State of Wyoming Retirement System – Public Employee Plan

Actuarial Valuation Report
for the Year Beginning January 1, 2024

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May 30, 2024

Board of Trustees
State of Wyoming Retirement System
6101 Yellowstone Road
Suite 500
Cheyenne, WY 82002

Dear Board of Trustees:

Subject: Actuarial Valuation as of January 1, 2024

We are pleased to present the report of the actuarial valuation of the Public Employee Plan of the State of Wyoming Retirement System ("the Fund") for the plan year commencing January 1, 2024. This report describes the current actuarial condition of the Fund, determines the calculated employer contribution rate (the actuarially determined contribution rate), and analyzes changes in this contribution rate from the prior year. Valuations are prepared annually, as of January 1, the first day of the Fund's plan year.

This report was prepared at the request of the Board and is intended for use by the Retirement System and those designated or approved by the Board. This report may be provided to parties other than the System only in its entirety and only with the permission of the Board. GRS is not responsible for unauthorized use of this report.

Financing Objectives and Funding Policy

The employer and employee contribution rates are specified in the statute. Pursuant to House Enrolled Act No. 41, effective July 1, 2026, the funding policy for the Public Employee Plan has changed from fixed contribution rates to an Actuarially Determined Contribution rate. With this change, the employee and employer contribution rates will be determined in the actuarial valuation as of January 1 of each odd-numbered year. The purposes of the valuation are to measure the System's funding progress and to determine whether or not the statutory contribution is sufficient to meet the obligations of the Fund. This report should not be relied on for any purpose other than the purposes described herein. Determinations of financial results, associated with the benefits described in this report, for purposes other than those identified above may be significantly different.

This valuation assumed the continuing ability of the plan sponsor to make the contributions necessary to fund this plan. A determination regarding whether or not the plan sponsor is actually able to do so is outside our scope of expertise and was not performed.

Progress Toward Realization of Financing Objectives

The funded ratio (the ratio of the actuarial value of assets to the actuarial accrued liability) is a standard measure of a plan's funded status. The funded ratio, based upon the assumption of no further cost-of-living adjustment increases as of January 1, 2024 is 78.52%. In the January 1, 2023 valuation, this funded ratio was 77.25%. On a market value of assets basis, the funded ratio increased from 75.06% as of January 1, 2023 to 79.15% as of January 1, 2024. The funded status alone is not appropriate for assessing the need for future contributions. The funded status is also not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations.

Benefit Provisions

The benefit provisions reflected in this valuation are those which were in effect on January 1, 2024, including legislation that affects benefits for members who join the State of Wyoming Retirement System later than August 31, 2012. W.S. 9-3-454 prohibits benefit changes, including cost-of-living increases, unless the funded ratio stays above 100% plus a margin for adverse experience throughout the life of the benefit change. Therefore, this valuation does not include any liability for future cost-of-living increases.

The benefit provisions are summarized in Appendix B of the report.

Assumptions and Methods

Actuarial assumptions and methods are set by the Board, based upon recommendations made by the plan's actuary. The current assumptions used in the actuarial valuation were adopted by the Board effective November 17, 2021 and February 17, 2022 and were first utilized with the January 1, 2022 valuation report. For a detailed description of the experience related to these assumptions, as well as the rationale for any changes, please see our latest Wyoming Retirement System Actuarial Experience Study Report that covered the five-year investigation period ending December 31, 2020. All actuarial assumptions used in this report are reasonable for the purposes of this valuation. Furthermore, the assumptions and methods used in this valuation follow the guidance in the applicable Actuarial Standards of Practice and are expected to have no significant bias.

The results of the actuarial valuation are dependent upon the actuarial assumptions used. Actual results can and almost certainly will differ, as actual experience deviates from the assumptions. Even seemingly minor changes in the assumptions can materially change the liabilities, calculated contribution rates and funding periods. The actuarial calculations presented in the report are intended to provide information for rational decision making.

This report was prepared using our proprietary valuation model and related software which in our professional judgment has the capability to provide results that are consistent with the purposes of the valuation and has no material limitations or known weaknesses. We performed tests to ensure that the model reasonably represents that which is intended to be modeled.

Assumptions and Methods (Continued)

The 9.25% employee contribution and the 9.37% employer contribution are the current rates that comply with State law. Due to the many factors affecting a retirement system, users of this report should be aware that contributions made at that rate do not necessarily guarantee long-term benefit security.

The employer contribution requirement in Table 1 of this report is determined using the actuarial assumptions and methods disclosed in Appendix A of this report. This report includes risk metrics in Appendix C but does not include a more robust assessment of the risks of future experience not meeting the actuarial assumptions. Additional assessment of risks was outside the scope of this assignment. We encourage a review and assessment of investment and other significant risks that may have a material effect on the plan's financial condition.

All assumptions and methods are described in Appendix A of our report.

Data

Member data for retired, active and inactive members was supplied as of January 1, 2024 by the System's staff. We did not audit this data, but we did apply a number of tests to the data, and we concluded that it was reasonable and consistent with the prior year's data.

Asset and financial information as of January 1, 2024 was prepared by the Wyoming Retirement System and is the responsibility of management. Eide Bailly, LLP provided us the asset and financial information and will opine on Wyoming Retirement System's statements.

We are not responsible for the accuracy or completeness of the information provided by the System's staff.

Plan Experience

As part of each valuation, we examine the Fund's experience relative to the assumptions. As experience in a given year deviates from the assumptions, a gain occurs if the liabilities grow slower than the assumption set anticipates and a loss occurs if the liabilities grow faster. This past fiscal year, the Fund had a total experience gain of approximately $50 million, composed of a $219 million investment gain, a $19 million contribution loss, and a $150 million liability loss. The aggregate results of these analyses are disclosed in Tables 4 and 5 under Section III of the report.

Actuarial Certification

All of the tables contained in this actuarial valuation report were prepared by Gabriel, Roeder, Smith & Company. Historical information for years prior to 2010 was prepared by the prior actuarial firm and was not subjected to our actuarial review.

We certify that the information presented herein is accurate and fairly portrays the actuarial position of the System as of January 1, 2024.

All of our work conforms with generally accepted actuarial principles and practices, and with the Actuarial Standards of Practice issued by the Actuarial Standards Board. In our opinion, our calculations also comply with the requirements of state law and, where applicable, the Internal Revenue Code and ERISA.

The undersigned are independent actuaries and consultants.

Thomas Lyle and Dana Woolfrey are Enrolled Actuaries and Paul Wood, Thomas Lyle, Dana Woolfrey, and Karli Fehrman are Members of the American Academy of Actuaries, and all four meet all the Qualification Standards of the American Academy of Actuaries.

Finally, all of the undersigned are experienced in performing valuations for large public retirement systems.

Respectfully submitted,
Gabriel, Roeder, Smith & Company

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SECTION I

EXECUTIVE SUMMARY

Executive Summary

Item	January 1, 2024 No COLA	January 1, 2023 No COLA
1. Contributions:		
a. Total normal cost	11.10%	11.33%
b. Employee contributions	(9.25%)	(9.25%)
c. Net employer normal cost	1.85%	2.08%
d. Amortization payment	8.24%	8.86%
e. Administrative expenses	0.41%	0.42%
f. Actuarially determined contribution	10.50%	11.36%
g. Statutory contribution	(9.37%)	(9.37%)
h. Shortfall/(surplus)	1.13%	1.99%
2. Funding Elements:		
a. Market value of assets (MVA)	$9,191,034,051	$8,406,590,596
b. Actuarial value of assets (AVA)	$9,117,074,643	$8,651,600,098
c. Actuarial accrued liability (AAL)	$11,611,635,879	$11,199,652,249
d. Unfunded/(overfunded) actuarial accrued liability	$2,494,561,236	$2,548,052,151
3. Contributions and Ratios:		
a. Actuarially determined contribution	$218,078,391	$218,711,295
b. Actual contributions	N/A	191,126,021
i. Employer	*N/A*	*188,450,521*
ii. Other	*N/A*	*2,675,500*
c. Percentage contributed	N/A	87.39%
d. Funded ratio on an actuarial basis (AVA/AAL)	78.52%	77.25%
e. Funded ratio on a market basis (MVA/AAL)	79.15%	75.06%
f. Projected payroll	$2,076,937,052	$1,925,275,481

SECTION II

DISCUSSION

Contribution Requirements

- Exhibits throughout this report are based primarily, unless stated otherwise, on the assumption of no future cost-of-living adjustments (COLAs).
- W.S. 9-3-454 prohibits benefit changes, including cost-of-living increases, unless the funded ratio stays above 100% plus a margin for adverse experience throughout the life of the benefit change. The actuarial value funded ratio is 78.52% and the market value funded ratio is 79.15%.
- The actuarial assumptions have not changed since the prior valuation. For a detailed description of the experience related to these assumptions, as well as the rationale for any changes, please see our latest Wyoming Retirement System Actuarial Experience Study Report.
- An Actuarially Determined Contribution (ADC) is calculated as part of this valuation. Because contribution rates are set in statutes, the ADC could be thought of as a metric to which one could compare the statutory rate. The amortization payment for the purpose of calculating the ADC is based upon the following assumptions:
  - The funding period is based on a 30-year closed period for the initial base as of January 1, 2018 and 20-year closed period layers for future gains and losses
  - Amortization payment amounts are calculated in such a way that they will increase as a level percentage of payroll
  - Total payroll increases are assumed at 2.50% per year, and
  - Future growth in the number of active members is not reflected in the annual valuation
- The analysis of the changes in the ADC is shown in Table 5 under Section III of the report.
- The employer is currently contributing at the rate of 9.37% of salary and employees are contributing at the rate of 9.25% of salary.
- The calculated funding period assuming the Statutory contribution rates, with the future adjustments due to the new ADC policy, and an open group projection based on a projection of the market value of assets is 23 years. In the January 1, 2023 valuation, the funding period based on a projection of the market value of assets was 41 years. Projection results were produced under a separate cover.
- The calculated funding period assuming the Statutory contribution rates and an open group projection based on the projection of the actuarial value of assets is 23 years. In the January 1, 2023 valuation, the funding period based on the projection of the actuarial value of assets was 33 years. Projection results were produced under a separate cover.
- Pursuant to House Bill 0011, the full-time state park ranger participants were moved to the Law Enforcement plan.
- Pursuant to House Enrolled Act No. 41, effective July 1, 2026 the required contribution rates will change from fixed rates to a rate based on the Actuarially Determined Contribution calculated as of January 1 of each odd-numbered year. The rates will be effective July 1 of even years. Rates cannot increase or decrease by more than 0.5% every two years. Additional details on the contribution development will be provided subsequent to this valuation.

Calculation of Contribution Rates

The funds available to pay benefits come from two sources, contributions and investment income on those contributions (the majority of the funds available to pay benefits typically come from investment income). The Fund receives contributions from two sources, employer contributions and member contributions, both of which are determined as a percentage of pay. An Actuarially Determined Contribution (ADC) is calculated as part of this valuation. Because contribution rates are set in Statutes, the ADC could be thought of as a metric to which one could compare the Statutory rate. As shown in Table 1 under Section III of the report, the employer ADC has three components:

- The normal cost percentage (NC%)
- The amortization percentage (UAAL%)
- The administrative expenses

The NC% is the theoretical amount which would be required to pay the members' benefits if this amount had been contributed from each member's entry date and if the fund's experience exactly followed the actuarial assumptions. The NC% is shown in Table 3 under Section III of the report.

Members are required to make employee contributions and only the excess of the NC% over the member contribution rate is included in the employer contribution rate.

The actuarial accrued liability (AAL) is the difference between (i) the actuarial present value of all future benefits for all current participants of the fund, including active, inactive and retired members, and (ii) the actuarial present value of future normal costs. Thus, the AAL represents the liability associated with past years. The unfunded actuarial accrued liability (UAAL) is the difference between the AAL and the actuarial value of assets (AVA). It is the shortfall/excess between the liability associated with prior years (the AAL) and the assets actually accumulated (the AVA). This shortfall/excess can arise from several sources, including actuarial gains and losses, which are caused by differences between actual experience and the plan's assumptions, changes to the plan's actuarial assumptions, and amendments to the benefit provisions.

The UAAL% is the amount required to fund this difference. It is the amount, expressed as a level percentage of payroll, necessary to amortize the UAAL. Amortization bases are established each year and amortized based on the Board's policy. The Board's policy for purposes of calculating the ADC consists of amortizing the unfunded liability as of January 1, 2018, over a closed 30-year period with each subsequent amortization base created as a result of year to year experience changes over individual 20-year closed periods. The Executive Summary shows the UAAL%, called Amortization Payment, compared to that of last year.

Assumed administrative expenses are the average of the prior two years, with each year projected at 2.50% to the valuation date.

The ADC is calculated for the twelve-month period beginning January 1, 2024. As of January 1, 2024, the statutory employer contribution is within 1.13% of meeting the ADC. The calculated ADC under the Board's funding policy can be considered a "Reasonable Actuarially Determined Contribution" as required by the Actuarial Standards of Practice. Assuming the market value of assets earns 6.8% and deferred gains are recognized, the current shortfall in contribution is only expected to persist for a few more years.

Financial Data and Experience

As of January 1, 2024, the Fund has a total market value of $9.19 billion. Financial information was received from Eide Bailly, LLP.

Table 7 under Section III of the report shows a reconciliation of the market values between the beginning and end of 2023.

During 2023, the total investment return on the market value of assets (MVA), as reported by Meketa Investment Group, Inc., was 13.84%, as shown in Table 10 under Section III of the report.

In determining the contribution rates and funded status of the Fund, an actuarial value of assets (AVA) is used rather than the market value of assets. The actuarial value of assets is based on the market value of assets with a five-year phase-in of actual investment return in excess of (or less than) expected investment income. Expected investment income is determined using the assumed investment return rate and the market value of assets (adjusted for receipts and disbursements during the year). The returns are computed net of investment expenses. An adjustment is made if the actuarial value is not within 20% of the Market Value. For any year following a year in which the 20% of market value adjustment was applied, the actuarial value is determined as if the adjustment was not applied in the previous year.

The development of the AVA is shown in Table 9 under Section III of the report. The AVA is $9.1 billion. The AVA is 99.2% of the MVA as of December 31, 2023, compared to 102.91% last year. The difference between the AVA and the MVA is the deferred gains and losses. As of January 1, 2023, the total deferred loss was $245 million. As of January 1, 2024, the total deferred gain was $74 million. Having a deferred gain in the AVA is an indicator that the funded ratio will have an upward “tilt” in the near term, and the ADC will likewise have downward pressure.

In addition to the market return, Table 10 also shows the return on the actuarial value of assets for the Fund. For 2023, this return was 9.4%. Since this return is greater than the assumed 6.80% investment return, an actuarial gain occurred decreasing the unfunded actuarial accrued liabilities of the Fund by $219.4 million.

Member Data

Member data as of January 1, 2024 was supplied electronically by the Fund's staff. While we did not audit this data, we did perform various tests to ensure that it was internally consistent, consistent with the prior year's data, and was reasonable overall.

Table 15 under Section III of the report shows the number of members by category (active, inactive, retired, etc.) along with member statistics. Tables 16 through 28 show summaries of certain historical data and include membership statistics.

Total active member payroll increased 7.88% last year, compared to an increase of 4.03% from the prior year.

The number of active members in Tier 1 decreased, from 13,535 to 12,517. There were 780 members who retired out of Tier 1, compared to 849 who retired out of Tier 1 last year.

Of the 35,385 active participants, 5,145 are eligible or will become eligible for unreduced retirement and 6,826 are eligible or will become eligible for reduced retirement in 2024.

The average of the final average salaries for participants who retired or became disabled this year is $52,893.

Changes in payroll are significant because the Fund receives its statutory contributions as a percent of pay. If payroll does not grow at the assumed rate, then fewer contributions will be made to the plan and the funding of the Fund will be delayed. Furthermore, the methodology used in the valuation to amortize the unfunded actuarial accrued liability assumes a growing payroll into the future. If the payroll does not grow at the assumed 2.50% per year average, then the current amortization payments may be understated and the funding position of the Fund will not strengthen as assumed over time. Higher than expected payroll growth, however, has the opposite effect of this and the funded position of the Fund should trend toward 100%. Table 5 under Section III of the report shows, for the past year, payroll for the plan increased more than expected so the effect is a decrease in the calculated contribution rate of 0.46% of payroll.

One reason payroll increased more than expected is that the salary, for continuing active participants, increased more than expected. This represented a loss to the Plan, as shown in Table 4 under Section III of the report.

Benefit Provisions

Appendix B of the report includes a more detailed summary of the benefit provisions for the Fund. A brief summary is as follows:

A new tier of benefits was signed into law on March 23, 2012 and is effective for new members joining the System on or after September 1, 2012.

– *Tier*

  - Members who join the State of Wyoming Retirement System by August 31, 2012 are in Tier 1, while members who join later are in Tier 2.

– *Normal Retirement Eligibility*

  - For Tier 1 member - Age 60 with at least four years of service
  - For Tier 2 member - Age 65 with at least four years of service

– *Normal Retirement Benefit*

  - For Tier 1 member - 2.125% of employee's Highest Average Salary for each year of credited service for the first 15 years of service credit plus 2.25% of Highest Average Salary for any years of service credit exceeding 15 years. This amount is reduced by 5.0% per year that the employee is under age 60, given that they are at least age 50 with 4 years of service or have 25 total years of service.
  - For Tier 2 member - 2.00% of employee's Highest Average Salary for each year of credited service. This amount is reduced by 5.0% per year that the employee is under age 65, given that they are at least age 55 with 4 years of service or have 25 total years of service.

    However, members retiring with a combined age and service of at least 85 receive an unreduced benefit. Employees hired prior to July 1, 1981 may be entitled to benefits earned under a different formula.

– *Normal Form of Payment*

  - Monthly benefit for life with a lump-sum death benefit equal to the excess (if any) of the employee contributions with interest over the total benefits received.

– *Employee Contributions* are required

  - 9.25% of pay. Effective July 1, 2026, employees will contribute 49.68% of the actuarially determined contribution rate calculated as of January 1 of the preceding odd-numbered year. The employee contribution rate cannot be adjusted by more than 0.25% every two years.

– *Post-retirement Cost-of-Living Adjustments (COLAs)*

  - W.S. 9-3-454 prohibits benefit changes, including cost-of-living increases, unless the funded ratio stays above 100% plus a margin for adverse experience throughout the life of the benefit change.

Actuarial Methods and Assumptions

Appendix A of the report includes a summary of the actuarial assumptions and methods used in this valuation. A few highlights are listed as follows:

- Costs are determined using the Entry Age Normal actuarial cost method, calculated as a level percentage of payroll.
- The unfunded actuarial accrued liability is amortized over an effective 23 year closed period as a level percent of payroll. Future valuations will include additional amortization layers on a closed 20-year basis.
- The assumed annual investment return rate is 6.80%, with assumed inflation of 2.25%.
- Payroll is assumed to increase at 2.50% per year.
- Inactive vested participants are assumed to retire at age 60 (65 for Tier 2) or on the valuation date if older.
- The benefit amount is not available for all members entitled to deferred benefits. The benefit amount and present value of benefits expected to be paid to vested inactive non-retired members without a benefit in the data is approximated using the data provided.

The average future lifetime for current pensioners is 15.6 years.

The actuarial assumptions and methods were reviewed in detail as part of the 2021 Experience Study covering the five-year period ending December 31, 2020. Please see Appendix A for a summary of these assumptions.

GASB and Funding Progress

Governmental Accounting Standards Board Statement Number 67 (GASB 67) contains certain accounting requirements for the Fund. Schedules, notes and required supplementary information are provided under separate cover.

SECTION III

SUPPORTING EXHIBITS

Table 1A

Calculation of Employer Contribution Rate
(Assumes No Future Cost-Of-Living Increases)

	Item	January 1, 2024	January 1, 2023
1.	Projected valuation payroll	$2,076,937,052	$1,925,275,481
2.	Present value of future pay	$15,681,640,730	$14,533,902,541
3.	Employer normal cost rate	1.85%	2.08%
4.	Actuarial accrued liability for active members		
	a. Present value of future benefits for active members	$5,652,906,063	$5,330,443,702
	b. Less: present value of future employer normal costs	(236,049,152)	(250,360,341)
	c. Less: present value of future employee contributions	(1,450,551,754)	(1,344,385,985)
	d. Actuarial accrued liability	$3,966,305,157	$3,735,697,376
5.	Total actuarial accrued liability for:		
	a. Retirees and beneficiaries	$6,972,765,676	$6,817,999,915
	b. Disabled members	35,582,544	37,244,676
	c. Inactive members	636,982,502	608,710,282
	d. Active members (Item 4d)	3,966,305,157	3,735,697,376
	e. Total	$11,611,635,879	$11,199,652,249
6.	Actuarial value of assets (Table 9)	$9,117,074,643	$8,651,600,098
7.	Unfunded actuarial accrued liability (UAAL) (Item 5e - Item 6)	$2,494,561,236	$2,548,052,151
8.	Effective UAAL amortization period	23 years	24 years
9.	Assumed payroll growth rate	2.50%	2.50%
10.	Employer actuarially determined contribution (ADC)		
	a. UAAL amortization payment as % of pay	8.24%	8.86%
	b. Employer normal cost	1.85%	2.08%
	c. Administrative expense	0.41%	0.42%
	d. Employer Contribution (a + b + c)	10.50%	11.36%

Table 1B

Calculation of UAAL Amortization Payment
(Assumes No Future Cost-Of-Living Increases)

UAAL as of January 1, 2024				$2,494,561,236
Total Prior Remaining Amortization Bases as of January 1, 2024				$2,545,005,149
2024 Amortization Base as of January 1, 2024				**($50,443,913)**
2024 Payment (20 years, level percent of pay amortization)				**($3,745,322)**
		As of January 1, 2024		
Base Year	**Initial Base**	**Remaining Base**	**Years Remaining**	**Amortization Payment**
2024 Experience Gain	$ (50,443,913)	$ (50,443,913)	20	$ (3,745,322)
2023 Experience Loss	46,079,900	45,677,615	19	3,506,839
2022 Experience Gain	(316,011,592)	(309,700,141)	18	(24,650,810)
2022 Assumption Changes	168,448,054	165,083,774	18	13,139,964
2021 Experience Gain	(103,194,098)	(99,759,541)	17	(8,256,664)
2020 Experience Loss	171,551,375	163,047,678	16	14,078,969
2019 Experience Loss	259,338,420	241,420,154	15	21,831,109
2018 Experience Loss	2,273,969,633	2,339,235,610	24	155,225,053
Total		**$ 2,494,561,236**		**$ 171,129,138**

Table 2

Cost Breakdown

(Assumes No Future Cost-Of-Living Increases)

Item	Present Value of Future Normal Costs (1)	Actuarial Accrued Liabilities (2)	Total Present Value of Benefits (3) = (1) + (2)
Age and service allowances based on total service and disability benefits likely to be rendered by present active members	$1,111,167,033	$3,964,333,288	$5,075,500,321
Death-in-service benefits likely to be paid on behalf of present active members (employer financed portion)	18,498,979	51,448,765	69,947,744
Separation benefits (refunds of contributions and deferred allowances) likely to be paid to present active members	556,934,894	(49,476,896)	507,457,998
Benefits likely to be paid to vested inactive members	0	554,070,493	554,070,493
Benefits to be paid to members due refunds	0	82,912,009	82,912,009
Benefits to be paid to current retirees, disabled members, beneficiaries, and future beneficiaries of current retirees	0	7,008,348,220	7,008,348,220
Total	$1,686,600,906	$11,611,635,879	$13,298,236,785
Actuarial value of assets	0	9,117,074,643	9,117,074,643
Liabilities to be covered by future contributions	$1,686,600,906	$2,494,561,236	$4,181,162,142

Table 3

History of Total Normal Cost

(Assumes No Future Cost-Of-Living Increases)

Fiscal Year Ending December 31	Total Normal Cost as Percent of Payroll
(1)	(2)
2008	9.08%
2009	10.10%
2010	10.86%
2011	11.11%
2012	10.86%
2013	10.77%
2014	11.96%
2015	11.96%
2016	11.83%
2017	11.55%
2018	10.96%
2019	10.91%
2020	10.87%
2021	10.85%
2022	11.38%
2023	11.33%
2024	11.10%

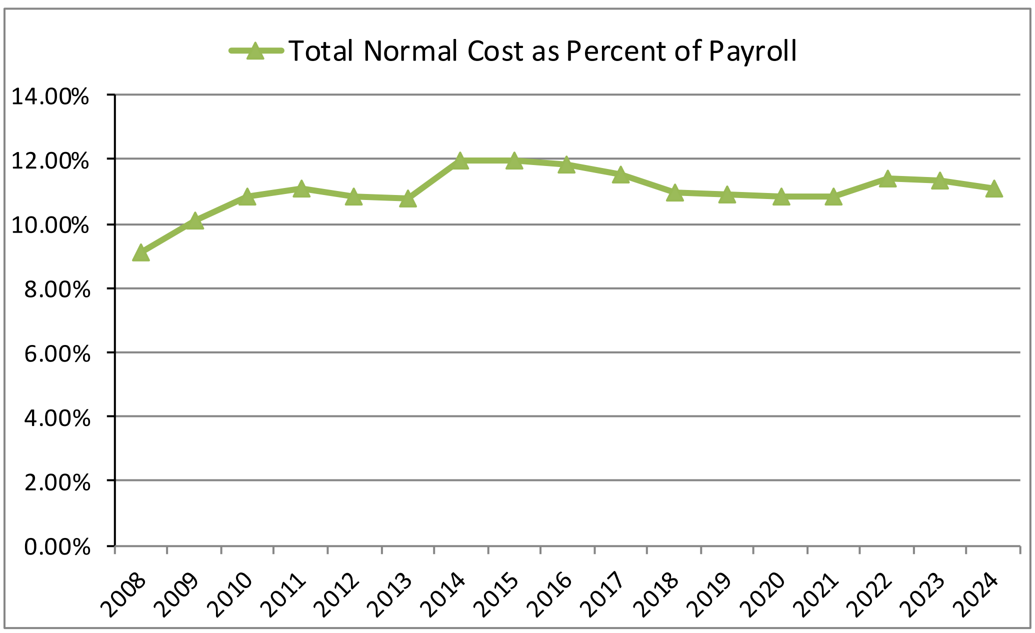

Table 4

Calculation of Total Actuarial Gain/(Loss)

(Assumes No Future Cost-Of-Living Increases)

Item	January 1, 2024
1. Derivation of Experience Gain/(Loss)	
a. Unfunded actuarial accrued liability (UAAL) - previous valuation	$2,548,052,151
b. Normal cost (NC) for fiscal year ending December 31, 2023	218,085,360
c. Expected administrative expenses for fiscal year ending December 31, 2023	8,128,400
d. Actuarially determined contribution for fiscal year ending December 31, 2023	396,822,990
e. Interest accrual:	
(i) For whole year on (a)	173,267,546
(ii) For half year on (b) + (c) - (d)	(5,705,318)
(iii) Total interest: (e)(i) + (e)(ii)	167,562,228
f. Change in UAAL due to plan changes	0
g. Change in UAAL due to assumption changes	0
h. Expected UAAL current year: (a) + (b) + (c) - (d) + (e)(iii) + (f) + (g)	2,545,005,149
i. Actual UAAL current year	2,494,561,236
j. Experience gain/(loss): (h) - (i)	50,443,913
k. Experience gain/(loss) as a % of actuarial accrued liability	0.43%
2. Approximate portion of gain/(loss) due to investments (at actuarial value)	$219,372,772
3. Approximate portion of gain/(loss) due to contributions and administrative expenses higher or lower than expected*	($18,508,281)
4. Approximate amount of gain/(loss) due to liabilities: (1)(j) - (2) - (3)	($150,420,577)
a. Age & service retirements	($4,040,093)
b. Disability retirements	227,218
c. Death-in-service	(12,206)
d. Deferred members and withdrawal from employment	(25,429)
e. Rehires and new hires	(5,563,820)
f. Pay increases	(129,491,213)
g. Death after retirement	5,569,107
h. Service Purchases	(2,073,268)
i. Other	(15,010,873)
j. Other as a % of actuarial accrued liability	-0.13%

Includes $2.1 million in additional employee contributions for service purchases. *These additional contributions offset the liability loss due to service purchases.*

Table 5

Change in Calculated Contribution Rate Since the Prior Valuation

(Assumes No Future Cost-Of-Living Increases)

Item	January 1, 2024
1. Calculated contribution rate as of January 1, 2023	11.36%
2. Change in contribution rate during year	
a. Change in normal cost	-0.23%
b. Actuarial (gain) loss from investments on actuarial value of assets	-0.83%
c. Actuarial (gain) loss from liability sources	0.56%
d. Difference between contributions made and ADC	0.08%
e. Effect of payroll growing (faster)/slower than assumption	-0.46%
f. Other changes	0.02%
g. Total change	-0.86%
3. Calculated contribution rate as of January 1, 2024	10.50%

Table 6

Statement of Plan Net Assets

Assets at Market Value		
Item	**FYE 2023**	**FYE 2022**
1. Cash and Cash Equivalents (Operating Cash)	$353,834,025	$350,825,992
2. Receivables		
a. Insurance premium tax	$0	$0
b. Buy backs	0	0
c. Employer contributions	10,493,525	9,866,366
d. Employee contributions	10,353,178	9,729,645
e. Securities sold	210,834,919	3,692,320
f. Accrued interest and dividends	17,984,266	15,465,035
g. Currency contract receivable	546,074,159	512,813,037
h. Other	441,439	238,094
i. Rebate and fee income receivable	0	0
j. Total receivables	$796,181,486	$551,804,497
3. Investments, at Fair Value	$8,888,970,569	$8,456,966,964
4. Liabilities		
a. Benefits and refunds payable	($601,566)	($1,721,235)
b. Securities purchased	(15,766,262)	(12,279,564)
c. Administrative and consulting fees payable	(13,241,567)	(11,697,269)
d. Currency contract payable	(560,818,557)	(526,344,201)
e. Securities lending collateral	(257,524,077)	(400,964,588)
f. Total liabilities	($847,952,029)	($953,006,857)
5. Total Market Value of Assets Available for Benefits	$9,191,034,051	$8,406,590,596

Table 7

Reconciliation of Plan Net Assets

Assets at Market Value			
	Item	FYE 2023	FYE 2022
A.	Market Value of Assets at Beginning of Year	$8,406,590,596	$9,389,866,647
B.	Contribution Income:		
	1. Contributions		
	a. Employee	$186,059,940	$173,778,027
	b. Employer	188,450,521	175,980,064
	c. Other	4,806,009	5,651,540
	d. Total	$379,316,470	$355,409,631
	2. Investment Income		
	a. Interest, dividends, and other income	$201,401,272	$167,373,373
	b. Net appreciation	962,338,188	(764,156,970)
	c. Investment expenses	(48,580,734)	(48,468,131)
	d. Net investment income	$1,115,158,726	$(645,251,728)
	3. Securities Lending		
	a. Gross income	$20,036,100	$7,339,891
	b. Deductions	(18,914,263)	(6,460,800)
	c. Net investment income	$1,121,837	$879,091
	4. Benefits and Refunds		
	a. Refunds	$(20,563,422)	$(24,875,791)
	b. Regular monthly benefits	(681,355,433)	(660,862,406)
	c. Total	$(701,918,855)	$(685,738,197)
	5. Administrative and Miscellaneous Expenses	$(9,234,723)	$(8,574,848)
C.	Market Value of Assets at End of Year	$9,191,034,051	$8,406,590,596

Table 8

Progress of Fund Through December 31, 2023

Plan Year Ending December 31	Employer Contributions*	Employee Contributions*	Administrative Expenses and Other Expenses	Net Investment Income**	Benefit Payments	Transfers	Actuarial Value of Assets
Total	$ 3,485,394,934	$ 3,317,565,439	$ (124,216,550)	$ 12,276,543,723	$ (10,488,696,364)	$ (115,633,895)	
1986	$ 41,364,465	$ 36,365,804	$ (782,000)	$ 98,998,090	$ (42,082,765)	$ -	$ 900,097,591
1987	39,901,834	36,039,418	(808,023)	91,374,783	(50,604,364)	-	1,016,001,239
1988	38,414,939	33,222,264	(444,343)	103,025,282	(48,627,479)	-	1,141,591,902
1989	36,139,394	36,231,108	(424,136)	128,370,680	(55,459,353)	-	1,286,449,595
1990	38,668,634	38,960,372	(850,148)	114,218,588	(61,154,261)	-	1,416,292,780
1991	38,903,350	39,288,267	(863,301)	148,164,188	(69,348,501)	-	1,572,336,783
1992	42,354,843	42,883,874	(909,653)	175,246,400	(75,211,430)	-	1,756,700,817
1993	41,596,571	42,266,219	(801,026)	189,281,426	(82,480,713)	-	1,946,563,294
1994	42,791,243	43,415,880	(888,518)	136,210,578	(89,707,717)	-	2,078,384,760
1995	43,714,263	44,435,762	(937,480)	230,731,781	(99,689,985)	-	2,296,639,101
1996	43,495,146	44,761,611	(1,028,163)	233,212,720	(108,536,621)	-	2,508,543,794
1997	44,958,544	46,152,691	(1,147,818)	314,340,179	(117,126,096)	-	2,795,721,294
1998	46,183,091	47,366,181	(1,074,562)	436,098,461	(123,858,991)	-	3,200,435,474
1999	48,681,209	50,106,535	(1,182,899)	475,758,627	(132,428,572)	-	3,641,370,374
2000	50,539,675	51,868,059	(1,096,747)	592,379,739	(144,620,949)	-	4,190,440,151
2001	56,517,377	53,792,429	(1,387,930)	439,286,379	(156,189,100)	-	4,582,462,306
2002	57,377,428	58,234,324	(1,281,554)	(66,209,697)	(171,160,286)	(106,978,719)	4,352,423,802
2003	55,363,788	60,848,296	(1,435,922)	376,524,142	(185,826,481)	-	4,657,897,625
2004	60,573,670	61,412,824	(1,644,382)	127,831,761	(201,772,174)	-	4,704,299,324
2005	65,191,670	63,381,309	(1,930,627)	238,882,774	(217,308,520)	(8,655,176)	4,843,861,114
2006	72,664,403	69,020,297	(1,949,051)	409,948,934	(232,944,164)	-	5,160,601,533
2007	83,149,236	78,495,298	(2,005,783)	583,547,681	(249,765,088)	-	5,654,022,877
2008	88,451,655	84,814,014	(2,778,990)	(720,402,274)	(268,232,301)	-	4,835,874,981
2009***	244,063,923	89,298,711	(3,081,105)	868,641,735	(292,256,569)	-	5,742,541,676
2010	104,757,666	99,291,423	(3,600,747)	170,797,772	(314,256,856)	-	5,799,530,934
2011	122,557,906	116,691,540	(5,541,488)	71,962,242	(343,979,208)	-	5,761,221,926
2012	124,648,088	119,052,404	(6,463,506)	126,138,774	(374,629,714)	-	5,749,967,972
2013	128,277,269	122,611,180	(6,513,680)	654,726,838	(404,568,029)	-	6,244,501,550
2014	129,627,747	141,061,289	(5,258,065)	535,776,435	(436,096,614)	-	6,609,612,342
2015	144,622,373	153,529,134	(5,410,522)	382,521,078	(469,954,814)	-	6,814,919,591
2016	151,488,715	152,422,538	(6,305,865)	452,136,957	(501,610,080)	-	7,063,051,856
2017	148,746,669	149,752,251	(6,863,445)	495,488,269	(535,492,257)	-	7,314,683,343
2018	147,632,510	151,130,515	(7,321,620)	278,282,588	(566,027,667)	-	7,318,379,669
2019	157,385,096	157,610,787	(6,836,622)	433,644,411	(600,487,685)	-	7,459,695,656
2020	165,984,825	165,086,190	(7,533,380)	670,140,170	(625,747,935)	-	7,827,625,526
2021	169,201,788	171,342,471	(8,023,878)	881,005,321	(651,795,973)	-	8,389,355,255
2022	178,277,910	177,131,721	(8,574,848)	601,148,257	(685,738,197)	-	8,651,600,098
2023	191,126,021	188,190,449	(9,234,723)	797,311,653	(701,918,855)	-	9,117,074,643

* Employer contributions include other funding sources and employee contributions may include member redeposits and member service purchase contributions

** Net of investment expenses

*** December 31, 2009 market values exclude Air Guard Firefighters

Table 9

Development of Actuarial Value of Assets

Item	FYE 2023	FYE 2022
1. Actuarial value of assets, beginning of year (without corridor)	$8,651,600,098	$8,389,355,255
2. Market value, end of year	$9,191,034,051	$8,406,590,596
3. Market value, beginning of year	$8,406,590,596	$9,389,866,647
4. Non-investment/administrative net cash flow:		
a. Employee contributions	$186,059,940	$173,778,027
b. Employer contributions	188,450,521	175,980,064
c. Other contributions	4,806,009	5,651,540
d. Refund of employee accounts	(20,563,422)	(24,875,791)
e. Retirement benefits	(681,355,433)	(660,862,406)
f. Administrative expenses and Other Expenses	(9,234,723)	(8,574,848)
g. Total net cash flow: [sum of (4a) through (4f)]	($331,837,108)	($338,903,414)
5. Investments and securities lending:		
a. Interest and dividends on investments	$201,401,272	$167,373,373
b. Gross income from securities lending	20,036,100	7,339,891
c. Fees and expenses	(67,494,997)	(54,928,931)
d. Total net income: [sum of (5a) through (5c)]	$153,942,375	$119,784,333
6. Investment income:		
a. Actual market return: (2) - (3) - (4g) - (5d)	$962,338,188	($764,156,970)
b. Assumed rate of return	6.80%	6.80%
c. Assumed amount of return	406,608,869	507,393,379
d. Amount subject to phase-in: (6a) - (6c)	$555,729,319	($1,271,550,349)
7. Phase-in recognition of investment income:		
a. Current year: 0.20 * (6d)	$111,145,864	($254,310,070)
b. First prior year	(254,310,070)	169,057,812
c. Second prior year	169,057,812	54,190,540
d. Third prior year	54,190,540	156,676,263
e. Fourth prior year	156,676,263	(151,644,000)
f. Total recognition	$236,760,409	($26,029,455)
8. Actuarial value of assets, end of year		
a. Preliminary actuarial value of assets, end of year: (1) + (4g) + (5d) + (6c) + (7f)	$9,117,074,643	$8,651,600,098
b. Upper corridor limit: 120% * (2)	11,029,240,861	10,087,908,715
c. Lower corridor limit: 80% * (2)	7,352,827,241	6,725,272,477
d. Actuarial value of assets, end of year	$9,117,074,643	$8,651,600,098
9. Difference between market and actuarial value of assets	$73,959,408	($245,009,502)
10. Actuarial rate of return	9.40%	7.31%
11. Market rate of return*	13.84%	-6.99%
12. Ratio of actuarial value to market value of assets	99.20%	102.91%

* Current year market rate of return is based on unaudited data and is supplied by the plan's investment

Table 10

History of Investment Returns

History of Investment Returns

Plan Year	Market Value	Actuarial Value
(1)	(2)	(3)
2000	-0.99%	16.37%
2001	-4.47%	10.54%
2002	-9.29%	-1.47%
2003	21.00%	8.72%
2004	11.54%	2.77%
2005	8.22%	5.13%
2006	12.63%	8.55%
2007	7.44%	11.41%
2008	-29.63%	-12.85%
2009	23.72%	17.89%
2010	13.80%	3.00%
2011	-0.90%	1.25%
2012	14.05%	2.22%
2013	13.53%	11.55%
2014	4.70%	8.70%
2015	-0.26%	5.87%
2016	7.60%	6.74%
2017	14.20%	7.14%
2018	-3.52%	3.88%
2019	18.72%	6.05%
2020	11.03%	9.17%
2021	17.19%	11.49%
2022	-6.99%	7.31%
2023	13.84%	9.40%
Average returns:		
Last five years:	10.34%	8.67%
Last ten years:	7.31%	7.55%

The market returns above are gross of investment expenses and were provided by the plan's investment consultant. The actuarial returns above are based on the financial information provided by the plan's auditors.

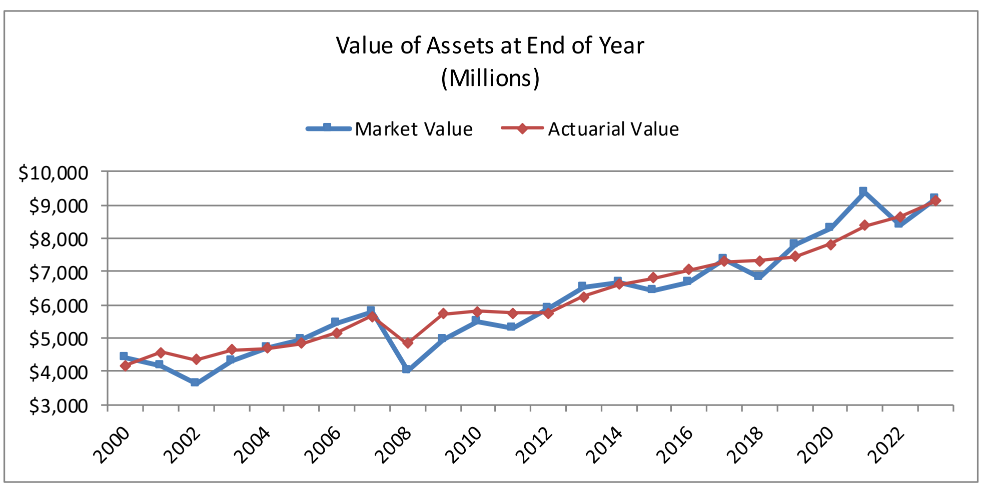

Table 11

Solvency Test

Valuation Date January 1	Total Active Member Contributions (1)	Inactive and Pensioner Liability (2)	Employer Financed Active Accrued Liability (3)	Actuarial Value of Assets	Percentage of Liabilities Covered by Assets (1)	(2)	(3)
2005	$840,104,000	$2,592,159,000	$2,103,929,000	$4,704,299,324	100%	100%	60.5%
2006	888,544,000	2,354,500,000	1,848,710,000	4,843,861,114	100%	100%	86.6%
2007	941,572,000	2,488,504,000	2,038,153,000	5,160,601,533	100%	100%	84.9%
2008	991,444,000	2,699,505,000	2,325,036,000	5,654,022,877	100%	100%	84.4%
2009	1,036,443,231	2,796,308,000	2,319,370,769	4,835,874,981	100%	100%	43.2%
2010	1,109,001,753	2,933,630,669	2,519,698,185	5,742,541,676	100%	100%	67.3%
2011	1,161,508,226	3,178,244,317	2,515,890,340	5,799,530,934	100%	100%	58.0%
2012	1,226,273,201	3,455,740,883	2,355,172,581	5,761,221,926	100%	100%	45.8%
2013	1,286,009,555	3,724,948,051	2,308,247,120	5,749,967,972	100%	100%	32.0%
2014	1,333,532,543	4,251,120,151	2,460,394,278	6,244,501,550	100%	100%	26.8%
2015	1,394,083,171	4,600,839,298	2,375,744,013	6,609,612,342	100%	100%	25.9%
2016	1,472,111,790	4,897,375,395	2,343,866,339	6,814,919,591	100%	100%	19.0%
2017	1,491,204,773	5,255,363,783	2,292,735,275	7,063,051,856	100%	100%	13.8%
2018	1,504,862,214	5,994,581,648	2,089,209,114	7,314,683,343	100%	97%	0.0%
2019	1,527,496,996	6,322,068,735	2,020,049,493	7,318,379,669	100%	92%	0.0%
2020	1,549,303,903	6,649,766,799	1,996,975,268	7,459,695,656	100%	89%	0.0%
2021	1,601,637,607	6,887,287,795	1,980,862,523	7,827,625,526	100%	90%	0.0%
2022	1,610,077,173	7,240,298,587	2,039,482,269	8,389,355,255	100%	94%	0.0%
2023	1,656,533,731	7,463,954,873	2,079,163,645	8,651,600,098	100%	94%	0.0%
2024	1,732,956,067	7,645,330,722	2,233,349,090	9,117,074,643	100%	97%	0.0%

Excludes Air Guard beginning in 2010

Effective January 1, 2010, liabilities are calculated assuming no future cost-of-living increases.

Table 12

Schedule of Funding Progress

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Valuation Date January 1	Actuarial Value of Assets	Actuarial Accrued Liability (AAL)	Unfunded AAL (UAAL) [(3) - (2)]	Funded Ratio [(2)/(3)]	Covered Payroll	UAAL as a Percentage of Covered Payroll [(4)/(6)]
2001	$4,190,440,151	$3,683,174,000	($507,266,151)	113.77%	$897,641,000	(56.51%)
2002	4,582,462,306	4,442,033,000	(140,429,306)	103.16%	964,121,000	(14.57%)
2003	4,352,423,802	4,718,618,000	366,194,198	92.24%	988,135,000	37.06%
2004	4,657,897,625	5,077,443,000	419,545,375	91.74%	1,032,259,000	40.64%
2005	4,704,299,324	4,902,322,000	198,022,676	95.96%	1,086,736,000	18.22%
2006	4,843,861,114	5,091,763,000	247,901,886	95.13%	1,156,400,000	21.44%
2007	5,160,601,533	5,468,229,000	307,627,467	94.37%	1,285,096,000	23.94%
2008	5,654,022,877	6,015,985,000	361,962,123	93.98%	1,462,474,000	24.75%
2009	4,835,874,981	6,152,122,000	1,316,247,019	78.60%	1,585,728,000	83.01%
2010	5,742,541,676	6,562,330,607	819,788,931	87.51%	1,697,341,384	48.30%
2011	5,799,530,934	6,855,642,883	1,056,111,949	84.59%	1,728,433,786	61.10%
2012	5,761,221,926	7,037,186,665	1,275,964,739	81.87%	1,756,856,648	72.63%
2013	5,749,967,972	7,319,204,726	1,569,236,754	78.56%	1,782,069,208	88.06%
2014	6,244,501,550	8,045,046,972	1,800,545,422	77.62%	1,782,062,471	101.04%
2015	6,609,612,342	8,370,666,482	1,761,054,140	78.96%	1,818,197,022	96.86%
2016	6,814,919,591	8,713,353,524	1,898,433,933	78.21%	1,858,678,687	102.14%
2017	7,063,051,856	9,039,303,831	1,976,251,975	78.14%	1,851,873,634	106.72%
2018	7,314,683,343	9,588,652,976	2,273,969,633	76.28%	1,784,888,475	127.40%
2019	7,318,379,669	9,869,615,224	2,551,235,555	74.15%	1,781,668,069	143.19%
2020	7,459,695,656	10,196,045,970	2,736,350,314	73.16%	1,824,979,015	149.94%
2021	7,827,625,526	10,469,787,925	2,642,162,399	74.76%	1,865,426,156	141.64%
2022	8,389,355,255	10,889,858,029	2,500,502,774	77.04%	1,850,670,904	135.11%
2023	8,651,600,098	11,199,652,249	2,548,052,151	77.25%	1,925,275,481	132.35%
2024	9,117,074,643	11,611,635,879	2,494,561,236	78.52%	2,076,937,052	120.11%

Excludes Air Guard beginning in 2010

Effective January 1, 2010, liabilities are calculated assuming no future cost-of-living increases.

Table 13

Schedule of Contributions from the Employer(s) and Other Contributing Entities

(1)	(2)	(3)	(4)	(5)	(6)
Fiscal Year Ending December 31	Actuarially Determined Contribution		Employer Contributions*		Percentage of Actuarially Determined Contribution Contributed
	% of Payroll	Amount	% of Payroll	Amount	[(5)/(3)]
2004	8.76%	$90,477,000	5.87%	$60,573,670	66.95%
2005	10.00%	108,707,000	6.00%	65,191,670	59.97%
2006	5.68%	65,714,000	6.28%	72,664,403	110.58%
2007	5.68%	73,035,000	6.47%	83,149,236	113.85%
2008	5.68%	83,036,000	6.05%	88,451,655	106.52%
2009	9.15%	145,015,000	15.39%	244,063,923**	168.32%
2010	8.06%	136,689,664	6.17%	104,757,666	76.64%
2011	7.60%	131,260,466	7.09%	122,557,906	93.37%
2012	8.04%	141,299,725	7.09%	124,648,088	88.22%
2013	8.86%	158,013,754	7.20%	128,277,269	81.18%
2014	10.28%	183,086,430	7.27%	129,627,747	70.80%
2015	9.26%	168,411,742	7.95%	144,622,373	85.87%
2016	9.38%	174,211,753	8.15%	151,488,715	86.96%
2017	9.37%	173,551,431	8.03%	148,746,669	85.71%
2018	10.74%	191,677,662	8.27%	147,632,510	77.02%
2019	11.64%	207,518,684	8.83%	157,385,096	75.84%
2020	12.06%	219,815,919	9.10%	165,984,825	75.51%
2021	11.39%	212,378,768	9.07%	169,201,788	79.67%
2022	11.36%	210,236,215	9.63%	178,277,910	84.80%
2023	11.36%	218,711,295	9.93%	191,126,021	87.39%
2024	10.50%	218,078,391	-	-	-

Excludes Air Guard beginning December 31, 2009, including Employer Contributions of $149,244 as of December 31, 2009.

Effective January 1, 2010, liabilities are calculated assuming no future cost-of-living increases.

* Includes other funding sources but excludes member redeposits and member service purchase contributions.

** There was a $150.6 million legislative appropriation to address the increase in school district employee pay.

Table 14

Reconciliation of Participant Data

	Active Participants		Vested Former	Retired			Participants	
	Tier 1	Tier 2	Participants	Participants	Disableds	Beneficiaries	Due Refunds	Total
Number as of January 1, 2023	**13,535**	**21,177**	**8,383**	**27,643**	**212**	**3,000**	**18,934**	**92,884**
New participants	-	4,285	9	-	-	13	712	5,019
Vested terminations	(336)	(735)	1,092	-	-	-	(21)	-
Retirements	(780)	(121)	(328)	1,230	-	-	(1)	-
Disability	(1)	(1)	-	(1)	3	-	-	-
Deceased with beneficiary	-	(3)	(8)	(262)	(5)	280	(2)	-
Deceased without beneficiary	(13)	(15)	(24)	(500)	(5)	(175)	(34)	(766)
Due refunds	(1)	(1,912)	(3)	-	-	-	1,916	-
Lump sum payoffs	(28)	(433)	(216)	-	-	-	(836)	(1,513)
Rehires/return to active	142	634	(260)	(4)	-	-	(510)	2
Certain period expired	-	-	-	-	-	(8)	-	(8)
Reclassifications	(1)	(2)	-	-	-	-	20	17
Data corrections	-	(6)	-	(1)	-	-	-	(7)
Number as of January 1, 2024	**12,517**	**22,868**	**8,645**	**28,105**	**205**	**3,110**	**20,178**	**95,628**

Table 15

Demographic Statistics

	January 1 2024	January 1 2023	Change
Active Participants			
Number	35,385	34,712	1.9%
Vested	*22,902*	*22,660*	
Not vested	*12,483*	*12,052*	
Average age (years)	45.68	45.78	-0.2%
Average service (years)	9.39	9.51	-1.3%
Average entry age (years)	36.29	36.27	0.1%
Total payroll*	$2,076,937,052	$1,925,275,481	7.9%
Average payroll*	$58,695	$55,464	5.8%
Total employee contributions with interest	$1,732,956,067	$1,656,533,731	4.6%
Average employee contributions with interest	$48,974	$47,722	2.6%
Vested Former Participants			
Number	8,645	8,383	3.1%
Average age (years)	50.38	50.42	-0.1%
Total employee contributions with interest	$349,155,787	$327,381,016	6.7%
Average employee contributions with interest	$40,388	$39,053	3.4%
Service Retirees			
Number	28,105	27,643	1.7%
Average age (years)	73.32	72.99	0.5%
Total annual benefits	$629,946,260	$612,543,501	2.8%
Average annual benefit	$22,414	$22,159	1.2%
Disability Retirees			
Number	205	212	-3.3%
Average age (years)	67.15	66.42	1.1%
Total annual benefits	$3,447,239	$3,560,101	-3.2%
Average annual benefit	$16,816	$16,793	0.1%
Beneficiaries			
Number	3,110	3,000	3.7%
Average age (years)	77.21	76.91	0.4%
Total annual benefits	$50,964,813	$47,949,438	6.3%
Average annual benefit	$16,387	$15,983	2.5%
Participants Due Refunds			
Number	20,178	18,934	6.6%
Total Refunds Due	$82,912,009	$78,082,031	6.2%

* Projected payroll for the upcoming valuation year

Table 16

Distribution of Male Active Members by Age and by Years of Service

Average Age = 46.4 Average Service = 9.7

Age Last Birthday		Whole Years of Service at Valuation Date 0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	Totals
Less than 20	Count	53	-	-	-	-	-	-	53
	Avg. Salary	$29,872	-	-	-	-	-	-	$29,872
20-24	Count	438	3	-	-	-	-	-	441
	Avg. Salary	40,046	*	-	-	-	-	-	40,071
25-29	Count	798	133	2	-	-	-	-	933
	Avg. Salary	49,316	56,230	*	-	-	-	-	50,362
30-34	Count	693	398	88	4	-	-	-	1,183
	Avg. Salary	54,167	63,142	63,529	$67,285	-	-	-	57,927
35-39	Count	643	416	376	74	3	-	-	1,512
	Avg. Salary	54,192	68,031	74,604	69,801	*	-	-	63,911
40-44	Count	554	356	345	310	60	-	-	1,625
	Avg. Salary	55,140	67,269	76,116	82,710	$84,091	-	-	68,579
45-49	Count	476	282	301	334	216	38	-	1,647
	Avg. Salary	56,325	69,587	77,260	83,703	84,248	$91,518	-	72,448
50-54	Count	396	279	239	246	202	219	39	1,620
	Avg. Salary	57,178	66,676	74,849	78,081	86,202	90,270	$90,277	73,484
55-59	Count	424	254	225	237	191	161	152	1,644
	Avg. Salary	54,102	64,395	70,993	77,293	77,330	85,949	91,627	70,634
60-64	Count	310	216	159	185	129	90	139	1,228
	Avg. Salary	47,712	58,547	65,002	74,583	77,202	84,565	86,671	66,113
65-69	Count	157	86	93	56	40	20	45	497
	Avg. Salary	48,028	56,126	69,496	67,079	70,215	82,572	85,391	62,152
70 & Over	Count	99	48	25	21	9	10	16	228
	Avg. Salary	31,363	41,231	63,837	60,579	56,087	75,904	70,270	45,352
Totals	Count	**5,041**	**2,471**	**1,853**	**1,467**	**850**	**538**	**391**	**12,611**
	Avg. Salary	**$51,426**	**$64,356**	**$73,162**	**$78,653**	**$81,139**	**$87,558**	**$88,139**	**$65,003**

Average salary represents annualized salary earned in 2023 and is not shown for cells with counts less than or equal to three participants

Table 17

Distribution of Female Active Members by Age and by Years of Service

Average Age = 45.3 Average Service = 9.2

Age Last Birthday		Whole Years of Service at Valuation Date 0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	Totals
Less than 20	Count	87	-	-	-	-	-	-	87
	Avg. Salary	$23,197	-	-	-	-	-	-	$23,197
20-24	Count	936	2	-	-	-	-	-	938
	Avg. Salary	35,736	*	-	-	-	-	-	35,724
25-29	Count	1,520	219	-	-	-	-	-	1,739
	Avg. Salary	44,090	$52,415	-	-	-	-	-	45,138
30-34	Count	1,291	771	177	-	-	-	-	2,239
	Avg. Salary	42,621	57,469	$62,892	-	-	-	-	49,336
35-39	Count	1,355	727	655	170	2	-	-	2,909
	Avg. Salary	41,422	57,558	65,964	$68,893	*	-	-	52,623
40-44	Count	1,265	806	604	534	107	-	-	3,316
	Avg. Salary	42,599	55,090	64,989	72,847	$74,378	-	-	55,610
45-49	Count	984	685	570	473	385	63	-	3,160
	Avg. Salary	42,506	53,539	61,950	68,916	76,122	$76,770	-	57,137
50-54	Count	757	548	496	450	375	271	58	2,955
	Avg. Salary	43,585	50,979	59,726	66,669	73,989	79,072	$83,081	59,069
55-59	Count	595	416	342	399	358	199	177	2,486
	Avg. Salary	43,241	51,556	56,878	60,754	64,406	72,230	79,094	57,240
60-64	Count	484	317	277	330	253	163	194	2,018
	Avg. Salary	37,654	46,755	52,087	55,371	58,976	60,639	71,210	51,718
65-69	Count	160	125	98	92	80	63	63	681
	Avg. Salary	31,171	45,857	51,512	53,992	57,215	55,382	60,708	47,909
70 & Over	Count	90	38	31	23	23	11	30	246
	Avg. Salary	27,822	30,266	49,073	51,342	51,720	47,558	70,064	41,345
Totals	Count	**9,524**	**4,654**	**3,250**	**2,471**	**1,583**	**770**	**522**	**22,774**
	Avg. Salary	**$41,347**	**$53,686**	**$61,224**	**$65,509**	**$68,822**	**$70,825**	**$73,869**	**$52,978**

Average salary represents annualized salary earned in 2023 and is not shown for cells with counts less than or equal to three participants

Table 18

Distribution of Total Active Members by Age and by Years of Service

Average Age = 45.7 Average Service = 9.4

Age Last Birthday		Whole Years of Service at Valuation Date 0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	Totals
Less than 20	Count	140	-	-	-	-	-	-	140
	Avg. Salary	$25,724	-	-	-	-	-	-	$25,724
20-24	Count	1,374	5	-	-	-	-	-	1,379
	Avg. Salary	37,110	$38,294	-	-	-	-	-	37,114
25-29	Count	2,318	352	2	-	-	-	-	2,672
	Avg. Salary	45,889	53,856	*	-	-	-	-	46,962
30-34	Count	1,984	1,169	265	4	-	-	-	3,422
	Avg. Salary	46,654	59,400	63,103	$67,285	-	-	-	52,306
35-39	Count	1,998	1,143	1,031	244	5	-	-	4,421
	Avg. Salary	45,532	61,370	69,115	69,168	$91,787	-	-	56,483
40-44	Count	1,819	1,162	949	844	167	-	-	4,941
	Avg. Salary	46,419	58,821	69,034	76,470	$77,868	-	-	59,875
45-49	Count	1,460	967	871	807	601	101	-	4,807
	Avg. Salary	47,011	58,219	67,241	75,036	79,043	$82,319	-	62,383
50-54	Count	1,153	827	735	696	577	490	97	4,575
	Avg. Salary	48,253	56,275	64,644	70,702	78,265	84,076	$85,974	64,173
55-59	Count	1,019	670	567	636	549	360	329	4,130
	Avg. Salary	47,760	56,423	62,479	66,917	68,902	78,366	84,884	62,572
60-64	Count	794	533	436	515	382	253	333	3,246
	Avg. Salary	41,581	51,534	56,797	62,272	65,130	69,150	77,664	57,164
65-69	Count	317	211	191	148	120	83	108	1,178
	Avg. Salary	39,520	50,043	60,268	58,944	61,549	61,934	70,993	53,918
70 & Over	Count	189	86	56	44	32	21	46	474
	Avg. Salary	29,676	36,386	55,664	55,751	52,948	61,056	70,136	43,272
Totals	Count	**14,565**	**7,125**	**5,103**	**3,938**	**2,433**	**1,308**	**913**	**35,385**
	Avg. Salary	**$44,835**	**$57,387**	**$65,559**	**$70,405**	**$73,125**	**$77,707**	**$79,980**	**$57,264**

Average salary represents annualized salary earned in 2023 and is not shown for cells with counts less than or equal to three participants

Table 19

Distribution of Male Deferred Members by Age and by Years of Service

Average Age = 50.1 Average Service = 8.6

Age Last Birthday	Whole Years of Service at Valuation Date							Totals
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	
Less than 20	-	-	-	-	-	-	-	-
20-24	-	-	-	-	-	-	-	-
25-29	22	20	-	-	-	-	-	42
30-34	57	96	10	-	-	-	-	163
35-39	107	208	39	2	-	-	-	356
40-44	85	226	102	17	-	-	-	430
45-49	71	198	96	33	15	2	-	415
50-54	86	204	76	48	22	3	-	439
55-59	59	229	108	43	19	5	-	463
60-64	71	138	46	24	11	1	1	292
65-69	39	51	21	10	6	-	-	127
70 & Over	22	44	10	5	4	1	1	87
Totals	**619**	**1,414**	**508**	**182**	**77**	**12**	**2**	**2,814**

Table 20

Distribution of Female Deferred Members by Age and by Years of Service

Average Age = 50.5 Average Service = 8.5

Age Last Birthday	Whole Years of Service at Valuation Date 0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	Totals
Less than 20	-	-	-	-	-	-	-	-
20-24	3	1	-	-	-	-	-	4
25-29	55	28	-	-	-	-	-	83
30-34	136	225	8	-	-	-	-	369
35-39	212	386	94	3	-	-	-	695
40-44	188	456	131	34	4	-	-	813
45-49	148	401	147	70	19	1	1	787
50-54	128	432	229	103	48	7	-	947
55-59	130	462	228	110	39	10	1	980
60-64	143	327	129	58	17	6	1	681
65-69	77	127	62	19	6	3	1	295
70 & Over	49	88	24	9	3	1	3	177
Totals	**1,269**	**2,933**	**1,052**	**406**	**136**	**28**	**7**	**5,831**

Table 21

Distribution of Total Deferred Members by Age and by Years of Service

Average Age = 50.4 Average Service = 8.6

Age Last Birthday	Whole Years of Service at Valuation Date							Totals
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	
Less than 20	-	-	-	-	-	-	-	-
20-24	3	1	-	-	-	-	-	4
25-29	77	48	-	-	-	-	-	125
30-34	193	321	18	-	-	-	-	532
35-39	319	594	133	5	-	-	-	1,051
40-44	273	682	233	51	4	-	-	1,243
45-49	219	599	243	103	34	3	1	1,202
50-54	214	636	305	151	70	10	-	1,386
55-59	189	691	336	153	58	15	1	1,443
60-64	214	465	175	82	28	7	2	973
65-69	116	178	83	29	12	3	1	422
70 & Over	71	132	34	14	7	2	4	264
Totals	**1,888**	**4,347**	**1,560**	**588**	**213**	**40**	**9**	**8,645**

Table 22

Schedule of Pension Recipients Added to and Removed from Rolls

Fiscal Year Ending December 31	Added to Rolls*		Removed from Rolls		Total		Percent Increase in Annual Pension Benefits	Average Annual Pension Benefit
	Count	Annual Pension Benefits	Count	Annual Pension Benefits	Count	Annual Pension Benefits		
2008	1,290	$26,985,322	552	$3,650,746	18,333	$268,901,376	9.50%	$14,668
2009	1,160	24,062,484	577	6,292,131	18,916	286,671,729	6.61%	15,155
2010	1,388	31,055,004	562	6,314,155	19,742	311,412,579	8.63%	15,774
2011	1,538	34,517,321	592	7,019,999	20,688	338,909,901	8.83%	16,382
2012	1,497	35,646,627	585	6,920,227	21,600	367,636,301	8.48%	17,020
2013	1,745	39,633,549	614	8,227,809	22,731	399,042,042	8.54%	17,555
2014	1,755	42,076,101	726	9,207,206	23,760	431,910,937	8.24%	18,178
2015	1,657	38,445,600	689	9,453,053	24,728	460,903,484	6.71%	18,639
2016	1,768	43,327,957	728	9,191,130	25,768	495,040,311	7.41%	19,211
2017	1,806	43,470,131	766	10,395,795	26,808	528,114,647	6.68%	19,700
2018	1,786	41,353,498	812	10,936,120	27,782	558,532,025	5.76%	20,104
2019	1,773	42,280,614	805	11,779,332	28,750	589,033,307	5.46%	20,488
2020	1,585	36,818,814	928	13,759,321	29,407	612,092,800	3.91%	20,815
2021	1,841	45,070,447	1,022	14,752,502	30,226	642,410,745	4.95%	21,254
2022	1,598	36,477,267	969	14,834,972	30,855	664,053,040	3.37%	21,522
2023	1,525	35,758,054	960	15,452,782	31,420	684,358,312	3.06%	21,781

* *Includes cost-of-living increases*

Table 23

Retired and Disabled Members by Option Code

Option Code*	Count			Monthly Benefit			Count elected self-funded COLA**		
	Male	Female	Total	Male	Female	Total	1%	2%	3%
1	2,338	7,513	9,851	$4,430,947	$11,927,545	$16,358,493	56	44	69
2	4,981	4,229	9,210	11,567,548	7,619,220	19,186,768	53	51	60
2P	1,539	2,227	3,766	3,061,130	4,258,277	7,319,407	20	25	37
3	467	664	1,131	1,217,885	1,269,090	2,486,975	11	5	9
3P	307	640	947	773,982	1,500,224	2,274,206	5	10	8
4a	294	604	898	494,790	904,958	1,399,748	9	5	11
4b	107	181	288	179,953	266,334	446,287	8	9	8
5	573	1,646	2,219	953,243	2,357,665	3,310,908	20	14	27
Total	**10,606**	**17,704**	**28,310**	**$22,679,479**	**$30,103,312**	**$52,782,792**	**182**	**163**	**229**
Beneficiaries	**693**	**2,417**	**3,110**	**$850,900**	**$3,396,167**	**$4,247,067**	**-**	**-**	**-**
Grand Total	**11,299**	**20,121**	**31,420**	**$23,530,379**	**$33,499,479**	**$57,029,859**	**182**	**163**	**229**

**See optional forms of payment in Appendix B*

***Option totals in left portion of the table include these counts of members who elected a self-funded COLA option. Of the 1,232 new retirees and disabled members, 49 elected a self-funded COLA*

Table 24

Pensioners by Monthly Benefit and Option Code

Males	Option Code*								
Benefit Amount	**1**	**2**	**2P**	**3**	**3P**	**4a****	**4b**	**5**	**Total**
Under $200	95	128	49	5	4	21	2	90	394
$200-$399	223	319	128	13	21	27	15	173	919
$400-$599	248	336	139	16	13	43	20	162	977
$600-$799	201	296	110	24	10	26	8	127	802
$800-$999	169	275	105	21	12	15	7	95	699
$1,000-$1,499	285	599	202	64	34	58	15	170	1,427
$1,500-$1,999	238	530	141	47	32	27	6	100	1,121
$2,000-$2,499	186	526	158	65	40	18	9	88	1,090
$2,500 & over	693	1,972	507	212	141	74	25	246	3,870
Total	**2,338**	**4,981**	**1,539**	**467**	**307**	**309**	**107**	**1,251**	**11,299**
Females									
Benefit Amount	**1**	**2**	**2P**	**3**	**3P**	**4a****	**4b**	**5**	**Total**
Under $200	459	227	76	23	15	47	9	298	1,154
$200-$399	906	410	205	44	27	92	32	523	2,239
$400-$599	790	355	185	46	33	73	20	449	1,951
$600-$799	634	292	137	53	37	62	15	380	1,610
$800-$999	562	320	155	57	40	38	17	330	1,519
$1,000-$1,499	1,130	628	304	94	75	90	29	621	2,971
$1,500-$1,999	767	425	245	88	75	48	19	439	2,106
$2,000-$2,499	614	376	240	68	63	41	5	311	1,718
$2,500 & over	1,651	1,196	680	191	275	130	35	695	4,853
Total	**7,513**	**4,229**	**2,227**	**664**	**640**	**621**	**181**	**4,046**	**20,121**
Males & Females									
Benefit Amount	**1**	**2**	**2P**	**3**	**3P**	**4a****	**4b**	**5**	**Total**
Under $200	554	355	125	28	19	68	11	388	1,548
$200-$399	1,129	729	333	57	48	119	47	696	3,158
$400-$599	1,038	691	324	62	46	116	40	611	2,928
$600-$799	835	588	247	77	47	88	23	507	2,412
$800-$999	731	595	260	78	52	53	24	425	2,218
$1,000-$1,499	1,415	1,227	506	158	109	148	44	791	4,398
$1,500-$1,999	1,005	955	386	135	107	75	25	539	3,227
$2,000-$2,499	800	902	398	133	103	59	14	399	2,808
$2,500 & over	2,344	3,168	1,187	403	416	204	60	941	8,723
Total	**9,851**	**9,210**	**3,766**	**1,131**	**947**	**930**	**288**	**5,297**	**31,420**

**Options include those who elected a self-funded COLA option.*

***Option 4a includes 32 beneficiaries who are receiving a certain only benefit.*

Table 25

Pensioners by Age and Option Code

Average Age Male = 73.7 Average Age Female = 73.7 Average Age Total = 73.7

Males	Option Code*								
Age Last Birthday	**1**	**2**	**2P**	**3**	**3P**	**4a****	**4b**	**5**	**Total**
Under 50	1	-	-	-	-	8	-	6	15
50-54	11	12	4	1	1	3	-	8	40
55-59	70	126	41	13	9	-	6	19	284
60-64	219	544	154	42	21	23	31	109	1,143
65-69	504	1,113	332	72	53	51	38	214	2,377
70-74	531	1,166	464	95	87	75	24	270	2,712
75-79	449	994	328	91	75	62	6	270	2,275
80-84	305	576	156	62	40	52	2	181	1,374
85 & over	248	450	60	91	21	35	-	174	1,079
Total	**2,338**	**4,981**	**1,539**	**467**	**307**	**309**	**107**	**1,251**	**11,299**
Females									
Age Last Birthday	**1**	**2**	**2P**	**3**	**3P**	**4a****	**4b**	**5**	**Total**
Under 50	4	2	-	-	-	9	-	26	41
50-54	12	15	4	3	-	3	1	23	61
55-59	123	93	54	17	15	6	14	70	392
60-64	808	582	289	65	85	48	45	283	2,205
65-69	1,623	1,055	632	166	180	104	72	574	4,406
70-74	1,790	1,133	667	164	188	138	37	829	4,946
75-79	1,357	728	432	129	108	151	9	787	3,701
80-84	936	373	119	63	49	85	1	663	2,289
85 & over	860	248	30	57	15	77	2	791	2,080
Total	**7,513**	**4,229**	**2,227**	**664**	**640**	**621**	**181**	**4,046**	**20,121**
Males & Females									
Age Last Birthday	**1**	**2**	**2P**	**3**	**3P**	**4a****	**4b**	**5**	**Total**
Under 50	5	2	-	-	-	17	-	32	56
50-54	23	27	8	4	1	6	1	31	101
55-59	193	219	95	30	24	6	20	89	676
60-64	1,027	1,126	443	107	106	71	76	392	3,348
65-69	2,127	2,168	964	238	233	155	110	788	6,783
70-74	2,321	2,299	1,131	259	275	213	61	1,099	7,658
75-79	1,806	1,722	760	220	183	213	15	1,057	5,976
80-84	1,241	949	275	125	89	137	3	844	3,663
85 & over	1,108	698	90	148	36	112	2	965	3,159
Total	**9,851**	**9,210**	**3,766**	**1,131**	**947**	**930**	**288**	**5,297**	**31,420**

**Options include those who elected a self-funded COLA option.*

***Option 4a includes 32 beneficiaries who are receiving a certain only benefit.*

Table 26

Pensions Awarded in 2023 by Option Code

Average Age = 63.0

Males & Females	Option Code*								
Benefit Amount	**1**	**2**	**2P**	**3**	**3P**	**4a****	**4b**	**5**	**Total**
Under $200	14	10	5	5	0	0	1	22	57
$200-$399	51	37	11	2	1	0	5	52	159
$400-$599	43	26	9	1	2	6	4	39	130
$600-$799	32	19	11	1	1	3	1	36	104
$800-$999	33	22	11	4	0	3	4	32	109
$1,000-$1,499	64	51	26	6	3	6	4	60	220
$1,500-$1,999	48	48	24	5	7	3	4	41	180
$2,000-$2,499	30	40	16	1	2	3	1	28	121
$2,500 & over	104	148	50	20	19	7	9	88	445
Total	**419**	**401**	**163**	**45**	**35**	**31**	**33**	**398**	**1,525**
Males & Females									
Age Last Birthday	**1**	**2**	**2P**	**3**	**3P**	**4a****	**4b**	**5**	**Total**
Under 50	0	1	0	0	0	1	0	1	3
50-54	9	13	5	2	0	1	0	9	39
55-59	39	50	19	10	9	1	5	15	148
60-64	191	175	74	11	12	14	16	78	571
65-69	139	124	52	19	12	10	8	76	440
70-74	27	31	13	2	2	4	3	68	150
75-79	10	7	0	0	0	0	1	58	76
80-84	4	0	0	1	0	0	0	45	50
85 & over	0	0	0	0	0	0	0	48	48
Total	**419**	**401**	**163**	**45**	**35**	**31**	**33**	**398**	**1,525**

**Options include those who elected a self-funded COLA option*

***Option 4a includes 2 beneficiaries who are receiving a certain only benefit.*

Table 27

Retirees and Disabled Members by Service at Retirement and Years Since Retirement

(Average Monthly Benefit)

Average Service at Retirement = 20.2 Average Years Since Retirement = 12.3

Service at Retirement		Years Elapsed Since Retirement							
		0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	Totals
Less than 5	Count	251	235	262	186	112	49	88	1,183
	Avg. Benefit	$2,083	$621	$279	$249	$391	$2,044	$147	$347
5-9	Count	918	1,193	956	575	369	235	266	4,512
	Avg. Benefit	$558	$526	$458	$403	$374	$327	$283	$465
10-14	Count	1,007	1,170	784	509	381	298	274	4,423
	Avg. Benefit	$1,035	$949	$842	$728	$649	$606	$526	$849
15-19	Count	1,021	934	709	500	418	309	196	4,087
	Avg. Benefit	$1,555	$1,455	$1,356	$1,108	$1,007	$921	$865	$1,306
20-24	Count	905	929	789	547	357	253	157	3,937
	Avg. Benefit	$2,102	$2,114	$1,992	$1,606	$1,413	$1,356	$1,187	$1,867
25-29	Count	884	1,054	990	728	431	233	97	4,417
	Avg. Benefit	$3,061	$2,875	$2,793	$2,366	$2,132	$1,927	$1,798	$2,664
30-34	Count	742	954	910	576	326	200	87	3,795
	Avg. Benefit	$3,851	$3,776	$3,601	$3,064	$2,662	$2,729	$2,556	$3,462
35 & Over	Count	594	690	373	165	60	44	30	1,956
	Avg. Benefit	$4,945	$4,791	$4,350	$3,841	$3,225	$3,239	$3,092	$4,565
Totals	Count	**6,322**	**7,159**	**5,773**	**3,786**	**2,454**	**1,621**	**1,195**	**28,310**
	Avg. Benefit	**$2,171**	**$2,105**	**$1,969**	**$1,636**	**$1,350**	**$1,254**	**$902**	**$1,864**

Table 28

Retirees and Disabled Members by Year of Retirement

January 1, 2024 Total = 28,310

Year of Retirement	Count
Under 1961	-
1961	-
1962	-
1963	-
1964	-
1965	-
1966	-
1967	-
1968	-
1969	-
1970	-
1971	-
1972	-
1973	1
1974	1
1975	2
1976	2
1977	3
1978	11
1979	8
1980	10
1981	17
1982	17
1983	16
1984	28
1985	37
1986	55
1987	95
1988	96
1989	104
1990	127
1991	145

Year of Retirement	Count
1992	202
1993	199
1994	249
1995	414
1996	290
1997	325
1998	332
1999	379
2000	441
2001	514
2002	504
2003	595
2004	721
2005	650
2006	689
2007	802
2008	923
2009	854
2010	1,041
2011	1,239
2012	1,288
2013	1,348
2014	1,421
2015	1,397
2016	1,468
2017	1,445
2018	1,427
2019	1,452
2020	1,260
2021	1,455
2022	1,175
2023*	1,036

**May include retirements as of January 1, 2024*

Table 29

Thirty Year Closed Group Projected Benefit Payments

Year Ending December 31	Actives	Retirees*	Total
2024	$ 17,782,199	$ 703,817,671	$ 721,599,870
2025	44,412,755	698,369,735	742,782,490
2026	71,552,107	691,991,600	763,543,707
2027	99,016,642	685,014,358	784,031,000
2028	129,250,394	676,920,553	806,170,947
2029	159,957,553	668,645,775	828,603,328
2030	191,455,464	659,405,879	850,861,343
2031	223,729,555	649,106,006	872,835,561
2032	256,670,247	637,362,313	894,032,560
2033	290,694,756	624,051,217	914,745,973
2034	325,879,741	598,688,674	924,568,415
2035	362,233,069	583,352,621	945,585,690
2036	399,847,725	566,462,014	966,309,739
2037	438,063,435	548,462,779	986,526,214
2038	476,310,819	529,186,755	1,005,497,574
2039	514,526,754	508,727,411	1,023,254,165
2040	552,534,066	487,394,663	1,039,928,729
2041	589,730,307	464,921,074	1,054,651,381
2042	625,832,190	441,610,032	1,067,442,222
2043	660,299,531	417,634,872	1,077,934,403
2044	692,987,455	393,175,385	1,086,162,840
2045	723,683,423	368,437,329	1,092,120,752
2046	751,802,737	343,353,429	1,095,156,166
2047	777,172,542	318,439,617	1,095,612,159
2048	799,619,197	293,896,972	1,093,516,169
2049	819,334,594	269,769,076	1,089,103,670
2050	836,166,400	246,203,708	1,082,370,108
2051	849,575,669	223,507,852	1,073,083,521
2052	859,684,040	202,001,260	1,061,685,300
2053	867,449,888	181,744,821	1,049,194,709

* Includes Disabled Members, Beneficiaries, and Deferred Vested Members. Retirement benefit payments for deferred vested members are assumed to commence at age 60 (age 65 for Tier 2).

Appendix A

Summary of Actuarial Assumptions and Methods

Summary of Actuarial Assumptions and Methods

The following methods and assumptions were used in preparing the January 1, 2024 actuarial valuation report.

1. Valuation Date

The valuation date for any given year is January 1st, the first day of each plan year. This is the date as of which the actuarial present value of future benefits and the actuarial value of assets are determined.

2. Actuarial Cost Method

The actuarial valuation uses the Entry Age Normal (EAN) actuarial cost method, amortized as a level percentage of payroll. Under this method, the employer contribution rate is the sum of (i) the employer normal cost rate, and (ii) the rate that will amortize the unfunded actuarial accrued liability (UAAL).

a. The valuation is prepared on the projected benefit basis, under which the present value, at the investment return rate assumed to be earned in the future (currently 6.80%), of each participant's expected benefit payable at retirement or death is determined, based on his/her age, service, sex and compensation. The calculations take into account the probability of a participant's death or termination of employment prior to becoming eligible for a benefit, as well as the possibility of his/her terminating with a service, disability, or survivor's benefit. Future salary increases are also anticipated. The present value of the expected benefits payable for the active participants is added to the present value of the expected future payments to retired participants and beneficiaries to obtain the present value of all expected benefits payable from the Fund on account of the present group of participants and beneficiaries.

b. The employer contributions required to support the benefits of the Fund are determined using a level funding approach, and consist of a normal cost contribution and an unfunded accrued liability contribution.

c. The normal cost contribution is determined using the "entry age normal" actuarial cost method. Under this method, a calculation is made to determine the average uniform and constant percentage rate of employer contribution which, if applied to the compensation of each new participant during the entire period of his/her anticipated covered service, would be required to meet the cost of all benefits payable on his/her behalf based on the benefits provisions applicable for the individual member.

d. The unfunded accrued liability contributions are determined by subtracting the actuarial value of assets from the actuarial accrued liability. Amortization bases are established each year and amortized based on the Board's policy. The Board's policy consists of amortizing the unfunded liability as of January 1, 2018, over a closed 30-year period with each subsequent amortization base created as a result of year to year experience changes over individual 20-year closed periods. The current year amortization base is determined by taking the current unfunded liability less the outstanding amounts of prior year bases.

Summary of Actuarial Assumptions and Methods (continued)

3. Actuarial Value of Assets

The actuarial value of assets is based on the market value of assets with a five-year phase-in of actual investment return in excess of (less than) expected investment income. Expected investment income is determined using the assumed investment return rate and the market value of assets (adjusted for receipts and disbursements during the year). The returns are computed net of investment expenses. An adjustment is made if the actuarial value is not within 20% of the Market Value. For any year following a year in which the 20% of market value adjustment was applied, the actuarial value is determined as if the adjustment was not applied in the previous year.

4. Economic Assumptions

a. Investment return

6.80% per year, compounded annually, composed of an assumed 2.25% inflation rate and a 4.55% net real rate of return. This rate represents the assumed return, net of investment expenses.

b. Salary increase rate

Service	Rate	Service	Rate
1	6.50%	14	3.25%
2	6.50%	15	3.00%
3	6.50%	16	3.00%
4	6.00%	17	2.75%
5	5.25%	18	2.75%
6	4.75%	19	2.75%
7	4.25%	20	2.75%
8	4.00%	21	2.50%
9	4.00%	22	2.50%
10	3.50%	23	2.50%
11	3.50%	24	2.50%
12	3.50%	25	2.50%
13	3.50%	25+	2.50%

c. Payroll growth rate

In the amortization of the unfunded actuarial accrued liability, payroll is assumed to increase 2.50% per year. This increase rate is solely due to the effect of inflation on salaries, with no allowance for future membership growth.

d. Cost-of-Living adjustment

No cost-of-living adjustment is assumed since the policy for providing the benefit requires Board approval to make the recommendation to the Joint Appropriations Committee and the funded level of the plan shows a cost-of-living requirement would not be permitted.

5. Demographic Assumptions

a. Mortality

Healthy Pre-Retirement Mortality:
Pub-2010 General Active Mortality Table, amount weighted, fully generational, projected with the MP-2020 Ultimate Scale

Males: No set back with a multiplier of 100%
Females: No set back with a multiplier of 100%

Healthy Post-Retirement Mortality:
Pub-2010 General Healthy Annuitant Mortality Table, amount weighted, fully generational, projected with the MP-2020 Ultimate Scale

Males: No set back with a multiplier of 100%
Females: No set back with a multiplier of 103%

Disabled Mortality
Pub-2010 General Disabled Mortality Table, amount weighted, fully generational, projected with the MP-2020 Ultimate Scale

Males: No set back with a multiplier of 100%
Females: No set back with a multiplier of 100%

	Pre-Retirement		Post-Retirement		Disabled	
	Projected to 2024 using the MP-2020 Ultimate Scale					
Age	Male	Female	Male	Female	Male	Female
20	0.03%	0.01%	0.03%	0.01%	0.34%	0.19%
25	0.02%	0.01%	0.02%	0.01%	0.23%	0.14%
30	0.03%	0.01%	0.03%	0.01%	0.29%	0.21%
35	0.04%	0.02%	0.04%	0.02%	0.38%	0.33%
40	0.05%	0.03%	0.05%	0.03%	0.53%	0.52%
45	0.08%	0.05%	0.09%	0.06%	0.83%	0.81%
50	0.12%	0.07%	0.25%	0.19%	1.33%	1.23%
55	0.18%	0.10%	0.36%	0.24%	1.75%	1.44%
60	0.26%	0.15%	0.51%	0.33%	2.07%	1.62%
65	0.39%	0.25%	0.76%	0.53%	2.53%	1.88%
70	0.59%	0.41%	1.28%	0.92%	3.28%	2.40%
75			2.27%	1.64%	4.40%	3.39%
80			4.09%	2.96%	6.29%	5.15%
85			7.60%	5.66%	9.57%	8.26%
90			13.43%	10.83%	14.88%	12.51%
95			21.64%	18.33%	22.33%	18.25%
100			31.27%	27.81%	31.27%	27.00%

Summary of Actuarial Assumptions and Methods (continued)

b. Disability, Withdrawal and Retirement

Age	Disability	
	Male	Female
20	0.01%	0.01%
25	0.01%	0.01%
30	0.01%	0.01%
35	0.01%	0.01%
40	0.01%	0.01%
45	0.02%	0.02%
50	0.12%	0.05%
55	0.24%	0.12%
60	0.24%	0.24%

Withdrawal		
Service	Male	Female
1	13.00%	14.00%
2	13.00%	14.00%
3	13.00%	14.00%
4	13.00%	14.00%
5	13.00%	13.00%
6	11.00%	11.00%
7	10.00%	10.00%
8	9.00%	9.00%
9	8.00%	8.00%
10	8.00%	8.00%
11	8.00%	8.00%
12	8.00%	7.00%
13	7.00%	7.00%
14	6.00%	7.00%
15	6.00%	6.00%
16	5.00%	6.00%
17	5.00%	6.00%
18	4.00%	6.00%
19	3.00%	6.00%
20+	3.00%	6.00%

Age	Retirement	
	Unreduced	Reduced
<50	15.00%	0.20%
50	15.00%	0.20%
51	15.00%	0.20%
52	15.00%	0.30%
53	15.00%	0.50%
54	15.00%	0.50%
55	17.00%	1.00%
56	17.00%	1.00%
57	17.00%	1.00%
58	17.00%	1.50%
59	17.00%	2.00%
60	13.00%	2.50%
61	13.00%	2.50%
62	18.00%	2.50%
63	15.00%	2.50%
64	15.00%	2.50%
65	30.00%	
66	35.00%	
67	28.00%	
68	25.00%	
69	25.00%	
70	25.00%	
71	20.00%	
72	20.00%	
73	20.00%	
74	15.00%	
75	15.00%	
76	15.00%	
77	15.00%	
78	15.00%	
79	15.00%	
80+	100.00%	

Summary of Actuarial Assumptions and Methods (continued)

6. Other Assumptions

a. Percent married: 85% of employees are assumed to be married. (No beneficiaries other than the spouse assumed.)

b. Age difference: Male members are assumed to be three years older than their spouses, and female members are assumed to be three years younger than their spouses.

c. Percent electing annuity on death (when eligible): All of the spouses of vested, married participants are assumed to elect an annuity.

d. Percent electing deferred termination benefit: Vested terminating members are assumed to elect a refund or a deferred benefit. It is assumed that the active members will elect the maximum value of the refund or deferred benefit when they terminate.

e. Assumed age for commencement of deferred benefits: Members electing to receive a deferred benefit are assumed to commence receipt at the first age at which unreduced benefits are available, which for this plan is age 60 (65 for Tier 2).

f. No benefit amount data is available for members entitled to deferred benefits. The benefit is estimated using the final average compensation and service provided by WRS.

g. There will be no recoveries once disabled. We assume all disabled members are totally disabled.

h. No surviving spouse will remarry.

i. Administrative expenses: Assumed to be the average of the prior two years, with each year projected at 2.50% to the valuation date.

j. Pay increase timing: Beginning of (fiscal) year. This is equivalent to assuming that reported pay represents amount paid to members during the year ended on the valuation date.

k. Decrement timing: Decrements of all types are assumed to occur mid-year.

l. Eligibility testing: Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.

m. Decrement relativity: Decrement rates are converted to probabilities in order to account for multiple decrements.

n. Incidence of Contributions: Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in the report, and the actual payroll payable at the time contributions are made.

o. Benefit Service: All members are assumed to accrue one year of service each year. Exact fractional service is used to determine the amount of benefit payable.

p. Employee contribution pickup: For members hired after January 1, 2018, it is assumed that 37% of the employee contributions were paid by employee and therefore would be refundable.

APPENDIX B

SUMMARY OF PLAN PROVISIONS

Summary of Plan Provisions

Covered Members	Any full-time or regular part-time employee of an employer as defined under W.S. 9-3-402(a)(vii).
Tier	Members who join the State of Wyoming Retirement System by August 31, 2012 are in Tier 1, while members who join on or after September 1, 2012 are in Tier 2.
Final Average Salary	For Tier 1 member: employee's average annual salary for the highest paid three continuous years of service. For Tier 2 members: employee's average annual salary for the highest paid five continuous years of service.
Service Retirement	
Eligibility	Tier 1 members may retire upon normal retirement on the date he/she attains age 60 with four or more years of service while Tier 2 members may retire upon normal retirement on the date he/she attains age 65 with four or more years of service. All employees may also retire upon normal retirement on the date that the sum of the member's age and service is at least 85. Tier 1 members are eligible for a reduced benefit at age 50 with four or more years of service and Tier 2 members are eligible for a reduced benefit at age 55 with four or more years of service. All members are eligible for a reduced benefit at any age with 25 or more years of service.
Benefit	For Tier 1 member: 2.125% of employee's Final Average Salary for each year of credited service for the first 15 years of service credit plus 2.25% of Final Average Salary for any years of service credit exceeding 15 years. For Tier 2 members: 2.000% of employee's Final (5-year) Average Salary for each year of credited service. This amount is reduced by 5.0% per year that the employee is under age 60 for Tier 1 and under age 65 for Tier 2. However, members retiring with a combined age and service of at least 85 receive an unreduced benefit. Employees hired prior to July 1, 1981 may be entitled to benefits earned under a different formula.
Vesting	Any employee who has left employment with four or more years of service, and who has not withdrawn accumulated contributions, is eligible to receive the above benefit or can elect to receive a lump-sum refund of employee contributions with interest. An employee who terminates with less than four years of service is only eligible for the lump-sum benefit.

Summary of Plan Provisions (continued)

Disability Benefit

Eligibility	Ten or more years of service.
Benefit	Service retirement benefit earned as of the date of disability, payable immediately.

Pre-retirement Death Benefit

Eligibility	No age or service requirements.
Benefit	A lump sum equal to two times the employee contributions with interest. If the employee is vested, the beneficiary can elect, in lieu of this lump sum, to receive a monthly annuity equal to the actuarial equivalent of the retirement benefit that would be due the employee.

Contributions

Employee	9.25% of salary. Effective July 1, 2026, employees will contribute 49.68% of the actuarially determined contribution rate calculated as of January 1 of the preceding odd-numbered year. The rates will be effective July 1 of even years. The total contribution rate cannot increase or decrease by more than 0.50% every two years.
Employer	9.37% of salary. Effective July 1, 2026, employers will contribute 50.32% of the actuarially determined contribution rate calculated as of January 1 of the preceding odd-numbered year. The rates will be effective July 1 of even years. The total contribution rate cannot increase or decrease by more than 0.50% every two years.
Interest	3.00% annually (0.0% for non-vested members).

Cost-of-Living Improvements W.S. 9-3-454 prohibits benefit changes, including cost-of-living increases, unless the funded ratio stays above 100% plus a margin for adverse experience throughout the life of the benefit change.

Summary of Plan Provisions (continued)

Optional Forms of Payment

All options include the choice to elect a reduced benefit with a self-funded annual COLA of 1%, 2%, or 3% per year. COLAs commence on July 1 following the two-year anniversary of retirement.

Option 1	Monthly benefit for life with a lump-sum death benefit equal to the excess (if any) of the employee contributions with interest over the total benefits.
Option 2	Monthly benefit for life. Upon death, 100% of the benefit continues to be paid to the beneficiary.
Option 2P	Monthly benefit for life. Upon death, 100% of the benefit continues to be paid to the beneficiary. Benefit reverts to Option 1 amount but without the cash refund feature upon beneficiary death.
Option 3	Monthly benefit for life. Upon death, 50% of the benefit continues to be paid to the beneficiary.
Option 3P	Monthly benefit for life. Upon death, 50% of the benefit continues to be paid to the beneficiary. Benefit reverts to Option 1 amount but without the cash refund feature upon beneficiary death.
Option 4a	Monthly benefit for life with a guarantee of 120 monthly payments.
Option 4b	Monthly benefit for life with a guarantee of 240 monthly payments.
Option 5	The largest possible monthly benefit payable for life with no lump-sum death benefit.

APPENDIX C

RISKS ASSOCIATED WITH MEASURING THE ACCRUED LIABILITY

Risks Associated With Measuring the Accrued Liability and Actuarially Determined Contribution

The determination of the accrued liability and the actuarially determined contribution requires the use of assumptions regarding future economic and demographic experience. Risk measures, as illustrated in this report, are intended to aid in the understanding of the effects of future experience differing from the assumptions used in the course of the actuarial valuation. Risk measures may also help with illustrating the potential volatility in the accrued liability and the actuarially determined contribution that result from the differences between actual experience and the actuarial assumptions.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions due to changing conditions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period, or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. The scope of an actuarial valuation does not include an analysis of the potential range of such future measurements.

Examples of risk that may reasonably be anticipated to significantly affect the plan's future financial condition include:

1. Investment risk – actual investment returns may differ from the expected returns;
2. Asset/Liability mismatch – changes in asset values may not match changes in liabilities, thereby altering the gap between the accrued liability and assets and consequently altering the funded status and contribution requirements;
3. Contribution risk – actual contributions may differ from expected future contributions. For example, actual contributions may not be made in accordance with the plan's funding policy or material changes may occur in the anticipated number of covered employees, covered payroll, or other relevant contribution base;
4. Salary and Payroll risk – actual salaries and total payroll may differ from expected, resulting in actual future accrued liability and contributions differing from expected;
5. Longevity risk – members may live longer or shorter than expected and receive pensions for a period of time other than assumed;
6. Other demographic risks – members may terminate, retire or become disabled at times or with benefits other than assumed resulting in actual future accrued liability and contributions differing from expected.

The effects of certain trends in experience can generally be anticipated. For example, if the investment return since the most recent actuarial valuation is less (or more) than the assumed rate, the cost of the plan can be expected to increase (or decrease). Likewise, if longevity is improving (or worsening), increases (or decreases) in cost can be anticipated.

The computed contribution rate shown on Table 1A may be considered as a minimum contribution rate that complies with the Board's funding policy. The timely receipt of the actuarially determined contributions is critical to support the financial health of the plan. Users of this report should be aware that contributions made at the actuarially determined rate do not necessarily guarantee benefit security.

Risks Associated With Measuring the Accrued Liability and Actuarially Determined Contribution

Plan Maturity Measures

Risks facing a pension plan evolve over time. A young plan with virtually no investments and paying few benefits may experience little investment risk. An older plan with a large number of members in pay status and a significant trust may be much more exposed to investment risk. Generally accepted plan maturity measures include the following:

	January 1, 2024	January 1, 2023
Ratio of the market value of assets to total payroll	4.4	4.4
Ratio of actuarial accrued liability to payroll	5.6	5.8
Ratio of actives to retirees and beneficiaries	1.1	1.1
Ratio of net cash flows to market value of assets	-4%	-4%
Duration of the actuarial accrued liability	11.8	11.8

Ratio of Market Value of Assets to Payroll

The relationship between assets and payroll is a useful indicator of the potential volatility of contributions. For example, if the market value of assets is 4.0 times the payroll, a return on assets 5% different than assumed would equal 20% of payroll. A higher (lower) or increasing (decreasing) level of this maturity measure generally indicates a higher (lower) or increasing (decreasing) volatility in plan sponsor contributions as a percentage of payroll.

Ratio of Actuarial Accrued Liability to Payroll

The relationship between actuarial accrued liability and payroll is a useful indicator of the potential volatility of contributions for a fully funded plan. A funding policy that targets a funded ratio of 100% is expected to result in the ratio of assets to payroll and the ratio of liability to payroll converging over time.

The ratio of liability to payroll may also be used as a measure of sensitivity of the liability itself. For example, if the actuarial accrued liability is 5.5 times the payroll, a change in liability 2% other than assumed would equal 11% of payroll. A higher (lower) or increasing (decreasing) level of this maturity measure generally indicates a higher (lower) or increasing (decreasing) volatility in liability (and also plan sponsor contributions) as a percentage of payroll.

Ratio of Actives to Retirees and Beneficiaries

A young plan with many active members and few retirees will have a high ratio of active to retirees. A mature open plan may have close to the same number of actives to retirees resulting in a ratio near 1.0. A super-mature or closed plan may have significantly more retirees than actives resulting in a ratio below 1.0.

Risks Associated With Measuring the Accrued Liability and Actuarially Determined Contribution

Ratio of Net Cash Flow to Market Value of Assets

A positive net cash flow means contributions exceed benefits and expenses. A negative cash flow means existing funds are being used to make payments. A certain amount of negative net cash flow is generally expected to occur when benefits are prefunded through a qualified trust. Large negative net cash flows as a percent of assets may indicate a super-mature plan or a need for additional contributions.

Duration of Actuarial Accrued Liability

The duration of the actuarial accrued liability may be used to approximate the sensitivity to a 1% change in the assumed rate of return. For example, duration of 10 indicates that the liability would increase approximately 10% if the assumed rate of return were lowered 1%.

Additional Risk Assessment

Additional risk assessment is outside the scope of the annual actuarial valuation. Additional assessment may include scenario tests, sensitivity tests, stochastic modeling, stress tests, and a comparison of the present value of accrued benefits at low-risk discount rates with the actuarial accrued liability.

Risk Measures – Low Default Risk Obligation Measure

Introduction

In December 2021, the Actuarial Standards Board (ASB) adopted a revision to Actuarial Standard of Practice (ASOP) No. 4, Measuring Pension Obligations and Determining Pension Plan Costs or Contributions. The revised ASOP No. 4 requires the calculation and disclosure of a liability referred to by the ASOP as the "Low-Default-Risk Obligation Measure" (LDROM). The rationale that the ASB cited for the calculation and disclosure of the LDROM was included in the Transmittal Memorandum of ASOP No. 4 and is presented below (emphasis added):

> "The ASB believes that the calculation and disclosure of this measure provides **appropriate, useful information for the intended user regarding the funded status of a pension plan**. The calculation and disclosure of this additional measure is **not intended to suggest that this is the "right" liability measure** for a pension plan. However, the ASB does believe that **this additional disclosure provides a more complete assessment of a plan's funded status and provides additional information regarding the security of benefits that members have earned as of the measurement date.**"

Comparing the Accrued Liabilities and the LDROM

One of the fundamental financial objectives of the Public Employee Plan of the State of Wyoming Retirement System (the Fund) is to finance each member's retirement benefits over the period from the member's date of hire until the member's projected date of retirement (entry age actuarial cost method) as a level percentage of payroll. To fulfill this objective, the discount rate that is used to value the accrued liabilities of the Fund is set equal to the expected return on the Fund's diversified portfolio of assets (referred to sometimes as the investment return assumption). For the Public Employee Plan, the investment return assumption is 6.80%.

The LDROM is meant to approximately represent the lump sum cost to a plan to purchase low-default-risk fixed income securities whose resulting cash flows essentially replicate in timing and amount the benefits earned (or the costs accrued) as of the measurement date. The LDROM is very dependent upon market interest rates at the time of the LDROM measurement. The lower the market interest rates, the higher the LDROM, and vice versa. The LDROM results presented in this report are based on the entry age actuarial cost method and discount rates based upon the intermediate rate from the FTSE Pension Discount Curve and Liability Index published by the Society of Actuaries. This rate is 4.80% as of December 31, 2023. This measure may not be appropriate for assessing the need for or amount of future contributions. This measure may not be appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligation.

The difference between the two measures (Valuation and LDROM) is one illustration of the savings the sponsor anticipates by taking on risk in a diversified portfolio.

Valuation Accrued Liabilities	LDROM
$11,611,635,879	$14,637,859,548