

Wyoming Retirement System Wyoming State Highway Patrol, Game & Fish Warden and Criminal Investigator Retirement Fund

GASB Statement Nos. 67 and 68 Accounting and Financial
Reporting for Pensions

For Measurement Date as of December 31, 2023





March 27, 2024

Board of Trustees

Wyoming State Highway Patrol, Game & Fish Warden and Criminal Investigator Retirement Fund

Dear Board Members:

This report provides information required by the Wyoming State Highway Patrol, Game & Fish Warden and Criminal Investigator 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 State Highway Patrol, Game & Fish Warden and Criminal Investigator 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 State Highway Patrol, Game & Fish Warden and Criminal Investigator Retirement Fund as of the valuation date.

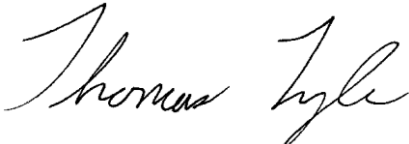
All calculations have been made in conformity with generally accepted actuarial principles and practices as well as with the Actuarial Standards of Practice issued by the Actuarial Standards Board.


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,

Gabriel, Roeder, Smith & Company

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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	378	
- Inactive, Nonretired Members	114	
- Active Members	272	
- Total	764	
Covered Payroll	\$ 22,796,672	

Net Pension Liability

Total Pension Liability	\$ 225,317,116
Plan Fiduciary Net Position	188,587,305
Net Pension Liability	\$ 36,729,811
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	83.70 %
Net Pension Liability as a Percentage of Covered Payroll	161.12 %

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 \$ 851,656

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	\$ 3,243,176	\$ 1,348,898
Changes in assumptions	1,498,266	0
Net difference between projected and actual earnings on pension plan investments	15,452,963	17,052,818
Total	\$ 20,194,405	\$ 18,401,716

**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 slightly decrease 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.
4. The funded status of the plan is expected gradually increase towards a 100% funded ratio.

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 State Highway Patrol, Game & Fish Warden and Criminal Investigator 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	\$	4,938,034
2. Interest on the Total Pension Liability		14,617,710
3. Current-Period Benefit Changes		86,445
4. Employee Contributions (made negative for addition here)		(4,021,897)
5. Projected Earnings on Plan Investments (made negative for addition here)		(11,465,877)
6. Pension Plan Administrative Expense		178,140
7. Other Changes in Plan Fiduciary Net Position		13,321
8. Recognition of Outflow (Inflow) of Resources due to Liabilities		1,213,445
9. Recognition of Outflow (Inflow) of Resources due to Assets		(4,707,665)
10. Total Pension Expense	\$	851,656 *

* 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	\$	4,230,603
2. Assumption Changes (gains) or losses	\$	0
3. Recognition period for Liabilities: Average of the expected remaining service lives of all employees {in years}		3.9593
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	\$	1,068,523
5. Outflow (Inflow) of Resources to be recognized in the current pension expense for assumption changes	\$	0
6. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Liabilities	\$	1,068,523
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	\$	3,162,080
8. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for assumption changes	\$	0
9. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Liabilities	\$	3,162,080

B. Outflows (Inflows) of Resources due to Assets

1. Net difference between projected and actual earnings on pension plan investments (gains) or losses	\$	(11,323,855)
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	\$	(2,264,771)
4. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Assets	\$	(9,059,084)



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	4.8205	4.8865	4.9676	4.4724	4.2551	4.1483	4.1594	4.7574	4.3983	3.9593	Total	Deferred Net (Inflows)/Outflows at Measurement Date
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023		
Total	\$ -	\$ (1,821,706)	\$ 62,315	\$ (4,722,830)	\$ (2,017,522)	\$ 1,453,141	\$ 2,116,116	\$ (2,876,961)	\$ (524,759)	\$ 4,230,603	\$ (4,101,603)	
2014	-	-	-	-	-	-	-	-	-	-	-	-
2015	-	(372,804)	-	-	-	-	-	-	-	-	(372,804)	(372,804)
2016	-	(372,804)	12,544	-	-	-	-	-	-	-	(360,260)	(360,260)
2017	-	(372,804)	12,544	(1,055,994)	-	-	-	-	-	-	(1,416,254)	(1,416,254)
2018	-	(372,804)	12,544	(1,055,994)	(474,142)	-	-	-	-	-	(1,890,396)	(1,890,396)
2019	-	(330,490)	12,544	(1,055,994)	(474,142)	350,298	-	-	-	-	(1,497,784)	(1,497,784)
2020	-	-	12,139	(1,055,994)	(474,142)	350,298	508,755	-	-	-	(658,944)	(658,944)
2021	-	-	-	(498,854)	(474,142)	350,298	508,755	(604,734)	-	-	(718,677)	(718,677)
2022	-	-	-	-	(120,954)	350,298	508,755	(604,734)	(119,310)	-	14,055	14,055
2023	-	-	-	-	-	51,949	508,755	(604,734)	(119,310)	1,068,523	905,183	905,183
2024	-	-	-	-	-	-	81,096	(604,734)	(119,310)	1,068,523	425,575	\$ 1,894,278
2025	-	-	-	-	-	-	-	(458,025)	(119,310)	1,068,523	491,188	
2026	-	-	-	-	-	-	-	-	(47,519)	1,025,034	977,515	
2027	-	-	-	-	-	-	-	-	-	-	-	
2028	-	-	-	-	-	-	-	-	-	-	-	
Thereafter	-	-	-	-	-	-	-	-	-	-	-	
	\$ -	\$ (1,821,706)	\$ 62,315	\$ (4,722,830)	\$ (2,017,522)	\$ 1,453,141	\$ 2,116,116	\$ (2,876,961)	\$ (524,759)	\$ 4,230,603	\$ (4,101,603)	

Assumption changes - Net (inflows)/outflows of resources

Recognition Period	4.8205	4.8865	4.9676	4.4724	4.2551	4.1483	4.1594	4.7574	4.3983	3.9593	Total
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	
Total	\$ -	\$ 32,535,213	\$ (5,188,326)	\$ (22,946,444)	\$ 13,137,489	\$ (15,224,856)	\$ -	\$ 4,055,904	\$ -	\$ -	\$ 6,368,980
2014	-	-	-	-	-	-	-	-	-	-	-
2015	-	6,658,183	-	-	-	-	-	-	-	-	6,658,183
2016	-	6,658,183	(1,044,433)	-	-	-	-	-	-	-	5,613,750
2017	-	6,658,183	(1,044,433)	(5,130,678)	-	-	-	-	-	-	483,072
2018	-	6,658,183	(1,044,433)	(5,130,678)	3,087,469	-	-	-	-	-	3,570,541
2019	-	5,902,481	(1,044,433)	(5,130,678)	3,087,469	(3,670,143)	-	-	-	-	(855,304)
2020	-	-	(1,010,594)	(5,130,678)	3,087,469	(3,670,143)	-	-	-	-	(6,723,946)
2021	-	-	-	(2,423,732)	3,087,469	(3,670,143)	-	852,546	-	-	(2,153,860)
2022	-	-	-	-	787,613	(3,670,143)	-	852,546	-	-	(2,029,984)
2023	-	-	-	-	-	(544,284)	-	852,546	-	-	308,262
2024	-	-	-	-	-	-	-	852,546	-	-	852,546
2025	-	-	-	-	-	-	-	645,720	-	-	645,720
2026	-	-	-	-	-	-	-	-	-	-	-
2027	-	-	-	-	-	-	-	-	-	-	-
2028	-	-	-	-	-	-	-	-	-	-	-
Thereafter	-	-	-	-	-	-	-	-	-	-	-
	\$ -	\$ 32,535,213	\$ (5,188,326)	\$ (22,946,444)	\$ 13,137,489	\$ (15,224,856)	\$ -	\$ 4,055,904	\$ -	\$ -	\$ 6,368,980



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	\$ 3,410,288	\$ 10,785,198	\$ 682,472	\$ (8,825,212)	\$ 14,702,888	\$ (15,256,127)	\$ (5,457,870)	\$ (17,255,403)	\$ 25,754,939	\$ (11,323,855)		
2014	682,058										682,058	
2015	682,058	2,157,040									2,839,098	
2016	682,058	2,157,040	136,494								2,975,592	
2017	682,058	2,157,040	136,494	(1,765,042)							1,210,550	
2018	682,056	2,157,040	136,494	(1,765,042)	2,940,578						4,151,126	
2019	-	2,157,038	136,494	(1,765,042)	2,940,578	(3,051,225)					417,843	
2020	-	-	136,496	(1,765,042)	2,940,578	(3,051,225)	(1,091,574)				(2,830,767)	
2021	-	-	-	(1,765,044)	2,940,578	(3,051,225)	(1,091,574)	(3,451,081)			(6,418,346)	
2022	-	-	-	-	2,940,576	(3,051,225)	(1,091,574)	(3,451,081)	5,150,988		497,684	
2023	-	-	-	-	-	(3,051,227)	(1,091,574)	(3,451,081)	5,150,988	(2,264,771)	(4,707,665)	
2024	-	-	-	-	-	-	(1,091,574)	(3,451,081)	5,150,988	(2,264,771)	(1,656,438)	\$ (1,599,855)
2025	-	-	-	-	-	-	-	(3,451,079)	5,150,988	(2,264,771)	(564,862)	
2026	-	-	-	-	-	-	-	-	5,150,987	(2,264,771)	2,886,216	
2027	-	-	-	-	-	-	-	-	-	(2,264,771)	(2,264,771)	
2028	-	-	-	-	-	-	-	-	-	-	-	
Thereafter	-	-	-	-	-	-	-	-	-	-	-	
	\$ 3,410,288	\$ 10,785,198	\$ 682,472	\$ (8,825,212)	\$ 14,702,888	\$ (15,256,127)	\$ (5,457,870)	\$ (17,255,403)	\$ 25,754,939	\$ (11,323,855)	\$ (2,782,682)	

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

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Total	
Total	\$ 3,410,288	\$ 41,498,705	\$ (4,443,539)	\$ (36,494,486)	\$ 25,822,855	\$ (29,027,842)	\$ (3,341,754)	\$ (16,076,460)	\$ 25,230,180	\$ (7,093,252)		
2014	682,058										682,058	
2015	682,058	8,442,419									9,124,477	
2016	682,058	8,442,419	(895,395)								8,229,082	
2017	682,058	8,442,419	(895,395)	(7,951,714)							277,368	
2018	682,056	8,442,419	(895,395)	(7,951,714)	5,553,905						5,831,271	
2019	-	7,729,029	(895,395)	(7,951,714)	5,553,905	(6,371,070)					(1,935,245)	
2020	-	-	(861,959)	(7,951,714)	5,553,905	(6,371,070)	(582,819)				(10,213,657)	
2021	-	-	-	(4,687,630)	5,553,905	(6,371,070)	(582,819)	(3,203,269)			(9,290,883)	
2022	-	-	-	-	3,607,235	(6,371,070)	(582,819)	(3,203,269)	5,031,678		(1,518,245)	
2023	-	-	-	-	-	(3,543,562)	(582,819)	(3,203,269)	5,031,678	(1,196,248)	(3,494,220)	
2024	-	-	-	-	-	-	(1,010,478)	(3,203,269)	5,031,678	(1,196,248)	(378,317)	\$ 1,792,689
2025	-	-	-	-	-	-	-	(3,263,384)	5,031,678	(1,196,248)	572,046	
2026	-	-	-	-	-	-	-	-	5,103,468	(1,239,737)	3,863,731	
2027	-	-	-	-	-	-	-	-	-	(2,264,771)	(2,264,771)	
2028	-	-	-	-	-	-	-	-	-	-	-	
Thereafter	-	-	-	-	-	-	-	-	-	-	-	
	\$ 3,410,288	\$ 41,498,705	\$ (4,443,539)	\$ (36,494,486)	\$ 25,822,855	\$ (29,027,842)	\$ (3,341,754)	\$ (16,076,460)	\$ 25,230,180	\$ (7,093,252)	\$ (515,305)	



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	\$ 2,481,773	\$ 1,268,328	\$ 1,213,445
2. Due to Assets	5,150,988	9,858,653	(4,707,665)
3. Total	\$ 7,632,761	\$ 11,126,981	\$ (3,494,220)

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	\$ 1,629,227	\$ 724,044	\$ 905,183
2. Assumption Changes	852,546	544,284	308,262
3. Net Difference between projected and actual earnings on pension plan investments	5,150,988	9,858,653	(4,707,665)
4. Total	\$ 7,632,761	\$ 11,126,981	\$ (3,494,220)

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	\$ 3,243,176	\$ 1,348,898	\$ 1,894,278
2. Assumption Changes	1,498,266	0	1,498,266
3. Net Difference between projected and actual earnings on pension plan investments	15,452,963	17,052,818	(1,599,855)
4. Total	\$ 20,194,405	\$ 18,401,716	\$ 1,792,689

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	\$ (378,317)
2025	572,046
2026	3,863,731
2027	(2,264,771)
2028	0
Thereafter	0
Total	\$ 1,792,689



Statement of Fiduciary Net Position as of December 31, 2023

	2023
Assets	
Cash and Deposits	\$ 8,208,651
Receivables	
Accounts Receivable - Sale of Investments	\$ 4,314,436
Accrued Interest and Other Dividends	370,839
Contributions	41
Accounts Receivable - Other	11,176,280
Total Receivables	\$ 15,861,596
Investments	
Fixed Income	\$ 29,533,167
Equities	87,799,422
Private Markets	24,138,393
Marketable Alternatives	35,089,711
Security Lending Collateral	5,269,863
Capital Assets, at Cost, Net of Accumulated Depreciation	63,658
Total Investments	\$ 181,894,214
Total Assets	\$ 205,964,461
Liabilities	
Payables	
Accounts Payable - Purchase of Investments	\$ 17,068,849
Accrued Expenses	308,307
Accounts Payable - Other	0
Total Liabilities	\$ 17,377,156
Net Position Restricted for Pensions	\$ 188,587,305



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

	2023
Additions	
Contributions	
Employer	\$ 3,934,395
Employee	3,852,222
Other Employer Contributions	23,613
Other Employee Contributions	169,675
Total Contributions	\$ 7,979,905
Investment Income	
Net Appreciation in Fair Value of Investments	\$ 20,038,777
Interest and Dividends	4,129,881
Less Investment Expense	(1,378,926)
Net Investment Income	\$ 22,789,732
Other	\$ 0
Total Additions	\$ 30,769,637
 Deductions	
Benefit Payments, including Refunds of Employee Contributions	\$ 13,333,785
Pension Plan Administrative Expense	178,140
Other	13,321
Total Deductions	\$ 13,525,246
Net Increase in Net Position	\$ 17,244,391
 Net Position Restricted for Pensions	
Beginning of Year	\$ 171,342,914
End of Year	\$ 188,587,305



SECTION C

REQUIRED SUPPLEMENTARY INFORMATION

Auditor's Note – This information is intended to assist in preparation of the financial statements of the Wyoming State Highway Patrol, Game & Fish Warden and Criminal Investigator 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	\$ 4,938,034
2. Interest on the total pension liability	14,617,710
3. Changes of benefit terms	86,445
4. Difference between expected and actual experience of the total pension liability	4,230,603
5. Changes of assumptions	0
6. Benefit payments, including refunds of employee contributions	(13,333,785)
7. Net change in total pension liability	<u>10,539,007</u>
8. Total pension liability – beginning	<u>214,778,109</u>
9. Total pension liability – ending	<u><u>\$ 225,317,116</u></u>
B. Plan fiduciary net position	
1. Contributions – employer	\$ 3,958,008
2. Contributions – employee	4,021,897
3. Net investment income	22,789,732
4. Benefit payments	(13,108,046)
5. Refunds	(225,739)
6. Pension plan administrative expense	(178,140)
7. Other	(13,321)
8. Net change in plan fiduciary net position	<u>17,244,391</u>
9. Plan fiduciary net position – beginning	<u>171,342,914</u>
10. Plan fiduciary net position – ending	<u><u>\$ 188,587,305</u></u>
C. Net pension liability	<u><u>\$ 36,729,811</u></u>
D. Plan fiduciary net position as a percentage of the total pension liability	83.70 %
E. Covered-employee payroll	\$ 22,796,672
F. Net pension liability as a percentage of covered-employee payroll	161.12 %



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	\$ 4,938,034	\$ 5,072,114	\$ 5,202,574	\$ 4,800,841	\$ 4,614,951	\$ 5,078,748	\$ 4,764,423	\$ 7,631,559	\$ 7,511,738	\$ 5,276,236
Interest on the total pension liability	14,617,710	13,942,597	13,562,409	13,412,219	12,833,018	12,084,646	12,129,167	12,213,078	11,513,094	11,490,234
Changes of benefit terms	86,445	0	0	0	0	0	0	0	0	0
Difference between expected and actual experience	4,230,603	(524,759)	(2,876,961)	2,116,116	1,453,141	(2,017,522)	(4,722,830)	62,315	(1,821,706)	0
Changes of assumptions	0	0	4,055,904	0	(15,224,856)	13,137,489	(22,946,444)	(5,188,326)	32,535,213	0
Benefit payments, including refunds of employee contributions	(13,333,785)	(13,341,487)	(11,853,113)	(11,638,230)	(11,132,637)	(10,612,051)	(10,304,469)	(9,719,868)	(9,046,994)	(8,732,855)
Net change in total pension liability	10,539,007	5,148,465	8,090,813	8,690,946	(7,456,383)	17,671,310	(21,080,153)	4,998,758	40,691,345	8,033,615
Total pension liability - beginning	214,778,109	209,629,644	201,538,831	192,847,885	200,304,268	182,632,958	203,713,111	198,714,353	158,023,008	149,989,393
Total pension liability - ending (a)	\$ 225,317,116	\$ 214,778,109	\$ 209,629,644	\$ 201,538,831	\$ 192,847,885	\$ 200,304,268	\$ 182,632,958	\$ 203,713,111	\$ 198,714,353	\$ 158,023,008
Plan fiduciary net position										
Employer contributions	\$ 3,958,008	\$ 3,615,480	\$ 3,590,133	\$ 3,664,996	\$ 3,639,164	\$ 3,529,976	\$ 3,552,582	\$ 3,574,065	\$ 3,355,688	\$ 3,006,277
Employee contributions	4,021,897	4,230,269	3,859,144	3,932,180	4,196,524	3,796,060	3,485,756	3,678,081	3,524,286	3,150,559
Pension plan net investment income	22,789,732	(13,021,808)	28,404,943	16,114,071	24,466,565	(4,908,329)	17,623,232	8,622,074	(1,199,475)	5,900,708
Benefit payments	(13,108,046)	(12,572,407)	(11,744,509)	(11,270,238)	(10,843,842)	(10,260,821)	(9,795,108)	(9,396,540)	(8,926,088)	(8,364,762)
Refunds	(225,739)	(769,080)	(108,604)	(367,992)	(288,795)	(351,230)	(509,361)	(323,328)	(120,906)	(368,093)
Pension plan administrative expense	(178,140)	(174,222)	(161,144)	(149,733)	(138,770)	(139,377)	(128,991)	(114,832)	(95,918)	(96,479)
Other	(13,321)	(11,017)	(5,973)	(5,841)	(6,039)	(5,536)	(5,897)	(5,897)	(5,850)	229,589
Net change in plan fiduciary net position	17,244,391	(18,702,785)	23,833,990	11,917,443	21,024,807	(8,339,257)	14,222,213	6,033,623	(3,468,263)	3,457,799
Plan fiduciary net position - beginning	171,342,914	190,045,699	166,211,709	154,294,266	133,269,459	141,608,716	127,386,503	121,352,880	124,821,143	121,363,344
Plan fiduciary net position - ending (b)	\$ 188,587,305	\$ 171,342,914	\$ 190,045,699	\$ 166,211,709	\$ 154,294,266	\$ 133,269,459	\$ 141,608,716	\$ 127,386,503	\$ 121,352,880	\$ 124,821,143
Net pension liability - ending (a) - (b)	\$ 36,729,811	\$ 43,435,195	\$ 19,583,945	\$ 35,327,122	\$ 38,553,619	\$ 67,034,809	\$ 41,024,242	\$ 76,326,608	\$ 77,361,473	\$ 33,201,865
Plan fiduciary net position as a percentage of total pension liability	83.70 %	79.78 %	90.66 %	82.47 %	80.01 %	66.53 %	77.54 %	62.53 %	61.07 %	78.99 %
Covered-employee payroll	\$ 22,796,672	\$ 23,495,253	\$ 24,201,407	\$ 24,074,484	\$ 23,118,850	\$ 23,063,176	\$ 23,641,495	\$ 23,636,482	\$ 22,196,930	\$ 21,817,686
Projected valuation payroll	\$ 23,366,589	\$ 24,082,634	\$ 24,806,442	\$ 24,676,346	\$ 23,696,821	\$ 23,639,756	\$ 24,646,258	\$ 24,641,033	\$ 23,140,300	\$ 22,744,938
Net pension liability as a percentage of covered-employee payroll	161.12 %	184.87 %	80.92 %	146.74 %	166.76 %	290.66 %	173.53 %	322.92 %	348.52 %	152.18 %

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	\$ 158,023,008	\$ 124,821,143	\$ 33,201,865	78.99 %	\$ 21,817,686	152.18 %
2015	198,714,353	121,352,880	77,361,473	61.07 %	22,196,930	348.52 %
2016	203,713,111	127,386,503	76,326,608	62.53 %	23,636,482	322.92 %
2017	182,632,958	141,608,716	41,024,242	77.54 %	23,641,495	173.53 %
2018	200,304,268	133,269,459	67,034,809	66.53 %	23,063,176	290.66 %
2019	192,847,885	154,294,266	38,553,619	80.01 %	23,118,850	166.76 %
2020	201,538,831	166,211,709	35,327,122	82.47 %	24,074,484	146.74 %
2021	209,629,644	190,045,699	19,583,945	90.66 %	24,201,407	80.92 %
2022	214,778,109	171,342,914	43,435,195	79.78 %	23,495,253	184.87 %
2023	225,317,116	188,587,305	36,729,811	83.70 %	22,796,672	161.12 %

* 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	\$ 4,037,681	\$ 3,077,515	\$ 960,166	\$ 21,817,686	14.11 %
2015	3,784,380	3,355,688	428,692	22,196,930	15.12 %
2016	4,097,473	3,574,065	523,408	23,636,482	15.12 %
2017	4,041,445	3,552,582	488,863	23,641,495	15.03 %
2018	3,607,303	3,529,976	77,327	23,063,176	15.31 %
2019	3,997,559	3,639,164	358,395	23,118,850	15.74 %
2020	4,345,242	3,664,996	680,246	24,074,484	15.22 %
2021	4,026,853	3,590,133	436,720	24,201,407	14.83 %
2022	4,191,149	3,615,480	575,669	23,495,253	15.39 %
2023	4,496,075	3,958,008	538,067	22,796,672	17.36 %

* 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	25 years
Asset Valuation Method	5-Year smoothed market
Inflation	2.25%
Salary Increases	2.50% to 8.50% 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 has been updated since the prior valuation.
The employer is contributing at the rate of 14.88% of salary.
Employees are contributing at the rate of 14.56% of salary. Effective July 1, 2024, employee contribution rates will increase to 18.92%.
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 State Highway Patrol, Game & Fish Warden and Criminal Investigator 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% and a municipal bond rate of 3.77%. 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 and future contributions were sufficient to finance the benefit payments through the year 2122. 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%
\$ 64,419,526	\$ 36,729,811	\$ 13,871,126



Summary of Population Statistics

Inactive Plan Members or Beneficiaries Currently Receiving Benefits	378
Inactive Plan Members Entitled to But Not Yet Receiving Benefits	114
Active Plan Members	<u>272</u>
Total Plan Members	764



SECTION E

SUMMARY OF BENEFITS

Summary of Benefits

Covered Members

Any person who is employed by the Wyoming state highway patrol division as a sworn law enforcement officer;

Any person who is commissioned as a full-time law enforcement officer of the Wyoming state game and fish department;

Any criminal investigator as defined under W.S. 9-3-602(a)(iv);

Any person designated and appointed as capitol police under W.S. 9-1-612 and qualified pursuant to W.S. 9-1-701 through 9-1-707.

Final Average Salary

Employee's average annual salary for the highest paid three continuous years of service.

Service Retirement

Eligibility

Age 50 with six or more years of service.

Monthly Benefit

2.50% of employee's highest three-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 six 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 six 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. 9-3-611(a).

Monthly Benefit

62.5% of Final Average 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 Average Salary.



Pre-retirement Duty Death Benefit

Eligibility	No age or service requirements.
Monthly Benefit	50% of member's final actual salary, payable to the surviving spouse plus 5% of the member's final actual salary for each unmarried child under 18. Payment shall not exceed the member's final actual salary.

Pre-retirement Non-duty Death Benefit

Eligibility	No age or service requirements.
Monthly Benefit	2% for each year of credited service, not to exceed 50%, of the member's final actual salary payable to the surviving spouse plus 5% of the member's final actual salary for each unmarried child under 18. Payment shall not exceed 60% of the member's final actual salary.

Post-retirement Death Benefit

Monthly Benefit	50% of the benefit payable prior to the member's death plus 5% of the member's final actual salary for each unmarried child under 18. Payment shall not exceed 60% of the member's final actual salary.
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Contributions

Employee	14.56% of salary. The Employer may subsidize all except 1.62% of the employee contributions, which shall be paid through salary reductions. Effective July 1, 2024, the employee contribution rate will increase to 18.92% of salary.
Employer	14.88% of salary.

Interest	3.00% annually effective January 1, 2016.
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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. Upon death, 50% of the benefit continues to be paid to the beneficiary.
Option 2	Monthly benefit for life. Upon death, 100% of the benefit continues to be paid to the beneficiary.
Option 3	Not available under this plan.
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.



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.

b. Salary increase rate

Age	Rate
20	8.50%
25	8.00%
30	5.75%
35	4.00%
40	3.00%
45	3.00%
50	3.00%
55	2.50%
60	2.50%

c. Payroll growth rate

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

d. Cost-of-Living adjustment

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



5. Demographic Assumptions

a. Rates Before Retirement

Healthy Pre-Retirement Mortality:

Pub-2010 Safety Healthy Active Mortality Table, amount weighted, fully generational, projected

with the MP-2020 Ultimate Scale

Males: No set back with a multiplier of 100%

Females: No set back with a multiplier of 100%

Healthy Post-Retirement Mortality:

Pub-2010 Safety Healthy Annuitant Mortality Table, amount weighted, fully generational, projected

with the MP-2020 Ultimate Scale

Males: No set back with a multiplier of 100%

Females: No set back with a multiplier of 100%

Disabled Mortality:

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

Males: No set back with a multiplier of 100%

Females: No set back with a multiplier of 100%

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%

100% of active deaths are assumed to be duty-related



b. Disability and Withdrawal

Age	Disability		Withdrawal	
	Male	Female	Ultimate	
			Male	Female
20	0.10%	0.10%	4.50%	4.50%
25	0.10%	0.10%	4.50%	4.50%
30	0.23%	0.23%	4.50%	4.50%
35	0.39%	0.39%	4.50%	4.50%
40	0.57%	0.57%	3.00%	3.00%
45	0.73%	0.73%	3.00%	3.00%
50	0.75%	0.75%	1.00%	1.00%
55	0.75%	0.75%	1.00%	1.00%
60	0.75%	0.75%	1.00%	1.00%

100% of active disabilities are assumed to be duty-related

c. Retirement Rates

Age	Rate
50	15.00%
51	5.00%
52	5.00%
53	5.00%
54	10.00%
55	10.00%
56	10.00%
57	15.00%
58	15.00%
59	15.00%
60	35.00%
61	40.00%
62	100.00%

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: Vested terminating members are assumed to elect a refund or a deferred benefit, whichever is more valuable at the time of termination.
- 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 50.
- 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. Administrative expenses: Average of actual expenses for the prior two years, with each year projected at 2.50% to the valuation date.
- i. 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.
- j. Decrement timing: Decrements of all types are assumed to occur mid-year.
- k. 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.
- l. 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.
- m. 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		Contributions from Current Employees		Employer Contributions for Current Employees	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)				
2023	\$ 22,856,611	\$ 509,979	\$ 23,366,589	\$ 4,021,897	\$ 3,915,576	\$ 42,432	\$ 7,979,905				
2024	22,023,040	1,927,714	23,950,754	3,686,657	3,296,849	162,129	7,145,635				
2025	21,226,692	3,322,831	24,549,523	4,016,090	3,173,390	279,573	7,469,053				
2026	20,522,942	4,640,319	25,163,261	3,882,941	3,066,127	390,992	7,340,060				
2027	19,843,740	5,948,603	25,792,343	3,754,436	2,962,670	501,885	7,218,991				
2028	19,069,565	7,367,587	26,437,152	3,607,962	2,845,179	622,203	7,075,344				
2029	18,230,072	8,868,009	27,098,081	3,449,130	2,718,104	749,851	6,917,085				
2030	17,404,300	10,371,233	27,775,533	3,292,894	2,594,981	879,920	6,767,795				
2031	16,549,564	11,920,357	28,469,921	3,131,177	2,465,885	1,014,241	6,611,303				
2032	15,705,203	13,476,466	29,181,669	2,971,424	2,340,075	1,151,674	6,463,173				
2033	14,863,788	15,047,423	29,911,211	2,812,229	2,213,218	1,290,581	6,316,028				
2034	14,013,281	16,645,710	30,658,991	2,651,313	2,086,578	1,434,101	6,171,992				
2035	13,163,950	18,261,516	31,425,466	2,490,619	1,960,112	1,580,569	6,031,300				
2036	12,298,526	19,912,577	32,211,103	2,326,881	1,831,251	1,730,872	5,889,004				
2037	11,501,809	21,514,572	33,016,381	2,176,142	1,711,469	1,876,061	5,763,672				
2038	10,741,557	23,100,234	33,841,791	2,032,303	1,598,344	2,022,975	5,653,622				
2039	9,955,554	24,732,282	34,687,836	1,883,591	1,481,386	2,175,028	5,540,005				
2040	9,176,618	26,378,414	35,555,032	1,736,216	1,365,481	2,329,057	5,430,754				
2041	8,480,312	27,963,596	36,443,908	1,604,475	1,261,870	2,479,097	5,345,442				
2042	7,804,732	29,550,274	37,355,006	1,476,655	1,161,344	2,630,311	5,268,310				
2043	7,098,212	31,190,669	38,288,881	1,342,982	1,056,214	2,787,177	5,186,373				
2044	6,383,468	32,862,635	39,246,103	1,207,752	949,860	2,947,408	5,105,020				
2045	5,691,686	34,535,570	40,227,256	1,076,867	846,923	3,108,650	5,032,440				
2046	5,010,142	36,222,795	41,232,937	947,919	745,509	3,271,710	4,965,138				
2047	4,341,423	37,922,337	42,263,760	821,397	646,004	3,436,194	4,903,595				
2048	3,738,564	39,581,790	43,320,354	707,336	556,298	3,597,399	4,861,033				
2049	3,191,949	41,211,414	44,403,363	603,917	474,962	3,756,632	4,835,511				
2050	2,672,798	42,840,649	45,513,447	505,693	397,712	3,915,642	4,819,047				
2051	2,197,620	44,453,663	46,651,283	415,790	327,006	4,073,294	4,816,090				
2052	1,778,919	46,038,646	47,817,565	336,572	264,703	4,228,159	4,829,434				
2053	1,445,004	47,568,000	49,013,004	273,395	215,017	4,378,093	4,866,505				
2054	1,136,365	49,101,964	50,238,329	215,000	169,091	4,528,179	4,912,270				
2055	860,207	50,634,080	51,494,287	162,751	127,999	4,677,058	4,967,808				
2056	641,381	52,140,263	52,781,644	121,349	95,438	4,822,996	5,039,783				
2057	457,155	53,644,030	54,101,185	86,494	68,025	4,967,561	5,122,080				
2058	309,040	55,144,675	55,453,715	58,470	45,985	5,110,869	5,215,324				
2059	188,525	56,651,533	56,840,058	35,669	28,052	5,253,520	5,317,241				
2060	102,191	58,158,868	58,261,059	19,334	15,206	5,395,323	5,429,863				
2061	42,795	59,674,790	59,717,585	8,097	6,368	5,537,013	5,551,478				
2062	10,698	61,199,827	61,210,525	2,024	1,592	5,678,861	5,682,477				
2063	0	62,740,788	62,740,788	0	0	5,821,820	5,821,820				
2064	0	64,309,308	64,309,308	0	0	5,967,195	5,967,195				
2065	0	65,917,041	65,917,041	0	0	6,116,110	6,116,110				
2066	0	67,564,967	67,564,967	0	0	6,268,694	6,268,694				
2067	0	69,254,091	69,254,091	0	0	6,425,110	6,425,110				
2068	0	70,985,443	70,985,443	0	0	6,585,476	6,585,476				
2069	0	72,760,079	72,760,079	0	0	6,749,880	6,749,880				
2070	0	74,579,081	74,579,081	0	0	6,918,432	6,918,432				
2071	0	76,443,558	76,443,558	0	0	7,091,264	7,091,264				
2072	0	78,354,647	78,354,647	0	0	7,268,486	7,268,486				



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		Contributions from Current Employees		Employer Contributions for Current Employees	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	\$ 0	\$ 80,313,513	\$ 80,313,513	\$ 0	\$ 0	\$ 7,450,197	\$ 7,450,197				
2074	0	82,321,351	82,321,351	0	0	7,636,507	7,636,507				
2075	0	84,379,385	84,379,385	0	0	7,827,544	7,827,544				
2076	0	86,488,870	86,488,870	0	0	8,023,404	8,023,404				
2077	0	88,651,092	88,651,092	0	0	8,224,182	8,224,182				
2078	0	90,867,369	90,867,369	0	0	8,429,976	8,429,976				
2079	0	93,139,053	93,139,053	0	0	8,640,921	8,640,921				
2080	0	95,467,529	95,467,529	0	0	8,857,121	8,857,121				
2081	0	97,854,217	97,854,217	0	0	9,078,697	9,078,697				
2082	0	100,300,572	100,300,572	0	0	9,305,781	9,305,781				
2083	0	102,808,086	102,808,086	0	0	9,538,524	9,538,524				
2084	0	105,378,288	105,378,288	0	0	9,777,074	9,777,074				
2085	0	108,012,745	108,012,745	0	0	10,021,576	10,021,576				
2086	0	110,713,064	110,713,064	0	0	10,272,190	10,272,190				
2087	0	113,480,891	113,480,891	0	0	10,529,069	10,529,069				
2088	0	116,317,913	116,317,913	0	0	10,792,357	10,792,357				
2089	0	119,225,861	119,225,861	0	0	11,062,208	11,062,208				
2090	0	122,206,508	122,206,508	0	0	11,338,781	11,338,781				
2091	0	125,261,671	125,261,671	0	0	11,622,248	11,622,248				
2092	0	128,393,213	128,393,213	0	0	11,912,769	11,912,769				
2093	0	131,603,043	131,603,043	0	0	12,210,521	12,210,521				
2094	0	134,893,119	134,893,119	0	0	12,515,693	12,515,693				
2095	0	138,265,447	138,265,447	0	0	12,828,477	12,828,477				
2096	0	141,722,083	141,722,083	0	0	13,149,073	13,149,073				
2097	0	145,265,135	145,265,135	0	0	13,477,686	13,477,686				
2098	0	148,896,763	148,896,763	0	0	13,814,526	13,814,526				
2099	0	152,619,182	152,619,182	0	0	14,159,803	14,159,803				
2100	0	156,434,662	156,434,662	0	0	14,513,731	14,513,731				
2101	0	160,345,529	160,345,529	0	0	14,876,526	14,876,526				
2102	0	164,354,167	164,354,167	0	0	15,248,410	15,248,410				
2103	0	168,463,021	168,463,021	0	0	15,629,605	15,629,605				
2104	0	172,674,597	172,674,597	0	0	16,020,342	16,020,342				
2105	0	176,991,462	176,991,462	0	0	16,420,858	16,420,858				
2106	0	181,416,249	181,416,249	0	0	16,831,398	16,831,398				
2107	0	185,951,655	185,951,655	0	0	17,252,209	17,252,209				
2108	0	190,600,446	190,600,446	0	0	17,683,547	17,683,547				
2109	0	195,365,457	195,365,457	0	0	18,125,674	18,125,674				
2110	0	200,249,593	200,249,593	0	0	18,578,857	18,578,857				
2111	0	205,255,833	205,255,833	0	0	19,043,372	19,043,372				
2112	0	210,387,229	210,387,229	0	0	19,519,499	19,519,499				
2113	0	215,646,910	215,646,910	0	0	20,007,527	20,007,527				
2114	0	221,038,083	221,038,083	0	0	20,507,753	20,507,753				
2115	0	226,564,035	226,564,035	0	0	21,020,479	21,020,479				
2116	0	232,228,136	232,228,136	0	0	21,546,017	21,546,017				
2117	0	238,033,839	238,033,839	0	0	22,084,688	22,084,688				
2118	0	243,984,685	243,984,685	0	0	22,636,820	22,636,820				
2119	0	250,084,302	250,084,302	0	0	23,202,749	23,202,749				
2120	0	256,336,410	256,336,410	0	0	23,782,820	23,782,820				
2121	0	262,744,820	262,744,820	0	0	24,377,389	24,377,389				
2122	0	269,313,441	269,313,441	0	0	24,986,817	24,986,817				



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	\$ 171,342,914	\$ 7,979,905	\$ 13,333,785	\$ 191,461	\$ 22,789,732	\$ 188,587,305
2024	188,587,305	7,145,635	13,763,982	186,816	12,596,366	194,378,508
2025	194,378,508	7,469,053	14,235,777	191,486	12,985,050	200,405,348
2026	200,405,348	7,340,060	14,613,199	196,273	13,377,780	206,313,717
2027	206,313,717	7,218,991	14,978,139	201,180	13,763,133	212,116,521
2028	212,116,521	7,075,344	15,439,565	206,210	14,137,321	217,683,412
2029	217,683,412	6,917,085	15,952,049	211,365	14,493,267	222,930,349
2030	222,930,349	6,767,795	16,384,163	216,649	14,830,439	227,927,771
2031	227,927,771	6,611,303	16,840,450	222,065	15,149,591	232,626,151
2032	232,626,151	6,463,173	17,324,682	227,617	15,447,748	236,984,773
2033	236,984,773	6,316,028	17,758,093	233,307	15,724,530	241,033,931
2034	241,033,931	6,171,992	18,252,398	239,140	15,978,331	244,692,716
2035	244,692,716	6,031,300	18,762,041	245,119	16,205,181	247,922,037
2036	247,922,037	5,889,004	19,267,340	251,247	16,402,914	250,695,367
2037	250,695,367	5,763,672	19,694,606	257,528	16,572,811	253,079,716
2038	253,079,716	5,653,622	20,048,643	263,966	16,719,212	255,139,940
2039	255,139,940	5,540,005	20,466,077	270,565	16,841,327	256,784,631
2040	256,784,631	5,430,754	20,907,971	277,329	16,934,509	257,964,594
2041	257,964,594	5,345,442	21,186,810	284,262	17,002,338	258,841,302
2042	258,841,302	5,268,310	21,450,760	291,369	17,050,310	259,417,793
2043	259,417,793	5,186,373	21,730,668	298,653	17,077,167	259,652,012
2044	259,652,012	5,105,020	21,970,589	306,120	17,082,101	259,562,424
2045	259,562,424	5,032,440	22,164,341	313,773	17,066,847	259,183,597
2046	259,183,597	4,965,138	22,326,949	321,617	17,033,136	258,533,305
2047	258,533,305	4,903,595	22,472,923	329,657	16,981,707	257,616,027
2048	257,616,027	4,861,033	22,535,309	337,899	16,915,547	256,519,399
2049	256,519,399	4,835,511	22,540,894	346,346	16,839,654	255,307,324
2050	255,307,324	4,819,047	22,498,298	355,005	16,757,817	254,030,885
2051	254,030,885	4,816,090	22,379,982	363,880	16,674,580	252,777,694
2052	252,777,694	4,829,434	22,183,358	372,977	16,596,080	251,646,873
2053	251,646,873	4,866,505	21,912,281	382,301	16,529,178	250,747,974
2054	250,747,974	4,912,270	21,611,830	391,859	16,479,311	250,135,866
2055	250,135,866	4,967,808	21,275,743	401,655	16,450,456	249,876,732
2056	249,876,732	5,039,783	20,889,015	411,697	16,447,838	250,063,641
2057	250,063,641	5,122,080	20,467,453	421,989	16,477,054	250,773,333
2058	250,773,333	5,215,324	20,011,251	432,539	16,543,334	252,088,200
2059	252,088,200	5,317,241	19,526,061	443,352	16,652,016	254,088,044
2060	254,088,044	5,429,863	19,007,966	454,436	16,808,727	256,864,233
2061	256,864,233	5,551,478	18,462,136	465,797	17,019,448	260,507,225
2062	260,507,225	5,682,477	17,888,975	477,442	17,290,330	265,113,615
2063	265,113,615	5,821,820	17,293,235	489,378	17,627,747	270,780,569
2064	270,780,569	5,967,195	16,683,475	501,613	18,037,943	277,600,619
2065	277,600,619	6,116,110	16,067,868	514,153	18,526,853	285,661,561
2066	285,661,561	6,268,694	15,447,131	527,007	19,100,428	295,056,544
2067	295,056,544	6,425,110	14,822,073	540,182	19,764,979	305,884,379
2068	305,884,379	6,585,476	14,193,575	553,686	20,527,201	318,249,795
2069	318,249,795	6,749,880	13,562,576	567,529	21,394,185	332,263,755
2070	332,263,755	6,918,432	12,930,135	581,717	22,373,446	348,043,780
2071	348,043,780	7,091,264	12,297,296	596,260	23,472,943	365,714,431
2072	365,714,431	7,268,486	11,665,067	611,166	24,701,118	385,407,802



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	\$ 385,407,802	\$ 7,450,197	\$ 11,034,576	\$ 626,445	\$ 26,066,917	\$ 407,263,894
2074	407,263,894	7,636,507	10,406,939	642,107	27,579,827	431,431,182
2075	431,431,182	7,827,544	9,783,302	658,159	29,249,909	458,067,173
2076	458,067,173	8,023,404	9,164,882	674,613	31,087,836	487,338,918
2077	487,338,918	8,224,182	8,553,045	691,479	33,104,925	519,423,501
2078	519,423,501	8,429,976	7,949,510	708,765	35,313,164	554,508,366
2079	554,508,366	8,640,921	7,356,115	726,485	37,725,240	592,791,927
2080	592,791,927	8,857,121	6,774,771	744,647	40,354,585	634,484,214
2081	634,484,214	9,078,697	6,207,673	763,263	43,215,412	679,807,387
2082	679,807,387	9,305,781	5,657,043	782,344	46,322,757	728,996,537
2083	728,996,537	9,538,524	5,125,105	801,903	49,692,537	782,300,590
2084	782,300,590	9,777,074	4,614,181	821,951	53,341,605	839,983,137
2085	839,983,137	10,021,576	4,126,473	842,499	57,287,817	902,323,558
2086	902,323,558	10,272,190	3,664,127	863,562	61,550,103	969,618,162
2087	969,618,162	10,529,069	3,229,035	885,151	66,148,554	1,042,181,599
2088	1,042,181,599	10,792,357	2,822,650	907,280	71,104,522	1,120,348,548
2089	1,120,348,548	11,062,208	2,446,258	929,962	76,440,727	1,204,475,264
2090	1,204,475,264	11,338,781	2,100,784	953,211	82,181,368	1,294,941,418
2091	1,294,941,418	11,622,248	1,786,671	977,041	88,352,253	1,392,152,207
2092	1,392,152,207	11,912,769	1,503,978	1,001,467	94,980,939	1,496,540,470
2093	1,496,540,470	12,210,521	1,252,321	1,026,504	102,096,876	1,608,569,042
2094	1,608,569,042	12,515,693	1,030,864	1,052,166	109,731,572	1,728,733,277
2095	1,728,733,277	12,828,477	838,329	1,078,470	117,918,759	1,857,563,713
2096	1,857,563,713	13,149,073	673,069	1,105,432	126,694,574	1,995,628,859
2097	1,995,628,859	13,477,686	533,119	1,133,068	136,097,749	2,143,538,108
2098	2,143,538,108	13,814,526	416,241	1,161,395	146,169,803	2,301,944,801
2099	2,301,944,801	14,159,803	320,060	1,190,430	156,955,250	2,471,549,364
2100	2,471,549,364	14,513,731	242,156	1,220,190	168,501,806	2,653,102,555
2101	2,653,102,555	14,876,526	180,104	1,250,695	180,860,610	2,847,408,893
2102	2,847,408,893	15,248,410	131,542	1,281,963	194,086,456	3,055,330,253
2103	3,055,330,253	15,629,605	94,247	1,314,012	208,238,031	3,277,789,630
2104	3,277,789,630	16,020,342	66,173	1,346,862	223,378,176	3,515,775,113
2105	3,515,775,113	16,420,858	45,481	1,380,533	239,574,148	3,770,344,105
2106	3,770,344,105	16,831,398	30,568	1,415,047	256,897,913	4,042,627,801
2107	4,042,627,801	17,252,209	20,069	1,450,423	275,426,445	4,333,835,963
2108	4,333,835,963	17,683,547	12,856	1,486,683	295,242,053	4,645,262,023
2109	4,645,262,023	18,125,674	8,029	1,523,851	316,432,728	4,978,288,545
2110	4,978,288,545	18,578,857	4,883	1,561,947	339,092,518	5,334,393,090
2111	5,334,393,090	19,043,372	2,891	1,600,995	363,321,921	5,715,154,498
2112	5,715,154,498	19,519,499	1,664	1,641,020	389,228,322	6,122,259,634
2113	6,122,259,634	20,007,527	931	1,682,046	416,926,444	6,557,510,628
2114	6,557,510,628	20,507,753	507	1,724,097	446,538,847	7,022,832,625
2115	7,022,832,625	21,020,479	268	1,767,199	478,196,456	7,520,282,092
2116	7,520,282,092	21,546,017	138	1,811,379	512,039,121	8,052,055,713
2117	8,052,055,713	22,084,688	70	1,856,664	548,216,229	8,620,499,895
2118	8,620,499,895	22,636,820	34	1,903,081	586,887,346	9,228,120,946
2119	9,228,120,946	23,202,749	16	1,950,658	628,222,912	9,877,595,932
2120	9,877,595,932	23,782,820	8	1,999,424	672,404,978	10,571,784,299
2121	10,571,784,299	24,377,389	3	2,049,410	719,627,999	11,313,740,274
2122	11,313,740,274	24,986,817	1	2,100,645	770,099,672	12,106,726,116



Single Discount Rate Development

Present Values of Projected Benefits

Ending December 31 for 2023 to 2072

Year	Projected Beginning 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	\$ 171,342,914	\$ 13,333,785	\$ 13,333,785	\$ 0	\$ 12,902,320	\$ 0	\$ 12,902,320
2024	188,587,305	13,763,982	13,763,982	0	12,470,596	0	12,470,596
2025	194,378,508	14,235,777	14,235,777	0	12,076,833	0	12,076,833
2026	200,405,348	14,613,199	14,613,199	0	11,607,693	0	11,607,693
2027	206,313,717	14,978,139	14,978,139	0	11,140,052	0	11,140,052
2028	212,116,521	15,439,565	15,439,565	0	10,752,097	0	10,752,097
2029	217,683,412	15,952,049	15,952,049	0	10,401,676	0	10,401,676
2030	222,930,349	16,384,163	16,384,163	0	10,003,221	0	10,003,221
2031	227,927,771	16,840,450	16,840,450	0	9,627,157	0	9,627,157
2032	232,626,151	17,324,682	17,324,682	0	9,273,387	0	9,273,387
2033	236,984,773	17,758,093	17,758,093	0	8,900,167	0	8,900,167
2034	241,033,931	18,252,398	18,252,398	0	8,565,457	0	8,565,457
2035	244,692,716	18,762,041	18,762,041	0	8,244,027	0	8,244,027
2036	247,922,037	19,267,340	19,267,340	0	7,927,018	0	7,927,018
2037	250,695,367	19,694,606	19,694,606	0	7,586,896	0	7,586,896
2038	253,079,716	20,048,643	20,048,643	0	7,231,536	0	7,231,536
2039	255,139,940	20,466,077	20,466,077	0	6,912,083	0	6,912,083
2040	256,784,631	20,907,971	20,907,971	0	6,611,728	0	6,611,728
2041	257,964,594	21,186,810	21,186,810	0	6,273,319	0	6,273,319
2042	258,841,302	21,450,760	21,450,760	0	5,947,073	0	5,947,073
2043	259,417,793	21,730,668	21,730,668	0	5,641,082	0	5,641,082
2044	259,652,012	21,970,589	21,970,589	0	5,340,228	0	5,340,228
2045	259,562,424	22,164,341	22,164,341	0	5,044,308	0	5,044,308
2046	259,183,597	22,326,949	22,326,949	0	4,757,786	0	4,757,786
2047	258,533,305	22,472,923	22,472,923	0	4,483,982	0	4,483,982
2048	257,616,027	22,535,309	22,535,309	0	4,210,140	0	4,210,140
2049	256,519,399	22,540,894	22,540,894	0	3,943,056	0	3,943,056
2050	255,307,324	22,498,298	22,498,298	0	3,685,023	0	3,685,023
2051	254,030,885	22,379,982	22,379,982	0	3,432,251	0	3,432,251
2052	252,777,694	22,183,358	22,183,358	0	3,185,483	0	3,185,483
2053	251,646,873	21,912,281	21,912,281	0	2,946,215	0	2,946,215
2054	250,747,974	21,611,830	21,611,830	0	2,720,803	0	2,720,803
2055	250,135,866	21,275,743	21,275,743	0	2,507,951	0	2,507,951
2056	249,876,732	20,889,015	20,889,015	0	2,305,584	0	2,305,584
2057	250,063,641	20,467,453	20,467,453	0	2,115,220	0	2,115,220
2058	250,773,333	20,011,251	20,011,251	0	1,936,399	0	1,936,399
2059	252,088,200	19,526,061	19,526,061	0	1,769,147	0	1,769,147
2060	254,088,044	19,007,966	19,007,966	0	1,612,552	0	1,612,552
2061	256,864,233	18,462,136	18,462,136	0	1,466,522	0	1,466,522
2062	260,507,225	17,888,975	17,888,975	0	1,330,519	0	1,330,519
2063	265,113,615	17,293,235	17,293,235	0	1,204,316	0	1,204,316
2064	270,780,569	16,683,475	16,683,475	0	1,087,876	0	1,087,876
2065	277,600,619	16,067,868	16,067,868	0	981,025	0	981,025
2066	285,661,561	15,447,131	15,447,131	0	883,077	0	883,077
2067	295,056,544	14,822,073	14,822,073	0	793,393	0	793,393
2068	305,884,379	14,193,575	14,193,575	0	711,377	0	711,377
2069	318,249,795	13,562,576	13,562,576	0	636,471	0	636,471
2070	332,263,755	12,930,135	12,930,135	0	568,157	0	568,157
2071	348,043,780	12,297,296	12,297,296	0	505,946	0	505,946
2072	365,714,431	11,665,067	11,665,067	0	449,376	0	449,376



Single Discount Rate Development

Present Values of Projected Benefits

Ending December 31 for 2073 to 2122 (concluded)

Year	Projected Beginning 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)
2073	\$ 385,407,802	\$ 11,034,576	\$ 11,034,576	\$ 0	\$ 398,022	\$ 0	\$ 398,022
2074	407,263,894	10,406,939	10,406,939	0	351,482	0	351,482
2075	431,431,182	9,783,302	9,783,302	0	309,382	0	309,382
2076	458,067,173	9,164,882	9,164,882	0	271,372	0	271,372
2077	487,338,918	8,553,045	8,553,045	0	237,131	0	237,131
2078	519,423,501	7,949,510	7,949,510	0	206,365	0	206,365
2079	554,508,366	7,356,115	7,356,115	0	178,802	0	178,802
2080	592,791,927	6,774,771	6,774,771	0	154,187	0	154,187
2081	634,484,214	6,207,673	6,207,673	0	132,285	0	132,285
2082	679,807,387	5,657,043	5,657,043	0	112,876	0	112,876
2083	728,996,537	5,125,105	5,125,105	0	95,751	0	95,751
2084	782,300,590	4,614,181	4,614,181	0	80,717	0	80,717
2085	839,983,137	4,126,473	4,126,473	0	67,589	0	67,589
2086	902,323,558	3,664,127	3,664,127	0	56,195	0	56,195
2087	969,618,162	3,229,035	3,229,035	0	46,369	0	46,369
2088	1,042,181,599	2,822,650	2,822,650	0	37,952	0	37,952
2089	1,120,348,548	2,446,258	2,446,258	0	30,797	0	30,797
2090	1,204,475,264	2,100,784	2,100,784	0	24,764	0	24,764
2091	1,294,941,418	1,786,671	1,786,671	0	19,720	0	19,720
2092	1,392,152,207	1,503,978	1,503,978	0	15,543	0	15,543
2093	1,496,540,470	1,252,321	1,252,321	0	12,118	0	12,118
2094	1,608,569,042	1,030,864	1,030,864	0	9,340	0	9,340
2095	1,728,733,277	838,329	838,329	0	7,112	0	7,112
2096	1,857,563,713	673,069	673,069	0	5,347	0	5,347
2097	1,995,628,859	533,119	533,119	0	3,965	0	3,965
2098	2,143,538,108	416,241	416,241	0	2,899	0	2,899
2099	2,301,944,801	320,060	320,060	0	2,087	0	2,087
2100	2,471,549,364	242,156	242,156	0	1,479	0	1,479
2101	2,653,102,555	180,104	180,104	0	1,030	0	1,030
2102	2,847,408,893	131,542	131,542	0	704	0	704
2103	3,055,330,253	94,247	94,247	0	472	0	472
2104	3,277,789,630	66,173	66,173	0	311	0	311
2105	3,515,775,113	45,481	45,481	0	200	0	200
2106	3,770,344,105	30,568	30,568	0	126	0	126
2107	4,042,627,801	20,069	20,069	0	77	0	77
2108	4,333,835,963	12,856	12,856	0	46	0	46
2109	4,645,262,023	8,029	8,029	0	27	0	27
2110	4,978,288,545	4,883	4,883	0	15	0	15
2111	5,334,393,090	2,891	2,891	0	9	0	9
2112	5,715,154,498	1,664	1,664	0	5	0	5
2113	6,122,259,634	931	931	0	2	0	2
2114	6,557,510,628	507	507	0	1	0	1
2115	7,022,832,625	268	268	0	1	0	1
2116	7,520,282,092	138	138	0	0	0	0
2117	8,052,055,713	70	70	0	0	0	0
2118	8,620,499,895	34	34	0	0	0	0
2119	9,228,120,946	16	16	0	0	0	0
2120	9,877,595,932	8	8	0	0	0	0
2121	10,571,784,299	3	3	0	0	0	0
2122	11,313,740,274	1	1	0	0	0	0
Totals					\$ 259,584,276	\$ 0	\$ 259,584,276



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	The total pension expense is the sum of the following items that are recognized at the end of the employer’s fiscal year: <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.