Cavanaugh Macdonald
CONSULTING, LLC
The experience and dedication you deserve

THE NEBRASKA PUBLIC EMPLOYEES

RETIREMENT SYSTEM

STATE EMPLOYEES' RETIREMENT SYSTEM

CASH BALANCE BENEFIT FUND

GASB STATEMENT NO. 68 REPORT

MEASUREMENT DATE: DECEMBER 31, 2020

FOR STATE FISCAL YEAR END 2021

www.CavMacConsulting.com

Cavanaugh Macdonald
CONSULTING, LLC
The experience and dedication you deserve

July 19, 2021

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

Dear Members of the Board:

Presented in this report is information to assist the Nebraska Public Employees Retirement System in providing information required under the Governmental Accounting Standards Board (GASB) Statement No. 68 to the State of Nebraska for the State Employees' Retirement System Cash Balance Benefit Fund. GASB Statement No. 68 establishes accounting and financial reporting requirements for governmental employers who provide pension benefits to their employees through a trust. This report, which has been prepared as of December 31, 2020, is intended for use in the State's financial reporting for fiscal year 2021. The calculations in this report have been made on a basis that is consistent with our understanding of this accounting standard (GASB 68). Please note that the discount rate used to determine the Total Pension Liability (TPL) changed from 7.50% at the Prior Measurement Date to 7.30% at the current Measurement Date.

The annual actuarial valuation used as the basis for much of the information presented in this report was performed as of January 1, 2021. The valuation was based upon data, furnished by the System's staff, concerning active, inactive and retired members along with pertinent financial information. This information was reviewed for completeness and internal consistency, but was not audited by us. The valuation results depend on the integrity of the data. If any of the information is inaccurate or incomplete, our results may be different and our calculations may need to be revised. Please see the actuarial valuation for additional details on the funding requirements for the System including actuarial assumptions and methods and the Plan's funding policy.

To the best of our knowledge, the information contained in this report is complete and accurate. Certain information about the Plan and where additional information can be found was provided by the Nebraska Public Employees Retirement System and used in this report. The calculations were performed by qualified actuaries according to generally accepted actuarial principles and practices, as well as in conformity with Actuarial Standards of Practice issued by the Actuarial Standards Board. In order to prepare the results in this report, we have utilized appropriate actuarial models that were developed for this purpose. These models use assumptions about future contingent events along with recognized actuarial approaches to develop the needed results. The calculations are based on the current provisions of the System, and on actuarial assumptions that are internally consistent and individually reasonable based on the actual experience of the System. In addition, the calculations were completed in compliance with applicable law and, in our opinion, meet the requirements of GASB 68.

3802 Raynor Pkwy, Suite 202, Bellevue, NE 68123
Phone (402) 905-4461 • Fax (402) 905-4464
www.CavMacConsulting.com
Offices in Kennesaw, GA • Bellevue, NE

These results are only for financial reporting and may not be appropriate for funding purposes or other types of analysis. Calculations for purposes other than satisfying the requirements of GASB 68 may produce significantly different results. Future actuarial results may differ significantly from the current results presented in this report due to such factors as changes in plan experience or changes in economic or demographic assumptions.

We, Patrice A. Beckham, FSA, and Brent A. Banister, FSA, 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 this report or to provide explanations or further details as may be appropriate.

Respectfully submitted,

Patrice Beckham

Brent A. Banister

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

Brent A. Banister, PhD, FSA, EA, FCA, MAAA
Chief Actuary

TABLE OF CONTENTS

GASB STATEMENT NO. 68

NEBRASKA PUBLIC EMPLOYEES RETIREMENT SYSTEM

STATE EMPLOYEES' RETIREMENT SYSTEM CASH BALANCE BENEFIT FUND

SECTION I - SUMMARY OF PRINCIPAL RESULTS

Valuation Date (VD):	January 1, 2021
Prior Measurement Date:	December 31, 2019
Measurement Date (MD):	December 31, 2020
Membership Data:	
Retirees and Beneficiaries	2,360
Inactive Vested Members	3,702
Inactive Nonvested Members	5,768
Active Employees	13,917
Total	25,747
Single Equivalent Interest Rate (SEIR):	
Long-Term Expected Rate of Return	7.30%
Municipal Bond Index Rate at Prior Measurement Date	2.75%
Municipal Bond Index Rate at Measurement Date	2.12%
Year in which Fiduciary Net Position is Projected to be Depleted	N/A
Single Equivalent Interest Rate at Prior Measurement Date	7.50%
Single Equivalent Interest Rate at Measurement Date	7.30%
Net Pension Liability/(Asset):	
Total Pension Liability (TPL)	$1,795,412,351
Fiduciary Net Position (FNP)	1,991,720,438
Net Pension Liability/(Asset) (NPL = TPL – FNP)	($196,308,087)
FNP as a percentage of TPL	110.93%
Pension Expense:	$13,332,684
Deferred Outflows of Resources:	$106,368,407
Deferred Inflows of Resources:	$229,048,430

SECTION II – INTRODUCTION

The Governmental Accounting Standards Board issued Statement No. 68 (GASB 68), *"Accounting and Financial Reporting for Pensions"* in June 2012. GASB 68's effective date for employers was the first fiscal year beginning after June 15, 2014 (fiscal year ending June 30, 2015 for the State of Nebraska). The State Employees' Retirement System Cash Balance Benefit Fund (Plan) is a single-employer defined benefit pension plan.

Paragraph 20 of GASB Statement 68 permits the measurement date of the Net Pension Liability reported by a single employer to be "as of" a date no earlier than the end of its prior fiscal year provided that the actuarial valuation used to determine the Net Pension Liability meets the timing requirements of paragraph 22 of GASB 68. This option is available to the State of Nebraska (employer) which has a fiscal year end of June 30. Therefore, a Measurement Date of December 31, 2020 was used to determine the Net Pension Liability and Pension Expense for the employer's fiscal year ending June 30, 2021.

This report, prepared as of December 31, 2020 (the Measurement Date), presents information to assist the State Employees' Retirement System Cash Balance Benefit Fund of the Nebraska Public Employees Retirement System in providing the required information under GASB 68 to the State of Nebraska. Much of the material provided in this report, including the Net Pension Liability/(Asset), is based on the results of the GASB 67 report for the State Employees' Retirement System Cash Balance Benefit Fund of the Nebraska Public Employees Retirement System, which was issued June 15, 2021. See that report for more information on the member data, actuarial assumptions, and methods used in developing the GASB 67 results.

GASB 68 requires the inclusion of a Net Pension Liability/(Asset) (NPL) on the employer's Statement of Net Position and a determination of a Pension Expense (PE) in the Notes to the Financial Statements, that may bear little relationship to the employer's funding requirements. In fact, it is possible in some years for the NPL to be an asset or the PE to be an income item. The NPL is set equal to the Total Pension Liability (TPL) minus the Fiduciary Net Position (FNP). The benefit provisions recognized in the calculation of the TPL are summarized in Appendix B.

PE includes amounts for Service Cost (the Normal Cost under Entry Age Normal (EAN) for the year), interest on the TPL, employee contributions, administrative expenses, other cash flows during the year, recognition of increases/decreases in the TPL due to changes in the benefit structure, actual versus expected experience, actuarial assumption changes, and recognition of investment gains/losses. The actual experience and assumption change impacts are recognized over the average expected remaining service life of the Plan membership as of the beginning of the measurement period, while investment gains/losses are recognized equally over five years. The development of the PE is shown in Section III. The unrecognized portions of each year's experience, assumption changes and investment gains/losses are used to develop Deferred Inflows and Outflows of Resources, which also must be included on the employer's Statement of Net Position.

Among the items needed for the TPL calculation is a discount rate, as defined by GASB, or a Single Equivalent Interest Rate (SEIR). To determine the SEIR, the FNP must be projected into the future for as long as there are anticipated benefits payable under the plan provisions applicable to the membership and beneficiaries of the Plan on the Measurement Date. Future contributions were projected to be made at the current levels set in statute. If the FNP is not projected to be depleted at any point in the future, the long-term expected rate of return on plan investments expected to be used to finance the benefit payments may be used as the SEIR.

If, however, the FNP is projected to be depleted at a future measurement date, the SEIR is determined as the single rate that will generate a present value of benefit payments equal to the sum of the present value determined by discounting all projected benefit payments through the date of depletion by the long-term expected rate of return, and the present value determined by discounting those benefits after the depletion date by a 20-year tax-exempt municipal bond (rating AA/Aa or higher) rate (Municipal Bond Index Rate). The rate used, if necessary, for this purpose is the monthly average of the Bond Buyer General Obligation 20-year Municipal Bond Index (formerly published monthly by the Board of Governors of the Federal Reserve System).

Our calculations indicate that the FNP is not projected to be depleted, so the Municipal Bond Index Rate is not used in the determination of the SEIR for either the December 31, 2019 or the December 31, 2020 TPL. The SEIR for the Prior Measurement Date was 7.50% and the SEIR for the current Measurement Date is 7.30%, the long-term assumed rate of return on investments and meets the requirements of GASB 67 and 68.

The FNP projections are based upon the System's financial status on the Measurement Date, the indicated set of methods and assumptions, and the requirements of GASB 67 and 68. As such, the FNP projections are not reflective of the cash flows and asset accumulations that would occur on an ongoing plan basis, reflecting the impact of future members. Therefore, the results of this test do not necessarily indicate whether or not the fund will actually run out of money, the financial condition of the System, or the System's ability to make benefit payments in future years.

The System was effective on January 1, 1964 and consisted of a defined contribution plan that covered employees of the State. Effective January 1, 2003, a cash balance benefit was added to the State Employees Retirement Act. Each member employed and participating in the retirement system prior to January 1, 2003 elected to either to continue participation in the defined contribution plan or to transfer their account balance to the cash balance plan and begin participation in the cash balance benefit plan. All new members of the System on or after January 1, 2003 participate in the cash balance benefit plan. There have been several subsequent election periods which permitted members in the defined contribution plan to elect to transfer to the cash balance benefit plan.

Members of the defined contribution plan may elect at retirement to receive an annuity (monthly benefits) rather than a lump sum. If so elected, they become members of the Cash Balance Benefit Fund at that time because their account balance is transferred to the State Employees' Retirement System Cash Balance

Benefit Fund, increasing the FNP for that System, and a liability is reflected in the TPL equal to the present value of the expected future monthly benefit payments.

For purposes of GASB 68, the defined contribution plan is reported as a separate defined contribution plan and the Cash Balance Benefit Fund is reported as a defined benefit plan. Only GASB 68 information for the defined benefit plan is reflected in this report.

The sections that follow provide the results of all the required calculations, presented in the order laid out in GASB 68 for note disclosure and Required Supplementary Information (RSI). Some of this information was provided by the Nebraska Public Employees Retirement System for use in this report. These sections, not prepared by Cavanaugh Macdonald LLC, are: Paragraphs 37, 38, 40(a)-(b), 40(d)-(e), 43 and 45(e)-(f).

SECTION III – PENSION EXPENSE

As noted earlier, the Pension Expense (PE) consists of a number of different items. GASB 68 refers to the first item as Service Cost, which is the Normal Cost using the Entry Age Normal (EAN) actuarial funding method. The second item is interest on the TPL at 7.50%, the SEIR in effect as of the Prior Measurement Date.

The next three items refer to any changes that occurred in the TPL due to:

- benefit changes,
- actual versus expected experience, or
- changes in actuarial assumptions or other inputs.

Benefit changes, which are reflected immediately, will increase PE if there is a benefit improvement for existing Plan members, or decrease PE if there is a benefit reduction. For the plan year ended December 31, 2020, there was one benefit change to be recognized, a dividend of 3.00% granted by the PERB in 2020 (based on December 31, 2019 account balances).

The next item to be recognized is the portion of current year changes in TPL due to actual versus expected experience for the year. The portion to recognize in the current year is determined by spreading the total change over the average expected remaining service life of the entire Plan membership at the beginning of the measurement period. The average expected remaining service life of active members is the average number of years the active members are expected to remain in covered employment. At the beginning of the measurement period, this number is 9.68 years. The average expected remaining service life of the inactive members is zero. Therefore, the recognition period is the weighted average of these two amounts, or 5.30 years.

The last item under changes in TPL is changes in actuarial assumptions or other inputs. There were a number of changes in the actuarial assumptions or other inputs since the Prior Measurement Date. These changes are detailed in Appendix C of this report. The changes will be recognized over the average expected remaining service life of the entire Plan membership, using the same approach applied to experience gains and losses, as described in the prior paragraph.

Employee contributions for the year and projected earnings on the FNP at the long-term expected rate of return are subtracted from the amount determined thus far. One-fifth of the current-period difference between projected and actual earnings on the FNP is recognized in the PE.

The current year portions of previously determined experience, assumption changes and earnings amounts, recognized as Deferred Outflows of Resources and Deferred Inflows of Resources are included next. Deferred Outflows of Resources are added to the PE while Deferred Inflows of Resources are subtracted from the PE. Finally, administrative expenses and other miscellaneous items are included.

The calculation of the PE for the plan year ended December 31, 2020 is shown in the following table.

Pension Expense
For the Year Ended

December 31, 2020	
Service Cost at end of year	$66,765,739
Interest on the Total Pension Liability	121,384,492
Benefit term changes	33,745,768
Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability	(2,645,745)
Expensed portion of current-period assumption changes	4,059,713
Employee contributions	(33,007,021)
Projected earnings on plan investments	(133,493,575)
Expensed portion of current-period differences between projected and actual earnings on plan investments	(17,700,678)
Administrative expenses	1,519,944
Other	0
Recognition of beginning Deferred Outflows of Resources	44,053,550
Recognition of beginning Deferred Inflows of Resources	(71,349,503)
Total Pension Expense	**$13,332,684**

Note: Average expected remaining service life for all members is 5.30 years.

SECTION IV – NOTES TO FINANCIAL STATEMENTS

The material presented herein will follow the order presented in GASB 68. Paragraph numbers are provided for ease of reference.

Paragraph 37: This information is available in the State Annual Report online at:

https://npers.ne.gov/SelfService/public/howto/publications/LegisReports/AnnualReport2021.pdf

Paragraph 38: The state of Nebraska is the plan sponsor for the State Employees' Retirement System Cash Balance Benefit Fund, Judges' Retirement System and the Patrol Retirement System. All are single-employer defined benefit plans. Information for paragraphs 39 to 45 for the State Employees' Retirement System Cash Balance Benefit Fund can be found on the following pages. Similar information for the Judges' Retirement System and State Patrol Retirement System can be found in the GASB 68 report prepared for those systems.

Paragraph 39: Not Applicable.

Paragraph 40(a): The name of the pension plan is the State Employees' Retirement System Cash Balance Benefit Fund and it is administered by the Nebraska Public Employees Retirement Board which was created in 1971 to administer the Nebraska retirement plans. The State Employees' Retirement System Cash Balance Benefit Fund is a single-employer defined benefit plan.

The State Employees' Retirement System Cash Balance Benefit Fund has been created in accordance with Internal Revenue Code Sections 401(a), 414(h), and 414(k). Please refer to Neb. Rev. Stat. §§ 84-1301 through 84-1333 (Reissue 2014, Cum. Supp. 2018) for the State Employees' Retirement Act. Benefit and contribution provisions are established by State law and may be amended only by the Nebraska Legislature.

Paragraph 40(b):

(1) Classes of employees covered: Immediate participation is mandatory for all permanent, full-time employees who work one-half or more of the regularly scheduled hours. Participation is voluntary for permanent, part-time employees age 18 or older and permanent part-time seasonal employees age 18 or older.

(2) Types of benefits: The main benefits provided are retirement benefits. However, the Plan also provides ancillary benefits in the event of pre-retirement death, disability, or termination of employment prior to meeting the eligibility requirements to retire.

(3) Key elements of the pension formulas: Upon attainment of age 55, regardless of service, the retirement allowance shall be equal to the accumulated employee and employer cash balance accounts, including interest credits, annuitized for payment in the normal form, a single life annuity with five-year certain, payable monthly. Members have the option to convert their cash balance accounts to a monthly annuity with an annual cost-of-living adjustment of 2.5%. Additional forms of payment, which are actuarially equivalent to the normal form and include the option of a full or partial lump-sum, are also available under the Plan.

(4) **Terms with respect to automatic postemployment benefit changes, including automatic COLAs and ad hoc COLAs:** When selecting an annuity, the retiree must decide if they wish to purchase an annual cost-of-living adjustment (COLA) to offset inflation. If the retiree elects an annuity with no COLA, the monthly annuity amount will never change. If the retiree purchases with the COLA, the annuity dollar amount increases 2.5% each year.

(5) **Authority under which benefit terms are established or may be amended:** Benefit and contribution provisions are established by State law (Neb. Rev. Stat. §§ 18-1301 through 84-1333 (Reissue 2014, Cum. Supp. 2018)) and may be amended only by the Nebraska Legislature.

Paragraph 40(c): The data required regarding the membership of the Plan was furnished by the Nebraska Public Employees Retirement System. The following table summarizes the membership of the Plan as of January 1, 2021 (the Valuation Date). The January 1, 2021 valuation was used to determine the December 31, 2020 TPL.

Membership

Number as of January 1, 2021	
Inactive Members Or Their Beneficiaries Currently Receiving Benefits	2,360
Inactive Members Entitled To But Not Yet Receiving Benefits	3,702
Inactive Non-vested Members Entitled to a Refund of Member Contributions	5,768
Active Members	13,917
Total	25,747

Paragraph 40(d):

(1) **Basis for determining the employer's contributions to the plan:** Pursuant to state statute, an actuarial valuation is performed each year to determine the actuarial required contribution. To the extent member and State payroll-related contributions are insufficient to meet the full actuarial required contribution, the remainder is paid by the State (see 40(d)(3)).

(2) **Identification of the authority under which contribution requirements of the employer and employees are established or may be amended:** contribution provisions are established by State law (Neb. Rev. Stat. §§ 84-1301 through 84-1333 (Reissue 2014, Cum. Supp. 2018)) and may be amended only by the Nebraska Legislature.

(3) **The contribution rates (in dollars or as a percentage of covered payroll) of those entities for the reporting period:**

Members: Each member contributes 4.8% of annual compensation.

State contributions: The State contributes 156% of the member contribution rate (7.488% of annual compensation). State statutes also require the State to make an additional contribution if the regular, payroll-related contributions by employees and the State are insufficient to meet the actuarial required contribution for the plan year. For the measurement period ending December 31, 2020, there were no additional State contributions.

Amount of contributions recognized by the pension plan from the employer during the reporting period (only the total amounts recognized as additions to the plan's fiduciary net position are reflected here): For the measurement period ending December 31, 2020 the plan received $51,505,962 in employer contributions.

Paragraph 40(e): Whether the pension plan issues a stand-alone financial report (or the pension plan is included in the report of a public employee retirement system or another government) that is available to the public and, if so, how to obtain the report: Annually, the Nebraska Public Employees Retirement System prepares stand-alone financial statements for the State Employees' Retirement Plans. The audited financial statement reports can be found at:

https://www.nebraska.gov/auditor/FileSearch/entityresults.cgi?id=Retirement%20Systems%2C%20Public%20Employees%20(Retirement)

Paragraph 41: This paragraph requires information to be disclosed regarding the actuarial assumptions and other inputs used to measure the TPL. The complete set of actuarial assumptions and other inputs utilized in developing the TPL are outlined in Appendix C. The TPL, as of December 31, 2020, was determined based on an actuarial valuation prepared as of January 1, 2021, using the following key actuarial assumptions and other inputs:

Price Inflation	2.65 percent
Wage Inflation	3.15 percent
Salary increases, including wage inflation	3.15 to 9.50 percent
Long-term Rate of Return, net of investment expense, including price inflation	7.30 percent
Municipal Bond Index Rate	2.12 percent
Year FNP is projected to be depleted	N/A
Single Equivalent Interest Rate, net of investment expense, including price inflation	7.30 percent

Interest crediting rate, including dividends	6.15 percent
Mortality	
a. Healthy lives - Active members	Pub-2010 General Members (Above Median) Employee Mortality Table (100% of male rates, 95% of female rates), both male and female rates set back one year, projected generationally using MP-2019 modified to 75% of the ultimate rates.
b. Healthy lives – Retired members	Pub-2010 General Members (Above Median) Retiree Mortality Table (100% of male rates, 95% of female rates), both male and female rates set back one year, projected generationally using MP-2019 modified to 75% of the ultimate rates.
c. Healthy lives – Beneficiaries	Pub-2010 General Members (Above Median) Contingent Survivor Mortality Table (100% of male rates, 95% of female rates), both male and female rates set back one year, projected generationally using MP-2019 modified to 75% of the ultimate rates.
Mortality for Annuitizing Cash Balance Accounts	For members hired before January 1, 2018: 1994 Group Annuity Mortality Table, with 50% Male, 50% Female blending (set statutorily).for members hired before January 1, 2018 (set statutorily). For members hired on or after January 1, 2018: Retiree mortality table, projected to 2040, with 55% Male, 45% Female blending.

The actuarial assumptions used in the valuation are based on the results of the most recent actuarial experience study, which covered the four-year period ending June 30, 2019. The experience study report is dated December 21, 2020.

Paragraph 42:

(a): Discount rate (SEIR). The discount rate used to measure the TPL at December 31, 2020 was 7.30 percent. The discount rate used to measure the TPL at December 31, 2019 was 7.50 percent.

(b): Projected cash flows. The projection of cash flows used to determine the discount rate was performed in accordance with GASB 67 and 68. Contributions from members and the State of Nebraska were assumed to be made at the current statutory rates in law:

a. Employee contribution rate: 4.8% of annual compensation.

b. State of Nebraska contribution rate: 156% of the employee contribution rate (7.488% of annual compensation). State statutes also require the State to make an additional contribution if the regular, payroll related contributions by employees and the State are insufficient to meet the actuarial required contribution for the plan year. No additional State contributions were assumed to be made.
c. Administrative expenses for the current and future years were assumed to be 0.21% of the current members' proportionate share of covered payroll.

Based on those assumptions, the Plan's FNP was projected to be available to make all projected future benefit payments of current Plan members. Therefore, the long-term expected rate of return on Plan investments of 7.30% was applied to all periods of projected benefit payments to determine the TPL.

The FNP projections are based upon the Plan's financial status on the Measurement Date, the indicated set of methods and assumptions, and the requirements of GASB 68. As such, the FNP projections are not reflective of the cash flows and asset accumulations that would occur on an ongoing plan basis, reflecting the impact of future members. Therefore, the results of this test do not necessarily indicate whether or not the fund will actually run out of money, the financial condition of the Plan, or the Plan's ability to make benefit payments in future years.

(c): Long-term rate of return. The long-term expected rate of return on pension plan investments is reviewed regularly as part of the experience study. The experience analysis was performed and results provided in a report dated December 21, 2020. Generally, several factors are considered in evaluating the long-term rate of return assumption, including long-term historical data, estimates inherent in current market data, and an analysis in which best-estimate ranges of expected future real rates of return (expected returns, net of investment expense and inflation), along with estimates of variability and correlations for each asset class, were developed by the System's investment consultant. These ranges were combined to develop the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and then adding expected inflation. The capital market assumptions developed by investment consultants are often intended for use over a 10-year investment horizon and are not always useful in setting the long-term rate of return for funding pension plans which covers a longer timeframe. The long-term rate of return assumption is intended to be a long-term assumption (30 to 50 years) and is not expected to change absent a significant change in the asset allocation, a change in the inflation assumption, or a fundamental change in the market that alters expected returns in future years.

(d): Municipal bond rate. A municipal bond rate was not used in determining the discount rate. If it were required, the rate would be 2.12% on the Measurement Date.

(e): Periods of projected benefit payments. Projected future benefit payments for all current members of the Plan were projected through 2120.

(f): Assumed asset allocation. The target asset allocation and best estimates of arithmetic real rates of return for each major asset class as of the most recent experience study, as provided by the System's investment consultant, Aon Investments USA, Inc., are summarized in the following table:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return*
U.S. Equity	27.0%	4.5%
Non-U.S. Equity	11.5%	5.8%
Global Equity	19.0%	5.3%
Fixed Income	30.0%	0.7%
Private Equity	5.0%	7.4%
Real Estate	7.5%	4.2%
Total	100.0%	

*Arithmetic mean, net of investment expenses

(g): Sensitivity analysis. This paragraph requires disclosure of the sensitivity of the NPL to changes in the discount rate. The following presents the NPL of the System, calculated using the discount rate of 7.30 percent, as well as the System's NPL calculated using a discount rate that is 1-percentage-point lower (6.30 percent) or 1-percentage-point higher (8.30 percent) than the current rate.

	1% Decrease (6.30%)	Current Discount Rate (7.30%)	1% Increase (8.30%)
Total Pension Liability	$1,961,416,614	$1,795,412,351	$1,656,743,836
Fiduciary Net Position	$1,991,720,438	$1,991,720,438	$1,991,720,438
Net Pension Liability/(Asset)	($30,303,824)	($196,308,087)	($334,976,602)

Paragraph 43: The Plans' financial statements were prepared on the accrual basis of accounting. Under this method, revenues are recorded when earned and expenses are recorded when a liability is incurred. Employee and employer contributions are recognized in the period in which employee services are performed. Benefits and refunds are recognized when due and payable in accordance with the terms of the Plan.

Investments as reported in the financial statements include long-term investments. Law or legal instruments may restrict these investments. All investments are stated at fair value, based on quoted market prices. For investments where no readily ascertainable fair value exists, management has received an estimate of fair value from the investment fund manager based, in part, on real estate appraisals. The State Treasurer is the custodian of all funds; however, investment of funds is under the responsibility of the Nebraska Investment Council.

There have been no changes since the Measurement Date that would materially alter the Plan's financial report.

This information can be found in the published financials online at: http://npers.ne.gov/SelfService/.
Go to 'Related Links' and click on 'Retirement Plan Audits'.

Paragraph 44 (a) – (c): This paragraph requires a schedule of changes in the NPL. The necessary information is provided in the table below for reporting year ended December 31:

	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability/(Asset) (a) – (b)
Balances at December 31, 2019	$1,669,035,171	$1,789,743,277	($120,708,106)
Changes for the year:			
Service Cost at end of year	66,765,739		66,765,739
Interest on TPL	121,384,492		121,384,492
Benefit term changes	33,745,768		33,745,768
Differences between expected and actual experience	(14,022,451)		(14,022,451)
Assumption changes	21,516,477		21,516,477
Employer contributions		51,505,962	(51,505,962)
Employee contributions		33,007,021	(33,007,021)
Net investment income		221,996,967	(221,996,967)
Benefit payments, including member refunds	(112,330,647)	(112,330,647)	0
Administrative expenses		(1,519,944)	1,519,944
Transfers	9,317,802	9,317,802	0
Net changes	126,377,180	201,977,161	(75,599,981)
Balances at December 31, 2020	$1,795,412,351	$1,991,720,438	($196,308,087)

Paragraph 44(d): There is no special funding situation.

Paragraph 45:

(a): The Measurement Date of the NPL is December 31, 2020. The TPL as of December 31, 2020 was determined based upon an actuarial valuation performed as of the Valuation Date, January 1, 2021.

(b): There is no special funding situation.

(c): There were a number of changes in the actuarial assumptions since the Prior Measurement Date. These changes are detailed in Appendix C of this report.

(d): There was one benefit changes in the benefit terms since the Prior Measurement Date. The PERB granted a dividend of 3.00% in 2020 which was credited to the December 31, 2019 account balance of members.

(e): There were no benefit payments in the measurement period attributable to the purchase of allocated insurance contracts.

(f): Based on the available information, the Nebraska Public Employees Retirement System believes that there are no changes between the Measurement Date of the NPL (December 31, 2020) and the employer's reporting date (June 30, 2021) that are expected to have a significant effect on the NPL.

(g): Please see Section III for the development of the PE.

(h): Since certain expense items are recognized over closed periods each year, the deferred portions of these items must be tracked annually. If the amounts serve to reduce PE they are labeled Deferred Inflows of Resources. If they will increase PE they are labeled Deferred Outflows of Resources. The recognition of these amounts is accomplished on a level dollar basis, with no interest included in the deferred amounts. Experience gains/losses and the impact of changes in actuarial assumptions, if any, are recognized over the average expected remaining service life of the active and inactive Plan members at the beginning of the measurement period. Investment gains and losses are recognized equally over a five-year period.

The following tables provide a summary of the amounts of the Deferred Outflows of Resources and Deferred Inflows of Resources as of the Measurement Date (December 31, 2020). Per GASB 68, reporting of the differences between projected and actual earnings should be on a net basis, with only one Deferred Outflow or Inflow. This information is provided in the following table:

	Deferred Outflows of Resources	Deferred Inflows of Resources	Net Deferred Outflows/(Inflows) of Resources
Differences between expected and actual experience	$51,320	$29,219,662	($29,168,342)
Changes of assumptions	32,381,082	0	32,381,082
Differences between projected and actual earnings	73,936,005	199,828,768	(125,892,763)
Total	$106,368,407	$229,048,430	($122,680,023)

The following tables show the Deferred Outflows of Resources and Deferred Inflows of Resources separately to provide additional detail.

Deferred Outflows of Resources								
		December 31, 2019		Additions		Recognition		December 31, 2020
Differences between expected and actual experience								
FY 2015 Base	$	162,888	$	0	$	111,568	$	51,320
FY 2016 Base		0		0		0		0
FY 2017 Base		0		0		0		0
FY 2018 Base		0		0		0		0
FY 2019 Base		0		0		0		0
FY 2020 Base		0		0		0		0
Total	$	162,888	$	0	$	111,568	$	51,320
Changes of assumptions								
FY 2015 Base	$	0	$	0	$	0	$	0
FY 2016 Base		0		0		0		0
FY 2017 Base		21,898,298		0		6,973,980		14,924,318
FY 2018 Base		0		0		0		0
FY 2019 Base		0		0		0		0
FY 2020 Base		0		21,516,477		4,059,713		17,456,764
Total	$	21,898,298	$	21,516,477	$	11,033,693	$	32,381,082
Differences between projected and actual earnings								
FY 2015 Base	$	0	$	0	$	0	$	0
FY 2016 Base		0		0		0		0
FY 2017 Base		0		0		0		0
FY 2018 Base		110,904,007		0		36,968,002		73,936,005
FY 2019 Base		0		0		0		0
FY 2020 Base		0		0		0		0
Total	$	110,904,007	$	0	$	36,968,002	$	73,936,005
Total	$	132,965,193	$	21,516,477	$	48,113,263	$	106,368,407

Deferred Inflows of Resources								
	December 31, 2019		Additions		Recognition		December 31, 2020	
Differences between expected and actual experience								
FY 2014 Base	$	926,196	$	0	$	926,196	$	0
FY 2015 Base		0		0		0		0
FY 2016 Base		5,028,168		0		2,244,718		2,783,450
FY 2017 Base		9,685,318		0		3,084,496		6,600,822
FY 2018 Base		2,542,531		0		722,310		1,820,221
FY 2019 Base		8,614,196		0		1,975,733		6,638,463
FY 2020 Base		0		14,022,451		2,645,745		11,376,706
Total	$	26,796,409	$	14,022,451	$	11,599,198	$	29,219,662
Changes of assumptions								
FY 2015 Base	$	0	$	0	$	0	$	0
FY 2016 Base		0		0		0		0
FY 2017 Base		0		0		0		0
FY 2018 Base		0		0		0		0
FY 2019 Base		0		0		0		0
FY 2020 Base		0		0		0		0
Total	$	0	$	0	$	0	$	0
Differences between projected and actual earnings								
FY 2015 Base	$	0	$	0	$	0	$	0
FY 2016 Base		2,293,816		0		2,293,816		0
FY 2017 Base		51,280,644		0		25,640,323		25,640,321
FY 2018 Base		0		0		0		0
FY 2019 Base		137,847,644		0		34,461,911		103,385,733
FY 2020 Base		0		88,503,392		17,700,678		70,802,714
Total	$	191,422,104	$	88,503,392	$	80,096,728	$	199,828,768
Total	$	218,218,513	$	102,525,843	$	91,695,926	$	229,048,430

(i): Amounts reported as Deferred Outflows of Resources and Deferred Inflows of Resources related to pensions will be recognized in PE in future fiscal years as follows:

Fiscal Year Ending June 30:	Deferred Outflows of Resources	Deferred Inflows of Resources	Net Deferred Outflows/(Inflows) of Resources
2022	$48,053,015	$88,475,912	($40,422,897)
2023	48,001,696	61,129,605	(13,127,909)
2024	5,036,071	57,591,498	(52,555,427)
2025	4,059,713	21,057,689	(16,997,976)
2026	1,217,912	793,726	424,186
Thereafter	0	0	0

(j): Based on information supplied by NPERS, the State Employees' Retirement System Cash Balance Benefit Fund receives no revenue from non-employer contributing entities.

SECTION V – REQUIRED SUPPLEMENTARY INFORMATION

There are several tables of Required Supplementary Information (RSI) that need to be included in the Plan's financial statements:

Paragraphs 46(a) - (c): The required tables of schedules are provided in Appendix A.

Paragraph 47: Significant methods and assumptions used in calculating the Actuarially Determined Contributions, if any, should be presented as notes to the schedule required by paragraph 46(c). In addition, for each of the schedules required by paragraph 46, information should be presented about factors that significantly affect trends in the amounts reported.

Changes of benefit and funding terms: The following changes were made by the Nebraska Legislature and reflected in the valuation performed as of January 1 listed below:

2021: The Board granted a dividend of 3.00% in 2020 that was first reflected in the January 1, 2021 valuation.

2019: The Board granted a dividend of 5.46% in 2018 that was first reflected in the January 1, 2019 valuation.

2018: The Board granted a dividend of 3.07% in 2017 that was first reflected in the January 1, 2018 valuation.

2016: The Board granted a dividend of 4.53% in 2015 that was first reflected in the January 1, 2016 valuation.

2013: The 2012 Nebraska Legislature passed LB 916, as amended by AM1739, which created an election period beginning September 1, 2012 and ending October 31, 2012 during which members in the State Defined Contribution Plan could elect to transfer their account balances to the State Employees' Retirement System Cash Balance Benefit Fund.

Changes in actuarial assumptions:

1/1/2021 valuation:

- Price inflation assumption was lowered from 2.75% to 2.65%.
- Investment return assumption was lowered from 7.50% to 7.30%.
- Interest crediting rate on Cash Balance accounts decreased from 6.25% to 6.15%.
- General wage inflation was lowered from 3.50% to 3.15%.
- Salary merit increases were adjusted to better reflect observed experience.
- An explicit assumption for administrative expenses was adopted as a component of the actuarial contribution rate and was set to 0.21% of pay.
- Retirement rates were adjusted to better reflect observed experience.
- Termination rates were adjusted to better reflect observed experience.
- Mortality assumptions were changed to the Pub-2010 General Members (Above Median) Mortality Tables (100% of male rate for males, 95% of female rates for females), set back on year, projected generationally using MP-2019 modified to 75% of the ultimate rates.

1/1/2018 valuation:

- Investment return assumption was lowered from 7.75% to 7.50%.
- Price inflation assumption was lowered from 3.25% to 2.75%.
- General wage growth was lowered from 4.00% to 3.50%.
- Covered payroll growth assumption decreased from 4.00% to 3.50%.
- Individual salary increase assumption was lowered by 0.50% in order to remain consistent with the general wage growth assumption.
- Assumed cash balance interest crediting rate was lowered from 6.75% to 6.25%.
- Mortality assumption was changed to the RP-2014 While Collar Mortality Table, with adjustments made to better reflect observed experience. Generational mortality improvements are modeled using a System-specific projection scale.
- Retirement rates were adjusted to better reflect observed experience.
- Termination rates were changed to a service-based assumption.

1/1/2013 valuation:

- The interest crediting rate on cash balance accounts was lowered from 7.00% to 6.75% per year.
- Salary increases were changed to rates grading down from 5.43% for less than one year of service to 4.00% at 20 years of service. Prior rates graded from 5.9% for less than one year of service to 4.5% at 20 years of service.
- Retirement rates increased at age 65 to 69 and 100% probability of retirement was extended to age 80 from age 70.
- Pre- and post-retirement healthy mortality assumptions were changed from the 1994 Group Annuity Mortality (GAM) table projected to 2010 (pre-retirement male rates were 65% of rates and female

rates were 50% of rates) to the 1994 GAM table, with 1-year setback, projected to 2015 (pre-retirement rates are adjusted by 55% for males and 40% for females).

- The select and ultimate termination rates were increased.
- Disability rates were removed.
- Price inflation was lowered from 3.50% to 3.25% per year.
- Economic productivity was lowered from 1.00% to 0.75% per year.
- The assumption for the form of payment elected by retiring active members was changed from 100% elect an annuity to 50% elect a lump sum and 50% elect an annuity.

Method and assumptions used in calculations of actuarially determined contributions.

The Plan is funded with fixed contribution rates for both members and the State of Nebraska. If such contributions are less than the Actuarially Determined Contribution, the State makes an additional contribution. The Actuarially Determined Contributions in the *Schedule of Employer Contributions* are calculated as of the January 1 preceding the first day of the fiscal year in which contributions are reported (January 1, 2020 actuarial valuation applies for contributions reported for July 1, 2020 to June 30, 2021).

The following actuarial methods and assumptions were used to determine the Actuarially Determined Contribution reported for the most recent fiscal year, June 30, 2021 (based on the January 1, 2020 actuarial valuation).

Actuarial cost method	Entry age
Amortization method	Level dollar amount, closed
Remaining amortization period	25 years
Asset valuation method	5-year smoothed market
Price Inflation	2.75 percent
Wage Inflation	3.50 percent
Salary increases, including wage inflation	3.50 to 4.93 percent
Long-term Rate of Return, net of investment expense, including price inflation	7.50 percent
Interest crediting rate, including dividends	6.25 percent

Please see the information presented earlier in regard to Paragraph 47 for detailed information on the benefit changes and assumption changes that may have impacted the Actuarially Determined Contributions shown in the *Schedule of Employer Contributions*.

APPENDIX A

Exhibit A

GASB 68 Paragraphs 46(a) – (b)
SCHEDULE OF CHANGES IN THE NET PENSION LIABILITY/(ASSET)

Plan Year Ended December 31

	2020	2019	2018	2017	2016	2015	2014
Total Pension Liability							
Service Cost	$66,765,739	$61,853,977	$61,061,110	$64,050,683	$61,768,235	$57,304,924	$54,920,902
Interest	121,384,492	116,719,477	108,435,469	102,758,618	98,053,908	89,967,248	85,695,932
Benefit term changes	33,745,768	0	56,311,516	31,484,516	0	35,892,320	0
Differences between expected and actual experience	(14,022,451)	(10,589,929)	(3,987,151)	(18,938,806)	(14,007,040)	720,728	(11,217,240)
Assumption changes	21,516,477	0	0	42,820,238	0	0	0
Transfers	9,317,802	5,371,677	7,735,118	3,591,366	5,115,400	5,849,328	4,195,885
Benefit payments, including member refunds	(112,330,647)	(113,827,088)	(121,911,299)	(94,358,979)	(84,773,402)	(85,278,057)	(73,527,209)
Net change in Total Pension Liability	$126,377,180	$59,528,114	$107,644,763	$131,407,636	$66,157,101	$104,456,491	$60,068,270
Total Pension Liability - beginning	$1,669,035,171	$1,609,507,057	$1,501,862,294	$1,370,454,658	$1,304,297,557	$1,199,841,066	$1,139,772,796
Total Pension Liability - ending (a)	$1,795,412,351	$1,669,035,171	$1,609,507,057	$1,501,862,294	$1,370,454,658	$1,304,297,557	$1,199,841,066
Plan Fiduciary Net Position							
Employer contributions	$51,505,962	$48,889,798	$46,580,471	$45,437,713	$44,894,300	$43,339,706	$41,455,919
Employee contributions	33,007,021	31,334,445	29,854,372	29,127,571	28,775,358	27,798,721	26,603,709
Net investment income	221,996,967	286,205,172	(63,590,687)	237,283,016	112,758,193	14,784,129	83,523,713
Benefit payments, including member refunds	(112,330,647)	(113,827,088)	(121,911,299)	(94,358,979)	(84,773,402)	(85,278,057)	(73,527,209)
Administrative expenses	(1,519,944)	(1,373,893)	(1,398,690)	(1,293,454)	(1,134,239)	(1,079,197)	(910,460)
Transfers	9,317,802	5,371,677	7,735,118	3,591,366	5,115,400	5,849,328	4,195,885
Net change in Plan Fiduciary Net Position	$201,977,161	$256,600,111	($102,730,715)	$219,787,233	$105,635,610	$5,414,630	$81,341,557
Plan Fiduciary Net Position – beginning	$1,789,743,277	$1,533,143,166	$1,635,873,881	$1,416,086,648	$1,310,451,038	$1,305,036,408	$1,223,694,851
Plan Fiduciary Net Position - ending (b)	$1,991,720,438	$1,789,743,277	$1,533,143,166	$1,635,873,881	$1,416,086,648	$1,310,451,038	$1,305,036,408
Net Pension Liability - ending (a) - (b)	($196,308,087)	($120,708,106)	$76,363,891	($134,011,587)	($45,631,990)	($6,153,481)	($105,195,342)
Plan Fiduciary Net Position as a percentage of the Total Pension Liability	110.93%	107.23%	95.26%	108.92%	103.33%	100.47%	108.77%
Covered payroll	$687,846,715	$652,908,627	$622,068,256	$606,807,065	$599,549,947	$578,788,809	$553,631,397
Employers' Net Pension Liability/(Asset) as a percentage of covered payroll	(28.54%)	(18.49%)	12.28%	(22.08%)	(7.61%)	(1.06%)	(19.00%)

Note: Schedule is intended to show 10-year trend. Additional years will be reported as they become available.

Exhibit B

GASB 68 Paragraphs 46(c)
SCHEDULE OF EMPLOYER CONTRIBUTIONS

Fiscal Year Ended June 30

	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
Actuarially determined employer contribution	TBD	$37,254,820	$30,306,947	$30,314,322	$33,205,408	$29,116,505	$31,986,195	$35,129,093	$32,983,397	$27,256,129
Actual employer contributions*	TBD	50,354,529	47,278,838	46,043,335	45,207,653	44,313,901	42,391,616	40,344,578	35,794,156	31,495,971
Annual contribution deficiency (excess)	TBD	($13,099,709)	($16,971,891)	($15,729,013)	($12,002,245)	($15,197,396)	($10,405,421)	($5,215,485)	($2,810,759)	($4,239,842)
Covered payroll	TBD	$672,469,671	$631,394,738	$614,894,965	$603,734,682	$591,798,892	$566,127,350	$538,789,770	$478,020,246	$420,619,271
Actual contributions as a percentage of covered payroll	TBD	7.49%	7.49%	7.49%	7.49%	7.49%	7.49%	7.49%	7.49%	7.49%

* Provided by NPERS

APPENDIX B

SUMMARY OF MAIN BENEFIT PROVISIONS

Membership
All permanent, full-time employees of the State who work one-half or more of the regularly scheduled hours during each pay period shall begin immediate participation in the State Employees' Retirement System as of January 1, 2007 or date of hire, if later. All permanent, part-time employees who have attained the age of eighteen may exercise the option to begin immediate participation in the State Employees' Retirement System.

Existing members of the State Employees' Retirement System could have elected, during the period beginning September 1, 2012 and ending October 31, 2012 to participate in the Cash Balance benefit. If no election was made by October 31, 2012, the member was treated as though he or she elected to continue participating in the Defined Contribution benefit as provided in the State Employees' Retirement Act.

Existing members of the State Employees' Retirement System could have elected, during the period beginning November 1, 2007 and ending December 31, 2007 to participate in the Cash Balance Benefit Fund. If no election was made by December 31, 2007, the member was treated as though he or she elected to continue participating in the Defined Contribution Plan as provided in the State Employees' Retirement Act.

Existing members of the State Employees' Retirement System could have elected, during the period beginning October 1, 2002, and ending December 31, 2002, to participate in the Cash Balance Benefit Fund. If no election was made by January 1, 2003, the member was treated as though he or she elected to continue participating in the Defined Contribution Plan as provided in the State Employees' Retirement Act. For a member who first participates in the retirement system on or after January 1, 2003, he or she shall automatically participate in the Cash Balance Benefit Fund subject to plan eligibility requirements.

Compensation Considered
Compensation means gross wages or salaries payable to the member for personal services performed during the plan year, overtime pay, member retirement contributions, and amounts contributed by the member to plans under sections 125, 403(b) and 457 of the Internal Revenue Code or any other section of the code which defers or excludes such amounts from income.

Member Contributions
Members of the State Employees' Retirement System shall contribute an amount equal to four and eight-tenths percent (4.8%) of annual compensation to the fund. The member contribution shall be credited to the employee cash balance account.

Employer Contributions
The State shall contribute at a rate of 156% of the members' contributions to the fund. The State contribution shall be credited to the employer cash balance account.

Interest Credit Rate
Interest credit rate means the greater of (a) five percent or (b) the applicable federal mid-term rate as published by the Internal Revenue Service as of the first day of the calendar quarter for which interest credits are credited, plus one and one-half percent, such rate to be compounded annually.

Interest Credits
Interest credits means the amount credited to the employee cash balance account and the employer cash balance account daily. Such interest credit for each account shall be determined by applying the daily portion of the interest credit rate to the account balance at the end of the previous day.

Retirement Age
A member is eligible for retirement after attaining age 55.

Service
Service is defined to mean the actual total length of employment with the State and is not interrupted by a) temporary or seasonal suspension of service that does not terminate the member's employment, b) leave of absence authorized by the State for no longer than twelve months, c) leave of absence due to disability or d) leave due to military service.

Retirement Allowance
Upon attainment of age 55, regardless of service, the retirement allowance shall be equal to the accumulated employee and employer cash balance accounts including interest credit, annuitized for payment in the normal form. Also available are additional forms of payment allowed under the plan which are actuarially equivalent to the normal form including the option of a full lump sum or partial lump sum.

Normal Form of Payment
The normal form of payment under the Cash Balance Benefit Fund is a single life annuity with five-year certain, payable monthly. Members will have the option to convert their cash balance account to a monthly annuity with built in cost-of-living adjustments of 2.5% annually. This monthly benefit and all other options allowed under the Plan will be of actuarial equivalence to the accumulated employee and employer cash balance accounts including interest credits.

Optional Form of Payment
Optional forms of payment include a lump sum and the following annuities (with or without a 2.5% COLA): life annuity, modified cash refund, certain and life annuity (5, 10 or 15 years), certain only annuity (5, 10, 15 or 20 years) and joint and survivor annuity (50%, 75% or 100%).

Deferred Vested Allowance
A member who terminates with at least 3 years of participation in the system, including eligibility and vesting credit, may choose to leave his employee and employer cash balance accounts in the Plan and be eligible to receive a vested monthly allowance at retirement age or request a distribution of his employee and employer cash balance accounts plus interest credit, with no future benefit payable from the plan.

Severance Benefits
A member who terminates with less than 3 years of participation in the system, including eligibility and vesting credit, may elect to receive a distribution of his/her employee cash balance account including interest credit, with no future benefit payable from the plan.

Disability Allowance
If a member becomes disabled prior to retirement, the member shall receive the total amount of his/her accumulated employee and employer cash balance accounts including interest credits, as a lump sum or converted into a monthly annuity, as defined under the retirement allowance.

Pre-retirement Death Allowance
If a member dies prior to retirement, the surviving spouse, designated beneficiary (if different), or estate shall receive the total amount of his/her accumulated employee and employer cash balance accounts including interest credit, as a lump sum or converted into a monthly annuity, as defined under the retirement allowance.

Defined Contribution Transfers at Retirement
Upon retirement, members participating in the Defined Contribution Benefit Fund may elect to annuitize their accumulated account balance and receive a monthly benefit payment from the Cash Balance Benefit Fund. The accumulated account balance is transferred from the Defined Contribution Plan to the Cash Balance Benefit Fund upon the retirement of a Defined Contribution member electing an annuity. The actuarial assumptions used to convert the accumulated account balance to monthly income are (i) the 1994 Group Annuity Mortality Table with a 50% male / 50% female mix, and (ii) the interest rate in accordance with Nebraska State Statute 84-1319.

Benefit Improvements
In accordance with Section 84-1319 of the Nebraska State Statutes, the Public Employees' Retirement Board may grant benefit improvements if the unfunded actuarial accrued liability is less than zero, but in no event will such improvement result in an actuarially required contribution rate in excess of 90% of the total statutory contribution rate.

Dividend Policy
Under Nebraska Statutes, the Board may grant a dividend in addition to the regular interest credit if the UAAL is less than $0 (i.e. a surplus exists) and the actuarial contribution after the extra dividend is no more than 90% of the scheduled contribution rate. Additionally, the Board has adopted a policy that also requires that the Accumulated Benefit Obligation be completely funded.

Year Issued	Dividend %	For Time Period
2020	3.000%	1/1/2019 – 12/31/2019
2019	0.000%	1/1/2018 – 12/31/2018
2018	5.460%	1/1/2017 – 12/31/2017
2017	3.070%	1/1/2016 – 12/31/2016
2016	0.000%	1/1/2015 – 12/31/2015
2015	4.530%	1/1/2014 – 12/31/2014
2014	0.000%	1/1/2013 – 12/31/2013
2013	0.000%	1/1/2012 – 12/31/2012
2012	0.000%	1/1/2011 – 12/31/2011
2011	0.000%	1/1/2010 – 12/31/2010
2010	0.000%	1/1/2009 – 12/31/2009
2009	0.000%	1/1/2008 – 12/31/2008
2008	5.180%	1/1/2007 – 12/31/2007
2007	2.730%	1/1/2006 – 12/31/2006
2006	13.500%	1/1/2005 – 12/31/2005
2005	2.800%	1/1/2004 – 12/31/2004
2004	3.088%	1/1/2003 – 12/31/2003

Changes in Plan Provisions Since the Prior Year
There have been no changes in plan provisions since the prior valuation.

APPENDIX C

STATEMENT OF ACTUARIAL ASSUMPTIONS

ECONOMIC ASSUMPTIONS

1. Long-term Assumed Investment Return

   7.30% per annum, compounded annually, net of investment expenses.
   Note: The assumption will decrease by 0.10% per year until reaching the ultimate rate of 7.00% in the 2024 valuation.

2. Administrative Expenses

   0.21% of covered payroll.

3. Inflation

   2.65% per annum, compounded annually.
   Note: The assumption will decrease by 0.10% per year until reaching the ultimate rate of 2.35% in the 2024 valuation.

4. General Wage Inflation

   3.15% per annum.
   Note: The assumption will decrease by 0.10% per year until reaching the ultimate rate of 2.85% in the 2024 valuation.

5. Interest Crediting Rate on Cash Balance Accounts

   6.15% per annum, compounded annually.
   Note: The assumption will decrease by 0.05% per year until reaching the ultimate rate of 6.00% in the 2024 valuation.

6. Annuitization Rate of Member & Employer Accumulated Balances

   7.75% per annum, compounded annually, for members hired before January 1, 2018 (set statutorily).
   7.30% per annum, compounded annually, for members hired after January 1, 2018.

7. Salary Scale

Service	Inflation	Productivity	Merit	Total
1	2.65%	0.50%	6.35%	9.50%
2	2.65	0.50	3.50	6.65
3	2.65	0.50	3.00	6.15
4	2.65	0.50	2.50	5.65
5	2.65	0.50	2.00	5.15
6	2.65	0.50	1.75	4.90
7	2.65	0.50	1.50	4.65
8	2.65	0.50	1.40	4.55
9	2.65	0.50	1.30	4.45
10	2.65	0.50	1.20	4.35
11-21	2.65	0.50	1.10	4.25
22	2.65	0.50	0.50	3.65
23-29	2.65	0.50	0.10	3.25
30+	2.65	0.50	0.00	3.15

DEMOGRAPHIC ASSUMPTIONS

1. Mortality

a. Healthy lives - Active members

Pub-2010 General Members (Above Median) Employee Mortality Table (100% of male rates, 95% of female rates), both male and female rates set back one year, projected generationally using MP-2019 modified to 75% of the ultimate rates.

b. Healthy lives – Retired members

Pub-2010 General Members (Above Median) Retiree Mortality Table (100% of male rates, 95% of female rates), both male and female rates set back one year, projected generationally using MP-2019 modified to 75% of the ultimate rates.

c. Healthy lives – Beneficiaries

Pub-2010 General Members (Above Median) Contingent Survivor Mortality Table (100% of male rates, 95% of female rates), both male and female rates set back one year, projected generationally using MP-2019 modified to 75% of the ultimate rates.

d. Disabled lives

Not applicable

e. Healthy mortality rates and projection scale are shown below at sample ages:

	Pre-retirement Mortality	
	Mortality Rate	
Sample Age	Males	Females
20	0.04%	0.01%
30	0.04	0.01
40	0.07	0.03
50	0.11	0.06
60	0.27	0.16

	Post-retirement Mortality	
	Mortality Rate	
Sample Age	Males	Females
50	0.11%	0.06%
60	0.53	0.35
70	1.17	0.80
80	3.60	2.60
90	11.73	9.07

	Projection Scale – Post-retirement Mortality					
	Scale (2020)		Scale (2030)		Scale (2040)	
Sample Age	**Males**	**Females**	**Males**	**Females**	**Males**	**Females**
50	0.0004	0.0030	0.0026	0.0036	0.0075	0.0075
60	0.0004	-0.0041	0.0063	0.0069	0.0075	0.0075
70	0.0017	0.0052	0.0069	0.0063	0.0075	0.0075
80	0.0067	0.0061	0.0066	0.0070	0.0075	0.0075
90	0.0048	0.0032	0.0067	0.0067	0.0069	0.0069

f. Mortality for Annuitization of Employee and Employer Cash Balance Accounts

1994 Group Annuity Mortality Table, with 50 % Male, 50% Female blending for members hired before January 1, 2018 (set statutorily).

Sample Age	Mortality Rate	Life Expectancy (Years)
55	0.34%	28.0
60	0.62	23.5
65	1.16	19.4
70	1.87	15.7
75	2.99	12.2
80	5.07	9.3

Retiree mortality table, projected to 2040, with 55% Male, 45% Female blending for members hired after January 1, 2018.

Sample Age	Mortality Rate	Life Expectancy (Years)
55	0.27%	32.3
60	0.40	27.7
65	0.58	23.3
70	0.89	19.1
75	1.51	15.1
80	2.71	11.4

2. Retirement

Graduated rates by retirement age after 5 years of service.

Age	Annual Rates
55-58	5.0%
59-61	6.0
62	10.0
63	12.0
64	12.0
65-79	28.0
80	100.0

3. Termination

Graduated rates by age and service.

Service	Rate
<1	30.0%
1	22.0
5	14.0
10	8.0
15	3.5
20	3.0
25+	2.0

4. Disability

None.

OTHER ASSUMPTIONS

1. Payment Assumptions

As shown in the table below, 50% of all members eligible for retirement are assumed to be paid in the form of an annuity and the other 50% in the form of a lump sum, and 100% of members eligible for all other types of benefits are assumed to be paid in the form of a lump sum. Deferred vested and non-vested members are assumed to take a refund of their account balance as of the valuation date.

Benefit	Assumed Form of Payment
Retirement	50% Lump Sum / 50% Annuity*
Vested	Lump Sum
Non-vested	Lump Sum
Disability	Lump Sum
Death	Lump Sum

*Five-year certain and life annuity.

2. Cost of Living Adjustment	None assumed, except 2.5% per year is used for retirees electing annuity payments with a COLA feature.

Changes in Assumptions Since the Prior Year

At their meeting on December 21, 2020, the Public Employees Retirement Board adopted a new set of actuarial assumptions, based on the recommendations in the 2020 experience study. Changes to the set of economic assumptions are phased in over four years. Below is a summary of the key assumption changes:

- Price inflation assumption was lowered from 2.75% to 2.65%.
- Investment return assumption was lowered from 7.50% to 7.30%.
- Interest crediting rate on Cash Balance accounts decreased from 6.25% to 6.15%.
- General wage inflation was lowered from 3.50% to 3.15%.
- Salary merit increases were adjusted to better reflect observed experience.
- An explicit assumption for administrative expenses was adopted as a component of the actuarial contribution rate and was set to 0.21% of pay.
- Retirement rates were adjusted to better reflect observed experience.
- Termination rates were adjusted to better reflect observed experience.
- Mortality assumptions were changed to the Pub-2010 General Members (Above Median) Mortality Tables (100% of male rate for males, 95% of female rates for females), set back on year, projected generationally using MP-2019 modified to 75% of the ultimate rates.