

# Wyoming Air Guard Firefighters Retirement System

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 Air Guard Firefighters Retirement System

Dear Board Members:

This report provides information required by the Wyoming Air Guard Firefighters Retirement System (WRS) in connection with the Governmental Accounting Standards Board (GASB) Statement Nos. 67 and Statement No. 68 "Accounting and Financial Reporting for Pensions." 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 Air Guard Firefighters 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 are based on 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 Air Guard Firefighters 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.

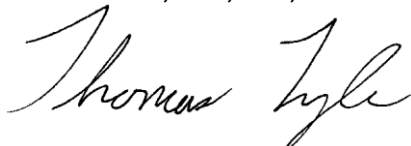
Paul T. Wood, Thomas A. Lyle, and Dana Woolfrey are members of the American Academy of Actuaries (MAAA) and are experienced in performing valuations for public retirement systems. These actuaries meet the Academy's Qualification Standards to render the actuarial opinions contained herein. The signing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

Respectfully submitted,

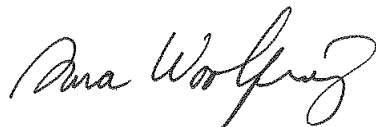
**Gabriel, Roeder, Smith & Company**



By \_\_\_\_\_  
Paul T. Wood, ASA, FCA, MAAA



By \_\_\_\_\_  
Thomas A. Lyle, FSA, EA, FCA, MAAA



By \_\_\_\_\_  
Dana Woolfrey, FSA, EA, FCA, MAAA



# Table of Contents

	<u>Page</u>
<b>Section A</b> Executive Summary	
Executive Summary .....	1
Discussion .....	2-5
<b>Section B</b> Financial Statements	
Statement of Pension Expense under GASB Statement No. 68 .....	7
Statement of Outflows and Inflows Arising from Current Reporting Period .....	8
History of Deferred Outflows and Inflows of Resources by Source .....	9-10
Statement of Outflows and Inflows Arising from Current and Prior Reporting Periods.....	11
Statement of Fiduciary Net Position .....	12
Statement of Changes in Fiduciary Net Position .....	13
<b>Section C</b> Required Supplementary Information	
Schedule of Changes in Net Pension Liability and Related Ratios Current Reporting Period.	15
Schedule of Changes in Net Pension Liability and Related Ratios Multiyear .....	16
Schedule of Net Pension Liability Multiyear .....	17
Schedule of Contributions Multiyear .....	18
Notes to Schedule of Contributions .....	19
Schedule of Investment Returns Multiyear.....	20
<b>Section D</b> Notes to Financial Statements	
Sensitivity of Net Pension Liability to the Single Discount Rate Assumption .....	22
Summary of Population Statistics .....	23
<b>Section E</b> Summary of Benefits .....	25-26
<b>Section F</b> Actuarial Cost Method and Actuarial Assumptions	
Actuarial Assumptions and Cost Method.....	28-33
Experience Analysis .....	34
<b>Section G</b> Calculation of the Single Discount Rate	
Calculation of the Single Discount Rate .....	36
Projection of Contributions .....	37-38
Projection of Plan Net Position .....	39-40
Present Values of Projected Benefits .....	41-42
<b>Section H</b> Glossary of Terms .....	44-47

# SECTION A

---

## EXECUTIVE SUMMARY

# Executive Summary as of December 31, 2022

	<b>2022</b>
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	19
- Inactive, Nonretired Members	14
- Active Members	38
- Total	71
Covered Payroll	\$ 2,145,431

## Net Pension Liability

Total Pension Liability	\$ 11,861,849
Plan Fiduciary Net Position	9,593,858
Net Pension Liability	\$ 2,267,991
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	80.88 %
Net Pension Liability as a Percentage of Covered Payroll	105.71 %

## 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

<b>Total Pension Expense</b>	<b>\$ 419,037</b>
------------------------------	-------------------

## 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	\$ 970,750	\$ 0
Changes in assumptions	335,822	0
Net difference between projected and actual earnings on pension plan investments	1,136,162	844,695
Total	<b>\$ 2,442,734</b>	<b>\$ 844,695</b>

*\*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 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 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 Air Guard Firefighters 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	\$	341,554
2. Interest on the Total Pension Liability		772,538
3. Current-Period Benefit Changes		0
4. Employee Contributions (made negative for addition here)		(393,638)
5. Projected Earnings on Plan Investments (made negative for addition here)		(711,784)
6. Pension Plan Administrative Expense		10,439
7. Other Changes in Plan Fiduciary Net Position		616
8. Recognition of Outflow (Inflow) of Resources due to Liabilities		367,883
9. Recognition of Outflow (Inflow) of Resources due to Assets		31,429
<b>10. Total Pension Expense</b>	<b>\$</b>	<b>419,037</b> *

\* 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	\$	698,485
2. Assumption Changes (gains) or losses	\$	0
3. Recognition period for Liabilities: Average of the expected remaining service lives of all employees {in years}		5.6597
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	\$	123,414
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	\$	123,414
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	\$	575,071
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	\$	575,071

## B. Outflows (Inflows) of Resources due to Assets

1. Net difference between projected and actual earnings on pension plan investments (gains) or losses	\$	1,420,202
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	\$	284,040
4. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Assets	\$	1,136,162



# 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	7.6469	8.7180	8.3862	7.7574	7.8568	8.0476	7.9281	6.2137	5.6597		Deferred Net (Inflows)/Outflows at Measurement
	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total	
<b>Total</b>	\$ -	\$ 201,096	\$ 65,370	\$ 272,060	\$ 161,615	\$ 1,751	\$ 186,135	\$ 193,673	\$ 698,485		
2014	-	-	-	-	-	-	-	-	-	-	-
2015	-	23,067	-	-	-	-	-	-	-	23,067	23,067
2016	-	23,067	7,795	-	-	-	-	-	-	30,862	30,862
2017	-	23,067	7,795	35,071	-	-	-	-	-	65,933	65,933
2018	-	23,067	7,795	35,071	20,570	-	-	-	-	86,503	86,503
2019	-	23,067	7,795	35,071	20,570	218	-	-	-	86,721	86,721
2020	-	23,067	7,795	35,071	20,570	218	23,478	-	-	110,199	110,199
2021	-	23,067	7,795	35,071	20,570	218	23,478	31,169	-	141,368	141,368
2022	-	23,067	7,795	35,071	20,570	218	23,478	31,169	123,414	264,782	264,782
2023	-	16,560	7,795	35,071	20,570	218	23,478	31,169	123,414	258,275	\$ 970,750
2024	-	-	3,010	26,563	20,570	218	23,478	31,169	123,414	228,422	
2025	-	-	-	-	17,625	218	23,478	31,169	123,414	195,904	
2026	-	-	-	-	-	218	23,478	31,169	123,414	178,279	
2027	-	-	-	-	-	7	21,789	6,659	81,415	109,870	
Thereafter	-	-	-	-	-	-	-	-	-	-	
	\$ -	\$ 201,096	\$ 65,370	\$ 272,060	\$ 161,615	\$ 1,751	\$ 186,135	\$ 193,673	\$ 698,485	\$ 1,780,185	

**Assumption changes - Net (inflows)/outflows of resources**

Recognition Period	7.6469	8.7180	8.3862	7.7574	7.8568	8.0476	7.9281	6.2137	5.6597		Deferred Net (Inflows)/Outflows at Measurement
	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total	
<b>Total</b>	\$ -	\$ -	\$ -	\$ 311,427	\$ -	\$ -	\$ -	\$ 391,181	\$ -		
2014	-	-	-	-	-	-	-	-	-	-	-
2015	-	-	-	-	-	-	-	-	-	-	-
2016	-	-	-	-	-	-	-	-	-	-	-
2017	-	-	-	40,146	-	-	-	-	-	40,146	40,146
2018	-	-	-	40,146	-	-	-	-	-	40,146	40,146
2019	-	-	-	40,146	-	-	-	-	-	40,146	40,146
2020	-	-	-	40,146	-	-	-	-	-	40,146	40,146
2021	-	-	-	40,146	-	-	-	62,955	-	103,101	103,101
2022	-	-	-	40,146	-	-	-	62,955	-	103,101	103,101
2023	-	-	-	40,146	-	-	-	62,955	-	103,101	\$ 335,822
2024	-	-	-	30,405	-	-	-	62,955	-	93,360	
2025	-	-	-	-	-	-	-	62,955	-	62,955	
2026	-	-	-	-	-	-	-	62,955	-	62,955	
2027	-	-	-	-	-	-	-	13,451	-	13,451	
Thereafter	-	-	-	-	-	-	-	-	-	-	
	\$ -	\$ -	\$ -	\$ 311,427	\$ -	\$ -	\$ -	\$ 391,181	\$ -	\$ 702,608	



## 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
	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total	
<b>Total</b>	<b>\$ 161,568</b>	<b>\$ 525,780</b>	<b>\$ 41,782</b>	<b>\$ (447,294)</b>	<b>\$ 776,171</b>	<b>\$ (795,705)</b>	<b>\$ (302,799)</b>	<b>\$ (940,725)</b>	<b>\$ 1,420,202</b>		
2014	32,314									32,314	
2015	32,314	105,156								137,470	
2016	32,314	105,156	8,356							145,826	
2017	32,314	105,156	8,356	(89,459)						56,367	
2018	32,312	105,156	8,356	(89,459)	155,234					211,599	
2019	-	105,156	8,356	(89,459)	155,234	(159,141)				20,146	
2020	-	-	8,358	(89,459)	155,234	(159,141)	(60,560)			(145,568)	
2021	-	-	-	(89,458)	155,234	(159,141)	(60,560)	(188,145)		(342,070)	
2022	-	-	-	-	155,235	(159,141)	(60,560)	(188,145)	284,040	31,429	
2023	-	-	-	-	-	(159,141)	(60,560)	(188,145)	284,040	(123,806)	\$ 291,467
2024	-	-	-	-	-	-	(60,559)	(188,145)	284,040	35,336	
2025	-	-	-	-	-	-	-	(188,145)	284,040	95,895	
2026	-	-	-	-	-	-	-	-	284,042	284,042	
2027	-	-	-	-	-	-	-	-	-	-	
Thereafter	-	-	-	-	-	-	-	-	-	-	
	<b>\$ 161,568</b>	<b>\$ 525,780</b>	<b>\$ 41,782</b>	<b>\$ (447,294)</b>	<b>\$ 776,171</b>	<b>\$ (795,705)</b>	<b>\$ (302,799)</b>	<b>\$ (940,725)</b>	<b>\$ 1,420,202</b>	<b>\$ 438,980</b>	

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

	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total	
<b>Total</b>	<b>\$ 161,568</b>	<b>\$ 726,876</b>	<b>\$ 107,152</b>	<b>\$ 136,193</b>	<b>\$ 937,786</b>	<b>\$ (793,954)</b>	<b>\$ (116,664)</b>	<b>\$ (355,871)</b>	<b>\$ 2,118,687</b>		
2014	32,314									32,314	
2015	32,314	128,223								160,537	
2016	32,314	128,223	16,151							176,688	
2017	32,314	128,223	16,151	(14,242)						162,446	
2018	32,312	128,223	16,151	(14,242)	175,804					338,248	
2019	-	128,223	16,151	(14,242)	175,804	(158,923)				147,013	
2020	-	23,067	16,153	(14,242)	175,804	(158,923)	(37,082)			4,777	
2021	-	23,067	7,795	(14,241)	175,804	(158,923)	(37,082)	(94,021)		(97,601)	
2022	-	23,067	7,795	75,217	175,805	(158,923)	(37,082)	(94,021)	407,454	399,312	
2023	-	16,560	7,795	75,217	20,570	(158,923)	(37,082)	(94,021)	407,454	237,570	\$ 1,598,039
2024	-	-	3,010	56,968	20,570	218	(37,081)	(94,021)	407,454	357,118	
2025	-	-	-	-	17,625	218	23,478	(94,021)	407,454	354,754	
2026	-	-	-	-	-	218	23,478	94,124	407,456	525,276	
2027	-	-	-	-	-	7	21,789	20,110	81,415	123,321	
Thereafter	-	-	-	-	-	-	-	-	-	-	
	<b>\$ 161,568</b>	<b>\$ 726,876</b>	<b>\$ 107,152</b>	<b>\$ 136,193</b>	<b>\$ 937,786</b>	<b>\$ (793,954)</b>	<b>\$ (116,664)</b>	<b>\$ (355,871)</b>	<b>\$ 2,118,687</b>	<b>\$ 2,921,773</b>	



# 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	\$ 367,883	\$ 0	\$ 367,883
2. Due to Assets	439,275	407,846	31,429
<b>3. Total</b>	<b>\$ 807,158</b>	<b>\$ 407,846</b>	<b>\$ 399,312</b>

### 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	\$ 264,782	\$ 0	\$ 264,782
2. Assumption Changes	103,101	0	103,101
3. Net Difference between projected and actual earnings on pension plan investments	439,275	407,846	31,429
<b>4. Total</b>	<b>\$ 807,158</b>	<b>\$ 407,846</b>	<b>\$ 399,312</b>

### 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	\$ 970,750	\$ 0	\$ 970,750
2. Assumption Changes	335,822	0	335,822
3. Net Difference between projected and actual earnings on pension plan investments	1,136,162	844,695	291,467
<b>4. Total</b>	<b>\$ 2,442,734</b>	<b>\$ 844,695</b>	<b>\$ 1,598,039</b>

### 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	\$ 237,570
2024	357,118
2025	354,754
2026	525,276
2027	123,321
Thereafter	0
<b>Total</b>	<b>\$ 1,598,039</b>





## Statement of Fiduciary Net Position as of December 31, 2022

	<b>2022</b>
<b>Assets</b>	
Cash and Deposits	\$ 704,010
Receivables	
Accounts Receivable - Sale of Investments	\$ 4,085
Accrued Interest and Other Dividends	17,442
Contributions	0
Accounts Receivable - Other	567,309
Total Receivables	\$ 588,836
Investments	
Fixed Income	\$ 1,518,423
Equities	4,463,056
Private Markets	1,220,061
Marketable Alternatives	1,707,354
Security Lending Collateral	443,575
Capital Assets, at Cost, Net of Accumulated Depreciation	1,630
Total Investments	\$ 9,354,099
<b>Total Assets</b>	<b>\$ 10,646,945</b>
<b>Liabilities</b>	
Payables	
Accounts Payable - Purchase of Investments	\$ 1,039,439
Accrued Expenses	13,648
Accounts Payable - Other	0
Total Liabilities	\$ 1,053,087
<b>Net Position Restricted for Pensions</b>	<b>\$ 9,593,858</b>



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

	<b>2022</b>
<b>Additions</b>	
Contributions	
Employer	\$ 168,330
Employee	393,638
Other - Employer	9
Other - Employee	0
<b>Total Contributions</b>	<b>\$ 561,977</b>
Investment Income	
Net Appreciation in Fair Value of Investments	\$ (835,983)
Interest and Dividends	188,368
Less Investment Expense	(60,803)
<b>Net Investment Income</b>	<b>\$ (708,418)</b>
Other	\$ 0
<b>Total Additions</b>	<b>\$ (146,441)</b>
 <b>Deductions</b>	
Benefit Payments, including Refunds of Employee Contributions	\$ 875,856
Pension Plan Administrative Expense	10,439
Other	616
<b>Total Deductions</b>	<b>\$ 886,911</b>
<b>Net Increase in Net Position</b>	<b>\$ (1,033,352)</b>
 <b>Net Position Restricted for Pensions</b>	
Beginning of Year	\$ 10,627,210
End of Year	<b>\$ 9,593,858</b>

## SECTION C

---

### **REQUIRED SUPPLEMENTARY INFORMATION**

Auditor's Note – This information is intended to assist in preparation of the financial statements of the Wyoming Air Guard Firefighters 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

<b>A. Total pension liability</b>	
1. Service cost	\$ 341,554
2. Interest on the total pension liability	772,538
3. Changes of benefit terms	0
4. Difference between expected and actual experience of the total pension liability	698,485
5. Changes of assumptions	0
6. Benefit payments, including refunds of employee contributions	(875,856)
<b>7. Net change in total pension liability</b>	<u>936,721</u>
<b>8. Total pension liability – beginning</b>	<u>10,925,128</u>
<b>9. Total pension liability – ending</b>	<u><u>\$ 11,861,849</u></u>
<b>B. Plan fiduciary net position</b>	
1. Contributions – employer	\$ 168,339
2. Contributions – employee	393,638
3. Net investment income	(708,418)
4. Benefit payments, including refunds of employee contributions	(875,856)
5. Pension plan administrative expense	(10,439)
6. Other	(616)
<b>7. Net change in plan fiduciary net position</b>	<u>(1,033,352)</u>
<b>8. Plan fiduciary net position – beginning</b>	<u>10,627,210</u>
<b>9. Plan fiduciary net position – ending</b>	<u><u>\$ 9,593,858</u></u>
<b>C. Net pension liability</b>	<u><u>\$ 2,267,991</u></u>
<b>D. Plan fiduciary net position as a percentage of the total pension liability</b>	80.88 %
<b>E. Covered-employee payroll</b>	\$ 2,145,431
<b>F. Net pension liability as a percentage of covered-employee payroll</b>	105.71 %



# 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
<b>Total pension liability</b>									
Service cost	\$ 341,554	\$ 344,841	\$ 312,751	\$ 317,202	\$ 294,146	\$ 272,169	\$ 337,474	\$ 331,123	\$ 276,305
Interest on the total pension liability	772,538	711,065	667,446	624,153	599,634	563,514	554,448	517,889	455,677
Changes of benefit terms	0	0	0	0	0	0	0	0	0
Difference between expected and actual experience	698,485	193,673	186,135	1,751	161,615	272,060	65,370	201,096	0
Changes of assumptions	0	391,181	0	0	0	311,427	0	0	0
Benefit payments, including refunds of employee contributions	(875,856)	(822,537)	(500,565)	(512,859)	(598,879)	(390,843)	(702,598)	(189,069)	(126,427)
<b>Net change in total pension liability</b>	936,721	818,223	665,767	430,247	456,516	1,028,327	254,694	861,039	605,554
<b>Total pension liability - beginning</b>	10,925,128	10,106,905	9,441,138	9,010,891	8,554,375	7,526,048	7,271,354	6,410,315	5,804,761
<b>Total pension liability - ending (a)</b>	\$ 11,861,849	\$ 10,925,128	\$ 10,106,905	\$ 9,441,138	\$ 9,010,891	\$ 8,554,375	\$ 7,526,048	\$ 7,271,354	\$ 6,410,315
<b>Plan fiduciary net position</b>									
Employer contributions	\$ 168,339	\$ 155,959	\$ 141,013	\$ 158,176	\$ 159,583	\$ 156,263	\$ 136,768	\$ 158,319	\$ 142,437
Employee contributions	393,638	364,707	329,758	369,907	445,101	367,485	376,685	405,026	335,763
Pension plan net investment income	(708,418)	1,567,665	897,557	1,300,461	(253,859)	902,109	431,043	(55,411)	260,772
Benefit payments, including refunds of employee contributions	(875,856)	(822,537)	(500,565)	(512,859)	(598,879)	(390,843)	(702,598)	(189,069)	(126,427)
Pension plan administrative expense	(10,439)	(12,936)	(8,047)	(6,972)	(7,141)	(6,431)	(5,731)	(4,637)	(4,312)
Other	(616)	(337)	(323)	(327)	(292)	(602)	(301)	(276)	1,085
<b>Net change in plan fiduciary net position</b>	(1,033,352)	1,252,521	859,393	1,308,386	(255,487)	1,027,981	235,866	313,952	609,318
<b>Plan fiduciary net position - beginning</b>	10,627,210	9,374,689	8,515,296	7,206,910	7,462,397	6,434,416	6,198,550	5,884,598	5,275,280
<b>Plan fiduciary net position - ending (b)</b>	\$ 9,593,858	\$ 10,627,210	\$ 9,374,689	\$ 8,515,296	\$ 7,206,910	\$ 7,462,397	\$ 6,434,416	\$ 6,198,550	\$ 5,884,598
<b>Net pension liability - ending (a) - (b)</b>	\$ 2,267,991	\$ 297,918	\$ 732,216	\$ 925,842	\$ 1,803,981	\$ 1,091,978	\$ 1,091,632	\$ 1,072,804	\$ 525,717
<b>Plan fiduciary net position as a percentage of total pension liability</b>	80.88 %	97.27 %	92.76 %	90.19 %	79.98 %	87.23 %	85.50 %	85.25 %	91.80 %
<b>Covered-employee payroll</b>	\$ 2,145,431	\$ 2,157,801	\$ 2,316,140	\$ 2,341,404	\$ 2,154,544	\$ 1,975,631	\$ 2,151,997	\$ 2,124,296	\$ 1,731,731
<b>Projected valuation payroll</b>	\$ 2,199,066	\$ 2,211,746	\$ 2,374,043	\$ 2,399,940	\$ 2,208,407	\$ 2,059,595	\$ 2,243,456	\$ 2,214,578	\$ 1,805,329
<b>Net pension liability as a percentage of covered-employee payroll</b>	105.71 %	13.81 %	31.61 %	39.54 %	83.73 %	55.27 %	50.73 %	50.50 %	30.36 %

**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	\$ 6,410,315	\$ 5,884,598	\$ 525,717	91.80 %	\$ 1,731,731	30.36 %
2015	7,271,354	6,198,550	1,072,804	85.25 %	2,124,296	50.50 %
2016	7,526,048	6,434,416	1,091,632	85.50 %	2,151,997	50.73 %
2017	8,554,375	7,462,397	1,091,978	87.23 %	1,975,631	55.27 %
2018	9,010,891	7,206,910	1,803,981	79.98 %	2,154,544	83.73 %
2019	9,441,138	8,515,296	925,842	90.19 %	2,341,404	39.54 %
2020	10,106,905	9,374,689	732,216	92.76 %	2,316,140	31.61 %
2021	10,925,128	10,627,210	297,918	97.27 %	2,157,801	13.81 %
2022	11,861,849	9,593,858	2,267,991	80.88 %	2,145,431	105.71 %

\* 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	\$ 13,694	\$ 143,582	\$ (129,888)	\$ 1,731,731	8.29 %
2015	3,987	158,319	(154,332)	2,124,296	7.45 %
2016	7,634	136,768	(129,134)	2,151,997	6.36 %
2017	6,011	156,263	(150,252)	1,975,631	7.91 %
2018	11,590	159,583	(147,993)	2,154,544	7.41 %
2019	4,344	158,176	(153,832)	2,341,404	6.76 %
2020	15,348	141,013	(125,665)	2,316,140	6.09 %
2021	19,558	155,959	(136,401)	2,157,801	7.23 %
2022	126,605	168,339	(41,734)	2,145,431	7.85 %

\* 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	24 years
Asset Valuation Method	5-Year smoothed market
Inflation	2.25%
Salary Increases	4.75% to 8.75% 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 currently contributing at the rate of 7.12% of salary.  
Employees are currently contributing at the rate of 16.25% 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

<u>FY Ending December 31,</u>	<u>Annual Return<sup>1</sup></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)%

<sup>1</sup> 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 Air Guard Firefighters 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 required contribution rate. Based on these assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

## Sensitivity of Results

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

### Sensitivity of Net Pension Liability to the Single Discount Rate Assumption

1% Decrease	Current Single Discount Rate Assumption	1% Increase
5.80%	6.80%	7.80%
\$ 3,776,882	\$ 2,267,991	\$ 1,058,591

## Summary of Population Statistics

Inactive Plan Members or Beneficiaries Currently Receiving Benefits	19
Inactive Plan Members Entitled to But Not Yet Receiving Benefits	14
Active Plan Members	<u>38</u>
Total Plan Members	71

# SECTION E

---

## SUMMARY OF BENEFITS

## Summary of Benefits

<b>Covered Members</b>	Any employees covered by the Air Guard Firefighter Pension Plan (Air Guard Firefighters employees).
<b>Final Average Salary</b>	Employee's average annual salary for the highest paid three continuous years of service.
<b>Service Retirement</b>	
Eligibility	Age 60 with four or more years of service or age 50 with 25 or more years of service. All employees are eligible for a reduced benefit at age 50 with four or more years of service or any age with 25 or more years of service.
Monthly Benefit	2.50% of employee's Final Average Salary for each year of credited service. This amount is reduced by 5.0% per year that the employee is under age 60. However, members who are at least age 55 retiring with a combined age and service of at least 75 receive an unreduced benefit.
Vesting	Any employee who has left employment with four or more years of service, and who has not withdrawn accumulated contributions, is eligible to receive the above benefit or can elect to receive a lump-sum refund of contributions with interest. An employee who terminates with less than four years of service is only eligible for the lump-sum benefit.
<b>Disability Benefit</b>	
Eligibility	Ten or more years of service.
Benefit	65% of salary as of the date of disability, payable immediately.
<b>Pre-retirement Death Benefit</b>	
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.
<b>Contributions</b>	
Employee	16.65% of salary.
Employer	7.12% of salary.
Interest	3.00% annually.



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

## **SECTION F**

---

### **ACTUARIAL COST METHOD AND ACTUARIAL ASSUMPTIONS**



## Actuarial Assumptions and Cost Method

The following methods and assumptions were used in preparing the January 1, 2022 actuarial valuation report 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 1<sup>st</sup>, 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 percent 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 actuarial accrued liability contributions are determined by subtracting the actuarial value of assets from the actuarial accrued liability and amortizing the result over 30 years from the valuation date. 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 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 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%

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%	0.35%	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. Disability

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	0.03%	0.03%
50	0.08%	0.08%
55	0.20%	0.20%
60	0.20%	0.20%

65% of active disabilities are assumed to be duty-related

c. Withdrawal

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, 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 60.
- f. No benefit amount data is available for members entitled to deferred benefits. The present value of benefits expected to be paid to vested inactive non-retired members is approximated using the data provided.
- g. There will be no recoveries once disabled.
- h. No surviving spouse will remarry.
- i. Administrative expenses: Assumed to be the average of the 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. 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	Payroll for Current Employees	Payroll for Future Employees	Total Employee Payroll	Contributions from Current Employees	Employer Contributions for Current Employees	Employer Contributions Related to Payroll of Future Employees	Total Contributions
	(a)	(b)=max(0,(c)-(a))	(c)	(d)	(e)=(a)*ER%	(f) = (b)*netER%	(g)=(d)+(e)+(f)
2022	\$ 2,131,556	\$ 67,510	\$ 2,199,066	\$ 393,638	\$ 162,091	\$ 6,239	\$ 561,968
2023	1,990,902	263,141	2,254,043	331,485	141,752	24,319	497,556
2024	1,865,151	445,243	2,310,394	310,548	132,799	41,152	484,499
2025	1,754,448	613,706	2,368,154	292,116	124,917	56,727	473,760
2026	1,654,143	773,215	2,427,358	275,415	117,775	71,480	464,670
2027	1,565,450	922,592	2,488,042	260,647	111,460	85,316	457,423
2028	1,490,967	1,059,276	2,550,243	248,246	106,157	98,051	452,454
2029	1,427,833	1,186,166	2,613,999	237,734	101,662	110,001	449,397
2030	1,367,475	1,311,874	2,679,349	227,685	97,364	121,923	446,972
2031	1,309,172	1,437,161	2,746,333	217,977	93,213	133,845	445,035
2032	1,254,982	1,560,009	2,814,991	208,955	89,355	145,567	443,877
2033	1,203,926	1,681,440	2,885,366	200,454	85,720	157,172	443,346
2034	1,158,168	1,799,332	2,957,500	192,835	82,462	168,461	443,758
2035	1,110,994	1,920,444	3,031,438	184,980	79,103	180,051	444,134
2036	1,067,643	2,039,581	3,107,224	177,763	76,016	191,455	445,234
2037	1,030,478	2,154,427	3,184,905	171,575	73,370	202,466	447,411
2038	993,583	2,270,945	3,264,528	165,432	70,743	213,639	449,814
2039	955,064	2,391,077	3,346,141	159,018	68,001	225,144	452,163
2040	910,025	2,519,770	3,429,795	151,519	64,794	237,454	453,767
2041	858,356	2,657,184	3,515,540	142,916	61,115	250,573	454,604
2042	806,196	2,797,233	3,603,429	134,232	57,401	263,953	455,586
2043	752,736	2,940,779	3,693,515	125,331	53,595	277,679	456,605
2044	692,240	3,093,613	3,785,853	115,258	49,287	292,304	456,849
2045	621,093	3,259,406	3,880,499	103,412	44,222	308,146	455,780
2046	551,437	3,426,074	3,977,511	91,814	39,262	324,073	455,149
2047	492,798	3,584,151	4,076,949	82,051	35,087	339,217	456,355
2048	441,044	3,737,829	4,178,873	73,434	31,402	353,964	458,800
2049	390,926	3,892,419	4,283,345	65,089	27,834	368,800	461,723
2050	341,699	4,048,730	4,390,429	56,893	24,329	383,792	465,014
2051	297,481	4,202,709	4,500,190	49,531	21,181	398,555	469,267
2052	255,391	4,357,304	4,612,695	42,523	18,184	413,377	474,084
2053	213,781	4,514,231	4,728,012	35,595	15,221	428,384	479,200
2054	179,088	4,667,124	4,846,212	29,818	12,751	442,993	485,562
2055	150,367	4,817,000	4,967,367	25,036	10,706	457,309	493,051
2056	125,575	4,965,976	5,091,551	20,908	8,941	471,531	501,380
2057	104,521	5,114,319	5,218,840	17,403	7,442	485,687	510,532
2058	86,894	5,262,417	5,349,311	14,468	6,187	499,814	520,469
2059	71,661	5,411,383	5,483,044	11,932	5,102	514,021	531,055
2060	58,191	5,561,929	5,620,120	9,689	4,143	528,376	542,208
2061	47,164	5,713,459	5,760,623	7,853	3,358	542,821	554,032
2062	38,715	5,865,924	5,904,639	6,446	2,756	557,357	566,559
2063	31,776	6,020,479	6,052,255	5,291	2,262	572,093	579,646
2064	25,646	6,177,915	6,203,561	4,270	1,826	587,101	593,197
2065	20,350	6,338,300	6,358,650	3,388	1,449	602,389	607,226
2066	16,061	6,501,555	6,517,616	2,674	1,144	617,951	621,769
2067	12,316	6,668,240	6,680,556	2,051	877	633,841	636,769
2068	8,948	6,838,622	6,847,570	1,490	637	650,075	652,202
2069	6,697	7,012,062	7,018,759	1,115	477	666,600	668,192
2070	5,164	7,189,064	7,194,228	860	368	683,464	684,692
2071	3,927	7,370,157	7,374,084	654	280	700,714	701,648



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

Year	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	\$ 3,112	\$ 7,555,324	\$ 7,558,436	\$ 518	\$ 222	\$ 718,351	\$ 719,091
2073	2,437	7,744,960	7,747,397	406	174	736,410	736,990
2074	1,849	7,939,233	7,941,082	308	132	754,908	755,348
2075	1,357	8,138,252	8,139,609	226	97	773,854	774,177
2076	1,013	8,342,086	8,343,099	169	72	793,253	793,494
2077	804	8,550,872	8,551,676	134	57	813,122	813,313
2078	634	8,764,834	8,765,468	106	45	833,480	833,631
2079	477	8,984,128	8,984,605	80	34	854,342	854,456
2080	304	9,208,916	9,209,220	51	22	875,724	875,797
2081	185	9,439,266	9,439,451	31	13	897,631	897,675
2082	88	9,675,349	9,675,437	15	6	920,080	920,101
2083	-	9,917,323	9,917,323	-	-	943,088	943,088
2084	-	10,165,256	10,165,256	-	-	966,660	966,660
2085	-	10,419,387	10,419,387	-	-	990,820	990,820
2086	-	10,679,872	10,679,872	-	-	1,015,583	1,015,583
2087	-	10,946,869	10,946,869	-	-	1,040,964	1,040,964
2088	-	11,220,541	11,220,541	-	-	1,066,980	1,066,980
2089	-	11,501,055	11,501,055	-	-	1,093,646	1,093,646
2090	-	11,788,581	11,788,581	-	-	1,120,978	1,120,978
2091	-	12,083,296	12,083,296	-	-	1,148,995	1,148,995
2092	-	12,385,378	12,385,378	-	-	1,177,712	1,177,712
2093	-	12,695,012	12,695,012	-	-	1,207,149	1,207,149
2094	-	13,012,387	13,012,387	-	-	1,237,322	1,237,322
2095	-	13,337,697	13,337,697	-	-	1,268,251	1,268,251
2096	-	13,671,139	13,671,139	-	-	1,299,953	1,299,953
2097	-	14,012,917	14,012,917	-	-	1,332,449	1,332,449
2098	-	14,363,240	14,363,240	-	-	1,365,759	1,365,759
2099	-	14,722,321	14,722,321	-	-	1,399,902	1,399,902
2100	-	15,090,379	15,090,379	-	-	1,434,900	1,434,900
2101	-	15,467,638	15,467,638	-	-	1,470,774	1,470,774
2102	-	15,854,329	15,854,329	-	-	1,507,545	1,507,545
2103	-	16,250,687	16,250,687	-	-	1,545,235	1,545,235
2104	-	16,656,954	16,656,954	-	-	1,583,869	1,583,869
2105	-	17,073,378	17,073,378	-	-	1,623,468	1,623,468
2106	-	17,500,212	17,500,212	-	-	1,664,058	1,664,058
2107	-	17,937,717	17,937,717	-	-	1,705,663	1,705,663
2108	-	18,386,160	18,386,160	-	-	1,748,307	1,748,307
2109	-	18,845,814	18,845,814	-	-	1,792,018	1,792,018
2110	-	19,316,959	19,316,959	-	-	1,836,821	1,836,821
2111	-	19,799,883	19,799,883	-	-	1,882,744	1,882,744
2112	-	20,294,880	20,294,880	-	-	1,929,815	1,929,815
2113	-	20,802,252	20,802,252	-	-	1,978,062	1,978,062
2114	-	21,322,308	21,322,308	-	-	2,027,515	2,027,515
2115	-	21,855,366	21,855,366	-	-	2,078,204	2,078,204
2116	-	22,401,750	22,401,750	-	-	2,130,160	2,130,160
2117	-	22,961,794	22,961,794	-	-	2,183,414	2,183,414
2118	-	23,535,839	23,535,839	-	-	2,237,999	2,237,999
2119	-	24,124,235	24,124,235	-	-	2,293,949	2,293,949
2120	-	24,727,341	24,727,341	-	-	2,351,297	2,351,297
2121	-	25,345,525	25,345,525	-	-	2,410,079	2,410,079



# 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	\$ 10,627,210	\$ 561,977	\$ 875,856	\$ 11,055	\$ (708,418)	\$ 9,593,858
2023	9,593,858	497,556	728,791	11,270	644,273	9,995,626
2024	9,995,626	484,499	732,158	11,552	671,034	10,407,449
2025	10,407,449	473,760	711,551	11,841	699,359	10,857,175
2026	10,857,175	464,670	719,515	12,137	729,360	11,319,552
2027	11,319,552	457,423	736,877	12,440	759,968	11,787,627
2028	11,787,627	452,454	753,349	12,751	791,070	12,265,052
2029	12,265,052	449,397	762,644	13,070	823,111	12,761,846
2030	12,761,846	446,972	773,811	13,397	856,428	13,278,038
2031	13,278,038	445,035	785,511	13,732	891,062	13,814,892
2032	13,814,892	443,877	798,633	14,075	927,079	14,373,139
2033	14,373,139	443,346	812,965	14,427	964,531	14,953,624
2034	14,953,624	443,758	829,645	14,788	1,003,448	15,556,397
2035	15,556,397	444,134	850,091	15,157	1,043,753	16,179,036
2036	16,179,036	445,234	869,264	15,536	1,085,475	16,824,945
2037	16,824,945	447,411	887,792	15,925	1,128,837	17,497,475
2038	17,497,475	449,814	909,293	16,323	1,173,917	18,195,590
2039	18,195,590	452,163	942,433	16,731	1,220,346	18,908,935
2040	18,908,935	453,767	978,527	17,149	1,267,686	19,634,712
2041	19,634,712	454,604	1,021,134	17,578	1,315,627	20,366,231
2042	20,366,231	455,586	1,061,765	18,017	1,364,030	21,106,065
2043	21,106,065	456,605	1,103,614	18,468	1,412,958	21,853,546
2044	21,853,546	456,849	1,158,443	18,929	1,461,946	22,594,969
2045	22,594,969	455,780	1,214,051	19,402	1,510,452	23,327,748
2046	23,327,748	455,149	1,269,443	19,888	1,558,391	24,051,958
2047	24,051,958	456,355	1,336,340	20,385	1,605,424	24,757,012
2048	24,757,012	458,800	1,407,978	20,894	1,651,037	25,437,976
2049	25,437,976	461,723	1,457,550	21,417	1,695,765	26,116,497
2050	26,116,497	465,014	1,509,260	21,952	1,740,267	26,790,566
2051	26,790,566	469,267	1,559,526	22,501	1,784,547	27,462,352
2052	27,462,352	474,084	1,588,980	23,063	1,829,386	28,153,778
2053	28,153,778	479,200	1,631,664	23,640	1,875,127	28,852,800
2054	28,852,800	485,562	1,688,338	24,231	1,920,958	29,546,751
2055	29,546,751	493,051	1,738,351	24,837	1,966,705	30,243,319
2056	30,243,319	501,380	1,767,798	25,458	2,013,344	30,964,788
2057	30,964,788	510,532	1,774,804	26,094	2,062,455	31,736,876
2058	31,736,876	520,469	1,774,917	26,747	2,115,263	32,570,944
2059	32,570,944	531,055	1,771,745	27,415	2,172,418	33,475,256
2060	33,475,256	542,208	1,778,682	28,101	2,234,029	34,444,710
2061	34,444,710	554,032	1,771,074	28,803	2,300,578	35,499,443
2062	35,499,443	566,559	1,759,541	29,523	2,373,081	36,650,019
2063	36,650,019	579,646	1,743,859	30,261	2,452,257	37,907,802
2064	37,907,802	593,197	1,701,583	31,018	2,539,628	39,308,025
2065	39,308,025	607,226	1,656,935	31,793	2,636,779	40,863,303
2066	40,863,303	621,769	1,609,952	32,588	2,744,569	42,587,101
2067	42,587,101	636,769	1,561,277	33,403	2,863,890	44,493,079
2068	44,493,079	652,202	1,511,293	34,238	2,995,656	46,595,406
2069	46,595,406	668,192	1,459,415	35,094	3,140,855	48,909,944
2070	48,909,944	684,692	1,406,305	35,971	3,300,542	51,452,901
2071	51,452,901	701,648	1,352,464	36,870	3,475,800	54,241,016



# 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	\$ 54,241,016	\$ 719,091	\$ 1,297,773	\$ 37,792	\$ 3,667,774	\$ 57,292,315
2073	57,292,315	736,990	1,242,698	38,737	3,877,671	60,625,541
2074	60,625,541	755,348	1,187,257	39,705	4,106,766	64,260,692
2075	64,260,692	774,177	1,131,384	40,698	4,356,421	68,219,209
2076	68,219,209	793,494	1,075,020	41,715	4,628,097	72,524,064
2077	72,524,064	813,313	1,018,124	42,758	4,923,357	77,199,851
2078	77,199,851	833,631	960,811	43,827	5,243,871	82,272,715
2079	82,272,715	854,456	903,180	44,923	5,591,413	87,770,480
2080	87,770,480	875,797	845,393	46,046	5,967,870	93,722,708
2081	93,722,708	897,675	787,498	47,197	6,375,250	100,160,938
2082	100,160,938	920,101	729,751	48,377	6,815,691	107,118,602
2083	107,118,602	943,088	672,399	49,587	7,291,459	114,631,163
2084	114,631,163	966,660	615,637	50,826	7,804,958	122,736,318
2085	122,736,318	990,820	559,960	52,097	8,358,736	131,473,817
2086	131,473,817	1,015,583	505,704	53,399	8,955,485	140,885,782
2087	140,885,782	1,040,964	453,226	54,734	9,598,057	151,016,843
2088	151,016,843	1,066,980	402,891	56,103	10,289,477	161,914,306
2089	161,914,306	1,093,646	355,000	57,505	11,032,951	173,628,398
2090	173,628,398	1,120,978	309,872	58,943	11,831,884	186,212,445
2091	186,212,445	1,148,995	267,815	60,416	12,689,893	199,723,102
2092	199,723,102	1,177,712	229,053	61,927	13,610,824	214,220,659
2093	214,220,659	1,207,149	193,702	63,475	14,598,773	229,769,404
2094	229,769,404	1,237,322	161,822	65,062	15,658,109	246,437,951
2095	246,437,951	1,268,251	133,409	66,688	16,793,501	264,299,606
2096	264,299,606	1,299,953	108,421	68,356	18,009,933	283,432,715
2097	283,432,715	1,332,449	86,786	70,065	19,312,738	303,921,051
2098	303,921,051	1,365,759	68,356	71,816	20,707,616	325,854,254
2099	325,854,254	1,399,902	52,939	73,612	22,200,671	349,328,277
2100	349,328,277	1,434,900	40,283	75,452	23,798,437	374,445,878
2101	374,445,878	1,470,774	30,080	77,338	25,507,912	401,317,146
2102	401,317,146	1,507,545	22,012	79,272	27,336,593	430,060,000
2103	430,060,000	1,545,235	15,765	81,253	29,292,510	460,800,726
2104	460,800,726	1,583,869	11,036	83,285	31,384,261	493,674,535
2105	493,674,535	1,623,468	7,542	85,367	33,621,052	528,826,145
2106	528,826,145	1,664,058	5,026	87,501	36,012,731	566,410,407
2107	566,410,407	1,705,663	3,262	89,689	38,569,838	606,592,958
2108	606,592,958	1,748,307	2,059	91,931	41,303,643	649,550,917
2109	649,550,917	1,792,018	1,263	94,229	44,226,196	695,473,638
2110	695,473,638	1,836,821	753	96,585	47,350,377	744,563,499
2111	744,563,499	1,882,744	435	98,999	50,689,953	797,036,762
2112	797,036,762	1,929,815	245	101,474	54,259,633	853,124,491
2113	853,124,491	1,978,062	134	104,011	58,075,131	913,073,539
2114	913,073,539	2,027,515	72	106,612	62,153,235	977,147,605
2115	977,147,605	2,078,204	38	109,277	66,511,878	1,045,628,373
2116	1,045,628,373	2,130,160	19	112,009	71,170,217	1,118,816,722
2117	1,118,816,722	2,183,414	10	114,809	76,148,713	1,197,034,029
2118	1,197,034,029	2,237,999	5	117,679	81,469,219	1,280,623,564
2119	1,280,623,564	2,293,949	2	120,621	87,155,080	1,369,951,969
2120	1,369,951,969	2,351,297	1	123,637	93,231,229	1,465,410,857
2121	1,465,410,857	2,410,079	1	126,728	99,724,295	1,567,418,503



# Single Discount Rate Development

## Present Values of Projected Benefits

### Ending December 31 for 2022 to 2071

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 <sup>-(a)-.5</sup>	(g)=(e)*vf <sup>-(a)-.5</sup>	(h)=((c)/(1+SDR) <sup>-(a)-.5</sup> )
2022	\$ 10,627,210	\$ 875,856	\$ 875,856	\$ 0	\$ 847,514	\$ 0	\$ 847,514
2023	9,593,858	728,791	728,791	0	660,307	0	660,307
2024	9,995,626	732,158	732,158	0	621,122	0	621,122
2025	10,407,449	711,551	711,551	0	565,206	0	565,206
2026	10,857,175	719,515	719,515	0	535,142	0	535,142
2027	11,319,552	736,877	736,877	0	513,160	0	513,160
2028	11,787,627	753,349	753,349	0	491,228	0	491,228
2029	12,265,052	762,644	762,644	0	465,626	0	465,626
2030	12,761,846	773,811	773,811	0	442,363	0	442,363
2031	13,278,038	785,511	785,511	0	420,461	0	420,461
2032	13,814,892	798,633	798,633	0	400,266	0	400,266
2033	14,373,139	812,965	812,965	0	381,507	0	381,507
2034	14,953,624	829,645	829,645	0	364,545	0	364,545
2035	15,556,397	850,091	850,091	0	349,747	0	349,747
2036	16,179,036	869,264	869,264	0	334,864	0	334,864
2037	16,824,945	887,792	887,792	0	320,226	0	320,226
2038	17,497,475	909,293	909,293	0	307,099	0	307,099
2039	18,195,590	942,433	942,433	0	298,025	0	298,025
2040	18,908,935	978,527	978,527	0	289,737	0	289,737
2041	19,634,712	1,021,134	1,021,134	0	283,102	0	283,102
2042	20,366,231	1,061,765	1,061,765	0	275,625	0	275,625
2043	21,106,065	1,103,614	1,103,614	0	268,247	0	268,247
2044	21,853,546	1,158,443	1,158,443	0	263,646	0	263,646
2045	22,594,969	1,214,051	1,214,051	0	258,710	0	258,710
2046	23,327,748	1,269,443	1,269,443	0	253,290	0	253,290
2047	24,051,958	1,336,340	1,336,340	0	249,661	0	249,661
2048	24,757,012	1,407,978	1,407,978	0	246,296	0	246,296
2049	25,437,976	1,457,550	1,457,550	0	238,734	0	238,734
2050	26,116,497	1,509,260	1,509,260	0	231,464	0	231,464
2051	26,790,566	1,559,526	1,559,526	0	223,945	0	223,945
2052	27,462,352	1,588,980	1,588,980	0	213,646	0	213,646
2053	28,153,778	1,631,664	1,631,664	0	205,417	0	205,417
2054	28,852,800	1,688,338	1,688,338	0	199,019	0	199,019
2055	29,546,751	1,738,351	1,738,351	0	191,867	0	191,867
2056	30,243,319	1,767,798	1,767,798	0	182,694	0	182,694
2057	30,964,788	1,774,804	1,774,804	0	171,740	0	171,740
2058	31,736,876	1,774,917	1,774,917	0	160,815	0	160,815
2059	32,570,944	1,771,745	1,771,745	0	150,307	0	150,307
2060	33,475,256	1,778,682	1,778,682	0	141,288	0	141,288
2061	34,444,710	1,771,074	1,771,074	0	131,726	0	131,726
2062	35,499,443	1,759,541	1,759,541	0	122,536	0	122,536
2063	36,650,019	1,743,859	1,743,859	0	113,711	0	113,711
2064	37,907,802	1,701,583	1,701,583	0	103,890	0	103,890
2065	39,308,025	1,656,935	1,656,935	0	94,723	0	94,723
2066	40,863,303	1,609,952	1,609,952	0	86,177	0	86,177
2067	42,587,101	1,561,277	1,561,277	0	78,251	0	78,251
2068	44,493,079	1,511,293	1,511,293	0	70,923	0	70,923
2069	46,595,406	1,459,415	1,459,415	0	64,127	0	64,127
2070	48,909,944	1,406,305	1,406,305	0	57,859	0	57,859
2071	51,452,901	1,352,464	1,352,464	0	52,101	0	52,101



# 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	\$ 54,241,016	\$ 1,297,773	\$ 1,297,773	\$ 0	\$ 46,811	\$ 0	\$ 46,811
2073	57,292,315	1,242,698	1,242,698	0	41,971	0	41,971
2074	60,625,541	1,187,257	1,187,257	0	37,545	0	37,545
2075	64,260,692	1,131,384	1,131,384	0	33,500	0	33,500
2076	68,219,209	1,075,020	1,075,020	0	29,805	0	29,805
2077	72,524,064	1,018,124	1,018,124	0	26,430	0	26,430
2078	77,199,851	960,811	960,811	0	23,354	0	23,354
2079	82,272,715	903,180	903,180	0	20,555	0	20,555
2080	87,770,480	845,393	845,393	0	18,015	0	18,015
2081	93,722,708	787,498	787,498	0	15,713	0	15,713
2082	100,160,938	729,751	729,751	0	13,634	0	13,634
2083	107,118,602	672,399	672,399	0	11,762	0	11,762
2084	114,631,163	615,637	615,637	0	10,084	0	10,084
2085	122,736,318	559,960	559,960	0	8,588	0	8,588
2086	131,473,817	505,704	505,704	0	7,262	0	7,262
2087	140,885,782	453,226	453,226	0	6,094	0	6,094
2088	151,016,843	402,891	402,891	0	5,072	0	5,072
2089	161,914,306	355,000	355,000	0	4,185	0	4,185
2090	173,628,398	309,872	309,872	0	3,420	0	3,420
2091	186,212,445	267,815	267,815	0	2,768	0	2,768
2092	199,723,102	229,053	229,053	0	2,216	0	2,216
2093	214,220,659	193,702	193,702	0	1,755	0	1,755
2094	229,769,404	161,822	161,822	0	1,373	0	1,373
2095	246,437,951	133,409	133,409	0	1,060	0	1,060
2096	264,299,606	108,421	108,421	0	806	0	806
2097	283,432,715	86,786	86,786	0	604	0	604
2098	303,921,051	68,356	68,356	0	446	0	446
2099	325,854,254	52,939	52,939	0	323	0	323
2100	349,328,277	40,283	40,283	0	230	0	230
2101	374,445,878	30,080	30,080	0	161	0	161
2102	401,317,146	22,012	22,012	0	110	0	110
2103	430,060,000	15,765	15,765	0	74	0	74
2104	460,800,726	11,036	11,036	0	48	0	48
2105	493,674,535	7,542	7,542	0	31	0	31
2106	528,826,145	5,026	5,026	0	19	0	19
2107	566,410,407	3,262	3,262	0	12	0	12
2108	606,592,958	2,059	2,059	0	7	0	7
2109	649,550,917	1,263	1,263	0	4	0	4
2110	695,473,638	753	753	0	2	0	2
2111	744,563,499	435	435	0	1	0	1
2112	797,036,762	245	245	0	1	0	1
2113	853,124,491	134	134	0	0	0	0
2114	913,073,539	72	72	0	0	0	0
2115	977,147,605	38	38	0	0	0	0
2116	1,045,628,373	19	19	0	0	0	0
2117	1,118,816,722	10	10	0	0	0	0
2118	1,197,034,029	5	5	0	0	0	0
2119	1,280,623,564	2	2	0	0	0	0
2120	1,369,951,969	1	1	0	0	0	0
2121	1,465,410,857	0	0	0	0	0	0
<b>Totals</b>	\$		\$		\$ 14,369,538	\$ 0	\$ 14,369,538



# SECTION H

---

## GLOSSARY OF TERMS



## Glossary of Terms

<b>Accrued Service</b>	Service credited under the system that was rendered before the date of the actuarial valuation.
<b>Actuarial Accrued Liability (AAL)</b>	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."
<b>Actuarial Assumptions</b>	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.
<b>Actuarial Cost Method</b>	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.
<b>Actuarial Equivalent</b>	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.
<b>Actuarial Gain (Loss)</b>	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.
<b>Actuarial Present Value (APV)</b>	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.
<b>Actuarial Valuation</b>	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.
<b>Actuarial Valuation Date</b>	The date as of which an actuarial valuation is performed.
<b>Actuarially Determined Contribution (ADC) or Annual Required Contribution (ARC)</b>	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

<b>Amortization Method</b>	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).
<b>Amortization Payment</b>	The amortization payment is the periodic payment required to pay off an interest-discounted amount with payments of interest and principal.
<b>Cost-of-Living Adjustments</b>	Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.
<b>Cost-Sharing Multiple-Employer Defined Benefit Pension Plan (cost-sharing pension plan)</b>	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.
<b>Covered-Employee Payroll</b>	The payroll of employees that are provided with pensions through the pension plan.
<b>Deferred Inflows and Outflows</b>	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.
<b>Deferred Retirement Option Program (DROP)</b>	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

<b>Other Postemployment Benefits (OPEB)</b>	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.
<b>Real Rate of Return</b>	The real rate of return is the rate of return on an investment after adjustment to eliminate inflation.
<b>Service Cost</b>	The service cost is the portion of the actuarial present value of projected benefit payments that is attributed to a valuation year.
<b>Total Pension Expense</b>	The total pension expense is the sum of the following items that are recognized at the end of the employer's fiscal year: <ol style="list-style-type: none"><li>1. Service Cost</li><li>2. Interest on the Total Pension Liability</li><li>3. Current-Period Benefit Changes</li><li>4. Employee Contributions (made negative for addition here)</li><li>5. Projected Earnings on Plan Investments (made negative for addition here)</li><li>6. Pension Plan Administrative Expense</li><li>7. Other Changes in Plan Fiduciary Net Position</li><li>8. Recognition of Outflow (Inflow) of Resources due to Liabilities</li><li>9. Recognition of Outflow (Inflow) of Resources due to Assets</li></ol>
<b>Total Pension Liability (TPL)</b>	The TPL is the portion of the actuarial present value of projected benefit payments that is attributed to past periods of member service.
<b>Unfunded Actuarial Accrued Liability (UAAL)</b>	The UAAL is the difference between actuarial accrued liability and valuation assets.
<b>Valuation Assets</b>	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.