Wyoming Law Enforcement Retirement Fund

Actuarial Valuation Report for the Year Beginning January 1, 2023

GRS

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April 28, 2023

Board of Trustees
Wyoming Law Enforcement Retirement Fund
6101 Yellowstone Road
Suite 500
Cheyenne, WY 82002

Dear Board of Trustees:

Subject: Actuarial Valuation as of January 1, 2023

We are pleased to present the report of the actuarial valuation of the Wyoming Law Enforcement Retirement Fund ("the Fund") for the plan year commencing January 1, 2023. 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. 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.

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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, 2023 is 84.27%. As of January 1, 2022, this funded ratio, based on the assumption of no future COLAs and the actuarial value of assets, was 84.67%. On a market value of assets basis, the funded ratio decreased from 94.62% as of January 1, 2022 to 81.76% as of January 1, 2023. 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, 2023, including recent legislation that amended the death benefits for active members. 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 at the November 17, 2021 and February 17, 2022 meetings 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.

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 amounts 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.

The 8.60% employer contribution and the 8.60% employee contribution are the 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. In fact, current contribution rates are not expected to sustain the plan and funding levels are expected to deteriorate over time.

The actuarially determined employer contribution 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, 2023 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, 2023 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 relied on the System's staff for the accuracy and completeness of the information.

Plan experience

As part of each valuation, we examine the Fund's experience relative to the assumptions. Experience in a given year will deviate from the assumptions and 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 loss of approximately $12.6 million due to a contribution loss of $6.2 million and a liability loss of $10.2 million, primarily due to salary increases greater than expected. These losses were partially offset by an investment gain of $3.8 million. Additionally, the liabilities increased by $0.05 million due to recently passed legislation that amended the death benefits for active members. 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, 2023.

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, and Dana Woolfrey are Members of the American Academy of Actuaries, and all three 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

Paul T Wood

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SECTION I

EXECUTIVE SUMMARY

Executive Summary

Item	January 1, 2023 No COLA	January 1, 2022 No COLA
1. Contributions:		
a. Total normal cost	16.41%	16.38%
b. Employee contributions	(8.60%)	(8.60%)
c. Other expected contributions	0.00%	0.00%
d. Net employer normal cost	7.81%	7.78%
e. Amortization payment	6.50%	6.01%
f. Administrative expenses	0.50%	0.47%
g. Actuarially determined contribution	14.81%	14.26%
h. Statutory	(8.60%)	(8.60%)
i. Shortfall/(surplus)	6.21%	5.66%
2. Funding Elements:		
a. Market value of assets (MVA)	$806,217,227	$882,352,248
b. Actuarial value of assets (AVA)	$831,035,274	$789,572,141
c. Actuarial accrued liability (AAL)	$986,133,210	$932,553,503
d. Unfunded/(overfunded) actuarial accrued liability	$155,097,936	$142,981,362
3. Contributions and Ratios:		
a. Actuarially determined contribution	$25,384,165	$23,603,760
b. Actual contributions	N/A	14,990,494
i. Employer	*N/A*	*14,548,971*
ii. Other	*N/A*	*441,523*
c. Percentage contributed	N/A	63.51%
d. Funded ratio on an actuarial basis (AVA/AAL)	84.27%	84.67%
e. Funded ratio on a market basis (MVA/AAL)	81.76%	94.62%
f. Projected payroll	$171,443,834	$165,440,506

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 84.27% and the market value funded ratio is 81.76%.
- Pursuant to recently passed legislation, death benefits for active members have been updated since the prior valuation.
- There have not been any changes to the actuarial assumptions or methods 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
  - 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
- Using the current statutory contribution of 8.60% of pay and an open group projection, the plan is not projected to reach full funding. Rather, the plan's funded ratio is expected to decrease over the next 30 years.
- As of the prior valuation, a rate increase was recommended. Given that both contributions and investment return on a market value basis were lower than expected, a rate increase should still be considered in order to change the funding trajectory.

Calculation of Contribution Rates

The funds available to pay benefits come from two sources, contributions as specified in the statute 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 which are both 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 contribution rate 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.

Administrative expenses are the average of the actual expenses for 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, 2023. Note that the statutory employer contribution is set at 8.60% of payroll. Therefore, the ADC will not be fully contributed. This is detailed in the Executive Summary.

Financial Data and Experience

As of January 1, 2023, the Fund has a total market value of about $806 million. 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 2022.

During 2022, the total investment return on the market value of assets (MVA), as reported by Meketa Investment Group, Inc., was (6.99%), 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 administrative and 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 $831 million. The AVA is 103.08% of the MVA as of December 31, 2022, compared to 89.48% last year. The difference between the AVA and the MVA is the deferred gains and losses. As of January 1, 2022, the total deferred gain was $92.8 million. As of January 1, 2023, the total deferred loss was $24.8 million. Having a deferred loss in the AVA is an indicator that the funded ratio will have a downward "tilt" in the near term, and the ADC will likewise have upward pressure.

In addition to the market return, Table 10 also shows the return on the actuarial value of assets for the Fund. For 2022, this return was 7.29%. Because this is more than the assumed 7.00% investment return for the prior year, an actuarial gain occurred, decreasing the unfunded actuarial accrued liabilities of the Fund by $3.8 million.

Member Data

Member data as of January 1, 2023 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.

The total payroll shown on the statistical tables is the amount that was supplied by the Fund, annualized, if necessary. For the cost calculations, the pay amounts were adjusted in accordance with the actuarial assumptions to reflect one year's salary increase.

Total active member payroll increased 3.63%, compared with a 2.84% decrease the prior year.

The average of the final average salaries for participants who retired or became disabled this year is $67,481.

Of the 2,524 active participants, 385 are eligible or will become eligible for normal retirement in 2023, and 530 are eligible or will become eligible for early retirement in 2023.

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 0.06% of payroll.

Benefit Provisions

Appendix B of the report includes a more detailed summary of the benefit provisions for the Fund. A brief summary from W.S. 9-3-432 is as follows:

- *Normal Retirement Eligibility*
  - Age 60 with at least four years of service as a law enforcement officer or any age with at least twenty years of service as a law enforcement officer.
- *Normal Retirement Benefit*
  - 2.50% of highest average five-year salary not to exceed 75.0% of highest average five-year salary.
- *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
  - 8.60% of pay.
- *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.

Pursuant to Enrolled Act No. 25, interest crediting for non-vested inactive members on a prospective basis is eliminated beginning July 1, 2019.

Pursuant to Enrolled Act No. 22, death benefits for active members were revised. Details can be found in Appendix B.

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 21 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 or the valuation date if over age 60. Those with over 20 years of service are assumed to retire immediately.
- No benefit data is available for all members entitled to deferred benefits. The present value of benefits expected to be paid to vested inactive non-retired members is approximated using the data provided.

The average future lifetime for current pensioners is 23.1 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.

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 Actuarially Determined Employer Contribution Rate
(Assumes No Future Cost-Of-Living Increases)

Item		January 1, 2023	January 1, 2022
1.	Projected valuation payroll	$171,443,834	$165,440,506
2.	Present value of future pay	$1,261,145,776	$1,221,579,122
3.	Employer normal cost rate	7.81%	7.78%
4.	Actuarial accrued liability for active members		
	a. Present value of future benefits for active members	$625,042,593	$599,323,321
	b. Less: present value of future employer normal costs	(96,217,246)	(92,759,134)
	c. Less: present value of future employee contributions	(108,458,537)	(105,055,805)
	d. Actuarial accrued liability	$420,366,810	$401,508,382
5.	Total actuarial accrued liability for:		
	a. Retirees and beneficiaries	$459,943,597	$432,023,567
	b. Disabled members	68,361,895	64,908,278
	Duty	*49,085,961*	*42,165,839*
	Non-duty	*19,275,934*	*22,742,439*
	c. Inactive members	37,460,908	34,113,276
	d. Active members (Item 4d)	420,366,810	401,508,382
	e. Total	$986,133,210	$932,553,503
6.	Actuarial value of assets (Table 9)	$831,035,274	$789,572,141
7.	Unfunded actuarial accrued liability (UAAL) (Item 5e - Item 6)	$155,097,936	$142,981,362
8.	Effective UAAL amortization period	21 years	22 years
9.	Assumed payroll growth rate	2.50%	2.50%
10.	Actuarially Determined Employer Contribution		
	a. UAAL amortization payment as % of pay	6.50%	6.01%
	b. Employer normal cost	7.81%	7.78%
	c. Administrative expense	0.50%	0.47%
	d. Employer contribution (a + b + c)	14.81%	14.26%

Table 1B

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

UAAL as of January 1, 2023				$155,097,936
Total Prior Remaining Amortization Bases as of January 1, 2023				142,420,356
2023 Amortization Base as of January 1, 2023				**$12,677,580**
2023 Payment (20 years, level percent of pay amortization)				**$941,276**
		As of January 1, 2023		
Base Year	**Initial Base**	**Remaining Base**	**Years Remaining**	**Amortization Payment**
2023 Experience Loss	$ 12,625,835	$ 12,625,835	20	$ 937,434
2023 Plan Changes	51,745	51,745	20	3,842
2022 Experience Gain	(32,736,377)	(32,450,583)	19	(2,491,351)
2022 Assumption Changes	57,271,373	56,771,385	19	4,358,549
2021 Experience Gain	(4,812,047)	(4,719,173)	18	(375,626)
2020 Experience Gain	14,645,499	14,167,942	17	1,172,619
2019 Experience Gain	24,129,271	22,949,490	16	1,981,661
2018 Experience Gain	83,395,794	85,701,295	25	5,553,892
Total		**$ 155,097,936**		**$ 11,141,020**

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	$166,489,986	$424,071,943	$590,561,929
Death-in-service benefits likely to be paid on behalf of present active members (employer financed portion)	4,141,389	2,267,920	6,409,309
Separation benefits (refunds of contributions and deferred allowances) likely to be paid to present active members	34,044,408	(5,973,053)	28,071,355
Benefits likely to be paid to vested inactive members	0	31,354,122	31,354,122
Benefits to be paid to members due refunds	0	6,106,786	6,106,786
Benefits to be paid to current retirees, disabled members, beneficiaries, and future beneficiaries of current retirees	0	528,305,492	528,305,492
Total	$204,675,783	$986,133,210	$1,190,808,993
Actuarial Value of Assets	0	831,035,274	831,035,274
Liabilities to be covered by future contributions	$204,675,783	$155,097,936	$359,773,719

Table 3

History of Total Normal Cost
(Assumes No Future Cost-Of-Living Increases)

Fiscal Year Ending December 31	Normal Cost as Percent of Payroll
2007	13.56%
2008	13.42%
2009	13.46%
2010	14.14%
2011	14.13%
2012	14.14%
2013	14.12%
2014	14.56%
2015	14.54%
2016	14.46%
2017	14.26%
2018	14.30%
2019	14.31%
2020	14.26%
2021	14.20%
2022	16.38%
2023	16.41%

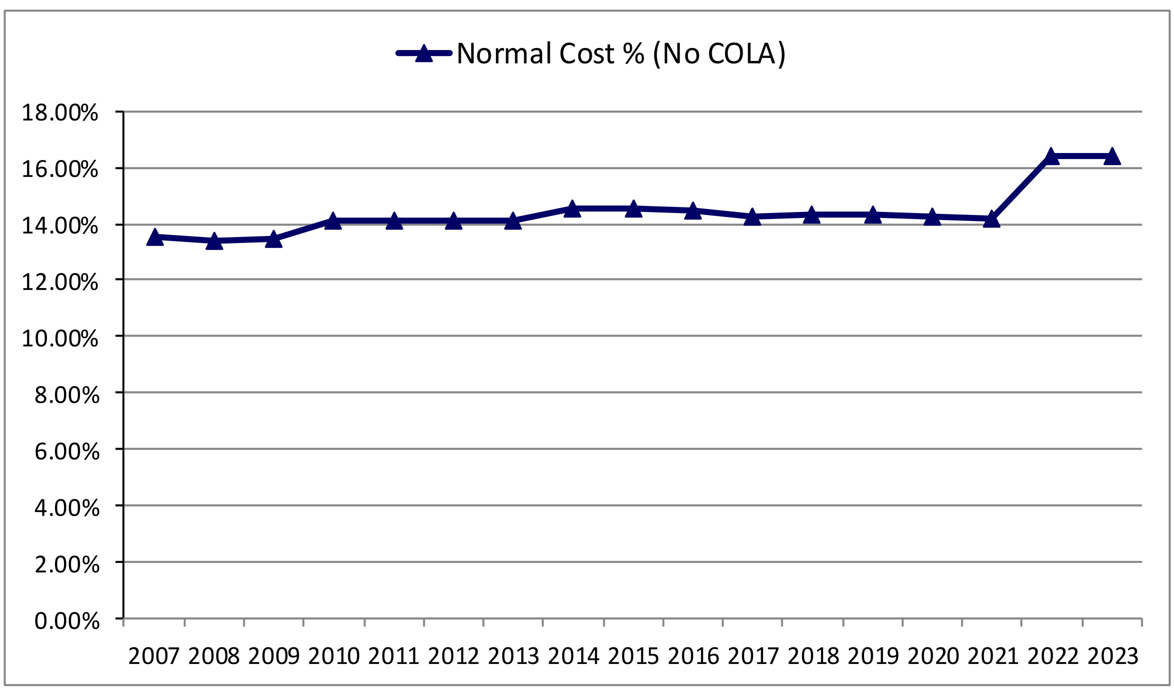

Table 4

Calculation of Total Actuarial Gain/(Loss)

Assumes No Future Cost-Of-Living Increases

Item	January 1, 2023
1. Derivation of Experience Gain/(Loss)	
a. Unfunded actuarial accrued liability (UAAL) - previous valuation	$142,981,362
b. Normal cost (NC) for fiscal year ending December 31, 2022	27,101,074
c. Expected administrative expenses for fiscal year ending December 31, 2022	779,600
d. Actuarially determined contribution for fiscal year ending December 31, 2022	37,831,643
e. Interest accrual:	
(i) For whole year on (a)	9,722,733
(ii) For half year on (b) + (c) - (d)	(332,769)
(iii) Total interest: (e)(i) + (e)(ii)	9,389,964
f. Change in UAAL due to plan changes	51,745
g. Change in UAAL due to assumption change	0
h. Expected UAAL current year: (a) + (b) + (c) - (d) + (e)(iii) + (f) + (g)	142,472,101
i. Actual UAAL current year	155,097,936
j. Experience gain/(loss): (h) - (i)	(12,625,835)
k. Experience gain/(loss) as a % of actuarial accrued liability	-1.28%
2. Approximate Portion of Gain/(Loss) Due to Investments (at Actuarial Value)	$3,789,649
3. Approximate Portion of Gain/(Loss) Due to Contributions and Administrative Expenses higher or lower than expected*	($6,223,038)
4. Approximate Portion of Gain/(Loss) Due to Liabilities: (1)(j) - (2) - (3)	($10,192,447)
a. Age & service retirements	(265,825)
b. Non-duty disability retirements	(93,088)
c. Duty disability retirements	(100,012)
d. Death-in-service	947,665
e. Withdrawal from employment	577,017
f. Rehires	(860,206)
g. Pay increases	(7,574,626)
h. Death after Retirement	49,912
i. Service Purchases	(2,355,599)
j. Other	(517,685)
k. Other as a % of actuarial accrued liability	-0.05%

**Includes $2.36 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, 2023
1. Calculated contribution rate as of January 1, 2022	14.26%
2. Change in contribution rate during year	
a. Change in employer normal cost	0.03%
b. Assumption changes	0.00%
c. Plan Changes	0.03%
d. Actuarial (gain) loss from investments on actuarial value of assets	-0.17%
e. Actuarial (gain) loss from liability sources and administrative expenses	0.45%
f. Difference between contributions made and ADC	0.27%
g. Effect of payroll growing (faster)/slower than assumption	-0.06%
h. Other changes	0.00%
i. Total change	0.55%
3. Calculated contribution rate as of January 1, 2023	14.81%

Table 6

Statement of Plan Net Assets

Assets at Market Value		
Item	**FYE 2022**	**FYE 2021**
1. Cash and Cash Equivalents (Operating Cash)	$34,464,676	$43,454,200
2. Receivables		
a. Insurance premium tax	$0	$0
b. Buy backs	0	0
c. Employer contributions	959,151	969,988
d. Employee contributions	956,914	962,957
e. Securities sold	353,810	857,999
f. Accrued interest and dividends	1,482,236	2,057,313
g. Currency contract receivable	49,139,387	71,155,925
h. Other	31,641	34,076
i. Rebate and fee income receivable	0	0
j. Total receivables	$52,923,139	$76,038,258
3. Investments, at fair value	$810,284,694	$884,842,655
4. Liabilities		
a. Benefits and refunds payable	($221,158)	($80,604)
b. Securities purchased	(1,176,667)	(3,084,086)
c. Administrative and consulting fees payable	(1,199,759)	(1,146,873)
d. Currency contract payable	(50,435,987)	(70,696,209)
e. Securities lending collateral	(38,421,711)	(46,975,093)
f. Total liabilities	($91,455,282)	($121,982,865)
5. Total Market Value of Assets Available for Benefits	$806,217,227	$882,352,248

Table 7

Reconciliation of Plan Net Assets

Assets at Market Value		
Item	**FYE 2022**	**FYE 2021**
A. Market Value of Assets at Beginning of Year	$882,352,248	$765,011,012
B. Contribution Income:		
1. Contributions		
a. Employee	$14,548,477	$14,160,550
b. Employer	14,548,971	14,113,663
c. Other	2,797,122	1,540,186
d. Total	$31,894,570	$29,814,399
2. Investment Income		
a. Interest, dividends, and other income	$15,883,203	$14,471,892
b. Net appreciation	(71,982,505)	122,031,188
c. Investment expenses	(4,619,981)	(4,965,077)
d. Net investment income	($60,719,283)	$131,538,003
3. Securities Lending		
a. Gross income	$699,821	$90,480
b. Deductions	(616,441)	(13,550)
c. Net investment income	$83,380	$76,930
4. Benefits and Refunds		
a. Refunds	($3,790,198)	($3,117,493)
b. Regular monthly benefits	(42,739,295)	(40,189,329)
c. Total	($46,529,493)	($43,306,822)
5. Administrative and Miscellaneous Expenses	($864,195)	($781,274)
C. Market Value of Assets at End of Year	$806,217,227	$882,352,248

Table 8

Progress of Fund Through December 31, 2022

Plan Year Ending December 31	Employer Contributions*	Employee Contributions*	Administrative Expenses	Net Investment Income**	Benefit Payments	Transfers	Actuarial Value of Assets
Total	$279,387,624	$253,215,647	($7,986,345)	$554,295,125	($495,171,488)	$8,655,176	
2003	$7,229,011	$8,646,962	($67,842)	$9,479,413	($6,475,594)	-	$204,892,219
2004	12,902,452	8,415,620	(83,082)	12,318,566	(7,747,280)	-	230,698,495
2005	11,155,211	8,185,299	(138,060)	16,938,900	(10,532,309)	$8,655,176	264,962,712
2006	34,228,475	9,114,022	(101,237)	25,935,590	(11,170,034)	-	322,969,528
2007	10,591,387	10,072,138	(113,629)	34,419,422	(13,215,795)	-	364,723,051
2008	11,861,638	11,267,854	(158,229)	(46,711,706)	(15,036,756)	-	325,945,852
2009	11,779,557	11,867,348	(184,662)	4,176,581	(16,785,935)	-	389,358,007
2010	13,166,633	12,811,136	(219,040)	13,106,593	(18,656,300)	-	409,567,029
2011	13,497,836	12,838,756	(345,446)	7,312,027	(20,667,243)	-	422,202,959
2012	13,364,655	12,963,835	(416,632)	12,335,269	(23,214,588)	-	437,235,498
2013	13,558,586	13,043,663	(470,177)	49,168,273	(25,717,983)	-	486,817,860
2014	13,496,913	13,928,652	(414,331)	42,034,212	(27,320,442)	-	528,542,864
2015	12,706,883	15,397,475	(442,876)	31,040,707	(30,119,285)	-	557,125,768
2016	13,730,305	14,442,190	(544,008)	37,077,027	(31,364,891)	-	590,466,391
2017	13,614,406	13,691,494	(631,865)	42,084,105	(33,662,493)	-	625,562,038
2018	13,781,011	13,846,377	(664,066)	24,801,449	(35,984,464)	-	641,342,345
2019	14,270,844	14,671,686	(623,912)	39,362,935	(37,276,954)	-	671,746,944
2020	14,893,513	15,860,479	(721,782)	60,916,180	(40,386,827)	-	722,308,507
2021	14,567,813	15,246,586	(781,274)	81,537,331	(43,306,822)	-	789,572,141
2022	14,990,494	16,904,076	(864,195)	56,962,251	(46,529,493)	-	831,035,274

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

** Net of investment expenses

Table 9

Development of Actuarial Value of Assets

Item	FYE 2022	FYE 2021
1. Actuarial value of assets, beginning of year (before corridor)	$789,572,141	$722,308,507
2. Market value, end of year	$806,217,227	$882,352,248
3. Market value, beginning of year	$882,352,248	$765,011,012
4. Non-investment/administrative net cash flow:		
a. Employee contributions	$14,548,477	$14,160,550
b. Employer contributions	14,548,971	14,113,663
c. Other contributions	2,797,122	1,540,186
d. Refund of employee accounts	(3,790,198)	(3,117,493)
e. Retirement benefits	(42,739,295)	(40,189,329)
f. Administrative expenses	(864,195)	(781,274)
g. Total net cash flow: [sum of (4a) through (4f)]	($15,499,118)	($14,273,697)
5. Investments and securities lending:		
a. Interest and dividends on investments	$15,883,203	$14,471,892
b. Gross income from securities lending	699,821	90,480
c. Fees and expenses	(5,236,422)	(4,978,627)
d. Total net income: [sum of (5a) through (5c)]	$11,346,602	$9,583,745
6. Investment income:		
a. Actual market return: (2) - (3) - (4g) - (5d)	($71,982,505)	$122,031,188
b. Assumed rate of return	6.80%	7.00%
c. Assumed amount of return	48,135,047	43,475,896
d. Amount subject to phase-in: (6a) - (6c)	($120,117,552)	$78,555,292
7. Phase-in recognition of investment income:		
a. Current year: 0.20 * (6d)	($24,023,510)	$15,711,058
b. First prior year	15,711,058	5,154,634
c. Second prior year	5,154,634	13,833,557
d. Third prior year	13,833,557	(13,195,137)
e. Fourth prior year	(13,195,137)	6,973,578
f. Total recognition	($2,519,398)	$28,477,690
8. Actuarial value of assets, end of year		
a. Preliminary actuarial value of assets, end of year:		
(1) + (4g) + (5d) + (6c) + (7f)	$831,035,274	$789,572,141
b. Upper corridor limit: 120% * (2)	967,460,672	1,058,822,698
c. Lower corridor limit: 80% * (2)	644,973,782	705,881,798
d. Actuarial value of assets, end of year	$831,035,274	$789,572,141
9. Difference between market and actuarial value of assets	($24,818,047)	$92,780,107
10. Actuarial rate of return	7.29%	11.40%
11. Market rate of return*	-6.99%	17.19%
12. Ratio of actuarial value to market value of assets	103.08%	89.48%

* 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

Plan Year	Market Value	Actuarial Value
(1)	(2)	(3)
2004	11.54%	5.82%
2005	8.22%	7.08%
2006	12.63%	9.23%
2007	7.44%	10.54%
2008	-29.63%	-12.67%
2009	23.72%	17.23%
2010	13.80%	3.34%
2011	-0.90%	1.77%
2012	14.05%	2.91%
2013	13.53%	11.24%
2014	4.70%	8.64%
2015	-0.26%	5.89%
2016	7.60%	6.68%
2017	14.20%	7.17%
2018	-3.52%	3.99%
2019	18.72%	6.18%
2020	11.03%	9.14%
2021	17.19%	11.40%
2022	-6.99%	7.29%
Average returns:		
Last five years:	6.75%	7.57%
Last ten years:	7.28%	7.74%

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.

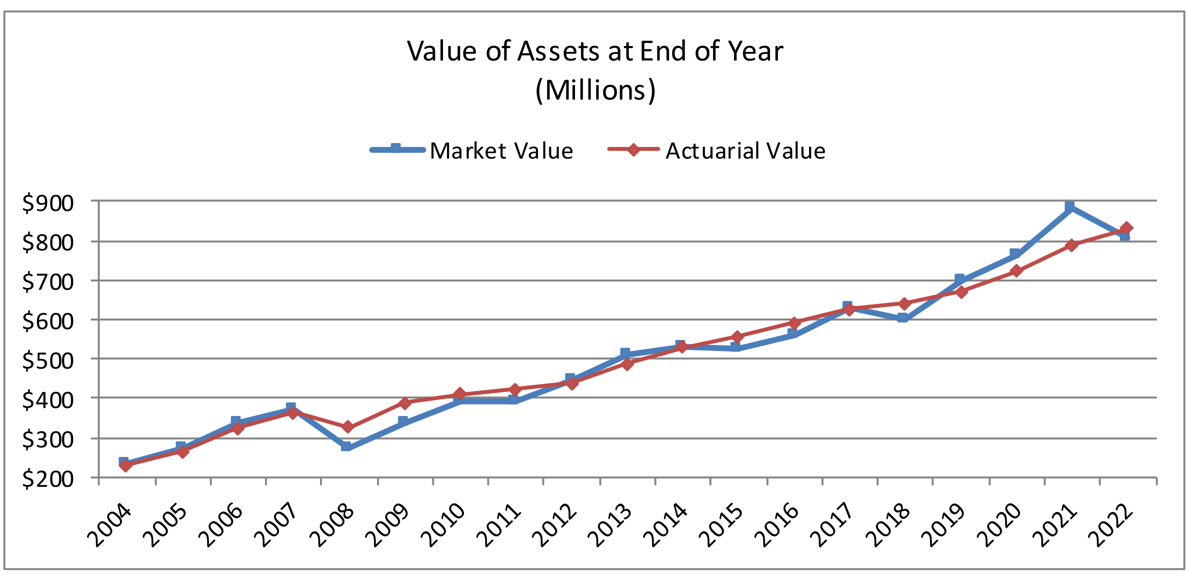

Table 11

Solvency Test

Valuation Date January 1	Total Active Member Contributions (1)	Inactive and Pensioner Liability (2)	Active Accrued Liability (3)	Actuarial Value of Assets	Percentage of Liabilities Covered by Assets (1)	(2)	(3)
2005	$61,842,876	$87,958,000	$110,225,000	$230,698,495	100%	100%	73.4%
2006	66,827,791	109,836,100	119,969,000	264,962,712	100%	100%	73.6%
2007	72,004,612	130,672,200	128,806,000	322,969,528	100%	100%	93.4%
2008	74,889,713	163,621,400	141,901,000	364,723,051	100%	100%	88.9%
2009	82,306,146	173,849,000	134,790,000	325,945,852	100%	100%	51.8%
2010	92,241,086	166,797,234	121,992,468	389,358,007	100%	100%	100.0%
2011	100,333,051	186,200,382	123,626,373	409,567,029	100%	100%	99.5%
2012	106,871,965	210,366,572	123,266,327	422,202,959	100%	100%	85.2%
2013	116,002,787	229,727,100	127,814,770	437,235,498	100%	100%	71.6%
2014	121,915,804	260,467,214	144,399,452	486,817,860	100%	100%	72.3%
2015	128,198,774	286,399,991	149,642,588	528,542,864	100%	100%	76.1%
2016	133,911,728	309,474,214	153,470,235	557,125,768	100%	100%	74.1%
2017	137,264,555	335,396,840	155,423,417	590,466,391	100%	100%	75.8%
2018	140,028,844	389,301,860	179,627,128	625,562,038	100%	100%	53.6%
2019	140,663,665	421,538,730	187,322,490	641,342,345	100%	100%	42.2%
2020	142,463,869	453,526,381	198,964,475	671,746,944	100%	100%	38.1%
2021	146,445,081	485,587,766	208,779,989	722,308,507	100%	100%	43.2%
2022	147,980,630	531,045,121	253,527,752	789,572,141	100%	100%	43.6%
2023	149,380,012	565,766,400	270,986,798	831,035,274	100%	100%	42.8%

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)]
2003	$186,080,269	$206,395,100	$20,314,831	90.16%	$79,217,700	25.64%
2004	204,892,219	236,441,300	31,549,081	86.66%	84,242,600	37.45%
2005	230,698,495	260,025,800	29,327,305	88.72%	89,351,600	32.82%
2006	264,962,712	296,633,400	31,670,688	89.32%	98,070,700	32.29%
2007	322,969,528	331,483,200	8,513,672	97.43%	108,350,000	7.86%
2008	364,723,051	380,413,100	15,690,049	95.88%	119,165,000	13.17%
2009	325,945,852	390,945,700	64,999,848	83.37%	132,701,500	48.98%
2010	389,358,007	381,030,788	(8,327,219)	102.19%	149,481,383	-5.57%
2011	409,567,029	410,159,806	592,777	99.86%	154,652,284	0.38%
2012	422,202,959	440,504,864	18,301,905	95.85%	155,481,933	11.77%
2013	437,235,498	473,544,657	36,309,158	92.33%	157,764,488	23.01%
2014	486,817,860	526,782,470	39,964,610	92.41%	154,071,943	25.94%
2015	528,542,864	564,241,353	35,698,489	93.67%	156,791,728	22.77%
2016	557,125,768	596,856,177	39,730,409	93.34%	161,357,314	24.62%
2017	590,466,391	628,084,812	37,618,421	94.01%	160,072,828	23.50%
2018	625,562,038	708,957,832	83,395,794	88.24%	155,696,162	53.56%
2019	641,342,345	749,524,885	108,182,540	85.57%	159,747,760	67.72%
2020	671,746,944	794,954,725	123,207,781	84.50%	164,757,930	74.78%
2021	722,308,507	840,812,836	118,504,329	85.91%	170,284,524	69.59%
2022	789,572,141	932,553,503	142,981,362	84.67%	165,440,506	86.42%
2023	831,035,274	986,133,210	155,097,936	84.27%	171,443,834	90.47%

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 Contributions Contributed [(5)/(3)]
	% of Payroll	Amount	% of Payroll	Amount	
2004	7.95%	$6,693,300	15.32%	$12,902,452	192.77%
2005	8.81%	7,873,900	12.48%	11,155,211	141.67%
2006	7.28%	7,138,000	34.90%	34,228,475	479.52%
2007	7.21%	7,810,100	9.78%	10,591,387	135.61%
2008	7.62%	9,084,200	9.95%	11,861,638	130.57%
2009	8.60%	11,413,400	8.88%	11,779,557	103.21%
2010	5.37%	8,029,651	8.81%	13,166,633	163.98%
2011	5.69%	8,806,599	8.73%	13,497,836	153.27%
2012	6.37%	9,899,466	8.60%	13,364,655	135.00%
2013	7.01%	11,071,525	8.59%	13,558,586	122.46%
2014	7.67%	11,812,078	8.76%	13,496,913	114.26%
2015	7.47%	11,708,248	8.10%	12,706,883	108.53%
2016	7.48%	12,063,684	8.76%	13,730,305	113.82%
2017	7.26%	11,623,441	8.51%	13,614,406	117.13%
2018	9.31%	14,493,422	8.61%	13,781,011	95.08%
2019	10.48%	16,754,321	8.92%	14,270,844	85.18%
2020	11.07%	18,231,644	9.04%	14,893,513	81.69%
2021	10.75%	18,309,732	8.55%	14,567,813	79.56%
2022	14.26%	23,603,760	9.06%	14,990,494	63.51%
2023	14.81%	25,384,165	-	-	-

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.

Table 14

Reconciliation of Participant Data

	Active Participants	Vested Former Participants	Retired Participants	Disableds	Beneficiaries	Participants Due Refunds	Total
Number as of January 1, 2022	**2,579**	**457**	**1,192**	**168**	**162**	**1,263**	**5,821**
New participants	274	1	-	-	4	50	329
Vested terminations	(80)	80	-	-	-	-	-
Retirements	(79)	(9)	88	-	-	-	-
Disability	(7)	(1)	-	9	-	(1)	-
Deceased with beneficiary	(1)	-	(9)	(3)	13	-	-
Deceased without beneficiary	(1)	-	(9)	(1)	(6)	(2)	(19)
Due refunds	(123)	-	-	-	-	123	-
Lump sum payoffs	(63)	(25)	-	-	-	(66)	(154)
Rehires/return to active	25	(8)	-	-	-	(17)	-
Certain period expired	-	-	-	-	(1)	-	(1)
Reclassifications	-	-	-	-	-	(124)	(124)
Data corrections	-	-	-	-	-	-	-
Number as of January 1, 2023	**2,524**	**495**	**1,262**	**173**	**172**	**1,226**	**5,852**

Table 15

Demographic Statistics

	January 1 2023	2022	Change
Active Participants			
Number	2,524	2,579	-2.1%
Vested	*1,735*	*1,768*	
Not vested	*789*	*811*	
Average age (years)	39.66	39.52	0.4%
Average service (years)	9.06	8.98	0.9%
Average entry age (years)	30.60	30.54	0.2%
Total payroll*	$171,443,834	$165,440,506	3.6%
Average payroll*	$67,925	$64,149	5.9%
Total employee contributions with interest	$149,380,012	$147,980,630	0.9%
Average employee contributions with interest	$59,184	$57,379	3.1%
Vested Former Participants			
Number	495	457	8.3%
Average age (years)	44.74	45.24	-1.1%
Total employee contributions with interest	$24,148,367	$22,049,998	9.5%
Average employee contributions with interest	$48,785	$48,249	1.1%
Service Retirees			
Number	1,262	1,192	5.9%
Average age (years)	64.97	64.79	0.3%
Total annual benefits	$35,400,171	$33,165,187	6.7%
Average annual benefit	$28,051	$27,823	0.8%
Disability Retirees			
Number	173	168	3.0%
Average age (years)	56.99	56.73	0.5%
Total annual benefits	$5,404,844	$5,118,667	5.6%
Average annual benefit	$31,242	$30,468	2.5%
Beneficiaries			
Number	172	162	6.2%
Average age (years)	66.67	66.71	-0.1%
Total annual benefits	$3,087,305	$2,891,670	6.8%
Average annual benefit	$17,949	$17,850	0.6%
Participants Due Refunds			
Number	1,226	1,263	-2.9%
Total Refunds Due	$6,106,786	$5,537,004	10.3%

* Projected payroll for the upcoming valuation year

Table 16

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

Average Age = 39.9 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	5	-	-	-	-	-	-	5
	Avg. Salary	$39,637	-	-	-	-	-	-	$39,637
20-24	Count	106	2	-	-	-	-	-	108
	Avg. Salary	$53,455	*	-	-	-	-	-	$53,594
25-29	Count	154	54	-	-	-	-	-	208
	Avg. Salary	56,630	$68,173	-	-	-	-	-	59,627
30-34	Count	133	143	51	3	-	-	-	330
	Avg. Salary	58,802	66,890	$73,948	*	-	-	-	64,902
35-39	Count	76	88	134	48	-	-	-	346
	Avg. Salary	56,116	70,958	74,579	$82,727	-	-	-	70,733
40-44	Count	81	46	70	84	12	-	-	293
	Avg. Salary	62,511	70,740	73,623	78,828	$81,768	-	-	71,924
45-49	Count	29	30	54	54	34	4	-	205
	Avg. Salary	60,125	68,680	70,072	76,675	83,904	$88,530	-	72,855
50-54	Count	28	19	28	47	35	15	-	172
	Avg. Salary	53,219	72,150	70,037	73,935	84,342	93,286	-	73,536
55-59	Count	12	16	24	34	16	12	4	118
	Avg. Salary	63,151	68,398	69,078	76,370	81,545	90,674	$119,785	76,090
60-64	Count	4	4	9	13	1	2	3	36
	Avg. Salary	54,357	59,438	62,049	74,486	*	*	*	67,780
65-69	Count	1	3	2	3	2	-	4	15
	Avg. Salary	*	*	*	*	*	-	86,625	77,908
70 & Over	Count	1	-	-	-	-	-	-	1
	Avg. Salary	*	-	-	-	-	-	-	*
Totals	Count	**630**	**405**	**372**	**286**	**100**	**33**	**11**	**1,837**
	Avg. Salary	**$57,138**	**$68,796**	**$72,627**	**$77,751**	**$83,525**	**$90,843**	**$96,997**	**$68,334**

Average Salary represents annualized salary earned in 2022 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 = 39.1 Average Service = 8.1

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	1	-	-	-	-	-	-	1
	Avg. Salary	*	-	-	-	-	-	-	*
20-24	Count	66	-	-	-	-	-	-	66
	Avg. Salary	$49,516	-	-	-	-	-	-	$49,516
25-29	Count	81	19	-	-	-	-	-	100
	Avg. Salary	55,263	$67,594	-	-	-	-	-	57,606
30-34	Count	65	41	14	-	-	-	-	120
	Avg. Salary	55,312	61,585	$66,128	-	-	-	-	58,717
35-39	Count	43	25	20	12	-	-	-	100
	Avg. Salary	56,014	64,315	70,477	$83,450	-	-	-	64,274
40-44	Count	32	14	19	26	6	-	-	97
	Avg. Salary	54,606	62,012	68,269	73,152	$68,786	-	-	64,199
45-49	Count	15	16	18	19	6	1	-	75
	Avg. Salary	55,402	59,815	63,813	72,474	$73,769	*	-	64,757
50-54	Count	6	10	15	14	11	2	-	58
	Avg. Salary	51,217	63,506	64,170	65,565	75,018	*	-	65,372
55-59	Count	5	4	12	10	3	2	3	39
	Avg. Salary	54,221	61,326	59,892	59,824	*	*	*	61,152
60-64	Count	3	4	4	7	5	4	-	27
	Avg. Salary	*	58,782	60,312	61,215	71,170	64,936	-	61,703
65-69	Count	-	1	-	-	2	-	-	3
	Avg. Salary	-	*	-	-	*	-	-	*
70 & Over	Count	-	-	-	-	-	-	1	1
	Avg. Salary	-	-	-	-	-	-	*	*
Totals	Count	**317**	**134**	**102**	**88**	**33**	**9**	**4**	**687**
	Avg. Salary	**$53,888**	**$62,664**	**$65,721**	**$70,739**	**$71,068**	**$73,027**	**$80,317**	**$60,745**

Average Salary represents annualized salary earned in 2022 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 = 39.7 Average Service = 9.1

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	6	-	-	-	-	-	-	6
	Avg. Salary	$38,365	-	-	-	-	-	-	$38,365
20-24	Count	172	2	-	-	-	-	-	174
	Avg. Salary	$51,944	*	-	-	-	-	-	52,047
25-29	Count	235	73	-	-	-	-	-	308
	Avg. Salary	56,159	$68,023	-	-	-	-	-	58,971
30-34	Count	198	184	65	3	-	-	-	450
	Avg. Salary	57,656	65,708	$72,264	*	-	-	-	63,252
35-39	Count	119	113	154	60	-	-	-	446
	Avg. Salary	56,079	69,488	74,046	$82,872	-	-	-	69,285
40-44	Count	113	60	89	110	18	-	-	390
	Avg. Salary	60,272	68,703	72,480	77,487	$77,441	-	-	70,003
45-49	Count	44	46	72	73	40	5	-	280
	Avg. Salary	58,515	65,597	68,507	75,581	82,384	$90,915	-	70,686
50-54	Count	34	29	43	61	46	17	-	230
	Avg. Salary	52,866	69,169	67,991	72,014	82,112	90,754	-	71,477
55-59	Count	17	20	36	44	19	14	7	157
	Avg. Salary	60,524	66,984	66,016	72,609	77,624	88,686	$101,008	72,379
60-64	Count	7	8	13	20	6	6	3	63
	Avg. Salary	51,848	59,110	61,515	69,841	69,387	69,344	*	65,175
65-69	Count	1	4	2	3	4	-	4	18
	Avg. Salary	*	67,897	*	*	85,037	-	86,625	74,806
70 & Over	Count	1	-	-	-	-	-	1	2
	Avg. Salary	*	-	-	-	-	-	*	*
Totals	Count	**947**	**539**	**474**	**374**	**133**	**42**	**15**	**2,524**
	Avg. Salary	**$56,050**	**$67,272**	**$71,141**	**$76,101**	**$80,434**	**$87,025**	**$92,549**	**$66,269**

Average Salary represents annualized salary earned in 2022 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 = 44.4 Average Service = 7.8

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	1	-	-	-	-	-	-	1
25-29	5	6	-	-	-	-	-	11
30-34	10	31	2	-	-	-	-	43
35-39	10	36	9	-	-	-	-	55
40-44	19	28	9	1	-	-	-	57
45-49	8	30	12	3	-	-	-	53
50-54	6	22	17	3	-	-	-	48
55-59	4	16	8	2	-	-	-	30
60-64	1	6	1	1	-	-	-	9
65-69	-	1	3	-	-	-	-	4
70 & Over	-	-	-	-	-	-	-	-
Totals	**64**	**176**	**61**	**10**	**-**	**-**	**-**	**311**

Table 20

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

Average Age = 45.3 Average Service = 8.1

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	1	-	-	-	-	-	-	1
25-29	3	4	-	-	-	-	-	7
30-34	9	12	1	-	-	-	-	22
35-39	6	17	6	1	-	-	-	30
40-44	7	15	3	6	-	-	-	31
45-49	4	18	4	3	-	-	-	29
50-54	2	20	8	1	-	-	-	31
55-59	2	12	8	1	-	1	-	24
60-64	-	5	2	-	-	-	-	7
65-69	1	1	-	-	-	-	-	2
70 & Over	-	-	-	-	-	-	-	-
Totals	**35**	**104**	**32**	**12**	**-**	**1**	**-**	**184**

Table 21

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

Average Age = 44.7 Average Service = 7.9

Age	Whole Years of Service at Valuation Date							
Last Birthday	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	Totals
Less than 20	-	-	-	-	-	-	-	-
20-24	2	-	-	-	-	-	-	2
25-29	8	10	-	-	-	-	-	18
30-34	19	43	3	-	-	-	-	65
35-39	16	53	15	1	-	-	-	85
40-44	26	43	12	7	-	-	-	88
45-49	12	48	16	6	-	-	-	82
50-54	8	42	25	4	-	-	-	79
55-59	6	28	16	3	-	1	-	54
60-64	1	11	3	1	-	-	-	16
65-69	1	2	3	-	-	-	-	6
70 & Over	-	-	-	-	-	-	-	-
Totals	**99**	**280**	**93**	**22**	**-**	**1**	**-**	**495**

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	72	$1,651,841	11	($9,251)	610	$13,605,759	13.91%	$22,305
2009	55	1,154,341	9	(65,125)	656	14,694,975	8.01%	22,401
2010	75	1,881,618	12	(109,159)	719	16,467,434	12.06%	22,903
2011	93	2,330,905	7	(101,024)	805	18,697,315	13.54%	23,226
2012	54	1,418,567	7	(62,989)	852	20,052,893	7.25%	23,536
2013	77	2,048,141	12	(155,942)	917	21,945,092	9.44%	23,931
2014	98	2,598,158	14	(250,849)	1,001	24,292,401	10.70%	24,268
2021	83	2,229,651	14	(234,679)	1,070	26,287,373	8.21%	24,568
2016	91	2,618,016	14	(239,572)	1,147	28,665,817	9.05%	24,992
2017	83	2,325,313	28	(478,242)	1,202	30,512,888	6.44%	25,385
2018	89	2,817,707	17	(254,449)	1,274	33,076,146	8.40%	25,962
2019	111	3,086,125	22	(461,992)	1,363	35,700,279	7.93%	26,192
2020	106	3,212,958	27	(487,974)	1,442	38,425,263	7.63%	26,647
2021	114	3,265,415	34	(515,154)	1,522	41,175,524	7.16%	27,054
2022	114	3,294,318	29	(577,522)	1,607	43,892,320	6.60%	27,313

* Includes cost-of-living increases

Table 23

Retired and Disabled Members by Option Code

	Count			Monthly Benefit		
	Male	**Female**	**Total**	**Male**	**Female**	**Total**
Option Code*						
1	214	126	340	$519,928	$245,112	$765,040
2	488	71	559	1,239,209	140,704	1,379,913
2P	206	42	248	508,006	91,047	599,053
3	40	10	50	99,104	23,929	123,033
3P	41	10	51	102,685	23,330	126,015
4	25	13	38	65,016	28,141	93,157
5	36	19	55	71,594	41,531	113,125
Other**	92	2	94	196,533	4,548	201,081
Total	**1,142**	**293**	**1,435**	**$2,802,075**	**$598,342**	**$3,400,417**
Beneficiaries	**9**	**163**	**172**	**$10,211**	**$247,065**	**$257,276**
Grand Total	**1,151**	**456**	**1,607**	**$2,812,286**	**$845,407**	**$3,657,693**

*See optional forms of payment in Appendix B.
**66.67% joint and survivor option for grandfathered employees.

Table 24

Pensioners by Monthly Benefit and Option Code

Males	Option Code								
Benefit Amount	1	2	2P	3	3P	4*	5	Other	Total
Under $200	2	2	-	-	-	-	-	-	4
$200-$399	8	6	5	1	-	5	4	-	29
$400-$599	6	14	10	3	2	2	4	-	41
$600-$799	12	11	6	-	2	1	3	1	36
$800-$999	6	11	10	-	-	2	2	3	34
$1,000-$1,499	15	34	13	3	6	-	5	8	84
$1,500-$1,999	21	66	25	5	5	-	1	27	150
$2,000-$2,499	34	102	37	4	8	4	5	29	223
$2,500 & over	110	242	100	24	18	15	17	24	550
Total	**214**	**488**	**206**	**40**	**41**	**29**	**41**	**92**	**1,151**
Females									
Benefit Amount	1	2	2P	3	3P	4*	5	Other	Total
Under $200	1	-	-	-	-	-	4	-	5
$200-$399	6	2	1	-	-	3	14	-	26
$400-$599	9	5	1	-	-	2	13	-	30
$600-$799	6	2	2	-	-	-	15	-	25
$800-$999	8	4	1	-	2	1	7	-	23
$1,000-$1,499	17	5	4	-	1	1	47	-	75
$1,500-$1,999	16	10	5	4	2	2	27	1	67
$2,000-$2,499	24	23	13	2	2	2	17	-	83
$2,500 & over	39	20	15	4	3	5	35	1	122
Total	**126**	**71**	**42**	**10**	**10**	**16**	**179**	**2**	**456**
Males & Females									
Benefit Amount	1	2	2P	3	3P	4*	5	Other	Total
Under $200	3	2	-	-	-	-	4	-	9
$200-$399	14	8	6	1	-	8	18	-	55
$400-$599	15	19	11	3	2	4	17	-	71
$600-$799	18	13	8	-	2	1	18	1	61
$800-$999	14	15	11	-	2	3	9	3	57
$1,000-$1,499	32	39	17	3	7	1	52	8	159
$1,500-$1,999	37	76	30	9	7	2	28	28	217
$2,000-$2,499	58	125	50	6	10	6	22	29	306
$2,500 & over	149	262	115	28	21	20	52	25	672
Total	**340**	**559**	**248**	**50**	**51**	**45**	**220**	**94**	**1,607**

**Includes 7 beneficiaries who are receiving a certain only benefit.*

Table 25

Pensioners by Age and Option Code

Average Age Male = 64.0   Average Age Female = 65.0   Average Age Total = 64.3

Males	Option Code								
Age Last Birthday	1	2	2P	3	3P	4*	5	Other	Total
Under 50	25	40	29	3	2	4	1	-	104
50-54	28	52	27	5	5	3	5	-	125
55-59	24	66	21	9	5	4	3	1	133
60-64	41	96	35	4	9	6	8	3	202
65-69	31	114	41	7	10	4	8	24	239
70-74	31	80	32	8	5	5	12	27	200
75-79	24	33	19	2	2	3	2	19	104
80-84	8	6	2	1	3	-	2	13	35
85 & over	2	1	-	1	-	-	-	5	9
Total	**214**	**488**	**206**	**40**	**41**	**29**	**41**	**92**	**1,151**
Females									
Age Last Birthday	1	2	2P	3	3P	4*	5	Other	Total
Under 50	14	6	5	4	1	3	11	-	44
50-54	10	4	6	1	-	2	12	-	35
55-59	11	7	7	1	3	2	15	-	46
60-64	20	15	11	1	3	3	22	-	75
65-69	38	25	5	2	1	5	28	-	104
70-74	18	11	7	1	2	-	47	1	87
75-79	10	3	1	-	-	1	19	1	35
80-84	5	-	-	-	-	-	13	-	18
85 & over	-	-	-	-	-	-	12	-	12
Total	**126**	**71**	**42**	**10**	**10**	**16**	**179**	**2**	**456**
Males & Females									
Age Last Birthday	1	2	2P	3	3P	4*	5	Other	Total
Under 50	39	46	34	7	3	7	12	-	148
50-54	38	56	33	6	5	5	17	-	160
55-59	35	73	28	10	8	6	18	1	179
60-64	61	111	46	5	12	9	30	3	277
65-69	69	139	46	9	11	9	36	24	343
70-74	49	91	39	9	7	5	59	28	287
75-79	34	36	20	2	2	4	21	20	139
80-84	13	6	2	1	3	-	15	13	53
85 & over	2	1	-	1	-	-	12	5	21
Total	**340**	**559**	**248**	**50**	**51**	**45**	**220**	**94**	**1,607**

**Includes 7 beneficiaries who are receiving a certain only benefit.*

Table 26

Pensions Awarded in 2022 by Option Code

Average Age = 54.4

Males & Females	Option Code								
Benefit Amount	**1**	**2**	**2P**	**3**	**3P**	**4**	**5**	**Other**	**Total**
Under $200	-	-	-	-	-	-	-	-	0
$200-$399	-	-	-	-	-	-	3	2	5
$400-$599	2	-	-	-	-	1	-	-	3
$600-$799	1	1	1	-	-	-	3	-	6
$800-$999	-	2	2	-	-	1	-	-	5
$1,000-$1,499	1	2	-	-	3	-	4	-	10
$1,500-$1,999	1	3	-	1	1	1	3	-	10
$2,000-$2,499	1	4	6	-	1	-	3	-	15
$2,500 & over	18	22	11	1	1	1	6	-	60
Total	**24**	**34**	**20**	**2**	**6**	**4**	**22**	**2**	**114**
Males & Females									
Age Last Birthday	**1**	**2**	**2P**	**3**	**3P**	**4**	**5**	**Other**	**Total**
Under 50	7	10	8	1	1	-	2	2	31
50-54	7	6	6	-	1	-	3	-	23
55-59	2	4	-	-	-	-	2	-	8
60-64	5	8	5	1	4	2	6	-	31
65-69	2	6	1	-	-	2	1	-	12
70-74	-	-	-	-	-	-	7	-	7
75-79	1	-	-	-	-	-	1	-	2
80-84	-	-	-	-	-	-	-	-	0
85 & over	-	-	-	-	-	-	-	-	-
Total	**24**	**34**	**20**	**2**	**6**	**4**	**22**	**2**	**114**

Table 27

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

Average Service at Retirement = 17.9 Average Years Since Retirement = 10.2

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	13	8	14	6	43	26	24	134
	Avg. Benefit	$5,461	$420	$3,869	$1,380	$3,542	$2,225	$1,646	$1,923
5-9	Count	37	45	42	22	2	-	-	148
	Avg. Benefit	$1,120	$742	$995	$1,077	$366	-	-	$953
10-14	Count	69	61	30	23	4	-	2	189
	Avg. Benefit	$1,714	$1,804	$1,635	$1,769	$876	-	$1,547	$1,717
15-19	Count	47	27	27	39	1	1	1	143
	Avg. Benefit	$2,357	$2,033	$1,920	$1,724	$400	$1,506	$2,291	$2,021
20-24	Count	203	130	102	102	16	3	-	556
	Avg. Benefit	$2,874	$2,700	$2,473	$2,146	$1,998	$1,866	-	$2,596
25-29	Count	41	49	35	45	4	2	-	176
	Avg. Benefit	$3,873	$3,563	$3,253	$2,760	$2,513	$2,559	-	$3,333
30-34	Count	20	24	18	13	-	1	-	76
	Avg. Benefit	$4,386	$3,841	$3,953	$3,499	-	$3,030	-	$3,942
35 & Over	Count	7	4	2	-	-	-	-	13
	Avg. Benefit	$5,150	$4,128	$3,105	-	-	-	-	$4,521
Totals	Count	**437**	**348**	**270**	**250**	**70**	**33**	**27**	**1,435**
	Avg. Benefit	**$2,669**	**$2,402**	**$2,239**	**$2,114**	**$2,102**	**$2,215**	**$1,663**	**$2,370**

Table 28

Retirees and Disabled Members by Year of Retirement

January 1, 2023 Total = 1,435

Year of Retirement	Count	Year of Retirement	Count
Under 1960	-	1991	4
1960	-	1992	2
1961	-	1993	7
1962	-	1994	3
1963	-	1995	9
1964	-	1996	9
1965	-	1997	5
1966	-	1998	13
1967	-	1999	4
1968	-	2000	8
1969	-	2001	11
1970	-	2002	27
1971	-	2003	36
1972	-	2004	41
1973	-	2005	57
1974	-	2006	47
1975	-	2007	71
1976	-	2008	56
1977	-	2009	36
1978	-	2010	56
1979	1	2011	71
1980	1	2012	49
1981	2	2013	59
1982	-	2014	78
1983	2	2015	78
1984	-	2016	71
1985	2	2017	68
1986	2	2018	71
1987	1	2019	96
1988	2	2020	86
1989	6	2021	93
1990	2	2022*	92

**May include retirements as of January 1, 2023*

Table 29

Thirty Year Closed Group Projected Benefit Payments

Year Ending December 31	Actives	Retirees*	Total
2023	$ 4,130,791	$ 44,093,996	$ 48,224,787
2024	6,972,542	44,005,747	50,978,288
2025	9,663,448	43,877,888	53,541,336
2026	12,358,219	43,752,024	56,110,243
2027	15,478,038	43,588,272	59,066,309
2028	18,865,725	43,493,408	62,359,133
2029	22,454,595	43,308,811	65,763,406
2030	26,188,462	43,088,105	69,276,567
2031	30,012,177	42,851,777	72,863,953
2032	33,928,785	42,532,169	76,460,954
2033	37,873,682	42,155,554	80,029,237
2034	41,806,531	41,724,678	83,531,209
2035	45,823,762	41,199,531	87,023,293
2036	49,904,391	40,703,138	90,607,529
2037	53,979,918	40,191,289	94,171,207
2038	58,079,542	39,579,743	97,659,286
2039	62,200,441	38,819,016	101,019,457
2040	66,220,919	38,005,955	104,226,874
2041	70,131,669	37,168,856	107,300,525
2042	73,962,253	36,335,943	110,298,196
2043	77,472,949	35,415,721	112,888,669
2044	80,501,249	34,408,949	114,910,198
2045	83,099,561	33,346,030	116,445,591
2046	85,244,315	32,229,022	117,473,337
2047	86,947,129	31,093,058	118,040,186
2048	88,264,957	29,918,639	118,183,596
2049	89,282,435	28,710,066	117,992,501
2050	89,954,645	27,453,623	117,408,268
2051	90,257,254	26,113,150	116,370,403
2052	90,261,585	24,794,774	115,056,359

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

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, 2023 actuarial valuation report.

1. <u>Valuation Date</u>

   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. <u>Actuarial Cost Method</u>

   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.

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, with interest, dividends, and other income recognized immediately. 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 administrative and 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.

a. Salary increase rate

Age	Rate
20	7.00%
25	6.50%
30	5.00%
35	4.25%
40	4.25%
45	4.00%
50	3.50%
55	3.25%
60	3.00%

b. 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.

c. 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

b. Rates Before Retirement

Healthy Pre-Retirement Mortality:

Pub-2010 Safety Healthy 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 Safety 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 100%

Disabled Mortality:

Pub-2010 Safety Disabled Retiree 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 2023 using the MP-2020 Ultimate Scale					
Age	Male	Female	Male	Female	Male	Female
20	0.03%	0.01%	0.03%	0.01%	0.10%	0.04%
25	0.03%	0.02%	0.03%	0.02%	0.09%	0.05%
30	0.03%	0.02%	0.03%	0.02%	0.10%	0.07%
35	0.04%	0.03%	0.04%	0.03%	0.12%	0.10%
40	0.05%	0.04%	0.05%	0.04%	0.15%	0.14%
45	0.07%	0.06%	0.10%	0.07%	0.20%	0.19%
50	0.10%	0.08%	0.16%	0.12%	0.30%	0.25%
55	0.15%	0.10%	0.26%	0.22%	0.40%	0.39%
60	0.22%	0.14%	0.43%	0.37%	0.62%	0.59%
65	0.35%	0.19%	0.74%	0.65%	1.00%	0.89%
70	0.65%	0.39%	1.33%	1.13%	1.62%	1.37%
75			2.43%	1.97%	2.78%	2.10%
80			4.42%	3.43%	4.85%	3.43%
85			8.15%	6.11%	8.22%	6.11%
90			14.61%	10.88%	14.61%	10.88%
95			22.64%	17.99%	22.64%	17.99%
100			31.36%	27.08%	31.36%	27.08%

30% of active deaths are assumed to be duty-related

c. Disability

Age	Disability Non-Duty	Disability Duty
20	0.03%	0.02%
25	0.03%	0.02%
30	0.03%	0.02%
35	0.04%	0.02%
40	0.09%	0.05%
45	0.19%	0.12%
50	0.33%	0.20%
55	0.57%	0.34%
60	1.11%	0.67%
65	1.53%	0.92%
70	1.53%	0.92%
75	1.53%	0.92%

30% of active disabilities are assumed to be duty-related

d. Withdrawal

Service	Withdrawal Male	Withdrawal Female
1	12.00%	18.00%
2-4	12.00%	16.00%
5	12.00%	14.00%
6	10.00%	14.00%
7	10.00%	12.00%
8	9.00%	11.00%
9	7.00%	8.00%
10-11	6.00%	8.00%
12	5.00%	7.00%
13	4.00%	6.00%
14	4.00%	5.00%
15	3.00%	4.00%
16	3.00%	3.00%
17-18	2.00%	2.00%
19-20	1.00%	1.00%
21+	0.00%	0.00%

e. Retirement Rates

Age	Normal	Early
50	25.00%	2.00%
51-56	18.00%	2.00%
57-60	20.00%	2.00%
61-62	17.00%	
63-64	20.00%	
65-69	50.00%	
70+	100.00%	

15% is assumed for members with at least 20 years of service before age 50

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: It is assumed that 45% of active members who terminate with a vested deferred benefit will elect to have their contributions refunded.

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.

f. No benefit 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.

h. No children are assumed for purposes of valuing the ordinary death benefit.

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. 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.

n. Benefit Service: All members are assumed to accrue one year of service each year.

APPENDIX B

SUMMARY OF PLAN PROVISIONS

Summary of Plan Provisions

Covered Members	County sheriffs, deputy county sheriffs, municipal police officers; Investigator of the Wyoming Livestock Board; meeting the specifications of W.S.7-2-101(a)(iv)(E), investigators employed by the Wyoming State Board of Outfitters and professional guides meeting the specifications of W.S. 7-2-101(a)(iv)(J); Correctional officers, probation and parole agents employed by the Wyoming Department of Corrections, Wyoming Law Enforcement Academy instructors, University of Wyoming campus police officers; And full-time dispatchers or detention officers for law enforcement agencies.
Final Average Salary	Employee's average annual salary for the highest paid five continuous years of service.
Service Retirement	
Eligibility	Age 60 with four or more years of service as a law enforcement officer or any age with at least twenty years of service as a law enforcement officer. Early retirement benefits are payable to any law enforcement officer who has at least four but less than twenty years of service and are at least age 50. Early retirement benefits are actuarially reduced by 5% per year before age 60.
Monthly Benefit	2.50% of employee's highest five-year average salary for each year of credited service, not to exceed 75.0% of final average salary.
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 contributions with interest. An employee who terminates with less than four years of service is only eligible for the lump-sum benefit.
Duty Disability Retirement	
Eligibility	No age or service eligibility requirements. Partial or total disability resulting from an individual and specific act, the type of which would normally occur only while employed as an employee, or as otherwise defined under W.S. 9-3-432(h).
Monthly Benefit	62.5% of Final Salary.
Non-duty Disability Retirement	
Eligibility	10 years of credited service. Partial or total disability, but not eligible for duty disability.
Monthly Benefit	50.0% of Final Salary.

Pre-retirement Duty Death Benefit

Eligibility	No age or service requirements.
Monthly Benefit	The greater of 62.5% or 2.5% for each year of credited service times the greater of the member's final actual salary and final average compensation, payable to the surviving spouse plus 6% of the member's final actual salary for each unmarried child under 18. Payment shall not exceed 100% of the greater of the member's final actual salary and final average compensation.

Pre-retirement Non-duty Death Benefit

Eligibility	No age or service requirements.
Monthly Benefit	50% of the greater of the member's final actual salary and final average compensation, payable to the surviving spouse plus 6% of the member's final actual salary for each unmarried child under 18. Payment shall not exceed 100% of the greater of the member's final actual salary and final average compensation.

Contributions

Employee	8.6% of salary. The employer may subsidize all or part of the employee contributions.
Employer	8.6% of salary.
Interest	3.0% annually. (0.0% for non-vested inactive members after July 1, 2019)

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.

Optional Forms of Payment

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 received.
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 4	Monthly benefit for life with a guarantee of 120 monthly payments
Option 5	The largest possible monthly benefit payable for life with no lump-sum death benefit.
Other	Grandfathered group of retirees has an optional form which, upon death, 66.67% of the benefit continues to be paid to the beneficiary.

APPENDIX C

RISKS ASSOCIATED WITH MEASURING THE ACCRUED LIABILITY AND ACTUARIALLY DETERMINED CONTRIBUTION

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 page 13 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.

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, 2023	January 1, 2022
Ratio of the market value of assets to total payroll	4.7	5.3
Ratio of actuarial accrued liability to payroll	5.8	5.6
Ratio of actives to retirees and beneficiaries	1.6	1.7
Ratio of net cash flows to market value of assets	-2%	-2%
Duration of the actuarial accrued liability	13.4	13.5

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.

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