North Carolina National Guard Pension Fund

Principal Results of Actuarial Valuation as of December 31, 2021

October 27, 2022, Board of Trustees Meeting

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Valuation input

Member data

Inputs

Results

The table below provides a summary of the membership data used in this valuation compared to the prior valuation.

Number as of	12/31/2021	12/31/2020
Active members	5,620	5,056
Terminated members entitled to benefits but not yet receiving benefits	3,222	4,777
Retired members currently receiving benefits	4,766	4,739
Total	13,608	14,572

A detailed summary of the membership data used in this valuation is provided in Section 2 and Appendix F.

The total number of active members increased by 11.2% from the previous valuation date and the total number of terminated members decreased by 32.6%.

The decrease of terminated members is primarily attributable to significant updates to the source and content of census data provided by the North Carolina National Guard and the recognition of reported North Carolina National Guard service, which was not considered in previous valuations.

Valuation input

Asset data

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The table below provides details of the Market Value of Assets for the current and prior year's valuations.

Asset Data as of	12/31/2021	12/31/2020
Beginning of year market value of assets	$ 164,416,547	$ 146,197,432
Contributions	11,031,715	11,031,715
Benefit Payments	(8,966,120)	(8,925,039)
Expenses	(94,271)	(88,859)
Investment income	15,461,813	16,201,298
Net increase / (decrease)	17,433,137	18,219,115
End of year market value of assets	181,849,684	164,416,547
Estimated net investment return	9.35%	11.01%

National Guard Pension Fund assets are held in trust and are invested for the exclusive benefit of plan members.

Over the long term, benefit payments and administrative expenses not covered by contributions are expected to be covered with investment income, illustrating the benefits of following actuarial pre-funding since inception.

Valuation results

Funded ratio

The table below provides a summary of the results of this valuation compared to the prior valuation.

Valuation results as of	12/31/2021	12/31/2020
Assets		
Actuarial Value (AVA)	$ 172,825,139	$ 156,856,964
Market Value	$ 181,849,684	$ 164,416,547
Actuarial Accrued Liability (AAL)	$ 149,382,457	$ 173,089,662
Unfunded Accrued Liability (AAL-AVA)	$ (23,442,682)	$ 16,232,698
Funded Ratio (AVA/AAL)	115.7%	90.6%

The funded ratio increased from 90.6% to 115.7% as of 12/31/2021. This is primarily due to significant updates to the source and content of census data provided by the North Carolina National Guard and the recognition of reported North Carolina National Guard service, which was not considered in previous valuations.

The additional SCRSP contributions also added to this increase in funded ratio.

Valuation results

Net actuarial gain or loss

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The table below provides a reconciliation of the prior year's unfunded actuarial accrued liability to the current year's unfunded actuarial accrued liability.

(in millions)	
Unfunded Actuarial Accrued Liability (UAAL) as of 12/31/2020	$ 16.2
Normal Cost and Administrative Expense during 2021	0.3
Reduction due to Actual Contributions during 2021	(11.0)
Interest on UAAL, Normal Cost, and Contributions	0.7
Asset (Gain)/Loss	(3.7)
Actuarial Accrued Liability (Gain)/Loss	(25.9)
Impact of Assumption Changes	0.0
Impact of Legislative Changes	0.0
Unfunded Actuarial Accrued Liability (UAAL) as of 12/31/2021	$ (23.4)

A detailed summary of the net actuarial gain or loss is provided in Section 5.

During 2021, demographic experience decreased the UAAL by $25.9 million. Of this amount, $26.1 million was attributable to changes in member data used in the valuation to estimate eligibility for benefits. Net of these service adjustments was an offsetting $0.2 million loss due to other demographic experience.

This gain was in addition to a gain recognized in the actuarial value of assets during the year, which decreased the UAAL by $3.7 million, as well as a gain due to SCRSP contributions in excess of the normal cost and administrative expenses.

Valuation results

Employer contributions

The table below provides a reconciliation of the actuarially determined employer contribution (ADEC).

Fiscal year ending June 30, 2023 Preliminary ADEC (based on December 31, 2020 valuation)	$ 6,876,182
Impact of Legislative Changes	0
Fiscal year ending June 30, 2023 Final ADEC	$ 6,876,182
Anticipated Reduction in UAAL*	(5,480,844)
Change Due to Demographic (Gain)/Loss**	(3,344,555)
Change Due to Investment (Gain)/Loss	(487,946)
Change Due to Contributions Greater than ADEC	(531,211)
Direct Rate Smoothing	154,185
Fiscal year ending June 30, 2024 Preliminary ADEC (based on December 31, 2021 valuation and no less than $0)	$ 0

*Amortization of the UAAL included a fresh-start 9-year amortization for the December 31, 2009, valuation with the first payment effective July 1, 2011. However, the Appropriations Act of 2011 changed the period over which the UAAL is amortized from nine years to 12 years, retroactive to July 1, 2011, as implemented in the December 31, 2010, valuation. As such, the original amortization balance with current annual payments of $5.5 million will be paid off as of June 30, 2023, which significantly reduces the ADEC.

** The majority of the demographic gain is attributed to changes in member data used in the valuation to estimate eligibility for benefits.

A detailed summary of the actuarially determined employer contribution rates is provided in Section 6.

The change in rate due to investment gain is based on the actuarial value of assets return of 8.87%, which is greater than the 6.50% assumed return.

The 12-year amortization of the fresh-start unfunded actuarial accrued liability as of December 31, 2009, is paid off as of July 1, 2023, which significantly reduces the ADEC for fiscal year ending June 30, 2024.

Changes in member data used in the valuation to estimate eligibility for benefits also caused a significant reduction in the ADEC as of June 30, 2024.

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The table below provides a summary of the employer contribution development for this valuation compared to the prior valuation.

Contributions for Fiscal Year Ending	6/30/2024	6/30/2023
Actuarially Determined Employer Contribution (ADEC)		
Normal Cost	$ 1,122,673	$ 1,085,481
Accrued Liability	(1,122,673)	6,407,442
Total Preliminary ADEC	0	$ 7,492,923
Total Based on Direct Rate Smoothing	$ 0	$ 6,876,182
Additional Contribution Under State Contribution Rate Stabilization Policy (SCRSP)**	$ 0	$ 4,155,533
Total Contribution	$ 0	$ 11,031,715
Contributions for Fiscal Year Ending	**6/30/2024**	**6/30/2023**
Legislative Appropriation	N/A	11,031,715

A detailed summary of the actuarially determined employer contribution rates is provided in Section 6.

**According to the SCRSP adopted on April 29, 2021, and effective July 1, 2022, through June 30, 2027, the recommended contribution is as follows:

- If the Funded Percentage (AVA/AAL) is greater than or equal to 100%, the underlying preliminary actuarially determined contribution rate (ADEC)
- If the Funded Percentage is less than 100%, the greater of :

  (1) The appropriation recommended by the Board for the current year; or

  (2) The underlying preliminary ADEC, plus $2,000,000.

Since the Funded Percentage for the December 31, 2021, valuation is greater than 100%, the recommended contribution is the ADEC for fiscal year ending June 30, 2024.

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- Below is a summary of the SCRSP that the Board adopted on April 29, 2021
- Annual Appropriation Recommendation (before consideration of benefit improvements)
  - If the Funded Percentage is greater than or equal to 100%, the Board will recommend a contribution equal to the underlying ADEC
  - If the Funded Percentage is less than 100%, the Board recommendation will be the greater of (1) the appropriation recommended by the Board for the current fiscal year or (2) the underlying ADEC for the upcoming fiscal year plus $2 million
- Board considerations for benefit improvements:
  - Recommended benefit increase is no greater than the most recent June-over-June CPI-U increase
  - The Benefit Improvement Funding Requirement (BIFR) is included in the appropriation recommended by the Board for the upcoming fiscal year
  - See next slides for information regarding the BIFR
- Board considerations for Cost-of-Living Adjustments (COLAs):
  - If the Funded Percentage is greater than or equal to 90%, any recommendations of the Board regarding (1) whether a COLA should be granted, (2) the percentage increase in retirement benefits due to the COLA, and (3) the term of amortization will be the same as the Board's recommendations taking effect at the same time regarding TSERS. If it is not administratively feasible for RSD staff to implement the same adjustments for the NCNGPF as for TSERS, then the Board will recommend that some pension adjustment of similar value for retirees be implemented.
  - If the Funded Percentage is less than 90%, the Board may consider recommending a COLA for NCNGPF retirees under the conditions described above for benefit improvements.

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Metrics the Board must consider to recommend a benefit increase to the General Assembly based on the results of the December 31, 2021 valuation:

- The most recent June-over-June increase in the CPI-U is 9.06%. Consequently, the maximum benefit improvement the Board could approve is an increase in the $105/$210 benefit to $114/$228 applicable to current and future retired participants, provided the BIFR is included in the appropriation recommendation for the upcoming fiscal year.
- The increase in the AAL and Normal Cost for certain proposed benefit improvements:

	$ Improvement		
	$1	$5	$9
Increase in AAL	$ 1,422,690	$ 7,113,450	$ 12,804,211
% Increase in AAL	0.95%	4.76%	8.57%
Increase in Normal Cost	$ 2,125	$ 10,624	$ 19,123

- Development of BIFR for a benefit improvement from $105/$210 to $114/$228

	$ Improvement		
	$1	$5	$9
(1) Full Actuarial Cost of Proposed Benefit Improvement	$ 1,424,815	$ 7,124,074	$ 12,823,333
(2) NCNGPF Actuarial Accrued Liability as of 12/31/2021	149,382,457	149,382,457	149,382,457
(3) NCNGPF Actuarial Value of Assets as of 12/31/2021	172,825,139	172,825,139	172,825,139
(4) Underlying ADEC for FYE 6/30/2024	0	0	0
(5) Policy Contribution Without Benefit Increase for FY 6/30/2024	0	0	0
(6) Total Adjustment (2) – (3) + (4) – (5), only if less than $0	(23,442,682)	(23,442,682)	(23,442,682)
BIFR: (1) + (6), not less than $0	$ 0	$ 0	$ 0

Actuarial assumptions and methods

There have been no changes to the demographic assumptions from the previous report. Given the change in reporting for the census data this year, which resulted in material changes to how participant service and statuses were reported, assumptions with regard to the data were added for this year's valuation. These assumptions are outlined below.

- Members of the Army National Guard who were terminated vested participants in the prior valuation but were reported with less than 15 years of prior North Carolina National Guard duty were assumed to have terminated without a vested benefit.
- Inactive Army National Guard members who were reported this year with over 20 years of total service and more than 15 years of North Carolina National Guard duty (or National Guard duty information was omitted) but were not included as deferred vested members the previous year, are assumed to have terminated with a vested benefit.
- Where service showed an unexpected change from the prior year and an explanation for the change could not be reconciled, the creditable service reported for the current year was accepted.

ASOP 27/35 disclosures

ASOPs 27 and 35 ask the actuary to disclose the information and analysis used to support the actuary's determination that the assumptions selected by the plan sponsor do not significantly conflict with what, in the actuary's professional judgment, are reasonable for the purpose of the measurement. In the case of the Board's selection of the investment return assumption, the signing actuaries have used economic information and tools provided by Buck's Financial Risk Management ("FRM") practice. A spreadsheet tool created by the FRM team converts averages, standard deviations, and correlations from Buck's Capital Markets Assumptions ("CMA") that are used for stochastic forecasting into approximate percentile ranges for the arithmetic and geometric average returns. It is intended to suggest possible reasonable ranges for the investment return assumption without attempting to predict or select a specific best estimate rate of return. It takes into account the duration (horizon) of investment and the target allocation of assets in the portfolio to various asset classes. Based on the actuaries' analysis, including consistency with other assumptions used in the valuation, the percentiles generated by the spreadsheet described above, and review of actuarial gain/loss experience, the actuaries believe the assumptions, in the actuaries' professional judgment, is reasonable for the purpose of the measurement.

ASOP 56 disclosure

Actuarial Standard of Practice No. 56 (“ASOP 56”) provides guidance to actuaries when performing actuarial services with respect to designing, developing, selecting, modifying, using, reviewing, or evaluating models. Buck uses third-party software in the performance of annual actuarial valuations and projections. The model is intended to calculate the liabilities associated with the provisions of the Plan using data and assumptions as of the measurement date under the accounting rules specified in this report. The output from the third-party vendor software is used as input to an internally developed model that applies applicable accounting rules to the liabilities derived and other inputs, such as Plan assets and contributions, to generate many of the exhibits found in this report. Buck has an extensive review process whereby the results of the liability calculations are checked using detailed sample output, changes from year to year are summarized by source, and significant deviations from expectations are investigated. Other accounting outputs and the internal model are similarly reviewed in detail and at a high level for accuracy, reasonability, and consistency with prior results. Buck also reviews the third-party model when significant changes are made to the software. The review is performed by experts within the company who are familiar with applicable accounting rules as well as the manner in which the model generates its output. If significant changes are made to the internal model, extra checking and review are completed. Significant changes to the internal model that are applicable to multiple clients are generally developed, checked and reviewed by multiple experts within the company who are familiar with the details of the required changes.

Certification

Future actuarial results may differ significantly from the current results presented in this report due to such factors as the following: fund experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; and changes in plan provisions or applicable law. Such changes in law may include additional costs resulting from future legislated benefit improvements or cost-of-living pension increases or supplements, which are not anticipated in the actuarial valuation. Because of limited scope, Buck performed no analysis of the potential range of such future differences, except for some limited analysis in financial projections or required disclosure information.

We meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained in this report. This report has been prepared in accordance with all applicable Actuarial Standards of Practice, and we are available to answer questions about it.

Michael A. Ribble, FSA, EA, MAAA, FCA

Elizabeth A. Wiley, FSA, EA, MAAA, FCA

North Carolina National Guard Pension Fund

Report on the Actuarial Valuation
Prepared as of December 31, 2021

October 2022

110 West Berry Street
Suite 1300
Fort Wayne, IN 46802

October 14, 2022

Board of Trustees
Teachers' and State Employees'
Retirement System of North Carolina
3200 Atlantic Avenue
Raleigh, NC 27604

Members of the Board:

We submit herewith our report on the actuarial valuation of the National Guard Pension Fund of North Carolina (referred to as "the Fund") prepared as of December 31, 2021. The report has been prepared in accordance with Chapter 127A of the North Carolina General Statutes. Information contained in our report for plan years from December 31, 2017, to December 31, 2020, is based on valuations performed by the prior actuarial firm.

The primary purpose of the valuation report is to determine the required employer contribution rates, to describe the current financial condition of the Fund, and to analyze changes in such condition. In addition, the report provides information that the Office of the State Controller (OSC) requires for its Annual Comprehensive Financial Report and it summarizes census data. Use of this report for any other purposes or by anyone other than OSC and its auditors, or North Carolina Retirement Systems Division and Department of State Treasurer staff may not be appropriate and may result in mistaken conclusions because of failure to understand applicable assumptions, methods, or inapplicability of the report for that purpose. The attached pages should not be provided without a copy of this cover letter. Because of the risk of misinterpretation of actuarial results, you should ask Buck Global, LLC (Buck) to review any statement you wish to make on the results contained in this report. Buck will not accept any liability for any such statement made without prior review.

The results of this report are based upon participant data supplied by the Retirement Systems Division (RSD) and financial data supplied by the Financial Operations Division. Although we reviewed the data for reasonableness and consistency with data for the prior these elements have not been audited by Buck and we cannot certify as to the accuracy and completeness of the data supplied. The results of this report are dependent on the accuracy of the data. Sometimes assumptions are made by Buck to interpret membership data that is imperfect. The valuation does not include members with less than seven years of service. Since the December 31, 2020 actuarial valuations, the liabilities have been adjusted to reflect the expected impact of these members. Furthermore, in order to be eligible to receive a benefit from the National Guard Pension Fund, members are required to have twenty years of total military service, of which at least fifteen must be North Carolina National Guard service. In previous valuations, the valuation liabilities for active and terminated vested members were determined based only on reported total military service. Effective with this December 31, 2021 actuarial valuation, as agreed upon with RSD staff, reported North Carolina National Guard service was used to determine satisfaction of the 15-year requirement. In particular, the following material assumptions were made with respect to the North Carolina National Guard service:

- Members of the Army National Guard who were terminated vested participants in the prior valuation but reported with less than 15 years of prior North Carolina National Guard duty were assumed to have terminated without a vested benefit.
- Inactive Army National Guard members who were reported this year with over 20 years of total service and more than 15 years of North Carolina National Guard duty (or National Guard duty information was omitted), but were not included as deferred vested members the previous year, are assumed to have terminated with a vested benefit.
- Inactive Air National Guard members who were inactive in the prior year were not reported with updated information for the current year. We have relied upon the prior year data for their information.

The valuation is also based on benefit and contribution provisions as presented in this report. If you have reason to believe that the plan provisions are incorrectly described, that important plan provisions relevant to this valuation are not described, or that conditions have changed since the calculations were made, you should contact the authors of this actuarial report prior to relying on this information.

The valuation is further based on the actuarial valuation assumptions, approved by the Board of Trustees, as presented in this report. We believe that these assumptions are reasonable and comply with the Actuarial Standards of Practice ("ASOPs") 27 and 35 and the requirements of Governmental Accounting Standards Board (GASB) Statement No. 67. We prepared this valuation in accordance with the requirements of this standard and in accordance with all applicable ASOPs.

The assumptions used for the December 31, 2021, actuarial valuation are based on the experience study prepared as of December 31, 2019, and adopted by the Board of Trustees on January 28, 2021. All assumptions other than the investment return assumption (i.e., the valuation interest rate) are discussed annually with the appropriate parties, and actuarial gain/loss experience is reviewed during each valuation, to see if any changes are needed. The economic assumptions with respect to investment yield and inflation have been based upon a review of the existing portfolio structure as well as recent and anticipated experience. All assumptions represent an estimate of future experience.

ASOPs 27 and 35 ask the actuary to disclose the information and analysis used to support the actuary's determination that the assumptions selected by the plan sponsor do not significantly conflict with what, in the actuary's professional judgment, are reasonable for the purpose of the measurement. In the case of the Board's selection of the investment return assumption, the signing actuaries have used economic information and tools provided by Buck's Financial Risk Management ("FRM") practice. A spreadsheet tool created by the FRM team converts averages, standard deviations, and correlations from Buck's Capital Markets Assumptions ("CMA") that are used for stochastic forecasting into approximate percentile ranges for the arithmetic and geometric average returns. It is intended to suggest possible reasonable ranges for the investment return assumption without attempting to predict or select a specific best estimate rate of return. It takes into account the duration (horizon) of investment and the target allocation of assets in the portfolio to various asset classes. Based on the actuaries' analysis, including consistency with other assumptions used in the valuation, the percentiles generated by the spreadsheet described above, and review of actuarial gain/loss experience, the actuaries believe the assumptions, in the actuaries' professional judgment, is reasonable for the purpose of the measurement.

Where presented, references to "funded ratio" and "unfunded accrued liability" typically are measured on an actuarial value of assets basis. It should be noted that the same measurements using market value of assets would result in different funded ratios and unfunded accrued liabilities. Moreover, the funded ratio presented is appropriate for evaluating the need and level of future contributions but makes no assessment regarding the funded status of the plan if the plan were to settle (i.e. purchase annuities) for a portion or all of its liabilities. In various places in the report the results also show funded ratios and unfunded liabilities based upon varying sets of assumptions as well as market values of assets as that is required for certain disclosure information required per accounting rules or statutes. Where this has been done it has been clearly indicated.

Actuarial Standard of Practice No. 56 ("ASOP 56") provides guidance to actuaries when performing actuarial services with respect to designing, developing, selecting, modifying, using, reviewing, or evaluating models. In addition to the spreadsheet model discussed above, Buck uses third-party software in the performance of annual actuarial valuations and projections. The model is intended to calculate the liabilities associated with the provisions of the Plan using data and assumptions as of the measurement date under the accounting rules specified in this report. The output from the third-party vendor software is used as input to an internally developed model that applies applicable accounting rules to the liabilities derived and other inputs, such as Plan assets and contributions, to generate many of the exhibits found in this report. Buck has an extensive review process whereby the results of the liability calculations are checked using detailed sample output, changes from year to year are summarized by source, and significant deviations from expectations are investigated. Other accounting outputs and the internal model are similarly reviewed in detail and at a high level for accuracy, reasonability, and consistency with prior results. Buck also reviews the third-party model when significant changes are made to the software. The review is performed by experts within the company who are familiar with applicable accounting rules as well as the manner in which the model generates its output. If significant changes are made to the internal model, extra checking and review are completed. Significant changes to the internal model that are applicable to multiple clients are generally developed, checked and reviewed by multiple experts within the company who are familiar with the details of the required changes.

Future actuarial results may differ significantly from the current results presented in this report due to such factors as the following: fund experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; and changes in plan provisions or applicable law. Such changes in law may include additional costs resulting from future legislated benefit improvements or cost-of-living pension increases or supplements, which are not anticipated in the actuarial valuation. Because of limited scope, Buck performed no analysis of the potential range of such future differences, except for some limited analysis in financial projections or required disclosure information.

This report was prepared under our supervision and in accordance with all applicable Actuarial Standards of Practice. We are Fellows of the Society of Actuaries, Enrolled Actuaries, Members of the American Academy of Actuaries, and Fellows of the Conference of Consulting Actuaries. We meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein. We are available to discuss this report with you at your convenience.

Respectfully submitted,

Buck Global, LLC (Buck)

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Principal, Retirement Actuary

Elizabeth A. Wiley, FSA, EA, MAAA, FCA
Senior Consultant, Retirement Actuary

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Section 1: Principal Results

This report, prepared as of December 31, 2021, presents the results of the actuarial valuation of the Fund. For convenience of reference, the principal results of the valuation and a comparison with the preceding year's results are summarized below.

Table 1: Summary of Principal Results

Valuation results as of	12/31/2021	12/31/2020
Active Members		
Number	5,620	5,056
Retired Members Currently Receiving Benefits		
Number	4,766	4,739
Annual Pensions	$ 8,891,999	$ 8,796,359
Terminated Members Entitled to but Not Yet Receiving Benefits		
Number	3,222	4,777
Deferred Pensions	$ 5,612,935	$ 8,467,830
Assets		
Actuarial Value (AVA)	$ 172,825,139	$ 156,856,964
Market Value	$ 181,849,684	$ 164,416,547
Actuarial Accrued Liability (AAL)	$ 149,382,457	$ 173,089,662
Unfunded Accrued Liability (AAL-AVA)	$ (23,442,682)	$ 16,232,698
Funded Ratio (AVA/AAL)*	115.7%	90.6%
Contributions for Fiscal Year Ending	**6/30/2024**	**6/30/2023**
Actuarially Determined Employer Contribution (ADEC)		
Normal Cost	$ 1,122,673	$ 1,085,481
Accrued Liability	(1,122,673)	6,407,442
Total Preliminary ADEC	0	$ 7,492,923
Total Based on Direct Rate Smoothing	$ 0	$ 6,876,182
Additional Contribution Under State Contribution Rate Stabilization Policy (SCRSP)**	$ 0	$ 4,155,533
Total Contribution	$ 0	$ 11,031,715
Contributions for Fiscal Year Ending	**6/30/2024**	**6/30/2023**
Legislative Appropriation	N/A	11,031,715

* The Funded Ratio on a Market Value of Assets basis is 121.7% at December 31, 2021.

** According to the SCRSP adopted on April 29, 2021 and effective July 1, 2023 through June 30, 2027, the provision in the previous SCRSP regarding not including excess contributions resulting from General Assembly contributions in excess of the ADEC has been eliminated. The provision recommending that the appropriation be the greater of (1) or (2) below remains as long as funded percentage is less than 100%:

(1) Appropriation recommended by Board for current year

(2) Underlying actuarially determined employer contribution rate (ADEC) plus $2,000,000.

The ADEC for fiscal year ending June 30, 2023 has been determined under the new SCRSP. Since the plan has a funded ratio over 100% as of 12/31/2021, SCRSP recommends an appropriation equal to the ADEC.

Section 1: Principal Results (continued)

The following table shows a reconciliation of the change in the actuarially determined employer contribution from $6,876,182 based on the December 31, 2020 valuation to $0 based on the December 31, 2021 valuation.

Table 2: Reconciliation of Change in Actuarially Determined Employer Contribution (ADEC)

Fiscal year ending June 30, 2023 Preliminary ADEC (based on December 31, 2020 valuation)	$ 6,876,182
Impact of Legislative Changes	0
Fiscal year ending June 30, 2023 Final ADEC	$ 6,876,182
Anticipated Reduction in UAAL*	(5,480,844)
Change Due to Demographic (Gain)/Loss**	(3,344,555)
Change Due to Investment (Gain)/Loss	(487,946)
Change Due to Contributions Greater than ADEC	(531,211)
Direct Rate Smoothing	154,185
Fiscal year ending June 30, 2024 Preliminary ADEC (based on December 31, 2021 valuation and no less than $0)	$ 0

*Amortization of the UAAL included a fresh-start 9-year amortization for the December 31, 2009, valuation with the first payment effective July 1, 2011. However, the Appropriations Act of 2011 changed the period over which the UAAL is amortized from nine years to 12 years, retroactive to July 1, 2011, as implemented in the December 31, 2010, valuation. As such, the original amortization balance with current annual payments of $5.5 million will be paid off as of June 30, 2023, which significantly reduces the ADEC.

** The majority of the demographic gain is attributed to changes in member data used in the valuation to estimate eligibility for benefits.

- Tables summarizing the membership of the Fund as of the valuation date are shown in Section 2.
- The valuation balance sheet showing the assets and liabilities of the Fund as of the current and previous valuation dates is provided in Section 3.
- An allocation of investments by category is shown in Section 4.
- Comments on the experience and actuarial gains/losses during the valuation year are provided in Section 5.
- Comments on the actuarially determined employer contribution are provided in Section 6.
- Accounting information to be disclosed in the financial statements of the Plan is provided in Section 7.
- Comments on risks to the fund are provided in Section 8.
- Appendix A presents the development of the actuarial value of assets.
- Appendix B presents the development of the amortization of the unfunded accrued liability.
- Appendix C outlines the full set of actuarial assumptions and methods employed.
- Appendix D gives a summary of the benefit provisions of the Fund.
- Appendix E provides the projection of cash flows used to determine the discount rate under GASB Statement No. 67.
- Appendix F provides detailed tabulations of the membership of the Fund as of the valuation date.

Section 2: Membership Data

Data regarding the membership of the Fund for use as a basis for the valuation were furnished by the Retirement Systems Division. The following table summarizes the membership of the Fund as of December 31, 2021 upon which the valuation was based. Detailed tabulations of the data are given in Appendix F.

Table 3: Membership of the Fund as of December 31, 2021

	Member Count	Average Age	Average Service	Annual Pensions
Active Members	5,620	37.79	15.03	N/A
Retired Members Currently Receiving Benefits	4,766	72.52	N/A	$ 8,891,999
Terminated Members Entitled to Benefits but Not Yet Receiving Benefits	3,222	59.92	N/A	$ 5,612,935

Section 3: Valuation Balance Sheet

The following valuation balance sheet shows the assets and liabilities of the Retirement Fund as of the current valuation date of December 31, 2021. Appendix A summarizes the development of the actuarial value of assets.

Table 4: Valuation Balance Sheet Showing the Present and Prospective Assets and Liabilities of the North Carolina National Guard Pension Fund Prepared as of December 31, 2021

Assets		
Present Assets		$ 172,825,139
Present Value of Prospective Contributions Payable by State		
Normal Contributions	$ 1,128,194	
Accrued Liability Contributions	$ (23,442,682)	
Total Prospective Contributions by State		$ (22,314,488)
Total Assets		$ 150,510,651
Liabilities		
Present Value of Pensions Payable to Retired Members Currently Receiving Benefits		$ 77,950,299
Present Value of Deferred Pensions Payable to Terminated Members Entitled to Benefits but Not Yet Receiving Benefits		$ 46,532,377
Present Value of Prospective Pensions to Active Members Included in the Valuation		$ 26,027,975
Reserve for Increases in Retirement Allowances		$ 0
Total Liabilities		$ 150,510,651

Section 4: Asset Allocation

The following table shows an allocation of investments by category as of December 31, 2021.

Table 5: Allocation of Investments by Category for the National Guard Pension Fund as of December 31, 2021

Cash and Receivables	13.8%
Fixed Income (LTIF)	23.1%
Public Equity	34.5%
Other*	28.6%
Total	100.0%

* Real Estate, Alternatives, Inflation, and Credit.

Section 5: Experience Gains and Losses

The following table shows a detailed reconciliation of the change in unfunded accrued liability since the prior valuation.

Table 6: Reconciliation of Change in Unfunded Accrued Liability Since the Prior Valuation (in millions)

Unfunded Actuarial Accrued Liability (UAAL) as of 12/31/2020	$ 16.2
Normal Cost and Administrative Expense during 2021	0.3
Reduction due to Actual Contributions during 2021	(11.0)
Interest on UAAL, Normal Cost, and Contributions	0.7
Asset (Gain)/Loss	(3.7)
Actuarial Accrued Liability (Gain)/Loss	(25.9)
Impact of Assumption Changes	0.0
Impact of Legislative Changes	0.0
Unfunded Actuarial Accrued Liability (UAAL) as of 12/31/2021	$ (23.4)

Commentary: During 2021, demographic experience decreased the UAAL by $25.9 million. Of this amount, $26.1 million was attributable to adjustments to the North Carolina National Guard service, which impacted participants' vested percentage and the setting of participant statuses. Net of these service adjustments was an offsetting $0.2 million loss due to other demographic experience. In addition, an asset gain decreased the UAAL by $3.7 million.

Section 6: Actuarially Determined Employer Contribution

The normal cost contribution is the cost of benefits accruing in the current year under the actuarial funding method. The valuation indicates that the annual normal cost contribution payable by the State is equal to $44.07 multiplied by the number of active members with seven or more years of service. Based on 5,620 active members included in the valuation, the normal contribution is $247,673. In addition, there is $150,000 required for administrative expenses and $725,000 added to the normal cost to account for members with less than 7 years of service that are not included in the valuation.

The unfunded actuarial accrued liability is amortized within a 12-year period through an annual unfunded accrued liability contribution. According to the SCRSP adopted on April 29, 2021, and effective July 1, 2023 through June 30, 2027, the provision in the previous SCRSP regarding not including excess contributions resulting from General Assembly contributions in excess of the ADEC has been eliminated. The provision recommending that the appropriation be the greater of (1) or (2) below remains as long as the funded percentage is less than 100%:

(1) Appropriation recommended by Board for current year

(2) Underlying actuarially determined employer contribution rate (ADEC) plus $2,000,000

Based on the present membership and the amortization schedule described above, the following table shows the total annual contributions payable by the State for the fiscal years ending June 30, 2024 and June 30, 2023. Since the plan has a funded ratio over 100% as of 12/31/2021, SCRSP recommends an appropriation equal to ADEC.

Table 7: Actuarially Determined Employer Contribution (ADEC)

Contribution	Annual Amount FY Ending 6/30/2024	Annual Amount FY Ending 6/30/2023
Normal Cost	$ 247,673	$ 210,481
Administrative Expenses	$ 150,000	$ 150,000
Load for New Entrants	$ 725,000	$ 725,000
Total	$ 1,122,673	$ 1,085,481
Accrued Liability	$ (1,122,673)	$ 6,407,442
Total	$ 0	$ 7,492,923
Impact of Direct Rate Smoothing	$ 0	$ (616,741)
Preliminary ADEC (not less than $0)	$ 0	$ 6,876,182

Section 7: Accounting Information

The section contains the accounting information for Governmental Accounting Standards Board (GASB) Statement No. 67 for fiscal year ending June 30, 2022 based on a valuation date of December 31, 2021.

The June 30, 2022 total pension liability presented in this section was determined by an actuarial valuation as of December 31, 2021, based on the assumptions, methods and plan provisions described in this report. The actuarial cost method used to develop the total pension liability is the Entry Age Normal Cost method, as required by GASB Statement No. 67.

GASB Statement No. 67 set forth certain items of information to be disclosed in the financial statements of the Plan. The tables below provide a distribution of the number of employees by type of membership.

Table 8: Number of Active and Retired Members as of December 31, 2021

Group	Number
Retired members and survivors of deceased members currently receiving benefits	4,766
Terminated members and survivors of deceased members entitled to benefits but not yet receiving benefits	3,222
Active members	5,620
Total	13,608

Section 7: Accounting Information

GASB Statement No. 67 set forth certain items of information to be disclosed in the financial statements of the Plan. The tables below provide the schedule of changes in Net Pension Liability (Asset).

Table 9: Schedule of Changes in Net Pension Liability (Asset)

Calculation as of	June 30, 2022
Total Pension Liability	
Service Cost	$ 196,000
Interest	11,070,000
Changes of Benefit Terms	0
Difference between Expected and Actual Experience	(26,734,000)
Change of Assumptions	0
Benefit Payments, including Refund of Member Contributions	(9,049,000)
Net Change in Total Pension Liability	$ (24,517,000)
Total Pension Liability - Beginning of Year	$ 174,571,000
Total Pension Liability - End of Year	$ 150,054,000
Plan Fiduciary Net Position	
Employer Contributions	$ 11,032,000
Member Contributions	0
Net Investment Income	(12,272,000)
Benefit Payments, including Refund of Member Contributions	(9,049,000)
Administrative Expenses	(91,000)
Other	(4,000)
Net Change in Fiduciary Net Position	$ (10,384,000)
Plan Fiduciary Net Position - Beginning of Year	$ 175,765,000
Plan Fiduciary Net Position - End of Year	$ 165,381,000

Table 10: Net Pension Liability (Asset)

Calculation as of	June 30, 2022	June 30, 2021
Total Pension Liability	$ 150,054,000	$ 174,571,000
Plan Fiduciary Net Position	165,381,000	175,765,000
Net Pension Liability (Asset)	$ (15,327,000)	$ (1,194,000)
Plan Fiduciary Net Position as a Percentage of the Total Pension Liability	110.21%	100.68%

Section 7: Accounting Information

The table below is the sensitivity of the net pension liability to changes in the discount rate.

Table 11: Sensitivity of the Net Pension Liability (Asset) as of June 30, 2022 to Changes in the Discount Rate

	1% Decrease	Current	1% Increase
Discount Rate	5.50%	6.50%	7.50%
Net Pension Liability (Asset)	2,485,000	(15,327,000)	(29,932,000)

The discount rate used to measure the total pension liability was 6.50%. The projection of cash flows used to determine the discount rate assumed that System contributions will continue to follow the current funding policy, including “direct-rate smoothing” as adopted by the Board of Trustees on January 28, 2021. Investment earnings are based on actual returns through June 30, 2022, and on the assumed investment rate of return thereafter. Additional State Contribution Rate Stabilization Policy contributions are not included in the projected contributions. Based on those assumptions, the System’s fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Please see Appendix E for additional detail. Additional SCRSP contributions are not included in Appendix E.

The table below provides the methods and assumptions used to calculate the actuarially determined employer contribution rate.

Table 12: Additional Information for GASB Statement No. 67

Valuation Date	12/31/2021
Actuarial Cost Method	Entry Age
Amortization Method	Level dollar closed
Amortization Period	12-year closed period
Asset Valuation Method	Asset returns in excess of or less than the expected return on market value of assets reflected over a five-year period (not greater than 120% of market value and not less than 80% of market value)
Actuarial Assumptions	
Investment Rate of Return*	6.50%
Projected Salary Increases	N/A
* Includes Inflation of	2.50%
Cost-of-living Adjustments	N/A

Section 8: Risk

Measuring pension obligations and actuarially determined contributions requires the use of assumptions regarding future economic and demographic experience. Whenever assumptions are made about future events, there is risk that actual experience will differ from expected. Actuarial valuations include the risk that actual future measurements will deviate from expected future measurements due to actual experience that is different than the actuarial assumptions. The primary areas of risk in this actuarial valuation are:

Investment Risk

The potential that investment returns will be different than expected.

Longevity and Other Demographic Risks

The potential that mortality or other demographic experience will be different than expected.

Interest Rate Risk

To the extent market rates of interest affect the expected return on assets, there is a risk of change to the discount rate which determines the present value of liabilities and actuarial valuation results.

Contribution Risk

The potential that actual contributions are different than the actuarially determined contributions.

Annual actuarial valuations are performed for RSD which re-measure the assets and liabilities and compute a new actuarially determined contribution. RSD also has experience studies performed every five years to analyze the discrepancies between actuarial assumptions and actual experience and determine if the actuarial assumptions need to be changed. Annual actuarial valuations and periodic experience studies are practical ways to monitor and reassess risk.

Appendix A: Development of Actuarial Value of Assets

Asset Data as of	12/31/2021
Beginning of Year Market Value of Assets	$ 164,416,547
Contributions	11,031,715
Benefit Payments and Administrative Expenses	(9,060,391)
Net Cash Flow	1,971,324
Expected Investment Return	10,750,135
Expected End of Year Market Value of Assets	177,138,006
End of Year Market Value of Assets	181,849,684
Excess of Market Value over Expected Market Value of Assets	4,711,678
80% of 2021 Asset Gain/(Loss)	3,769,342
60% of 2020 Asset Gain/(Loss)	3,538,829
40% of 2019 Asset Gain/(Loss)	3,874,685
20% of 2018 Asset Gain/(Loss)	(2,158,311)
Total Deferred Asset Gain/(Loss)	9,024,545
Preliminary End of Year Actuarial Value of Assets	172,825,139
Final End of Year Actuarial Value of Assets (not less than 80% and not greater than 120% of Market Value)	172,825,139
Estimated Net Investment Return on Actuarial Value	8.87%
Estimated Net Investment Return on Market Value	9.35%

Commentary: The actuarial value of assets smooths investment gains/losses, resulting in less volatility in the employer contribution. The asset valuation method recognizes asset returns in excess of or less than the expected return on the market value of assets over a five-year period. Higher than expected market returns, in 2019, 2020, and 2021, resulted in an actuarial value of asset return for calendar year 2021 of 8.87% and a recognized actuarial asset gain of $3.7 million during 2021.

Appendix B: Amortization Schedule for Unfunded Actuarial Accrued Liability

Date Established	Original Balance	12/31/2021 Outstanding Balance	Annual Payment Effective July 1, 2023*
December 31, 2009	$ 40,483,684	$ 7,833,731	$ 0
December 31, 2010	(2,911,753)	(907,634)	$ (392,438)
December 31, 2011	(2,233,724)	(942,569)	$ (300,119)
December 31, 2012	(515,855)	(270,727)	$ (69,099)
December 31, 2013	4,219,347	2,619,119	$ 563,512
December 31, 2014	7,361,464	5,228,236	$ 980,321
December 31, 2015	16,021,040	12,713,652	$ 2,127,207
December 31, 2016	796,884	693,783	$ 105,424
December 31, 2017	1,856,450	1,749,106	$ 244,689
December 31, 2018	(9,816,470)	(9,920,348)	$ (1,291,545)
December 31, 2019	(10,786,025)	(11,572,717)	$ (1,414,550)
December 31, 2020	2,913,588	3,102,971	$ 380,321
December 31, 2021	(33,769,285)	(33,769,285)	$ (4,408,029)
Total		$ (23,442,682)	$ (3,474,306)

* Total Annual Payment of ($3,474,306) is constrained so that the resulting ADEC is no less than $0.

Appendix C: Actuarial Assumptions and Methods

The assumptions used for the December 31, 2021 valuation are based on the experience study prepared by the prior actuary as of December 31, 2019 and adopted on January 28, 2021 for use beginning with the December 31, 2020 annual actuarial valuation.

Interest Rate

6.50% per annum, compounded annually.

Active Members

Normal Cost is loaded $725,000 to account for active members with less than 7 years of service that are not included in the valuation.

Separations From Active Service

Assumed annual rates of separation from active service are as follows:

Annual Rates of Withdrawal				
	Service			
Age	< = 6	7 – 9	10 - 19	> = 20
< = 50	0.000	0.175	0.110	0.150
50 - 54	0.000	0.175	0.110	0.200
> = 55	0.000	0.175	0.110	0.250

Deaths Prior to Retirement

Representative values of the assumed pre-retirement mortality rates prior to any mortality improvements are as follows:

Annual Rates of Mortality		
Age	Males	Females
25	0.00028	0.00009
30	0.00036	0.00015
35	0.00047	0.00023
40	0.00066	0.00036
45	0.00098	0.00056
50	0.00149	0.00083
55	0.00219	0.00123
60	0.00319	0.00186

Appendix C: Actuarial Assumptions and Methods (continued)

Service Retirement

Assumed annual rates of retirement from active service are as follows:

Annual Rates of Retirement		
	Service	
Age	<=19	>=20
<=55	0.000	0.150
55-59	0.000	0.250
60-64	0.000	0.500
>=65	0.000	1.000

Deaths After Retirement

Representative values of the assumed post-retirement mortality rates prior to any mortality improvements are as follows:

Annual Rates of Mortality				
	Service Retirements		Contingent Annuitants	
Age	Males	Females	Males	Females
55	0.00455	0.00272	0.01147	0.00742
60	0.00649	0.00365	0.01450	0.00975
65	0.00963	0.00582	0.02086	0.01332
70	0.01610	0.01010	0.03221	0.01931
75	0.02818	0.01789	0.04971	0.02946
80	0.05037	0.03360	0.07802	0.04698
85	0.09064	0.06515	0.12468	0.07945
90	0.15479	0.12636	0.19956	0.13258

Deaths After Retirement (Healthy at Retirement)

Mortality rates are based on the Pub 2010 General Retirees Mortality Table (Benefits Weighted) adjusted 105.50% for males and as follows for females:

Age	Factor
< 76	95%
76	96%
77	97%
78	98%
79	99%
80	100%
81	101%
82	102%

Age	Factor
83	103%
84	104%
85	105%
86	106%
87	107%
88	108%
89	109%
>=90	110%

Appendix C: Actuarial Assumptions and Methods (continued)

Deaths After Retirement (Contingent Annuitants):

Mortality rates are based on the Pub-2010 Teachers Contingent Annuitant Below Median Mortality Table (Benefits Weighted) set forward 3 years for males and 1 year for females.

Mortality Projection

Post-retirement mortality rates are projected from 2010 using generational improvement with Scale MP-2019.

Deaths Prior to Retirement

Mortality Rates are based on the Pub 2010 General Employees Mortality Table (Benefits Weighted).

Timing of Assumptions

All withdrawals, deaths and retirements are assumed to occur July 1 of each year. The timing of retirement changes from mid-year to beginning of year at and after the 100% retirement age.

Administrative Expenses

$150,000 added to Normal Cost.

Missing Gender Code

For members reported on the data without a gender code, we use the prior year's code where available or assign a code based on inspection.

Other Data Assumptions

- Members of the Army National Guard who were terminated vested participants in the prior valuation but were reported with less than 15 years of prior North Carolina National Guard duty were assumed to have terminated without a vested benefit.
- Inactive Army National Guard members who were reported this year with over 20 years of total service and more than 15 years of North Carolina National Guard duty (or National Guard duty information was omitted), but were not included as deferred vested members the previous year, are assumed to have terminated with a vested benefit.
- Where service showed an unexpected change from the prior year and an explanation for the change could not be reconciled, the creditable service reported for the current year was accepted.

Actuarial Cost Method

Entry age normal cost method. Entry age is established on an individual basis.

Normal Cost

Normal cost rate reflects the impact of new entrants during the year.

Appendix C: Actuarial Assumptions and Methods (continued)

Asset Valuation Method

Actuarial value, as developed in Appendix A. Actuarial value of assets is based upon a smoothed market value method. Under this method, asset returns in excess of or less than the expected return on market value of assets will be reflected in the actuarial value of assets over a five-year period. The calculation of the Actuarial Value of Assets is based on the following formula:

$MV - 80\% \times G/(L)_1 - 60\% \times G/(L)_2 - 40\% \times G/(L)_3 - 20\% \times G/(L)_4$

MV = the market value of assets as of the valuation date

$G/(L)_i$ = the asset gain or (loss) for the i-th year preceding the valuation date

Changes in Assumption and Methods Since Prior Valuation:

As a result of discussions with RSD staff, reported North Carolina National Guard service was first recognized with this 12/31/2021 valuation in the determination of participants' vested percentage and the setting of participant statuses. Assumptions with regard to interpretation of the North Carolina National Guard service are outlined above under "Other Data Assumptions" and decreased the actuarial accrued liability by $26.1M as of December 31, 2021, or 14.9% of the expected actuarial accrued liabilities. In addition, since the prior valuation, a transition from the prior actuary to Buck resulted in valuation programming modifications and differences in methodology. The net impact of these changes resulted in no material change to the actuarial accrued liability.

Appendix D: Summary of Main Plan Provisions

Membership

All members of the North Carolina National Guard with seven years of service are eligible to be members of the Fund.

Benefits

Service Retirement Pension

Condition for Pension

A member who retires after he or she has attained age 60 and has credit for 20 years of military service, including at least 15 years of North Carolina National Guard duty, both reserve and active, and who has received an honorable discharge, is entitled to a monthly pension.

Amount of Pension

The amount of the pension is equal to $105 per month for 20 years of creditable service with an additional $10.50 per month for each additional year of such service, provided that the total pension shall not exceed $210 per month.

Deferred Early Retirement Pension

Condition for Pension

A member whose service is terminated after he or she has credit for 20 years of military service, including at least 15 years of North Carolina National Guard duty, both reserve and active, and who has received an honorable discharge, is eligible to receive a deferred retirement pension commencing at age 60.

Amount of Pension

The amount is the same as that for a service retirement.

Normal Form

Life Annuity.

Optional Form

None.

Contributions

The State makes annual contributions sufficient to meet the cost of the benefits under the Fund.

Changes Since Prior Valuation

None.

Appendix E: GASB 67 Fiduciary Net Position Projection

Table E-1: Projection of Fiduciary Net Positions (in thousands)

Calendar Year	Beginning Fiduciary Position	Member Contributions	Employer Contributions	Benefit Payments	Administrative Expenses	Investment Earnings	Ending Fiduciary Position
2022	$ 181,850	$ 0	$ 7,882	$ 10,963	$ 155	$ (12,193)	$ 166,421
2023	166,421	0	2,266	11,006	133	10,533	168,081
2024	168,081	0	0	11,036	114	10,569	167,500
2025	167,500	0	0	11,041	99	10,531	166,891
2026	166,891	0	0	11,015	86	10,493	166,283
2027	166,283	0	0	11,011	74	10,453	165,651
2028	165,651	0	0	11,014	64	10,413	164,986
2029	164,986	0	0	11,007	55	10,370	164,294
2030	164,294	0	0	11,002	47	10,325	163,570
2031	163,570	0	0	10,981	40	10,279	162,828
2032	162,828	0	0	10,881	34	10,235	162,148
2033	162,148	0	0	10,711	29	10,196	161,604
2034	161,604	0	0	10,546	24	10,166	161,200
2035	161,200	0	0	10,362	20	10,146	160,964
2036	160,964	0	0	10,151	17	10,137	160,933
2037	160,933	0	0	9,922	14	10,143	161,140
2038	161,140	0	0	9,744	11	10,161	161,546
2039	161,546	0	0	9,545	9	10,195	162,187
2040	162,187	0	0	9,430	7	10,241	162,991
2041	162,991	0	0	9,304	6	10,296	163,977
2042	163,977	0	0	9,200	5	10,365	165,137
2043	165,137	0	0	9,087	4	10,442	166,488
2044	166,488	0	0	8,969	3	10,535	168,051
2045	168,051	0	0	8,812	2	10,641	169,878
2046	169,878	0	0	8,641	2	10,765	172,000
2047	172,000	0	0	8,485	1	10,908	174,422
2048	174,422	0	0	8,358	1	11,070	177,133
2049	177,133	0	0	8,240	1	11,250	180,142
2050	180,142	0	0	8,082	1	11,451	183,510
2051	183,510	0	0	7,912	0	11,675	187,273
2052	187,273	0	0	7,682	0	11,927	191,518
2053	191,518	0	0	7,459	0	12,210	196,269
2054	196,269	0	0	7,213	0	12,527	201,583
2055	201,583	0	0	6,959	0	12,881	207,505
2056	207,505	0	0	6,695	0	13,274	214,084
2057	214,084	0	0	6,406	0	13,711	221,389
2058	221,389	0	0	6,106	0	14,195	229,478
2059	229,478	0	0	5,807	0	14,730	238,401
2060	238,401	0	0	5,515	0	15,320	248,206
2061	248,206	0	0	5,230	0	15,966	258,942
2062	258,942	0	0	4,952	0	16,674	270,664
2063	270,664	0	0	4,681	0	17,443	283,426
2064	283,426	0	0	4,417	0	18,281	297,290
2065	297,290	0	0	4,161	0	19,191	312,320
2066	312,320	0	0	3,911	0	20,176	328,585
2067	328,585	0	0	3,669	0	21,240	346,156
2068	346,156	0	0	3,433	0	22,390	365,113
2069	365,113	0	0	3,205	0	23,630	385,538
2070	385,538	0	0	2,983	0	24,965	407,520
2071	407,520	0	0	2,768	0	26,400	431,152

Appendix E: GASB 67 Fiduciary Net Position Projection (continued)

Table E-1: Projection of Fiduciary Net Positions (in thousands) (continued)

Calendar Year	Beginning Fiduciary Position	Member Contributions	Employer Contributions	Benefit Payments	Administrative Expenses	Investment Earnings	Ending Fiduciary Position
2072	$ 431,152	$ 0	$ 0	$ 2,560	$ 0	$ 27,943	$ 456,535
2073	456,535	0	0	2,359	0	29,600	483,776
2074	483,776	0	0	2,165	0	31,375	512,986
2075	512,986	0	0	1,979	0	33,281	544,288
2076	544,288	0	0	1,800	0	35,321	577,809
2077	577,809	0	0	1,630	0	37,506	613,685
2078	613,685	0	0	1,467	0	39,842	652,060
2079	652,060	0	0	1,313	0	42,342	693,089
2080	693,089	0	0	1,168	0	45,014	736,935
2081	736,935	0	0	1,031	0	47,867	783,771
2082	783,771	0	0	904	0	50,916	833,783
2083	833,783	0	0	787	0	54,170	887,166
2084	887,166	0	0	679	0	57,644	944,131
2085	944,131	0	0	581	0	61,349	1,004,899
2086	1,004,899	0	0	493	0	65,303	1,069,709
2087	1,069,709	0	0	414	0	69,518	1,138,813
2088	1,138,813	0	0	344	0	74,012	1,212,481
2089	1,212,481	0	0	282	0	78,801	1,291,000
2090	1,291,000	0	0	229	0	83,908	1,374,679
2091	1,374,679	0	0	184	0	89,348	1,463,843
2092	1,463,843	0	0	145	0	95,145	1,558,843
2093	1,558,843	0	0	113	0	101,322	1,660,052
2094	1,660,052	0	0	86	0	107,900	1,767,866
2095	1,767,866	0	0	65	0	114,909	1,882,710
2096	1,882,710	0	0	48	0	122,375	2,005,037
2097	2,005,037	0	0	35	0	130,326	2,135,328
2098	2,135,328	0	0	25	0	138,796	2,274,099
2099	2,274,099	0	0	17	0	147,816	2,421,898
2100	2,421,898	0	0	11	0	157,423	2,579,310
2101	2,579,310	0	0	8	0	167,655	2,746,957
2102	2,746,957	0	0	5	0	178,552	2,925,504
2103	2,925,504	0	0	3	0	190,158	3,115,659
2104	3,115,659	0	0	2	0	202,518	3,318,175
2105	3,318,175	0	0	1	0	215,681	3,533,855
2106	3,533,855	0	0	1	0	229,701	3,763,555
2107	3,763,555	0	0	0	0	244,631	4,008,186
2108	4,008,186	0	0	0	0	260,532	4,268,718
2109	4,268,718	0	0	0	0	277,467	4,546,185
2110	4,546,185	0	0	0	0	295,502	4,841,687
2111	4,841,687	0	0	0	0	314,709	5,156,396
2112	5,156,396	0	0	0	0	335,166	5,491,562
2113	5,491,562	0	0	0	0	356,951	5,848,513
2114	5,848,513	0	0	0	0	380,154	6,228,667
2115	6,228,667	0	0	0	0	404,863	6,633,530
2116	6,633,530	0	0	0	0	431,180	7,064,710
2117	7,064,710	0	0	0	0	459,206	7,523,916
2118	7,523,916	0	0	0	0	489,054	8,012,970
2119	8,012,970	0	0	0	0	520,843	8,533,813
2120	8,533,813	0	0	0	0	554,698	9,088,511
2121	9,088,511	0	0	0	0	590,753	9,679,264

Appendix E: GASB 67 Fiduciary Net Position Projection (continued)

Table E-2: Actuarial Present Value of Projected Benefit Payments (in thousands)

					Present Value of Benefit Payments		
Calendar Year	Beginning Fiduciary Position	Benefit Payments	Funded Benefit Payments	Unfunded Benefit Payments	Funded Payments at 6.50%	Unfunded Payments at 3.54%	Using Single Discount Rate of 6.50%
2022	$ 181,850	$ 10,963	$ 10,963	$ 0	$ 10,623	$ 0	$ 10,623
2023	166,421	11,006	11,006	0	10,014	0	10,014
2024	168,081	11,036	11,036	0	9,428	0	9,428
2025	167,500	11,041	11,041	0	8,857	0	8,857
2026	166,891	11,015	11,015	0	8,297	0	8,297
2027	166,283	11,011	11,011	0	7,788	0	7,788
2028	165,651	11,014	11,014	0	7,314	0	7,314
2029	164,986	11,007	11,007	0	6,864	0	6,864
2030	164,294	11,002	11,002	0	6,442	0	6,442
2031	163,570	10,981	10,981	0	6,037	0	6,037
2032	162,828	10,881	10,881	0	5,617	0	5,617
2033	162,148	10,711	10,711	0	5,192	0	5,192
2034	161,604	10,546	10,546	0	4,800	0	4,800
2035	161,200	10,362	10,362	0	4,428	0	4,428
2036	160,964	10,151	10,151	0	4,073	0	4,073
2037	160,933	9,922	9,922	0	3,738	0	3,738
2038	161,140	9,744	9,744	0	3,447	0	3,447
2039	161,546	9,545	9,545	0	3,171	0	3,171
2040	162,187	9,430	9,430	0	2,941	0	2,941
2041	162,991	9,304	9,304	0	2,725	0	2,725
2042	163,977	9,200	9,200	0	2,530	0	2,530
2043	165,137	9,087	9,087	0	2,346	0	2,346
2044	166,488	8,969	8,969	0	2,175	0	2,175
2045	168,051	8,812	8,812	0	2,006	0	2,006
2046	169,878	8,641	8,641	0	1,847	0	1,847
2047	172,000	8,485	8,485	0	1,703	0	1,703
2048	174,422	8,358	8,358	0	1,575	0	1,575
2049	177,133	8,240	8,240	0	1,458	0	1,458
2050	180,142	8,082	8,082	0	1,343	0	1,343
2051	183,510	7,912	7,912	0	1,234	0	1,234
2052	187,273	7,682	7,682	0	1,125	0	1,125
2053	191,518	7,459	7,459	0	1,026	0	1,026
2054	196,269	7,213	7,213	0	932	0	932
2055	201,583	6,959	6,959	0	844	0	844
2056	207,505	6,695	6,695	0	762	0	762
2057	214,084	6,406	6,406	0	685	0	685
2058	221,389	6,106	6,106	0	613	0	613
2059	229,478	5,807	5,807	0	547	0	547
2060	238,401	5,515	5,515	0	488	0	488
2061	248,206	5,230	5,230	0	435	0	435
2062	258,942	4,952	4,952	0	386	0	386
2063	270,664	4,681	4,681	0	343	0	343
2064	283,426	4,417	4,417	0	304	0	304
2065	297,290	4,161	4,161	0	269	0	269
2066	312,320	3,911	3,911	0	237	0	237
2067	328,585	3,669	3,669	0	209	0	209
2068	346,156	3,433	3,433	0	184	0	184
2069	365,113	3,205	3,205	0	161	0	161
2070	385,538	2,983	2,983	0	141	0	141
2071	407,520	2,768	2,768	0	123	0	123

Appendix E: GASB 67 Fiduciary Net Position Projection (continued)

Table E-2: Actuarial Present Value of Projected Benefit Payments (in thousands) (continued)

					Present Value of Benefit Payments		
Calendar Year	Beginning Fiduciary Position	Benefit Payments	Funded Benefit Payments	Unfunded Benefit Payments	Funded Payments at 6.50%	Unfunded Payments at 3.54%	Using Single Discount Rate of 6.50%
2072	$ 431,152	$ 2,560	$ 2,560	$ 0	$ 106	$ 0	$ 106
2073	456,535	2,359	2,359	0	92	0	92
2074	483,776	2,165	2,165	0	79	0	79
2075	512,986	1,979	1,979	0	68	0	68
2076	544,288	1,800	1,800	0	58	0	58
2077	577,809	1,630	1,630	0	49	0	49
2078	613,685	1,467	1,467	0	42	0	42
2079	652,060	1,313	1,313	0	35	0	35
2080	693,089	1,168	1,168	0	29	0	29
2081	736,935	1,031	1,031	0	24	0	24
2082	783,771	904	904	0	20	0	20
2083	833,783	787	787	0	16	0	16
2084	887,166	679	679	0	13	0	13
2085	944,131	581	581	0	11	0	11
2086	1,004,899	493	493	0	8	0	8
2087	1,069,709	414	414	0	7	0	7
2088	1,138,813	344	344	0	5	0	5
2089	1,212,481	282	282	0	4	0	4
2090	1,291,000	229	229	0	3	0	3
2091	1,374,679	184	184	0	2	0	2
2092	1,463,843	145	145	0	2	0	2
2093	1,558,843	113	113	0	1	0	1
2094	1,660,052	86	86	0	1	0	1
2095	1,767,866	65	65	0	1	0	1
2096	1,882,710	48	48	0	0	0	0
2097	2,005,037	35	35	0	0	0	0
2098	2,135,328	25	25	0	0	0	0
2099	2,274,099	17	17	0	0	0	0
2100	2,421,898	11	11	0	0	0	0
2101	2,579,310	8	8	0	0	0	0
2102	2,746,957	5	5	0	0	0	0
2103	2,925,504	3	3	0	0	0	0
2104	3,115,659	2	2	0	0	0	0
2105	3,318,175	1	1	0	0	0	0
2106	3,533,855	1	1	0	0	0	0
2107	3,763,555	0	0	0	0	0	0
2108	4,008,186	0	0	0	0	0	0
2109	4,268,718	0	0	0	0	0	0
2110	4,546,185	0	0	0	0	0	0
2111	4,841,687	0	0	0	0	0	0
2112	5,156,396	0	0	0	0	0	0
2113	5,491,562	0	0	0	0	0	0
2114	5,848,513	0	0	0	0	0	0
2115	6,228,667	0	0	0	0	0	0
2116	6,633,530	0	0	0	0	0	0
2117	7,064,710	0	0	0	0	0	0
2118	7,523,916	0	0	0	0	0	0
2119	8,012,970	0	0	0	0	0	0
2120	8,533,813	0	0	0	0	0	0
2121	9,088,511	0	0	0	0	0	0

Appendix F: Detailed Tabulations of Member Data

Table F: The Number of Active Members Distributed by Age and Service as of December 31, 2021

	Years of Service										
Age	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	Total
Under 25	0	0	15	0	0	0	0	0	0	0	15
25 to 29	0	0	725	147	0	0	0	0	0	0	872
30 to 34	0	0	405	885	178	0	0	0	0	0	1,468
35 to 39	0	0	155	404	548	112	0	0	0	0	1,219
40 to 44	0	0	60	148	284	353	42	0	0	0	887
45 to 49	0	0	22	73	114	134	113	28	0	0	484
50 to 54	0	0	3	42	95	99	83	112	14	0	448
55 to 59	0	0	0	2	39	36	33	56	42	4	212
60 to 64	0	0	0	0	1	3	2	5	3	1	15
65 to 69	0	0	0	0	0	0	0	0	0	0	0
70 & Up	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	1,385	1,701	1,259	737	273	201	59	5	5,620

Appendix F: Detailed Tabulations of Member Data (continued)

Table F-2: The Number of Active Members Distributed by Age as of December 31, 2021

Age	Number
24	15
25	70
26	157
27	187
28	213
29	245
30	223
31	302
32	301
33	340
34	302
35	274
36	231
37	227
38	251
39	236
40	226
41	193
42	203
43	132
44	133
45	110
46	94
47	99
48	102
49	79
50	93
51	109
52	97
53	83
54	66
55	61
56	54
57	37
58	35
59	25
60	10
61	4
63	1
Total	5,620

Appendix F: Detailed Tabulations of Member Data (continued)

Table F-3: The Number of Active Members Distributed by Service as of December 31, 2021

Service	Number
7	489
8	489
9	407
10	395
11	334
12	320
13	319
14	333
15	315
16	237
17	209
18	237
19	261
20	246
21	178
22	118
23	98
24	97
25	72
26	57
27	62
28	43
29	39
30	51
31	38
32	50
33	29
34	33
35	16
36	11
37	14
38	12
39	6
40	3
41	1
42	1
Total	5,620

Appendix F: Detailed Tabulations of Member Data (continued)

Table F-4: The Number and Deferred Annual Retirement Allowances of Terminated Vested Members Distributed by Age as of December 31, 2021

Age	Number	Allowances
30	1	$ 2,520
31	4	10,080
32	3	7,560
33	4	10,080
34	5	12,600
35	4	10,080
36	5	12,600
37	7	17,640
38	10	15,372
39	8	11,718
40	13	18,270
41	31	45,612
42	27	37,170
43	35	50,274
44	43	62,244
45	44	64,890
46	57	89,334
47	57	93,114
48	71	113,904
49	76	124,488
50	99	169,470
51	122	214,830
52	127	234,499
53	134	247,464
54	145	269,262
55	135	262,080
56	134	246,960
57	155	293,076
58	171	310,968
59	181	343,728
60	151	282,870
61	57	95,760
62	71	119,574
63	41	75,096
64	48	81,270

Appendix F: Detailed Tabulations of Member Data (continued)

Table F-4: The Number and Deferred Annual Retirement Allowances of Terminated Vested Members Distributed by Age as of December 31, 2021 (continued)

Age	Number	Allowances
65	31	$ 48,132
66	39	62,370
67	42	63,882
68	45	70,686
69	40	59,346
70	38	55,314
71	38	59,850
72	66	102,438
73	73	118,566
74	71	111,258
75	75	127,764
76	64	109,620
77	53	90,090
78	41	73,458
79	52	90,090
80	30	52,038
81	30	54,180
82	21	36,792
83	12	19,908
84	5	7,812
85	13	22,554
86	11	21,798
87	13	23,814
88	5	7,686
89	11	19,530
90	5	9,072
91	13	24,192
92	6	8,946
93	3	5,292
Total	3,222	$ 5,612,935

Appendix F: Detailed Tabulations of Member Data (continued)

Table F-5: The Number and Annual Retirement Allowances of Retired Members Distributed by Age as of December 31, 2021

Age	Number	Allowances
60	70	$ 135,799
61	188	351,415
62	178	326,340
63	170	340,260
64	165	303,282
65	174	315,126
66	150	284,497
67	161	296,161
68	160	288,647
69	207	370,210
70	253	460,936
71	271	490,506
72	280	513,181
73	307	558,306
74	304	543,767
75	289	516,690
76	192	363,636
77	191	354,147
78	168	313,614
79	147	282,732
80	104	188,550
81	74	142,758
82	72	150,066
83	88	172,758
84	73	146,271
85	67	137,016
86	55	112,518
87	52	104,832
88	35	75,726
89	29	58,590
90	23	47,628
91	18	38,808
92	19	37,926
93	16	32,886
94	7	14,868
95	5	12,600
98	4	8,946
Total	4,766	$ 8,891,999