

Teachers' and State Employees' Retirement System of North Carolina

Principal Results of Actuarial Valuation as of December 31, 2024

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October 30, 2025, Board of
Trustees Meeting



Gallagher

Insurance | Risk Management | Consulting

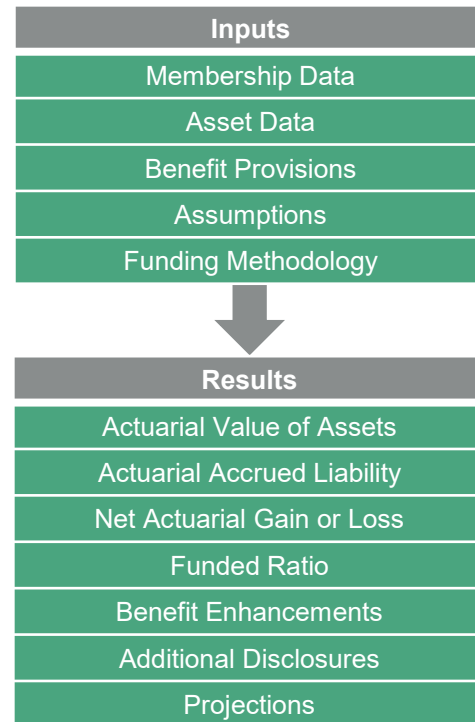
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Purpose of the annual actuarial valuation

- As of the end of each calendar year:
 - An annual actuarial valuation is performed on TSERS
 - The actuary determines the amount of employer contributions to be made to TSERS during each member's career that, when combined with investment return and member contributions, are expected to be sufficient to pay for retirement benefits
- The annual actuarial valuation is performed to:
 - Determine the progress on funding TSERS
 - Explore why the results of the current valuation differ from the results of the valuation of the previous year
 - Satisfy regulatory and accounting requirements

The valuation process

- The diagram to the right summarizes the inputs and results of the actuarial valuation process.
- A detailed summary of the valuation process and a glossary of actuarial terms are provided in the supplementary document, “State of North Carolina Retirement Systems Actuarial Valuation Report Process and Actuarial Terms Glossary” dated October 2025.
- Bars at the top of the page, consistent with the diagram to the right, will appear throughout the presentation to designate where we are in the valuation process. Some of the items on the bars at the top of the page are covered in the appendix to the presentation.



Valuation input

Membership data

Membership Data	Asset Data	Benefit Provisions	Assumptions	Funding Methodology
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The table below provides a summary of the membership data used in this valuation compared to the prior valuation.

Number as of	12/31/2024	12/31/2023
Active members	298,000	299,037
Members currently receiving Disability Income Plan benefits	3,507	4,031
Terminated vested members and survivors of deceased members entitled to benefits but not yet receiving benefits	66,591	64,936
Terminated non-vested members and survivors of deceased members entitled to a refund of contributions	170,774	161,163
Retired members and survivors of deceased members currently receiving benefits	<u>257,645</u>	<u>252,036</u>
Total	796,517	781,203

The number of active members decreased by 0.3% from the previous valuation date.

The number of retired members and survivors of deceased members currently receiving benefits increased by 2.2% from the previous valuation.

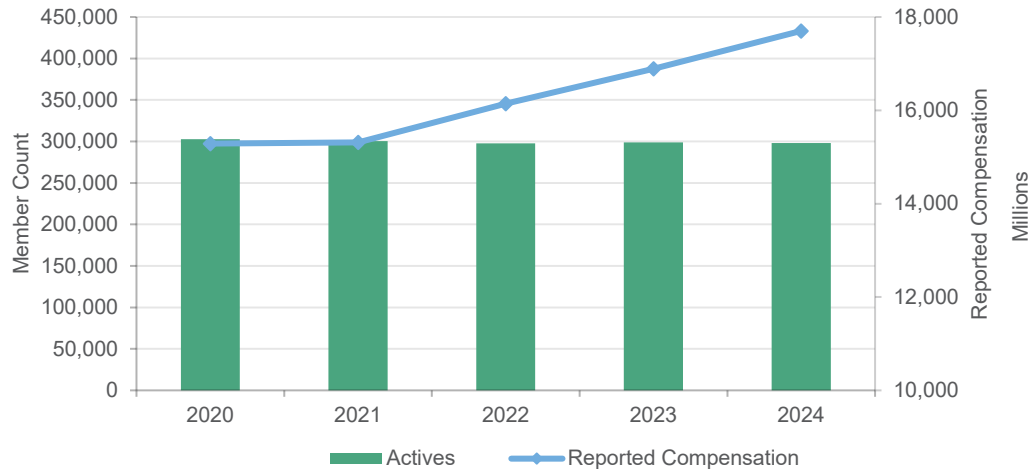
The increase in retiree population is consistent with expectations.

Valuation input (continued)

Actives

Membership Data	Asset Data	Benefit Provisions	Assumptions	Funding Methodology
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The graph below provides a history of the number of active members and reported compensation over the past five years.



Reported compensation for active members for the year ending December 31, 2024 was \$17.7 billion compared to \$16.9 billion in the prior year, an increase of 4.8%.

Covered payroll was expected to increase annually by 3.25%.

Payroll that is increasing faster than we assume results in more benefits accruing than we anticipate, but also more contributions supporting the system. The pay increases will ultimately lead to increases in the dollar amounts of contributions and the immediate effect on the December 31, 2024 actuarial valuation is a reduction in the funded ratio and an increase in required employer contribution rates compared to those anticipated in prior projections.

Valuation input (continued)

Historical market value and returns

Membership Data

Asset Data

Benefit Provisions

Assumptions

Funding Methodology

The graph below provides a history of the market value of assets and asset returns over the past five years.



The investment return for the market value of assets for 2024 was 7.42%, which was above the expected return of 6.50%.

The return on the actuarial value of assets, which is used to determine the contribution rates, was below the 6.50% expected return at 4.87%.

This resulted in an increase in the unfunded actuarial accrued liability (UAAL) of \$1.4 billion.

Market value returns have exceeded expectations four times in the last five years.

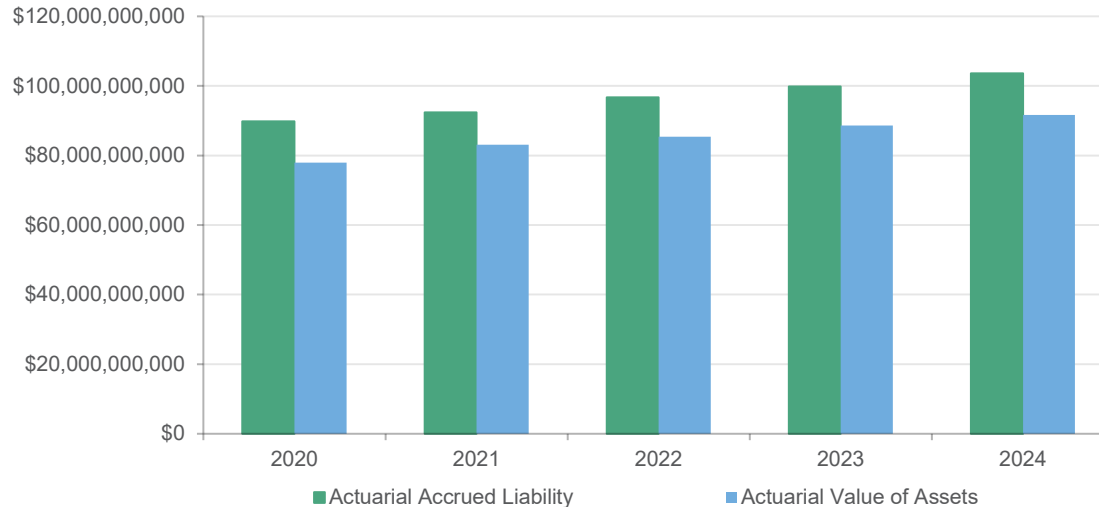
The annual rates of return on the actuarial value of assets have varied between 4.53% and 9.18% for the past five years.

Valuation results

Valuation results

Actuarial Value of Assets	Actuarial Accrued Liability	Net Actuarial Gain or Loss	Funded Ratio	Employer Contributions
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The graph below provides a history of the actuarial accrued liability and actuarial value of assets.



The difference in the actuarial accrued liability and the actuarial value of assets is known as the Unfunded Actuarial Accrued Liability (UAAL).

The UAAL is \$12 billion as of 12/31/2024 and is to be paid off over a 12-year period.

Valuation results (continued)

Net actuarial gain or loss

Actuarial Value of Assets	Actuarial Accrued Liability	Net Actuarial Gain or Loss	Funded Ratio	Employer Contributions
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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 12/31/2023	\$	11,191
Normal cost and administrative expense during 2024		2,073
Reduction due to actual contributions during 2024		(4,378)
Interest on UAAL, normal cost, and contributions		721
Asset (gain) / loss		1,433
Actuarial accrued liability (gain) / loss		966
Impact of assumption changes		0
Impact of benefit changes		0
Unfunded actuarial accrued liability (UAAL) as of 12/31/2024	\$	12,006

During 2024, the UAAL increased due to the asset loss of \$1.433 billion.

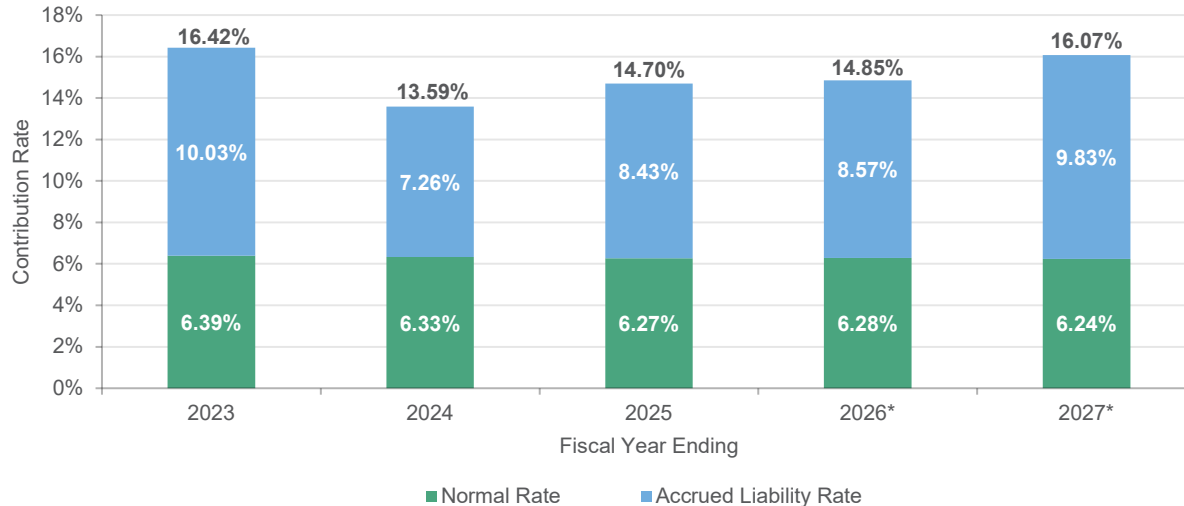
Additionally, changes in the census data, primarily higher-than-expected salary increases for continuing active members, increased the UAAL by \$966 million.

Valuation results (continued)

Rates prior to application of ECRSP

Actuarial Value of Assets	Actuarial Accrued Liability	Net Actuarial Gain or Loss	Funded Ratio	Employer Contributions
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The graph below provides a history of actuarially determined employer contribution rates over the past five years before applying funding policy minimums.



* Subject to the impact of future legislative changes effective before or during that fiscal year

The rates are split into the normal rate and the accrued liability rate.

The normal rate is the employer's portion of the cost of benefits accruing after reducing for the 6% of pay member contributions.

The accrued liability rate is the payment toward the unfunded liability.

The actuarially determined employer contribution rate is the amount needed to pay for the cost of the benefits accruing and to pay off the unfunded liability over a 12-year period.

The 12-year period is a short period for Public Sector Retirement Systems in the United States, with the funding period for most of these Systems much longer. The shorter period results in higher contributions during the amortization period and more benefit security.

Valuation results (continued)

Employer contributions

Actuarial Value of Assets	Actuarial Accrued Liability	Net Actuarial Gain or Loss	Funded Ratio	Employer Contributions
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The table below provides a reconciliation of the actuarially determined employer contribution rate shown as a percentage of covered payroll before applying the funding policy minimum.

Fiscal year ending June 30, 2026 Preliminary ADEC (based on December 31, 2023 valuation)	14.85%
Impact of Benefit Changes	<u>0.00%</u>
Fiscal year ending June 30, 2026 ADEC Prior to ECRSP	14.85%
Change Due to Anticipated Reduction in UAAL*	(0.26%)
Change Due to Demographic (Gain)/Loss	0.51%
Change Due to Investment (Gain)/Loss	0.95%
Change Due to Contributions Greater than ADEC	(0.58%)
Impact of Assumption Changes	0.00%
Impact of Benefit Changes	0.00%
Impact of Direct Rate Smoothing	0.60%
Reversal of one-time Benefit Costs	<u>0.00%</u>
Fiscal year ending June 30, 2027 Preliminary ADEC (based on December 31, 2024 valuation)	16.07%

* Amortization of the UAAL is determined as a level dollar amount with payments expected to remain the same over the amortization period but was calculated as a percentage of valuation payroll in the previous valuation. Payroll is expected to increase annually while the expected amortization payment does not increase. This causes the expected amortization payment to be a lesser percentage of the expected payroll.

The change in rate due to investment loss is based on the actuarial value of assets return of 4.87%, which was less than the 6.50% assumed return.

The change in rate due to demographic loss was largely due to higher-than-expected salary increases for continuing active members.

Valuation results (continued)

ECRSP

Actuarial Value of Assets	Actuarial Accrued Liability	Net Actuarial Gain or Loss	Funded Ratio	Employer Contributions
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The Employer Contribution Rate Stabilization Policy (ECRSP) would result in a recommended contribution rate of 17.49% of payroll for fiscal year ending 2027.

- 16.07% is the actuarially determined employer contribution calculated in this most recent valuation prior to direct-rate smoothing.
- The minimum is 17.49%; the recommended appropriation from last year of 17.14% plus 0.35%
- The maximum is approximately 41.45%; the estimated actuarially determined employer contribution using a discount rate equal to the long-term treasury bond yield (4.78%).

The ECRSP adopted by the Board of Trustees on April 29, 2021, requires that recommended contributions be 0.35% of payroll greater than the recommended appropriation during the prior year, with the following bounds:

- 1) Contributions may not be less than the actuarially determined employer contribution (ADEC), and
- 2) Contributions may not be greater than a contribution determined using the same assumption used to calculate the ADEC based on the long-term treasury bond yield.

Valuation results (continued)

Potential COLA considerations

Benefit Enhancements	Additional Disclosures	Projections
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- Note that the TSERS Board can *recommend* COLAs to the General Assembly; the Board does not have the authority to grant COLAs
- G.S. 135-5(o) has various provisions related to COLAs, including a description of a permanent COLA limited to 4% or inflation (whichever is less) when the cost would not require an increase in the employer contribution rate.
- Type of increase
 - Supplement payable October 2026
 - Permanent effective July 1, 2026
- Immediate or 12-year funding
 - Immediate funding recommended for Supplement
 - 12-year funding could be considered for Permanent
 - The contribution increase is added to the ECRSP rate per policy adopted at April 2021 Board meeting

Valuation results (continued)

Potential COLAs for fiscal year ending 2027

Benefit Enhancements	Additional Disclosures	Projections
• The December 31, 2024, valuation indicates an actuarial investment loss was incurred during 2024, and there are no investment gains available to support a recommendation of either of the following by the TSERS Board of Trustees. – a Cost-of-Living Adjustment (COLA) that would take effect on July 1, 2026; or – a one-time supplement to participants in receipt of benefits, payable July 1, 2026. • If granted by the General Assembly, the cost for a 1.00% COLA increase would be \$586.7M, or an increase of 0.39% in the ADEC, payable over 12 years. • If granted by the General Assembly, the cost of a one-time 1.00% supplement payment would be \$57.9M, or an increase of 0.29% in the ADEC, payable over a single year.		

Note: Gallagher cannot provide legal advice. Neither this slide, nor any other slide, should be interpreted as legal advice as to the Board's ability to provide a COLA to retirees or recommend a COLA to the legislature

Valuation results (continued)

Potential COLAs for fiscal year ending 2028

Benefit Enhancements	Additional Disclosures	Projections
- Based on the methods and assumptions used for the projections discussed later in the presentation, the standard conditions for the Board to consider proposing a potential COLA effective July 1, 2027, following the December 31, 2025, valuation would include the following minimal levels of investment return on market values of assets during 2025. Note, however, the ECRSP would require an increase in the employer contribution rate to cover the cost of a COLA. - If calendar year 2025 market value returns exceed 17.47% (or about \$15.3B for TSERS), the plan is estimated to have an actuarial investment gain (rather than a loss) for 2025 and a COLA effective July 1, 2027, could be considered. - If calendar year 2025 market value returns exceed 20.81% (or about \$18.3B for TSERS), the plan is estimated to have an actuarial investment gain (rather than a loss) for 2025 and such gain may be enough to consider providing a 1.00% COLA effective July 1, 2027. - Estimated actuarial investment gain of \$586.7M - Estimated cost of 1.00% COLA payable to retirees effective July 1, 2027 of \$586.7M.		

Note: Gallagher cannot provide legal advice. Neither this slide, nor any other slide, should be interpreted as legal advice as to the Board's ability to provide a COLA to retirees or recommend a COLA to the legislature

Valuation results (continued)

Projections

Benefit Enhancements	Additional Disclosures	Projections
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- Projections of contribution requirements and funded status into the future can be helpful planning tools for stakeholders. This section provides such projections. The projections of the actuarial valuation are known as deterministic projections. Deterministic projections are based on one scenario in the future. The baseline deterministic projection is based on December 31, 2024 valuation results and assumptions.
- Key Projection Assumptions
 - Valuation interest rate of 6.50%
 - Direct-rate smoothing of the change in the employer contribution rate due to the changes in assumption and methods over a 5-year period beginning July 1, 2022
 - 6.50% investment return on market value of assets
 - Actuarial assumptions and methods as described in Appendix C. All future demographic experience is assumed to be exactly realized.
 - The contribution rate under the Employer Contribution Rate Stabilization Policy (ECRSP) is contributed until fiscal year ending 2027.
 - The actuarially determined employer contribution rate is contributed for fiscal years ending 2028 and beyond.
 - The employer contribution shall not be less than the employee contribution, which is currently 6%.

Valuation results (continued)

Projections

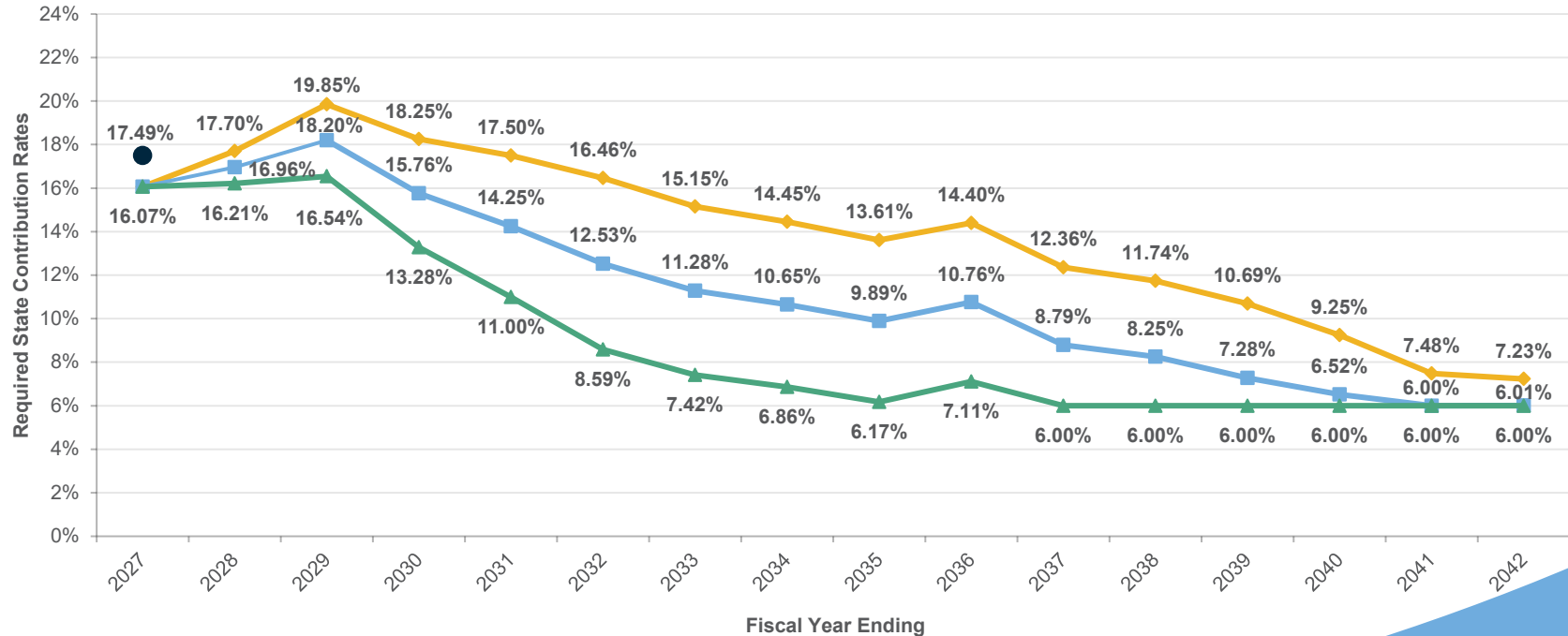
Benefit Enhancements	Additional Disclosures	Projections
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- Key Projection Assumptions (continued)
 - 0% increase in both the active population of TSERS and its subgroups: Teachers, Other Education, General Employees, and Law Enforcement Officers, except that no new hires of UNC Health Care System (UNC HC) will participate in TSERS
 - To replace those assumed to leave active service, the age, gender and salary of future members assumed to be hired into TSERS are based on the demographic information of new TSERS hires over the past three (3) valuations
 - Demographic profiles of new entrants for each subgroup are based on new hires specific to that subgroup over the past three (3) valuations
 - 75% of new entrants are assumed to have rounded service of 0 when first valued, and 25% are assumed to have rounded service of 1 when first valued
 - No cost-of-living adjustments granted
 - Future pay increases based on long-term salary increase assumptions
- The ECRSP contribution rate is the Stable Contribution rate shown in the projections. See Appendix F for more detail on the ECRSP.
- In addition, we have provided two alternate deterministic projections. The first alternate deterministic projection is based on the same assumptions as the baseline deterministic projection except that it assumes a 0.0% asset return for calendar year 2025. The second alternate deterministic projection is based on the same assumptions as the baseline deterministic projection except that it assumes a 13.0% asset return for calendar year 2025.

Valuation results (continued)

Projected contribution rates

Benefit Enhancements	Additional Disclosures	Projections
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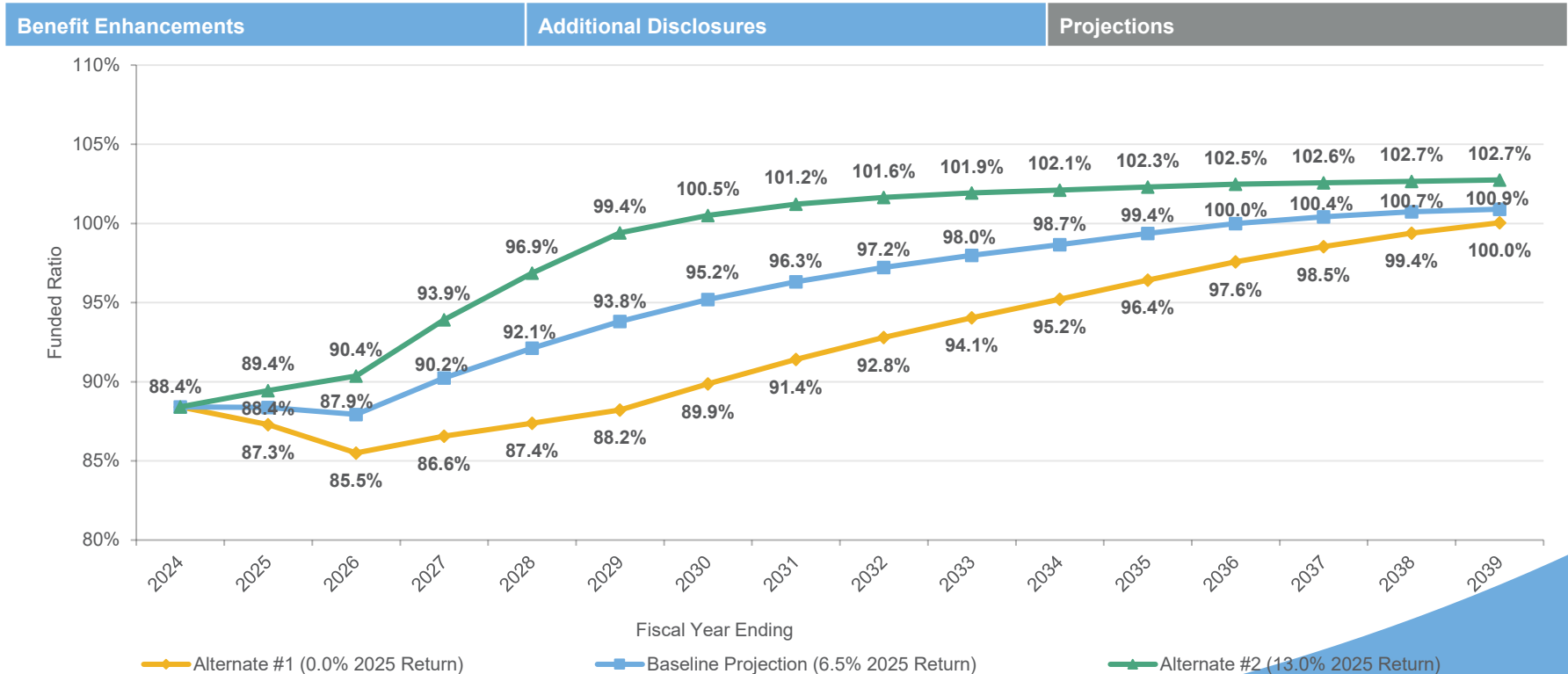


◆ Alternate #1 (0.0% 2025 Return)
 ■ Baseline Projection (6.5% 2025 Return)
 ▲ Alternate #2 (13.0% 2025 Return)
 ● Stable Contribution

A detailed summary of the deterministic projections is provided in Section 6.

Valuation results (continued)

Projected funded ratio



A detailed summary of the deterministic projections is provided in Section 6.

Key takeaways

- Key results of the December 31, 2024 valuation were:
 - Market value returns of 7.42% during calendar year 2024 compared to 6.50% assumed
 - Liabilities \$1.0 billion higher than anticipated as of December 31, 2024, primarily from higher-than-expected salary increases for continuing active members
 - Completion of direct-rate smoothing of the change in the employer contribution rate due to the changes in assumptions and methods over a 5-year period beginning with the December 31, 2020 valuation

Key takeaways (continued)

- When compared to the December 31, 2023 baseline projections, the above resulted in:
 - A lower funded ratio as of December 31, 2024 (88.4% in the valuation compared to 89.0% in the baseline projection)
 - A higher actuarially determined employer contribution rate prior to applying the Employer Contribution Rate Stabilization Policy (ECRSP) for fiscal year ending June 30, 2027 (16.07% in the valuation compared to 15.92% in the prior year's baseline projection)

Key takeaways (continued)

- TSERS is well funded compared to its peers. This is due to:
 - Stakeholders working together to keep TSERS well-funded since inception
 - A history of appropriating and contributing the recommended contribution requirements
 - Implementation of the ECRSP which provides additional funding of the System
 - Assumptions that in aggregate are more conservative than peers
 - A funding policy that aggressively pays down unfunded liability over a 12-year period
 - An ad hoc cost-of-living adjustment, which typically only provides benefit increases when certain financial conditions are met, supports the health of the system
 - Modest changes in benefits when compared to peers
- As has been done for over 80 years, continued focus on these measures will be needed to maintain the sustainability of TSERS well into the future

Certification

Future actuarial measurements may differ significantly from current measurements due to plan experience differing from that anticipated by the economic and demographic assumptions, increases or decreases expected as part of the natural operation of the methodology used for these measurements, and changes in plan provisions or applicable law. Because of limited scope, Gallagher performed no analysis of the potential range of such future differences, except for some limited analysis in financial projections or required disclosure information. 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 purpose of this presentation is to provide a summary of the actuarial valuation results to the Board at the October 30, 2025 meeting attended by the actuaries. Use of this report for any other purposes may not be appropriate and may result in mistaken conclusions because of failure to understand applicable assumptions, methods, or inapplicability of this presentation for that purpose. This presentation should not be provided without a copy of the full valuation report. Because of the risk of misinterpretation of actuarial results, you should ask Gallagher Benefit Services, Inc. (hereinafter "Gallagher") to review any statement you wish to make on the results contained in this presentation. Gallagher will not accept any liability for any such statement made without prior review."

This presentation is considered part of the annual actuarial valuation report. Please see the report for full description of data, actuarial assumptions and methods, plan provisions, and other applicable disclosures.

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.

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

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Appendix I

Supplemental Information

Valuation input

Retirees and survivors receiving benefits

Membership Data

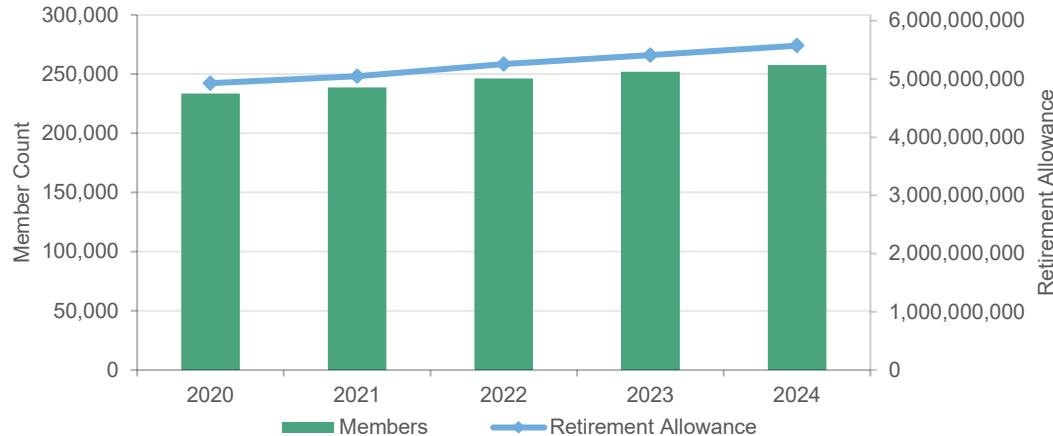
Asset Data

Benefit Provisions

Assumptions

Funding Methodology

The graph below provides a history of the number of retired members and survivors of deceased members and benefit amounts payable over the past five years.



The number of retired members and survivors of deceased members and the benefits paid to these members has been increasing steadily, as expected based on plan assumptions.

Valuation input (continued)

Market value

Membership Data	Asset Data	Benefit Provisions	Assumptions	Funding Methodology
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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	12/31/2024	12/31/2023
Beginning of year market value of assets	\$ 83,642,776,867	\$ 77,445,236,928
Employer contributions	3,245,895,693	3,104,597,510
Employee contributions	1,132,437,503	1,078,160,026
Benefit payments other than refunds	(5,520,083,224)	(5,584,204,848)
Refunds	(126,234,924)	(136,745,938)
Administrative expenses	(16,685,387)	(16,552,601)
Investment income	<u>6,158,494,089</u>	<u>7,752,285,790</u>
Net increase / (decrease)	4,873,823,750	6,197,539,939
End of year market value of assets	\$ 88,516,600,617	\$ 83,642,776,867
Estimated net investment return	7.42%	10.11%

TSERS assets are held in trust and are invested for the exclusive benefit of plan members.

Incoming contributions currently cover over 70% of outgoing benefit payments and administrative expenses.

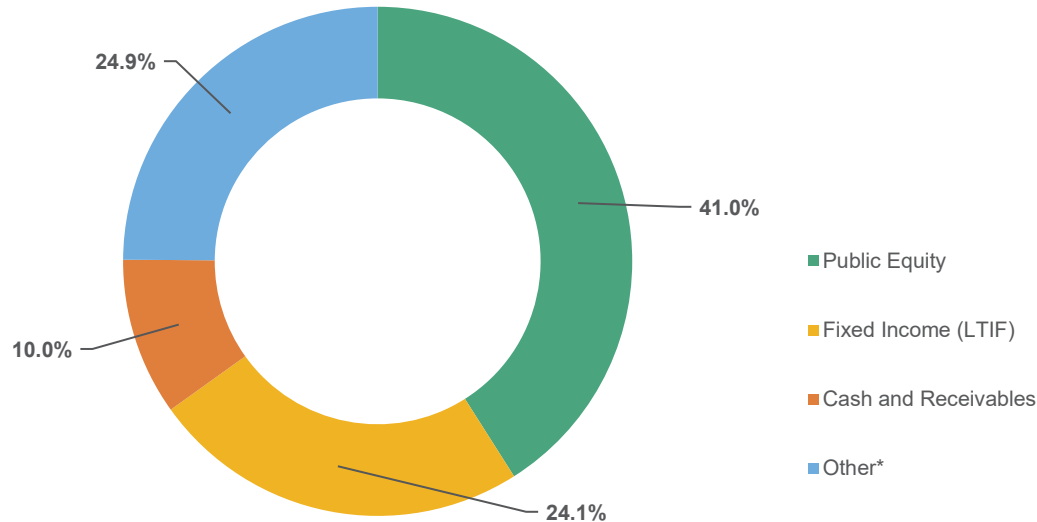
Over the long term, benefit payments and administrative expenses not covered by contributions are expected to be covered with investment income, illustrating the benefits of following actuarial pre-funding since inception.

Valuation input (continued)

Asset allocation

Membership Data	Asset Data	Benefit Provisions	Assumptions	Funding Methodology
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The graph below provides the breakdown of the market value of assets on December 31, 2024 by asset category.



Based on historical market returns, the current asset allocation, the current investment policy, and the expectation of future asset returns, as reviewed in the recent experience study, the 6.50% discount rate used in this valuation is reasonable and appropriate.

*Real estate, alternatives, inflation, and credit

A detailed summary of the market value of assets is provided in Section 3.

Valuation input (continued)

Benefit provisions

Membership Data	Asset Data	Benefit Provisions	Assumptions	Funding Methodology
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Benefit provisions are described in North Carolina General Statutes, Chapter 135, Article 1.

- There were no significant changes in benefit provisions from the prior year's valuation.

Many Public Sector Retirement Systems in the United States have undergone pension reform where the benefits of members (active or future members) have been reduced.

Because of the well-funded status of TSERS due to the legislature contributing at least the actuarially determined employer contribution on the basis of an actuarially sound funding policy, benefit cuts have not been needed in North Carolina as they have been in most other states.

Valuation input (continued)

Actuarial Assumptions

Membership Data	Asset Data	Benefit Provisions	Assumptions	Funding Methodology
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Actuarial assumptions bridge the gap between the information that we know with certainty as of the valuation date and what may happen in the future. The assumptions used include the following:

- Demographic
 - Retirement
 - Termination
 - Disability
 - Death
- Economic
 - Interest rate – 6.50% per year
 - Salary increase (individual, varies by service and job type)
 - Inflation – 2.50%
 - Real wage growth – 0.75%

The assumptions used for the December 31, 2024, 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.

No assumption changes have been made since the prior valuation.

Valuation input (continued)

Actuarial cost method

Membership Data

Asset Data

Benefit Provisions

Assumptions

Funding Methodology

The Funding Methodology is the payment plan for TSERS and is composed of the Actuarial Cost Method, the Asset Valuation Method and Amortization Method.

- Actuarial Cost Methods allocate costs to the actuarial accrued liability (i.e., the amount of money that should be in the fund) for past service and normal cost (i.e., the cost of benefits accruing during the year) for current service.
 - The Board of Trustees has adopted Entry Age Normal as its actuarial cost method
 - This method develops normal costs that stay level as a percent of payroll

The following “Objectives and Principles for Funding Public Sector Pension Plans” provides information on funding of Public Plans:

https://www.actuary.org/sites/default/files/files/Public-Plans_IB-Funding-Policy_02-18-2014.pdf.

Page 13 of the following :

<https://www.ccactuaries.org/docs/default-source/papers/CCA-Actuarial-Funding-Policies-for-Public-Plans-2-Final-8-2024.pdf> - denotes Entry Age Normal as a model practice for cost methods.

Valuation input (continued)

Asset valuation method

Membership Data	Asset Data	Benefit Provisions	Assumptions	Funding Methodology
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The Funding Methodology is the payment plan for TSERS and is composed of the Actuarial Cost Method, the Asset Valuation Method and Amortization Method.

- Asset Valuation Methods smooth or average the market value returns over time to alleviate contribution volatility that results from market returns.
 - Asset returns in excess of or less than the expected return on market value of assets reflected over a five-year period
 - Assets corridor: not greater than 120% of market value and not less than 80% of market value

Page 22 of the following

<https://www.ccactuaries.org/docs/default-source/papers/CCA-Actuarial-Funding-Policies-for-Public-Plans-2-Final-8-2024.pdf> - denotes the policy being used is a model practice.

Almost all Public Sector Retirement Systems in the United States use asset valuation methods to alleviate contribution volatility. The use of a four- or five-year period is most common.

Valuation input (continued)

Amortization method

Membership Data	Asset Data	Benefit Provisions	Assumptions	Funding Methodology
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The Funding Methodology is the payment plan for TSERS and is composed of the Actuarial Cost Method, the Asset Valuation Method and Amortization Method.

- Amortization Methods determine the payment schedule for unfunded actuarial accrued liability (i.e., the difference between the actuarial accrued liability and actuarial value of assets)
 - Payment level: the payment is determined as a level dollar amount, like a mortgage payment
 - Payment period: a 12-year closed amortization period was adopted for fiscal year ending 2012. A new amortization base is created each year based on the prior years' experience.
- For fiscal years beginning after January 1, 2017, the sum of the "normal contribution" and the "accrued liability contribution" shall not be less than the employee contribution.

Pages 38-39 of the following -

<https://www.ccactuaries.org/docs/default-source/papers/CCA-Actuarial-Funding-Policies-for-Public-Plans-2-Final-8-2024.pdf> suggests the Amortization Method is an acceptable practice, with conditions.

When compared to other Public Sector Retirement Systems in the United States, the Amortization Method results in higher pension debt payments. This is because of:

A shorter period of 12 years compared to a national average of 21*

Level dollar payments instead of payments designed to increase, which is more typical in the Public Sector

* NASRA, April 2022, *Overview of Public Pension Plan Amortization Policies*

Valuation results

Actuarial value of assets

Actuarial Value of Assets	Actuarial Accrued Liability	Net Actuarial Gain or Loss	Funded Ratio	Employer Contributions
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The table below provides the calculation of the Actuarial Value of Assets (AVA) at the valuation date.

Asset data as of	12/31/2024
Beginning of year actuarial value of assets	\$ 88,619,071,210
Beginning of year market value of assets	83,642,776,867
Total contributions	4,378,333,196
Benefit payments, refunds and administrative expenses	<u>(5,663,003,535)</u>
Net cash flow	(1,284,670,339)
Expected investment return	5,395,685,984
Expected end of year market value of assets	87,753,792,512
End of year market value of assets	88,516,600,617
Excess market value over expected market value of assets	762,808,105
80% of 2024 asset gain/(loss)	610,246,484
60% of 2023 asset gain/(loss)	1,660,847,507
40% of 2022 asset gain/(loss)	(5,890,900,357)
20% of 2021 asset gain/(loss)	<u>515,679,238</u>
Total deferred asset gain/(loss)	(3,104,127,128)
Preliminary end of year actuarial value of assets	91,620,727,745
Final end of year actuarial value of assets (not less than 80% and not greater than 120% of market value)	91,620,727,745
Estimated net investment return on actuarial value	4.87%

The actuarial value of assets smooths investment gains/losses, resulting in less volatility in the employer contribution.

The asset valuation recognizes asset returns in excess of or less than the expected return on the market value of assets over a five-year period.

Continued recognition of the 2022 asset loss resulted in a lower-than-expected return on the actuarial value of assets for calendar year 2024 of 4.87% and a recognized actuarial asset loss of \$1.4 billion during 2024.

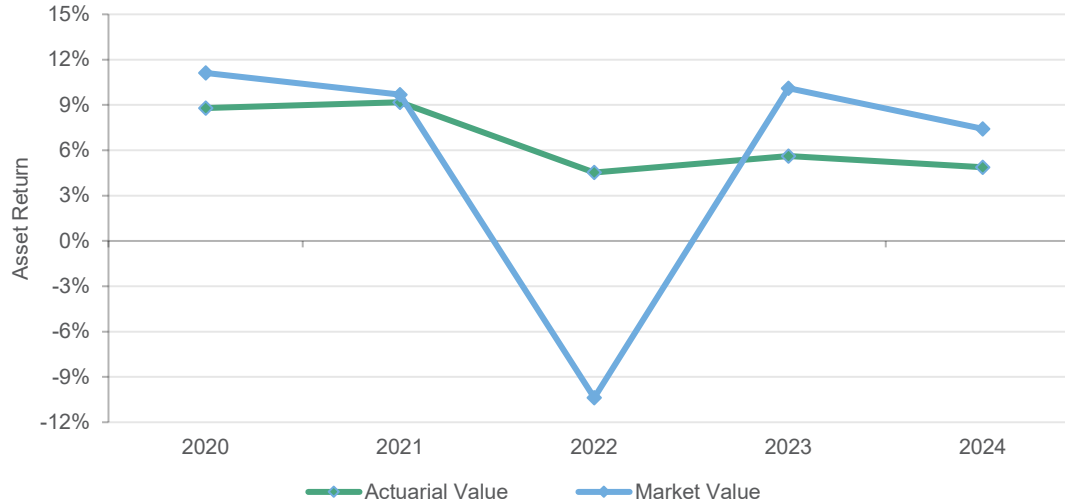
The assets at actuarial value were \$12 billion less than the actuarial accrued liability as of December 31, 2024.

Valuation results (continued)

Five-year return history

Actuarial Value of Assets	Actuarial Accrued Liability	Net Actuarial Gain or Loss	Funded Ratio	Employer Contributions
---------------------------	-----------------------------	----------------------------	--------------	------------------------

The graph below provides a history of the market value and actuarial value of asset returns over the past five years.



The investment return for the market value of assets for calendar year 2024 was 7.42%.

The actuarial value of assets smooths investment gains and losses.

The lower-than-expected market return in 2022, partially offset by higher-than-expected market returns in 2020, 2021, 2023, and 2024, resulted in an actuarial value of asset return for calendar year 2024 of 4.87% and a recognized actuarial asset loss of \$1.4 billion during 2024.

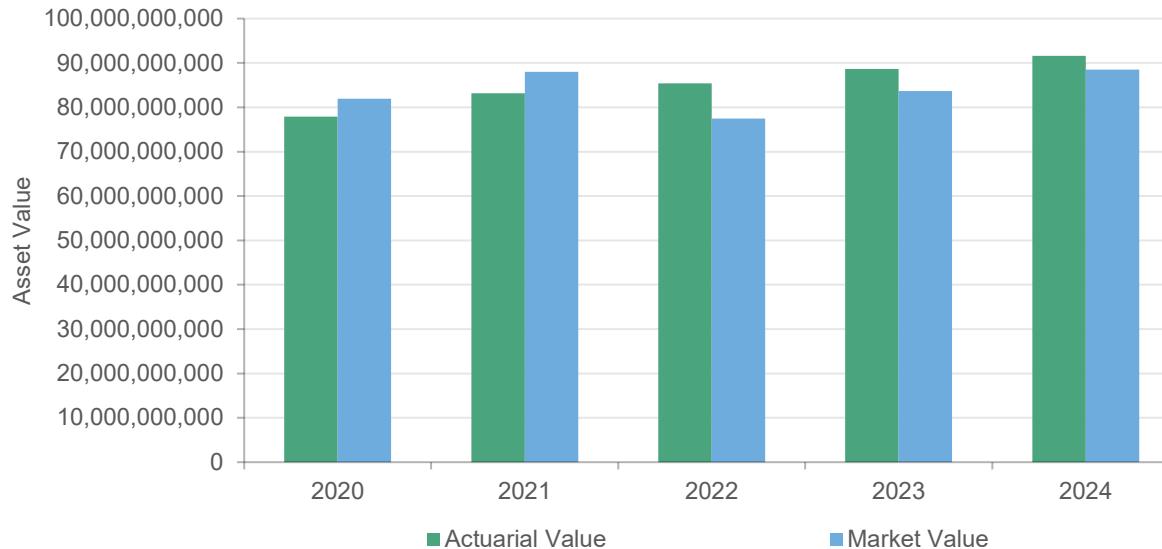
The assets at actuarial value were \$12 billion less than the actuarial accrued liability as of December 31, 2024.

Valuation results (continued)

Comparison to market values

Actuarial Value of Assets	Actuarial Accrued Liability	Net Actuarial Gain or Loss	Funded Ratio	Employer Contributions
---------------------------	-----------------------------	----------------------------	--------------	------------------------

The graph below provides a history of the market value and actuarial value of assets over the past five years.



The market value of assets is lower than the actuarial value of assets, which is used to determine employer contributions.

This indicates that overall, there are unrecognized asset losses to be recognized in future valuations.

In fact, if the investments earn the expected 6.50% per year over the next three years, a loss will be recognized the next two years followed by a gain in the third year.

Valuation results (continued)

Comparison to market returns

Actuarial Value of Assets		Actuarial Accrued Liability	Net Actuarial Gain or Loss	Funded Ratio	Employer Contributions
Calendar Year	Expected Asset Return	Actuarial Value of Asset Return	Market Value of Asset Return	20 Year Average Market Return	
2005	7.25%	8.26%	6.97%	NA	
2006	7.25%	8.94%	11.41%	NA	
2007	7.25%	8.87%	8.38%	NA	
2008	7.25%	2.89%	-19.50%	NA	
2009	7.25%	4.74%	14.84%	NA	
2010	7.25%	5.89%	11.47%	NA	
2011	7.25%	5.15%	2.19%	NA	
2012	7.25%	6.32%	11.82%	NA	
2013	7.25%	7.43%	12.21%	NA	
2014	7.25%	7.19%	6.21%	NA	
2015	7.25%	5.87%	0.36%	6.86%	
2016	7.25%	5.32%	6.22%	6.71%	
2017	7.25%	6.56%	13.49%	6.49%	
2018	7.20%	5.10%	-1.39%	5.60%	
2019	7.00%	6.18%	14.85%	5.82%	
2020	7.00%	8.80%	11.12%	6.25%	
2021	6.50%	9.18%	9.68%	6.84%	
2022	6.50%	4.53%	-10.38%	6.54%	
2023	6.50%	5.63%	10.11%	6.16%	
2024	6.50%	4.87%	7.42%	6.00%	
20-Yr Average	7.05%	6.37%	6.00%	NA	
Range	0.75%	6.29%	34.35%	NA	

The average investment return recognized for purposes of determining the annual change in contribution each year is the actuarial value of assets return.

Currently, the average actuarial return over the past 20 years of 6.37% compares with an average market return of 6.00%.

The range of returns is markedly more volatile in the market value of assets at 34.35% versus 6.29% for actuarial value.

Using the actuarial value of assets versus market value results in much lower employer contribution volatility, while ensuring that the actuarial needs of TSERS are met.

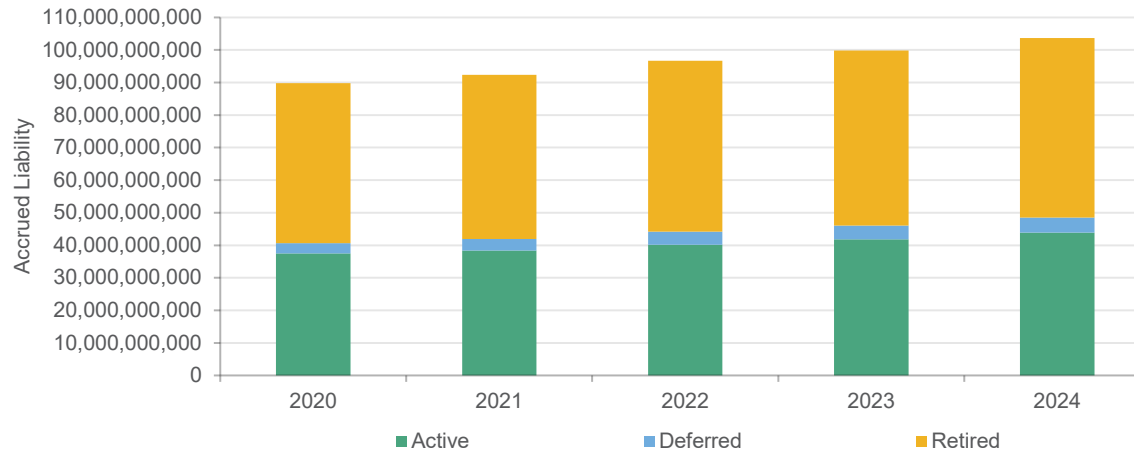
A detailed summary of the Actuarial Value of Assets is provided in Section 3.

Valuation results (continued)

Actuarial accrued liability

Actuarial Value of Assets	Actuarial Accrued Liability	Net Actuarial Gain or Loss	Funded Ratio	Employer Contributions
---------------------------	-----------------------------	----------------------------	--------------	------------------------

The graph below provides a history of the actuarial accrued liability (AAL) over the past five years.



The AAL increased from \$99.8 billion to \$103.6 billion during 2024.

The Retirement System is an open plan, which means that new members enter the plan each year.

In an open plan, liabilities are expected to grow from one year to the next as more benefits accrue and the membership approaches retirement.

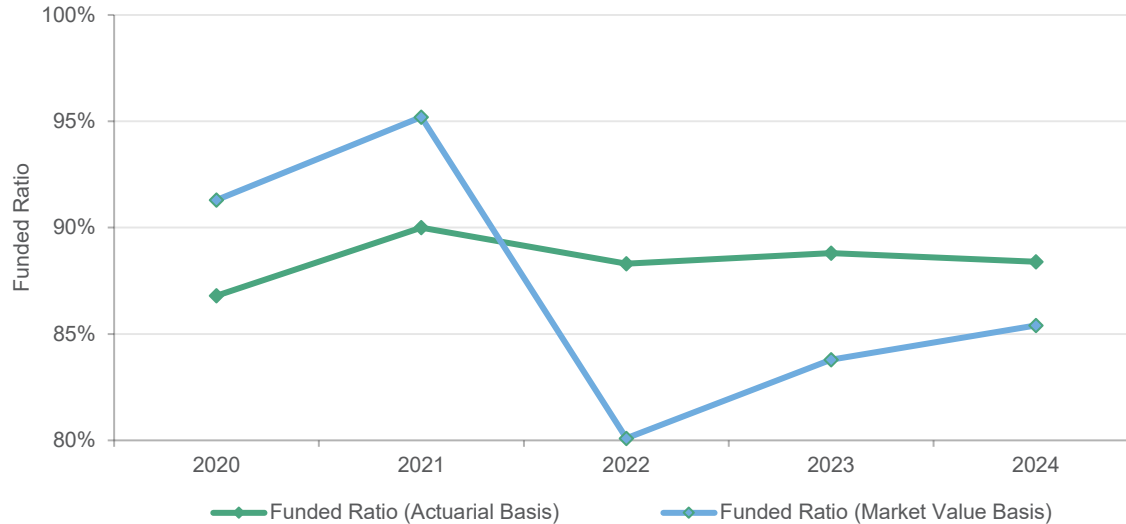
The AAL was \$1.0 billion higher than expected, resulting primarily from higher-than-expected salary increases for continuing active members.

Valuation results (continued)

Funded ratio

Actuarial Value of Assets	Actuarial Accrued Liability	Net Actuarial Gain or Loss	Funded Ratio	Employer Contributions
---------------------------	-----------------------------	----------------------------	--------------	------------------------

The graph below provides a history of the funded ratio on a market and actuarial basis over the past five years.



The ratio of assets to liabilities shows the health of the plan on an accrued basis.

The actuarial value of assets basis is used for computing contributions to alleviate contribution volatility.

The funded ratio on an actuarial basis decreased from 88.8% on December 31, 2023 to 88.4% on December 31, 2024.

Valuation results (continued)

History of rates and appropriations

Actuarial Value of Assets	Actuarial Accrued Liability	Net Actuarial Gain or Loss	Funded Ratio	Employer Contributions
---------------------------	-----------------------------	----------------------------	--------------	------------------------

The table below provides a history of the actuarially determined employer contribution and the corresponding appropriated rate.

Valuation Date	Fiscal Year Ending	Normal Rate	Accrued Liability Rate	Effect of Direct Rate Smoothing	Legislated Benefit Cost*	ULSR Contribution G.S. 143C-4-10(e)	ADEC Prior to Applicable Funding Policy	ADEC under ECRSP	Appropriated Rate
12/31/2024	06/30/2027	6.24%	9.83%	0.00%	N/A	N/A	N/A	N/A	N/A
12/31/2023	06/30/2026	6.28%	9.17%	(0.60%)	N/A	N/A	N/A	N/A	N/A
12/31/2022	06/30/2025	6.27%	9.63%	(1.20%)	0.00%	0.00%	14.70%	16.79%	16.79%
12/31/2021	06/30/2024	6.33%	7.85%	(1.79%)	1.20%	0.00%	13.59%	17.64%	17.64%
12/31/2020	06/30/2023	6.39%	11.13%	(2.39%)	1.24%	0.05%	16.42%	17.38%	17.38%
12/31/2019	06/30/2022	5.16%	10.58%	0.00%	0.64%	0.00%	16.38%	16.38%	16.38%

* The change due to legislation for the contribution for fiscal year ending June 30, 2024 provided for a one-time supplement equal to 4% of the annual retirement allowance payable by November 2023. The change due to legislation for the contribution for fiscal year ending June 30, 2023 provided for a one-time supplement equal to 4% of the annual retirement allowance payable in October 2022. The change due to legislation for the contribution for fiscal year ending June 30, 2022 provided for a one-time supplement equal to 2% of the annual retirement allowance payable in December 2021.

Session Law 2025-89, enacted in 2025, established an employer contribution rate of 17.14% for the fiscal year ending June 30, 2026. It is possible that this law is superseded by an Appropriations Act for the 2025-2027 fiscal biennium.

The ADEC for fiscal year ending 2027 is 16.07% of payroll before applying the ECRSP and 17.49% of payroll after applying the ECRSP, without regard to any legislated changes to the rate.

Valuation results (continued)

Additional disclosures

Benefit Enhancements	Additional Disclosures					Projections
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The table below illustrates the sensitivity of certain valuation results to changes in the discount rate on a market value of assets basis. All numbers rounded to billions*

Discount Rate	4.78%	5.64%	6.50%	7.36%	8.22%
Market Value of Assets	\$ 88.52	\$ 88.52	\$ 88.52	\$ 88.52	\$ 88.52
Actuarial Accrued Liability	<u>127.22</u>	<u>114.42</u>	<u>103.63</u>	<u>94.48</u>	<u>86.67</u>
Unfunded Accrued Liability (UAAL)	\$ 38.70	\$ 25.90	\$ 15.11	\$ 5.97	\$ (1.84)
Funded Ratio	69.6%	77.4%	85.4%	93.7%	102.1%
20-Year Amortization of UAAL	\$ 3.19	\$ 2.32	\$ 1.46	\$ 0.62	N/A
(as % of general state revenue)	7.1%	5.2%	3.2%	1.4%	N/A

* Numbers may not add due to rounding.

Section 6(c) of Session Law 2016-108 requires that the actuarial valuation report provide the valuation results using a 30-year Treasury rate as of December 31 of the year of the valuation as the discount rate.

The 30-year Treasury rate is 4.78% as of December 31, 2024.

The difference between the UAAL measured at 6.50% and 4.78% is \$23.59 billion on December 31, 2024.

Valuation results (continued)

Additional disclosures

Benefit Enhancements	Additional Disclosures	Projections
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The table below provides an estimate of future market value of asset returns based on the study commissioned by the DST Investment Management Division and presented by Callan to the Investment Advisory Committee on February 23, 2022.

Horizon	95% Chance (19 out of every 20 scenarios)	75% Chance (3 out of every 4 scenarios)	50% Chance (1 out of every 2 scenarios)	25% Chance (1 out of every 4 scenarios)	5% Chance (1 out of every 20 scenarios)
10 Years (2032)	0.4%	3.6%	5.7%	7.8%	11.1%
30 Years (2052)	3.3%	5.1%	6.3%	7.6%	9.3%

The table below provides an estimate of future market value of asset returns prepared by Gallagher and included in its Stress Testing and Sensitivity Analysis Report, which was presented to the TSERS Board of Trustees on July 25, 2024

Horizon	95% Chance (19 out of every 20 scenarios)	75% Chance (3 out of every 4 scenarios)	50% Chance (1 out of every 2 scenarios)	25% Chance (1 out of every 4 scenarios)	5% Chance (1 out of every 20 scenarios)
10 Years (2033)	2.3%	5.3%	7.1%	8.7%	11.1%
30 Years (2053)	4.0%	5.7%	6.8%	7.8%	9.2%

Callan performed analysis for DST's Investment Management Division in 2022 and Gallagher analyzed expected future market value of asset returns in its Stress Testing and Sensitivity Analysis Report, which was presented to the TSERS Board of Trustees on July 25, 2024.

In both studies, the lower bound of 4.78% returns is between 75% to 95% likely to be achieved on average over the next 30 years, while the upper bound of 8.22% is more than 5% likely to be achieved on average over the next 30 years. For additional information regarding Gallagher's underlying Capital Market Assumptions and related assumptions, please refer to the TSERS Stress Testing and Sensitivity Analysis Report dated July 2024.

Appendix II

Fiscal Year Ending

Valuation input

Historical market value and returns

Membership Data

Asset Data

Benefit Provisions

Assumptions

Funding Methodology

Market Value of Assets and Asset Return

		Market Value of Assets	Asset Return
2020	\$	81,969,425,086	11.12%
2021		87,966,352,518	9.68%
2022		77,445,236,928	-10.38%
2023		83,642,776,867	10.11%
2024		88,516,600,617	7.42%

Valuation results

Five-year return history

Actuarial Value of Assets	Actuarial Accrued Liability	Net Actuarial Gain or Loss	Funded Ratio	Employer Contributions
---------------------------	-----------------------------	----------------------------	--------------	------------------------

Asset Returns

	Actuarial Value	Market Value
2020	8.80%	11.12%
2021	9.18%	9.68%
2022	4.53%	-10.38%
2023	5.63%	10.11%
2024	4.87%	7.42%

Valuation results (continued)

Actuarial value of assets / actuarial accrued liability

Actuarial Value of Assets	Actuarial Accrued Liability	Net Actuarial Gain or Loss	Funded Ratio	Employer Contributions
---------------------------	-----------------------------	----------------------------	--------------	------------------------

Actuarial Accrued Liability and Actuarial Value of Assets

		Actuarial Accrued Liability		Actuarial Value of Assets
2020	\$	89,809,074,074	\$	77,922,070,039
2021		92,356,225,906		83,139,458,098
2022		96,675,255,859		85,406,884,383
2023		99,809,701,710		88,619,071,210
2024		103,626,727,675		91,620,727,745

Valuation results (continued)

Rates prior to application of ECRSP

Actuarial Value of Assets	Actuarial Accrued Liability	Net Actuarial Gain or Loss	Funded Ratio	Employer Contributions
---------------------------	-----------------------------	----------------------------	--------------	------------------------

Actuarially Determined Employer Contribution Rates

Fiscal Year Ending	Normal Rate	Accrued Liability Rate	Total Rate
2023	6.39%	10.03%	16.42%
2024	6.33%	7.26%	13.59%
2025	6.27%	8.43%	14.70%
2026*	6.28%	8.57%	14.85%
2027*	6.24%	9.83%	16.07%

* Subject to the impact of future legislative changes during that fiscal year

Valuation results (continued)

Projected contribution rates

Benefit Enhancements

Additional Disclosures

Projections

Projected Actuarially Determined Employer Contribution Rates

	Alternate #1 (0.0% 2025 Return)	Baseline Projection	Alternate #2 (13.0% 2025 Return)
2027	16.07%	16.07%	16.07%
2028	17.70%	16.96%	16.21%
2029	19.85%	18.20%	16.54%
2030	18.25%	15.76%	13.28%
2031	17.50%	14.25%	11.00%
2032	16.46%	12.53%	8.59%
2033	15.15%	11.28%	7.42%
2034	14.45%	10.65%	6.86%
2035	13.61%	9.89%	6.17%
2036	14.40%	10.76%	7.11%
2037	12.36%	8.79%	6.00%
2038	11.74%	8.25%	6.00%
2039	10.69%	7.28%	6.00%
2040	9.25%	6.52%	6.00%
2041	7.48%	6.00%	6.00%
2042	7.23%	6.01%	6.00%

Valuation results (continued)

Projected funded ratio

Benefit Enhancements

Additional Disclosures

Projections

Projected Funded Ratio

	Alternate #1 (0.0% 2025 Return)	Baseline Projection	Alternate #2 (13.0% 2025 Return)
2024	88.4%	88.4%	88.4%
2025	87.3%	88.4%	89.4%
2026	85.5%	87.9%	90.4%
2027	86.6%	90.2%	93.9%
2028	87.4%	92.1%	96.9%
2029	88.2%	93.8%	99.4%
2030	89.9%	95.2%	100.5%
2031	91.4%	96.3%	101.2%
2032	92.8%	97.2%	101.6%
2033	94.1%	98.0%	101.9%
2034	95.2%	98.7%	102.1%
2035	96.4%	99.4%	102.3%
2036	97.6%	100.0%	102.5%
2037	98.5%	100.4%	102.6%
2038	99.4%	100.7%	102.7%
2039	100.0%	100.9%	102.7%

Valuation input

Actives

Membership Data

Asset Data

Benefit Provisions

Assumptions

Funding Methodology

Active Members

	Active Member Count	Reported Compensation
2020	302,771	\$ 15,287,665,011
2021	300,310	15,312,224,584
2022	297,802	16,141,902,861
2023	299,037	16,889,491,503
2024	298,000	17,701,957,404

Valuation input (continued)

Retirees and survivors receiving benefits

Membership Data

Asset Data

Benefit Provisions

Assumptions

Funding Methodology

Retired Members and Survivors of Deceased Members

	Retired and Survivors of Deceased Member Count	Retirement Allowance
2020	233,751	\$ 4,927,686,580
2021	238,652	5,044,817,043
2022	246,374	5,258,568,393
2023	252,036	5,412,198,884
2024	257,645	5,572,291,750

Valuation results

Comparison to market values

Actuarial Value of Assets	Actuarial Accrued Liability	Net Actuarial Gain or Loss	Funded Ratio	Employer Contributions
---------------------------	-----------------------------	----------------------------	--------------	------------------------

Actuarial Value and Market Value of Assets

		Actuarial Value of Assets		Market Value of Assets
2020	\$	77,922,070,039	\$	81,969,425,086
2021		83,139,458,098		87,966,352,518
2022		85,406,884,383		77,445,236,928
2023		88,619,071,210		83,642,776,867
2024		91,620,727,745		88,516,600,617

Valuation results (continued)

Actuarial accrued liability

Actuarial Value of Assets	Actuarial Accrued Liability	Net Actuarial Gain or Loss	Funded Ratio	Employer Contributions
---------------------------	-----------------------------	----------------------------	--------------	------------------------

Actuarial Accrued Liability

	Liability for Active Members	Liability for Deferred Members	Liability for Retired Members	Total Liability
2020	\$ 37,450,731,186	\$ 3,184,248,746	\$ 49,174,094,142	\$ 89,809,074,074
2021	38,402,155,212	3,505,355,079	50,448,715,615	92,356,225,906
2022	40,197,454,923	3,957,962,360	52,519,838,576	96,675,255,859
2023	41,802,890,911	4,293,041,123	53,713,769,676	99,809,701,710
2024	43,906,212,823	4,582,514,260	55,138,000,592	103,626,727,675

Valuation results (continued)

Funded ratio

Actuarial Value of Assets	Actuarial Accrued Liability	Net Actuarial Gain or Loss	Funded Ratio	Employer Contributions
---------------------------	-----------------------------	----------------------------	--------------	------------------------

Funded Ratios

	Funded Ratio (Actuarial Basis)	Funded Ratio (Market Value Basis)
2020	86.8%	91.3%
2021	90.0%	95.2%
2022	88.3%	80.1%
2023	88.8%	83.8%
2024	88.4%	85.4%

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Teachers' and State Employees' Retirement System of North Carolina

Report on the Eighty-Second Actuarial Valuation
Prepared as of December 31, 2024

October 2025



Gallagher

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October 22, 2025

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 eighty-second annual valuation of the Teachers' and State Employees' Retirement System of North Carolina (referred to as "TSERS") prepared as of December 31, 2024. The report has been prepared in accordance with North Carolina General Statute 135-6(o). Information contained in our report for plan years from December 31, 2017, to December 31, 2020, is based upon valuations performed by the prior actuarial firm.

The primary purpose of the valuation report is to determine the required member and employer contribution rates, to describe the current financial condition of TSERS, and to analyze changes in such condition. Use of this report for any other purposes or by anyone other than North Carolina Retirement Systems Division (RSD) or 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 Gallagher to review any statement you wish to make on the results contained in this report. Gallagher will not accept any liability for any such statement made without prior review.

The valuation is based upon membership data and financial information as furnished by RSD and the Financial Operations Division and as summarized in this report. Although we reviewed for reasonableness and consistency with the prior valuation, these elements have not been audited by Gallagher and we cannot certify as to the accuracy and completeness of the data supplied. 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 Actuarial Standard of Practice ("ASOP") 27. In our professional judgement, the combined effect of the assumptions is expected to have no significant bias. We have 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, 2024 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 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, salary increase, 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.



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ASOP 27 asks 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 Gallagher's Financial Risk Management ("FRM") practice. A spreadsheet tool created by the FRM team converts averages, standard deviations, and correlations from Gallagher'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, are 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 may be 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, Gallagher 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. Gallagher 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. Gallagher 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



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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, Gallagher 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 for Actuaries Issuing Statements of Actuarial Opinion in the United States 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,

Gallagher Benefit Services, Inc. (hereinafter "Gallagher")

Michael A. Ribble, FSA, EA, MAAA, FCA
Principal, Retirement Actuary

Elizabeth A. Wiley, FSA, EA, MAAA, FCA
Director, Retirement Actuary

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Executive Summary

Overview

The North Carolina Retirement Systems Division (RSD) was established in 1941 to provide retirement benefits for public servants in the State of North Carolina. Today, under the management of the Department of State Treasurer, RSD administers seven public pension plans (defined benefit plans), three supplemental retirement plans (voluntary defined contributions plans), a health trust fund, a disability income plan, death benefit funds and a number of other benefit programs. As of December 31, 2024, the RSD defined benefit plans cover over one million current and prior public servants of the state of North Carolina. During the fiscal year ending June 30, 2025, RSD paid over \$7.9 billion in pensions to more than 370,000 retirees and as of June 30, 2025, RSD's defined benefit plan assets were valued at over \$132 billion.

Under the supplemental retirement plans, the amount of contributions in any given year is defined by law. The amount of benefits derived is dependent on the investment returns the individual achieves. Conversely, under the pension plans, the amount of the benefit paid to a member upon retirement, termination, death, or disability is defined by law. The amount of contributions needed to fund these benefits cannot be known with certainty. In North Carolina, like other states, these contributions are paid during a public servant's career so that upon retirement, termination, death, or disability, there are funds available to pay these benefits. These amounts are determined through an actuarial valuation. Actuarial valuations are performed for each of the pension plans administered by RSD and the results are contained in actuarial valuation reports like this.

In 1941, the Teachers' and State Employees' Retirement System (referred to as "TSERS") was established. TSERS provides benefits to all full-time teachers and state employees in all public-school systems, universities, departments, institutions, and agencies of the state. With over \$88 billion in assets and over 790,000 members as of December 31, 2024, it is the largest pension plan within the NC Retirement Systems. This actuarial valuation report is our annual analysis of the financial health of TSERS. This report, prepared as of December 31, 2024, presents the results of the eighty-second annual valuation of TSERS.

Purpose

An actuarial valuation is performed on TSERS annually as of the end of the calendar year. The actuary determines the amount of contributions to be made to TSERS during each member's career that, when combined with investment return, will be sufficient to pay for retirement benefits.

In addition, the annual actuarial valuation is performed to:

- Determine the progress on funding TSERS,
- Explore why the results of the current valuation differ from the results of the valuation of the previous year, and
- Satisfy regulatory and accounting requirements.

A detailed summary of the valuation process and a glossary of actuarial terms are provided in the supplementary document, "State of North Carolina Retirement Systems Actuarial Valuation Report Process and Actuarial Terms Glossary" dated October 2025.

Executive Summary (continued)

Actuary's Comments and Other Observations

Membership

As with any estimate, the actuary collects information that we know now. Under the actuarial valuation process, current information about TSERS members is collected annually by the Retirement Systems Division staff at the direction of the actuary. Membership data will assist the actuary in estimating benefits that could be paid in the future. Information about benefit provisions and assets held in the trust as of the valuation date is also collected.

The member information the actuary collects includes data elements such as current service, salary and benefit group identifier for members that have not separated service, and actual benefit amounts and form of payment for members that have separated service. Data elements such as gender and date of birth are used to determine when a benefit might be paid and for how long.

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

Number as of	12/31/2024	12/31/2023
Active members	298,000	299,037
Members currently receiving Disability Income Plan benefits	3,507	4,031
Terminated vested members and survivors of deceased members entitled to benefits but not yet receiving benefits	66,591	64,936
Terminated non-vested members and survivors of deceased members entitled to a refund of contributions	170,774	161,163
Retired members and survivors of deceased members currently receiving benefits	<u>257,645</u>	<u>252,036</u>
Total	796,517	781,203

The number of active members decreased 0.3% from the previous valuation date. The number of retired members and survivors of deceased members currently receiving benefits increased by 2.2% from the previous valuation date. The increase in retiree population is consistent with expectations.

Reported compensation for active members for the year ending December 31, 2024 was \$17.7 billion compared to \$16.9 billion in the prior year, an increase of 4.8%. Covered payroll was expected to increase annually by 3.25%. Payroll that is increasing faster than we assume results in more benefits accruing than we anticipate, but also more contributions supporting the system. Although the pay increases will ultimately lead to increases in the dollar amounts of contributions, the immediate effect on the December 31, 2024 actuarial valuation is a reduction in the funded ratio and an increase in required employer contribution rates compared to those anticipated in prior projections.

The number of retired members and survivors of deceased members and the benefits paid to these members have been increasing steadily, as expected based on plan assumptions.

A detailed summary of membership data can be found in Section 2 of this report.

Executive Summary (continued)

Assets

TSERS assets are held in trust and are invested for the exclusive benefit of plan members. The Market Value of Assets is \$88.5 billion as of December 31, 2024 and was \$83.6 billion as of December 31, 2023. The estimated net investment return for the market value of assets for calendar year 2024 was 7.42%.

Market value returns during 2024 were higher than the 6.50% assumed rate of return. All else being equal, this resulted in lower required contributions and a higher funded ratio than anticipated in the December 31, 2023 baseline projections presented in the December 31, 2023 actuarial report.

The actuarial value of assets smooths investment gains and losses. The actuarial value of assets is \$91.6 billion as of December 31, 2024 and was \$88.6 billion as of December 31, 2023. The market value of assets is lower than the actuarial value of assets, which is used to determine employer contributions. This indicates that overall, there are unrecognized asset losses to be recognized in future valuations.

The lower-than-expected market return in 2022, partially offset by higher-than-expected market returns in 2020, 2021, 2023, and 2024, resulted in an actuarial value of asset return for calendar year 2024 of 4.87% and a recognized actuarial asset loss of \$1.4 billion during 2024. The assets at actuarial value were \$12.0 billion less than the actuarial accrued liability as of December 31, 2024.

Based on historical market returns, the current asset allocation, the current investment policy, and the expectation of future asset returns, as reviewed in the recent experience study, the 6.50% discount rate used in this valuation is reasonable and appropriate.

A detailed summary of asset information can be found in Section 3 of this report.

Benefit Provisions

Benefit provisions are described in North Carolina General Statutes, Chapter 135.

There were no significant changes in benefit provisions from the previous valuation.

Many public sector retirement systems in the United States have undergone pension reform where the benefits of members (active or future members) have been reduced. Because of the well-funded status of TSERS due to the legislature contributing at least the actuarially determined employer contribution on the basis of an actuarially sound funding policy, benefit cuts have not been needed in North Carolina as they have been in most other states. However, if North Carolina's investment policy shifts substantively, the system should review likely impacts of the shift and consider corresponding changes to actuarial assumptions, funding policy and/or benefit levels.

Cost-of-living increase recommendations to the General Assembly are periodically considered by the Board of Trustees to the extent that certain financial conditions are met. Specifically, benefit allowance increases are generally considered when the trust experiences sufficient investment gains to cover the additional actuarial accrued liabilities created by the cost-of-living adjustment. In addition to employers consistently contributing the actuary's recommended contribution, this benefit increase policy has helped keep costs manageable when compared to other public sector retirement systems in the United States. Post-retirement increases help to reduce the risk that the benefit will be eroded by inflation.

A detailed summary of the benefit provisions can be found in Appendix B of this report.

Executive Summary (continued)

Actuarial Assumptions

Actuarial assumptions bridge the gap between the information that we know with certainty as of the valuation date (age, gender, service, pay, and benefits of the members) and what may happen in the future. The actuarial assumptions of TSERS are reviewed at least every five years. Based on this review, the actuary will make recommendations on the demographic and economic assumptions.

Demographic assumptions describe future events that relate to people such as retirement rates, termination rates, disability rates, and mortality rates. Economic assumptions describe future events that relate to the assets of TSERS such as the interest rate, salary increases, the real return, and payroll growth.

The assumptions used for the December 31, 2024 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. No assumption changes have been made since the prior valuation.

A detailed summary of actuarial assumptions can be found in Appendix C of this report.

Funding Methodology

When compared to other public sector retirement systems in the United States, the funding policy for TSERS is quite aggressive in that the policy pays down the unfunded accrued liability over a much shorter period of time (12 years) compared to the longer funding periods of most public sector retirement systems. The shorter period results in higher contributions during the amortization period and more benefit security.

A detailed summary of actuarial methods can be found in Appendix C of this report. The Employer Contribution Rate Stabilization Policy (ECRSP) can be found in Appendix F.

Liabilities

The Actuarial Accrued Liability (AAL) increased from \$99.8 billion to \$103.6 billion during 2024. The Retirement System is an open plan, which means that new members enter the plan each year. In an open plan, liabilities are expected to grow from one year to the next as more benefits accrue and the membership approaches retirement. The AAL was \$1.0 billion higher than expected, resulting primarily from higher-than-expected salary increases for continuing active members.

A detailed summary of the actuarial accrued liability can be found in Section 4 of this report.

Funded Ratio

The funded ratio is a measure of the progress that has been made in funding the plan as of the valuation date. It is the ratio of how much money TSERS actually has in the fund to the amount TSERS should have in the fund.

The ratio of assets to liabilities shows the health of the plan on an accrued basis. The funded ratio on an actuarial basis decreased from 88.8% at December 31, 2023 to 88.4% at December 31, 2024.

Unfunded Accrued Liability

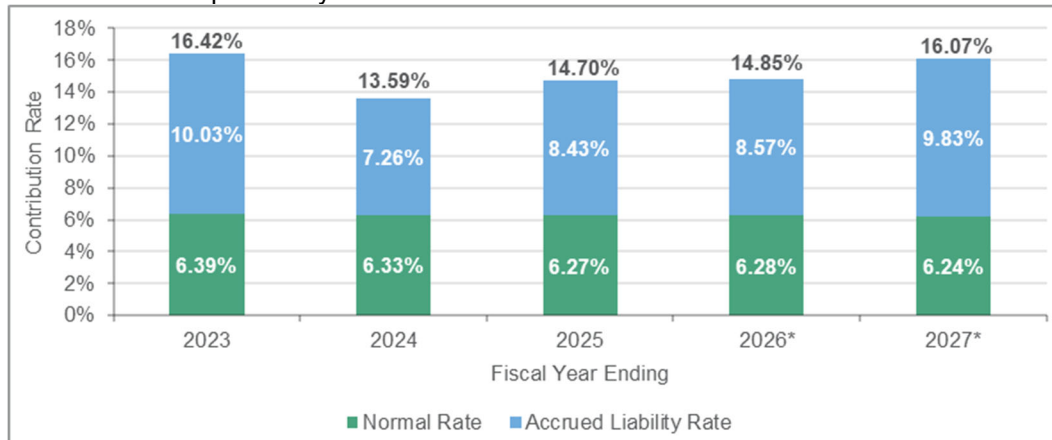
The unfunded accrued liability (UAAL) is the portion of actuarial accrued liability that is not covered by the assets of the Retirement System. The actuarial value of assets basis is used for computing contributions to alleviate contribution volatility. The difference in the actuarial accrued liability and the actuarial value of assets is the amount of unfunded actuarial accrued liability to be paid off over a 12-year period.

The UAAL increased from \$11.2 billion at December 31, 2023 to \$12.0 billion at December 31, 2024. A detailed reconciliation of the UAAL can be found in Section 4 of this report.

Executive Summary (continued)

Actuarially Determined Employer Contribution Rates Before Applying Funding Policy Minimums

The graph below provides a history of actuarially determined employer contribution rates prior to application of the ECRSP over the past five years.



* Subject to the impact of future legislative changes effective during that fiscal year

The actuarially determined employer contribution rate prior to application of the ECRSP is the amount needed to pay for the cost of the benefits accruing and to pay off the unfunded actuarial accrued liability over a 12-year period, offset for the 6% of pay contribution the members make. The 12-year period is a relatively short period for public sector retirement systems in the United States, with the funding period for most of these Systems much longer. The shorter period results in higher contributions and more benefit security.

A detailed summary of the actuarially determined employer contribution rates is provided in Section 5 of this report.

Projections

Projections of contribution requirements and funded status into the future can be helpful planning tools for stakeholders. The projections of the actuarial valuation are known as deterministic projections. Deterministic projections are based on one scenario in the future. The baseline deterministic projection is based on December 31, 2024 valuation results and assumptions.

A detailed summary of the deterministic projections can be found in Section 6 of this report.

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. Section 6 of this report demonstrates the sensitivity of future projected results to asset returns deviating from expected returns.
- Longevity and Other Demographic Risks – the potential that mortality or other demographic experience will be different than expected.

Executive Summary (continued)

- 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. Table D-1 of this report demonstrates the sensitivity of valuation results to differing discount rates.
- 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.

Key Takeaways

The actuarial valuation is performed each year to replace the estimates the actuary assumed for the prior valuation with the actual events that happened. This past year, as expected, some of the assumptions used in the prior valuation were not realized. Key results of the December 31, 2024 valuation as compared to the December 31, 2023 valuation were:

- Market value returns of 7.42% during calendar year 2024 compared to 6.50% assumed
- Liabilities \$1.0 billion higher than anticipated as of December 31, 2024, primarily from higher-than-expected salary increases for continuing active members
- Completion of direct-rate smoothing of the change in the employer contribution rate due to the changes in assumptions and methods over a 5-year period beginning with the December 31, 2020 valuation

When compared to the December 31, 2023 projections, the above resulted in:

- A lower funded ratio as of December 31, 2024 (88.4% in the valuation compared to 89.0% in the baseline projection)
- A higher actuarially determined employer contribution rate prior to applying the Employer Contribution Rate Stabilization Policy (ECRSP) for fiscal year ending June 30, 2027 (16.07% in the valuation compared to 15.92% in the prior year's baseline projection)

TSERS is well funded compared to its peers. This is due to:

- Stakeholders working together to keep TSERS well-funded since inception
- A history of appropriating and contributing a minimum of the recommended contribution requirements
- Implementation of the ECRSP which provides additional funding of the System
- Assumptions that in aggregate are more conservative than peers
- A funding policy that aggressively pays down the unfunded liability over a 12-year period
- An ad hoc cost-of-living adjustment, which typically only provides benefit increases when certain financial conditions are met, that supports the health of the system
- Modest changes in benefits when compared to peers

As has been done over the past 80 years, continued focus on these measures will be needed to maintain the solid status of TSERS well into the future.

This report, prepared as of December 31, 2024, presents the results of the annual valuation of the system. The principal results of the valuation and a comparison with the preceding year's results are summarized in the following table.

Section 1: Principal Results

This report, prepared as of December 31, 2024, presents the results of the eighty-second annual valuation of the system. 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	12/31/2024	12/31/2023
Active Members		
Number	298,000	299,037
Reported Compensation	\$ 17,701,957,404	\$16,889,491,503
Valuation Compensation*	\$ 19,197,631,253	\$18,382,251,586
Retired Members and Survivors of Deceased Members Currently Receiving Benefits		
Number	257,645	252,036
Annual Allowances	\$ 5,572,291,750	\$ 5,412,198,884
Assets		
Actuarial Value (AVA)	\$ 91,620,727,745	\$88,619,071,210
Market Value (MVA)	\$ 88,516,600,617	\$83,642,776,867
Actuarial Accrued Liability (AAL)	\$ 103,626,727,675	\$99,809,701,710
Unfunded Accrued Liability (AAL-AVA)	\$ 12,005,999,930	\$11,190,630,500
Funded Ratio (AVA/AAL)**	88.4%	88.8%
Results for Fiscal Year Ending	6/30/2027	6/30/2026***
Actuarially Determined Employer Contribution (ADEC), as a percentage of payroll		
Normal Cost	6.24%	6.28%
Accrued Liability	<u>9.83%</u>	<u>9.17%</u>
Total Preliminary ADEC	16.07%	15.45%
Total Based on Direct Rate Smoothing	16.07%	14.85%
Impact of Benefit Changes	<u>Not Final</u>	<u>Not Final</u>
ADEC Prior to Application of Funding Policy	Not Final	Not Final
Board of Trustees Recommended Contribution under the Employer Contribution Rate		
Stabilization Policy (ECRSP)	17.49%	17.14%
Required Employer Contribution NCGS 135-8(d)	17.49%	17.14%
Appropriations Act for Fiscal Year Ending	6/30/2027	6/30/2026***
Employer Contribution Rate as a percentage of payroll		
Normal Cost	6.24%	6.28%
Accrued Liability	<u>N/A</u>	<u>N/A</u>
Total	N/A	N/A

* Reported compensation annualized for new hires and projected for valuation purposes.

** The Funded Ratio on a Market Value of Assets basis is 85.4% at December 31, 2024.

*** Session Law 2025-89, enacted in 2025, established an employer contribution rate of 17.14% for the fiscal year ending June 30, 2026. It is possible that this law is superseded by an Appropriations Act for the 2025-2027 fiscal biennium.

Section 2: Membership Data

The Retirement Systems Division provided membership data as of the valuation date for each member of TSERS. The membership data assists the actuary in estimating benefits that could be paid in the future. The tables below provide a summary of the membership data used in this valuation. Detailed tabulations of data are provided in Appendix A.

Table 2: Summary of the Membership Data

Number as of	12/31/2024	12/31/2023
Active members	298,000	299,037
Members currently receiving Disability Income Plan benefits	3,507	4,031
Terminated vested members and survivors of deceased members entitled to benefits but not yet receiving benefits	66,591	64,936
Terminated non-vested members and survivors of deceased members entitled to a refund of contributions	170,774	161,163
Retired members and survivors of deceased members currently receiving benefits	<u>257,645</u>	<u>252,036</u>
Total	796,517	781,203

Table 3: Active Member Data

	Member Count	Average Age	Average Service	Reported Compensation
Teachers, Librarians and Counselors	147,836	44.22	10.78	\$ 8,300,104,550
Other Education	49,289	49.33	11.13	2,706,782,845
General Employees	95,455	47.07	10.76	6,288,666,040
Law Enforcement Officers	<u>5,420</u>	<u>39.52</u>	<u>10.81</u>	<u>406,403,969</u>
Total	298,000	45.89	10.83	\$ 17,701,957,404

The table above includes members not in receipt of benefits who were active at the end of 2024.

**Table 4: Disabled Member Data
(Receiving Benefit from the Disability Income Plan of North Carolina)**

	Member Count	Average Age	Average Service	Valuation Compensation
Teachers, Librarians and Counselors	1,268	55.22	14.02	\$ 52,185,445
Other Education	508	57.53	13.42	14,678,565
General Employees	1,710	56.53	13.23	67,550,953
Law Enforcement Officers	<u>21</u>	<u>48.01</u>	<u>14.46</u>	<u>1,175,429</u>
Total	3,507	56.15	13.55	\$ 135,590,392

The table above includes members not in receipt of benefits who did not have reported compensation in 2024 and who were reported as disabled in the current or prior valuations and not subsequently reported as returned to work.

Section 2: Membership Data (continued)

Table 5: Terminated Vested Member Data

	Member Count	Average Age	Average Service	Annual Deferred Retirement Allowances
Teachers, Librarians and Counselors	32,393	46.50	9.39	\$ 264,235,886
Other Education	7,322	51.27	10.24	67,582,990
General Employees	26,133	52.19	9.20	212,897,836
Law Enforcement Officers	743	45.05	9.96	7,314,044
Total	66,591	49.24	9.42	\$ 552,030,756

The table above includes vested members not in receipt of benefits who were not active at the end of 2024 and who were not valued as disabled members.

Table 6: Terminated Non-Vested Member Data

	Member Count	Average Age	Average Service	Accumulated Contributions
Teachers, Librarians and Counselors	71,398	41.44	1.84	\$ 388,361,556
Other Education	21,197	45.71	1.53	73,670,418
General Employees	76,850	46.15	1.57	427,188,967
Law Enforcement Officers	1,329	40.15	2.13	9,937,081
Total	170,774	44.08	1.68	\$ 899,158,022

The table above includes non-vested members not in receipt of benefits who were not active at the end of 2024 and who were not valued as disabled members.

Section 2: Membership Data (continued)

Table 7: Data for Members Currently Receiving Benefits

	Member Count	Average Age	Annual Retirement Allowances
<u>Retired Members (Healthy at Retirement)</u>			
Teachers and Other Education	131,691	71.95	\$ 3,144,555,374
General Employees	89,935	73.17	1,770,896,926
Law Enforcement Officers	4,052	65.42	135,720,868
Total	225,678	72.32	\$ 5,051,173,168
<u>Retired Members (Disabled at Retirement)*</u>			
Teachers and Other Education	5,075	72.67	\$ 95,335,353
General Employees	7,877	72.45	126,981,716
Law Enforcement Officers	152	70.32	3,758,250
Total	13,104	72.51	\$ 226,075,319
<u>Survivors of Deceased Members</u>			
Teachers and Other Education	6,624	73.90	\$ 123,717,614
General Employees	11,663	74.03	158,281,809
Law Enforcement Officers	576	73.60	13,043,840
Total	18,863	73.97	\$ 295,043,263
Grand Total	257,645	72.45	\$ 5,572,291,750

* Includes retired members reported as disabled in a prior valuation and not subsequently reported as returned to work.

Section 3: Asset Data

Assets are held in trust and are invested for the exclusive benefit of TSERS members. The tables below provide the details of the Market Value of Assets for the current and prior years' valuations.

Table 8: Market Value of Assets

Asset Data as of	12/31/2024	12/31/2023
Beginning of Year Market Value of Assets	\$ 83,642,776,867	\$ 77,445,236,928
Employer Contributions	3,245,895,693	3,104,597,510
Employee Contributions	1,132,437,503	1,078,160,026
Benefit Payments Other Than Refunds	(5,520,083,224)	(5,584,204,848)
Refunds	(126,234,924)	(136,745,938)
Administrative Expenses	(16,685,387)	(16,552,601)
Investment Income	6,158,494,089	7,752,285,790
Net Increase/(Decrease)	4,873,823,750	6,197,539,939
End of Year Market Value of Assets	\$ 88,516,600,617	\$ 83,642,776,867
Estimated Net Investment Return on Market Value	7.42%	10.11%

Table 9: Allocation of Investments by Category of the Market Value of Assets

Asset Data as of	12/31/2024	12/31/2023
Allocation by Dollar Amount		
Public Equity	\$ 36,254,013,403	\$ 31,390,836,967
Fixed Income (LTIF)	21,343,612,954	20,971,439,248
Cash and Receivables	8,846,603,151	9,705,361,729
Other*	22,072,371,109	21,575,138,923
Total Market Value of Assets	\$ 88,516,600,617	\$ 83,642,776,867
Allocation by Percentage of Asset Value		
Public Equity	41.0%	37.5%
Fixed Income (LTIF)	24.1%	25.1%
Cash and Receivables	10.0%	11.6%
Other*	24.9%	25.8%
Total Market Value of Assets	100.0%	100.0%

* Real Estate, Alternatives, Inflation and Credit

Section 3: Asset Data (continued)

In order to reduce the volatility that investment gains and losses can have on the required contributions and funded status of TSERS, the Board adopted an asset valuation method to determine the Actuarial Value of Assets used for funding purposes. The table below provides the calculation of the Actuarial Value of Assets at the valuation date.

Table 10: Actuarial Value of Assets

Asset Data as of	12/31/2024
Beginning of Year Actuarial Value of Assets	\$ 88,619,071,210
Beginning of Year Market Value of Assets	\$ 83,642,776,867
Contributions	4,378,333,196
Benefit Payments	(5,663,003,535)
Net Cash Flow	(1,284,670,339)
Expected Investment Return	5,395,685,984
Expected End of Year Market Value of Assets	\$ 87,753,792,512
End of Year Market Value of Assets	\$ 88,516,600,617
Excess of Market Value over Expected Market Value of Assets	762,808,105
80% of 2024 Asset Gain/(Loss)	610,246,484
60% of 2023 Asset Gain/(Loss)	1,660,847,507
40% of 2022 Asset Gain/(Loss)	(5,890,900,357)
20% of 2021 Asset Gain/(Loss)	515,679,238
Total Deferred Asset Gain/(Loss)	(3,104,127,128)
Preliminary End of Year Actuarial Value of Assets	\$ 91,620,727,745
Final End of Year Actuarial Value of Assets (not less than 80% and not greater than 120% of Market Value)	\$ 91,620,727,745
Estimated Net Investment Return on Actuarial Value	4.87%

Commentary The actuarial value of assets smooths investment gains/losses, resulting in less volatility in the employer contribution. The asset valuation recognizes asset returns in excess of or less than the expected return on the market value of assets over a five-year period.

Continued recognition of the 2022 asset loss resulted in a lower-than-expected return on the actuarial value of assets for calendar year 2024 of 4.87% and a recognized actuarial asset loss of \$1.4 billion during 2024. The assets at actuarial value were \$12.0 billion less than the actuarial accrued liability as of December 31, 2024.

Section 3: Asset Data (continued)

The valuation assumed that the funds will earn a 6.50% asset return in all future years. The table below provides a history of the Actuarial Value and Market Value of Asset returns.

Table 11: Historical Asset Returns

Calendar Year	Expected Asset Return	Actuarial Value of Asset Return	Market Value of Asset Return	20 Year Average Market Return
1996	7.50%	10.18%	9.39%	NA
1997	7.25%	10.18%	18.16%	NA
1998	7.25%	9.92%	16.66%	NA
1999	7.25%	10.60%	10.15%	NA
2000	7.25%	11.55%	2.50%	NA
2001	7.25%	8.51%	-1.87%	NA
2002	7.25%	5.66%	-5.21%	NA
2003	7.25%	7.98%	18.23%	NA
2004	7.25%	8.56%	10.73%	NA
2005	7.25%	8.26%	6.97%	NA
2006	7.25%	8.94%	11.41%	NA
2007	7.25%	8.87%	8.38%	NA
2008	7.25%	2.89%	-19.50%	NA
2009	7.25%	4.74%	14.84%	NA
2010	7.25%	5.89%	11.47%	NA
2011	7.25%	5.15%	2.19%	NA
2012	7.25%	6.32%	11.82%	NA
2013	7.25%	7.43%	12.21%	NA
2014	7.25%	7.19%	6.21%	NA
2015	7.25%	5.87%	0.36%	6.86%
2016	7.25%	5.32%	6.22%	6.71%
2017	7.20%	6.56%	13.49%	6.49%
2018	7.00%	5.10%	-1.39%	5.60%
2019	7.00%	6.18%	14.85%	5.82%
2020	7.00%	8.80%	11.12%	6.25%
2021	6.50%	9.18%	9.68%	6.84%
2022	6.50%	4.53%	-10.38%	6.54%
2023	6.50%	5.63%	10.11%	6.16%
2024	6.50%	4.87%	7.42%	6.00%
20-Yr Average	7.05%	6.37%	6.00%	NA
20-Yr Range	0.75%	6.29%	34.35%	NA

Commentary: The average investment return recognized for purposes of determining the annual change in contribution each year is the actuarial value of assets return. Currently, the average actuarial return over the past 20 years of 6.37% compares with an average market return of 6.00%. The range of returns on market value of assets is markedly more volatile, 34.35% versus 6.29% for actuarial value of assets. Using the actuarial value of assets instead of market value results in much lower employer contribution volatility, while ensuring that the actuarial needs of TSERS are met.

Section 4: Liability Results

Using the provided membership data, benefit provisions, and actuarial assumptions, the future benefit payments of TSERS are estimated. These projected future benefit payments are discounted into today's dollars using the assumed rate of investment return assumption to determine the Present Value of Future Benefits. The Present Value of Future Benefits is allocated to past, current and future service, respectively known as the actuarial accrued liability, normal cost and present value of future normal costs. The table below provides these liability numbers for the current and prior year's valuations.

Table 12: Liability Summary

Valuation Results as of	12/31/2024	12/31/2023
(a) Present Value of Future Benefits		
(1) Active Members	\$ 61,256,564,476	\$ 58,531,986,262
(2) Terminated Members	4,582,514,260	4,293,041,123
(3) Members Currently Receiving Benefits	55,138,000,592	53,713,769,676
(4) Total	\$ 120,977,079,328	\$ 116,538,797,061
(b) Present Value of Future Normal Costs		
(1) Employee Future Normal Costs	\$ 8,600,532,498	\$ 8,278,394,694
(2) Employer Future Normal Costs	8,749,819,155	8,450,700,657
(3) Total	\$ 17,350,351,653	\$ 16,729,095,351
(c) Actuarial Accrued Liability: (a4) - (b3)	\$ 103,626,727,675	\$ 99,809,701,710
(d) Actuarial Value of Assets	\$ 91,620,727,745	\$ 88,619,071,210
(e) Unfunded Accrued Liability: (c) - (d)	\$ 12,005,999,930	\$ 11,190,630,500

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

Table 13: Reconciliation of Unfunded Actuarial Accrued Liability

(in millions)	
Unfunded Actuarial Accrued Liability (UAAL) as of 12/31/2023	\$ 11,191
Normal Cost and Administrative Expense during 2024	2,073
Reduction due to Actual Contributions during 2024	(4,378)
Interest on UAAL, Normal Cost, and Contributions	721
Asset (Gain)/Loss	1,433
Actuarial Accrued Liability (Gain)/Loss	966
Impact of Assumption Changes	-
Impact of Benefit Changes	-
Unfunded Actuarial Accrued Liability (UAAL) as of 12/31/2024	\$ 12,006

Commentary: During 2024, the UAAL increased due to the asset loss of \$1.4 billion. Additionally, changes in the census data, primarily higher-than-expected salary increases for continuing active members, increased the UAAL by \$966 million.

Section 5: Actuarially Determined Employer Contribution

The Actuarially Determined Employer Contribution (ADEC) as a percent of payroll consists of a normal cost rate, an accrued liability rate and an administrative expense rate. The normal cost rate is the employer's portion of the cost of benefits accruing during the year after reducing for the member contribution. The accrued liability rate is the payment toward the unfunded accrued liability in order to pay off the unfunded accrued liability over 12 years. The expense rate is the payment for expected administrative expenses.

The table below provides the calculation of the ADEC for the current and prior years' valuations.

The ADEC is compliant with the definition of a reasonable actuarially determined contribution under ASOP 4. When determining the smoothing period for the actuarial value of assets and the amortization period for the unfunded actuarial accrued liability, the following items were considered: (i) the balance among benefit security, intergenerational equity, and stability of actuarially determined contributions, (ii) the timing and duration of expected benefit payments, and (iii) the nature and frequency of plan amendments. Plan amendments are amortized over periods appropriate for the nature of the change or are funded at the time of the change based on decisions by the plan sponsor.

The Employer Contribution Rate Stabilization Policy (ECRSP) adopted by the Board of Trustees on April 29, 2021 requires that recommended contributions be 0.35% of payroll greater than the appropriated contribution during the prior year, with the following bounds: (1) contributions may not be less than the ADEC calculated below and (2) contributions may not be greater than a contribution determined using the same assumptions used to calculate the ADEC but using a discount rate equal to the long-term Treasury bond yield.

The ECRSP would result in a recommended contribution rate of 17.49% of payroll for fiscal year ending 2027 before recognizing any benefit improvements that may be enacted.

- The minimum (before considering the ADEC) is 17.49%; Board's recommended appropriation for the fiscal year ending 2026 of 17.14%, plus 0.35%.
- 16.07% is the ADEC calculated in this most recent valuation before applying the ECRSP.
- The maximum ADEC is approximately 41.45%; the estimated ADEC using a discount rate equal to the long-term Treasury bond yield (4.78%).

Table 14: Calculation of the Actuarially Determined Employer Contribution (ADEC) Prior to ECRSP

Valuation Date	12/31/2024	12/31/2023
ADEC for Fiscal Year Ending	6/30/2027	6/30/2026**
Normal Cost Rate Calculation		
(a) Normal Cost Rate	6.14%	6.18%
(b) Expense Rate	<u>0.10%</u>	<u>0.10%</u>
(c) Total Normal Cost Rate	6.24%	6.28%
Accrued Liability Rate Calculation		
(d) Total Annual Amortization Payments*	\$ 1,946,566,024	\$ 1,737,619,816
(e) Projected Compensation	19,798,281,841	18,955,278,643
(f) Accrued Liability Rate: (d) / (e)	9.83%	9.17%
Total ADEC (c) + (f)	16.07%	15.45%
ADEC with Direct Rate Smoothing	16.07%	14.85%
Impact of Benefit Changes	<u>Not Final</u>	<u>Not Final</u>
Final ADEC Prior to ECRSP	Not Final	Not Final

* See Table 17 for more detail

** Session Law 2025-89, enacted in 2025, established an employer contribution rate of 17.14% for the fiscal year ending June 30, 2026. It is possible that this law is superseded by an Appropriations Act for the 2025-2027 fiscal biennium.

Section 5: Actuarially Determined Employer Contribution (continued)

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

Table 15: Reconciliation of the Change in the ADEC Prior to ECRSP

Fiscal year ending June 30, 2026 Preliminary ADEC (based on December 31, 2023 valuation)		14.85%
Impact of Benefit Changes		<u>0.00%</u>
Fiscal year ending June 30, 2026 ADEC Prior to ECRSP		14.85%
Change Due to Anticipated Reduction in UAAL*		(0.26%)
Change Due to Demographic (Gain)/Loss		0.51%
Change Due to Investment (Gain)/Loss		0.95%
Change Due to Contributions Greater than ADEC		(0.58%)
Impact of Assumption Changes		0.00%
Impact of Benefit Changes		0.00%
Impact of Direct Rate Smoothing		0.60%
Reversal of one-time Benefit Costs		<u>0.00%</u>
Fiscal year ending June 30, 2027 Preliminary ADEC (based on December 31, 2024 valuation)		16.07%

- * Amortization of the UAAL is determined as a level dollar amount with payments expected to remain the same over the amortization period but was calculated as a percentage of valuation payroll in the previous valuation. Payroll is expected to increase annually while the expected amortization payment does not increase. This causes the expected amortization payment to be a lesser percentage of the expected payroll.

Section 5: Actuarially Determined Employer Contribution (continued)

Amortization methods determine the payment schedule for the unfunded actuarial accrued liability. TSERS adopted a 12-year closed amortization period for fiscal year ending 2012. A new amortization base is created each year based on the prior years' experience. The tables below provide the calculation of the new amortization base and the amortization schedule for the current year's valuation.

Table 16: Calculation of the New Amortization Base

Calculation as of		12/31/2024	12/31/2023
(a)	Unfunded Actuarial Accrued Liability	\$ 12,005,999,930	\$ 11,190,630,500
(b)	Prior Years' Outstanding Balances	\$ 10,324,966,174	\$ 10,327,412,181
(c)	New Amortization Base: (a) - (b)	\$ 1,681,033,756	\$ 863,218,319
(d)	New Amortization Payment	\$ 219,431,544	\$ 112,679,075

Table 17: Amortization Schedule for Unfunded Accrued Liability

Date Established	Original Balance	12/31/2024 Outstanding Balance	Annual Payment Effective July 1, 2026
December 31, 2011	\$ 911,037,989	\$ 60,246,586	\$ -
December 31, 2012	78,277,759	15,006,125	-
December 31, 2013	(114,027,863)	(35,221,552)	(15,228,907)
December 31, 2014	(206,952,282)	(86,555,532)	(27,559,708)
December 31, 2015	2,586,581,023	1,345,571,545	343,435,477
December 31, 2016	1,983,860,720	1,219,846,760	262,453,830
December 31, 2017	2,551,629,668	1,793,643,618	336,317,586
December 31, 2018	1,836,431,391	1,444,074,350	241,617,831
December 31, 2019	865,931,898	747,354,960	113,563,961
December 31, 2020	1,141,156,638	1,064,801,581	148,959,390
December 31, 2021	(1,707,468,366)	(1,711,955,914)	(222,882,152)
December 31, 2022	3,323,112,118	3,548,826,137	433,778,097
December 31, 2023	863,218,319	919,327,510	112,679,075
December 31, 2024	1,681,033,756	1,681,033,756	219,431,544
Total		\$ 12,005,999,930	\$ 1,946,566,024

Commentary: This is the payment schedule for the unfunded actuarial accrued liability of TSERS.

Section 5: Actuarially Determined Employer Contribution (continued)

The table below provides a history of the actuarially determined employer contribution and the corresponding appropriated rate.

Table 18: History of Actuarially Determined Employer Contributions and Appropriated Rates

Valuation Date	Fiscal Year Ending	Normal Rate	Accrued Liability Rate	Effect of Direct Rate Smoothing	Legislated Benefit Cost*	ULSR Contribution G.S. 143C-4-10(e)	ADEC Prior to Applicable Funding Policy	ADEC under ECRSP	Appropriated Rate
12/31/2024	6/30/2027	6.24%	9.83%	0.00%	N/A	N/A	N/A	N/A	N/A
12/31/2023	6/30/2026 **	6.28%	9.17%	(0.60%)	N/A	N/A	N/A	N/A	N/A
12/31/2022	6/30/2025	6.27%	9.63%	(1.20%)	0.00%	0.00%	14.70%	16.79%	16.79%
12/31/2021	6/30/2024	6.33%	7.85%	(1.79%)	1.20%	0.00%	13.59%	17.64%	17.64%
12/31/2020	6/30/2023	6.39%	11.13%	(2.39%)	1.24%	0.05%	16.42%	17.38%	17.38%
12/31/2019	6/30/2022	5.16%	10.58%	0.00%	0.64%	0.00%	16.38%	16.38%	16.38%

* The change due to legislation for the contribution for fiscal year ending June 30, 2024 provided for a one-time supplement equal to 4% of the annual retirement allowance payable by November 2023. The change due to legislation for the contribution for fiscal year ending June 30, 2023 provided for a one-time supplement equal to 4% of the annual retirement allowance payable in October 2022. The change due to legislation for the contribution for fiscal year ending June 30, 2022 provided for a one-time supplement equal to 2% of the annual retirement allowance payable in December 2021.

** Session Law 2025-89, enacted in 2025, established an employer contribution rate of 17.14% for the fiscal year ending June 30, 2026. It is possible that this law is superseded by an Appropriations Act for the 2025-2027 fiscal biennium.

Section 5: Actuarially Determined Employer Contribution (continued)

The following table shows estimates of the potential cost of three types of benefit improvements if they were enacted based on the results of the December 31, 2024 or December 31, 2023 valuations. The first benefit improvement is a permanent one-time cost-of-living increase and the second benefit improvement is a one-time supplement payment for retirees during the upcoming year ending December 31, 2025. The third benefit improvement is a 0.01% increase in the defined benefit formula and would include a corresponding increase in retirement allowances.

Table 19: Cost of Benefit Enhancements

Calculation as of	12/31/2024	12/31/2023
Increase in UAAL for a 1.00% COLA	\$ 586,739,000	\$ 571,111,000
Increase in ADEC for a 1.00% COLA	0.39%	0.40%
Increase in UAAL for a 1.00% Supplement	\$ 57,875,000	\$ 57,687,000
Increase in ADEC for a 1.00% Supplement	0.29%	0.30%
Increase in UAAL for a 0.01% Increase in the Defined Benefit Formula	\$ 566,958,000	\$ 548,213,000
Increase in ADEC for a 0.01% Increase in the Defined Benefit Formula	0.45%	0.45%

The 1.00% COLA in the December 31, 2024 column would be effective July 1, 2026 and includes expected costs of COLAs paid for retirements before June 30, 2026. The COLA would be paid in full to retired members and survivors of deceased members on the retirement roll on July 1, 2025 and would be prorated for retired members and survivors of deceased members who commence benefits after July 1, 2025 but before June 30, 2026. We are assuming that the cost of the COLA is amortized over a 12-year period.

The 1.00% Supplement in the December 31, 2024 column is based on an assumed payment date of July 1, 2026 and includes expected costs of supplements paid for retirement before June 30, 2026. The supplement would be equal to 1.00% of the annual allowances of retirees and other beneficiaries who commence retirement on or before July 1, 2026. We are assuming that the cost of the supplement is amortized over a one-year period.

The 0.01% increase in the defined benefit formula would include a corresponding increase in retirement allowances. We are assuming that the cost of the 0.01% benefit increase is amortized over a 12-year period.

Section 6: Projections

Projections of contribution requirements and funded status into the future can be helpful planning tools for stakeholders. This section provides such projections. The projections of the actuarial valuation are known as deterministic projections. Deterministic projections are based on one scenario in the future. The baseline deterministic projection is based on December 31, 2024 valuation results and assumptions.

Key Projection Assumptions

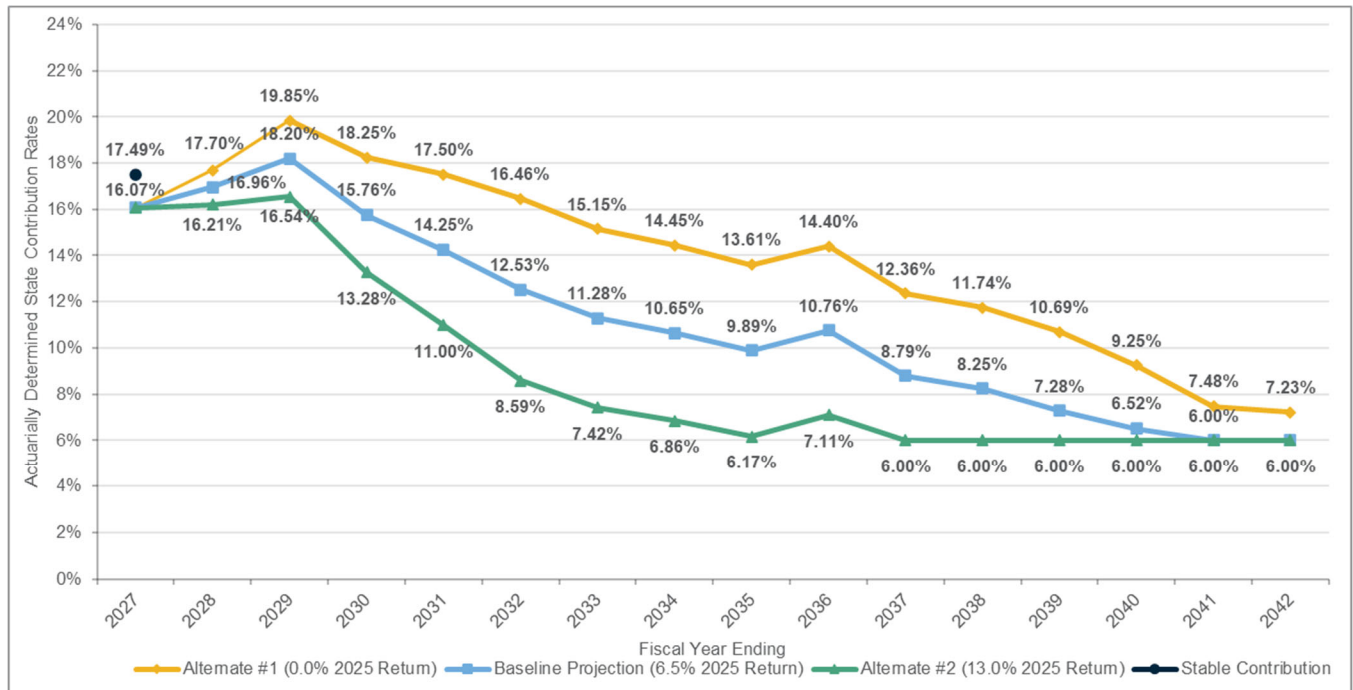
- Valuation interest rate of 6.50%
- Direct-rate smoothing of the change in the employer contribution rate due to the changes in assumption and methods over a 5-year period beginning July 1, 2022
- 6.50% investment return on market value of assets
- Actuarial assumptions and methods as described in Appendix C. All future demographic experience is assumed to be exactly realized
- The contribution rate under the Employer Contribution Rate Stabilization Policy (ECRSP) is contributed until fiscal year ending 2027
- The actuarially determined contribution rate is contributed for fiscal years ending 2028 and beyond
- The employer contribution shall not be less than the employee contribution, which is currently 6%
- 0% increase in both the active population of TSERS and its subgroups: Teachers, Other Education, General Employees, and Law Enforcement Officers, except that no new hires of UNC Health Care System (UNC HC) will participate in TSERS
- To replace those assumed to leave active service, the age, gender and salary of future members assumed to be hired into TSERS are based on the demographic information of new TSERS hires over the past three (3) valuations
- Demographic profiles of new entrants for each subgroup are based on new hires specific to that subgroup over the past three (3) valuations
- 75% of new entrants are assumed to have rounded service of 0 when first valued, and 25% are assumed to have rounded service of 1 when first valued
- No cost-of-living adjustments granted
- Future pay increases based on long-term salary increase assumptions

The ECRSP contribution rate is the Stable Contribution rate shown in the projections. The ECRSP can be found in Appendix F. In addition, we have provided two alternate deterministic projections. The first alternate deterministic projection is based on the same assumptions as the baseline deterministic projection except that it assumes a 0.0% asset return for calendar year 2025. The second alternate deterministic projection is based on the same assumptions as the baseline deterministic projection except that it assumes a 13.0% asset return for calendar year 2025.

Section 6: Projections (continued)

The graph below provides the actuarially determined employer contribution rates projected for 15 years, as well as the board approved stable contribution under the Employer Contribution Rate Stabilization Policy.

Projected Actuarially Determined Employer Contribution Rates

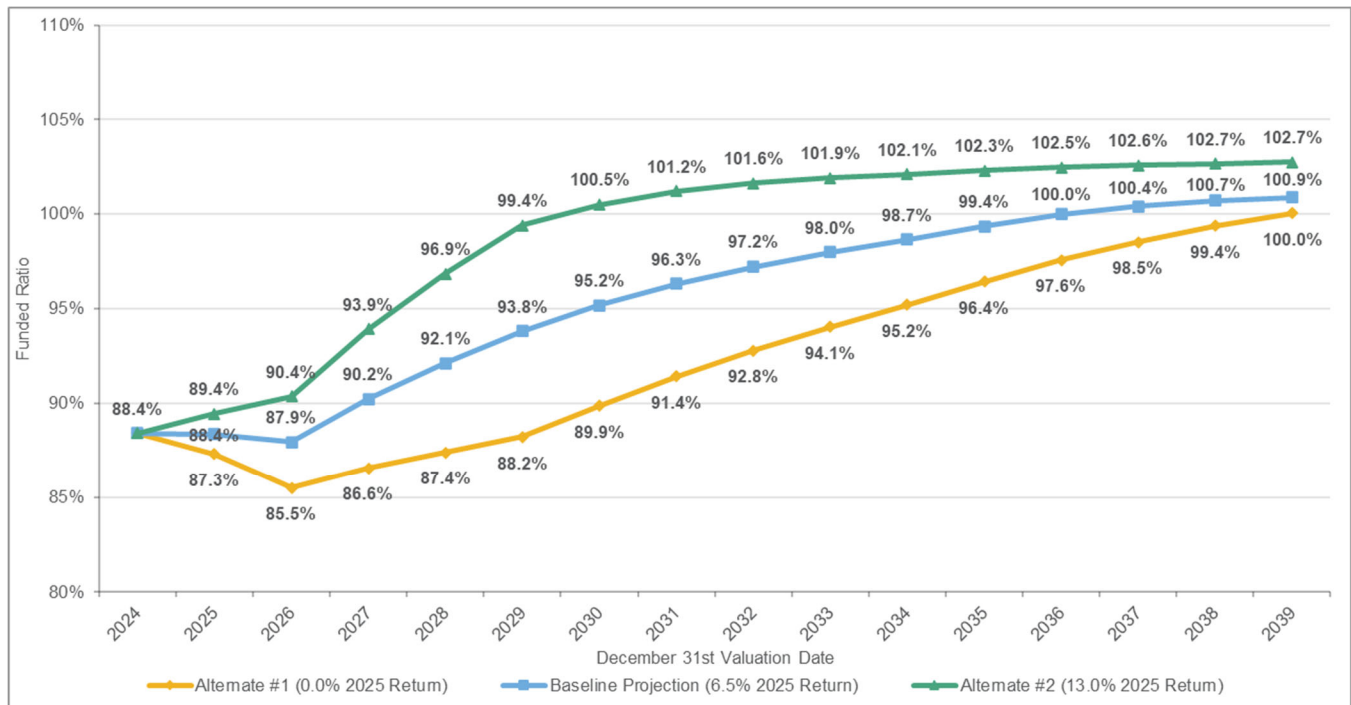


The minimum employer contribution rate is equal to the employee contribution rate of 6.00%.

Section 6: Projections (continued)

The graph below provides the funded ratio projected for 15 years.

Projected Funded Ratio



Absent favorable asset returns and other deviations from expectations resulting in gains to the plan's funded status, funded ratios are expected to decline until 2026, which is the point that the unfavorable asset returns in 2022 are fully recognized in the actuarial value of assets. Subsequently, funded ratios are expected to increase to 100% by the end of the projection under each scenario due to the 12-year amortization policy.

Appendix A: Detailed Tabulations of Member Data

Table A-1: Number and Average Reported Compensation of Active Members Distributed by Age and Service as of December 31, 2024

Age	Years of Service										Total
	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	
Under 25	4,826	6,032	54	0	0	0	0	0	0	0	10,912
	\$18,733	\$44,509	\$45,202	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$33,113
25 to 29	4,296	15,564	4,073	10	0	0	0	0	0	0	23,943
	\$20,550	\$48,605	\$54,606	\$50,388	\$0	\$0	\$0	\$0	\$0	\$0	\$44,593
30 to 34	3,361	10,758	10,973	3,466	6	0	0	0	0	0	28,564
	\$19,961	\$50,131	\$58,151	\$62,950	\$53,953	\$0	\$0	\$0	\$0	\$0	\$51,218
35 to 39	3,032	9,573	8,685	9,724	2,966	15	0	0	0	0	33,995
	\$21,323	\$51,578	\$60,853	\$67,127	\$70,914	\$62,776	\$0	\$0	\$0	\$0	\$57,389
40 to 44	2,607	8,705	7,944	6,612	9,578	3,517	54	0	0	0	39,017
	\$21,892	\$52,026	\$62,736	\$69,081	\$73,181	\$74,514	\$70,029	\$0	\$0	\$0	\$62,329
45 to 49	2,088	7,500	7,240	5,961	6,883	8,788	3,130	7	0	0	41,597
	\$23,588	\$53,114	\$61,649	\$68,753	\$73,407	\$76,990	\$79,469	\$60,344	\$0	\$0	\$65,745
50 to 54	1,967	7,034	7,328	6,074	7,041	6,721	7,530	847	5	0	44,547
	\$24,134	\$53,820	\$60,221	\$66,812	\$70,286	\$73,787	\$80,505	\$83,817	\$98,574	\$0	\$66,035
55 to 59	1,549	5,978	6,063	5,440	6,672	5,853	4,452	1,603	240	1	37,851
	\$22,949	\$53,777	\$59,808	\$63,654	\$67,493	\$70,259	\$74,911	\$89,844	\$82,824	\$71,816	\$64,065
60 to 64	867	3,940	4,650	3,826	4,554	3,960	2,247	866	475	85	25,470
	\$24,317	\$51,515	\$58,482	\$63,197	\$65,127	\$67,030	\$70,598	\$83,955	\$84,132	\$90,068	\$61,985
65 to 69	358	1,400	1,637	1,387	1,450	1,064	679	340	193	137	8,645
	\$20,513	\$49,478	\$62,562	\$62,903	\$67,882	\$68,182	\$74,574	\$78,718	\$91,704	\$85,147	\$62,928
70 & Up	173	716	575	530	533	347	222	132	94	137	3,459
	\$17,899	\$43,621	\$53,652	\$63,970	\$65,381	\$64,958	\$65,090	\$82,328	\$80,667	\$99,431	\$58,686
Total	25,124	77,200	59,222	43,030	39,683	30,265	18,314	3,795	1,007	360	298,000
	\$21,147	\$50,684	\$59,864	\$66,304	\$70,355	\$72,931	\$77,315	\$85,842	\$85,020	\$91,708	\$59,403

Appendix A: Detailed Tabulations of Member Data (continued)

**Table A-2: Number and Reported Compensation of Active Members
Distributed by Age as of December 31, 2024**

Age	Men		Women	
	Number	Compensation	Number	Compensation
18	5	\$ 64,114	3	\$ 22,518
19	74	1,029,101	70	731,169
20	170	3,917,590	147	2,755,138
21	240	6,693,289	329	6,921,167
22	403	11,726,520	875	21,507,694
23	663	21,742,453	1,901	55,715,006
24	1,016	37,179,657	2,890	106,848,646
25	1,262	51,756,964	3,220	127,809,221
26	1,382	61,439,556	3,395	141,700,620
27	1,419	64,317,400	3,348	144,384,206
28	1,403	67,861,293	3,301	145,801,495
29	1,467	73,263,192	3,413	156,286,283
30	1,579	80,796,740	3,455	161,695,951
31	1,588	83,962,654	3,552	167,684,995
32	1,686	91,532,677	3,774	183,885,494
33	1,776	98,447,095	4,212	209,950,575
34	1,858	108,294,514	4,391	224,286,506
35	1,954	112,952,430	4,519	238,101,176
36	1,967	119,461,607	4,689	252,056,608
37	1,930	119,348,683	4,704	255,838,537
38	1,997	126,853,029	4,880	272,993,111
39	2,033	135,622,796	5,010	281,238,714
40	2,111	140,273,188	5,168	296,589,013
41	2,142	143,465,415	5,271	308,705,878
42	2,260	154,133,272	5,462	326,007,819
43	2,292	159,693,447	5,737	344,451,677
44	2,257	157,456,713	5,724	347,913,946
45	2,436	174,466,927	5,847	357,834,648
46	2,308	167,047,998	5,868	364,058,451
47	2,442	177,836,277	5,985	373,401,950
48	2,386	175,103,356	6,171	388,456,097
49	2,327	175,159,583	5,757	364,229,148
50	2,464	181,443,493	6,233	394,620,265
51	2,505	182,991,349	6,087	385,186,231
52	2,544	186,227,494	6,169	385,274,844
53	2,625	196,292,493	6,320	397,928,285
54	2,824	204,972,255	6,601	415,550,038

Appendix A: Detailed Tabulations of Member Data (continued)

**Table A-2: Number and Reported Compensation of Active Members
Distributed by Age as of December 31, 2024 (continued)**

Age	Number	Men		Women	
		Compensation	Number	Compensation	
55	2,513	\$ 189,195,234	6,246	\$ 388,441,251	
56	2,414	181,354,904	5,782	356,505,189	
57	2,293	171,118,452	5,371	321,054,152	
58	2,133	153,272,374	5,166	309,667,443	
59	2,130	151,623,668	4,852	287,453,156	
60	2,109	146,387,536	4,566	268,636,357	
61	1,943	133,713,826	4,226	247,642,562	
62	1,799	124,948,312	3,740	216,452,097	
63	1,471	100,665,608	3,177	183,268,062	
64	1,305	92,172,880	2,669	158,859,837	
65	1,059	73,584,914	2,121	127,343,403	
66	832	59,920,206	1,489	90,434,843	
67	678	48,474,910	1,140	65,699,527	
68	563	41,255,781	897	51,368,929	
69	440	28,041,918	690	39,428,178	
70	380	26,637,990	493	27,184,268	
71	315	23,086,699	406	21,907,385	
72	233	14,670,834	312	15,604,231	
73	194	12,796,507	191	10,874,222	
74	162	9,684,451	195	10,278,435	
75	119	7,354,640	136	6,917,625	
76	112	7,195,911	105	4,884,542	
77	87	5,762,753	76	3,728,514	
78	66	3,912,172	62	2,910,232	
79	38	2,097,764	36	2,019,681	
80	27	1,709,070	24	1,264,258	
81	25	1,458,558	22	1,165,512	
82	23	1,517,169	19	682,392	
83	11	698,484	9	375,315	
84	7	432,149	4	234,944	
85	4	456,975	7	356,696	
86	2	214,064	3	204,917	
87	1	31,218			
88	2	149,906	1	73,731	
89			1	37,887	
91			2	115,497	
92			1	34,563	
Total	89,285	\$ 5,870,424,451	208,715	\$ 11,831,532,953	

Appendix A: Detailed Tabulations of Member Data (continued)

Table A-3: Number and Reported Compensation of Active Members Distributed by Service as of December 31, 2024

Service	Men		Women	
	Number	Compensation	Number	Compensation
0	4,369	\$ 64,064,132	10,708	\$ 157,935,571
1	8,336	358,055,186	18,331	709,864,594
2	6,968	381,774,906	16,936	800,213,470
3	5,624	326,355,321	14,307	700,384,718
4	3,749	223,929,143	8,770	467,432,065
5	3,588	226,618,113	9,017	484,564,108
6	4,065	263,392,484	9,103	498,702,613
7	3,644	241,832,899	8,147	460,386,609
8	3,471	239,334,927	7,909	457,644,816
9	3,408	235,035,020	7,200	428,447,765
10	3,151	220,597,857	6,917	420,778,256
11	2,884	205,556,828	6,340	391,828,954
12	2,853	201,735,414	6,490	407,078,899
13	2,512	188,116,231	5,500	357,375,718
14	2,289	174,139,918	4,914	327,379,427
15	2,038	154,371,546	4,269	287,522,913
16	1,680	135,341,741	3,936	263,681,787
17	2,666	200,142,526	6,140	408,401,343
18	2,409	191,859,411	6,012	406,438,964
19	2,411	188,881,471	6,144	413,136,322
20	2,199	171,576,746	5,580	378,899,815
21	1,973	157,082,433	4,960	341,136,877
22	1,736	140,323,412	4,294	301,439,526
23	1,487	122,681,675	3,813	268,363,089
24	1,623	133,458,224	4,096	289,077,204
25	1,483	124,411,921	3,796	267,437,410
26	1,421	125,170,035	3,414	245,716,063
27	1,268	108,920,561	2,963	217,887,482
28	1,031	89,030,453	2,506	189,155,941
29	816	73,424,970	1,958	145,560,439
30	502	44,266,529	1,208	92,415,762
31	416	39,668,510	785	61,501,174
32	282	27,184,568	590	47,546,033
33	218	21,602,465	382	32,047,234
34	138	14,178,858	246	19,745,078
35	138	13,664,202	236	19,339,668
36	93	8,644,275	183	14,055,242
37	89	8,131,278	146	11,175,157
38	58	5,149,232	119	10,550,321
39	49	4,677,782	71	6,026,828

Appendix A: Detailed Tabulations of Member Data (continued)

**Table A-3: Number and Reported Compensation of Active Members
Distributed by Service as of December 31, 2024 (continued)**

Service	Men		Women	
	Number	Compensation	Number	Compensation
40	34	\$ 3,105,166	62	\$ 4,774,493
41	29	3,176,301	52	4,433,542
42	22	2,574,227	28	2,043,048
43	13	1,359,363	24	2,921,515
44	12	1,249,449	15	1,235,946
45	5	632,805	12	776,813
46	13	1,785,340	23	1,999,177
47	7	722,767	19	1,422,757
48	3	205,351	14	1,262,722
49	2	115,599	5	470,404
50	3	258,943	3	304,279
51	2	158,604	4	287,545
52	1	161,568	4	312,490
53	1	91,488	2	168,029
54			4	309,774
55	1	102,415	6	385,828
56	1	181,244		
57	1	160,618	1	67,374
69			1	81,962
Total	89,285	\$ 5,870,424,451	208,715	\$ 11,831,532,953

Appendix A: Detailed Tabulations of Member Data (continued)

**Table A-4: Number and Valuation Compensation of Disabled Members
Distributed by Age as of December 31, 2024**

Age	Men		Women	
	Number	Compensation	Number	Compensation
23			1	\$ 21,046
25			1	36,728
26			1	45,552
27			2	102,546
28	1	\$ 11,804		
30	1	17,366	1	22,091
31	2	40,468	1	59,589
32			5	194,903
33	1	8,638	4	142,560
34			5	92,642
35	6	245,848	5	95,868
36	4	122,929	6	166,664
37	1	50,847	8	342,665
38	5	132,950	9	277,759
39	3	168,336	5	256,041
40	3	176,809	14	543,559
41	7	159,111	8	270,379
42	7	239,784	20	758,420
43	10	263,909	23	880,765
44	9	336,801	22	937,765
45	13	558,040	30	1,109,570
46	13	503,139	38	1,312,668
47	17	616,906	57	2,208,850
48	18	730,634	56	2,249,457
49	23	962,624	71	3,047,542
50	30	1,340,310	81	3,179,630
51	31	1,326,593	68	2,731,692
52	39	1,662,023	91	3,681,941
53	32	1,339,647	129	5,282,249
54	37	1,490,404	138	5,193,567
55	45	1,830,328	120	4,872,344
56	53	2,229,267	125	4,781,016
57	60	2,311,607	145	5,577,528
58	56	2,318,363	173	6,581,612
59	68	3,194,686	204	7,603,453
60	75	3,120,862	166	6,013,007
61	57	3,290,777	142	5,274,684
62	68	2,821,704	144	5,281,794
63	67	2,540,891	160	5,080,367
64	66	2,698,256	156	5,398,968

Appendix A: Detailed Tabulations of Member Data (continued)

**Table A-4: Number and Valuation Compensation of Disabled Members
Distributed by Age as of December 31, 2024 (continued)**

Age	Men		Women	
	Number	Compensation	Number	Compensation
65	33	\$ 1,173,426	81	\$ 3,057,354
66	2	50,652	3	106,733
67	2	47,631	3	56,885
68			2	34,931
69	1	21,485		
70	1	68,576	2	54,234
71	1	8,638	3	122,325
72	2	47,056	3	56,661
73			3	61,902
74	1	10,585		
82			1	39,176
Total	971	\$ 40,290,710	2,536	\$ 95,299,682

Appendix A: Detailed Tabulations of Member Data (continued)

Table A-5: Number and Deferred Annual Retirement Allowances of Terminated Vested Members Distributed by Age as of December 31, 2024

Age	Men		Women	
	Number	Allowances	Number	Allowances
24	1	\$ 3,654		
25	4	14,140	1	\$ 2,393
26	6	23,340	8	38,849
27	13	77,683	19	95,689
28	33	153,595	90	416,053
29	47	250,584	164	897,824
30	107	595,620	326	1,665,064
31	146	819,877	532	2,910,571
32	195	1,153,432	651	3,796,802
33	228	1,383,591	818	5,006,293
34	277	1,892,576	1,011	6,529,096
35	317	2,103,353	1,084	7,134,098
36	389	2,724,696	1,042	7,125,694
37	365	2,678,018	1,175	8,180,915
38	393	2,946,446	1,188	8,375,465
39	446	3,661,666	1,313	9,623,850
40	524	4,052,022	1,339	10,347,459
41	514	4,312,304	1,448	10,641,713
42	567	4,947,466	1,572	12,584,703
43	587	5,148,945	1,639	13,020,699
44	604	6,139,980	1,611	13,971,398
45	563	5,445,627	1,657	13,806,836
46	598	5,834,896	1,611	14,582,972
47	609	6,033,925	1,559	14,289,631
48	614	6,661,028	1,540	13,821,825
49	615	6,520,687	1,545	14,846,246
50	666	7,500,591	1,551	14,000,050
51	592	5,926,242	1,493	13,411,894
52	613	6,249,952	1,535	13,908,231
53	660	6,866,747	1,542	13,589,574
54	701	7,152,444	1,693	14,657,957
55	691	7,047,733	1,727	15,112,570
56	600	6,318,242	1,681	14,596,871
57	545	5,437,002	1,539	12,688,072
58	589	5,636,917	1,488	12,249,157
59	536	5,401,880	1,397	12,164,019
60	555	5,126,812	1,423	11,289,912
61	453	4,362,791	1,122	8,377,465
62	421	3,546,493	1,037	7,440,541
63	315	2,701,666	926	6,506,205
64	313	2,728,422	826	6,068,672
65	278	2,486,229	646	4,198,419
66	191	1,432,828	429	2,972,953
67	129	975,452	315	2,020,730

Appendix A: Detailed Tabulations of Member Data (continued)

Table A-5: Number and Deferred Annual Retirement Allowances of Terminated Vested Members Distributed by Age as of December 31, 2024 (continued)

Age	Men		Women	
	Number	Allowances	Number	Allowances
68	108	\$ 710,806	271	\$ 1,811,804
69	97	870,240	207	1,171,731
70	67	429,647	185	1,039,270
71	48	302,023	167	996,146
72	49	382,107	102	504,637
73	43	343,423	79	489,876
74	22	147,527	58	421,046
75	13	100,038	23	87,858
76	8	32,816	13	188,374
77	8	58,258	10	43,416
78	12	60,841	7	26,837
79	10	56,720	3	29,215
80	7	47,099	7	51,932
81	4	24,640	3	18,250
82	2	33,001	4	23,116
83			7	24,559
84	1	3,504	6	9,785
85	2	4,412	1	4,917
86	2	5,853	1	1,416
87	3	14,316	3	6,065
88			1	2,902
90	2	2,209	1	2,628
98	1	2,472		
Total	18,119	\$ 166,109,546	48,472	\$ 385,921,210

Appendix A: Detailed Tabulations of Member Data (continued)

Table A-6: Number and Accumulated Contributions of Terminated Non-Vested Members Distributed by Age as of December 31, 2024

Age	Men		Women	
	Number	Contributions	Number	Contributions
18			1	\$ 1,548
19	9	\$ 7,821	10	4,974
20	32	28,749	44	42,938
21	85	106,535	133	142,030
22	150	252,240	257	402,129
23	206	374,041	517	825,664
24	362	734,230	998	2,133,860
25	575	1,442,201	1,465	3,992,715
26	767	2,276,976	1,949	6,361,459
27	896	2,923,773	2,332	8,823,141
28	1,010	3,698,357	2,605	11,009,054
29	1,169	4,493,652	2,814	12,415,896
30	1,256	5,091,914	3,068	13,961,936
31	1,402	5,680,545	3,177	14,934,809
32	1,503	6,059,187	3,285	16,363,953
33	1,553	6,676,018	3,375	16,346,288
34	1,633	7,247,746	3,627	18,166,349
35	1,620	7,471,424	3,704	18,653,689
36	1,585	7,695,132	3,648	19,119,135
37	1,607	7,727,264	3,620	18,775,631
38	1,564	7,712,950	3,420	18,452,378
39	1,497	7,209,621	3,502	19,590,395
40	1,568	7,962,647	3,629	19,879,204
41	1,384	7,305,539	3,642	20,697,349
42	1,560	8,205,168	3,572	19,964,160
43	1,449	7,559,917	3,583	20,463,046
44	1,399	7,773,861	3,496	20,750,089
45	1,422	7,519,959	3,458	20,311,010
46	1,306	7,050,499	3,237	19,216,062
47	1,294	7,602,259	3,117	19,538,786
48	1,293	7,979,807	3,018	18,082,767
49	1,135	6,458,012	2,786	16,549,255
50	1,129	6,493,324	2,865	16,590,384
51	1,164	6,858,880	2,562	15,309,176
52	1,167	7,122,912	2,577	15,140,449
53	1,170	6,653,505	2,562	15,546,489
54	1,265	7,591,890	2,744	16,293,848
55	1,127	6,807,342	2,627	15,592,103
56	1,033	6,444,097	2,236	13,260,999
57	1,008	6,245,992	2,040	11,820,410
58	953	5,663,289	1,943	11,078,737
59	950	5,623,683	1,835	10,696,517
60	856	5,146,039	1,775	10,048,711
61	726	4,470,122	1,515	8,781,823

Appendix A: Detailed Tabulations of Member Data (continued)

Table A-6: Number and Accumulated Contributions of Terminated Non-Vested Members Distributed by Age as of December 31, 2024 (continued)

Age	Men		Women	
	Number	Contributions	Number	Contributions
62	683	\$ 4,034,652	1,448	\$ 7,994,476
63	640	3,398,779	1,365	7,524,633
64	653	3,774,691	1,226	6,957,264
65	499	2,920,270	1,028	6,013,129
66	433	2,620,570	778	4,510,964
67	412	2,364,856	700	4,067,948
68	379	2,217,736	671	3,815,606
69	355	2,199,890	569	3,115,665
70	344	1,911,718	559	3,010,122
71	257	1,536,262	424	2,377,591
72	217	1,083,507	399	2,573,026
73	211	1,173,519	299	1,813,238
74	135	621,820	187	1,024,008
75	66	296,401	100	493,624
76	50	196,631	55	225,022
77	40	180,030	47	236,133
78	25	71,749	38	133,549
79	15	51,140	27	123,615
80	27	165,241	18	61,534
81	15	54,579	14	89,252
82	10	63,697	9	45,103
83	13	32,235	9	34,137
84	7	22,622	5	29,047
85	8	27,188	7	11,252
86	8	50,881	8	5,582
87	5	32,566	6	32,344
88	5	36,169	4	16,052
89	3	6,614	2	20,690
90	7	16,762	3	5,428
91	3	3,299	2	473
92	3	24,742	2	269
93	2	933	1	95
94	1	5,242	3	1,851
95	1	209		
96	2	6,395	2	401
97	1			
98			3	6,067
99	2	73	1	231
100			1	7
101	1	2,078	1	5
103			2	242
104	1	149	1	345
105			1	250
107	1	1,393		
Total	52,379	\$ 266,656,407	118,395	\$ 632,501,615

Appendix A: Detailed Tabulations of Member Data (continued)

Table A-7: Number and Annual Retirement Allowances of Retired Members (Healthy at Retirement) and Survivors of Deceased Members Distributed by Age as of December 31, 2024

Age	Men		Women	
	Number	Allowances	Number	Allowances
<20	7	\$ 54,916	4	\$ 63,639
20	2	18,005		
21	1	33,297	3	37,030
22	7	71,966	2	28,561
23	1	5,191	1	16,720
24	1	5,219	4	64,689
25	3	17,539	5	39,392
26	9	73,288	3	19,274
27	7	124,531	7	80,683
28	9	69,722	10	160,866
29	9	106,495	7	102,054
30	4	51,893	10	106,047
31	7	92,371	12	139,062
32	6	71,761	16	198,933
33	13	239,859	15	168,255
34	11	128,848	14	145,123
35	19	206,147	23	200,959
36	24	213,760	21	236,442
37	15	243,825	20	250,738
38	17	154,111	28	370,497
39	16	169,578	24	252,175
40	16	206,257	21	245,193
41	28	266,089	22	167,374
42	29	348,501	31	359,564
43	33	295,912	35	433,008
44	30	421,997	34	304,214
45	24	307,084	40	425,389
46	29	266,844	41	506,152
47	32	389,846	43	526,326
48	43	834,240	55	592,186
49	49	1,187,599	60	822,866
50	89	2,509,336	110	2,027,960
51	211	6,446,676	266	6,972,341
52	312	10,323,837	483	13,505,991
53	493	16,517,875	815	24,269,243
54	593	20,326,421	1,130	34,620,230
55	728	25,889,534	1,298	41,434,405
56	767	26,414,728	1,476	46,052,655
57	845	28,811,779	1,534	47,003,753
58	919	31,009,546	1,681	51,194,788
59	980	33,017,154	1,757	52,068,030
60	1,078	34,305,012	2,227	63,249,548
61	1,427	42,991,604	3,003	79,072,394
62	1,672	47,632,946	3,555	87,173,697
63	1,901	49,176,423	4,355	96,508,779

Appendix A: Detailed Tabulations of Member Data (continued)

Table A-7: Number and Annual Retirement Allowances of Retired Members (Healthy at Retirement) and Survivors of Deceased Members Distributed by Age as of December 31, 2024 (continued)

Age	Men		Women	
	Number	Allowances	Number	Allowances
64	2,109	\$ 52,466,395	4,931	\$ 104,181,701
65	2,234	53,176,120	5,507	114,573,500
66	2,588	59,094,250	6,235	122,427,260
67	2,729	61,509,864	6,863	140,333,019
68	2,915	64,731,198	7,293	148,257,759
69	3,010	66,960,969	7,379	150,958,301
70	3,118	69,489,125	7,603	154,194,375
71	3,138	69,741,723	8,011	163,749,176
72	3,208	73,577,958	8,130	167,733,377
73	3,261	74,891,358	8,014	165,859,967
74	3,224	72,838,746	7,619	157,277,287
75	3,092	71,182,710	7,281	145,887,293
76	3,116	71,494,498	7,068	140,189,586
77	3,077	71,155,208	6,874	134,019,591
78	3,231	77,305,225	7,195	140,133,893
79	2,215	51,974,815	4,840	91,796,218
80	2,102	49,219,929	4,451	83,428,870
81	1,839	43,906,294	4,326	81,324,323
82	1,804	44,817,579	4,161	78,197,708
83	1,433	34,605,382	3,368	61,391,224
84	1,237	29,973,768	2,919	53,395,709
85	1,078	26,635,429	2,627	47,758,370
86	973	24,264,287	2,274	41,219,715
87	819	20,060,922	2,089	36,412,733
88	650	16,292,056	1,730	30,505,097
89	593	15,192,454	1,545	27,423,215
90	450	11,507,512	1,445	24,439,550
91	390	9,540,822	1,091	18,660,989
92	297	7,087,848	944	16,401,311
93	273	6,700,237	804	14,510,182
94	165	4,565,352	594	10,904,223
95	147	3,865,401	499	8,646,083
96	96	2,527,726	372	6,364,233
97	60	1,334,805	260	4,519,016
98	53	1,097,773	189	2,755,844
99	37	725,002	144	2,190,992
100+	57	890,438	231	3,526,776
Total	73,334	\$ 1,798,450,740	171,207	\$ 3,547,765,691

Appendix A: Detailed Tabulations of Member Data (continued)

Table A-8: Number and Annual Retirement Allowances of Retired Members (Healthy at Retirement) and Survivors of Deceased Members Distributed by Annuity Type as of December 31, 2024

Annuity Type	Men		Women	
	Number	Allowances	Number	Allowances
Maximum	24,474	\$ 580,580,488	91,877	\$ 1,875,754,986
Option 1	224	7,193,873	876	16,911,375
Option 2	15,548	384,339,685	12,340	223,991,263
Option 3	3,604	107,283,197	4,788	106,789,573
Option 4	8,594	213,693,378	24,174	541,697,371
Option 5-2	48	1,565,140	25	204,269
Option 5-3	22	720,873	26	514,511
Option 6-2	11,680	310,087,744	14,624	325,777,881
Option 6-3	4,034	125,256,017	8,718	228,782,295
Other	1	12,753	1	16,496
Survivors of Deceased Members	5,105	67,717,592	13,758	227,325,671
Total	73,334	\$ 1,798,450,740	171,207	\$ 3,547,765,691

Appendix A: Detailed Tabulations of Member Data (continued)

Table A-9: Number and Annual Retirement Allowances of Retired Members (Disabled at Retirement) Distributed by Age as of December 31, 2024

Age	Men		Women	
	Number	Allowances	Number	Allowances
49			1	\$ 18,676
50			1	16,243
51	3	\$ 72,956	2	26,901
52	3	79,148	4	100,142
53	6	120,389	12	276,133
54	14	330,882	16	380,291
55	15	340,151	37	961,104
56	27	609,208	42	1,022,001
57	27	612,553	45	1,098,606
58	37	777,575	50	1,220,289
59	36	733,647	48	1,117,888
60	61	1,244,758	102	2,280,617
61	67	1,449,163	163	3,098,100
62	80	1,676,527	172	3,442,046
63	102	1,885,216	202	3,758,265
64	90	1,697,272	273	4,824,199
65	124	2,269,153	269	4,537,644
66	184	2,810,213	374	5,935,525
67	194	3,318,012	411	6,769,925
68	196	3,257,448	392	6,093,989
69	173	2,864,088	453	7,435,917
70	172	2,896,241	429	7,053,253
71	183	3,138,102	490	8,303,856
72	209	3,591,970	483	8,631,074
73	205	3,622,355	520	9,259,499
74	193	3,451,710	554	9,772,875
75	196	3,331,640	463	8,009,844

Appendix A: Detailed Tabulations of Member Data (continued)

Table A-9: Number and Annual Retirement Allowances of Retired Members (Disabled at Retirement) Distributed by Age as of December 31, 2024 (continued)

Age	Men		Women	
	Number	Allowances	Number	Allowances
76	188	\$ 3,283,334	436	\$ 7,908,478
77	229	4,212,900	437	7,563,710
78	189	3,640,434	441	7,797,786
79	126	2,276,193	300	5,141,184
80	101	1,712,542	288	4,602,186
81	91	1,551,064	266	3,844,100
82	85	1,488,435	245	4,054,397
83	56	1,015,448	180	2,773,000
84	45	602,691	142	1,928,482
85	52	791,421	102	1,462,125
86	26	356,564	115	1,472,128
87	24	416,159	89	1,201,332
88	17	232,546	49	689,202
89	9	176,426	38	511,200
90	6	130,261	16	204,935
91	5	95,471	19	198,282
92	4	168,662	16	160,518
93	8	119,641	9	123,457
94	9	79,009	15	161,954
95			5	57,805
96			5	61,799
97			6	64,920
98			3	59,224
99			4	23,234
100			1	6,606
101			2	28,795
Total	3,867	\$ 68,529,578	9,237	\$ 157,545,741

Appendix A: Detailed Tabulations of Member Data (continued)

Table A-10: Number and Annual Retirement Allowances of Retired Members (Disabled at Retirement) Distributed by Annuity Type as of December 31, 2024

Annuity Type	Men		Women	
	Number	Allowances	Number	Allowances
Maximum	1,841	\$ 34,469,732	6,349	\$ 110,982,419
Option 1	30	607,443	112	1,693,865
Option 2	898	13,448,016	912	12,900,409
Option 3	168	3,197,700	305	4,774,757
Option 4	130	2,762,232	398	7,321,241
Option 5-2	1	20,506		
Option 5-3				
Option 6-2	626	10,441,755	757	12,313,270
Option 6-3	173	3,582,194	403	7,538,818
Other			1	20,962
Total	3,867	\$ 68,529,578	9,237	\$ 157,545,741

Appendix A: Detailed Tabulations of Member Data (continued)

Table A-11: Number and Annual Retirement Allowances of Retired Members and Survivors of Deceased Members Distributed by Amount of Annual Retirement Allowance as of December 31, 2024

Amount of Annual Retirement Allowances	Number of Retired Members and Survivors	Sum of Annual Retirement Allowances
\$0 - \$ 4,999	31,294	\$ 95,844,217
\$5,000 - \$9,999	41,593	309,759,879
\$10,000 - \$14,999	36,347	452,537,390
\$15,000 - \$19,999	29,006	504,523,422
\$20,000 - \$24,999	25,029	563,682,772
\$25,000 - \$29,999	24,359	669,260,942
\$30,000 - \$34,999	23,359	757,375,199
\$35,000 - \$39,999	17,036	635,957,895
\$40,000 - \$ 44,999	10,446	441,807,340
\$45,000 - \$49,999	6,358	300,621,393
\$50,000 & over	12,818	840,921,302
Total	257,645	\$ 5,572,291,750

Appendix B: Summary of Main Benefit and Contribution Provisions

A summary of the main benefit provisions of the Retirement System and of the sources of revenue from which benefits are paid is presented in the following digest. Items in parentheses in the text are the provisions applicable to law enforcement officers.

Average final compensation

The average annual compensation during the four consecutive years of membership service that afford the highest such average

Membership service

Service represented by regular contributions

Creditable service

Membership service, which may also include certain non-contributory or purchased service

Membership

Membership in TSERS is automatic for eligible employees who are permanent, full-time teachers or employees of a state-supported board of education or community college, a permanent employee of the state (or any of its agencies, departments, bureaus or institutions) and work at least 30 hours per week for nine months per year, a permanent employee of a charter school that participates in TSERS and works at least 30 hours per week for nine months per year, or a community college President hired after June 30, 2018. Faculty members, administrators or other eligible employees at a state institution of higher education as well as community college presidents hired on or before to June 30, 2018 may join the ORP instead of TSERS.

Agricultural Extension Service employees and members of the Federal Employees' Retirement System, new employees of the University of North Carolina Health Care System hired on or after Jan. 1, 2024, and employees of the Medical Faculty Practice Plan or ECU Dental School Clinical hired on or after Jan. 1, 2024 are not eligible for membership in TSERS.

Benefits

Unreduced Retirement Allowance

Condition for Allowance

An unreduced retirement allowance is payable to any member who retires from service:

- (a) after age 65 (55) and completion of five years of creditable service.
- (b) after age 60 and completion of 25 years of creditable service (not applicable to law enforcement officers); or
- (c) after completion of 30 years of creditable service.

Amount of Allowance

1.82% of average final compensation multiplied by the number of years of creditable service.

In no event will a member whose creditable service commenced on or before June 30, 1963 receive a smaller retirement allowance than he would have received under the benefit provisions of the system in effect on that date.

Appendix B: Summary of Main Benefit and Contribution Provisions (continued)

Reduced Retirement Allowance

Condition for Allowance

A reduced retirement allowance is payable to any member who retires from service prior to becoming eligible for an unreduced retirement allowance but after age 60 and completion of five years of membership service (age 55 and five years of creditable service).

Amount of Allowance

The member's reduced retirement allowance is equal to 1.82% of average final compensation multiplied by the number of years of creditable service at date of retirement reduced by 1/4 of 1% for each month by which the member's age at retirement is less than age 65.

In no event will a member whose creditable service commenced on or before June 30, 1963 receive a smaller retirement allowance than he would have received under the benefit provisions of the system in effect on that date.

OR

Condition for Allowance

A reduced retirement allowance is payable to any member who retires from service after age 50 and completion of 20 (15) years of creditable service but prior to becoming eligible for a reduced or unreduced retirement allowance.

Amount of Allowance

The member's reduced retirement allowance is equal to 1.82% of average final compensation multiplied by the number of years of creditable service at date of retirement reduced by the lesser of:

- (i) 5/12 (1/3) of 1% for each month by which his or her age is less than 60 (55), plus, if the member is not a law enforcement officer, 1/4 of 1% for each month by which his or her age is less than 65.
- (ii) 5% times the difference between 30 years and his or her creditable service at retirement.

OR

Condition for Allowance

A reduced retirement allowance is payable to any law enforcement officer who retires from service at any age with 25 years of service (15 years as an officer), but prior to becoming eligible for a reduced or unreduced retirement allowance.

Amount of Allowance

The member's reduced retirement allowance is equal to 1.82% of average final compensation multiplied by the number of years of creditable service at date of retirement reduced by the lesser of:

- (i) 1/3 of 1% for each month by which his or her age is less than 55,
- (ii) 5% times the difference between 30 years and creditable service at retirement plus 4% times the difference between age 50 and the member's age at retirement.

Deferred Retirement Allowance

Any member who separates from service after completing five or more years of membership service prior to becoming eligible for an unreduced or reduced retirement allowance and who leaves his or her total accumulated contributions in the system may receive a deferred retirement allowance, beginning at age 60 (55), computed in the same way as a reduced retirement allowance, or, if the member has 20 (15) or more years of service, at age 50 computed in the same way as a reduced service retirement allowance, on the basis of creditable service and compensation to the date of separation.

Appendix B: Summary of Main Benefit and Contribution Provisions (continued)

Return of Contributions

Upon the withdrawal of a member without a retirement allowance and upon his or her request, the member's contributions are returned, together with accumulated regular interest.

Upon the death of a member before retirement, his or her contributions, together with the full accumulated regular interest thereon, are paid to his or her estate or to person(s) designated by the member unless the designated beneficiary, if eligible, elects the survivor's alternate benefit described below.

The current interest rate on member contributions is 4%.

Survivor's Alternate Benefit

Upon the death of a member in service who has met conditions (a) or (b) below, his or her designated beneficiary may elect to receive a benefit equal to that which would have been payable under the provisions of Option 2 had the member retired on the first day of the month following his or her death and elected such option, in lieu of the member's accumulated contributions, provided the member had not instructed the Board of Trustees in writing that he or she did not wish the alternate benefit to apply.

- a) age 60 (55) and completion five years of membership (creditable) service; or
- b) completion of 20 years of creditable service.

Members receiving a benefit from the Disability Income Plan are eligible for this benefit.

Death After Retirement

Upon the death of a beneficiary who did not retire under an effective election of Option 2, 3, 5 or 6, an amount equal to the excess if any, of the member's accumulated contributions at retirement over the retirement allowance payments received is paid to a designated person or to the beneficiary's estate.

Upon the death of the survivor of a beneficiary who retired under an effective election of Option 2 or Option 3, an amount equal to the excess, if any, of the beneficiary's accumulated contributions at retirement over the total retirement allowance payments received is paid to such other person designated by the beneficiary or to the beneficiary's estate.

Upon the death of a beneficiary, a benefit may be provided by the Retirees' Contributory Death Benefit Plan.

Other Death Benefits

Upon the death of a member in service, other benefits may be provided by the Death Benefit Plan or Separate Insurance Benefit Plan for Law Enforcement Officers.

Optional Arrangements at Retirement

In lieu of the full retirement allowance, any member may elect to receive a reduced retirement allowance equal in value to the full allowance, with the provision that:

- Option 1 A member retiring prior to July 1, 1993, may elect that at his or her or her death within 10 years from his or her retirement date, an amount equal to his or her accumulated contributions at retirement, less 1/120 for each month he has received a retirement allowance, is paid to his or her estate, or to a person(s) designated by the member, or
- Option 2 At the death of the member his or her allowance shall be continued throughout the life of such other person as the member shall have designated at the time of his or her retirement, or

Appendix B: Summary of Main Benefit and Contribution Provisions (continued)

- Option 3 At the death of the member one-half of his or her allowance shall be continued throughout the life of such other person as the member shall have designated at the time of his or her retirement.
- Option 4 A member may elect to receive a retirement allowance in such an amount that, together with his or her Social Security benefit, he or she will receive approximately the same income per annum before and after the earliest age at which he or she becomes eligible to receive the Social Security benefit.
- Option 5 A member retiring prior to July 1, 1993 may elect to receive a reduced retirement allowance under the provisions of Option 2 or Option 3 in conjunction with the provisions of Option 1.
- Option 6 A member may elect either Option 2 or Option 3 with the added provision that in the event the designated beneficiary predeceases the member, the retirement allowance payable to the member after the designated beneficiary's death shall be equal to the retirement allowance which would have been payable had the member not elected the option.

Post-Retirement Increases in Allowances

Future increases in allowances may be granted at the discretion of the State.

Service Reciprocity

For the purpose of determining eligibility for a deferred, reduced or unreduced service retirement allowance, the membership and creditable service of a member shall include such prior service earned as a member of the Local Governmental Employees' Retirement System (LGERS), the Consolidated Judicial Retirement System (CJRS), or the Legislative Retirement System (LRS). In addition, if the member's accumulated contributions and reserves are transferred from the prior System to this System, the creditable service earned as a member of the prior System may be included for purposes of determining the amount of benefits payable under this System.

Military Service

For periods of active duty in the United States military may be counted as creditable service if the member was an employee upon entering the military and returned to employment within two years of discharge or for a period of 10 additional years.

Service Purchases

Additional creditable service may include service that the member purchased to restore a period of service for which the member:

- 1) received a refund of contributions,
- 2) had a leave of absence for educational purposes, extended illness or parental or maternity reasons,
- 3) had full-time temporary or part-time local or State government employment,
- 4) was in a probationary or waiting period with a unit of the LGERS,
- 5) had a leave of absence under Workers' Compensation,
- 6) performed service with a unit of local government not covered by LGERS,
- 7) performed service with the federal government or to another state not covered by any other retirement system,
- 8) performed service with a public community service entity funded entirely with federal funds,
- 9) performed service as a member of the General Assembly,
- 10) performed service as a member of a charter school not participating in the system,
- 11) was employed by The University of North Carolina and participated in the Optional Retirement Program but not eligible to receive any benefits from that program, or
- 12) performed service which was omitted by reason of error.

Appendix B: Summary of Main Benefit and Contribution Provisions (continued)

Unused Sick Leave

Unused sick leave counts as creditable service at retirement. Sick leave which was converted from unused vacation leave is also creditable. One month of credit is allowed for each 20 days of unused sick leave, plus an additional month for any part of 20 days left over.

Transfer of Defined Contribution Balances (Special Retirement Allowances)

A member may make a one-time election to transfer any portion of their eligible accumulated contributions to this plan on or after retirement. Eligible accumulated contributions are those from the Supplemental Retirement Income Plan or Public Employee Deferred Compensation Plan, not including Roth after-tax contributions. A member who became a member of the Supplemental Retirement Income Plan prior to retirement and who remains a member of the Supplemental Retirement Income Plan may also make a one-time election to transfer eligible balances, not including any Roth after-tax contributions, from any of the following plans to the Supplemental Retirement Income Plan, subject to the applicable requirements of the Supplemental Retirement Income Plan, and then through the Supplemental Retirement Income Plan to this Retirement System:

- 1) A plan participating in the North Carolina Public School Teachers' and Professional Educators' Investment Plan.
- 2) A plan described in section 403(b) of the Internal Revenue Code.
- 3) A plan described in section 457(b) of the Internal Revenue Code that is maintained by a state, political subdivision of a state, or any agency or instrumentality of a state or political subdivision of a state.
- 4) An individual retirement account or annuity described in Section 408(a) or 408(b) of the Internal Revenue Code that is eligible to be rolled over and would otherwise be includible in gross income.
- 5) A tax-qualified plan described in section 401(a) or 403(a) of the Internal Revenue Code.

The member may elect to convert the accumulated contributions to a life annuity with or without annual increases equal to the annual increase in the U.S. Consumer Price Index. Any ad-hoc COLA increases granted will not apply to benefits under this section. A member may elect Options 2, 3, or 6 under the Plan and may also elect either a guaranteed number of months of payments or a guarantee of total payments at least equal to the amount of contributions transferred to the Plan. In addition, any transfer may be paid in whole or in part with employer contributions paid directly to the Retirement System at the time of transfer.

Contributions

Member Contributions

Each member contributes 6% of his or her compensation.

Employer Contributions

Employers make annual contributions consisting of a normal contribution and an accrued liability contribution. The normal contribution covers the liability on account of current service and is determined by the actuary after each valuation.

The accrued liability contribution covers the past service liability that exceeds the actuarial value of assets.

The minimum total employer contribution rate is 6.00%.

Changes Since Prior Valuation

None.

Appendix C: Actuarial Assumptions and Methods

Assumptions are based on the experience investigation prepared as of December 31, 2019 and adopted by the Board of Trustees on January 28, 2021 for use beginning with the December 31, 2020 annual actuarial valuation.

Interest Rate

6.50% per annum, compounded annually.

Price Inflation

2.50% per annum, compounded annually.

Real Wage Growth

0.75% per annum.

Payroll Growth

3.25% per annum.

Separations From Active Service

Representative values of the assumed rates of separation from active service are as follows:

Rates of Withdrawal

Up to five years of membership								
Service	General Employees		Teachers, Librarians, and Counselors		Law Enforcement Officers		Other Education	
	Male	Female	Male	Female	Male	Female	Male	Female
0	0.0900	0.0900	0.0500	0.0350	0.0350	0.0350	0.0900	0.0700
1	0.1700	0.1750	0.1750	0.1650	0.0925	0.0925	0.1900	0.1750
2	0.1500	0.1575	0.1550	0.1550	0.0925	0.0925	0.1700	0.1550
3	0.1250	0.1400	0.1450	0.1375	0.0950	0.0950	0.1300	0.1250
4	0.1100	0.1150	0.1150	0.1150	0.0800	0.0800	0.1100	0.1075

After five years of membership								
Age	General Employees		Teachers, Librarians, and Counselors		Law Enforcement Officers		Other Education	
	Male	Female	Male	Female	Male	Female	Male	Female
25	0.2500	0.2500	0.3000	0.3500	0.0750	0.0750	0.2500	0.2500
30	0.1250	0.1200	0.0900	0.1000	0.0750	0.0750	0.1000	0.1500
35	0.0750	0.1000	0.0600	0.0575	0.0350	0.0350	0.0550	0.0750
40	0.0500	0.0575	0.0475	0.0400	0.0250	0.0250	0.0500	0.0650
45	0.0400	0.0400	0.0375	0.0350	0.0200	0.0200	0.0500	0.0475
50	0.0400	0.0400	0.0425	0.0400	0.0200	0.0200	0.0500	0.0450
55	0.0400	0.0400	0.0425	0.0400			0.0400	0.0350
60	0.0400	0.0400	0.0425	0.0400			0.0400	0.0350

Appendix C: Actuarial Assumptions and Methods (continued)

Annual Rates of Mortality for Employees

(Base rates using Pub-2010 Amount weighted)

Age	General Employees		Teachers, Librarians, and Counselors		Law Enforcement Officers		Other Education	
	Male	Female	Male	Female	Male	Female	Male	Female
25	0.00028	0.00009	0.00016	0.00009	0.00037	0.00020	0.00028	0.00009
30	0.00036	0.00015	0.00022	0.00014	0.00041	0.00027	0.00036	0.00015
35	0.00047	0.00023	0.00030	0.00020	0.00047	0.00036	0.00047	0.00023
40	0.00066	0.00036	0.00042	0.00031	0.00059	0.00049	0.00066	0.00036
45	0.00098	0.00056	0.00067	0.00048	0.00082	0.00067	0.00098	0.00056
50	0.00149	0.00083	0.00111	0.00073	0.00120	0.00091	0.00149	0.00083
55	0.00219	0.00123	0.00172	0.00107	0.00175	0.00123	0.00219	0.00123
60	0.00319	0.00186	0.00264	0.00161	0.00264	0.00168	0.00319	0.00186
65	0.00468	0.00296	0.00435	0.00270	0.00410	0.00228	0.00468	0.00296
70	0.00703	0.00489	0.00709	0.00485	0.00766	0.00454	0.00703	0.00489
74	0.01001	0.00731	0.00993	0.00809	0.01263	0.00787	0.01001	0.00731

Annual Rates of Disability

Active Members with 5 or more years of service as of January 1, 1988

Age	General Employees		Teachers, Librarians, and Counselors		Law Enforcement Officers		Other Education	
	Male	Female	Male	Female	Male	Female	Male	Female
25	0.00020	0.00024	0.00006	0.00018	0.00330	0.00330	0.00020	0.00024
30	0.00040	0.00040	0.00012	0.00026	0.00430	0.00430	0.00040	0.00040
35	0.00100	0.00100	0.00030	0.00060	0.00600	0.00600	0.00100	0.00100
40	0.00300	0.00180	0.00066	0.00102	0.00790	0.00790	0.00300	0.00180
45	0.00500	0.00320	0.00138	0.00178	0.01100	0.01100	0.00500	0.00320
50	0.00840	0.00500	0.00234	0.00316	0.01760	0.01760	0.00840	0.00500
55	0.01440	0.00880	0.00474	0.00554	0.03070	0.03070	0.01440	0.00880
60	0.02400	0.01380	0.00768	0.01020	0.06010	0.06010	0.02400	0.01380
64	0.03160	0.01780	0.01124	0.01392	0.11210	0.11210	0.03160	0.01780

Appendix C: Actuarial Assumptions and Methods (continued)

Retirements

Representative values of the assumed rates of retirement from active service are as follows:

Annual Rates of Retirement

General Employees

Male Age	5	10	15	Service 20	25	30	35
50				0.030	0.040	0.600	0.600
55				0.030	0.040	0.350	0.350
60	0.090	0.070	0.070	0.100	0.225	0.270	0.270
65	0.180	0.250	0.250	0.300	0.400	0.300	0.300
70	0.180	0.250	0.225	0.225	0.250	0.300	0.300
75	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Female Age	5	10	15	Service 20	25	30	35
50				0.035	0.040	0.400	0.400
55				0.040	0.040	0.250	0.250
60	0.070	0.080	0.090	0.095	0.200	0.250	0.250
65	0.200	0.250	0.300	0.300	0.350	0.300	0.300
70	0.150	0.200	0.225	0.250	0.350	0.300	0.300
75	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Teachers, Librarians, and Counselors

Male Age	5	10	15	Service 20	25	30	35
50				0.030	0.030	0.700	0.700
55				0.045	0.030	0.450	0.450
60	0.085	0.080	0.100	0.100	0.300	0.300	0.300
65	0.175	0.225	0.250	0.325	0.400	0.250	0.250
70	0.175	0.225	0.250	0.250	0.250	0.300	0.300
75	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Female Age	5	10	15	Service 20	25	30	35
50				0.050	0.045	0.750	0.750
55				0.050	0.045	0.375	0.375
60	0.080	0.100	0.100	0.130	0.250	0.375	0.375
65	0.250	0.300	0.250	0.350	0.475	0.400	0.400
70	0.225	0.250	0.300	0.300	0.300	0.325	0.325
75	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Appendix C: Actuarial Assumptions and Methods (continued)

Law Enforcement Officers

Age	Service						
	5	10	15	20	25	30	35
50			0.040	0.050	0.050	0.800	0.800
55	0.200	0.200	0.350	0.350	0.500	0.650	0.650
60	0.100	0.200	0.125	0.250	0.250	0.500	0.500
65	0.150	0.450	0.250	0.250	0.250	0.500	0.500
70	0.250	0.150	0.250	0.250	0.250	0.500	0.500
75	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Other Education

Male Age	Service						
	5	10	15	20	25	30	35
50				0.035	0.045	0.500	0.500
55				0.040	0.050	0.300	0.300
60	0.080	0.070	0.100	0.090	0.200	0.275	0.275
65	0.100	0.250	0.250	0.300	0.275	0.275	0.275
70	0.100	0.250	0.250	0.225	0.300	0.350	0.350
75	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Female Age	Service						
	5	10	15	20	25	30	35
50				0.045	0.045	0.500	0.500
55				0.045	0.060	0.300	0.300
60	0.070	0.090	0.100	0.100	0.300	0.300	0.300
65	0.175	0.250	0.250	0.300	0.350	0.350	0.350
70	0.150	0.200	0.225	0.200	0.275	0.350	0.350
75	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Salary Merit Increases

Total assumed salary increases are these merit rates combined with the wage inflation assumption of 3.25% (2.50% price inflation plus 0.75% real wage growth). Representative values of the assumed annual rates of salary merit increases are as follows:

Service	General Employees	Teachers, Librarians and Counselors	Law Enforcement Officers	Other Education
0	3.00%	4.05%	4.80%	4.25%
5	1.80%	2.87%	3.10%	2.65%
10	1.10%	2.04%	2.00%	1.85%
15	0.60%	1.13%	0.80%	1.33%
20	0.50%	0.00%	0.80%	0.83%
25	0.40%	0.00%	0.80%	0.33%
30	0.00%	0.00%	0.40%	0.00%
>=35	0.00%	0.00%	0.00%	0.00%

Appendix C: Actuarial Assumptions and Methods (continued)

Post-Retirement Mortality

Representative values of the assumed post-retirement mortality rates as of 2010 prior to any mortality improvements are as follows:

Annual Rates of Post-Retirement Mortality (members healthy at retirement)

Age	General Employees		Teachers, Librarians, and Counselors		Law Enforcement Officers		Other Education	
	Male	Female	Male	Female	Male	Female	Male	Female
55	0.00455	0.00272	0.00335	0.00266	0.00327	0.00279	0.00455	0.00272
60	0.00649	0.00365	0.00471	0.00344	0.00549	0.00482	0.00649	0.00365
65	0.00963	0.00582	0.00672	0.00456	0.00957	0.00832	0.00963	0.00582
70	0.01610	0.01010	0.01183	0.00789	0.01711	0.01438	0.01610	0.01010
75	0.02818	0.01789	0.02187	0.01499	0.03085	0.02483	0.02818	0.01789
80	0.05037	0.03360	0.04030	0.02895	0.05571	0.04287	0.05037	0.03360

Annual Rates of Post-Retirement Mortality (survivor and members disabled at retirement)

Age	Contingent Survivors of Deceased members		Members Disabled at Retirement			
	All Survivors		Non - Law Enforcement Officers		Law Enforcement Officers	
	Male	Female	Male	Female	Male	Female
55	0.01147	0.00742	0.02355	0.01692	0.01818	0.01587
60	0.01450	0.00975	0.02785	0.01914	0.02280	0.01833
65	0.02086	0.01332	0.03524	0.02178	0.02677	0.02051
70	0.03221	0.01931	0.04599	0.02706	0.03353	0.02450
75	0.04971	0.02946	0.06347	0.03718	0.04344	0.03239
80	0.07802	0.04698	0.09259	0.05517	0.05921	0.04678

Mortality Assumption

All mortality rates use Pub-2010 amount-weighted tables.

Mortality Projection

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

Deaths After Retirement (General Employees and Other Education)

Mortality rates are based on the General Mortality Table for Retirees. Rates for male members are multiplied by 105.5% at all ages. Rates for female members are multiplied by 95% for ages under 76, increased by 1% for each age up to age 90 and by 110% for all ages greater than 89. Because the retiree tables have no rates prior to age 50, the General Mortality Table for Employees is used for ages less than 50.

Appendix C: Actuarial Assumptions and Methods (continued)

Deaths After Retirement (Teachers)

Mortality rates are based on the Below-median Teachers Mortality Table for Retirees. Rates for male members are multiplied by 96% for ages under 83, increased by 2% for each age up to 87 and by 106% for all ages greater than 86. Rates for female members are multiplied by 101% for age 81, increased by 1% for each age up to 85, and by 105% for all ages greater than 84. Because the retiree tables have no rates prior to age 55, the Below-median Teachers Mortality Table for Employees is used for ages less than 55.

Deaths After Retirement (Law Enforcement Officers)

Mortality rates are based on the Safety Mortality Table for Retirees. Rates for all members are multiplied by 97% and Set Forward by 1 year. Because the retiree tables have no rates prior to age 45, the Safety Mortality Table for Employees is used for ages less than 45.

Deaths After Retirement (Survivors of Deceased Members)

Mortality rates are based on the Below- median Teachers Mortality Table for Contingent Survivors. Rates for male members are Set Forward 3 years. Rate for female members are Set Forward 1 year. Because the contingent survivor tables have no rates prior to age 45, the Below-median Teachers Mortality Table for Employees is used for ages less than 45.

Deaths After Retirement (Disabled Members at Retirement)

Mortality rates are based on the General Mortality Table for Disabled Retirees. Rates for male members not in Law Enforcement are Set Forward 3 years, while male members in Law Enforcement are Set Back 3 years. Rates for female members not in Law Enforcement are Set Back 1 year, while female members in Law Enforcement are Set Back 3 years.

Deaths Prior to Retirement

Mortality rates for the general and other education groups are based on the General Mortality Table for Employees. Mortality rates for teachers are based on the Teachers Mortality Table for Employees. Mortality rates for law enforcement officers are based on the Safety Mortality Table for Employees.

Timing of Assumptions

All withdrawals, deaths, disabilities, retirements and salary increases 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.

Appendix C: Actuarial Assumptions and Methods (continued)

Leave Conversions

Sick leave can be converted to increase creditable service and used to meet the eligibility requirements for retirement. Unused vacation leave can be converted to increase creditable service or compensation but does not add to the eligibility service. The assumed impact of these conversions is shown in the table below.

		General Employees		Teachers, Librarians and Counselors		Law Enforcement Officers		Other Education	
		Male	Female	Male	Female	Male	Female	Male	Female
Increase in AFC (percentage) – Unused Vacation Leave		2.50%	2.50%	2.00%	2.00%	1.75%	1.75%	1.75%	1.75%
Increase in Service (yrs) – Unused Sick Leave	Credited	0.85	0.55	0.90	0.70	1.50	1.50	1.05	0.80
	Eligibility	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Liability for Inactive Members

For inactive members with five or more years of service without actual deferred benefit amounts, a deferred benefit amount is estimated based on available data and contribution balances projecting backwards assuming 4% salary growth and 4% interest on contribution balances where necessary. For inactive members with less than five years of service the liability is equal to the member's accumulated contributions.

Administrative Expenses

0.10% of payroll added to the normal cost rate.

Marriage Assumption

100% married with male spouses three years older than female spouses.

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.

Reported Compensation

Calendar year compensation as furnished by the system's office.

Valuation Compensation

Reported compensation adjusted to reflect the assumed rate of pay as of the valuation date and the probability of decrement during the year.

Compensation for members receiving DIPNC benefits

Compensation earned as of the disability benefit effective date is increased by inflation to the valuation date.

Compensation Limits

No compensation limits are applied.

Appendix C: Actuarial Assumptions and Methods (continued)

Actuarial Cost Method

Entry age normal cost method. Under this method, the actuarial value of projected benefits for each individual participant is allocated as a level percentage of compensation over the working lifetime of the participant between the date of employment and assumed date of exit.

Normal Cost

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

Amortization Period

12-year closed, level-dollar amount. The first amortization base was created for the contribution payable for fiscal year ending 2012.

Asset Valuation Method

Actuarial value, as developed in Table 10. The 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 Actuarial Value of Assets was reset to the market value of assets at December 31, 2014. 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

Direct Rate Smoothing

Assumption changes adopted by the experience study prepared as of December 31, 2019, and adopted by the Board of Trustees on January 28, 2021, increased the actuarially determined contribution requirements of TSERS by 2.99% of payroll, as calculated by the prior actuarial firm. The impact of these assumption changes has been smoothed over a five-year period so that 20% of the impact has been recognized for each valuation starting with the December 31, 2020 valuation, and has been fully recognized in the December 31, 2024 valuation.

The Total Preliminary ADEC shown in Table 1 is the actuarially determined contribution prior to any direct rate smoothing and before reflection of the ECRSP.

Changes in Assumptions and Methods Since Prior Valuation:

None. The assumptions and methods used for the December 31, 2024 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.

Appendix D: Additional Disclosures

Table D-1 illustrates the sensitivity of certain valuation results to changes in the discount rate on a market value of assets basis. Table D-2 provides an estimate of future market value of asset returns based on the current portfolio structure and summarized in the “NCRS Investment Policy Statement Review” presentation prepared by the DST Investment Management Division and dated May 25, 2022.

Section 6(c) of Session Law 2016-108 requires that the actuarial valuation report provide the valuation results using a 30-year treasury rate as of December 31 of the year of the valuation as the discount rate. This is 4.78% at December 31, 2024 and has been used as the lower bound of the sensitivity analysis presented. The range between the current discount rate (6.50%) and the 30-year treasury rate (4.78%) was used to establish an upper bound for sensitivity analysis (8.22%). Callan performed analysis for DST’s Investment Management Division in 2022 and Gallagher analyzed expected future market value of asset returns in its Stress Testing and Sensitivity Analysis Report, which was presented to the TSERS Board of Trustees on July 25, 2024. In both studies, the lower bound of 4.78% returns is between 75% to 95% likely to be achieved on average over the next 30 years, while the upper bound of 8.22% is more than 5% likely to be achieved on average over the next 30 years. For additional information regarding Gallagher’s underlying Capital Market Assumptions and related assumptions, please refer to the TSERS Stress Testing and Sensitivity Analysis Report dated July 2024.

TSERS invests in a diversified portfolio with the objective of maximizing investment returns at a reasonable level of risk. However, Actuarial Standard of Practice No. 4 (“ASOP 4”) requires the actuary to disclose a Low-Default-Risk Obligation Measure (“LDROM”) of plan liabilities and provide commentary to help intended users of this report understand the significance of the measure with respect to funded status, contributions, and participant benefit security.

The LDROM is to be based on “discount rates derived from low-default-risk fixed income securities whose cash flows are reasonably consistent with the pattern of benefits expected to be paid in the future.” Note that the actuarial accrued liability shown in Table D-1 using the 30-year treasury rate of 4.78% as of December 31, 2024 represents the LDROM of plan liabilities. Please note that the interest rate used for the LDROM is based on 30-year Treasury rates as of the measurement and will therefore vary for different measurement dates. All other assumptions are the same as those used for funding purposes as shown in this report.

The LDROM shown here represents an estimate of what the TSERS actuarial accrued liability would be if TSERS invested its assets solely in 30-year Treasury bonds. Consequently, the difference between the LDROM and the Actuarial Accrued Liability can be thought of as representing the expected taxpayer savings / (cost) from investing in the plan’s diversified portfolio compared to investing only in 30-year Treasury bonds. It may also be thought of as the cost of reducing investment risk.

Actuaries play a role in helping determine funding methods and policies that can achieve affordable and appropriate contributions and risk management. The funded status based on actuarial accrued liability and the actuarially determined contributions are determined using the expected return on assets, which reflects the actual investment portfolio. Since the assets are not invested in an all-bond portfolio, the LDROM does not indicate TSERS’ funded status or progress, nor does it provide information on necessary plan contributions.

With respect to security of participant benefits, if this plan were to be funded on an LDROM basis, participant benefits currently accrued as of the measurement date may be considered more secure as investment risk may be significantly reduced. However, the assets being invested in a diversified portfolio does not mean the participant benefits are not secure. Security of participant benefits relies on a combination of the assets in the plan, the investment returns generated on those assets, and the promise of future contributions from the plan sponsors.

Appendix D: Additional Disclosures (continued)

Table D-1: Sensitivity of Valuation Results as of December 31, 2024

Discount Rate	4.78%	5.64%	6.50%	7.36%	8.22%
Market Value of Assets	\$ 88,516,600,617	\$ 88,516,600,617	\$ 88,516,600,617	\$ 88,516,600,617	\$ 88,516,600,617
Actuarial Accrued Liability	\$ 127,221,292,148	\$ 114,418,581,782	\$ 103,626,727,675	\$ 94,481,632,476	\$ 86,672,611,964
Unfunded Accrued Liability (UAAL)	\$ 38,704,691,531	\$ 25,901,981,165	\$ 15,110,127,058	\$ 5,965,031,859	\$ (1,843,988,653)
Funded Ratio	69.6%	77.4%	85.4%	93.7%	102.1%
20-Year Amortization of UAL (as % of general state revenue)	\$ 3,193,781,836 7.1%	\$ 2,316,362,181 5.2%	\$ 1,460,467,672 3.2%	\$ 621,509,431 1.4%	N/A N/A

Other than the discount rate, these results are based on the other economic and demographic assumptions presented in the report. For purposes of simplicity in this disclosure, no adjustments to the valuation assumption for inflation were reflected in the sensitivities above. The statute also requires that the actuarial valuation report show the results using a market value of assets basis. The “funded ratio” and “unfunded accrued liability” in Table D-1 are based upon the market value of assets. To alleviate volatility, future employer contributions are determined based on the actuarial value of assets, which smooths market value returns.

None of the liability amounts shown are intended to imply the amount that might represent the cost of any settlement of the plan’s obligations. The various caveats, constraints, and discussions presented earlier in the report apply to these results as well.

Table D-2: Statistical Likelihood of Minimum Future Asset Returns (Callan)

Horizon	95% Chance (19 out of every 20 scenarios)	75% Chance (3 out of every 4 scenarios)	50% Chance (1 out of every 2 scenarios)	25% Chance (1 out of every 4 scenarios)	5% Chance (1 out of every 20 scenarios)
10 Years (2032)	0.4%	3.6%	5.7%	7.8%	11.1%
30 Years (2052)	3.3%	5.1%	6.3%	7.6%	9.3%

This analysis was commissioned by the Investment Management Division and presented by Callan to the Investment Advisory Committee on February 23, 2022.

Table D-3: Statistical Likelihood of Minimum Future Asset Returns (Gallagher)

Horizon	95% Chance (19 out of every 20 scenarios)	75% Chance (3 out of every 4 scenarios)	50% Chance (1 out of every 2 scenarios)	25% Chance (1 out of every 4 scenarios)	5% Chance (1 out of every 20 scenarios)
10 Years (2033)	2.3%	5.3%	7.1%	8.7%	11.1%
30 Years (2053)	4.0%	5.7%	6.8%	7.8%	9.2%

This analysis was included in Gallagher’s Stress Testing and Sensitivity Analysis Report, which was presented to the TSERS Board of Trustees on July 25, 2024.

Appendix E: Participating Employers

Employer	Employer Code	Employer	Employer Code
A Childs Garden Charter (AKA Cross Creek Charter)	33501	Carteret Community College	31605
Academy of Moore County	36301	Carteret County Schools	31600
Administrative Office of the Courts	10800	Caswell County Schools	31700
Alamance Community College	30105	Catawba County Schools	31800
Alamance Community School	32915	Catawba Valley Community College	31805
Alamance County Schools	30100	Central Carolina Community College	35305
Alexander County Schools	30200	Central Park Sch for Children	33202
Alleghany County Schools	30300	Central Piedmont Community College	36005
American Renaissance Mid School	34901	Chapel Hill - Carrboro City Schools	36810
Anson County Schools	30400	Charlotte Secondary Charter	36009
Appalachian State University	20100	Charlotte-Mecklenburg County Schools	36000
Arapahoe Charter School	36901	Chatham County Schools	31900
Arts Based Elementary Charter	33402	Cherokee County Schools	32000
Ashe County Schools	30500	Clay County Schools	32200
Asheboro City Schools	37610	Cleveland Community College	32305
Asheville City Schools	31110	Cleveland County Schools	32300
Asheville-Buncombe Technical College	31105	Clinton City Schools	38210
Aspire Trade High School	36401	Clover Garden Charter School	30102
Avery County Schools	30600	Coastal Carolina Community College	36705
Barber Examiners, State Board Of	18600	College of the Albemarle	37005
Bear Grass Charter School	33206	Columbus County Schools	32400
Beaufort County Community College	30705	Community Colleges Administration	19005
Beaufort County Schools	30700	Community School of Davidson	36003
Bertie County Schools	30800	Cornerstone Academy	33027
Bethany Community Middle School	37901	Corvian Community Charter School	36004
Bladen Community College	30905	Craven Community College	32505
Bladen County Schools	30900	Cumberland County Schools	32600
Blue Ridge Community College	34505	Currituck County Schools	32700
Brevard Academy Charter School	38801	Dare County Schools	32800
Brunswick Community College	31005	Davidson County Schools	32900
Brunswick County Schools	31000	Davidson-Davie Community College	32905
Buncombe County Schools	31100	Davie County Schools	33000
Burke County Schools	31200	Department of Administration	10900
Cabarrus County Schools	31300	Department of Adult Corrections	19120
Caldwell Community College	31405	Department of Commerce	12510
Caldwell County Schools	31400	Department of Justice	10400
Camden County Schools	31500	Department of Natural and Cultural Resources	10700
Cape Fear Community College	36505	Department of Public Instruction	22000
Cape Fear Ctr for Inquiry	36501	Department of Public Safety	19100
Carolina International School	31301	Dept of Agriculture & Consumer Svcs.	18400

Appendix E: Participating Employers (continued)

Employer	Employer Code	Employer	Employer Code
Discovery Charter	32904	Hertford County Schools	34600
Duplin County Schools	33100	Hickory City Schools	31810
Durham Public Schools	33200	Highway - Administrative	51000
Durham Technical Institute	33205	Hoke County Schools	34700
East Carolina University	20300	Hyde County Schools	34800
East Wake First Academy	39208	Information Technology Services	10930
Edenton-Chowan County Schools	32100	Insurance Department	12600
Edgecombe County Schools	33300	Invest Collegiate Charter (Buncombe)	33207
Edgecombe Technical College	33305	Iredell-Statesville Schools	34900
Elizabeth City and Pasquotank County Schools	37000	Isothermal Community College	38105
Elizabeth City State University	20400	Jackson County Schools	35000
Elkin City Schools	38620	James Sprunt Technical College	33105
Endeavor Charter School	39201	Johnston County Schools	35100
Evergreen Community Charter School	31102	Johnston Technical College	35105
F Delany New School for Children	31101	Jones County Schools	35200
Fayetteville State University	20600	Kannapolis City Schools	31320
Fayetteville Technical Community College	32605	Labor Department	12700
Forsyth Technical Community College	33405	Lake Norman Charter School	36006
Franklin County Schools	33500	Lee County Board of Education	35300
Gaston College	33605	Lenoir County Community College	35405
Gaston County Schools	33600	Lenoir County Schools	35400
Gates County Schools	33700	Lexington City Schools	32910
General Assembly	12160	Lincoln County Schools	35500
Governor's Office	12100	Lt Governor's Office	12150
Graham County Schools	33800	Macon County Schools	35600
Granville County Public Schools	33900	Madison County Schools	35700
Gray Stone Day School	38402	Martin Community College	35805
Greene County Schools	34000	Martin County Schools	35800
Guilford County Schools	34100	Mayland Technical College	36105
Guilford Technical Community College	34105	Mcdowell County Schools	35900
Halifax Community College	34205	Mcdowell Technical College	35905
Halifax County Schools	34200	Millennium Charter Academy	38602
Haliwa-Saponi Tribal Charter	39301	Mitchell Community College	34905
Harnett County Schools	34300	Mitchell County Schools	36100
Haywood County Schools	34400	Montgomery Community College	36205
Haywood Technical College	34405	Montgomery County Schools	36200
Health and Human Svcs	12220	Moore County Schools	36300
Healthy Start Academy	33203	Mooresville City Schools	34910
Henderson Collegiate Charter School	39401	Mount Airy City Schools	38610
Henderson County Schools	34500	Mountain Community School	34501

Appendix E: Participating Employers (continued)

Employer	Employer Code	Employer	Employer Code
Mtn Discovery Charter	38701	Randolph County Schools	37600
N.E. Academy of Aerospace & Adv.Tech	37001	Revenue Department	13500
N.E. Regional School for Biotechnology	33001	Richmond County Schools	37700
Nash Community College	36405	Richmond Technical College	37705
Nash County Public Schools	36400	River Mill Academy Charter	30103
NC A&T University	20700	Roanoke Rapids City Schools	34220
NC Auctioneers Licensing Board	18740	Roanoke-Chowan Community College	34605
NC Brd of Examiners of Practicing Psychologists	18780	Robeson Community College	37805
NC Central University	20800	Robeson County Schools	37800
NC Department of Military & Veterans Affairs	11050	Rockingham Community College	37905
NC Dept of Environmental Quality	11300	Rockingham County Schools	37900
NC Housing Finance Agency	11310	Rowan-Cabarrus Community College	38005
NC School of Science & Mathematics	10950	Rowan-Salisbury School System	38000
NC School of the Arts	20200	Roxboro Community School	37301
NC State University	21300	Rutherford County Schools	38100
Neuse Charter School	35106	Sampson Community College	38205
New Bern Craven County Board of Education	32500	Sampson County Schools	38200
New Hanover County Schools	36500	Sandhills Community College	36305
Newton-Conover City Schools	31820	Scotland County Schools	38300
North Carolina Board of Opticians	18640	Secretary of State	13700
North Carolina Education Lottery	10200	Socrates Academy	36007
Northampton County Schools	36600	South Piedmont Community College	30405
Office of Administrative Hearing	10850	Southeastern Academy Charter School	37801
Office of State Budget & Management	10910	Southeastern Community College	32405
Office of State Controller	10940	Southern Wake Academy	39204
Onslow County Schools	36700	Southwestern Community College	35005
Orange Charter School	36802	Stanly Community College	38405
Orange County Schools	36800	Stanly County Schools	38400
Pamlico Community College	36905	Stars Charter School	36302
Pamlico County Schools	36900	State Auditor	10500
Pender County Schools	37100	State Board of Elections	11900
Perquimans County Schools	37200	State Bureau of Investigation	11000
Person County Schools	37300	State Treasurer	14300
Piedmont Community College	37305	Stokes County Schools	38500
Pine Lake Prep Charter	36008	Success Institute	34903
Pinnacle Classical Academy	39703	Surry Community College	38605
Pitt Community College	37405	Surry County Schools	38600
Pitt County Schools	37400	Swain County Schools	38700
Polk County Schools	37500	The Hawbridge School	30104
Randolph Community College	37605	The North Carolina Leadership Academy	36303

Appendix E: Participating Employers (continued)

Employer	Employer Code	Employer	Employer Code
Thomasville City Schools	32920	Wayne Community College	39605
Transylvania County Schools	38800	Wayne County Schools	39600
Tri-County Community College	32005	Weldon City Schools	34230
Two Rivers Comm School	39501	Western Carolina University	21800
Tyrrell County Schools	38900	Western Piedmont Comm College	31205
UNC - Pembroke	21200	Whiteville City Schools	32410
UNC Health Care System	21550	Wildlife Resources Commission	11600
UNC-Chapel Hill Cb1260	21520	Wilkes Community College	39705
UNC-System Office	21525	Wilkes County Schools	39700
Union County Schools	39000	Wilmington Prep Academy	36502
University of North Carolina at Asheville	23000	Wilson Community College	39805
University of North Carolina at Charlotte	23100	Wilson County Schools	39800
University of North Carolina at Greensboro	20900	Winston-Salem State University	21900
University of North Carolina at Wilmington	23200	Winston-Salem-Forsyth County Schools	33400
University of North Carolina Press	21570	Yadkin County Schools	39900
Uwharrie Charter Academy	37601	Yancey County Schools	30000
Vance Charter School	39101	Zeca School of the Arts and Technology	36701
Vance County Schools	39100		
Vance-Granville Community College	39105		
Voyager Academy	33204		
Wake County Public Schools System	39200		
Wake Technical College	39205		
Warren County Schools	39300		
Washington County Schools	39400		
Watauga County Schools	39500		

Appendix F: ECRSP Policy

Teachers' and State Employees' Retirement System Board of Trustees

Employer Contribution Rate Stabilization Policy for the Teachers' and State Employees' Retirement System

This ECRSP policy was adopted by the TSERS Board of Trustees at its meeting on April 29, 2021.

Policy Purpose

This policy provides for continued operation of an Employer Contribution Rate Stabilization Policy (ECRSP) for the Teachers' and State Employees' Retirement System (TSERS). On January 21, 2016, the Board of Trustees (Board) of TSERS approved an ECRSP to be in place for fiscal years ending 2017 through 2022. Having adopted the Experience Study of the 2015- 2019 calendar years on January 28, 2021, which will be effective for plan funding purposes for fiscal years ending 2023 and later, the Board wishes to institute an ECRSP effective for contributions during the five fiscal years ending 2023 through 2027.

Policy Objectives

This policy establishes how the Board will develop an annual appropriation amount to recommend to the General Assembly to fund TSERS and to establish the "required employer contribution rate" pursuant to G.S. 135-8(d)(a3).

Definitions

- **Actuarial Measurement**
The result of an analysis by the Board's consulting actuary, presented in a public report, based on actuarial assumptions and methods adopted by the Board for purposes of funding of TSERS.
- **Policy Contribution**
The State appropriation to be recommended by the Board under this policy.
- **Underlying Actuarially Determined Employer Contribution (Underlying ADEC)**
The amount developed annually by the Board's consulting actuary, representing a funding requirement according to the Board's actuarial assumptions and methods before applying this policy.

Annual Appropriation Recommendation

This policy calls for continuing the approach used for the fiscal years ending 2017 through 2022, whereby the Board recommends an appropriation at least equal to the Underlying ADEC, and also at least equal to the prior year's recommendation (as adjusted) plus 0.35% of retirement eligible compensation. This may result in an appropriation recommendation exceeding the Underlying ADEC.

Accordingly, for each year that this policy is in effect, the Policy Contribution recommended by the Board will be the greater of (1) the Underlying ADEC for the upcoming fiscal year or (2) 0.35% of eligible compensation greater than the appropriation recommended by the Board for the current fiscal year. However, if the Policy Contribution is determined by part (2) of the definition, it can be no greater than (3) the Underlying ADEC if it were determined using a discount rate equal to the annual yield on 30-year U.S. Treasury securities as of the date of the actuarial valuation used to determine the Underlying ADEC for the upcoming fiscal year.

In developing Parts (1) and (3) of this definition, the Underlying ADEC should be adjusted to include the effect of any benefit change enacted by the General Assembly that was not incorporated in the consulting actuary's annual valuation report. This adjustment should be equal to the Actuarial Measurement of the effect of the benefit change for purposes of the legislative actuarial note.

Appendix F: ECRSP Policy (continued)

Teachers' and State Employees' Retirement System Board of Trustees

Employer Contribution Rate Stabilization Policy for the Teachers' and State Employees' Retirement System

In developing Part (2) of this definition, this policy provides the following guidance.

- The appropriation that was recommended for the current fiscal year should be adjusted for the effect of any permanent cost-of-living allowance (COLA) or other permanent benefit change enacted by the General Assembly, taking effect during the current fiscal year, that was not incorporated in the Board's recommendation for the current fiscal year. This adjustment should be equal to the Actuarial Measurement of the effect of the benefit change on the Underlying ADEC for purposes of the legislative actuarial note.
- The appropriation that was recommended for the current fiscal year should be adjusted for the effect of any one-time supplemental payment (COLA supplements) enacted by the General Assembly, taking effect during the current fiscal year, that was not incorporated in the Board's recommendation for the current fiscal year, only if the General Assembly made a recurring appropriation associated with the supplemental payment. In that case, the adjustment should be equal to the percentage of eligible compensation equivalent to the recurring appropriation. Otherwise, the appropriation that was recommended for the current fiscal year should not be adjusted for the cost of a one-time supplemental payment.
- The appropriation that was recommended for the current fiscal year should be adjusted for the effect of any benefit change enacted by the General Assembly, taking effect during the upcoming fiscal year, including COLA supplements, that was not incorporated in the Board's recommendation for the current fiscal year. This adjustment should be equal to the Actuarial Measurement of the effect of the benefit change on the Underlying ADEC for purposes of the legislative actuarial note.
- The appropriation that was recommended for the current fiscal year should be adjusted for the effect of any changes in actuarial assumptions or methods adopted by the Board that were not incorporated in the Board's recommendation for the current fiscal year. The adjustment should be equal to the Actuarial Measurement of the effect on the Underlying ADEC.
- The appropriation that was recommended for the current fiscal year should exclude any appropriations to the Unfunded Liability Solvency Reserve for distribution to TSERS.

The Policy Contribution will be deemed by the Board to be the annual actuarially determined employer contribution (funding ADEC) and the "required employer contribution rate" for TSERS, pursuant to G.S. 135-8(d)(a3) as in effect at the date of adoption of this policy.

Policy Effective Date

This policy is effective through the fiscal year ending June 30, 2027. The Board may vote to extend it for any period of time.

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