Wyoming Retirement System – Public Employee Plan

GASB Statement Nos. 67 and 68 Accounting and Financial
Reporting for Pensions
For Measurement Date as of December 31, 2022

GRS

March 22, 2023

Board of Trustees
Wyoming Retirement System

Dear Board Members:

This report provides information required by the Wyoming Retirement System (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 Retirement System ("WRS") 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 Retirement System 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 _____
Paul T. Wood, ASA, FCA, MAAA
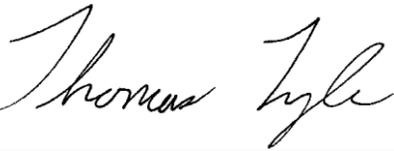
By _____
Thomas A. Lyle, FSA, EA, FCA, MAAA
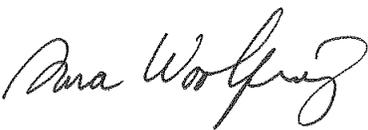
By _____
Dana Woolfrey, FSA, EA, FCA, MAAA

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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	30,226
- Inactive, Nonretired Members	35,416
- Active Members	34,533
- Total	100,175
Covered Payroll	$ 1,805,532,589

Net Pension Liability

Total Pension Liability	$ 11,139,404,858
Plan Fiduciary Net Position	8,406,590,596
Net Pension Liability	$ 2,732,814,262
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	75.47 %
Net Pension Liability as a Percentage of Covered Payroll	151.36 %

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 $ 217,504,897

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	$ 13,704,663	$ 17,323,674
Changes in assumptions	73,342,086	0
Net difference between projected and actual earnings on pension plan investments	1,017,240,279	781,998,591
Total	$ 1,104,287,028	$ 799,322,265

*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 decrease slightly as a percentage of payroll.
2. The unfunded liability is expected to decrease as a percentage of payroll.
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 to increase gradually 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 a 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 Retirement System. 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	$ 210,661,646
2. Interest on the Total Pension Liability	724,623,380
3. Current-Period Benefit Changes	0
4. Employee Contributions (made negative for addition here)	(177,131,721)
5. Projected Earnings on Plan Investments (made negative for addition here)	(627,177,712)
6. Pension Plan Administrative Expense	8,030,528
7. Other Changes in Plan Fiduciary Net Position	544,320
8. Recognition of Outflow (Inflow) of Resources due to Liabilities	55,180,939
9. Recognition of Outflow (Inflow) of Resources due to Assets	22,773,517
10. Total Pension Expense	**$ 217,504,897** *

* 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 — $ (24,730,118)

2. Assumption Changes (gains) or losses — $ 0

3. Recognition period for Liabilities: Average of the expected remaining service lives of all employees {in years} — 3.3390

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 — $ (7,406,444)

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 — $ (7,406,444)

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 — $ (17,323,674)

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 — $ (17,323,674)

B. Outflows (Inflows) of Resources due to Assets

1. Net difference between projected and actual earnings on pension plan investments (gains) or losses — $ 1,271,550,349

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 — $ 254,310,070

4. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Assets — $ 1,017,240,279

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	4.0139	3.9136	3.8583	4.1947	4.0527	3.9563	3.8962	3.4657	3.3390		Deferred Net (Inflows)/Outflows at Measurement Date
	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total	
Total	$ -	$ (66,191,620)	$ (43,790,701)	$ (56,701,091)	$ (49,213,548)	$ (7,044,256)	$ 55,560,847	$ 2,186,282	$ (24,730,118)		
2014	-									-	
2015	-	(16,913,231)								(16,913,231)	
2016	-	(16,913,231)	(11,349,740)							(28,262,971)	
2017	-	(16,913,231)	(11,349,740)	(13,517,317)						(41,780,288)	
2018	-	(15,451,927)	(11,349,740)	(13,517,317)	(12,143,398)					(52,462,382)	
2019	-	-	(9,741,481)	(13,517,317)	(12,143,398)	(1,780,516)				(37,182,712)	
2020	-	-	-	(13,517,317)	(12,143,398)	(1,780,516)	14,260,266			(13,180,965)	
2021	-	-	-	(2,631,823)	(12,143,398)	(1,780,516)	14,260,266	630,834		(1,664,637)	
2022	-	-	-	-	(639,956)	(1,702,708)	14,260,266	630,834	(7,406,444)	5,141,992	
2023	-	-	-	-	-	-	12,780,049	630,834	(7,406,444)	6,004,439	$ (3,619,011)
2024	-	-	-	-	-	-	-	293,780	(7,406,444)	(7,112,664)	
2025	-	-	-	-	-	-	-	-	(2,510,786)	(2,510,786)	
2026	-	-	-	-	-	-	-	-	-	-	
2027	-	-	-	-	-	-	-	-	-	-	
Thereafter	-	-	-	-	-	-	-	-	-	-	
	$ -	$ (66,191,620)	$ (43,790,701)	$ (56,701,091)	$ (49,213,548)	$ (7,044,256)	$ 55,560,847	$ 2,186,282	$ (24,730,118)	$ (189,924,205)	

Assumption changes - Net (inflows)/outflows of resources

Recognition Period	4.0139	3.9136	3.8583	4.1947	4.0527	3.9563	3.8962	3.4657	3.3390		
	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total	
Total	$ -	$ -	$ -	$ 290,801,601	$ -	$ -	$ -	$ 173,419,980	$ -		
2014	-									-	
2015	-	-								-	
2016	-	-	-							-	
2017	-	-	-	69,325,959						69,325,959	
2018	-	-	-	69,325,959	-					69,325,959	
2019	-	-	-	69,325,959	-	-				69,325,959	
2020	-	-	-	69,325,959	-	-	-			69,325,959	
2021	-	-	-	13,497,765	-	-	-	50,038,947		63,536,712	
2022	-	-	-	-	-	-	-	50,038,947	-	50,038,947	
2023	-	-	-	-	-	-	-	50,038,947	-	50,038,947	$ 73,342,086
2024	-	-	-	-	-	-	-	23,303,139	-	23,303,139	
2025	-	-	-	-	-	-	-	-	-	-	
2026	-	-	-	-	-	-	-	-	-	-	
2027	-	-	-	-	-	-	-	-	-	-	
Thereafter	-	-	-	-	-	-	-	-	-	-	
	$ -	$ -	$ -	$ 290,801,601	$ -	$ -	$ -	$ 173,419,980	$ -	$ 464,221,581	

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

	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total	Deferred Net (Inflows)/Outflows at Measurement Date
Recognition Period	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000		
Total	$ 180,861,863	$ 577,381,461	$ 35,536,046	$ (464,917,747)	$ 758,219,998	$ (783,381,316)	$ (270,952,701)	$ (861,568,742)	$ 1,271,550,349		
2014	36,172,373									36,172,373	
2015	36,172,373	115,476,292								151,648,665	
2016	36,172,373	115,476,292	7,107,209							158,755,874	
2017	36,172,373	115,476,292	7,107,209	(92,983,549)						65,772,325	
2018	36,172,371	115,476,292	7,107,209	(92,983,549)	151,644,000					217,416,323	
2019	-	115,476,293	7,107,209	(92,983,549)	151,644,000	(156,676,263)				24,567,690	
2020	-	-	7,107,210	(92,983,549)	151,644,000	(156,676,263)	(54,190,540)			(145,099,142)	
2021	-	-	-	(92,983,551)	151,644,000	(156,676,263)	(54,190,540)	(172,313,748)		(324,520,102)	
2022	-	-	-	-	151,643,998	(156,676,263)	(54,190,540)	(172,313,748)	254,310,070	22,773,517	
2023	-	-	-	-	-	(156,676,264)	(54,190,540)	(172,313,748)	254,310,070	(128,870,482)	$ 235,241,688
2024	-	-	-	-	-	-	(54,190,541)	(172,313,748)	254,310,070	27,805,781	
2025	-	-	-	-	-	-	-	(172,313,750)	254,310,070	81,996,320	
2026	-	-	-	-	-	-	-	-	254,310,069	254,310,069	
2027	-	-	-	-	-	-	-	-	-	-	
Thereafter	-	-	-	-	-	-	-	-	-	-	
	$ 180,861,863	$ 577,381,461	$ 35,536,046	$ (464,917,747)	$ 758,219,998	$ (783,381,316)	$ (270,952,701)	$ (861,568,742)	$ 1,271,550,349	$ 442,729,211	

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

	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total	
Total	$ 180,861,863	$ 511,189,841	$ (8,254,655)	$ (230,817,237)	$ 709,006,450	$ (790,425,572)	$ (215,391,854)	$ (685,962,480)	$ 1,246,820,231		
2014	36,172,373									36,172,373	
2015	36,172,373	98,563,061								134,735,434	
2016	36,172,373	98,563,061	(4,242,531)							130,492,903	
2017	36,172,373	98,563,061	(4,242,531)	(37,174,907)						93,317,996	
2018	36,172,371	100,024,365	(4,242,531)	(37,174,907)	139,500,602					234,279,900	
2019	-	115,476,293	(2,634,272)	(37,174,907)	139,500,602	(158,456,779)				56,710,937	
2020	-	-	7,107,210	(37,174,907)	139,500,602	(158,456,779)	(39,930,274)			(88,954,148)	
2021	-	-	-	(82,117,609)	139,500,602	(158,456,779)	(39,930,274)	(121,643,967)		(262,648,027)	
2022	-	-	-	-	151,004,042	(158,378,971)	(39,930,274)	(121,643,967)	246,903,626	77,954,456	
2023	-	-	-	-	-	(156,676,264)	(41,410,491)	(121,643,967)	246,903,626	(72,827,096)	$ 304,964,763
2024	-	-	-	-	-	-	(54,190,541)	(148,716,829)	246,903,626	43,996,256	
2025	-	-	-	-	-	-	-	(172,313,750)	251,799,284	79,485,534	
2026	-	-	-	-	-	-	-	-	254,310,069	254,310,069	
2027	-	-	-	-	-	-	-	-	-	-	
Thereafter	-	-	-	-	-	-	-	-	-	-	
	$ 180,861,863	$ 511,189,841	$ (8,254,655)	$ (230,817,237)	$ 709,006,450	$ (790,425,572)	$ (215,391,854)	$ (685,962,480)	$ 1,246,820,231	$ 717,026,587	

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	$ 64,930,047	$ 9,749,108	$ 55,180,939
2. Due to Assets	405,954,068	383,180,551	22,773,517
3. Total	$ 470,884,115	$ 392,929,659	$ 77,954,456

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	$ 14,891,100	$ 9,749,108	$ 5,141,992
2. Assumption Changes	50,038,947	0	50,038,947
3. Net Difference between projected and actual earnings on pension plan investments	405,954,068	383,180,551	22,773,517
4. Total	$ 470,884,115	$ 392,929,659	$ 77,954,456

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	$ 13,704,663	$ 17,323,674	$ (3,619,011)
2. Assumption Changes	73,342,086	0	73,342,086
3. Net Difference between projected and actual earnings on pension plan investments	1,017,240,279	781,998,591	235,241,688
4. Total	$ 1,104,287,028	$ 799,322,265	$ 304,964,763

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	$ (72,827,096)
2024	43,996,256
2025	79,485,534
2026	254,310,069
2027	0
Thereafter	0
Total	$ 304,964,763

Statement of Fiduciary Net Position
as of December 31, 2022

	2022
Assets	
Cash and Deposits	$ 350,825,992
Receivables	
Accounts Receivable - Sale of Investments	$ 3,692,320
Accrued Interest and Other Dividends	15,465,035
Contributions	19,596,011
Accounts Receivable - Other	513,051,131
Total Receivables	$ 551,804,497
Investments	
Fixed Income	$ 1,372,561,220
Equities	4,034,329,499
Private Markets	1,102,860,685
Marketable Alternatives	1,543,342,963
Security Lending Collateral	400,964,588
Capital Assets, at Cost, Net of Accumulated Depreciation	2,908,009
Total Investments	$ 8,456,966,964
Total Assets	$ 9,359,597,453
Liabilities	
Payables	
Accounts Payable - Purchase of Investments	$ 939,588,353
Accrued Expenses	11,697,269
Accounts Payable - Other	1,721,235
Total Liabilities	$ 953,006,857
Net Position Restricted for Pensions	$ 8,406,590,596

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

		2022
Additions		
Contributions		
Employer	$	175,980,064
Employee		173,778,027
Other Employer Contributions		2,297,846
Other Employee Contributions		3,353,694
Total Contributions	$	355,409,631
Investment Income		
Net Appreciation in Fair Value of Investments	$	(756,817,079)
Interest and Dividends		167,373,373
Less Investment Expense		(54,928,931)
Net Investment Income	$	(644,372,637)
Other	$	0
Total Additions	$	(288,963,006)
Deductions		
Benefit Payments, including Refunds of Employee Contributions	$	685,738,197
Pension Plan Administrative Expense		8,030,528
Other		544,320
Total Deductions	$	694,313,045
Net Increase in Net Position	$	(983,276,051)
Net Position Restricted for Pensions		
Beginning of Year	$	9,389,866,647
End of Year	$	8,406,590,596

SECTION C

REQUIRED SUPPLEMENTARY INFORMATION

Auditor's Note – This information is intended to assist in preparation of the financial statements of the Wyoming Retirement System. 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	$	210,661,646
2. Interest on the total pension liability		724,623,380
3. Changes of benefit terms		0
4. Difference between expected and actual experience of the total pension liability		(24,730,118)
5. Changes of assumptions		0
6. Benefit payments, including refunds of employee contributions		(685,738,197)
7. Net change in total pension liability		224,816,711
8. Total pension liability – beginning		10,914,588,147
9. Total pension liability – ending	$	11,139,404,858

B. Plan fiduciary net position

1. Contributions – employer	$	178,277,910
2. Contributions – employee		177,131,721
3. Net investment income		(644,372,637)
4. Benefit payments, including refunds of employee contributions		(685,738,197)
5. Pension plan administrative expense		(8,030,528)
6. Other		(544,320)
7. Net change in plan fiduciary net position		(983,276,051)
8. Plan fiduciary net position – beginning		9,389,866,647
9. Plan fiduciary net position – ending	$	8,406,590,596

C. Net pension liability	$	2,732,814,262
D. Plan fiduciary net position as a percentage of the total pension liability		75.47 %
E. Covered-employee payroll	$	1,805,532,589
F. Net pension liability as a percentage of covered-employee payroll		151.36 %

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	$ 210,661,646	$ 214,075,814	$ 198,288,435	$ 194,455,298	$ 195,575,014	$ 201,824,345	$ 219,893,113	$ 217,488,957	$ 213,059,299
Interest on the total pension liability	724,623,380	709,100,401	699,015,173	676,902,286	658,459,157	641,429,003	664,368,366	638,943,600	614,848,444
Changes of benefit terms	0	0	0	0	0	0	0	0	0
Difference between expected and actual experience	(24,730,118)	2,186,282	55,560,847	(7,044,256)	(49,213,548)	(56,701,091)	(43,790,701)	(66,191,620)	0
Changes of assumptions	0	173,419,980	0	0	0	290,801,601	0	0	0
Benefit payments, including refunds of employee contributions	(685,738,197)	(651,795,973)	(625,747,935)	(600,487,685)	(566,027,667)	(535,492,257)	(501,610,080)	(469,954,814)	(436,096,614)
Net change in total pension liability	224,816,711	446,986,504	327,116,520	263,825,643	238,792,956	541,861,601	338,860,698	320,286,123	391,811,130
Total pension liability - beginning	10,914,588,147	10,467,601,643	10,140,485,123	9,876,659,480	9,637,866,524	9,096,004,923	8,757,144,225	8,436,858,102	8,045,046,972
Total pension liability - ending (a)	$ 11,139,404,858	$ 10,914,588,147	$ 10,467,601,643	$ 10,140,485,123	$ 9,876,659,480	$ 9,637,866,524	$ 9,096,004,923	$ 8,757,144,225	$ 8,436,858,102
Plan fiduciary net position									
Employer contributions	$ 178,277,910	$ 170,676,891	$ 165,984,825	$ 157,385,096	$ 147,632,510	$ 148,746,669	$ 151,488,715	$ 144,622,373	$ 127,929,930
Employee contributions	177,131,721	169,867,368	165,086,190	157,610,787	151,130,515	149,752,251	152,422,538	153,529,134	137,144,565
Pension plan net investment income	(644,372,637)	1,414,900,342	805,893,355	1,251,518,669	(252,571,153)	923,878,089	454,712,993	(67,155,642)	318,184,952
Benefit payments, including refunds of employee contributions	(685,738,197)	(651,795,973)	(625,747,935)	(600,487,685)	(566,027,667)	(535,492,257)	(501,610,080)	(469,954,814)	(436,096,614)
Pension plan administrative expense	(8,030,528)	(7,725,813)	(7,238,487)	(6,527,091)	(7,033,951)	(6,551,109)	(5,993,529)	(5,097,818)	(5,182,863)
Other	(544,320)	(298,065)	(294,893)	(309,531)	(287,669)	(312,336)	(312,336)	(312,704)	5,539,339
Net change in plan fiduciary net position	(983,276,051)	1,095,624,750	503,683,055	959,190,245	(527,157,415)	680,021,307	250,708,301	(244,369,471)	147,519,309
Plan fiduciary net position - beginning	9,389,866,647	8,294,241,897	7,790,558,842	6,831,368,597	7,358,526,012	6,678,504,705	6,427,796,404	6,672,165,875	6,524,646,566
Plan fiduciary net position - ending (b)	$ 8,406,590,596	$ 9,389,866,647	$ 8,294,241,897	$ 7,790,558,842	$ 6,831,368,597	$ 7,358,526,012	$ 6,678,504,705	$ 6,427,796,404	$ 6,672,165,875
Net pension liability - ending (a) - (b)	$ 2,732,814,262	$ 1,524,721,500	$ 2,173,359,746	$ 2,349,926,281	$ 3,045,290,883	$ 2,279,340,512	$ 2,417,500,218	$ 2,329,347,821	$ 1,764,692,227
Plan fiduciary net position as a percentage of total pension liability	75.47 %	86.03 %	79.24 %	76.83 %	69.17 %	76.35 %	73.42 %	73.40 %	79.08 %
Covered-employee payroll	$ 1,805,532,589	$ 1,819,927,957	$ 1,780,467,331	$ 1,738,212,750	$ 1,741,354,609	$ 1,776,377,586	$ 1,782,905,215	$ 1,744,073,882	$ 1,709,412,443
Projected valuation payroll	$ 1,850,670,904	$ 1,865,426,156	$ 1,824,979,015	$ 1,781,668,069	$ 1,784,888,475	$ 1,820,787,026	$ 1,858,678,687	$ 1,818,197,022	$ 1,782,062,471
Net pension liability as a percentage of covered-employee payroll	151.36 %	83.78 %	122.07 %	135.19 %	174.88 %	128.31 %	135.59 %	133.56 %	103.23 %

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	$ 8,436,858,102	$ 6,672,165,875	$ 1,764,692,227	79.08 %	$ 1,709,412,443	103.23 %
2015	8,757,144,225	6,427,796,404	2,329,347,821	73.40 %	1,744,073,882	133.56 %
2016	9,096,004,923	6,678,504,705	2,417,500,218	73.42 %	1,782,905,215	135.59 %
2017	9,637,866,524	7,358,526,012	2,279,340,512	76.35 %	1,776,377,586	128.31 %
2018	9,876,659,480	6,831,368,597	3,045,290,883	69.17 %	1,741,354,609	174.88 %
2019	10,140,485,123	7,790,558,842	2,349,926,281	76.83 %	1,738,212,750	135.19 %
2020	10,467,601,643	8,294,241,897	2,173,359,746	79.24 %	1,780,467,331	122.07 %
2021	10,914,588,147	9,389,866,647	1,524,721,500	86.03 %	1,819,927,957	83.78 %
2022	11,139,404,858	8,406,590,596	2,732,814,262	75.47 %	1,805,532,589	151.36 %

* 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	$ 183,086,430	$ 129,627,747	$ 53,458,683	$ 1,709,412,443	7.58 %
2015	168,411,742	144,622,373	23,789,369	1,744,073,882	8.29 %
2016	174,211,753	151,488,715	22,723,038	1,782,905,215	8.50 %
2017	167,125,230	148,746,669	18,378,561	1,776,377,586	8.37 %
2018	191,677,662	147,632,510	44,045,152	1,741,354,609	8.48 %
2019	207,518,684	157,385,096	50,133,588	1,738,212,750	9.05 %
2020	219,815,919	165,984,825	53,831,094	1,780,467,331	9.32 %
2021	212,378,768	170,676,891	41,701,877	1,819,927,957	9.38 %
2022	210,236,215	178,277,910	31,958,305	1,805,532,589	9.87 %

* 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	25 years
Asset Valuation Method	5-Year smoothed market
Inflation	2.25%
Salary Increases	2.50% to 6.50% 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 General Healthy Annuitant Mortality Table, amount-weighted, fully generational, projected with the MP-2020 Ultimate Scale Males: No set back with a multiplier of 100% Females: No set back with a multiplier of 103%
Pre-Retirement Mortality	Pub-2010 General 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 9.37% of salary plus, effective March 5, 2015, an additional 1.00% for park rangers. Employees are contributing at the rate of 9.25% 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

FY Ending December 31,	Annual Return[1]
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 Retirement System. 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 the expected rate of return on pension plan investments of 6.80%. The projection of cash flows used to determine this Single Discount Rate assumed that plan member contributions will be made at the current contribution rate and that employer contributions will be made at rates equal to the statutory contribution rate. Based on these assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

Sensitivity of Results

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

Sensitivity of Net Pension Liability
to the Single Discount Rate Assumption

1% Decrease	Current Single Discount Rate Assumption	1% Increase
5.80%	6.80%	7.80%
$ 4,035,385,591	$ 2,732,814,262	$ 1,653,336,062

Summary of Population Statistics

Inactive Plan Members or Beneficiaries Currently Receiving Benefits	30,226
Inactive Plan Members Entitled to But Not Yet Receiving Benefits	35,416
Active Plan Members	34,533
Total Plan Members	100,175

SECTION E

SUMMARY OF BENEFITS

Summary of Benefits

Covered Members   Any full-time or regular part-time employee of an employer as defined under W.S. 9-3-402(a)(vii)

Tier   Members who join the State of Wyoming Retirement System by August 31, 2012 are in Tier 1, while members who join on or after September 1, 2012 are in Tier 2.

Final Average Salary   For Tier 1 member: employee's average annual salary for the highest paid three continuous years of service.
For Tier 2 member: employee's average annual salary for the highest paid five continuous years of service.

Service Retirement

Eligibility   Tier 1 members may retire upon normal retirement on the date he/she attains age 60 with four or more years of service while Tier 2 members may retire upon normal retirement on the date he/she attains age 65 with four or more years of service. All employees may also retire upon normal retirement on the date that the sum of the member's age and service is at least 85. Tier 1 members are eligible for a reduced benefit at age 50 with four or more years of service and Tier 2 members are eligible for a reduced benefit at age 55 with four or more years of service. All members are eligible for a reduced benefit at any age with 25 or more years of service.

Monthly Benefit   For Tier 1 member: 2.125% of employee's Final Average Salary for each year of credited service for the first 15 years of service credit plus 2.25% of Final Average Salary for any years of service credit exceeding 15 years.
For Tier 2 member: 2.000% of employee's Final (5-year) Average Salary for each year of credited service.

This amount is reduced by 5.00% per year that the employee is under age 60 for Tier 1 and under age 65 for Tier 2. However, members retiring with a combined age and service of at least 85 receive an unreduced benefit. Employees hired prior to July 1, 1981 may be entitled to benefits earned under a different formula.

Vesting   Any employee who has left employment with four or more years of service, and who has not withdrawn accumulated contributions, is eligible to receive the above benefit or can elect to receive a lump-sum refund of employee contributions with interest. An employee who terminates with less than four years of service is only eligible for the lump-sum benefit.

Disability Benefit

Eligibility	Ten or more years of service.
Benefit	Service retirement benefit earned as of the date of disability, payable immediately.
Park Rangers	Effective March 5, 2015, for eligible peace officers as defined under W.S. 6-1-104(a)(vi)(P) whose disability is duty-related, the member shall be eligible immediately for a benefit of 62.5% of the member's final salary.

Pre-retirement Death Benefit

Eligibility	No age or service requirements.
Benefit	A lump sum equal to two times the employee contributions with interest. If the employee is vested, the beneficiary can elect, in lieu of this lump sum, to receive a monthly annuity equal to the actuarial equivalent of the retirement benefit that would be due the employee.
Park Rangers	Effective March 5, 2015, for eligible peace officers as defined under W.S. 6-1-104(a)(vi)(P) whose death is duty-related, the member shall be eligible immediately for a benefit of 62.5% of member's final actual salary, payable to the surviving spouse plus 6% of the member's final actual salary for each unmarried child under age 18. Payment shall not exceed the member's final actual salary.

Contributions

Employee	9.25% of salary
Employer	9.37% of salary plus an additional 1.00% for park rangers.
Interest	3.00% annually (0.00% for non-vested members).

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

Optional Forms of Payment

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

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

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 consider 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

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

c. Payroll growth rate

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

d. Cost-of-Living adjustment

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

5. Demographic Assumptions

a. Mortality

Healthy Pre-Retirement Mortality:
Pub-2010 General Active Mortality Table, amount weighted, fully generational, projected with the MP-2020 Ultimate Scale
                Males: No set back with a multiplier of 100%
                Females: No set back with a multiplier of 100%
Healthy Post-Retirement Mortality:
Pub-2010 General Healthy Annuitant Mortality Table, amount weighted, fully generational, projected with the MP-2020 Ultimate Scale
                Males: No set back with a multiplier of 100%
                Females: No set back with a multiplier of 103%
Disabled Mortality
Pub-2010 General Disabled Retiree Mortality Table, amount weighted, fully generational, projected with the MP-2020 Ultimate Scale
                Males: No set back with a multiplier of 100%
                Females: No set back with a multiplier of 100%

	Pre-Retirement		Post-Retirement		Disabled	
	Projected to 2022 using the MP-2020 Ultimate Scale					
Age	Male	Female	Male	Female	Male	Female
20	0.03%	0.01%	0.03%	0.01%	0.35%	0.20%
25	0.02%	0.01%	0.02%	0.01%	0.24%	0.14%
30	0.03%	0.01%	0.03%	0.01%	0.30%	0.22%
35	0.04%	0.02%	0.04%	0.02%	0.39%	0.34%
40	0.06%	0.03%	0.06%	0.03%	0.55%	0.53%
45	0.08%	0.05%	0.09%	0.06%	0.86%	0.84%
50	0.13%	0.07%	0.25%	0.19%	1.36%	1.26%
55	0.19%	0.10%	0.37%	0.25%	1.80%	1.48%
60	0.27%	0.16%	0.52%	0.34%	2.13%	1.66%
65	0.40%	0.25%	0.78%	0.54%	2.60%	1.93%
70	0.61%	0.42%	1.31%	0.94%	3.36%	2.46%
75			2.32%	1.68%	4.51%	3.48%
80			4.18%	3.03%	6.43%	5.26%
85			7.74%	5.75%	9.74%	8.40%
90			13.60%	10.97%	15.07%	12.67%
95			21.81%	18.48%	22.51%	18.39%
100			31.45%	27.98%	31.45%	27.16%

b. <u>Disablity</u>

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

c. <u>Withdrawal</u>

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

d. Retirement Rates

Age	Retirement	
	Unreduced	Reduced
<50	15.00%	0.20%
50-54	15.00%	0.20%
55-59	17.00%	0.20%
60-61	13.00%	0.20%
62	18.00%	0.30%
63-64	15.00%	0.50%
65	30.00%	1.00%
66	35.00%	1.00%
67	28.00%	1.00%
68	25.00%	1.50%
69	25.00%	2.00%
70	25.00%	2.50%
71-73	20.00%	2.50%
74-79	15.00%	2.50%
80+	100.00%	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. It is assumed that the active members will elect the maximum value of the refund of deferred benefit when they terminate.

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

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

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

h. No surviving spouse will remarry.

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

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

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

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

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

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

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

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	Projected Payroll for Current Employees (a)	Payroll for Future Employees (b)=max(0,(c)-(a))	Total Employee Payroll (c)	Contributions from Current Employees (d)	Employer Contributions for Current Employees (e)=(a)*ER%	Employer Contributions Related to Payroll of Future Employees (f) = (b)*netER%	Total Contributions (g)=(d)+(e)+(f)
2022	$ 1,805,532,589	$ 45,138,315	$ 1,850,670,904	$ 177,131,721	$ 175,670,525	$ 3,663,233	$ 356,465,479
2023	1,789,410,637	107,527,040	1,896,937,677	165,520,484	167,667,777	8,726,435	341,914,696
2024	1,680,613,647	263,747,472	1,944,361,119	155,456,762	157,473,499	21,407,779	334,338,040
2025	1,581,498,459	411,471,688	1,992,970,147	146,288,607	148,186,406	33,402,050	327,877,063
2026	1,491,017,062	551,777,339	2,042,794,401	137,919,078	139,708,299	44,760,302	322,387,679
2027	1,407,742,910	686,121,351	2,093,864,261	130,216,219	131,905,511	55,571,482	317,693,212
2028	1,330,543,359	815,667,509	2,146,210,868	123,075,261	124,671,913	65,950,570	313,697,744
2029	1,258,103,900	941,762,240	2,199,866,140	116,374,611	117,884,335	76,027,062	310,286,008
2030	1,188,726,087	1,066,136,707	2,254,862,794	109,957,163	111,383,634	85,963,310	307,304,107
2031	1,121,516,228	1,189,718,136	2,311,234,364	103,740,251	105,086,071	95,851,626	304,677,948
2032	1,056,076,111	1,312,939,112	2,369,015,223	97,687,040	98,954,332	105,736,752	302,378,124
2033	992,500,768	1,435,739,836	2,428,240,604	91,806,321	92,997,322	115,622,541	300,426,184
2034	929,851,420	1,559,095,199	2,488,946,619	86,011,256	87,127,078	125,601,351	298,739,685
2035	867,943,760	1,683,226,524	2,551,170,284	80,284,798	81,326,330	135,699,010	297,310,138
2036	806,975,741	1,807,973,800	2,614,949,541	74,645,256	75,613,627	145,907,581	296,166,464
2037	746,971,106	1,933,352,174	2,680,323,280	69,094,827	69,991,193	156,233,980	295,320,000
2038	688,603,164	2,058,728,198	2,747,331,362	63,695,793	64,522,116	166,627,235	294,845,144
2039	632,393,360	2,183,621,286	2,816,014,646	58,496,386	59,255,258	177,044,420	294,796,064
2040	578,401,588	2,308,013,424	2,886,415,012	53,502,147	54,196,229	187,479,014	295,177,390
2041	526,446,193	2,432,129,194	2,958,575,387	48,696,273	49,328,008	197,944,604	295,968,885
2042	476,672,667	2,555,867,105	3,032,539,772	44,092,222	44,664,229	208,427,541	297,183,992
2043	429,016,421	2,679,336,845	3,108,353,266	39,684,019	40,198,839	218,931,266	298,814,124
2044	383,705,846	2,802,356,252	3,186,062,098	35,492,791	35,953,238	229,436,026	300,882,055
2045	341,256,149	2,924,457,501	3,265,713,650	31,566,194	31,975,701	239,897,967	303,439,862
2046	301,910,928	3,045,445,563	3,347,356,491	27,926,761	28,289,054	250,293,988	306,509,803
2047	265,976,779	3,165,063,624	3,431,040,403	24,602,852	24,922,024	260,602,450	310,127,326
2048	233,186,609	3,283,629,804	3,516,816,413	21,569,761	21,849,585	270,848,234	314,267,580
2049	202,920,783	3,401,816,040	3,604,736,823	18,770,172	19,013,677	281,076,822	318,860,671
2050	174,989,632	3,519,865,612	3,694,855,244	16,186,541	16,396,529	291,298,573	323,881,643
2051	149,403,407	3,637,823,218	3,787,226,625	13,819,815	13,999,099	301,508,028	329,326,942
2052	126,340,551	3,755,566,740	3,881,907,291	11,686,501	11,838,110	311,685,421	335,210,032
2053	105,808,485	3,873,146,488	3,978,954,973	9,787,285	9,914,255	321,822,797	341,524,337
2054	87,755,344	3,990,673,503	4,078,428,847	8,117,369	8,222,676	331,921,642	348,261,687
2055	72,194,652	4,108,194,916	4,180,389,568	6,678,005	6,764,639	341,985,359	355,428,003
2056	58,996,326	4,225,902,981	4,284,899,307	5,457,160	5,527,956	352,033,216	363,018,332
2057	47,970,562	4,344,051,228	4,392,021,790	4,437,277	4,494,842	362,090,297	371,022,416
2058	38,833,711	4,462,988,624	4,501,822,335	3,592,118	3,638,719	372,189,062	379,419,899
2059	31,280,616	4,583,087,277	4,614,367,893	2,893,457	2,930,994	382,363,354	388,187,805
2060	25,051,398	4,704,675,692	4,729,727,090	2,317,254	2,347,316	392,642,918	397,307,488
2061	19,912,363	4,828,057,904	4,847,970,267	1,841,894	1,865,788	403,054,856	406,762,538
2062	15,714,239	4,953,455,285	4,969,169,524	1,453,567	1,472,424	413,619,124	416,545,115
2063	12,301,156	5,081,097,606	5,093,398,762	1,137,857	1,152,618	424,356,061	426,646,536
2064	9,522,088	5,211,211,643	5,220,733,731	880,793	892,220	435,285,801	437,058,814
2065	7,290,044	5,343,962,030	5,351,252,074	674,329	683,077	446,423,471	447,780,877
2066	5,553,020	5,479,480,356	5,485,033,376	513,654	520,318	457,781,875	458,815,847
2067	4,233,003	5,617,926,207	5,622,159,210	391,553	396,632	469,376,191	470,164,376
2068	3,220,977	5,759,492,213	5,762,713,190	297,940	301,806	481,223,890	481,823,636
2069	2,447,394	5,904,333,626	5,906,781,020	226,384	229,321	493,339,230	493,794,935
2070	1,863,474	6,052,587,072	6,054,450,546	172,371	174,608	505,734,758	506,081,737
2071	1,416,374	6,204,395,436	6,205,811,810	131,015	132,714	518,423,290	518,687,019

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

Year	Projected Payroll for Current Employees (a)	Payroll for Future Employees (b)=max(0,(c)-(a))	Total Employee Payroll (c)	Contributions from Current Employees (d)	Employer Contributions for Current Employees (e)=(a)*ER%	Employer Contributions Related to Payroll of Future Employees (f) = (b)*netER%	Total Contributions (g)=(d)+(e)+(f)
2072	$ 1,070,091	$ 6,359,887,014	$ 6,360,957,105	$ 98,983	$ 100,268	$ 531,416,353	$ 531,615,604
2073	806,590	6,519,174,443	6,519,981,033	74,610	75,577	544,724,020	$ 544,874,207
2074	598,735	6,682,381,824	6,682,980,559	55,383	56,101	558,357,255	558,468,739
2075	436,205	6,849,618,868	6,850,055,073	40,349	40,872	572,325,795	572,407,016
2076	311,623	7,020,994,827	7,021,306,450	28,825	29,199	586,639,257	586,697,281
2077	214,867	7,196,624,244	7,196,839,111	19,875	20,133	601,307,611	601,347,619
2078	140,087	7,376,620,002	7,376,760,089	12,958	13,126	616,340,633	616,366,717
2079	84,352	7,561,094,739	7,561,179,091	7,803	7,904	631,748,083	631,763,790
2080	47,330	7,750,161,238	7,750,208,568	4,378	4,435	647,539,634	647,548,447
2081	25,507	7,943,938,275	7,943,963,782	2,359	2,390	663,725,414	663,730,163
2082	12,645	8,142,550,232	8,142,562,877	1,170	1,185	680,315,959	680,318,314
2083	4,817	8,346,122,132	8,346,126,949	446	451	697,321,720	697,322,617
2084	1,123	8,554,779,000	8,554,780,123	104	105	714,753,121	714,753,330
2085	158	8,768,649,468	8,768,649,626	15	15	732,620,854	732,620,884
2086	74	8,987,865,793	8,987,865,867	7	7	750,935,904	750,935,918
2087	35	9,212,562,479	9,212,562,514	3	3	769,709,446	769,709,452
2088	0	9,442,876,577	9,442,876,577	0	0	788,952,870	788,952,870
2089	0	9,678,948,491	9,678,948,491	0	0	808,677,837	808,677,837
2090	0	9,920,922,203	9,920,922,203	0	0	828,896,297	828,896,297
2091	0	10,168,945,258	10,168,945,258	0	0	849,620,487	849,620,487
2092	0	10,423,168,889	10,423,168,889	0	0	870,862,958	870,862,958
2093	0	10,683,748,111	10,683,748,111	0	0	892,636,575	892,636,575
2094	0	10,950,841,814	10,950,841,814	0	0	914,954,536	914,954,536
2095	0	11,224,612,859	11,224,612,859	0	0	937,830,379	937,830,379
2096	0	11,505,228,180	11,505,228,180	0	0	961,277,996	961,277,996
2097	0	11,792,858,885	11,792,858,885	0	0	985,311,642	985,311,642
2098	0	12,087,680,357	12,087,680,357	0	0	1,009,945,938	1,009,945,938
2099	0	12,389,872,366	12,389,872,366	0	0	1,035,195,883	1,035,195,883
2100	0	12,699,619,175	12,699,619,175	0	0	1,061,076,858	1,061,076,858
2101	0	13,017,109,654	13,017,109,654	0	0	1,087,604,637	1,087,604,637
2102	0	13,342,537,395	13,342,537,395	0	0	1,114,795,392	1,114,795,392
2103	0	13,676,100,830	13,676,100,830	0	0	1,142,665,709	1,142,665,709
2104	0	14,018,003,351	14,018,003,351	0	0	1,171,232,587	1,171,232,587
2105	0	14,368,453,435	14,368,453,435	0	0	1,200,513,460	1,200,513,460
2106	0	14,727,664,771	14,727,664,771	0	0	1,230,526,197	1,230,526,197
2107	0	15,095,856,390	15,095,856,390	0	0	1,261,289,118	1,261,289,118
2108	0	15,473,252,800	15,473,252,800	0	0	1,292,821,005	1,292,821,005
2109	0	15,860,084,120	15,860,084,120	0	0	1,325,141,108	1,325,141,108
2110	0	16,256,586,223	16,256,586,223	0	0	1,358,269,156	1,358,269,156
2111	0	16,663,000,879	16,663,000,879	0	0	1,392,225,375	1,392,225,375
2112	0	17,079,575,901	17,079,575,901	0	0	1,427,030,489	1,427,030,489
2113	0	17,506,565,299	17,506,565,299	0	0	1,462,705,741	1,462,705,741
2114	0	17,944,229,431	17,944,229,431	0	0	1,499,272,899	1,499,272,899
2115	0	18,392,835,167	18,392,835,167	0	0	1,536,754,273	1,536,754,273
2116	0	18,852,656,046	18,852,656,046	0	0	1,575,172,728	1,575,172,728
2117	0	19,323,972,447	19,323,972,447	0	0	1,614,551,697	1,614,551,697
2118	0	19,807,071,758	19,807,071,758	0	0	1,654,915,196	1,654,915,196
2119	0	20,302,248,552	20,302,248,552	0	0	1,696,287,839	1,696,287,839
2120	0	20,809,804,766	20,809,804,766	0	0	1,738,694,855	1,738,694,855
2121	0	21,330,049,885	21,330,049,885	0	0	1,782,162,102	1,782,162,102

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	$ 9,389,866,647	$ 355,409,631	$ 685,738,197	$ 8,574,848	$ (644,372,637)	$ 8,406,590,596
2023	8,406,590,596	341,914,696	701,342,854	7,967,138	559,362,148	8,598,557,447
2024	8,598,557,447	334,338,040	720,126,595	8,166,317	571,527,719	8,776,130,294
2025	8,776,130,294	327,877,063	736,091,805	8,370,475	582,845,894	8,942,390,971
2026	8,942,390,971	322,387,679	757,089,801	8,579,736	593,258,862	9,092,367,975
2027	9,092,367,975	317,693,212	777,593,840	8,794,230	602,607,466	9,226,280,582
2028	9,226,280,582	313,697,744	797,282,123	9,014,086	610,914,166	9,344,596,282
2029	9,344,596,282	310,286,008	817,328,666	9,239,438	618,167,633	9,446,481,820
2030	9,446,481,820	307,304,107	837,057,320	9,470,424	624,328,664	9,531,586,847
2031	9,531,586,847	304,677,948	856,151,904	9,707,184	629,381,529	9,599,787,236
2032	9,599,787,236	302,378,124	874,244,245	9,949,864	633,329,108	9,651,300,358
2033	9,651,300,358	300,426,184	891,836,595	10,198,611	636,170,105	9,685,861,441
2034	9,685,861,441	298,739,685	909,694,877	10,453,576	637,858,138	9,702,310,811
2035	9,702,310,811	297,310,138	927,163,157	10,714,915	638,335,996	9,700,078,873
2036	9,700,078,873	296,166,464	943,868,350	10,982,788	637,578,385	9,678,972,584
2037	9,678,972,584	295,320,000	959,714,167	11,257,358	635,575,771	9,638,896,830
2038	9,638,896,830	294,845,144	973,884,111	11,538,792	632,351,474	9,580,670,545
2039	9,580,670,545	294,796,064	986,552,418	11,827,262	627,957,160	9,505,044,089
2040	9,505,044,089	295,177,390	997,661,857	12,122,943	622,445,916	9,412,882,594
2041	9,412,882,594	295,968,885	1,006,581,394	12,426,017	615,896,990	9,305,741,058
2042	9,305,741,058	297,183,992	1,013,620,523	12,736,667	608,406,217	9,184,974,077
2043	9,184,974,077	298,814,124	1,018,496,909	13,055,084	600,074,857	9,052,311,065
2044	9,052,311,065	300,882,055	1,020,994,598	13,381,461	591,028,486	8,909,845,547
2045	8,909,845,547	303,439,862	1,021,194,373	13,715,997	581,408,498	8,759,783,537
2046	8,759,783,537	306,509,803	1,018,505,017	14,058,897	571,385,411	8,605,114,836
2047	8,605,114,836	310,127,326	1,013,378,290	14,410,370	561,148,601	8,448,602,104
2048	8,448,602,104	314,267,580	1,005,986,290	14,770,629	550,879,336	8,292,992,100
2049	8,292,992,100	318,860,671	996,436,230	15,139,895	540,758,466	8,141,035,112
2050	8,141,035,112	323,881,643	984,635,614	15,518,392	530,975,262	7,995,738,010
2051	7,995,738,010	329,326,942	970,426,271	15,906,352	521,739,353	7,860,471,682
2052	7,860,471,682	335,210,032	954,536,985	16,304,011	513,256,032	7,738,096,750
2053	7,738,096,750	341,524,337	937,614,132	16,711,611	505,697,976	7,630,993,321
2054	7,630,993,321	348,261,687	919,773,739	17,129,401	499,222,873	7,541,574,740
2055	7,541,574,740	355,428,003	901,382,841	17,557,636	493,982,744	7,472,045,010
2056	7,472,045,010	363,018,332	882,053,201	17,996,577	490,140,270	7,425,153,834
2057	7,425,153,834	371,022,416	861,295,130	18,446,492	487,898,456	7,404,333,084
2058	7,404,333,084	379,419,899	839,708,559	18,907,654	487,469,915	7,412,606,685
2059	7,412,606,685	388,187,805	817,004,099	19,380,345	489,069,176	7,453,479,222
2060	7,453,479,222	397,307,488	793,005,782	19,864,854	492,939,800	7,530,855,875
2061	7,530,855,875	406,762,538	767,981,842	20,361,475	499,337,812	7,648,612,908
2062	7,648,612,908	416,545,115	742,093,504	20,870,512	508,521,134	7,810,715,140
2063	7,810,715,140	426,646,536	715,162,583	21,392,275	520,765,030	8,021,571,848
2064	8,021,571,848	437,058,814	686,614,121	21,927,082	536,388,283	8,286,477,742
2065	8,286,477,742	447,780,877	656,479,118	22,475,259	555,749,847	8,611,054,089
2066	8,611,054,089	458,815,847	625,463,576	23,037,140	579,208,454	9,000,577,674
2067	9,000,577,674	470,164,376	594,049,266	23,613,069	607,106,824	9,460,186,539
2068	9,460,186,539	481,823,636	562,261,460	24,203,395	639,793,393	9,995,338,713
2069	9,995,338,713	493,794,935	530,272,876	24,808,480	677,633,562	10,611,685,854
2070	10,611,685,854	506,081,737	498,553,911	25,428,692	720,996,018	11,314,781,006
2071	11,314,781,006	518,687,019	467,367,769	26,064,410	770,249,652	12,110,285,497

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

Year	Projected Beginning Plan Net Position (a)	Projected Total Contributions (b)	Projected Benefit Payments (c)	Projected Administrative Expenses (d)	Projected Investment Earnings at 6.800% (e)	Projected Ending Plan Net Position (f)=(a)+(b)-(c)-(d)+(e)
2072	$ 12,110,285,497	$ 531,615,604	$ 436,793,997	$ 26,716,020	$ 825,776,923	$ 13,004,168,007
2073	13,004,168,007	544,874,207	406,905,388	27,383,920	887,981,478	14,002,734,384
2074	14,002,734,384	558,468,739	377,782,167	28,068,518	957,289,616	15,112,642,055
2075	15,112,642,055	572,407,016	349,492,577	28,770,231	1,034,152,008	16,340,938,270
2076	16,340,938,270	586,697,281	322,108,902	29,489,487	1,119,045,710	17,695,082,873
2077	17,695,082,873	601,347,619	295,695,730	30,226,724	1,212,476,088	19,182,984,125
2078	19,182,984,125	616,366,717	270,312,639	30,982,392	1,314,979,187	20,813,034,998
2079	20,813,034,998	631,763,790	246,012,369	31,756,952	1,427,124,257	22,594,153,725
2080	22,594,153,725	647,548,447	222,845,540	32,550,876	1,549,516,352	24,535,822,108
2081	24,535,822,108	663,730,163	200,860,272	33,364,648	1,682,798,926	26,648,126,276
2082	26,648,126,276	680,318,314	180,094,226	34,198,764	1,827,656,872	28,941,808,471
2083	28,941,808,471	697,322,617	160,572,738	35,053,733	1,984,820,124	31,428,324,742
2084	31,428,324,742	714,753,330	142,313,546	35,930,077	2,155,067,426	34,119,901,874
2085	34,119,901,874	732,620,884	125,326,787	36,828,328	2,339,230,190	37,029,597,834
2086	37,029,597,834	750,935,918	109,613,717	37,749,037	2,538,196,655	40,171,367,653
2087	40,171,367,653	769,709,452	95,167,713	38,692,763	2,752,916,334	43,560,132,963
2088	43,560,132,963	788,952,870	81,974,045	39,660,082	2,984,404,751	47,211,856,457
2089	47,211,856,457	808,677,837	70,010,243	40,651,584	3,233,748,491	51,143,620,958
2090	51,143,620,958	828,896,297	59,246,767	41,667,873	3,502,110,554	55,373,713,168
2091	55,373,713,168	849,620,487	49,646,116	42,709,570	3,790,736,078	59,921,714,046
2092	59,921,714,046	870,862,958	41,162,856	43,777,309	4,100,958,485	64,808,595,324
2093	64,808,595,324	892,636,575	33,744,119	44,871,742	4,434,206,030	70,056,822,068
2094	70,056,822,068	914,954,536	27,329,526	45,993,536	4,792,008,776	75,690,462,319
2095	75,690,462,319	937,830,379	21,850,916	47,143,374	5,176,006,059	81,735,304,467
2096	81,735,304,467	961,277,996	17,232,708	48,321,958	5,587,954,457	88,218,982,255
2097	88,218,982,255	985,311,642	13,393,749	49,530,007	6,029,736,233	95,171,106,373
2098	95,171,106,373	1,009,945,938	10,249,916	50,768,257	6,503,368,189	102,623,402,327
2099	102,623,402,327	1,035,195,883	7,716,264	52,037,464	7,011,010,978	110,609,855,460
2100	110,609,855,460	1,061,076,858	5,708,787	53,338,401	7,554,978,900	119,166,864,030
2101	119,166,864,030	1,087,604,637	4,146,518	54,671,861	8,137,750,246	128,333,400,533
2102	128,333,400,533	1,114,795,392	2,953,683	56,038,657	8,761,978,193	138,151,181,778
2103	138,151,181,778	1,142,665,709	2,061,205	57,439,623	9,430,502,320	148,664,848,980
2104	148,664,848,980	1,171,232,587	1,407,659	58,875,614	10,146,360,825	159,922,159,118
2105	159,922,159,118	1,200,513,460	939,823	60,347,504	10,912,803,516	171,974,188,768
2106	171,974,188,768	1,230,526,197	612,826	61,856,192	11,733,305,667	184,875,551,613
2107	184,875,551,613	1,261,289,118	389,907	63,402,597	12,611,582,820	198,684,631,047
2108	198,684,631,047	1,292,821,005	241,846	64,987,662	13,551,606,620	213,463,829,164
2109	213,463,829,164	1,325,141,108	146,133	66,612,353	14,557,621,773	229,279,833,560
2110	229,279,833,560	1,358,269,156	85,971	68,277,662	15,634,164,225	246,203,903,308
2111	246,203,903,308	1,392,225,375	49,234	69,984,604	16,786,080,640	264,312,175,486
2112	264,312,175,486	1,427,030,489	27,449	71,734,219	18,018,549,281	283,685,993,587
2113	283,685,993,587	1,462,705,741	14,904	73,527,574	19,337,102,371	304,412,259,220
2114	304,412,259,220	1,499,272,899	7,888	75,365,764	20,747,650,035	326,583,808,502
2115	326,583,808,502	1,536,754,273	4,075	77,249,908	22,256,505,915	350,299,814,706
2116	350,299,814,706	1,575,172,728	2,057	79,181,155	23,870,414,568	375,666,218,791
2117	375,666,218,791	1,614,551,697	1,011	81,160,684	25,596,580,750	402,796,189,543
2118	402,796,189,543	1,654,915,196	481	83,189,701	27,442,700,717	431,810,615,274
2119	431,810,615,274	1,696,287,839	220	85,269,444	29,416,995,663	462,838,629,112
2120	462,838,629,112	1,738,694,855	97	87,401,180	31,528,247,448	496,018,170,138
2121	496,018,170,138	1,782,162,102	57	89,586,210	33,785,836,752	531,496,582,724

Single Discount Rate Development
Present Values of Projected Benefits
Ending December 31 for 2022 to 2071

Year (a)	Projected Beginning Plan Net Position (b)	Projected Benefit Payments (c)	Funded Portion of Projected Benefit Payments (d)	Unfunded Portion of Projected Benefit Payments (e)	Present Value of Funded Benefit Payments using Expected Return Rate (v) (f)=(d)*v^((a)-.5)	Present Value of Unfunded Benefit Payments using Municipal Bond Rate (vf) (g)=(e)*vf ^((a)-.5)	Present Value of All Benefit Payments using Single Discount Rate (SDR) (h)=((c)/(1+SDR)^(a-.5)
2022	$ 9,389,866,647	$ 685,738,197	$ 685,738,197	$ 0	$ 663,548,566	$ 0	$ 663,548,566
2023	8,406,590,596	701,342,854	701,342,854	0	635,438,461	0	635,438,461
2024	8,598,557,447	720,126,595	720,126,595	0	610,914,901	0	610,914,901
2025	8,776,130,294	736,091,805	736,091,805	0	584,699,333	0	584,699,333
2026	8,942,390,971	757,089,801	757,089,801	0	563,088,631	0	563,088,631
2027	9,092,367,975	777,593,840	777,593,840	0	541,515,537	0	541,515,537
2028	9,226,280,582	797,282,123	797,282,123	0	519,874,941	0	519,874,941
2029	9,344,596,282	817,328,666	817,328,666	0	499,013,547	0	499,013,547
2030	9,446,481,820	837,057,320	837,057,320	0	478,519,401	0	478,519,401
2031	9,531,586,847	856,151,904	856,151,904	0	458,272,637	0	458,272,637
2032	9,599,787,236	874,244,245	874,244,245	0	438,161,918	0	438,161,918
2033	9,651,300,358	891,836,595	891,836,595	0	418,519,678	0	418,519,678
2034	9,685,861,441	909,694,877	909,694,877	0	399,719,274	0	399,719,274
2035	9,702,310,811	927,163,157	927,163,157	0	381,455,828	0	381,455,828
2036	9,700,078,873	943,868,350	943,868,350	0	363,603,671	0	363,603,671
2037	9,678,972,584	959,714,167	959,714,167	0	346,168,455	0	346,168,455
2038	9,638,896,830	973,884,111	973,884,111	0	328,913,433	0	328,913,433
2039	9,580,670,545	986,552,418	986,552,418	0	311,977,478	0	311,977,478
2040	9,505,044,089	997,661,857	997,661,857	0	295,403,199	0	295,403,199
2041	9,412,882,594	1,006,581,394	1,006,581,394	0	279,067,634	0	279,067,634
2042	9,305,741,058	1,013,620,523	1,013,620,523	0	263,126,576	0	263,126,576
2043	9,184,974,077	1,018,496,909	1,018,496,909	0	247,558,466	0	247,558,466
2044	9,052,311,065	1,020,994,598	1,020,994,598	0	232,364,757	0	232,364,757
2045	8,909,845,547	1,021,194,373	1,021,194,373	0	217,612,568	0	217,612,568
2046	8,759,783,537	1,018,505,017	1,018,505,017	0	203,220,484	0	203,220,484
2047	8,605,114,836	1,013,378,290	1,013,378,290	0	189,323,556	0	189,323,556
2048	8,448,602,104	1,005,986,290	1,005,986,290	0	175,976,172	0	175,976,172
2049	8,292,992,100	996,436,230	996,436,230	0	163,207,481	0	163,207,481
2050	8,141,035,112	984,635,614	984,635,614	0	151,006,221	0	151,006,221
2051	7,995,738,010	970,426,271	970,426,271	0	139,351,161	0	139,351,161
2052	7,860,471,682	954,536,985	954,536,985	0	128,342,222	0	128,342,222
2053	7,738,096,750	937,614,132	937,614,132	0	118,040,131	0	118,040,131
2054	7,630,993,321	919,773,739	919,773,739	0	108,421,470	0	108,421,470
2055	7,541,574,740	901,382,841	901,382,841	0	99,488,371	0	99,488,371
2056	7,472,045,010	882,053,201	882,053,201	0	91,156,273	0	91,156,273
2057	7,425,153,834	861,295,130	861,295,130	0	83,343,651	0	83,343,651
2058	7,404,333,084	839,708,559	839,708,559	0	76,081,288	0	76,081,288
2059	7,412,606,685	817,004,099	817,004,099	0	69,311,015	0	69,311,015
2060	7,453,479,222	793,005,782	793,005,782	0	62,991,670	0	62,991,670
2061	7,530,855,875	767,981,842	767,981,842	0	57,119,773	0	57,119,773
2062	7,648,612,908	742,093,504	742,093,504	0	51,680,047	0	51,680,047
2063	7,810,715,140	715,162,583	715,162,583	0	46,633,477	0	46,633,477
2064	8,021,571,848	686,614,121	686,614,121	0	41,921,276	0	41,921,276
2065	8,286,477,742	656,479,118	656,479,118	0	37,529,383	0	37,529,383
2066	8,611,054,089	625,463,576	625,463,576	0	33,479,678	0	33,479,678
2067	9,000,577,674	594,049,266	594,049,266	0	29,773,539	0	29,773,539
2068	9,460,186,539	562,261,460	562,261,460	0	26,386,092	0	26,386,092
2069	9,995,338,713	530,272,876	530,272,876	0	23,300,482	0	23,300,482
2070	10,611,685,854	498,553,911	498,553,911	0	20,511,923	0	20,511,923
2071	11,314,781,006	467,367,769	467,367,769	0	18,004,528	0	18,004,528

Single Discount Rate Development
Present Values of Projected Benefits
Ending December 31 for 2072 to 2121 (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)
2072	$ 12,110,285,497	$ 436,793,997	$ 436,793,997	$ 0	$ 15,755,363	$ 0	$ 15,755,363
2073	13,004,168,007	406,905,388	406,905,388	0	13,742,759	0	13,742,759
2074	14,002,734,384	377,782,167	377,782,167	0	11,946,775	0	11,946,775
2075	15,112,642,055	349,492,577	349,492,577	0	10,348,465	0	10,348,465
2076	16,340,938,270	322,108,902	322,108,902	0	8,930,370	0	8,930,370
2077	17,695,082,873	295,695,730	295,695,730	0	7,676,098	0	7,676,098
2078	19,182,984,125	270,312,639	270,312,639	0	6,570,381	0	6,570,381
2079	20,813,034,998	246,012,369	246,012,369	0	5,598,993	0	5,598,993
2080	22,594,153,725	222,845,540	222,845,540	0	4,748,820	0	4,748,820
2081	24,535,822,108	200,860,272	200,860,272	0	4,007,786	0	4,007,786
2082	26,648,126,276	180,094,226	180,094,226	0	3,364,643	0	3,364,643
2083	28,941,808,471	160,572,738	160,572,738	0	2,808,923	0	2,808,923
2084	31,428,324,742	142,313,546	142,313,546	0	2,331,004	0	2,331,004
2085	34,119,901,874	125,326,787	125,326,787	0	1,922,071	0	1,922,071
2086	37,029,597,834	109,613,717	109,613,717	0	1,574,052	0	1,574,052
2087	40,171,367,653	95,167,713	95,167,713	0	1,279,595	0	1,279,595
2088	43,560,132,963	81,974,045	81,974,045	0	1,032,020	0	1,032,020
2089	47,211,856,457	70,010,243	70,010,243	0	825,281	0	825,281
2090	51,143,620,958	59,246,767	59,246,767	0	653,934	0	653,934
2091	55,373,713,168	49,646,116	49,646,116	0	513,078	0	513,078
2092	59,921,714,046	41,162,856	41,162,856	0	398,320	0	398,320
2093	64,808,595,324	33,744,119	33,744,119	0	305,741	0	305,741
2094	70,056,822,068	27,329,526	27,329,526	0	231,855	0	231,855
2095	75,690,462,319	21,850,916	21,850,916	0	173,573	0	173,573
2096	81,735,304,467	17,232,708	17,232,708	0	128,173	0	128,173
2097	88,218,982,255	13,393,749	13,393,749	0	93,277	0	93,277
2098	95,171,106,373	10,249,916	10,249,916	0	66,837	0	66,837
2099	102,623,402,327	7,716,264	7,716,264	0	47,112	0	47,112
2100	110,609,855,460	5,708,787	5,708,787	0	32,636	0	32,636
2101	119,166,864,030	4,146,518	4,146,518	0	22,196	0	22,196
2102	128,333,400,533	2,953,683	2,953,683	0	14,804	0	14,804
2103	138,151,181,778	2,061,205	2,061,205	0	9,673	0	9,673
2104	148,664,848,980	1,407,659	1,407,659	0	6,185	0	6,185
2105	159,922,159,118	939,823	939,823	0	3,867	0	3,867
2106	171,974,188,768	612,826	612,826	0	2,361	0	2,361
2107	184,875,551,613	389,907	389,907	0	1,406	0	1,406
2108	198,684,631,047	241,846	241,846	0	817	0	817
2109	213,463,829,164	146,133	146,133	0	462	0	462
2110	229,279,833,560	85,971	85,971	0	255	0	255
2111	246,203,903,308	49,234	49,234	0	137	0	137
2112	264,312,175,486	27,449	27,449	0	71	0	71
2113	283,685,993,587	14,904	14,904	0	36	0	36
2114	304,412,259,220	7,888	7,888	0	18	0	18
2115	326,583,808,502	4,075	4,075	0	9	0	9
2116	350,299,814,706	2,057	2,057	0	4	0	4
2117	375,666,218,791	1,011	1,011	0	2	0	2
2118	402,796,189,543	481	481	0	1	0	1
2119	431,810,615,274	220	220	0	0	0	0
2120	462,838,629,112	97	97	0	0	0	0
2121	496,018,170,138	57	57	0	0	0	0
Totals					$ 12,431,310,493	$ 0	$ 12,431,310,493

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:

1. Service Cost
2. Interest on the Total Pension Liability
3. Current-Period Benefit Changes
4. Employee Contributions (made negative for addition here)
5. Projected Earnings on Plan Investments (made negative for addition here)
6. Pension Plan Administrative Expense
7. Other Changes in Plan Fiduciary Net Position
8. Recognition of Outflow (Inflow) of Resources due to Liabilities
9. 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.