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LB 674, passed in 2000 (effective July 1, 2001), provided for an annual cost-of-living increase equal to the CPI-W index, with a maximum of 2% in any one year, a minimum floor benefit equal to 60% of the purchasing power of the original benefit and the elimination of the State Patrol Purchasing Power Stabilization Fund. The existing assets in the State Patrol PPSF were transferred to the Nebraska State Patrol Retirement Fund. The State appropriation continues, as defined above to the Nebraska Patrol Retirement Fund. LB 711, passed in 2001, increased the maximum annual cost-of-living increase in any one year from 2% to 2.5%.

### **Benefits Reflected in Valuation**

All benefits were valued, including future cost of living increases granted by statute.

### **Plan Provisions Effective After July 1, 2013**

No future changes in plan provisions were recognized in determining the GASB 25 funded status or in determining the actuarial soundness of statutory contribution levels.

### **Changes in Plan Provisions Since the Prior Year**

Effective July 1, 2013, the employee and employer contribution rates were reduced from 19% of pay to 16% of pay.



## APPENDIX C – SUMMARY OF ACTUARIAL ASSUMPTIONS

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### ACTUARIAL METHODS

- 1. Calculation of Normal cost and Actuarial Accrued Liability:** The method used to determine the normal cost and actuarial accrued liability was the Entry Age Actuarial Cost Method described below.

#### Entry Age Actuarial Cost Method

Projected pension and preretirement spouse's death benefits were determined for all active members who had not reached age 60 or 25 years of service. Cost factors designed to produce annual costs as a level percentage of each member's expected compensation in each year from the assumed entry age to the assumed retirement age were applied to the projected benefits to determine the normal cost (the portion of the total cost of the plan allocated to the current year under the method). The normal cost is determined by summing intermediate results for active members who had not reached age 60 or 25 years of service and determining an average normal cost rate which is then related to the total payroll of active members who had not reached age 60 or 25 years of service. The actuarial assumptions shown in Appendix C were used in determining the projected benefits and cost factors. The actuarial accrued liability for active members (the portion of the total cost of the plan allocated to prior years under the method) was determined as the excess of the actuarial present value of projected benefits over the actuarial present value of future normal costs.

The actuarial accrued liability for retired members and their beneficiaries currently receiving benefits, active members who either reached age 60 or 25 years of service, terminated vested members and disabled members not yet receiving benefits was determined as the actuarial present value of the benefits to be paid. No future normal costs are payable for these members.

The actuarial accrued liability under this method at any point in time is the theoretical amount of the fund that would have been accumulated had annual contributions equal to the normal cost been made in prior years (it does not represent the liability for benefits accrued to the valuation date). The unfunded actuarial accrued liability is the excess of the actuarial accrued liability over the actuarial value of plan assets measured on the valuation date. The initial unfunded actuarial accrued liability established July 1, 2004, is amortized with a level dollar payment amount over 25 years. At subsequent valuation dates, amortization bases equal to changes in the unfunded actuarial accrued liability are established and amortized with a level dollar payment over a 25-year period. The unfunded actuarial accrued liability was reinitialized as of July 1, 2006 and amortized over a 30-year period. At subsequent valuation dates, amortization bases equal to changes in the unfunded actuarial accrued liability are established and amortization over a level dollar payment over a 30-year period. If the unfunded actuarial accrued liability was \$0 or less as of the prior valuation date, all previous amortization bases are considered fully amortized. Effective with the July 1, 2013 valuation, amortization payments were recalculated to amortize the remaining bases as a level percentage of expected payroll, per LB 553.

Under the Entry Age Normal method, experience gains or losses, i.e., decreases or increases in actuarial accrued liabilities attributable to deviations in experience from the actuarial assumptions, adjust the unfunded actuarial accrued liability.





## APPENDIX C – SUMMARY OF ACTUARIAL ASSUMPTIONS

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**2. Calculation of the Actuarial Value of Assets:** The actuarial value of assets is based on a five-year smoothing method and is determined by spreading the effect of each year's investment return in excess of or below the expected return. The Market Value of assets as the valuation date is reduced by the sum of the following:

- i. 80% of the return to be spread during the first year preceding the valuation date,
- ii. 60% of the return to be spread during the second year preceding the valuation date,
- iii. 40% of the return to be spread during the third year preceding the valuation date, and
- iv. 20% of the return to be spread during the fourth year preceding the valuation date.

The return to be spread is the difference between (1) the actual investment return on Market Value and (2) the expected return of Actuarial Value. Effective July 1, 2000, the expected return on Actuarial Value includes interest on the previous year's unrecognized return.

### **Changes in Methods and Procedures Since the Prior Year**

As a result of LB 553, the annual payments on the amortization bases are calculated as a level percentage of payroll rather than as a level dollar amount.



## APPENDIX C – SUMMARY OF ACTUARIAL ASSUMPTIONS

### ECONOMIC ASSUMPTIONS

1. Investment Return 8.0% per annum, compounded annually, net of expenses.
2. Inflation 3.25% per annum, compounded annually.
3. Salary Increase Rates vary by service. Sample rates are as follows:

Rates by Service	
Years	Rate*
<1	9.5%
5	6.6
10	5.6
15	5.5
20	5.5
25	5.5
30	4.0

\* Projected pay at retirement is adjusted by 8.7% to reflect Halpin decision for members hired before January 4, 1979.

4. Payroll Growth 4% per annum
5. Interest on Employee Contributions 4.25% per annum, compounded annually.
6. Increases on Compensation And Benefit Limits 3.25% per annum on the 401(a)(17) compensation limit and the 415 benefit limit

### DEMOGRAPHIC ASSUMPTIONS

1. Mortality The mortality assumption includes an appropriate amount of conservatism that reflects expected future mortality improvement.
- a. Healthy lives – Active members 1994 Group Annuity Mortality Table, projected to 2015 using scale AA, set-back 1 year (sex distinct)
- b. Healthy lives – Retired members and beneficiaries 1994 Group annuity Mortality table, projected to 2015 using scale AA, set-back 1 year (sex distinct)
- c. Disabled lives 1983 Railroad Retirement Board Disabled Annuitants Mortality (unisex)
- d. Healthy mortality rates and life expectancies are shown below at sample ages:



**APPENDIX C – SUMMARY OF ACTUARIAL ASSUMPTIONS**

<b>Pre-retirement Mortality</b>				
<b>Sample Age</b>	<b>Mortality Rate</b>		<b>Life Expectancy (Years)</b>	
	<b>Males</b>	<b>Females</b>	<b>Males</b>	<b>Females</b>
20	0.03%	0.02%	62.3	65.8
30	0.07	0.03	52.6	55.9
40	0.09	0.05	42.9	46.1
50	0.16	0.09	33.4	36.4
60	0.51	0.35	24.1	26.9
70	1.62	1.14	16.0	18.4

<b>Post-retirement Mortality</b>				
<b>Sample Age</b>	<b>Mortality Rate</b>		<b>Life Expectancy (Years)</b>	
	<b>Males</b>	<b>Females</b>	<b>Males</b>	<b>Females</b>
50	0.16%	0.09%	33.4	36.4
60	0.51	0.35	24.1	26.9
70	1.62	1.14	16.0	18.4
80	4.43	3.05	9.2	11.0
90	12.55	9.82	4.5	5.4

e. Disabled mortality rates and life expectancies are shown below at sample ages:

<b>Disabled Mortality</b>		
<b>Sample Age</b>	<b>Mortality Rate</b>	<b>Life Expectancy (Years)</b>
30	1.06%	30.0
40	1.35	23.1
50	3.16	17.2
60	4.25	13.1
70	6.75	9.1
80	10.77	5.8



## APPENDIX C – SUMMARY OF ACTUARIAL ASSUMPTIONS

### 2. Retirement

Retirement is assumed to occur upon attaining certain age and service requirements. The retirement assumption varies depending on benefit eligibility and age at retirement.

Early/Normal Retirement Eligibility	Age and Service Requirements	Retirement Assumption
Reduced	Age 50 Service: 10 years	3% at each age
Unreduced	Age 55 Service: 10 years	10% at each age
Unreduced (Eligible for DROP)	Age 50 Service: 25 years	100% at each age
Unreduced (Mandatory)	Age 60	100% at each age

### 3. Termination

Rates vary by service. Sample rates are as follows:

Rates by Service	
Years	Rate
<1	4.0%
1	3.8
5	2.0
10	1.5
15	1.0
20	1.0
25+	1.0

### 4. Disability

Rates vary by age. Sample rates are as follows:

Rates by Age	
Age	Rate
25	.08%
30	.10
35	.13
40	.20
45	.31
50	.52
55	.91
60	1.36

## OTHER ASSUMPTIONS

### 1. Form of Payment

75% Joint & Survivor Annuity. Deferred vesteds are assumed to take the greater of the present value of an annuity at earliest unreduced eligibility or a refund of contributions.



## **APPENDIX C – SUMMARY OF ACTUARIAL ASSUMPTIONS**

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2. Marital Status	
a. Percent married	100% married
b. Spouse's age	Females assumed to be three years younger than males.
3. Children	All members are assumed to have one dependent child at death or retirement. The child is assumed to be 28 years younger than the member, and is assumed to always survive until age 19.
4. Administrative Expense	Investment return is assumed to be net of expenses.
5. Cost of living adjustments	2.5% per annum, compounded annually, and 3.25% per annum, compounded annually, after reaching 60% purchasing power floor benefit.
6. DROP participation	All members elect the DROP at the earliest possible date and remain in the DROP for 4 years or to age 60, if earlier.
7. State Contribution	State contributions for the current plan year are assumed to be contributed in a lump sum on the July 1 following the plan year end. These amounts from the prior plan year are treated as a contribution receivable on the plan's financial statements.

### **Changes in Assumptions since the Prior Year**

There were no changes in the assumptions from the prior year.

There was a minor modification to the methodology of calculating the contribution rates that was adopted during the transition from the prior actuary.

### **TECHNICAL VALUATION PROCEDURES**

#### **Data Procedures**

Salaries for first year members are annualized.

#### **Other Valuation Procedures**

Salary increases are assumed to apply to annual amounts.

Decrement rates are assumed to occur mid-year, except that immediate retirement is assumed for those who are at or above the age at which retirement rates are 100%. Standard adjustments are made for multiple decrements.



## APPENDIX D – GLOSSARY OF TERMS

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<b>Actuarial Accrued Liability</b>	The difference between the actuarial present value of system benefits and the actuarial value of future normal costs. Also referred to as “accrued liability” or “actuarial liability”.
<b>Actuarial Assumptions</b>	Estimates of future experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and salary increases. Decrement assumptions (rates of mortality, disability, turnover and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (salary increases and investment income) consist of an underlying rate in an inflation-free environment plus a provision for a long-term average rate of inflation.
<b>Accrued Service</b>	Service credited under the system which was rendered before the date of the actuarial valuation.
<b>Actuarial Equivalent</b>	A single amount or series of amounts of equal actuarial value to another single amount or series of amounts, computed on the basis of appropriate assumptions.
<b>Actuarial Cost Method</b>	A mathematical budgeting procedure for allocating the dollar amount of the actuarial present value of retirement system benefit between future normal cost and actuarial accrued liability. Sometimes referred to as the “actuarial funding method”.
<b>Experience Gain (Loss)</b>	The difference between actual experience and actuarial assumptions anticipated experience during the period between two actuarial valuation dates.
<b>Actuarial Present Value</b>	The amount of funds currently required to provide a payment or series of payments in the future. It is determined by discounting future payments at predetermined rates of interest and by probabilities of payment.
<b>Amortization</b>	Paying off an interest-discounted amount with periodic payments of interest and principal, as opposed to paying off with lump sum payment.
<b>Normal Cost</b>	The actuarial present value of retirement system benefits allocated to the current year by the actuarial cost method.



## APPENDIX D – GLOSSARY OF TERMS

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**Unfunded Actuarial Accrued Liability** The difference between actuarial accrued liability and the valuation assets. Sometimes referred to as “unfunded actuarial liability” or “unfunded accrued liability”.

Most retirement systems have unfunded actuarial accrued liability. They arise each time new benefits are added and each time an actuarial loss is realized.

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