Cavanaugh Macdonald
CONSULTING, LLC
The experience and dedication you deserve

Nebraska Public Employees Retirement Systems 2017

State Equal Retirement Benefit Fund

Actuarial Valuation Results
as of January 1, 2017 for State Fiscal Year
ending June 30, 2018

TABLE OF CONTENTS

Cavanaugh Macdonald
CONSULTING, LLC
The experience and dedication you deserve

April 21, 2017

Public Employees Retirement Board
Nebraska Public Employees Retirement Systems
1526 "K" Street
Suite 400
Lincoln, NE 68509-4816

RE: Certification of Actuarial Valuation
State Equal Retirement Benefit Fund

Members of the Board:

At your request we have prepared an actuarial valuation of the State Equal Retirement Benefit Fund as of January 1, 2017 for the purpose of determining the funded status of the Plan and any required contribution for the plan year. Funding required from each participating State agency for current plan members, as approved by the Retirement Board, is equal to an amount necessary to fully fund the benefit obligation, or alternatively, an annual payment which would amortize the unfunded liability over a period of twenty years commencing January 1, 1999. As of the valuation date, two years remain in the amortization period.

There were no changes to the plan provisions or actuarial methods from the prior valuation. The only change to the actuarial assumptions was the annual update of the annuity conversion interest rate for members retiring from the Defined Contribution Plan. However, at their meeting on October 17, 2016, the Board adopted the set of recommended assumptions from the experience study that will be implemented with the January 1, 2018 valuation.

The actuarial valuation is based on unaudited financial data provided by the System and member data provided by Ameritas, the record keeper for the Plan. We found this information to be reasonably consistent and comparable with the information used in the prior report. 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. The benefits considered are those delineated in the Nebraska State Statutes as of January 1, 2017.

3906 Raynor Pkwy, Suite 106, Bellevue, NE 68123
Phone (402) 905-4461 • Fax (402) 905-4464
www.CavMacConsulting.com
Offices in Englewood, CO • Kennesaw, GA • Bellevue, NE

We further certify that all costs, liabilities, rates of interest and other factors for the State Equal Retirement Benefit Fund 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 affecting the System. 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 B.

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.

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.

Respectfully submitted,

Patrice Beckham

Brent A. Banister

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

Brent Banister, PhD, FSA, FCA, EA, MAAA
Chief Pension Actuary

S:/Nebraska PERS\Valuation\20170101\ \ERB\20170101 State ERB Valuation Report

EXECUTIVE SUMMARY

The State Equal Retirement Benefit Fund provides a benefit for members who had account balances on January 1, 1984 and who elect to annuitize those balances upon retirement. The fund was established to protect members who might have been negatively affected by the change in annuitization factors at that time when sex-distinct factors were replaced with unisex factors. As such, the characteristics of the actuarial liability of the Fund and the funding requirements are somewhat different from the other defined benefit plans managed by NPERS. This report determines the contribution requirements for the State as well as providing statistical information that may provide insight into the Fund's longer term financial health. The initial amortization period, which was set at 20 years, has declined and is currently two years. While the amount of the unfunded actuarial liability decreased from last year, the shortened remaining payoff period means the minimum contribution amount ($51,061) is higher than last year's amount.

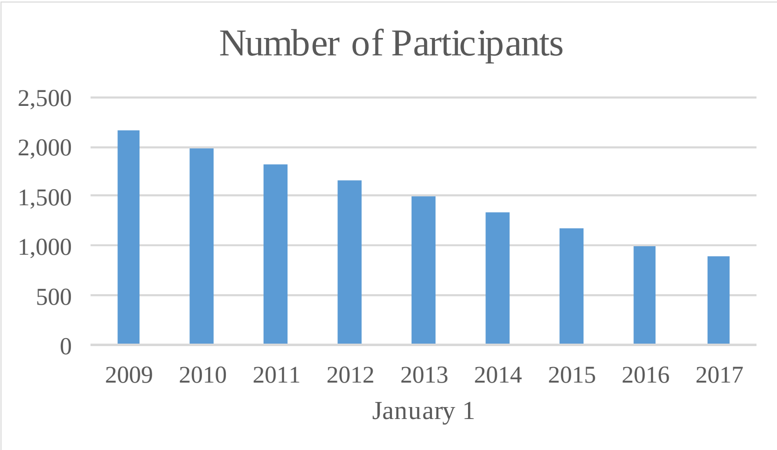
There are several risk factors that are key to the Fund's financial status over time. One of the most significant of these factors is the proportion of retirees that elect to take an annuity rather than a lump sum. An individual member's choice is based on their own personal situation and may consider different factors from other individuals who are also making this choice. The funding assumption is that 25% of retirees, in aggregate, will elect an annuity. While this assumption is reasonable, there are other assumptions that could also be considered to be reasonable. If a greater portion of retirees elect an annuity at retirement, the liability of the Fund would be higher than estimated in this report. As the number of members in the Plan declines, it is more likely that actual experience will vary significantly from that expected resulting in actuarial gains or losses. The possible volatility in the liability should be considered and evaluated. To assist with this analysis, we have included an exhibit in the report that shows the impact of a higher annuity election by retiring members (Exhibit 2). Liability results are shown should 50% or 75% of the retirees elect an annuity rather than the 25% assumed in the basic liability calculations. These alternative assumptions may or may not be reasonable in the aggregate, but the alternative results provide some measure of the possible downside risk.

Other factors and assumptions affecting the results include the following:

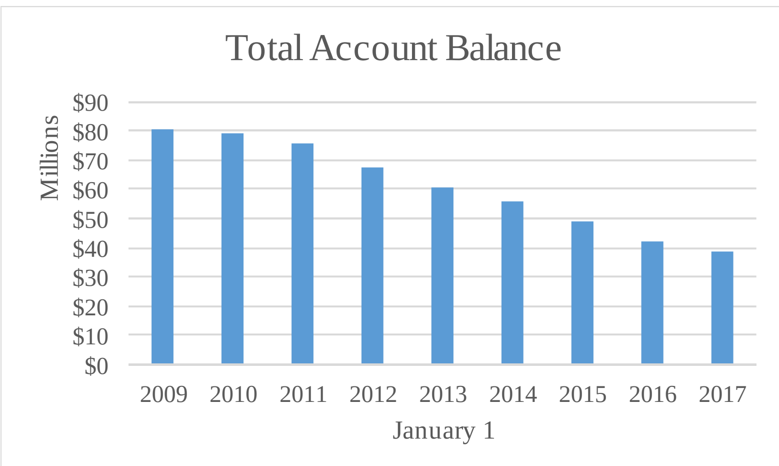
- Account growth – both the cash balance and defined contribution member balances are assumed to grow at 7.75% annually. To the extent actual investment returns (or interest credits and dividends in the cash balance accounts) are lower, the benefits assumed to be paid from the Fund are lower and so are the liabilities.
- Annuity factor interest rate – the defined contribution balances are assumed to be annuitized at the current applicable interest rate (2.62% as of January 1, 2017). If interest rates decrease in the future, the liabilities of the Fund would increase.
- General economic conditions – there are connections between the growth in the members' account balances, the interest rate environment (affecting the annuity factor interest rate), the investment return on the assets of the Fund, and the way in which potential retirees view the financial ramifications of retiring and electing an annuity. The exact interplay of these variables is extremely complex, but the fact that there is a connection means that the possible variability of the Fund's financial situation is potentially greater than it might otherwise appear. Consequently, we urge caution in concluding that the current strong financial health will continue indefinitely.

It is important to note that the unfunded actuarial liability is not, by itself, an indication of whether or not the Fund has sufficient assets to meet future liabilities. Further, the presence of an unfunded actuarial liability is not an indication of what future contributions may be required to fund the benefits.

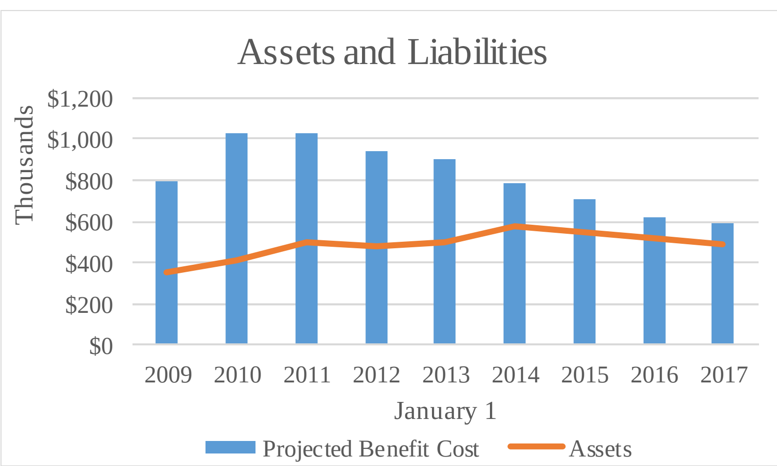
The following graphs show trends in the Fund over recent years:



Because there are no new members in the Fund, the number of participants has declined in past years and is expected to continue to decline in future years.



When comparing the total account balances in the current and past years, the growth in account balances due to investment earnings partially offsets the impact of a declining membership.



While the Fund's assets remain below the liabilities, this graph shows that the gap has been closing since 2010.

EXHIBIT 1 – SUMMARY OF ACTUARIAL RESULTS AND CONTRIBUTION ALTERNATIVES

Below is a comparison of results of the current and prior years' actuarial valuations.

Results	Actuarial Valuation as of January 1 2017	Actuarial Valuation as of January 1 2016
Number of Members		
Cash Balance	527	604
Defined Contribution	366	402
Total	893	1,006
Pre-1984 Account Balance with Interest, Beginning of Year		
Cash Balance	$22,340,643	$25,346,264
Defined Contribution	16,380,297	17,051,231
Total	$38,720,940	$42,397,495
Projected Benefit Cost (Liability)*		
a. Amount	$ 587,156	$ 615,448
b. As a percent of the account balance	1.516%	1.452%
c. Annuity Factor Interest Rate – Cash Balance	7.75%	7.75%
d. Annuity Factor Interest Rate – Defined Contribution	2.62%	3.57%
Actuarial Value of Assets (Market Value)		
a. Asset Value as of prior year's valuation	$ 513,259	$ 547,101
b. Deposits during the year	38,028	47,266
c. Withdrawals during the year	100,698	79,741
d. Investment Return or (Loss)	41,724	(1,367)
e. Actuarial Value of Assets as of Valuation Date [a.+ b.- c.+ d.]	$ 492,313	$ 513,259
Unfunded Liability/(Surplus)	$ 94,843	$ 102,189
Contribution Alternatives		
Full contribution	$ 94,843	$ 102,189
20 year amortization payment from January 1, 1999	$ 51,061	$ 38,028

*Cost is based on the assumption that 75% of members will elect a lump sum or installment payment instead of an annuity. To the extent that actual experience in the future deviates from this assumption, the costs in future years could vary as well, at times significantly.

EXHIBIT 2 – RISK MEASURES

This exhibit compares the Projected Benefit Cost (liability) assuming 25% of retirees elect an annuity (the funding assumption) with alternative assumptions of 50% and 75%. If the State has assets exceeding the liability of one or both of the alternative assumption scenarios, it indicates it is in a better position to withstand possible adverse experience.

	Percentage of Members Taking an Annuity		
	25% Annuitize	50% Annuitize	75% Annuitize
Projected Benefit Cost	$587,156	$1,174,312	$1,761,468
Actuarial Value of Assets	492,313	492,313	492,313
Unfunded Liability/(Surplus)	$ 94,843	$ 681,999	$1,269,155

EXHIBIT 3 – SUMMARY OF MEMBER DATA

Summary of Member Data

Age Range	Data	Gender Male	Female	Total
Less Than 50	Count of Members	0	2	2
	Average of Total Balance	$ 0	$ 23,595	$ 23,595
	Sum of Total Balance	$ 0	$ 47,189	$ 47,189
50-54	Count of Members	0	1	1
	Average of Total Balance	$ 0	$ 6,936	$ 6,936
	Sum of Total Balance	$ 0	$ 6,936	$ 6,936
55-59	Count of Members	12	17	29
	Average of Total Balance	$ 2,057	$ 2,786	$ 2,484
	Sum of Total Balance	$ 24,683	$ 47,367	$ 72,050
60-64	Count of Members	133	126	259
	Average of Total Balance	$ 7,991	$ 6,212	$ 7,126
	Sum of Total Balance	$ 1,062,841	$ 782,725	$ 1,845,566
65-69	Count of Members	245	178	423
	Average of Total Balance	$ 57,624	$ 31,082	$ 46,455
	Sum of Total Balance	$ 14,117,967	$ 5,532,594	$ 19,650,561
70-74	Count of Members	85	39	124
	Average of Total Balance	$ 116,591	$ 49,307	$ 95,429
	Sum of Total Balance	$ 9,910,244	$ 1,922,958	$ 11,833,202
75 and Above	Count of Members	32	23	55
	Average of Total Balance	$ 134,093	$ 42,367	$ 95,735
	Sum of Total Balance	$ 4,290,987	$ 974,449	$ 5,265,436
Total Members		507	386	893
Average of Total Balance		$ 58,001	$ 24,130	$ 43,361
Grand Total Balance		$ 29,406,722	$ 9,314,218	$ 38,720,940

APPENDIX A – SUMMARY OF BENEFIT PROVISIONS

Member	Any person employed by a State agency participating in either the Defined Contribution or Cash Balance Benefit under the State Employees Retirement System who has an accumulated account balance based on contributions which were made prior to January 1, 1984.
Contributions	Each participating State agency shall make contributions to the fund on an actuarial basis as approved by the Retirement Board.
Eligibility for Benefits	Any member who retires or terminates service and elects to convert to an annuity using their accumulated account balance, with interest, commencing on or after age 55, is eligible to receive a benefit from the fund.
Benefit Amount	The fund shall provide the Actuarially Equivalent amount required to purchase the additional monthly annuity, if any, which is equal to: a. the income provided by the Member's accumulated contributions made prior to January 1, 1984 with interest, based on male annuity conversion factors in effect on the annuity starting date, less b. the income provided by the Member's accumulated contributions made prior to January 1, 1984 with interest, which are based on 50% male / 50% female annuity conversion factors in effect on the annuity starting date.
Cash Balance Conversion	Any member who elected to transfer his or her account balance to the Nebraska State Cash Balance Plan as of January 1, 2003 or as of January 2, 2013 will have his or her Benefit Amount determined using the annuity conversion interest rate applicable to the State Employees Retirement System (Cash Balance Benefit), which for 2017 is 7.75%. Any other member will have his or her Benefit Amount determined using the annuity conversion interest rate applicable to the State Employees Retirement System (Defined Contribution Benefit), which for 2017 is 2.62%.

<u>Changes in Benefit Provisions Since the Prior Year</u>

There were no changes in the benefit provisions since the last valuation.

Economic Assumptions

1. Investment Return	7.75% per annum, compounded annually, net of expenses.
2. Consumer Price Inflation	3.25% per annum, compounded annually.
3. Interest on accumulated contribution balances (contributions made before January 1, 1984)	7.75% per annum, compounded annually.
4. COLA (optional purchase applicable to annuities)	2.50% per annum, compounded annually.
5. Annuity Conversion Interest Rates	7.75% for annuities from the Cash Balance Plan 2.62% for annuities from the Defined Contribution Plan

Demographic Assumptions

1. Mortality

a. Pre-retirement	None.
b. Post-retirement	1994 Group Annuity Mortality (based on Actuarial Equivalence definition in Statute).

2. Retirement

Rates vary by age as follows:

Age	State Annual Rates
55	5%
56	5
57	5
58	5
59	5
60	5
61	8
62	15
63	10
64	15
65	25
66	25
67	25
68	25
69-79	20
80	100

3. Withdrawal

None.

4. Disability

None.

Other Assumptions

1. Payment election

75% of retiring members were assumed to elect a lump sum distribution or installment payment, and 25% of retiring members were assumed to elect an annuity form of distribution.

2. Form of Annuity Payment

Of members electing an annuity, 80% of those members were assumed to elect a 5-year certain and life annuity without COLA, and 20% of those members were assumed to elect a 5-year certain and life annuity with a 2.5% annual COLA.

Appendix B – Summary of Actuarial Methods and Assumptions

Actuarial Methods

1. Funding Method	The present value of future benefits or Projected Benefit Cost, less the Actuarial Value of Assets, equals the Unfunded Liability or Surplus. The minimum recommended contribution is equal to an annual amount necessary to amortize the Unfunded Liability over twenty years from January 1, 1999.
2. Asset Valuation Method	Fair market value.

Changes in Assumptions Since the Prior Valuation

The assumed interest rate used for Defined Contribution annuity calculations is the annuity factor interest rate in effect as of the valuation date. The rate has changed from 3.57% to 2.62%.