

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, 2022





March 22, 2023

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, 2022 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 again 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.

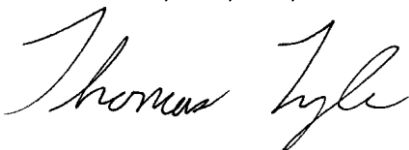
Paul T. Wood, Thomas A. Lyle, and Dana Woolfrey are members of the American Academy of Actuaries (MAAA) and are experienced in performing valuations for public retirement systems. These actuaries meet the Academy's Qualification Standards to render the actuarial opinions contained herein. The signing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

Respectfully submitted,

Gabriel, Roeder, Smith & Company



By _____
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Thomas A. Lyle, FSA, EA, FCA, MAAA



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SECTION A

EXECUTIVE SUMMARY

Executive Summary as of December 31, 2022

	2022
Actuarial Valuation Date	January 1, 2022
Measurement Date of the Net Pension Liability	December 31, 2022
Employer's Fiscal Year Ending Date (Reporting Date)	December 31, 2022

Membership

Number of	
- Retirees and Beneficiaries	365
- Inactive, Nonretired Members	101
- Active Members	298
- Total	764
Covered Payroll	\$ 23,495,253

Net Pension Liability

Total Pension Liability	\$ 214,778,109
Plan Fiduciary Net Position	171,342,914
Net Pension Liability	\$ 43,435,195
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	79.78 %
Net Pension Liability as a Percentage of Covered Payroll	184.87 %

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*	4.05 %
Last year ending December 31 in the 2022 to 2121 projection period for which projected benefit payments are fully funded	2121

Total Pension Expense \$ 718,305

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	\$ 641,800	\$ 2,072,942
Changes in assumptions	2,350,812	544,284
Net difference between projected and actual earnings on pension plan investments	20,603,951	15,587,616
Total	\$ 23,596,563	\$ 18,204,842

**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, 2022. 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, 2022.

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 2121. 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, 2022 and rolled forward to the measurement date of December 31, 2022.



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 4.05% (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, 2022

A. Expense

1. Service Cost	\$	5,072,114
2. Interest on the Total Pension Liability		13,942,597
3. Current-Period Benefit Changes		0
4. Employee Contributions (made negative for addition here)		(4,230,269)
5. Projected Earnings on Plan Investments (made negative for addition here)		(12,733,131)
6. Pension Plan Administrative Expense		174,222
7. Other Changes in Plan Fiduciary Net Position		11,017
8. Recognition of Outflow (Inflow) of Resources due to Liabilities		(2,015,929)
9. Recognition of Outflow (Inflow) of Resources due to Assets		497,684
10. Total Pension Expense	\$	718,305 *

* 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, 2022

A. Outflows (Inflows) of Resources due to Liabilities

1. Difference between expected and actual experience of the Total Pension Liability (gains) or losses	\$ (524,759)
2. Assumption Changes (gains) or losses	\$ 0
3. Recognition period for Liabilities: Average of the expected remaining service lives of all employees {in years}	4.3983
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	\$ (119,310)
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	<u>\$ (119,310)</u>
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	\$ (405,449)
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	<u>\$ (405,449)</u>

B. Outflows (Inflows) of Resources due to Assets

1. Net difference between projected and actual earnings on pension plan investments (gains) or losses	\$ 25,754,939
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	\$ 5,150,988
4. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Assets	\$ 20,603,951



History of Deferred Outflows and Inflows of Resources by Source

Fiscal Year Ended December 31, 2022

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		Deferred Net (Inflows)/Outflows at Measurement Date
	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total	
Total	\$ -	\$ (1,821,706)	\$ 62,315	\$ (4,722,830)	\$ (2,017,522)	\$ 1,453,141	\$ 2,116,116	\$ (2,876,961)	\$ (524,759)	\$ (8,332,206)	
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)	(163,340)	\$ (1,431,142)
2024	-	-	-	-	-	-	81,096	(604,734)	(119,310)	(642,948)	
2025	-	-	-	-	-	-	-	(458,025)	(119,310)	(577,335)	
2026	-	-	-	-	-	-	-	-	(47,519)	(47,519)	
2027	-	-	-	-	-	-	-	-	-	-	
Thereafter	-	-	-	-	-	-	-	-	-	-	
Total	\$ -	\$ (1,821,706)	\$ 62,315	\$ (4,722,830)	\$ (2,017,522)	\$ 1,453,141	\$ 2,116,116	\$ (2,876,961)	\$ (524,759)	\$ (8,332,206)	

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		Deferred Net (Inflows)/Outflows at Measurement Date
	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total	
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	6,658,183
2016	-	6,658,183	(1,044,433)	-	-	-	-	-	-	5,613,750	5,613,750
2017	-	6,658,183	(1,044,433)	(5,130,678)	-	-	-	-	-	483,072	483,072
2018	-	6,658,183	(1,044,433)	(5,130,678)	3,087,469	-	-	-	-	3,570,541	3,570,541
2019	-	5,902,481	(1,044,433)	(5,130,678)	3,087,469	(3,670,143)	-	-	-	(855,304)	(855,304)
2020	-	-	(1,010,594)	(5,130,678)	3,087,469	(3,670,143)	-	-	-	(6,723,946)	(6,723,946)
2021	-	-	-	(2,423,732)	3,087,469	(3,670,143)	-	852,546	-	(2,153,860)	(2,153,860)
2022	-	-	-	-	787,613	(3,670,143)	-	852,546	-	(2,029,984)	(2,029,984)
2023	-	-	-	-	-	(544,284)	-	852,546	-	308,262	\$ 1,806,528
2024	-	-	-	-	-	-	-	852,546	-	852,546	
2025	-	-	-	-	-	-	-	645,720	-	645,720	
2026	-	-	-	-	-	-	-	-	-	-	
2027	-	-	-	-	-	-	-	-	-	-	
Thereafter	-	-	-	-	-	-	-	-	-	-	
Total	\$ -	\$ 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, 2022 (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		Deferred Net (Inflows)/Outflows at Measurement Date
	2014	2015	2016	2017	2018	2019	2020	2021	2022	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	\$ 8,541,173		
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	(2,442,894)	\$	5,016,335
2024	-	-	-	-	-	-	(1,091,574)	(3,451,081)	5,150,988	608,333		
2025	-	-	-	-	-	-	-	(3,451,079)	5,150,988	1,699,909		
2026	-	-	-	-	-	-	-	-	5,150,987	5,150,987		
2027	-	-	-	-	-	-	-	-	-	-		
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	\$ 8,541,173		

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

	2014	2015	2016	2017	2018	2019	2020	2021	2022	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	\$ 6,577,947		
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	(2,297,972)	\$	5,391,721
2024	-	-	-	-	-	-	(1,010,478)	(3,203,269)	5,031,678	817,931		
2025	-	-	-	-	-	-	-	(3,263,384)	5,031,678	1,768,294		
2026	-	-	-	-	-	-	-	-	5,103,468	5,103,468		
2027	-	-	-	-	-	-	-	-	-	-		
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	\$ 6,577,947		



Statement of Outflows and Inflows Arising from Current and Prior Reporting Periods Fiscal Year Ended December 31, 2022

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	\$ 2,499,212	\$ 4,515,141	\$ (2,015,929)
2. Due to Assets	8,091,564	7,593,880	497,684
3. Total	\$ 10,590,776	\$ 12,109,021	\$ (1,518,245)

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	\$ 859,053	\$ 844,998	\$ 14,055
2. Assumption Changes	1,640,159	3,670,143	(2,029,984)
3. Net Difference between projected and actual earnings on pension plan investments	8,091,564	7,593,880	497,684
4. Total	\$ 10,590,776	\$ 12,109,021	\$ (1,518,245)

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	\$ 641,800	\$ 2,072,942	\$ (1,431,142)
2. Assumption Changes	2,350,812	544,284	1,806,528
3. Net Difference between projected and actual earnings on pension plan investments	20,603,951	15,587,616	5,016,335
4. Total	\$ 23,596,563	\$ 18,204,842	\$ 5,391,721

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
2023	\$ (2,297,972)
2024	817,931
2025	1,768,294
2026	5,103,468
2027	0
Thereafter	0
Total	\$ 5,391,721



Statement of Fiduciary Net Position as of December 31, 2022

	2022
Assets	
Cash and Deposits	\$ 8,258,079
Receivables	
Accounts Receivable - Sale of Investments	\$ 74,924
Accrued Interest and Other Dividends	315,075
Contributions	323
Accounts Receivable - Other	10,407,830
Total Receivables	\$ 10,798,152
Investments	
Fixed Income	\$ 27,851,939
Equities	81,864,400
Private Markets	22,379,191
Marketable Alternatives	31,317,433
Security Lending Collateral	8,136,352
Capital Assets, at Cost, Net of Accumulated Depreciation	53,322
Total Investments	\$ 171,602,637
Total Assets	\$ 190,658,868
Liabilities	
Payables	
Accounts Payable - Purchase of Investments	\$ 19,066,077
Accrued Expenses	249,877
Accounts Payable - Other	0
Total Liabilities	\$ 19,315,954
Net Position Restricted for Pensions	\$ 171,342,914



Statement of Changes in Fiduciary Net Position for Year Ended December 31, 2022

	2022
Additions	
Contributions	
Employer	\$ 3,591,807
Employee	3,514,564
Other Employer Contributions	23,673
Other Employee Contributions	715,705
Total Contributions	\$ 7,845,749
Investment Income	
Net Appreciation in Fair Value of Investments	\$ (15,309,223)
Interest and Dividends	3,401,929
Less Investment Expense	(1,114,514)
Net Investment Income	\$ (13,021,808)
Other	\$ 0
Total Additions	\$ (5,176,059)
Deductions	
Benefit Payments, including Refunds of Employee Contributions	\$ 13,341,487
Pension Plan Administrative Expense	174,222
Other	11,017
Total Deductions	\$ 13,526,726
Net Increase in Net Position	\$ (18,702,785)
Net Position Restricted for Pensions	
Beginning of Year	\$ 190,045,699
End of Year	\$ 171,342,914



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, 2022

A. Total pension liability	
1. Service cost	\$ 5,072,114
2. Interest on the total pension liability	13,942,597
3. Changes of benefit terms	0
4. Difference between expected and actual experience of the total pension liability	(524,759)
5. Changes of assumptions	0
6. Benefit payments, including refunds of employee contributions	(13,341,487)
7. Net change in total pension liability	5,148,465
8. Total pension liability – beginning	209,629,644
9. Total pension liability – ending	\$ 214,778,109
B. Plan fiduciary net position	
1. Contributions – employer	\$ 3,615,480
2. Contributions – employee	4,230,269
3. Net investment income	(13,021,808)
4. Benefit payments	(12,572,407)
5. Refunds	(769,080)
6. Pension plan administrative expense	(174,222)
7. Other	(11,017)
8. Net change in plan fiduciary net position	(18,702,785)
9. Plan fiduciary net position – beginning	190,045,699
10. Plan fiduciary net position – ending	\$ 171,342,914
C. Net pension liability	\$ 43,435,195
D. Plan fiduciary net position as a percentage of the total pension liability	79.78 %
E. Covered-employee payroll	\$ 23,495,253
F. Net pension liability as a percentage of covered-employee payroll	184.87 %



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,	2022	2021	2020	2019	2018	2017	2016	2015	2014
Total pension liability									
Service cost	\$ 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	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	0	0	0	0	0	0	0	0	0
Difference between expected and actual experience	(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	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	(13,341,487)	(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	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	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)	<u>\$ 214,778,109</u>	<u>\$ 209,629,644</u>	<u>\$ 201,538,831</u>	<u>\$ 192,847,885</u>	<u>\$ 200,304,268</u>	<u>\$ 182,632,958</u>	<u>\$ 203,713,111</u>	<u>\$ 198,714,353</u>	<u>\$ 158,023,008</u>
Plan fiduciary net position									
Employer contributions	\$ 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	4,230,269	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	(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	(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	(769,080)	(108,604)	(367,992)	(288,795)	(351,230)	(509,361)	(323,328)	(120,906)	(368,093)
Pension plan administrative expense	(174,222)	(161,144)	(149,733)	(138,770)	(139,377)	(128,991)	(114,832)	(95,918)	(96,479)
Other	(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	(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	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)	<u>\$ 171,342,914</u>	<u>\$ 190,045,699</u>	<u>\$ 166,211,709</u>	<u>\$ 154,294,266</u>	<u>\$ 133,269,459</u>	<u>\$ 141,608,716</u>	<u>\$ 127,386,503</u>	<u>\$ 121,352,880</u>	<u>\$ 124,821,143</u>
Net pension liability - ending (a) - (b)	<u>\$ 43,435,195</u>	<u>\$ 19,583,945</u>	<u>\$ 35,327,122</u>	<u>\$ 38,553,619</u>	<u>\$ 67,034,809</u>	<u>\$ 41,024,242</u>	<u>\$ 76,326,608</u>	<u>\$ 77,361,473</u>	<u>\$ 33,201,865</u>
Plan fiduciary net position as a percentage of total pension liability	79.78 %	90.66 %	82.47 %	80.01 %	66.53 %	77.54 %	62.53 %	61.07 %	78.99 %
Covered-employee payroll	\$ 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	\$ 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	184.87 %	80.92 %	146.74 %	166.76 %	290.66 %	173.53 %	322.92 %	348.52 %	152.18 %

Notes to Schedule:

For 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 %

* 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 %

* 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, 2022
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	26 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 There were no benefit changes during the year.
The employer is contributing at the rate of 14.88% of salary.
Employees are contributing at the rate of 14.56% of salary.
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)%

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 4.05%. 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 2121. 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%
\$ 70,115,683	\$ 43,435,195	\$ 21,372,297

Summary of Population Statistics

Inactive Plan Members or Beneficiaries Currently Receiving Benefits	365
Inactive Plan Members Entitled to But Not Yet Receiving Benefits	101
Active Plan Members	<u>298</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.
Employer	14.88% of salary.
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. 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, 2022 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 2022 using the MP-2020 Ultimate Scale					
	Male	Female	Male	Female	Male	Female
20	0.03%	0.01%	0.03%	0.01%	0.10%	0.05%
25	0.03%	0.02%	0.03%	0.02%	0.09%	0.06%
30	0.03%	0.02%	0.03%	0.02%	0.10%	0.08%
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%	0.21%	0.19%
50	0.10%	0.08%	0.16%	0.13%	0.30%	0.26%
55	0.15%	0.10%	0.26%	0.22%	0.41%	0.39%
60	0.22%	0.14%	0.43%	0.38%	0.62%	0.59%
65	0.35%	0.19%	0.75%	0.66%	1.01%	0.91%
70	0.66%	0.39%	1.35%	1.14%	1.64%	1.39%
75			2.45%	1.99%	2.81%	2.12%
80			4.47%	3.47%	4.90%	3.47%
85			8.23%	6.16%	8.30%	6.16%
90			14.70%	10.95%	14.70%	10.95%
95			22.73%	18.07%	22.73%	18.07%
100			31.45%	27.16%	31.45%	27.16%

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. No surviving spouse will remarry.
- i. Administrative expenses: Average of actual expenses for the prior two years, with each year projected at 2.50% to the valuation date.
- j. Pay increase timing: Beginning of (fiscal) year. This is equivalent to assuming that reported pay represents amount paid to members during the year ended on the valuation date.
- k. Decrement timing: Decrements of all types are assumed to occur mid-year.
- l. Eligibility testing: Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.
- m. Decrement relativity: Decrement rates are converted to probabilities in order to account for multiple decrements.
- n. Incidence of contributions: Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in the report, and the actual payroll payable at the time contributions are made.
- o. Benefit service: All members are assumed to accrue one year of service each year.

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 4.05%; 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 2022 to 2071

Year	Payroll for Current		Payroll for Future	Total Employee	Contributions from	Employer	Employer Contributions	Total Contributions
	Employees	Employees	Employees	Payroll	Current Employees	Contributions for Current Employees	Related to Payroll of Future Employees	
	(a)	(b)=max(0,(c)-(a))	(c)	(d)	(e)=(a)*ER%	(f) = (b)*netER%	(g)=(d)+(e)+(f)	
2022	\$ 23,655,255	\$ 427,379	\$ 24,082,634	\$ 4,230,269	\$ 3,579,244	\$ 36,236	\$ 7,845,749	
2023	22,931,718	1,752,982	24,684,700	3,338,858	3,435,171	150,384	6,924,413	
2024	22,146,973	3,154,845	25,301,818	3,224,599	3,313,187	270,707	6,808,493	
2025	21,311,670	4,622,693	25,934,363	3,102,979	3,186,095	397,128	6,686,202	
2026	20,535,068	6,047,654	26,582,722	2,989,906	3,065,886	519,480	6,575,272	
2027	19,784,862	7,462,428	27,247,290	2,880,676	2,951,901	641,632	6,474,209	
2028	18,956,679	8,971,793	27,928,472	2,760,092	2,828,336	773,206	6,361,634	
2029	18,078,946	10,547,738	28,626,684	2,632,295	2,695,571	910,645	6,238,511	
2030	17,237,726	12,104,625	29,342,351	2,509,813	2,568,421	1,047,413	6,125,647	
2031	16,381,639	13,694,271	30,075,910	2,385,167	2,440,864	1,189,680	6,015,711	
2032	15,518,008	15,309,800	30,827,808	2,259,422	2,310,631	1,333,837	5,903,890	
2033	14,671,242	16,927,261	31,598,503	2,136,133	2,184,548	1,481,036	5,801,717	
2034	13,820,296	18,568,170	32,388,466	2,012,235	2,057,842	1,631,323	5,701,400	
2035	12,977,924	20,220,254	33,198,178	1,889,586	1,932,413	1,783,979	5,605,978	
2036	12,115,779	21,912,353	34,028,132	1,764,057	1,804,040	1,940,954	5,509,051	
2037	11,310,055	23,568,780	34,878,835	1,646,744	1,682,936	2,093,527	5,423,207	
2038	10,546,256	25,204,550	35,750,806	1,535,535	1,569,283	2,247,523	5,352,341	
2039	9,751,961	26,892,615	36,644,576	1,419,886	1,451,092	2,407,253	5,278,231	
2040	8,955,264	28,605,426	37,560,690	1,303,886	1,332,543	2,569,807	5,206,236	
2041	8,221,306	30,278,401	38,499,707	1,197,022	1,223,330	2,730,000	5,150,352	
2042	7,507,214	31,954,986	39,462,200	1,093,054	1,117,073	2,891,425	5,101,548	
2043	6,787,223	33,661,532	40,448,755	988,220	1,009,939	3,056,479	5,054,638	
2044	6,069,224	35,390,750	41,459,974	883,679	903,101	3,224,125	5,010,905	
2045	5,385,286	37,111,187	42,496,473	784,098	801,331	3,391,753	4,977,182	
2046	4,716,146	38,842,739	43,558,885	686,671	701,763	3,560,908	4,949,342	
2047	4,069,163	40,578,694	44,647,857	592,470	605,491	3,730,731	4,928,692	
2048	3,486,668	42,277,385	45,764,053	507,659	518,816	3,897,544	4,924,019	
2049	2,949,589	43,958,565	46,908,154	429,460	438,899	4,063,037	4,931,396	
2050	2,450,964	45,629,894	48,080,858	356,860	364,703	4,227,445	4,949,008	
2051	1,983,542	47,299,337	49,282,879	288,804	295,151	4,391,726	4,975,681	
2052	1,557,463	48,957,488	50,514,951	226,767	231,750	4,554,403	5,012,920	
2053	1,211,964	50,565,861	51,777,825	176,462	180,340	4,712,348	5,069,150	
2054	901,688	52,170,583	53,072,271	131,286	134,171	4,869,458	5,134,915	
2055	641,238	53,757,840	54,399,078	93,364	95,416	5,023,951	5,212,731	
2056	434,420	55,324,635	55,759,055	63,252	64,642	5,175,895	5,303,789	
2057	266,126	56,886,905	57,153,031	38,748	39,600	5,326,197	5,404,545	
2058	146,074	58,435,783	58,581,857	21,268	21,736	5,474,425	5,517,429	
2059	64,338	59,982,065	60,046,403	9,368	9,573	5,621,369	5,640,310	
2060	24,386	61,523,177	61,547,563	3,551	3,629	5,767,124	5,774,304	
2061	5,326	63,080,926	63,086,252	776	793	5,913,737	5,915,306	
2062	0	64,663,408	64,663,408	0	0	6,062,261	6,062,261	
2063	0	66,279,993	66,279,993	0	0	6,213,813	6,213,813	
2064	0	67,936,993	67,936,993	0	0	6,369,111	6,369,111	
2065	0	69,635,418	69,635,418	0	0	6,528,295	6,528,295	
2066	0	71,376,303	71,376,303	0	0	6,691,484	6,691,484	
2067	0	73,160,711	73,160,711	0	0	6,858,774	6,858,774	
2068	0	74,989,729	74,989,729	0	0	7,030,280	7,030,280	
2069	0	76,864,472	76,864,472	0	0	7,206,105	7,206,105	
2070	0	78,786,084	78,786,084	0	0	7,386,353	7,386,353	
2071	0	80,755,736	80,755,736	0	0	7,571,144	7,571,144	



Single Discount Rate Development Projection of Contributions Ending December 31 for 2072 to 2121 (concluded)

Year	Payroll for Current		Total Employee Payroll	Contributions from Current Employees	Employer		Employer Contributions Related to Payroll of Future Employees	Total Contributions
	Employees	Employees			Current Employees	Current Employees		
	(a)	(b)=max(0,(c)-(a))	(c)	(d)	(e)=(a)*ER%	(f) = (b)*netER%	(g)=(d)+(e)+(f)	
2072	\$ 0	\$ 93,651,896	\$ 93,651,896	\$ 0	\$ 0	\$ 8,781,351	\$ 8,781,351	
2073	0	95,993,193	95,993,193	0	0	9,001,011	9,001,011	
2074	0	98,393,023	98,393,023	0	0	9,226,133	9,226,133	
2075	0	100,852,849	100,852,849	0	0	9,456,842	9,456,842	
2076	0	103,374,170	103,374,170	0	0	9,693,276	9,693,276	
2077	0	105,958,524	105,958,524	0	0	9,935,580	9,935,580	
2078	0	108,607,487	108,607,487	0	0	10,183,912	10,183,912	
2079	0	111,322,674	111,322,674	0	0	10,438,429	10,438,429	
2080	0	114,105,741	114,105,741	0	0	10,699,295	10,699,295	
2081	0	116,958,385	116,958,385	0	0	10,966,678	10,966,678	
2082	0	119,882,345	119,882,345	0	0	11,240,744	11,240,744	
2083	0	122,879,404	122,879,404	0	0	11,521,663	11,521,663	
2084	0	125,951,389	125,951,389	0	0	11,809,610	11,809,610	
2085	0	129,100,174	129,100,174	0	0	12,104,763	12,104,763	
2086	0	132,327,678	132,327,678	0	0	12,407,312	12,407,312	
2087	0	135,635,870	135,635,870	0	0	12,717,437	12,717,437	
2088	0	139,026,767	139,026,767	0	0	13,035,328	13,035,328	
2089	0	142,502,436	142,502,436	0	0	13,361,179	13,361,179	
2090	0	146,064,997	146,064,997	0	0	13,695,188	13,695,188	
2091	0	149,716,622	149,716,622	0	0	14,037,561	14,037,561	
2092	0	153,459,538	153,459,538	0	0	14,388,503	14,388,503	
2093	0	157,296,026	157,296,026	0	0	14,748,231	14,748,231	
2094	0	161,228,427	161,228,427	0	0	15,116,960	15,116,960	
2095	0	165,259,138	165,259,138	0	0	15,494,914	15,494,914	
2096	0	169,390,616	169,390,616	0	0	15,882,321	15,882,321	
2097	0	173,625,381	173,625,381	0	0	16,279,416	16,279,416	
2098	0	177,966,016	177,966,016	0	0	16,686,441	16,686,441	
2099	0	182,415,166	182,415,166	0	0	17,103,642	17,103,642	
2100	0	186,975,545	186,975,545	0	0	17,531,273	17,531,273	
2101	0	191,649,934	191,649,934	0	0	17,969,593	17,969,593	
2102	0	196,441,182	196,441,182	0	0	18,418,868	18,418,868	
2103	0	201,352,212	201,352,212	0	0	18,879,370	18,879,370	
2104	0	206,386,017	206,386,017	0	0	19,351,380	19,351,380	
2105	0	211,545,667	211,545,667	0	0	19,835,184	19,835,184	
2106	0	216,834,309	216,834,309	0	0	20,331,077	20,331,077	
2107	0	222,255,167	222,255,167	0	0	20,839,360	20,839,360	
2108	0	227,811,546	227,811,546	0	0	21,360,343	21,360,343	
2109	0	233,506,835	233,506,835	0	0	21,894,345	21,894,345	
2110	0	239,344,506	239,344,506	0	0	22,441,692	22,441,692	
2111	0	245,328,119	245,328,119	0	0	23,002,718	23,002,718	
2112	0	251,461,322	251,461,322	0	0	23,577,766	23,577,766	
2113	0	257,747,855	257,747,855	0	0	24,167,188	24,167,188	
2114	0	264,191,551	264,191,551	0	0	24,771,344	24,771,344	
2115	0	270,796,340	270,796,340	0	0	25,390,605	25,390,605	
2116	0	277,566,249	277,566,249	0	0	26,025,349	26,025,349	
2117	0	284,505,405	284,505,405	0	0	83,758,391	83,758,391	
2118	0	291,618,040	291,618,040	0	0	85,852,351	85,852,351	
2119	0	298,908,491	298,908,491	0	0	87,998,660	87,998,660	
2120	0	306,381,203	306,381,203	0	0	90,198,626	90,198,626	
2121	0	314,040,733	314,040,733	0	0	92,453,592	92,453,592	



Single Discount Rate Development Projection of Plan Net Position Ending December 31 for 2022 to 2071

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)
2022	\$ 190,045,699	\$ 7,845,749	\$ 13,341,487	\$ 185,239	\$ (13,021,808)	\$ 171,342,914
2023	171,342,914	6,924,413	12,822,876	172,793	11,448,290	176,719,949
2024	176,719,949	6,808,493	13,291,084	177,113	11,794,250	181,854,495
2025	181,854,495	6,686,202	13,781,295	181,541	12,122,769	186,700,630
2026	186,700,630	6,575,272	14,192,286	186,079	12,434,701	191,332,238
2027	191,332,238	6,474,209	14,594,508	190,731	12,732,664	195,753,872
2028	195,753,872	6,361,634	15,117,755	195,499	13,011,914	199,814,166
2029	199,814,166	6,238,511	15,659,650	200,387	13,265,611	203,458,251
2030	203,458,251	6,125,647	16,104,732	205,396	13,494,583	206,768,354
2031	206,768,354	6,015,711	16,568,398	210,531	13,700,317	209,705,453
2032	209,705,453	5,903,890	17,057,637	215,795	13,879,764	212,215,674
2033	212,215,674	5,801,717	17,508,528	221,190	14,031,783	214,319,456
2034	214,319,456	5,701,400	17,976,641	226,719	14,155,647	215,973,143
2035	215,973,143	5,605,978	18,465,722	232,387	14,248,362	217,129,374
2036	217,129,374	5,509,051	18,971,945	238,197	14,306,621	217,734,905
2037	217,734,905	5,423,207	19,413,010	244,152	14,329,978	217,830,928
2038	217,830,928	5,352,341	19,771,395	250,256	14,321,949	217,483,566
2039	217,483,566	5,278,231	20,194,755	256,512	14,281,483	216,592,013
2040	216,592,013	5,206,236	20,638,212	262,925	14,203,406	215,100,519
2041	215,100,519	5,150,352	20,946,542	269,498	14,089,585	213,124,416
2042	213,124,416	5,101,548	21,249,328	276,235	13,943,227	210,643,628
2043	210,643,628	5,054,638	21,537,443	283,141	13,763,099	207,640,781
2044	207,640,781	5,010,905	21,791,639	290,220	13,548,706	204,118,533
2045	204,118,533	4,977,182	22,005,271	297,475	13,300,679	200,093,648
2046	200,093,648	4,949,342	22,177,569	304,912	13,020,045	195,580,554
2047	195,580,554	4,928,692	22,308,331	312,535	12,707,836	190,596,216
2048	190,596,216	4,924,019	22,335,857	320,348	12,367,563	185,231,593
2049	185,231,593	4,931,396	22,299,825	328,357	12,003,953	179,538,759
2050	179,538,759	4,949,008	22,199,497	336,566	11,620,509	173,572,214
2051	173,572,214	4,975,681	22,050,822	344,980	11,220,367	167,372,460
2052	167,372,460	5,012,920	21,857,067	353,605	10,806,220	160,980,927
2053	160,980,927	5,069,150	21,592,429	362,445	10,382,030	154,477,232
2054	154,477,232	5,134,915	21,291,581	371,506	9,951,736	147,900,795
2055	147,900,795	5,212,731	20,943,841	380,794	9,518,458	141,307,349
2056	141,307,349	5,303,789	20,549,226	390,313	9,086,027	134,757,626
2057	134,757,626	5,404,545	20,117,609	400,071	8,658,122	128,302,614
2058	128,302,614	5,517,429	19,643,754	410,073	8,238,468	122,004,684
2059	122,004,684	5,640,310	19,134,468	420,325	7,831,006	115,921,206
2060	115,921,206	5,774,304	18,588,369	430,833	7,439,721	110,116,029
2061	110,116,029	5,915,306	18,020,501	441,604	7,068,314	104,637,544
2062	104,637,544	6,062,261	17,436,188	452,644	6,719,862	99,530,834
2063	99,530,834	6,213,813	16,841,727	463,960	6,397,175	94,836,135
2064	94,836,135	6,369,111	16,241,114	475,559	6,102,826	90,591,399
2065	90,591,399	6,528,295	15,634,752	487,448	5,839,387	86,836,881
2066	86,836,881	6,691,484	15,023,202	499,634	5,609,580	83,615,109
2067	83,615,109	6,858,774	14,407,143	512,125	5,416,278	80,970,892
2068	80,970,892	7,030,280	13,787,329	524,928	5,262,505	78,951,420
2069	78,951,420	7,206,105	13,164,585	538,051	5,151,447	77,606,336
2070	77,606,336	7,386,353	12,539,891	551,503	5,086,449	76,987,745
2071	76,987,745	7,571,144	11,914,262	565,290	5,071,025	77,150,362



Single Discount Rate Development

Projection of Plan Net Position

Ending December 31 for 2072 to 2121 (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)
2072	\$ 77,150,362	\$ 7,760,582	\$ 11,288,751	\$ 579,422	\$ 5,108,863	\$ 78,151,634
2073	78,151,634	7,954,778	10,664,533	593,908	5,203,834	80,051,805
2074	80,051,805	8,153,836	10,042,835	608,756	5,359,996	82,914,046
2075	82,914,046	8,357,878	9,424,993	623,975	5,581,604	86,804,560
2076	86,804,560	8,567,011	8,812,390	639,574	5,873,116	91,792,723
2077	91,792,723	8,781,351	8,206,528	655,563	6,239,205	97,951,188
2078	97,951,188	9,001,011	7,609,237	671,952	6,684,752	105,355,762
2079	105,355,762	9,226,133	7,022,408	688,751	7,214,854	114,085,590
2080	114,085,590	9,456,842	6,447,976	705,970	7,834,831	124,223,316
2081	124,223,316	9,693,276	5,888,118	723,619	8,550,235	135,855,091
2082	135,855,091	9,935,580	5,345,017	741,710	9,366,855	149,070,799
2083	149,070,799	10,183,912	4,820,921	760,252	10,290,734	163,964,272
2084	163,964,272	10,438,429	4,318,165	779,259	11,328,178	180,633,455
2085	180,633,455	10,699,295	3,838,964	798,740	12,485,780	199,180,826
2086	199,180,826	10,966,678	3,385,570	818,709	13,770,437	219,713,662
2087	219,713,662	11,240,744	2,960,043	839,176	15,189,380	242,344,568
2088	242,344,568	11,521,663	2,564,078	860,156	16,750,216	267,192,212
2089	267,192,212	11,809,610	2,199,167	881,660	18,460,968	294,381,964
2090	294,381,964	12,104,763	1,866,376	903,701	20,330,133	324,046,783
2091	324,046,783	12,407,312	1,566,268	926,294	22,366,739	356,328,273
2092	356,328,273	12,717,437	1,298,895	949,451	24,580,418	391,377,781
2093	391,377,781	13,035,328	1,063,735	973,187	26,981,485	429,357,673
2094	429,357,673	13,361,179	859,674	997,517	29,581,025	470,442,686
2095	470,442,686	13,695,188	685,077	1,022,455	32,390,980	514,821,323
2096	514,821,323	14,037,561	537,908	1,048,016	35,424,243	562,697,203
2097	562,697,203	14,388,503	415,796	1,074,217	38,694,746	614,290,440
2098	614,290,440	14,748,231	316,137	1,101,072	42,217,551	669,839,013
2099	669,839,013	15,116,960	236,216	1,128,599	46,008,936	729,600,094
2100	729,600,094	15,494,914	173,296	1,156,814	50,086,490	793,851,387
2101	793,851,387	15,882,321	124,711	1,185,734	54,469,190	862,892,453
2102	862,892,453	16,279,416	87,954	1,215,378	59,177,500	937,046,037
2103	937,046,037	16,686,441	60,733	1,245,762	64,233,449	1,016,659,432
2104	1,016,659,432	17,103,642	41,021	1,276,906	69,660,729	1,102,105,876
2105	1,102,105,876	17,531,273	27,075	1,308,829	75,484,787	1,193,786,032
2106	1,193,786,032	17,969,593	17,447	1,341,550	81,732,923	1,292,129,550
2107	1,292,129,550	18,418,868	10,967	1,375,088	88,434,401	1,397,596,764
2108	1,397,596,764	18,879,370	6,720	1,409,465	95,620,564	1,510,680,513
2109	1,510,680,513	19,351,380	4,010	1,444,702	103,324,955	1,631,908,136
2110	1,631,908,136	19,835,184	2,329	1,480,820	111,583,461	1,761,843,631
2111	1,761,843,631	20,331,077	1,317	1,517,840	120,434,454	1,901,090,005
2112	1,901,090,005	20,839,360	724	1,555,786	129,918,955	2,050,291,810
2113	2,050,291,810	21,360,343	388	1,594,681	140,080,811	2,210,137,896
2114	2,210,137,896	21,894,345	202	1,634,548	150,966,875	2,381,364,365
2115	2,381,364,365	22,441,692	103	1,675,412	162,627,216	2,564,757,758
2116	2,564,757,758	23,002,718	51	1,717,297	175,115,329	2,761,158,456
2117	2,761,158,456	23,577,766	25	1,760,229	188,488,371	2,971,464,340
2118	2,971,464,340	24,167,188	12	1,804,235	202,807,411	3,196,634,692
2119	3,196,634,692	24,771,344	5	1,849,341	218,137,690	3,437,694,381
2120	3,437,694,381	25,390,605	2	1,895,574	234,548,912	3,695,738,321
2121	3,695,738,321	26,025,349	1	1,942,964	252,115,541	3,971,936,247



Single Discount Rate Development

Present Values of Projected Benefits

Ending December 31 for 2022 to 2071

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)
2022	\$ 190,045,699	\$ 13,341,487	\$ 13,341,487	\$ 0	\$ 12,909,773	\$ 0	\$ 12,909,773
2023	171,342,914	12,822,876	12,822,876	0	11,617,925	0	11,617,925
2024	176,719,949	13,291,084	13,291,084	0	11,275,408	0	11,275,408
2025	181,854,495	13,781,295	13,781,295	0	10,946,887	0	10,946,887
2026	186,700,630	14,192,286	14,192,286	0	10,555,571	0	10,555,571
2027	191,332,238	14,594,508	14,594,508	0	10,163,600	0	10,163,600
2028	195,753,872	15,117,755	15,117,755	0	9,857,667	0	9,857,667
2029	199,814,166	15,659,650	15,659,650	0	9,560,875	0	9,560,875
2030	203,458,251	16,104,732	16,104,732	0	9,206,570	0	9,206,570
2031	206,768,354	16,568,398	16,568,398	0	8,868,570	0	8,868,570
2032	209,705,453	17,057,637	17,057,637	0	8,549,106	0	8,549,106
2033	212,215,674	17,508,528	17,508,528	0	8,216,375	0	8,216,375
2034	214,319,456	17,976,641	17,976,641	0	7,898,923	0	7,898,923
2035	215,973,143	18,465,722	18,465,722	0	7,597,214	0	7,597,214
2036	217,129,374	18,971,945	18,971,945	0	7,308,507	0	7,308,507
2037	217,734,905	19,413,010	19,413,010	0	7,002,264	0	7,002,264
2038	217,830,928	19,771,395	19,771,395	0	6,677,465	0	6,677,465
2039	217,483,566	20,194,755	20,194,755	0	6,386,187	0	6,386,187
2040	216,592,013	20,638,212	20,638,212	0	6,110,882	0	6,110,882
2041	215,100,519	20,946,542	20,946,542	0	5,807,282	0	5,807,282
2042	213,124,416	21,249,328	21,249,328	0	5,516,130	0	5,516,130
2043	210,643,628	21,537,443	21,537,443	0	5,234,946	0	5,234,946
2044	207,640,781	21,791,639	21,791,639	0	4,959,486	0	4,959,486
2045	204,118,533	22,005,271	22,005,271	0	4,689,238	0	4,689,238
2046	200,093,648	22,177,569	22,177,569	0	4,425,051	0	4,425,051
2047	195,580,554	22,308,331	22,308,331	0	4,167,735	0	4,167,735
2048	190,596,216	22,335,857	22,335,857	0	3,907,189	0	3,907,189
2049	185,231,593	22,299,825	22,299,825	0	3,652,515	0	3,652,515
2050	179,538,759	22,199,497	22,199,497	0	3,404,571	0	3,404,571
2051	173,572,214	22,050,822	22,050,822	0	3,166,451	0	3,166,451
2052	167,372,460	21,857,067	21,857,067	0	2,938,791	0	2,938,791
2053	160,980,927	21,592,429	21,592,429	0	2,718,360	0	2,718,360
2054	154,477,232	21,291,581	21,291,581	0	2,509,818	0	2,509,818
2055	147,900,795	20,943,841	20,943,841	0	2,311,636	0	2,311,636
2056	141,307,349	20,549,226	20,549,226	0	2,123,671	0	2,123,671
2057	134,757,626	20,117,609	20,117,609	0	1,946,690	0	1,946,690
2058	128,302,614	19,643,754	19,643,754	0	1,779,811	0	1,779,811
2059	122,004,684	19,134,468	19,134,468	0	1,623,284	0	1,623,284
2060	115,921,206	18,588,369	18,588,369	0	1,476,550	0	1,476,550
2061	110,116,029	18,020,501	18,020,501	0	1,340,301	0	1,340,301
2062	104,637,544	17,436,188	17,436,188	0	1,214,272	0	1,214,272
2063	99,530,834	16,841,727	16,841,727	0	1,098,195	0	1,098,195
2064	94,836,135	16,241,114	16,241,114	0	991,602	0	991,602
2065	90,591,399	15,634,752	15,634,752	0	893,802	0	893,802
2066	86,836,881	15,023,202	15,023,202	0	804,159	0	804,159
2067	83,615,109	14,407,143	14,407,143	0	722,081	0	722,081
2068	80,970,892	13,787,329	13,787,329	0	647,019	0	647,019
2069	78,951,420	13,164,585	13,164,585	0	578,459	0	578,459
2070	77,606,336	12,539,891	12,539,891	0	515,927	0	515,927
2071	76,987,745	11,914,262	11,914,262	0	458,976	0	458,976



Single Discount Rate Development

Present Values of Projected Benefits

Ending December 31 for 2072 to 2121 (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-.5)	(g)=(e)*vf^(a-.5)	(h)=((c)/(1+SDR))^(a-.5)
2072	\$ 77,150,362	\$ 11,288,751	\$ 11,288,751	\$ 0	\$ 407,190	\$ 0	\$ 407,190
2073	78,151,634	10,664,533	10,664,533	0	360,182	0	360,182
2074	80,051,805	10,042,835	10,042,835	0	317,589	0	317,589
2075	82,914,046	9,424,993	9,424,993	0	279,074	0	279,074
2076	86,804,560	8,812,390	8,812,390	0	244,321	0	244,321
2077	91,792,723	8,206,528	8,206,528	0	213,037	0	213,037
2078	97,951,188	7,609,237	7,609,237	0	184,955	0	184,955
2079	105,355,762	7,022,408	7,022,408	0	159,823	0	159,823
2080	114,085,590	6,447,976	6,447,976	0	137,406	0	137,406
2081	124,223,316	5,888,118	5,888,118	0	117,486	0	117,486
2082	135,855,091	5,345,017	5,345,017	0	99,859	0	99,859
2083	149,070,799	4,820,921	4,820,921	0	84,333	0	84,333
2084	163,964,272	4,318,165	4,318,165	0	70,729	0	70,729
2085	180,633,455	3,838,964	3,838,964	0	58,876	0	58,876
2086	199,180,826	3,385,570	3,385,570	0	48,617	0	48,617
2087	219,713,662	2,960,043	2,960,043	0	39,800	0	39,800
2088	242,344,568	2,564,078	2,564,078	0	32,281	0	32,281
2089	267,192,212	2,199,167	2,199,167	0	25,924	0	25,924
2090	294,381,964	1,866,376	1,866,376	0	20,600	0	20,600
2091	324,046,783	1,566,268	1,566,268	0	16,187	0	16,187
2092	356,328,273	1,298,895	1,298,895	0	12,569	0	12,569
2093	391,377,781	1,063,735	1,063,735	0	9,638	0	9,638
2094	429,357,673	859,674	859,674	0	7,293	0	7,293
2095	470,442,686	685,077	685,077	0	5,442	0	5,442
2096	514,821,323	537,908	537,908	0	4,001	0	4,001
2097	562,697,203	415,796	415,796	0	2,896	0	2,896
2098	614,290,440	316,137	316,137	0	2,061	0	2,061
2099	669,839,013	236,216	236,216	0	1,442	0	1,442
2100	729,600,094	173,296	173,296	0	991	0	991
2101	793,851,387	124,711	124,711	0	668	0	668
2102	862,892,453	87,954	87,954	0	441	0	441
2103	937,046,037	60,733	60,733	0	285	0	285
2104	1,016,659,432	41,021	41,021	0	180	0	180
2105	1,102,105,876	27,075	27,075	0	111	0	111
2106	1,193,786,032	17,447	17,447	0	67	0	67
2107	1,292,129,550	10,967	10,967	0	40	0	40
2108	1,397,596,764	6,720	6,720	0	23	0	23
2109	1,510,680,513	4,010	4,010	0	13	0	13
2110	1,631,908,136	2,329	2,329	0	7	0	7
2111	1,761,843,631	1,317	1,317	0	4	0	4
2112	1,901,090,005	724	724	0	2	0	2
2113	2,050,291,810	388	388	0	1	0	1
2114	2,210,137,896	202	202	0	0	0	0
2115	2,381,364,365	103	103	0	0	0	0
2116	2,564,757,758	51	51	0	0	0	0
2117	2,761,158,456	25	25	0	0	0	0
2118	2,971,464,340	12	12	0	0	0	0
2119	3,196,634,692	5	5	0	0	0	0
2120	3,437,694,381	2	2	0	0	0	0
2121	3,695,738,321	1	1	0	0	0	0
Totals	\$				\$ 251,300,212	\$ 0	\$ 251,300,212



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.