

Wyoming Retirement System Law Enforcement Retirement Fund

GASB Statement Nos. 67 and 68 Accounting and Financial
Reporting for Pensions
For Measurement Date as of December 31, 2023





April 22, 2024

Board of Trustees
Wyoming Law Enforcement Retirement Fund

Dear Board Members:

This report provides information required by the Wyoming Law Enforcement Retirement Fund (WRS) in connection with the Governmental Accounting Standards Board (GASB) Statement No. 67 and 68 for the Wyoming Retirement System ("WRS"). These calculations have been made on a basis that is consistent with our understanding of these Statements.

GASB Statement No. 67 is the accounting standard that applies to the stand-alone financial reports issued by retirement systems. GASB Statement No. 68 establishes accounting and financial reporting for state and local government employers who provide their employees (including former employees) pension benefits through a trust.

Our calculation of the liability associated with the benefits described in this report was performed for the purpose of providing reporting and disclosure information that satisfies the requirements of GASB Statement Nos. 67 and 68. The Net Pension Liability is not an appropriate measure for measuring the sufficiency of plan assets to cover the estimated cost of settling the employer's benefit obligation. The Net Pension Liability is not an appropriate measure for assessing the need for or amount of future employer contributions. A calculation of the plan's liability for purposes other than satisfying the requirements of GASB Statement Nos. 67 and 68 may produce significantly different results. This report may be provided to parties other than the Wyoming Law Enforcement Retirement Fund only in its entirety and only with the permission of WRS. GRS is not responsible for unauthorized use of this report.

This report is based upon information, furnished to us by WRS, concerning retirement and ancillary benefits, active members, deferred vested members, retirees and beneficiaries, and financial data. We checked for internal reasonability and year-to-year consistency, but did not audit the data. We are not responsible for the accuracy or completeness of the information provided by WRS.

This report complements the actuarial valuation report that was provided to WRS and should be considered in conjunction with that report. Please see the actuarial valuation report as of January 1, 2023 for additional discussion of the nature of actuarial calculations and more information related to participant data, economic and demographic assumptions, and benefit provisions. Furthermore, this report includes the assumptions adopted by the Board at the November 17, 2021 and the February 17, 2022 meetings. 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.

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.

This report has been prepared by actuaries who have substantial experience valuing public employee retirement systems. To the best of our knowledge, the information contained in this report is accurate and fairly presents the actuarial position of the Wyoming Law Enforcement Retirement Fund as of the valuation date.

All calculations have been made in conformity with generally accepted actuarial principles and practices as well as with the Actuarial Standards of Practice issued by the Actuarial Standards Board.

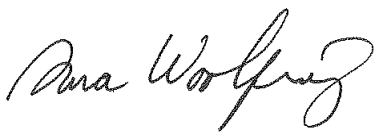
Paul T. Wood, Thomas A. Lyle, Dana Woolfrey, and Karli Fehrman are members of the American Academy of Actuaries (MAAA) and are experienced in performing valuations for public retirement systems. These actuaries meet the Academy's Qualification Standards to render the actuarial opinions contained herein. The signing actuaries are independent of the plan sponsor.

Respectfully submitted,

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Table of Contents

	<u>Page</u>
Section A Executive Summary	
Executive Summary	1
Discussion	2-5
Section B Financial Statements	
Statement of Pension Expense under GASB Statement No. 68.....	7
Statement of Outflows and Inflows Arising from Current Reporting Period	8
History of Deferred Outflows and Inflows of Resources by Source	9-10
Statement of Outflows and Inflows Arising from Current and Prior Reporting Periods.....	11
Statement of Fiduciary Net Position	12
Statement of Changes in Fiduciary Net Position	13
Section C Required Supplementary Information	
Schedule of Changes in Net Pension Liability and Related Ratios Current Reporting Period .	15
Schedule of Changes in Net Pension Liability and Related Ratios Multiyear	16
Schedule of Net Pension Liability Multiyear	17
Schedule of Contributions Multiyear	18
Notes to Schedule of Contributions	19
Schedule of Investment Returns Multiyear.....	20
Section D Notes to Financial Statements	
Sensitivity of Net Pension Liability to the Single Discount Rate Assumption	22
Summary of Population Statistics	23
Section E Summary of Benefits	25-27
Section F Actuarial Cost Method and Actuarial Assumptions	
Actuarial Assumptions and Cost Method.....	29-33
Experience Analysis	34
Section G Calculation of the Single Discount Rate	
Calculation of the Single Discount Rate	36
Projection of Contributions	37-38
Projection of Plan Net Position	39-40
Present Values of Projected Benefits	41-42
Section H Glossary of Terms	44-47

SECTION A

EXECUTIVE SUMMARY

Executive Summary as of December 31, 2023

	2023
Actuarial Valuation Date	January 1, 2023
Measurement Date of the Net Pension Liability	December 31, 2023
Employer's Fiscal Year Ending Date (Reporting Date)	December 31, 2023

Membership

Number of	
- Retirees and Beneficiaries	1,607
- Inactive, Nonretired Members	1,721
- Active Members	2,524
- Total	5,852
Covered Payroll	\$ 167,262,278

Net Pension Liability

Total Pension Liability	\$ 1,031,416,262
Plan Fiduciary Net Position	896,332,251
Net Pension Liability	\$ 135,084,011
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	86.90 %
Net Pension Liability as a Percentage of Covered Payroll	80.76 %

Development of the Single Discount Rate

Single Discount Rate	6.80 %
Long-Term Expected Rate of Investment Return	6.80 %
Long-Term Municipal Bond Rate*	3.77 %
Last year ending December 31 in the 2023 to 2122 projection period for which projected benefit payments are fully funded	2122

Total Pension Expense \$ 8,265,459

Deferred Outflows and Deferred Inflows of Resources by Source to be recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources
Difference between expected and actual experience	\$ 11,749,534	\$ 7,052,419
Changes in assumptions	75,785,515	160,455,069
Net difference between projected and actual earnings on pension plan investments	72,070,532	80,216,241
Total	\$ 159,605,581	\$ 247,723,729

**Source: Fixed-income municipal bonds with 20 years to maturity that include only federally tax-exempt municipal bonds as reported in Fidelity Index's "20-Year Municipal GO AA Index" as of December 31, 2023. In describing this index, Fidelity notes that the municipal curves are constructed using option-adjusted analytics of a diverse population of over 10,000 tax exempt securities.*



Discussion

Accounting Standard

For pension plans that are administered through trusts or equivalent arrangements, Governmental Accounting Standards Board (GASB) Statement No. 67 establishes standards of financial reporting for separately issued financial reports and specifies the required approach for measuring the pension liability. Similarly, GASB Statement No. 68 establishes standards for state and local government employers (as well as non-employer contributing entities) to account for and disclose the net pension liability, pension expense, and other information associated with providing retirement benefits to their employees (and former employees) on their basic financial statements.

The following discussion provides a summary of the information that is required to be disclosed under these accounting standards. A number of these disclosure items are provided in this report. However, certain information, such as notes regarding accounting policies and investments, is not included in this report and the retirement system and/or plan sponsor will be responsible for preparing and disclosing that information to comply with these accounting standards.

Financial Statements

GASB Statement No. 68 requires state or local governments to recognize the net pension liability and the pension expense on their financial statements. The net pension liability is the difference between the total pension liability and the plan's fiduciary net position. In traditional actuarial terms, this is analogous to the accrued liability less the market value of assets (not the smoothed actuarial value of assets that is often encountered in actuarial valuations performed to determine the employer's contribution requirement).

Paragraph 34 of GASB Statement No. 68 states, "Contributions to the pension plan from the employer subsequent to the measurement date of the collective net pension liability and before the end of the employer's reporting period should be reported as a deferred outflow of resources related to pensions." The information contained in this report does not incorporate any contributions made to WRS subsequent to the measurement date of December 31, 2023.

The pension expense recognized each fiscal year is equal to the change in the net pension liability from the beginning of the year to the end of the year, adjusted for deferred recognition of the liability and investment experience.

Pension plans that prepare their own, stand-alone financial statements are required to present two financial statements – a statement of fiduciary net position and a statement of changes in fiduciary net position in accordance with GASB Statement No. 67. The *statement of fiduciary net position* presents the assets and liabilities of the pension plan at the end of the pension plan's reporting period. The *statement of changes in fiduciary net position* presents the additions, such as contributions and investment income, and deductions, such as benefit payments and expenses, and net increase or decrease in the fiduciary net position.



Notes to Financial Statements

GASB Statement No. 68 requires the notes of the employer's financial statements to disclose the total pension expense, the pension plan's liabilities and assets, and deferred outflows and inflows of resources related to pensions.

GASB Statement Nos. 67 and 68 require the notes of the financial statements for the employers and pension plans to include certain additional information. The list of disclosure items should include:

- a description of benefits provided by the plan;
- the type of employees and number of members covered by the pension plan;
- a description of the plan's funding policy, which includes member and employer contribution requirements;
- the pension plan's investment policies;
- the pension plan's fiduciary net position and the net pension liability;
- the net pension liability using a discount rate that is 1% higher and 1% lower than used to calculate the total pension liability and net pension liability for financial reporting purposes;
- significant assumptions and methods used to calculate the total pension liability;
- inputs to the discount rates; and
- certain information about mortality assumptions and the dates of experience studies.

Retirement systems that issue stand-alone financial statements are required to disclose additional information in accordance with GASB Statement No. 67. This information includes:

- the composition of the pension plan's Board and the authority under which benefit terms may be amended;
- a description of how fair value is determined;
- information regarding certain reserves and investments, which include concentrations of investments greater than or equal to 5%, receivables, and insurance contracts excluded from plan assets;
- annual money-weighted rate of return.

Required Supplementary Information

GASB Statement No. 67 requires a 10-year fiscal history of:

- sources of changes in the net pension liability;
- information about the components of the net pension liability and related ratios, including the pension plan's fiduciary net position as a percentage of the total pension liability, and the net pension liability as a percent of covered-employee payroll; and
- a comparison of the actual employer contributions to the actuarially determined contributions based on the plan's funding policy.

General Implications of Contribution Allocation Procedure or Funding Policy on Future Expected Plan Contributions and Funded Status

Given the plan's contribution allocation procedure, if all actuarial assumptions are met (including the assumption of the plan earning 6.80% on the actuarial value of assets), then the following outcomes are expected:

1. The employer normal cost as a percentage of pay is expected to remain level as a percentage of payroll.
2. The unfunded liability is expected to decrease as a percentage of payroll each year in the future.
3. The unfunded liability is expected to be fully amortized during the lifetimes of current members.

This funding policy results in no expected crossover date and a GASB single discount rate of 6.80%. This funding policy results in the expectation that the plan's assets will be able to fully pay for promised benefits through at least 2122. The projections in this report are strictly for the purpose of determining the GASB single discount rate and are different from a funding projection for the ongoing plan.

Timing of the Valuation

An actuarial valuation to determine the total pension liability is required to be performed at least every two years. The net pension liability and pension expense should be measured as of the pension plan's fiscal year end (measurement date) on a date that is within the employer's prior fiscal year. If the actuarial valuation used to determine the total pension liability is not calculated as of the measurement date, the total pension liability is required to be rolled forward from the actuarial valuation date to the measurement date.

The total pension liability shown in this report is based on an actuarial valuation performed as of January 1, 2023 and rolled forward to a measurement date of December 31, 2023.

Single Discount Rate

Projected benefit payments are required to be discounted to their actuarial present values using a Single Discount Rate that reflects (1) a long-term expected rate of return on pension plan investments (to the extent that the plan's fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating (which is published by the Federal Reserve) as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the expected rate of return on pension plan investments is 6.80%; the municipal bond rate is 3.77% (based on the daily rate closest to but not later than the measurement date of the Fidelity "20-Year Municipal GO AA Index"); and the resulting Single Discount Rate is 6.80%.

Effective Date and Transition

GASB Statement Nos. 67 and 68 are effective for fiscal years beginning after June 15, 2013, and June 15, 2014 respectively, earlier application is encouraged by the GASB.



SECTION B

FINANCIAL STATEMENTS

Auditor's Note – This information is intended to assist in preparation of the financial statements of the Wyoming Law Enforcement Retirement Fund. Financial statements are the responsibility of management, subject to the auditor's review. Please let us know if the auditor recommends any changes.

Statement of Pension Expense under GASB Statement No. 68

Fiscal Year Ended December 31, 2023

A. Expense

1. Service Cost	\$	37,291,875
2. Interest on the Total Pension Liability		63,775,491
3. Current-Period Benefit Changes		459,677
4. Employee Contributions (made negative for addition here)		(16,510,832)
5. Projected Earnings on Plan Investments (made negative for addition here)		(54,224,167)
6. Pension Plan Administrative Expense		874,794
7. Other Changes in Plan Fiduciary Net Position		62,677
8. Recognition of Outflow (Inflow) of Resources due to Liabilities		(1,726,824)
9. Recognition of Outflow (Inflow) of Resources due to Assets		(21,737,232)
10. Total Pension Expense	\$	8,265,459 *

*In accordance with GASB 71, employers may need to illustrate contributions made after the measurement date

Statement of Outflows and Inflows Arising from Current Reporting Period Fiscal Year Ended December 31, 2023

A. Outflows (Inflows) of Resources due to Liabilities

1. Difference between expected and actual experience of the Total Pension Liability (gains) or losses	\$ 12,456,775
2. Assumption Changes (gains) or losses	\$ (179,852,545)
3. Recognition period for Liabilities: Average of the expected remaining service lives of all employees {in years}	3.7857
4. Outflow (Inflow) of Resources to be recognized in the current pension expense for the difference between expected and actual experience of the Total Pension Liability	\$ 3,290,481
5. Outflow (Inflow) of Resources to be recognized in the current pension expense for assumption changes	\$ (47,508,399)
6. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Liabilities	\$ (44,217,917)
7. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for the difference between expected and actual experience of the Total Pension Liability	\$ 9,166,294
8. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for assumption changes	\$ (132,344,146)
9. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Liabilities	\$ (123,177,853)

B. Outflows (Inflows) of Resources due to Assets

1. Net difference between projected and actual earnings on pension plan investments (gains) or losses	\$ (53,791,256)
2. Recognition period for Assets {in years}	5.0000
3. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Assets	\$ (10,758,251)
4. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Assets	\$ (43,033,005)



History of Deferred Outflows and Inflows of Resources by Source

Fiscal Year Ended December 31, 2023

Differences between expected and actual experience - Net (inflows)/outflows of resources

Recognition Period	5.2360	4.9669	4.8650	4.7436	4.5560	4.3883	4.2374	4.1607	3.9111	3.7857	Total	Deferred Net (Inflows)/Outflows at Measurement Date
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023		
Total	\$ -	\$ 1,710,375	\$ (3,501,453)	\$ (6,691,047)	\$ (7,328,715)	\$ 19,861,777	\$ 7,869,329	\$ 7,679,619	\$ (14,432,899)	\$ 12,456,775		
2014	-	-	-	-	-	-	-	-	-	-	-	-
2015	-	344,355	-	-	-	-	-	-	-	-	344,355	344,355
2016	-	344,355	(719,723)	-	-	-	-	-	-	-	(375,368)	(375,368)
2017	-	344,355	(719,723)	(1,410,542)	-	-	-	-	-	-	(1,785,910)	(1,785,910)
2018	-	344,355	(719,723)	(1,410,542)	(1,608,585)	-	-	-	-	-	(3,394,495)	(3,394,495)
2019	-	332,955	(719,723)	(1,410,542)	(1,608,585)	4,526,075	-	-	-	-	1,120,180	1,120,180
2020	-	-	(622,561)	(1,410,542)	(1,608,585)	4,526,075	1,857,113	-	-	-	2,741,500	2,741,500
2021	-	-	-	(1,048,879)	(1,608,585)	4,526,075	1,857,113	1,845,752	-	-	5,571,476	5,571,476
2022	-	-	-	-	(894,375)	4,526,075	1,857,113	1,845,752	(3,690,240)	-	3,644,325	3,644,325
2023	-	-	-	-	-	1,757,477	1,857,113	1,845,752	(3,690,240)	3,290,481	5,060,583	5,060,583
2024	-	-	-	-	-	-	440,877	1,845,752	(3,690,240)	3,290,481	1,886,870	1,886,870
2025	-	-	-	-	-	-	-	296,611	(3,362,179)	3,290,481	224,913	224,913
2026	-	-	-	-	-	-	-	-	-	2,585,332	2,585,332	2,585,332
2027	-	-	-	-	-	-	-	-	-	-	-	-
2028	-	-	-	-	-	-	-	-	-	-	-	-
Thereafter	-	-	-	-	-	-	-	-	-	-	-	-
	\$ -	\$ 1,710,375	\$ (3,501,453)	\$ (6,691,047)	\$ (7,328,715)	\$ 19,861,777	\$ 7,869,329	\$ 7,679,619	\$ (14,432,899)	\$ 12,456,775	\$ 17,623,761	\$ 4,697,115

Assumption changes - Net (inflows)/outflows of resources

Recognition Period	5.2360	4.9669	4.8650	4.7436	4.5560	4.3883	4.2374	4.1607	3.9111	3.7857	Total	Deferred Net (Inflows)/Outflows at Measurement Date
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023		
Total	\$ -	\$ -	\$ -	\$ 51,421,521	\$ 94,255,216	\$ (111,460,988)	\$ -	\$ 271,664,329	\$ (57,529,503)	\$ (179,852,545)		
2014	-	-	-	-	-	-	-	-	-	-	-	-
2015	-	-	-	-	-	-	-	-	-	-	-	-
2016	-	-	-	-	-	-	-	-	-	-	-	-
2017	-	-	-	10,840,189	-	-	-	-	-	-	10,840,189	10,840,189
2018	-	-	-	10,840,189	20,688,151	-	-	-	-	-	31,528,340	31,528,340
2019	-	-	-	10,840,189	20,688,151	(25,399,583)	-	-	-	-	6,128,757	6,128,757
2020	-	-	-	10,840,189	20,688,151	(25,399,583)	-	-	-	-	6,128,757	6,128,757
2021	-	-	-	8,060,765	20,688,151	(25,399,583)	-	65,292,938	-	-	68,642,271	68,642,271
2022	-	-	-	-	11,502,612	(25,399,583)	-	65,292,938	(14,709,290)	-	36,686,677	36,686,677
2023	-	-	-	-	-	(9,862,656)	-	65,292,938	(14,709,290)	(47,508,399)	(6,787,407)	(6,787,407)
2024	-	-	-	-	-	-	-	65,292,938	(14,709,290)	(47,508,399)	3,075,249	3,075,249
2025	-	-	-	-	-	-	-	10,492,577	(13,401,633)	(47,508,399)	(50,417,455)	(50,417,455)
2026	-	-	-	-	-	-	-	-	-	(37,327,348)	(37,327,348)	(37,327,348)
2027	-	-	-	-	-	-	-	-	-	-	-	-
2028	-	-	-	-	-	-	-	-	-	-	-	-
Thereafter	-	-	-	-	-	-	-	-	-	-	-	-
	\$ -	\$ -	\$ -	\$ 51,421,521	\$ 94,255,216	\$ (111,460,988)	\$ -	\$ 271,664,329	\$ (57,529,503)	\$ (179,852,545)	\$ 68,498,030	\$ (84,669,554)



History of Deferred Outflows and Inflows of Resources by Source Fiscal Year Ended December 31, 2023 (continued)

Net Difference between projected and actual earnings on pension plan investments - Net (inflows)/outflows of resources

Recognition Period	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	Deferred Net (Inflows)/Outflows at Measurement Date
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Total	
Total	\$ 14,545,212	\$ 46,589,301	\$ 2,778,485	\$ (39,041,366)	\$ 65,975,687	\$ (69,167,783)	\$ (25,773,169)	\$ (80,071,509)	\$ 120,117,552	\$ (53,791,256)		
2014	2,909,042										2,909,042	
2015	2,909,042	9,317,860									12,226,902	
2016	2,909,042	9,317,860	555,697								12,782,599	
2017	2,909,042	9,317,860	555,697	(7,808,273)							4,974,326	
2018	2,909,044	9,317,860	555,697	(7,808,273)	13,195,137						18,169,465	
2019	-	9,317,861	555,697	(7,808,273)	13,195,137	(13,833,557)					1,426,865	
2020	-	-	555,697	(7,808,273)	13,195,137	(13,833,557)	(5,154,634)				(13,045,630)	
2021	-	-	-	(7,808,274)	13,195,137	(13,833,557)	(5,154,634)	(16,014,302)			(29,615,630)	
2022	-	-	-	-	13,195,139	(13,833,557)	(5,154,634)	(16,014,302)	24,023,510		2,216,156	
2023	-	-	-	-	-	(13,833,555)	(5,154,634)	(16,014,302)	24,023,510	(10,758,251)	(21,737,232)	
2024	-	-	-	-	-	-	(5,154,633)	(16,014,302)	24,023,510	(10,758,251)	(7,903,676)	\$ (8,145,709)
2025	-	-	-	-	-	-	-	(16,014,301)	24,023,510	(10,758,251)	(2,749,042)	
2026	-	-	-	-	-	-	-	-	24,023,512	(10,758,251)	13,265,261	
2027	-	-	-	-	-	-	-	-	-	(10,758,252)	(10,758,252)	
2028	-	-	-	-	-	-	-	-	-	-	-	
Thereafter	-	-	-	-	-	-	-	-	-	-	-	
	\$ 14,545,212	\$ 46,589,301	\$ 2,778,485	\$ (39,041,366)	\$ 65,975,687	\$ (69,167,783)	\$ (25,773,169)	\$ (80,071,509)	\$ 120,117,552	\$ (53,791,256)	\$ (17,838,846)	

Total net differences from all sources - Net (inflows)/outflows of resources

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Total	
Total	\$ 14,545,212	\$ 48,299,676	\$ (722,968)	\$ 5,689,108	\$ 152,902,188	\$ (160,766,994)	\$ (17,903,840)	\$ 199,272,439	\$ 48,155,150	\$ (221,187,026)		
2014	2,909,042										2,909,042	
2015	2,909,042	9,662,215									12,571,257	
2016	2,909,042	9,662,215	(164,026)								12,407,231	
2017	2,909,042	9,662,215	(164,026)	1,621,374							14,028,605	
2018	2,909,044	9,662,215	(164,026)	1,621,374	32,274,703						46,303,310	
2019	-	9,650,816	(164,026)	1,621,374	32,274,703	(34,707,065)					8,675,802	
2020	-	-	(66,864)	1,621,374	32,274,703	(34,707,065)	(3,297,521)				(4,175,373)	
2021	-	-	-	(796,388)	32,274,703	(34,707,065)	(3,297,521)	51,124,388			44,598,117	
2022	-	-	-	-	23,803,376	(34,707,065)	(3,297,521)	51,124,388	5,623,980		42,547,158	
2023	-	-	-	-	-	(21,938,734)	(3,297,521)	51,124,388	5,623,980	(54,976,169)	(23,464,056)	
2024	-	-	-	-	-	-	(4,713,756)	51,124,388	5,623,980	(54,976,169)	(2,941,557)	\$ (88,118,148)
2025	-	-	-	-	-	-	-	(5,225,113)	7,259,698	(54,976,169)	(52,941,584)	
2026	-	-	-	-	-	-	-	-	24,023,512	(45,500,267)	(21,476,755)	
2027	-	-	-	-	-	-	-	-	-	(10,758,252)	(10,758,252)	
2028	-	-	-	-	-	-	-	-	-	-	-	
Thereafter	-	-	-	-	-	-	-	-	-	-	-	
	\$ 14,545,212	\$ 48,299,676	\$ (722,968)	\$ 5,689,108	\$ 152,902,188	\$ (160,766,994)	\$ (17,903,840)	\$ 199,272,439	\$ 48,155,150	\$ (221,187,026)	\$ 68,282,945	



Statement of Outflows and Inflows

Arising from Current and Prior Reporting Periods

Fiscal Year Ended December 31, 2023

A. Outflows and Inflows of Resources due to Liabilities and Assets to be Recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows of Resources
1. Due to Liabilities	\$ 74,043,761	\$ 75,770,585	\$ (1,726,824)
2. Due to Assets	24,023,510	45,760,742	(21,737,232)
3. Total	\$ 98,067,271	\$ 121,531,327	\$ (23,464,056)

B. Outflows and Inflows of Resources by Source to be Recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows of Resources
1. Differences between expected and actual experience	\$ 8,750,823	\$ 3,690,240	\$ 5,060,583
2. Assumption Changes	65,292,938	72,080,345	(6,787,407)
3. Net Difference between projected and actual earnings on pension plan investments	24,023,510	45,760,742	(21,737,232)
4. Total	\$ 98,067,271	\$ 121,531,327	\$ (23,464,056)

C. Deferred Outflows and Deferred Inflows of Resources by Source to be Recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources	Net Deferred Outflows of Resources
1. Differences between expected and actual experience	\$ 11,749,534	\$ 7,052,419	\$ 4,697,115
2. Assumption Changes	75,785,515	160,455,069	(84,669,554)
3. Net Difference between projected and actual earnings on pension plan investments	72,070,532	80,216,241	(8,145,709)
4. Total	\$ 159,605,581	\$ 247,723,729	\$ (88,118,148)

D. Deferred Outflows and Deferred Inflows of Resources by Year to be Recognized in Future Pension Expenses

Year Ending December 31	Net Deferred Outflows of Resources
2024	\$ (2,941,557)
2025	(52,941,584)
2026	(21,476,755)
2027	(10,758,252)
2028	0
Thereafter	0
Total	\$ (88,118,148)



Statement of Fiduciary Net Position as of December 31, 2023

	2023
Assets	
Cash and Deposits	\$ 35,203,024
Receivables	
Accounts Receivable - Sale of Investments	\$ 20,557,508
Accrued Interest and Other Dividends	1,754,032
Contributions	1,791,818
Accounts Receivable - Other	53,279,894
Total Receivables	\$ 77,383,252
Investments	
Fixed Income	\$ 140,720,204
Domestic Equities	418,348,377
International Equities	115,015,082
Real Estate	167,196,130
Security Lending Collateral	25,109,945
Capital Assets, at Cost, Net of Accumulated Depreciation	239,519
Total Investments	\$ 866,629,257
Total Assets	\$ 979,215,533
Liabilities	
Payables	
Accounts Payable - Purchase of Investments	\$ 81,329,982
Accrued Expenses	1,464,923
Accounts Payable - Other	88,377
Total Liabilities	\$ 82,883,282
Net Position Restricted for Pensions	\$ 896,332,251

Statement of Changes in Fiduciary Net Position for Year Ended December 31, 2023

	2023
Additions	
Contributions	
Employer	\$ 15,606,067
Employee	15,607,538
Other Employer Contributions	507,047
Other Employee Contributions	903,294
Total Contributions	\$ 32,623,946
Investment Income	
Net Appreciation in Fair Value of Investments	\$ 95,087,837
Interest and Dividends	19,479,836
Less Investment Expense	(6,552,250)
Net Investment Income	\$ 108,015,423
Other	\$ 0
Total Additions	\$ 140,639,369
 Deductions	
Benefit Payments, including Refunds of Employee Contributions	\$ 49,586,874
Pension Plan Administrative Expense	874,794
Other	62,677
Total Deductions	\$ 50,524,345
Net Increase in Net Position	\$ 90,115,024
 Net Position Restricted for Pensions	
Beginning of Year	\$ 806,217,227
End of Year	\$ 896,332,251

SECTION C

REQUIRED SUPPLEMENTARY INFORMATION

Auditor's Note – This information is intended to assist in preparation of the financial statements of the Wyoming Law Enforcement Retirement Fund. Financial statements are the responsibility of management, subject to the auditor's review. Please let us know if the auditor recommends any changes.

Schedule of Changes in Net Pension Liability and Related Ratios

Current Reporting Period

Fiscal Year Ended December 31, 2023

A. Total pension liability	
1. Service cost	\$ 37,291,875
2. Interest on the total pension liability	63,775,491
3. Changes of benefit terms	459,677
4. Difference between expected and actual experience of the total pension liability	12,456,775
5. Changes of assumptions	(179,852,545)
6. Benefit payments, including refunds of employee contributions	(49,586,874)
7. Net change in total pension liability	(115,455,601)
8. Total pension liability – beginning	1,146,871,863
9. Total pension liability – ending	\$ 1,031,416,262
B. Plan fiduciary net position	
1. Contributions – employer	\$ 16,113,114
2. Contributions – employee	16,510,832
3. Net investment income	108,015,423
4. Benefit payments	(46,131,432)
5. Refunds	(3,455,442)
6. Pension plan administrative expense	(874,794)
7. Other	(62,677)
8. Net change in plan fiduciary net position	90,115,024
9. Plan fiduciary net position – beginning	806,217,227
10. Plan fiduciary net position – ending	\$ 896,332,251
C. Net pension liability	\$ 135,084,011
D. Plan fiduciary net position as a percentage of the total pension liability	86.90 %
E. Covered-employee payroll	\$ 167,262,278
F. Net pension liability as a percentage of covered-employee payroll	80.76 %

Schedules of Required Supplementary Information

Schedule of Changes in Net Pension Liability and Related Ratios Multiyear

Last 10 Fiscal Years (which may be built prospectively)

Fiscal year ending December 31,	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Total pension liability										
Service cost	\$ 37,291,875	\$ 39,080,968	\$ 40,282,611	\$ 23,499,547	\$ 22,866,557	\$ 26,657,347	\$ 23,241,982	\$ 23,339,214	\$ 22,790,835	\$ 22,432,708
Interest on the total pension liability	\$ 63,775,491	59,391,957	57,437,879	55,065,772	51,970,908	47,238,165	47,200,725	45,945,359	43,444,727	40,636,242
Changes of benefit terms	\$ 459,677	0	0	0	0	0	0	0	0	0
Difference between expected and actual experience	\$ 12,456,775	(14,432,899)	7,679,619	7,869,329	19,861,777	(7,328,715)	(6,691,047)	(3,501,453)	1,710,375	0
Changes of assumptions	\$ (179,852,545)	(57,529,503)	271,664,329	0	(111,460,988)	94,255,216	51,421,521	0	0	0
Benefit payments, including refunds of employee contributions	\$ (49,586,874)	(46,529,493)	(43,306,822)	(40,386,827)	(37,276,954)	(35,984,464)	(33,662,493)	(31,364,891)	(30,119,285)	(27,320,442)
Net change in total pension liability	\$ (115,455,601)	(20,018,970)	333,757,616	46,047,821	(54,038,700)	124,837,549	81,510,688	34,418,229	37,826,652	35,748,508
Total pension liability - beginning	1,146,871,863	1,166,890,833	833,133,217	787,085,396	841,124,096	716,286,547	634,775,859	600,357,630	562,530,978	526,782,470
Total pension liability - ending (a)	\$ 1,031,416,262	\$ 1,146,871,863	\$ 1,166,890,833	\$ 833,133,217	\$ 787,085,396	\$ 841,124,096	\$ 716,286,547	\$ 634,775,859	\$ 600,357,630	\$ 562,530,978
Plan fiduciary net position										
Employer contributions	\$ 16,113,114	\$ 14,990,494	\$ 14,567,813	\$ 14,893,512	\$ 14,270,844	\$ 13,781,011	\$ 13,614,406	\$ 13,730,305	\$ 12,706,883	\$ 13,308,281
Employee contributions	\$ 16,510,832	16,904,076	15,246,586	15,860,480	14,671,686	13,846,377	13,691,494	14,442,190	15,397,475	13,314,132
Pension plan net investment income	\$ 108,015,423	(60,635,903)	131,614,933	74,478,954	110,793,173	(22,169,139)	77,946,645	37,782,650	(5,371,824)	24,853,352
Benefit payments	\$ (46,131,432)	(42,739,295)	(40,189,329)	(37,604,942)	(34,850,971)	(32,013,552)	(29,621,411)	(27,873,802)	(25,459,574)	(23,209,837)
Refunds	\$ (3,455,442)	(3,790,198)	(3,117,493)	(2,781,885)	(2,425,983)	(3,970,912)	(4,041,082)	(3,491,089)	(4,659,711)	(4,110,605)
Pension plan administrative expense	\$ (874,794)	(813,046)	(753,782)	(695,251)	(596,769)	(639,428)	(580,221)	(518,486)	(417,893)	(408,470)
Other	\$ (62,677)	(51,149)	(27,492)	(26,531)	(27,143)	(24,638)	(51,644)	(25,522)	(24,983)	797,291
Net change in plan fiduciary net position	\$ 90,115,024	(76,135,021)	117,341,236	64,124,337	101,834,837	(31,190,281)	70,958,187	34,046,246	(7,829,627)	24,544,144
Plan fiduciary net position - beginning	\$ 806,217,227	882,352,248	765,011,012	700,886,675	599,051,838	630,242,119	559,283,932	525,237,686	533,067,313	508,523,169
Plan fiduciary net position - ending (b)	\$ 896,332,251	\$ 806,217,227	\$ 882,352,248	\$ 765,011,012	\$ 700,886,675	\$ 599,051,838	\$ 630,242,119	\$ 559,283,932	\$ 525,237,686	\$ 533,067,313
Net pension liability - ending (a) - (b)	\$ 135,084,011	\$ 340,654,636	\$ 284,538,585	\$ 68,122,205	\$ 86,198,721	\$ 242,072,258	\$ 86,044,428	\$ 75,491,927	\$ 75,119,944	\$ 29,463,665
Plan fiduciary net position as a percentage of total pension liability	86.90 %	70.30 %	75.62 %	91.82 %	89.05 %	71.22 %	87.99 %	88.11 %	87.49 %	94.76 %
Covered-employee payroll	\$ 167,262,278	\$ 161,405,371	\$ 166,131,243	\$ 160,739,444	\$ 155,851,473	\$ 151,898,695	\$ 153,547,078	\$ 154,779,198	\$ 150,399,739	\$ 147,790,833
Projected valuation payroll	\$ 171,443,834	\$ 165,440,506	\$ 170,284,524	\$ 164,757,930	\$ 159,747,760	\$ 155,696,162	\$ 160,072,828	\$ 161,357,314	\$ 156,791,728	\$ 154,071,943
Net pension liability as a percentage of covered-employee payroll	80.76 %	211.06 %	171.27 %	42.38 %	55.31 %	159.36 %	56.04 %	48.77 %	49.95 %	19.94 %

Notes to Schedule:

For 2023, 2022, 2021, 2020, 2019, 2018, 2017, 2016 and 2015, "Other" changes to Plan Fiduciary Net Position includes other funding sources and depreciation expenses.
For 2014, "Other" changes also may include member redeposits and member service purchase contributions.



Schedules of Required Supplementary Information

Schedule of Net Pension Liability Multiyear

FY Ending December 31,	Total Pension Liability	Plan Net Position	Net Pension Liability	Plan Net Position as a % of Total Pension Liability	Covered Payroll*	Net Pension Liability as a % of Covered Payroll
2014	\$ 562,530,978	\$ 533,067,313	\$ 29,463,665	94.76 %	\$ 147,790,833	19.94 %
2015	600,357,630	525,237,686	75,119,944	87.49 %	150,399,739	49.95 %
2016	634,775,859	559,283,932	75,491,927	88.11 %	154,779,198	48.77 %
2017	716,286,547	630,242,119	86,044,428	87.99 %	153,547,078	56.04 %
2018	841,124,096	599,051,838	242,072,258	71.22 %	151,898,695	159.36 %
2019	787,085,396	700,886,675	86,198,721	89.05 %	155,851,473	55.31 %
2020	833,133,217	765,011,012	68,122,205	91.82 %	160,739,444	42.38 %
2021	1,166,890,833	882,352,248	284,538,585	75.62 %	166,131,243	171.27 %
2022	1,146,871,863	806,217,227	340,654,636	70.30 %	161,405,371	211.06 %
2023	1,031,416,262	896,332,251	135,084,011	86.90 %	167,262,278	80.76 %

* Covered payroll is the amount in force as of the valuation date and likely differs from the actual payroll paid during the year.

Schedule of Contributions Multiyear Last 10 Fiscal Years

FY Ending December 31,	Actuarially Determined Contribution	Actual Contribution*	Contribution Deficiency (Excess)	Covered Payroll**	Actual Contribution as a % of Covered Payroll
2014	\$ 11,812,078	\$ 13,308,281	\$ (1,496,203)	\$ 147,790,833	9.00 %
2015	11,708,248	12,706,883	(998,635)	150,399,739	8.45 %
2016	12,063,684	13,730,305	(1,666,621)	154,779,198	8.87 %
2017	11,623,441	13,614,406	(1,990,965)	153,547,078	8.87 %
2018	14,493,422	13,781,011	712,411	151,898,695	9.07 %
2019	16,754,321	14,270,844	2,483,477	155,851,473	9.16 %
2020	18,231,644	14,893,512	3,338,132	160,739,444	9.27 %
2021	18,309,732	14,567,813	3,741,919	166,131,243	8.77 %
2022	23,603,760	14,990,494	8,613,266	161,405,371	9.29 %
2023	25,384,165	16,113,114	9,271,051	167,262,278	9.63 %

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

** Covered payroll is the amount in force as of the valuation date and likely differs from the actual payroll paid during the year.



Notes to Schedule of Contributions

Valuation Date: January 1, 2023
Notes Actuarially determined contribution rates are calculated as of July 1 each year for implementation the following fiscal year.

Methods and Assumptions Used to Determine Contribution Rates:

Actuarial Cost Method	Entry Age Normal
Amortization Method	Level Percentage of Payroll, Closed
Remaining Amortization Period	22 years
Asset Valuation Method	5-Year smoothed market
Inflation	2.25%
Salary Increases	5.25% to 9.25% including inflation
Payroll Growth Rate	2.50%
Cost-of-Living Increase	0.00%
Investment Rate of Return	6.80%
Retirement Age	Experience-based table of rates that are specific to the type of eligibility condition. Last updated for the 2022 valuation pursuant to an experience study of the period 2016 - 2020.
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%
Pre-Retirement Mortality	Pub-2010 Safety Employee 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%

Other Information:

Notes The payment of death benefits for active members have been updated since the prior valuation.

The employer is currently contributing at the rate of 8.60% of salary. Effective July 1, 2024, the employer contribution rates will increase 0.9% each year for the next three years until it reaches an ultimate rate of 11.30%.

Employees are currently contributing at the rate of 8.60% of salary. Effective July 1, 2024, the employee contribution rates will increase 0.9% each year for the next three years until it reaches an ultimate rate of 11.30%.

The roll-forward methodology employed for purposes of the GASB disclosures is based on generally accepted actuarial methods.



Schedule of Investment Returns Multiyear Last 10 Fiscal Years

<u>FY Ending December 31,</u>	<u>Annual Return¹</u>
2014	4.70 %
2015	(0.26)%
2016	7.60 %
2017	14.20 %
2018	(3.52)%
2019	18.72 %
2020	11.03 %
2021	17.19 %
2022	(6.99)%
2023	13.84 %

¹ Annual money-weighted rate of return, net of investment expenses.

SECTION D

NOTES TO FINANCIAL STATEMENTS

Auditor's Note – This information is intended to assist in preparation of the financial statements of the Wyoming Law Enforcement Retirement Fund. Financial statements are the responsibility of management, subject to the auditor's review. Please let us know if the auditor recommends any changes.

Single Discount Rate

A Single Discount Rate of 6.80% was used to measure the total pension liability. This Single Discount Rate was based on an expected rate of return on pension plan investments of 6.80%. The projection of cash flows used to determine this Single Discount Rate assumed that plan member contributions will be made at the current contribution rate and that employer contributions will be made at rates equal to the statutory required contribution rate. Based on these assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

Sensitivity of Results

Regarding the sensitivity of the net pension liability to changes in the Single Discount Rate, the following presents the plan's net pension liability, calculated using a Single Discount Rate of 6.80%, as well as what the plan's net pension liability would be if it were calculated using a Single Discount Rate that is one percent lower or one percent higher:

Sensitivity of Net Pension Liability to the Single Discount Rate Assumption

1% Decrease	Current Single Discount Rate Assumption	1% Increase
5.80%	6.80%	7.80%
\$ 272,592,436	\$ 135,084,011	\$ 22,638,070

Summary of Population Statistics

Inactive Plan Members or Beneficiaries Currently Receiving Benefits	1,607
Inactive Plan Members Entitled to But Not Yet Receiving Benefits	1,721
Active Plan Members	<u>2,524</u>
Total Plan Members	5,852

SECTION E

SUMMARY OF BENEFITS

Summary of Benefits

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 90% 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	8.60% of salary. Effective July 1, 2024, the employee contribution rate will increase 0.9% per year for the next three years to an ultimate rate of 11.30%. The employer may subsidize all or part of the employee contributions.
Employer	8.60% of salary. Effective July 1, 2024, the employer contribution rate will increase 0.9% per year for the next three years to an ultimate rate of 11.30%.
Interest	3.00% annually effective January 1, 2016.

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.

SECTION F

ACTUARIAL COST METHOD AND ACTUARIAL ASSUMPTIONS

Summary of Actuarial Assumptions and Methods

The following methods and assumptions were used in preparing the January 1, 2023 actuarial valuation for GASB reporting purposes and are based on assumptions adopted by the Board at the November 17, 2021 and the February 17, 2022 meetings.

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.



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. For the purpose of this valuation, the expected rate of return on pension plan investments is 6.80% the municipal bond rate is 3.77%; and the resulting Single Discount Rate is 6.80%.

b. 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%

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. Rates Before Retirement

Healthy Pre-Retirement Mortality:

Pub-2010 Safety 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%

Age	Pre-Retirement		Post-Retirement		Disabled	
	Projected to 2023 using the MP-2020 Ultimate Scale					
	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

b. Disability

Age	Disability	
	Non-Duty	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

c. Withdrawal

Service	Withdrawal	
	Male	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%

d. 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%	2.00%
63-64	20.00%	2.00%
65-69	50.00%	2.00%
70+	100.00%	100.00%

10% is assumed for members with at least 20 years of service before age 50

6. Other Assumptions



- a. Percent married: 85.00% 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.

Experience Analysis

An experience study was conducted on behalf of all WRS' plans covering the five year period ending December 31, 2020. That study provided a detailed analysis concerning the development of the long term inflation rate, real rate of return and discount rate. The study also analyzed each major actuarial assumption (e.g. mortality, salary increases, retirement, termination and disability) and proposed assumptions consistent with the findings. For further information on the experience study and related assumption recommendation, the reader is directed to request the December 31, 2020 Wyoming Retirement System Experience Study.

SECTION G

CALCULATION OF THE SINGLE DISCOUNT RATE

Calculation of the Single Discount Rate

GASB Statement No. 67 includes a specific requirement for the discount rate that is used for the purpose of the measurement of the Total Pension Liability. This rate considers the ability of the Fund to meet benefit obligations in the future. To make this determination, employer contributions, employee contributions, benefit payments, expenses and investment returns are projected into the future. The Plan Net Position (assets) in future years can then be determined and compared to its obligation to make benefit payments in those years. As long as assets are projected to be on hand in a future year, the assumed valuation discount rate is used. In years where assets are not projected to be sufficient to meet benefit payments, the use of a municipal bond rate is required, as described in the following paragraph.

The Single Discount Rate (SDR) is equivalent to applying these two rates to the benefits that are projected to be paid during the different time periods. The SDR reflects (1) the long-term expected rate of return on pension plan investments (during the period in which the fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating (which is published by the Federal Reserve) as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the expected rate of return on pension plan investments is 6.80%; the municipal bond rate is 3.77%; and the resulting Single Discount Rate is 6.80%.

The tables in this section provide background for the development of the Single Discount Rate.

The **Projection of Contributions** table shows the development of expected contributions in future years. Normal Cost contributions for future hires are not included (nor are their liabilities).

The **Projection of Plan Net Position** table shows the development of expected asset levels in future years.

The **Present Values of Projected Benefit Payments** table shows the development of the Single Discount Rate (SDR). It breaks down the benefit payments into present values for funded and unfunded portions and shows the equivalent total at the SDR.

The projections in this report are strictly for the purpose of determining the GASB single discount rate and are different from a funding projection for the ongoing plan.

Single Discount Rate Development Projection of Contributions Ending December 31 for 2023 to 2072

Year	Payroll for Current Employees		Payroll for Future Employees		Total Employee Payroll	Employer Contributions		Employer Contributions Related to Payroll of Future Employees	Total Contributions
	(a)	(b)=max(0,(c)-(a))	(c)	(d)		(e)=(a)*ER%	(f) = (b)*netER%		
2023	\$ 167,262,278	\$ 4,181,557	\$ 171,443,834	\$ 16,510,832	\$ 16,510,832	\$ 16,113,114	\$ 0	\$ 32,623,946	
2024	155,900,235	19,829,695	175,729,930	14,108,971	14,108,971	14,108,971	409,754	28,627,696	
2025	146,954,075	33,169,103	180,123,178	14,621,931	14,621,931	14,621,931	1,282,751	30,526,613	
2026	138,885,413	45,740,844	184,626,257	15,069,067	15,069,067	15,069,067	2,592,797	32,730,931	
2027	131,342,417	57,899,496	189,241,913	14,841,693	14,841,693	14,841,693	3,801,822	33,485,208	
2028	124,104,439	69,868,522	193,972,961	14,023,802	14,023,802	14,023,802	4,583,402	32,631,006	
2029	117,044,163	81,778,122	198,822,285	13,225,990	13,225,990	13,225,990	5,358,775	31,810,755	
2030	110,240,597	93,552,245	203,792,842	12,457,188	12,457,188	12,457,188	6,123,849	31,038,225	
2031	103,721,490	105,166,173	208,887,663	11,720,528	11,720,528	11,720,528	6,878,473	30,319,529	
2032	97,318,565	116,791,290	214,109,855	10,996,998	10,996,998	10,996,998	7,635,596	29,629,592	
2033	91,043,928	128,418,673	219,462,601	10,287,964	10,287,964	10,287,964	8,395,101	28,971,029	
2034	84,945,715	140,003,451	224,949,166	9,598,866	9,598,866	9,598,866	9,154,898	28,352,630	
2035	78,821,368	151,751,527	230,572,895	8,906,815	8,906,815	8,906,815	9,929,157	27,742,787	
2036	72,636,956	163,700,261	236,337,217	8,207,976	8,207,976	8,207,976	10,720,965	27,136,917	
2037	66,496,311	175,749,336	242,245,647	7,514,083	7,514,083	7,514,083	11,524,571	26,552,737	
2038	60,257,663	188,044,125	248,301,788	6,809,116	6,809,116	6,809,116	12,349,669	25,967,901	
2039	53,915,108	200,594,225	254,509,333	6,092,407	6,092,407	6,092,407	13,197,199	25,382,013	
2040	47,670,398	213,201,668	260,872,066	5,386,755	5,386,755	5,386,755	14,054,139	24,827,649	
2041	41,495,947	225,897,921	267,393,868	4,689,042	4,689,042	4,689,042	14,922,557	24,300,641	
2042	35,281,015	238,797,700	274,078,715	3,986,755	3,986,755	3,986,755	15,810,214	23,783,724	
2043	29,487,411	251,443,272	280,930,683	3,332,077	3,332,077	3,332,077	16,682,593	23,346,747	
2044	24,501,734	263,452,216	287,953,950	2,768,696	2,768,696	2,768,696	17,510,234	23,047,626	
2045	20,224,726	274,928,073	295,152,799	2,285,394	2,285,394	2,285,394	18,300,197	22,870,985	
2046	16,599,471	285,932,148	302,531,619	1,875,740	1,875,740	1,875,740	19,056,740	22,808,220	
2047	13,556,474	296,538,435	310,094,909	1,531,882	1,531,882	1,531,882	19,784,855	22,848,619	
2048	11,024,745	306,822,537	317,847,282	1,245,796	1,245,796	1,245,796	20,489,457	22,981,049	
2049	8,909,488	316,883,976	325,793,464	1,006,772	1,006,772	1,006,772	21,177,077	23,190,621	
2050	7,144,619	326,793,682	333,938,301	807,342	807,342	807,342	21,852,457	23,467,141	
2051	5,697,778	336,588,981	342,286,759	643,849	643,849	643,849	22,518,221	23,805,919	
2052	4,522,688	346,321,240	350,843,928	511,064	511,064	511,064	23,177,997	24,200,125	
2053	3,568,051	356,046,975	359,615,026	403,190	403,190	403,190	23,835,740	24,642,120	
2054	2,786,095	365,819,307	368,605,402	314,829	314,829	314,829	24,495,216	25,124,874	
2055	2,150,290	375,670,247	377,820,537	242,983	242,983	242,983	25,158,705	25,644,671	
2056	1,650,371	385,615,679	387,266,050	186,492	186,492	186,492	25,827,387	26,200,371	
2057	1,256,744	395,690,957	396,947,701	142,012	142,012	142,012	26,503,827	26,787,851	
2058	947,701	405,923,693	406,871,394	107,090	107,090	107,090	27,190,018	27,404,198	
2059	707,073	416,336,106	417,043,179	79,899	79,899	79,899	27,887,557	28,047,355	
2060	520,239	426,949,019	427,469,258	58,787	58,787	58,787	28,598,057	28,715,631	
2061	375,533	437,780,456	438,155,989	42,435	42,435	42,435	29,322,897	29,407,767	
2062	265,108	448,844,781	449,109,889	29,957	29,957	29,957	30,063,189	30,123,103	
2063	181,937	460,155,699	460,337,636	20,559	20,559	20,559	30,819,964	30,861,082	
2064	119,721	471,726,356	471,846,077	13,528	13,528	13,528	31,594,165	31,621,221	
2065	74,299	483,567,930	483,642,229	8,396	8,396	8,396	32,386,595	32,403,387	
2066	43,279	495,690,006	495,733,285	4,891	4,891	4,891	33,197,935	33,207,717	
2067	23,719	508,102,898	508,126,617	2,680	2,680	2,680	34,028,916	34,034,276	
2068	12,121	520,817,661	520,829,782	1,370	1,370	1,370	34,880,293	34,883,033	
2069	5,800	533,844,727	533,850,527	655	655	655	35,752,759	35,754,069	
2070	2,450	547,194,340	547,196,790	277	277	277	36,646,968	36,647,522	
2071	956	560,875,754	560,876,710	108	108	108	37,563,515	37,563,731	
2072	338	574,898,290	574,898,628	38	38	38	38,502,999	38,503,075	



Single Discount Rate Development Projection of Contributions Ending December 31 for 2073 to 2122 (concluded)

Year	Payroll for Current Employees		Payroll for Future Employees		Total Employee Payroll	Employer Contributions		Employer Contributions Related to Payroll of Future Employees		Total Contributions
	(a)	(b)=max(0,(c)-(a))	(c)	(d)		(e)=(a)*ER%	(f) = (b)*netER%	(g)=(d)+(e)+(f)		
2073	\$ 100	\$ 589,270,994	\$ 589,271,094	\$ 11	\$ 11	\$ 39,466,005	\$ 39,466,027			
2074	26	604,002,845	604,002,871	3	3	40,453,108	40,453,114			
2075	0	619,102,943	619,102,943	0	0	41,464,891	41,464,891			
2076	0	634,580,517	634,580,517	0	0	42,501,950	42,501,950			
2077	0	650,445,030	650,445,030	0	0	43,564,901	43,564,901			
2078	0	666,706,156	666,706,156	0	0	44,654,373	44,654,373			
2079	0	683,373,810	683,373,810	0	0	45,771,013	45,771,013			
2080	0	700,458,155	700,458,155	0	0	46,915,492	46,915,492			
2081	0	717,969,609	717,969,609	0	0	48,088,506	48,088,506			
2082	0	735,918,849	735,918,849	0	0	49,290,771	49,290,771			
2083	0	754,316,820	754,316,820	0	0	50,523,027	50,523,027			
2084	0	773,174,741	773,174,741	0	0	51,786,034	51,786,034			
2085	0	792,504,110	792,504,110	0	0	53,080,569	53,080,569			
2086	0	812,316,713	812,316,713	0	0	54,407,434	54,407,434			
2087	0	832,624,631	832,624,631	0	0	55,767,448	55,767,448			
2088	0	853,440,247	853,440,247	0	0	57,161,454	57,161,454			
2089	0	874,776,253	874,776,253	0	0	58,590,312	58,590,312			
2090	0	896,645,659	896,645,659	0	0	60,054,903	60,054,903			
2091	0	919,061,800	919,061,800	0	0	61,556,127	61,556,127			
2092	0	942,038,345	942,038,345	0	0	63,094,907	63,094,907			
2093	0	965,589,304	965,589,304	0	0	64,672,183	64,672,183			
2094	0	989,729,037	989,729,037	0	0	66,288,921	66,288,921			
2095	0	1,014,472,263	1,014,472,263	0	0	67,946,106	67,946,106			
2096	0	1,039,834,070	1,039,834,070	0	0	69,644,748	69,644,748			
2097	0	1,065,829,922	1,065,829,922	0	0	71,385,881	71,385,881			
2098	0	1,092,475,670	1,092,475,670	0	0	73,170,564	73,170,564			
2099	0	1,119,787,562	1,119,787,562	0	0	74,999,879	74,999,879			
2100	0	1,147,782,251	1,147,782,251	0	0	76,874,939	76,874,939			
2101	0	1,176,476,807	1,176,476,807	0	0	78,796,882	78,796,882			
2102	0	1,205,888,727	1,205,888,727	0	0	80,766,875	80,766,875			
2103	0	1,236,035,945	1,236,035,945	0	0	82,786,115	82,786,115			
2104	0	1,266,936,844	1,266,936,844	0	0	84,855,831	84,855,831			
2105	0	1,298,610,265	1,298,610,265	0	0	86,977,282	86,977,282			
2106	0	1,331,075,522	1,331,075,522	0	0	89,151,758	89,151,758			
2107	0	1,364,352,410	1,364,352,410	0	0	91,380,585	91,380,585			
2108	0	1,398,461,220	1,398,461,220	0	0	93,665,121	93,665,121			
2109	0	1,433,422,751	1,433,422,751	0	0	96,006,759	96,006,759			
2110	0	1,469,258,320	1,469,258,320	0	0	98,406,928	98,406,928			
2111	0	1,505,989,778	1,505,989,778	0	0	100,867,092	100,867,092			
2112	0	1,543,639,522	1,543,639,522	0	0	103,388,752	103,388,752			
2113	0	1,582,230,510	1,582,230,510	0	0	105,973,449	105,973,449			
2114	0	1,621,786,273	1,621,786,273	0	0	108,622,759	108,622,759			
2115	0	1,662,330,930	1,662,330,930	0	0	111,338,300	111,338,300			
2116	0	1,703,889,203	1,703,889,203	0	0	114,121,730	114,121,730			
2117	0	1,746,486,433	1,746,486,433	0	0	116,974,747	116,974,747			
2118	0	1,790,148,594	1,790,148,594	0	0	119,899,093	119,899,093			
2119	0	1,834,902,309	1,834,902,309	0	0	122,896,550	122,896,550			
2120	0	1,880,774,867	1,880,774,867	0	0	125,968,948	125,968,948			
2121	0	1,927,794,239	1,927,794,239	0	0	129,118,161	129,118,161			
2122	0	1,975,989,095	1,975,989,095	0	0	132,346,108	132,346,108			



Single Discount Rate Development Projection of Plan Net Position Ending December 31 for 2023 to 2072

Year	Projected Beginning Plan Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 6.800%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
2023	\$ 806,217,227	\$ 32,623,946	\$ 49,586,874	\$ 937,471	\$ 108,015,423	\$ 896,332,251
2024	896,332,251	28,627,696	51,802,188	878,650	60,146,235	932,425,344
2025	932,425,344	30,526,613	54,369,326	900,616	62,577,485	970,259,501
2026	970,259,501	32,730,931	56,942,067	923,131	65,137,135	1,010,262,369
2027	1,010,262,369	33,485,208	59,900,801	946,210	67,782,839	1,050,683,404
2028	1,050,683,404	32,631,006	63,197,171	969,865	70,391,880	1,089,539,254
2029	1,089,539,254	31,810,755	66,602,938	994,111	72,891,945	1,126,644,905
2030	1,126,644,905	31,038,225	70,116,537	1,018,964	75,270,966	1,161,818,596
2031	1,161,818,596	30,319,529	73,703,706	1,044,438	77,517,934	1,194,907,914
2032	1,194,907,914	29,629,592	77,298,579	1,070,549	79,623,846	1,225,792,224
2033	1,225,792,224	28,971,029	80,863,333	1,097,313	81,581,853	1,254,384,460
2034	1,254,384,460	28,352,630	84,360,439	1,124,746	83,387,582	1,280,639,487
2035	1,280,639,487	27,742,787	87,845,536	1,152,864	85,035,045	1,304,418,918
2036	1,304,418,918	27,136,917	91,422,945	1,181,686	86,511,190	1,325,462,395
2037	1,325,462,395	26,552,737	94,979,154	1,211,228	87,802,700	1,343,627,450
2038	1,343,627,450	25,967,901	98,457,547	1,241,509	88,901,034	1,358,797,329
2039	1,358,797,329	25,382,013	101,804,881	1,272,547	89,800,017	1,370,901,932
2040	1,370,901,932	24,827,649	104,998,136	1,304,360	90,496,743	1,379,923,828
2041	1,379,923,828	24,300,641	108,056,822	1,336,969	90,989,233	1,385,819,911
2042	1,385,819,911	23,783,724	111,039,232	1,370,394	91,272,028	1,388,466,037
2043	1,388,466,037	23,346,747	113,612,558	1,404,653	91,350,152	1,388,145,725
2044	1,388,145,725	23,047,626	115,615,149	1,439,770	91,250,225	1,385,388,657
2045	1,385,388,657	22,870,985	117,130,386	1,475,764	91,004,963	1,380,658,455
2046	1,380,658,455	22,808,220	118,136,839	1,512,658	90,646,320	1,374,463,498
2047	1,374,463,498	22,848,619	118,681,938	1,550,475	90,206,921	1,367,286,624
2048	1,367,286,624	22,981,049	118,802,786	1,589,236	89,717,984	1,359,593,635
2049	1,359,593,635	23,190,621	118,588,392	1,628,967	89,207,710	1,351,774,608
2050	1,351,774,608	23,467,141	117,979,919	1,669,692	88,704,249	1,344,296,387
2051	1,344,296,387	23,805,919	116,916,244	1,711,434	88,241,234	1,337,715,862
2052	1,337,715,862	24,200,125	115,576,771	1,754,220	87,850,303	1,332,435,299
2053	1,332,435,299	24,642,120	113,965,549	1,798,075	87,558,419	1,328,872,214
2054	1,328,872,214	25,124,874	112,067,322	1,843,027	87,394,248	1,327,480,988
2055	1,327,480,988	25,644,671	109,959,456	1,889,103	87,385,975	1,328,663,075
2056	1,328,663,075	26,200,371	107,676,631	1,936,330	87,559,701	1,332,810,186
2057	1,332,810,186	26,787,851	105,194,373	1,984,739	87,942,740	1,340,361,665
2058	1,340,361,665	27,404,198	102,556,147	2,034,357	88,563,417	1,351,738,776
2059	1,351,738,776	28,047,355	99,785,732	2,085,216	89,449,513	1,367,364,697
2060	1,367,364,697	28,715,631	96,877,892	2,137,346	90,629,920	1,387,695,009
2061	1,387,695,009	29,407,767	93,833,007	2,190,780	92,135,564	1,413,214,553
2062	1,413,214,553	30,123,103	90,666,777	2,245,549	93,998,864	1,444,424,195
2063	1,444,424,195	30,861,082	87,404,020	2,301,688	96,253,031	1,481,832,600
2064	1,481,832,600	31,621,221	84,066,339	2,359,230	98,931,913	1,525,960,164
2065	1,525,960,164	32,403,387	80,678,070	2,418,211	102,070,077	1,577,337,347
2066	1,577,337,347	33,207,717	77,246,743	2,478,666	105,703,348	1,636,523,004
2067	1,636,523,004	34,034,276	73,784,826	2,540,633	109,869,311	1,704,101,132
2068	1,704,101,132	34,883,033	70,300,400	2,604,149	114,607,405	1,780,687,021
2069	1,780,687,021	35,754,069	66,800,982	2,669,253	119,959,220	1,866,930,076
2070	1,866,930,076	36,647,522	63,294,345	2,735,984	125,968,659	1,963,515,928
2071	1,963,515,928	37,563,731	59,788,301	2,804,384	132,682,093	2,071,169,067
2072	2,071,169,067	38,503,075	56,291,626	2,874,493	140,148,507	2,190,654,529



Single Discount Rate Development Projection of Plan Net Position Ending December 31 for 2073 to 2122 (concluded)

Year	Projected Beginning Plan Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 6.800%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
2073	\$ 2,190,654,529	\$ 39,466,027	\$ 52,814,290	\$ 2,946,355	\$ 148,419,602	\$ 2,322,779,513
2074	2,322,779,513	40,453,114	49,367,090	3,020,014	157,549,924	2,468,395,447
2075	2,468,395,447	41,464,891	45,961,751	3,095,515	167,596,995	2,628,400,067
2076	2,628,400,067	42,501,950	42,611,188	3,172,903	178,621,447	2,803,739,373
2077	2,803,739,373	43,564,901	39,329,085	3,252,225	190,687,169	2,995,410,133
2078	2,995,410,133	44,654,373	36,129,489	3,333,531	203,861,492	3,204,462,979
2079	3,204,462,979	45,771,013	33,026,210	3,416,869	218,215,417	3,432,006,329
2080	3,432,006,329	46,915,492	30,032,675	3,502,291	233,823,887	3,679,210,742
2081	3,679,210,742	48,088,506	27,161,981	3,589,848	250,766,084	3,947,313,503
2082	3,947,313,503	49,290,771	24,425,983	3,679,594	269,125,769	4,237,624,467
2083	4,237,624,467	50,523,027	21,834,865	3,771,584	288,991,695	4,551,532,740
2084	4,551,532,740	51,786,034	19,396,926	3,865,874	310,458,068	4,890,514,041
2085	4,890,514,041	53,080,569	17,118,308	3,962,521	333,625,053	5,256,138,835
2086	5,256,138,835	54,407,434	15,003,027	4,061,584	358,599,335	5,650,080,993
2087	5,650,080,993	55,767,448	13,052,843	4,163,123	385,494,702	6,074,127,177
2088	6,074,127,177	57,161,454	11,267,600	4,267,201	414,432,679	6,530,186,509
2089	6,530,186,509	58,590,312	9,645,626	4,373,881	445,543,168	7,020,300,482
2090	7,020,300,482	60,054,903	8,183,778	4,483,228	478,965,125	7,546,653,504
2091	7,546,653,504	61,556,127	6,877,598	4,595,309	514,847,264	8,111,583,988
2092	8,111,583,988	63,094,907	5,721,445	4,710,192	553,348,816	8,717,596,073
2093	8,717,596,073	64,672,183	4,708,500	4,827,947	594,640,319	9,367,372,129
2094	9,367,372,129	66,288,921	3,830,683	4,948,645	638,904,475	10,063,786,196
2095	10,063,786,196	67,946,106	3,078,803	5,072,361	686,337,055	10,809,918,194
2096	10,809,918,194	69,644,748	2,442,803	5,199,170	737,147,863	11,609,068,832
2097	11,609,068,832	71,385,881	1,911,916	5,329,150	791,561,738	12,464,775,385
2098	12,464,775,385	73,170,564	1,474,874	5,462,378	849,819,625	13,380,828,321
2099	13,380,828,321	74,999,879	1,120,308	5,598,938	912,179,689	14,361,288,643
2100	14,361,288,643	76,874,939	837,067	5,738,911	978,918,485	15,410,506,089
2101	15,410,506,089	78,796,882	614,512	5,882,384	1,050,332,187	16,533,138,262
2102	16,533,138,262	80,766,875	442,724	6,029,444	1,126,737,880	17,734,170,849
2103	17,734,170,849	82,786,115	312,638	6,180,180	1,208,474,931	19,018,939,077
2104	19,018,939,077	84,855,831	216,142	6,334,684	1,295,906,444	20,393,150,526
2105	20,393,150,526	86,977,282	146,127	6,493,051	1,389,420,811	21,862,909,440
2106	21,862,909,440	89,151,758	96,505	6,655,378	1,489,433,364	23,434,742,679
2107	23,434,742,679	91,380,585	62,195	6,821,762	1,596,388,142	25,115,627,449
2108	25,115,627,449	93,665,121	39,081	6,992,306	1,710,759,773	26,913,020,955
2109	26,913,020,955	96,006,759	23,925	7,167,114	1,833,055,499	28,834,892,174
2110	28,834,892,174	98,406,928	14,262	7,346,292	1,963,817,336	30,889,755,884
2111	30,889,755,884	100,867,092	8,278	7,529,949	2,103,624,397	33,086,709,146
2112	33,086,709,146	103,388,752	4,680	7,718,198	2,253,095,370	35,435,470,390
2113	35,435,470,390	105,973,449	2,580	7,911,153	2,412,891,187	37,946,421,293
2114	37,946,421,293	108,622,759	1,389	8,108,931	2,583,717,870	40,630,651,602
2115	40,630,651,602	111,338,300	732	8,311,655	2,766,329,584	43,500,007,099
2116	43,500,007,099	114,121,730	377	8,519,446	2,961,531,901	46,567,140,906
2117	46,567,140,906	116,974,747	190	8,732,432	3,170,185,291	49,845,568,321
2118	49,845,568,321	119,899,093	94	8,950,743	3,393,208,850	53,349,725,428
2119	53,349,725,428	122,896,550	44	9,174,512	3,631,584,290	57,095,031,712
2120	57,095,031,712	125,968,948	20	9,403,874	3,886,360,191	61,097,956,957
2121	61,097,956,957	129,118,161	8	9,638,971	4,158,656,559	65,376,092,698
2122	65,376,092,698	132,346,108	4	9,879,945	4,449,669,677	69,948,228,534



Single Discount Rate Development

Present Values of Projected Benefits

Ending December 31 for 2023 to 2072

Year	Projected Plan Net Position	Projected Benefit Payments	Funded Portion of Projected Benefit Payments	Unfunded Portion of Projected Benefit Payments	Present Value of Funded Benefit Payments using Expected Return Rate (v)	Present Value of Unfunded Benefit Payments using Municipal Bond Rate (vf)	Present Value of All Benefit Payments using Single Discount Rate (SDR)
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v^((a)-.5)	(g)=(e)*vf ^((a)-.5)	(h)=((c)/(1+SDR))^((a)-.5)
2023	\$ 806,217,227	\$ 49,586,874	\$ 49,586,874	\$ 0	\$ 47,982,305	\$ 0	\$ 47,982,305
2024	896,332,251	51,802,188	51,802,188	0	46,934,395	0	46,934,395
2025	932,425,344	54,369,326	54,369,326	0	46,123,878	0	46,123,878
2026	970,259,501	56,942,067	56,942,067	0	45,230,755	0	45,230,755
2027	1,010,262,369	59,900,801	59,900,801	0	44,551,466	0	44,551,466
2028	1,050,683,404	63,197,171	63,197,171	0	44,010,443	0	44,010,443
2029	1,089,539,254	66,602,938	66,602,938	0	43,429,042	0	43,429,042
2030	1,126,644,905	70,116,537	70,116,537	0	42,809,097	0	42,809,097
2031	1,161,818,596	73,703,706	73,703,706	0	42,134,096	0	42,134,096
2032	1,194,907,914	77,298,579	77,298,579	0	41,375,629	0	41,375,629
2033	1,225,792,224	80,863,333	80,863,333	0	40,527,843	0	40,527,843
2034	1,254,384,460	84,360,439	84,360,439	0	39,588,535	0	39,588,535
2035	1,280,639,487	87,845,536	87,845,536	0	38,599,265	0	38,599,265
2036	1,304,418,918	91,422,945	91,422,945	0	37,613,461	0	37,613,461
2037	1,325,462,395	94,979,154	94,979,154	0	36,588,545	0	36,588,545
2038	1,343,627,450	98,457,547	98,457,547	0	35,513,591	0	35,513,591
2039	1,358,797,329	101,804,881	101,804,881	0	34,382,934	0	34,382,934
2040	1,370,901,932	104,998,136	104,998,136	0	33,203,561	0	33,203,561
2041	1,379,923,828	108,056,822	108,056,822	0	31,995,140	0	31,995,140
2042	1,385,819,911	111,039,232	111,039,232	0	30,784,849	0	30,784,849
2043	1,388,466,037	113,612,558	113,612,558	0	29,492,776	0	29,492,776
2044	1,388,145,725	115,615,149	115,615,149	0	28,101,714	0	28,101,714
2045	1,385,388,657	117,130,386	117,130,386	0	26,657,314	0	26,657,314
2046	1,380,658,455	118,136,839	118,136,839	0	25,174,503	0	25,174,503
2047	1,374,463,498	118,681,938	118,681,938	0	23,680,395	0	23,680,395
2048	1,367,286,624	118,802,786	118,802,786	0	22,195,232	0	22,195,232
2049	1,359,593,635	118,588,392	118,588,392	0	20,744,548	0	20,744,548
2050	1,351,774,608	117,979,919	117,979,919	0	19,324,072	0	19,324,072
2051	1,344,296,387	116,916,244	116,916,244	0	17,930,572	0	17,930,572
2052	1,337,715,862	115,576,771	115,576,771	0	16,596,580	0	16,596,580
2053	1,332,435,299	113,965,549	113,965,549	0	15,323,232	0	15,323,232
2054	1,328,872,214	112,067,322	112,067,322	0	14,108,620	0	14,108,620
2055	1,327,480,988	109,959,456	109,959,456	0	12,961,846	0	12,961,846
2056	1,328,663,075	107,676,631	107,676,631	0	11,884,598	0	11,884,598
2057	1,332,810,186	105,194,373	105,194,373	0	10,871,370	0	10,871,370
2058	1,340,361,665	102,556,147	102,556,147	0	9,923,897	0	9,923,897
2059	1,351,738,776	99,785,732	99,785,732	0	9,041,026	0	9,041,026
2060	1,367,364,697	96,877,892	96,877,892	0	8,218,692	0	8,218,692
2061	1,387,695,009	93,833,007	93,833,007	0	7,453,537	0	7,453,537
2062	1,413,214,553	90,666,777	90,666,777	0	6,743,474	0	6,743,474
2063	1,444,424,195	87,404,020	87,404,020	0	6,086,893	0	6,086,893
2064	1,481,832,600	84,066,339	84,066,339	0	5,481,699	0	5,481,699
2065	1,525,960,164	80,678,070	80,678,070	0	4,925,806	0	4,925,806
2066	1,577,337,347	77,246,743	77,246,743	0	4,416,016	0	4,416,016
2067	1,636,523,004	73,784,826	73,784,826	0	3,949,538	0	3,949,538
2068	1,704,101,132	70,300,400	70,300,400	0	3,523,431	0	3,523,431
2069	1,780,687,021	66,800,982	66,800,982	0	3,134,870	0	3,134,870
2070	1,866,930,076	63,294,345	63,294,345	0	2,781,188	0	2,781,188
2071	1,963,515,928	59,788,301	59,788,301	0	2,459,860	0	2,459,860
2072	2,071,169,067	56,291,626	56,291,626	0	2,168,537	0	2,168,537



Single Discount Rate Development

Present Values of Projected Benefits

Ending December 31 for 2073 to 2122 (concluded)

Year	Projected Plan Net Position	Projected Benefit Payments	Funded Portion of Projected Benefit Payments	Unfunded Portion of Projected Benefit Payments	Present Value of Funded Benefit Payments using Expected Return Rate (v)	Present Value of Unfunded Benefit Payments using Municipal Bond Rate (vf)	Present Value of All Benefit Payments using Single Discount Rate (SDR)
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v ^a ((a)-.5)	(g)=(e)*vf ^a ((a)-.5)	(h)=((c)/(1+SDR)) ^a ((a)-.5)
2073	\$ 2,190,654,529	\$ 52,814,290	\$ 52,814,290	\$ 0	\$ 1,905,036	\$ 0	\$ 1,905,036
2074	2,322,779,513	49,367,090	49,367,090	0	1,667,316	0	1,667,316
2075	2,468,395,447	45,961,751	45,961,751	0	1,453,469	0	1,453,469
2076	2,628,400,067	42,611,188	42,611,188	0	1,261,716	0	1,261,716
2077	2,803,739,373	39,329,085	39,329,085	0	1,090,387	0	1,090,387
2078	2,995,410,133	36,129,489	36,129,489	0	937,902	0	937,902
2079	3,204,462,979	33,026,210	33,026,210	0	802,755	0	802,755
2080	3,432,006,329	30,032,675	30,032,675	0	683,513	0	683,513
2081	3,679,210,742	27,161,981	27,161,981	0	578,820	0	578,820
2082	3,947,313,503	24,425,983	24,425,983	0	487,374	0	487,374
2083	4,237,624,467	21,834,865	21,834,865	0	407,934	0	407,934
2084	4,551,532,740	19,396,926	19,396,926	0	339,313	0	339,313
2085	4,890,514,041	17,118,308	17,118,308	0	280,387	0	280,387
2086	5,256,138,835	15,003,027	15,003,027	0	230,093	0	230,093
2087	5,650,080,993	13,052,843	13,052,843	0	187,439	0	187,439
2088	6,074,127,177	11,267,600	11,267,600	0	151,501	0	151,501
2089	6,530,186,509	9,645,626	9,645,626	0	121,435	0	121,435
2090	7,020,300,482	8,183,778	8,183,778	0	96,470	0	96,470
2091	7,546,653,504	6,877,598	6,877,598	0	75,911	0	75,911
2092	8,111,583,988	5,721,445	5,721,445	0	59,129	0	59,129
2093	8,717,596,073	4,708,500	4,708,500	0	45,563	0	45,563
2094	9,367,372,129	3,830,683	3,830,683	0	34,708	0	34,708
2095	10,063,786,196	3,078,803	3,078,803	0	26,120	0	26,120
2096	10,809,918,194	2,442,803	2,442,803	0	19,404	0	19,404
2097	11,609,068,832	1,911,916	1,911,916	0	14,220	0	14,220
2098	12,464,775,385	1,474,874	1,474,874	0	10,271	0	10,271
2099	13,380,828,321	1,120,308	1,120,308	0	7,305	0	7,305
2100	14,361,288,643	837,067	837,067	0	5,111	0	5,111
2101	15,410,506,089	614,512	614,512	0	3,513	0	3,513
2102	16,533,138,262	442,724	442,724	0	2,370	0	2,370
2103	17,734,170,849	312,638	312,638	0	1,567	0	1,567
2104	19,018,939,077	216,142	216,142	0	1,014	0	1,014
2105	20,393,150,526	146,127	146,127	0	642	0	642
2106	21,862,909,440	96,505	96,505	0	397	0	397
2107	23,434,742,679	62,195	62,195	0	240	0	240
2108	25,115,627,449	39,081	39,081	0	141	0	141
2109	26,913,020,955	23,925	23,925	0	81	0	81
2110	28,834,892,174	14,262	14,262	0	45	0	45
2111	30,889,755,884	8,278	8,278	0	25	0	25
2112	33,086,709,146	4,680	4,680	0	13	0	13
2113	35,435,470,390	2,580	2,580	0	7	0	7
2114	37,946,421,293	1,389	1,389	0	3	0	3
2115	40,630,651,602	732	732	0	2	0	2
2116	43,500,007,099	377	377	0	1	0	1
2117	46,567,140,906	190	190	0	0	0	0
2118	49,845,568,321	94	94	0	0	0	0
2119	53,349,725,428	44	44	0	0	0	0
2120	57,095,031,712	20	20	0	0	0	0
2121	61,097,956,957	8	8	0	0	0	0
2122	65,376,092,698	4	4	0	0	0	0
Totals	\$ 1,191,725,330	\$ 0	\$ 1,191,725,330	\$ 0	\$ 1,191,725,330	\$ 0	\$ 1,191,725,330



SECTION H

GLOSSARY OF TERMS

Glossary of Terms

Accrued Service	Service credited under the system that was rendered before the date of the actuarial valuation.
Actuarial Accrued Liability (AAL)	The AAL is the difference between the actuarial present value of all benefits and the actuarial value of future normal costs. The definition comes from the fundamental equation of funding which states that the present value of all benefits is the sum of the Actuarial Accrued Liability and the present value of future normal costs. The AAL may also be referred to as "accrued liability" or "actuarial liability."
Actuarial Assumptions	These assumptions are estimates of future experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and compensation increases. Actuarial assumptions are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (compensation increases, payroll growth, inflation and investment return) consist of an underlying real rate of return plus an assumption for a long-term average rate of inflation.
Actuarial Cost Method	A mathematical budgeting procedure for allocating the dollar amount of the actuarial present value of the pension trust benefits between future normal cost and actuarial accrued liability. The actuarial cost method may also be referred to as the actuarial funding method.
Actuarial Equivalent	A single amount or series of amounts of equal actuarial value to another single amount or series of amounts, computed on the basis of appropriate actuarial assumptions.
Actuarial Gain (Loss)	The difference in liabilities between actual experience and expected experience during the period between two actuarial valuations is the gain (loss) on the accrued liabilities.
Actuarial Present Value (APV)	The amount of funds currently required to provide a payment or series of payments in the future. The present value is determined by discounting future payments at predetermined rates of interest and probabilities of payment.
Actuarial Valuation	The actuarial valuation report determines, as of the actuarial valuation date, the service cost, total pension liability, and related actuarial present value of projected benefit payments for pensions.
Actuarial Valuation Date	The date as of which an actuarial valuation is performed.
Actuarially Determined Contribution (ADC) or Annual Required Contribution (ARC)	A calculated contribution into a defined benefit pension plan for the reporting period, most often determined based on the funding policy of the plan. Typically, the Actuarially Determined Contribution has a normal cost payment and an amortization payment.

Glossary of Terms

Amortization Method	The method used to determine the periodic amortization payment may be a level dollar amount, or a level percent of pay amount. The period will typically be expressed in years, and the method will either be “open” (meaning, reset each year) or “closed” (the number of years remaining will decline each year).
Amortization Payment	The amortization payment is the periodic payment required to pay off an interest-discounted amount with payments of interest and principal.
Cost-of-Living Adjustments	Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.
Cost-Sharing Multiple-Employer Defined Benefit Pension Plan (cost-sharing pension plan)	A multiple-employer defined benefit pension plan in which the pension obligations to the employees of more than one employer are pooled and pension plan assets can be used to pay the benefits of the employees of any employer that provides pensions through the pension plan.
Covered-Employee Payroll	The payroll of employees that are provided with pensions through the pension plan.
Deferred Inflows and Outflows	The deferred inflows and outflows of pension resources are amounts used under GASB Statement No. 68 in developing the annual pension expense. Deferred inflows and outflows arise with differences between expected and actual experiences; changes of assumptions. The portion of these amounts not included in pension expense should be included in the deferred inflows or outflows of resources.
Deferred Retirement Option Program (DROP)	A program that permits a plan member to elect a calculation of benefit payments based on service credits and salary, as applicable, as of the DROP entry date. The plan member continues to provide service to the employer and is paid for the service by the employer after the DROP entry date; however, the pensions that would have been paid to the plan member are credited to an individual member account within the defined benefit pension plan until the end of the DROP period. Other variations for DROP exist and will be more fully detailed in the plan provision section of the valuation report.

Glossary of Terms

Discount Rate

For GASB purposes, the discount rate is the single rate of return that results in the present value of all projected benefit payments to be equal to the sum of the funded and unfunded projected benefit payments, specifically:

1. The benefit payments to be made while the pension plans' fiduciary net position is projected to be greater than the benefit payments that are projected to be made in the period; and
2. The present value of the benefit payments not in (1) above, discounted using the municipal bond rate.

Entry Age Actuarial Cost Method (EAN)

The EAN is a cost method for allocating the costs of the plan between the normal cost and the accrued liability. The actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis (either level dollar or level percent of pay) over the earnings or service of the individual between entry age and assumed exit ages(s). The portion of the actuarial present value allocated to a valuation year is the normal cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future normal costs is the actuarial accrued liability. The sum of the accrued liability plus the present value of all future normal costs is the present value of all benefits.

Fiduciary Net Position

The fiduciary net position is the market value of the assets of the trust dedicated to the defined benefit provisions.

GASB

The Governmental Accounting Standards Board is an organization that exists in order to promulgate accounting standards for governmental entities.

Money-Weighted Rate of Return

The money-weighted rate of return is a method of calculating the returns that adjusts for the changing amounts actually invested. For purposes of GASB Statement No. 67, money-weighted rate of return is calculated as the internal rate of return on pension plan investments, net of pension plan investment expense.

Multiple-Employer Defined Benefit Pension Plan

A multiple-employer plan is a defined benefit pension plan that is used to provide pensions to the employees of more than one employer.

Municipal Bond Rate

The Municipal Bond Rate is the discount rate to be used for those benefit payments that occur after the assets of the trust have been depleted.

Net Pension Liability (NPL)

The NPL is the liability of employers and non-employer contributing entities to plan members for benefits provided through a defined benefit pension plan.



Glossary of Terms

Other Postemployment Benefits (OPEB)	All postemployment benefits other than retirement income (such as death benefits, life insurance, disability, and long-term care) that are provided separately from a pension plan, as well as postemployment healthcare benefits regardless of the manner in which they are provided. Other post-employment benefits do not include termination benefits.
Real Rate of Return	The real rate of return is the rate of return on an investment after adjustment to eliminate inflation.
Service Cost	The service cost is the portion of the actuarial present value of projected benefit payments that is attributed to a valuation year.
Total Pension Expense	<p>The total pension expense is the sum of the following items that are recognized at the end of the employer’s fiscal year:</p> <ol style="list-style-type: none">1. Service Cost2. Interest on the Total Pension Liability3. Current-Period Benefit Changes4. Employee Contributions (made negative for addition here)5. Projected Earnings on Plan Investments (made negative for addition here)6. Pension Plan Administrative Expense7. Other Changes in Plan Fiduciary Net Position8. Recognition of Outflow (Inflow) of Resources due to Liabilities9. Recognition of Outflow (Inflow) of Resources due to Assets
Total Pension Liability (TPL)	The TPL is the portion of the actuarial present value of projected benefit payments that is attributed to past periods of member service.
Unfunded Actuarial Accrued Liability (UAAL)	The UAAL is the difference between actuarial accrued liability and valuation assets.
Valuation Assets	The valuation assets are the assets used in determining the unfunded liability of the plan. For purposes of GASB Statement Nos. 67 and 68, the valuation assets are equal to the market value of assets.