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NEBRASKA PUBLIC EMPLOYEES RETIREMENT SYSTEM

STATE EQUAL RETIREMENT BENEFIT FUND

Actuarial Valuation Results as of January 1, 2018

for State Fiscal Year Ending June 30, 2019

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May 15, 2018

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, 2018 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, one year remains in the amortization period.

There were no changes to the plan provisions or actuarial methods from the prior valuation. The annuity conversion interest rate for members retiring from the Defined Contribution Plan is updated annually. At their meeting on October 17, 2016, the Board adopted a new set of assumptions, based on recommendations in the experience study. Although adopted late in 2016, this is the first valuation report that utilizes the new set of assumptions. These assumption changes are discussed in further detail in the Executive Summary section of this report. The net impact of the assumption changes was an increase in the Projected Benefit Cost.

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, 2018.

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	Brent Banister, PhD, FSA, FCA, EA, MAAA
Principal and Consulting Actuary	Chief Actuary

EXECUTIVE SUMMARY

The State Equal Retirement Benefit Fund provides a benefit for members who had account balances on January 1, 1984 and elect to convert those balances to monthly income (annuity) at retirement. The Fund was established to protect members who might be negatively affected by the legal requirement to change from sex-distinct annuity factors to unisex annuity factors. As such, the characteristics of the liability of the Fund and the funding requirements are different from the other traditional 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 on January 1, 1999, has declined to one year.

The amount of the unfunded liability decreased from last year, as did the minimum contribution amount, reflecting aggregate favorable actuarial experience for the past year.

There were no changes to the actuarial methods since last year's report. However, there have been several changes to the actuarial assumptions used in this valuation as a result of the four-year experience study completed in 2016. All of the recommended assumptions were adopted by the Board at their October 17, 2016 meeting and are first used in this valuation, including:

- Price inflation decreased from 3.25% to 2.75%.
- Investment return assumption decreased from 7.75% to 7.50%.
- Interest on accumulated contribution balances decreased from 7.75% to 7.50%.
- Retirement rates were adjusted to better reflect actual experience.

The change in the actuarial assumptions increased the projected benefit cost (Plan liability) by $1,985 and the amortization payment by $2,035. The impact of the assumption changes on the January 1, 2018 valuation results is summarized in the following table:

	Old Assumptions	New Assumptions	Difference
Projected Benefit Cost	$498,445	$500,430	$1,985
Market Value of Assets	478,846	478,846	0
Unfunded Liability	$ 19,599	$ 21,584	$1,985
Unfunded Liability Amortization Payment as of July 1, 2018	$ 20,344	$ 22,379	$2,035

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 compared to other individuals who are also making this choice. The funding assumption is that 25% of the account balances of retiring members, in aggregate, will be converted to monthly income (an annuity). While we believe this assumption is reasonable, there are other assumptions that could also be considered reasonable that would result in a different funded status and contribution amount. In particular, if a greater portion of account balances are annuitized at retirement, the liability of the Fund would be higher than estimated in this report. The potential 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 assuming 50% or 75% of the aggregate account balances are annuitized rather than the 25% assumed in the basic valuation calculations.

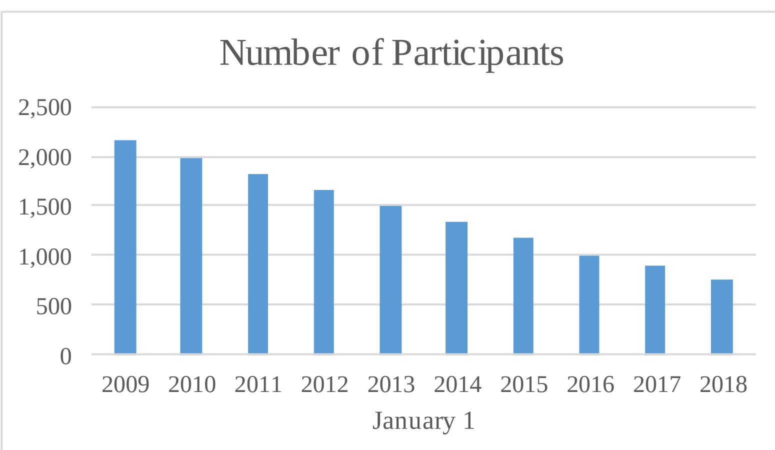
Although these alternatives assumptions may or may not be reasonable in the aggregate, the alternative results provide some measure of the possible downside risk.

Other factors and assumptions affecting the results include the following:

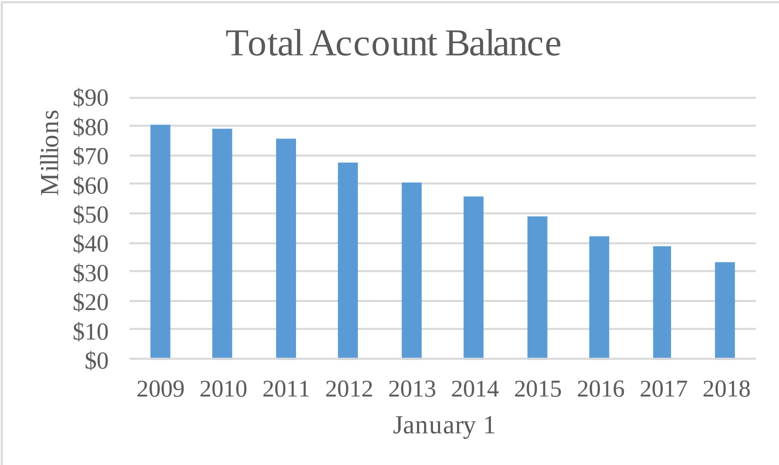
- Account growth – the account balances for both the cash balance and defined contribution members are assumed to increase at 7.50% annually. To the extent actual investment returns (or interest credits and dividends in the cash balance accounts) are lower, the benefits assumed to be paid from the Fund are lower and, therefore, the liabilities are lower.
- Annuity factor interest rate – the defined contribution balances are assumed to be annuitized at the current applicable interest rate (3.14% as of January 1, 2018). If interest rates decrease in the future, the difference in the liability of a benefit determined using a unisex annuity factor and the benefit determined using a male annuity factor increases, and so the liabilities of the Fund would increase.
- Funding policy – the current amortization period of one year results in any net unfavorable experience being immediately funded in the following year. With significant numbers of retirements expected in the next few years, there could be more volatility in the actual versus expected experience, leading to more volatility in the contribution amount.
- 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 of the Fund will continue indefinitely.**

It is important to note that an unfunded 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 liability is not an indication of what future contributions may be required to fund the benefits.

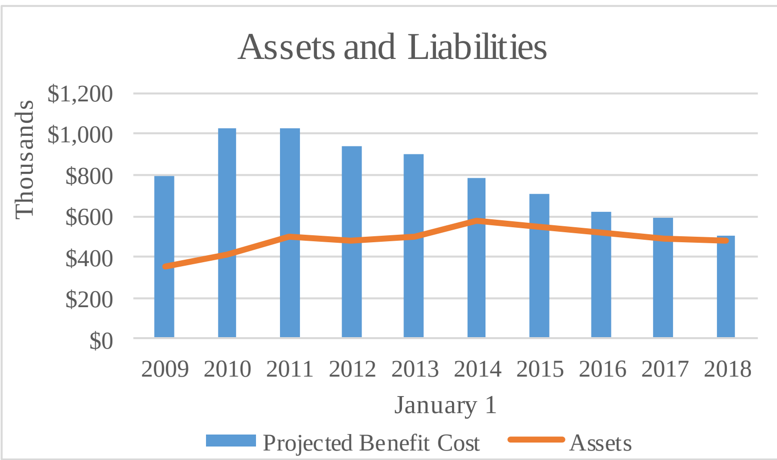
The following graphs show trends in the Fund over recent years:



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

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

Results	Actuarial Valuation as of January 1 2018	2017
Number of Members		
Cash Balance	426	527
Defined Contribution	319	366
Total	745	893
Pre-1984 Account Balance with Interest, Beginning of Year		
Cash Balance	$18,013,067	$22,340,643
Defined Contribution	15,011,183	16,380,297
Total	$33,024,250	$38,720,940
Projected Benefit Cost*		
a. Amount	$500,430	$587,156
b. As a percent of the account balance	1.515%	1.516%
c. Annuity Factor Interest Rate – Cash Balance	7.75%	7.75%
d. Annuity Factor Interest Rate – Defined Contribution	3.14%	2.62%
Market Value of Assets		
a. Asset Value as of prior year's valuation	$492,313	$513,259
b. Deposits during the year	51,061	38,028
c. Withdrawals during the year	129,573	100,698
d. Investment Return or (Loss)	65,045	41,724
e. Market Value of Assets as of Valuation Date [a.+ b.- c.+ d.]	$478,846	$492,313
Unfunded Liability	$21,584	$94,843
Contribution as of July 1, 2018	$22,379	$51,061

*Cost is based on the assumption that 75% of members will elect a lump sum or installment payments 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 the account balances of retiring members are converted to an annuity (the funding assumption) with alternative assumptions of 50% and 75%. As the table below indicates, greater utilization of the annuity option by members could significantly increase the liability of the plan and, therefore, the unfunded liability and contribution amount.

	Percentage of Members Taking an Annuity		
	25% Annuitize	50% Annuitize	75% Annuitize
Projected Benefit Cost	$500,430	$1,000,860	$1,501,290
Actuarial Value of Assets	478,846	478,846	478,846
Unfunded Liability	$21,584	$522,014	$1,022,444

EXHIBIT 3 – SUMMARY OF MEMBER DATA

Summary of Member Data

Age Range	Data	Gender Male	Female	Total
Less Than 50	Count of Members	0	0	0
	Average of Total Balance	$ 0	$ 0	$ 0
	Sum of Total Balance	$ 0	$ 0	$ 0
50-54	Count of Members	0	1	1
	Average of Total Balance	$ 0	$ 7,797	$ 7,797
	Sum of Total Balance	$ 0	$ 7,797	$ 7,797
55-59	Count of Members	4	2	6
	Average of Total Balance	$ 1,947	$ 1,658	$ 1,851
	Sum of Total Balance	$ 7,789	$ 3,315	$ 11,104
60-64	Count of Members	79	82	161
	Average of Total Balance	$ 3,222	$ 3,000	$ 3,109
	Sum of Total Balance	$ 254,503	$ 246,002	$ 500,505
65-69	Count of Members	228	165	393
	Average of Total Balance	$ 45,066	$ 27,158	$ 37,548
	Sum of Total Balance	$ 10,275,073	$ 4,481,146	$ 14,756,219
70-74	Count of Members	82	42	124
	Average of Total Balance	$ 115,685	$ 50,208	$ 93,507
	Sum of Total Balance	$ 9,486,189	$ 2,108,724	$ 11,594,913
75 and Above	Count of Members	35	25	60
	Average of Total Balance	$ 145,513	$ 42,430	$ 102,562
	Sum of Total Balance	$ 5,092,958	$ 1,060,754	$ 6,153,712
Total Members		428	317	745
Average of Total Balance		$ 58,683	$ 24,946	$ 44,328
Grand Total Balance		$ 25,116,512	$ 7,907,738	$ 33,024,250

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 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 2018 is 3.14%.
Cost of Living Adjustment (COLA)	Any member who elects an annuity has the option of purchasing a 2.50% COLA, compounded annually.

Changes in Benefit Provisions Since the Prior Year

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

Economic Assumptions

1. Investment Return	7.50% per annum, compounded annually, net of expenses.
2. Price Inflation	2.75% per annum, compounded annually.
3. Interest on accumulated contribution balances (contributions made before January 1, 1984)	7.50% per annum, compounded annually.
4. Annuity Conversion Interest Rates	7.75% for annuities from the Cash Balance Plan 3.14% 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	12
63	12
64	15
65	30
66	30
67	25
68	25
69-79	25
80	100

3. Withdrawal

None.

4. Disability

None.

<u>Other Assumptions</u>

1. Payment election

75% of the account balances of retiring members are assumed to be paid as a lump sum distribution or installment payment, and 25% of the account balances of retiring members are assumed to be paid as 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.

Actuarial Methods

1. Funding Method	The present value of future benefits or Projected Benefit Cost, less the Market 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 a closed twenty year period commencing January 1, 1999.
2. Asset Valuation Method	Fair market value of assets.

Changes in Assumptions Since the Prior Valuation

The assumed interest rate used for Defined Contribution annuity calculations is equal to the lesser of (i) the Pension Benefit Guaranty Corporation initial interest rate for valuing annuities for terminating plans as of the beginning of the year during which payment begins plus 0.75% or (ii) the interest rate used in the actuarial valuation as recommended by the actuary and approved by the board. The rate changed from 2.62% in the prior valuation to 3.14% in the current valuation.

The investment return assumption and the assumed interest on accumulated contribution balances were both lowered from 7.75% to 7.50%. The price inflation assumption was lowered from 3.25% to 2.75%, and the retirement rates were adjusted to better reflect observed experience. These changes were made as a result of the recommendations in the 2016 Experience Study.