

# 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, 2020





March 26, 2021

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, 2020 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 incorporates the assumptions adopted by the Board effective August 23, 2017. 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. Our experience study report was dated January 10, 2018 and it covered the five-year investigation period ending December 31, 2016.

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.

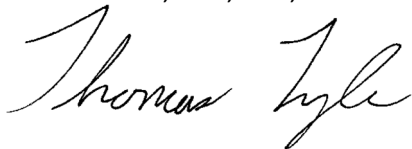
Respectfully submitted,

**Gabriel, Roeder, Smith & Company**



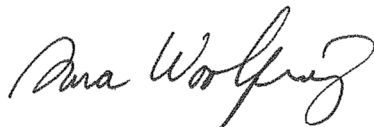
By

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Paul T. Wood, ASA, FCA, MAAA



By

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



By

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# SECTION A

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## EXECUTIVE SUMMARY

# Executive Summary as of December 31, 2020

	<b>2020</b>
Actuarial Valuation Date	January 1, 2020
Measurement Date of the Net Pension Liability	December 31, 2020
Employer's Fiscal Year Ending Date (Reporting Date)	December 31, 2020

## Membership

Number of	
- Retirees and Beneficiaries	13
- Inactive, Nonretired Members	6
- Active Members	41
- Total	60
Covered Payroll	\$ 2,316,140

## Net Pension Liability

Total Pension Liability	\$ 10,106,905
Plan Fiduciary Net Position	9,374,689
Net Pension Liability	\$ 732,216
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	92.76 %
Net Pension Liability as a Percentage of Covered Payroll	31.61 %

## Development of the Single Discount Rate

Single Discount Rate	7.00 %
Long-Term Expected Rate of Investment Return	7.00 %
Long-Term Municipal Bond Rate*	2.00 %
Last year ending December 31 in the 2020 to 2119 projection period for which projected benefit payments are fully funded	2119

**Total Pension Expense** \$ 68,828

## 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	\$ 484,742	\$ 0
Changes in assumptions	150,843	0
Net difference between projected and actual earnings on pension plan investments	310,469	809,120
Total	\$ 946,054	\$ 809,120

*\*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, 2020. 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, 2020.

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 7.00% 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 7.00%. This funding policy results in the expectation that the plan's assets will be able to fully pay for promised benefits through at least 2119. 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, 2020 and a measurement date of December 31, 2020.



## 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 7.00%; the municipal bond rate is 2.00% (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 7.00%.

## 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

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### 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, 2020

### A. Expense

1. Service Cost	\$	312,751
2. Interest on the Total Pension Liability		667,446
3. Current-Period Benefit Changes		0
4. Employee Contributions (made negative for addition here)		(329,758)
5. Projected Earnings on Plan Investments (made negative for addition here)		(594,758)
6. Pension Plan Administrative Expense		8,047
7. Other Changes in Plan Fiduciary Net Position		323
8. Recognition of Outflow (Inflow) of Resources due to Liabilities		150,345
9. Recognition of Outflow (Inflow) of Resources due to Assets		<u>(145,568)</u>
<b>10. Total Pension Expense</b>	<b>\$</b>	<b>68,828 *</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, 2020

### A. Outflows (Inflows) of Resources due to Liabilities

1. Difference between expected and actual experience of the Total Pension Liability (gains) or losses	\$	186,135
2. Assumption Changes (gains) or losses	\$	0
3. Recognition period for Liabilities: Average of the expected remaining service lives of all employees {in years}		7.9281
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	\$	23,478
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	\$	23,478
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	\$	162,657
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	\$	162,657

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

1. Net difference between projected and actual earnings on pension plan investments (gains) or losses	\$	(302,799)
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	\$	(60,560)
4. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Assets	\$	(242,239)



# History of Deferred Outflows and Inflows of Resources by Source

## Fiscal Year Ended December 31, 2020

### History of Deferred Outflows and Deferred Inflows of Resources by Source

#### 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		Deferred Net (Inflows)/Outflows at Measurement
	2014	2015	2016	2017	2018	2019	2020	Total	
<b>Total</b>	\$ -	\$ 201,096	\$ 65,370	\$ 272,060	\$ 161,615	\$ 1,751	\$ 186,135		
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	110,199	\$ 484,742
2022	-	23,067	7,795	35,071	20,570	218	23,478	110,199	
2023	-	16,560	7,795	35,071	20,570	218	23,478	103,692	
2024	-	-	3,010	26,563	20,570	218	23,478	73,839	
2025	-	-	-	-	17,625	218	23,478	41,321	
Thereafter	-	-	-	-	-	225	45,267	45,492	
	\$ -	\$ 201,096	\$ 65,370	\$ 272,060	\$ 161,615	\$ 1,751	\$ 186,135	\$ 888,027	

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

Recognition Period	7.6469	8.7180	8.3862	7.7574	7.8568	8.0476	7.9281		
	2014	2015	2016	2017	2018	2019	2020	Total	
<b>Total</b>	\$ -	\$ -	\$ -	\$ 311,427	\$ -	\$ -	\$ -		
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	-	-	-	40,146	\$ 150,843
2022	-	-	-	40,146	-	-	-	40,146	
2023	-	-	-	40,146	-	-	-	40,146	
2024	-	-	-	30,405	-	-	-	30,405	
2025	-	-	-	-	-	-	-	-	
Thereafter	-	-	-	-	-	-	-	-	
	\$ -	\$ -	\$ -	\$ 311,427	\$ -	\$ -	\$ -	\$ 311,427	

#### 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		
	2014	2015	2016	2017	2018	2019	2020	Total	
<b>Total</b>	\$ 161,568	\$ 525,780	\$ 41,782	\$ (447,294)	\$ 776,171	\$ (795,705)	\$ (302,799)		
2014	32,314	-	-	-	-	-	-	32,314	32,314
2015	32,314	105,156	-	-	-	-	-	137,470	137,470
2016	32,314	105,156	8,356	-	-	-	-	145,826	145,826
2017	32,314	105,156	8,356	(89,459)	-	-	-	56,367	56,367
2018	32,312	105,156	8,356	(89,459)	155,234	-	-	211,599	211,599
2019	-	105,156	8,356	(89,459)	155,234	(159,141)	-	20,146	20,146
2020	-	-	8,358	(89,459)	155,234	(159,141)	(60,560)	(145,568)	(145,568)
2021	-	-	-	(89,458)	155,234	(159,141)	(60,560)	(153,925)	\$ (498,651)
2022	-	-	-	-	155,235	(159,141)	(60,560)	(64,466)	(64,466)
2023	-	-	-	-	-	(159,141)	(60,560)	(219,701)	(219,701)
2024	-	-	-	-	-	-	(60,559)	(60,559)	(60,559)
2025	-	-	-	-	-	-	-	-	-
Thereafter	-	-	-	-	-	-	-	-	-
	\$ 161,568	\$ 525,780	\$ 41,782	\$ (447,294)	\$ 776,171	\$ (795,705)	\$ (302,799)	\$ (40,497)	

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

	2014	2015	2016	2017	2018	2019	2020	Total	
<b>Total</b>	\$ 161,568	\$ 726,876	\$ 107,152	\$ 136,193	\$ 937,786	\$ (793,954)	\$ (116,664)		
2014	32,314	-	-	-	-	-	-	32,314	32,314
2015	32,314	128,223	-	-	-	-	-	160,537	160,537
2016	32,314	128,223	16,151	-	-	-	-	176,688	176,688
2017	32,314	128,223	16,151	(14,242)	-	-	-	162,446	162,446
2018	32,312	128,223	16,151	(14,242)	175,804	-	-	338,248	338,248
2019	-	128,223	16,151	(14,242)	175,804	(158,923)	-	147,013	147,013
2020	-	23,067	16,153	(14,242)	175,804	(158,923)	(37,082)	4,777	4,777
2021	-	23,067	7,795	(14,241)	175,804	(158,923)	(37,082)	(3,580)	\$ 136,934
2022	-	23,067	7,795	75,217	175,805	(158,923)	(37,082)	85,879	85,879
2023	-	16,560	7,795	75,217	20,570	(158,923)	(37,082)	(75,863)	(75,863)
2024	-	-	3,010	56,968	20,570	218	(37,081)	43,685	43,685
2025	-	-	-	-	17,625	218	23,478	41,321	41,321
Thereafter	-	-	-	-	-	225	45,267	45,492	45,492
	\$ 161,568	\$ 726,876	\$ 107,152	\$ 136,193	\$ 937,786	\$ (793,954)	\$ (116,664)	\$ 1,158,957	



# Statement of Outflows and Inflows Arising from Current and Prior Reporting Periods

## Fiscal Year Ended December 31, 2020

### 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	\$ 150,345	\$ 0	\$ 150,345
2. Due to Assets	163,592	309,160	(145,568)
<b>3. Total</b>	<b>\$ 313,937</b>	<b>\$ 309,160</b>	<b>\$ 4,777</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	\$ 110,199	\$ 0	\$ 110,199
2. Assumption Changes	40,146	0	40,146
3. Net Difference between projected and actual earnings on pension plan investments	163,592	309,160	(145,568)
<b>4. Total</b>	<b>\$ 313,937</b>	<b>\$ 309,160</b>	<b>\$ 4,777</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	\$ 484,742	\$ 0	\$ 484,742
2. Assumption Changes	150,843	0	150,843
3. Net Difference between projected and actual earnings on pension plan investments	310,469	809,120	(498,651)
<b>4. Total</b>	<b>\$ 946,054</b>	<b>\$ 809,120</b>	<b>\$ 136,934</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
2021	\$ (3,580)
2022	85,879
2023	(75,863)
2024	43,685
2025	41,321
Thereafter	45,492
<b>Total</b>	<b>\$ 136,934</b>



## Statement of Fiduciary Net Position as of December 31, 2020

	<b>2020</b>
<b>Assets</b>	
Cash and Deposits	\$ 467,015
Receivables	
Accounts Receivable - Sale of Investments	\$ 18,153
Accrued Interest and Other Dividends	18,043
Contributions	0
Accounts Receivable - Other	940,560
Total Receivables	\$ 976,756
Investments	
Fixed Income	\$ 1,938,831
Equities	4,531,411
Private Markets	833,485
Marketable Alternatives	1,649,155
Other	347,490
Total Investments	\$ 9,300,372
<b>Total Assets</b>	<b>\$ 10,744,143</b>
<b>Liabilities</b>	
Payables	
Accounts Payable - Purchase of Investments	\$ 1,355,001
Accrued Expenses	14,453
Accounts Payable - Other	0
<b>Total Liabilities</b>	<b>\$ 1,369,454</b>
<b>Net Position Restricted for Pensions</b>	<b>\$ 9,374,689</b>





## Statement of Changes in Fiduciary Net Position for Year Ended December 31, 2020

	<b>2020</b>
<b>Additions</b>	
Contributions	
Employer	\$ 141,013
Employee	329,758
Other - Employer	0
Other - Employee	0
Total Contributions	\$ 470,771
Investment Income	
Net Appreciation in Fair Value of Investments	\$ 827,041
Interest and Dividends	122,253
Less Investment Expense	(51,737)
Net Investment Income	\$ 897,557
Other	\$ 0
<b>Total Additions</b>	<b>\$ 1,368,328</b>
 <b>Deductions</b>	
Benefit Payments, including Refunds of Employee Contributions	\$ 500,565
Pension Plan Administrative Expense	8,047
Other	323
Total Deductions	\$ 508,935
<b>Net Increase in Net Position</b>	<b>\$ 859,393</b>
 <b>Net Position Restricted for Pensions</b>	
Beginning of Year	\$ 8,515,296
End of Year	\$ 9,374,689



## SECTION C

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### **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, 2020

<b>A. Total pension liability</b>	
1. Service cost	\$ 312,751
2. Interest on the total pension liability	667,446
3. Changes of benefit terms	0
4. Difference between expected and actual experience of the total pension liability	186,135
5. Changes of assumptions	0
6. Benefit payments, including refunds of employee contributions	(500,565)
<b>7. Net change in total pension liability</b>	<b>665,767</b>
<b>8. Total pension liability – beginning</b>	<b>9,441,138</b>
<b>9. Total pension liability – ending</b>	<b>\$ 10,106,905</b>
<b>B. Plan fiduciary net position</b>	
1. Contributions – employer	\$ 141,013
2. Contributions – employee	329,758
3. Net investment income	897,557
4. Benefit payments, including refunds of employee contributions	(500,565)
5. Pension plan administrative expense	(8,047)
6. Other	(323)
<b>7. Net change in plan fiduciary net position</b>	<b>859,393</b>
<b>8. Plan fiduciary net position – beginning</b>	<b>8,515,296</b>
<b>9. Plan fiduciary net position – ending</b>	<b>\$ 9,374,689</b>
<b>C. Net pension liability</b>	<b>\$ 732,216</b>
<b>D. Plan fiduciary net position as a percentage of the total pension liability</b>	<b>92.76 %</b>
<b>E. Covered-employee payroll</b>	<b>\$ 2,316,140</b>
<b>F. Net pension liability as a percentage of covered-employee payroll</b>	<b>31.61 %</b>



# 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,	2020	2019	2018	2017	2016	2015	2014
<b>Total pension liability</b>							
Service cost	\$ 312,751	\$ 317,202	\$ 294,146	\$ 272,169	\$ 337,474	\$ 331,123	\$ 276,305
Interest on the total pension liability	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
Difference between expected and actual experience	186,135	1,751	161,615	272,060	65,370	201,096	0
Changes of assumptions	0	0	0	311,427	0	0	0
Benefit payments, including refunds of employee contributions	(500,565)	(512,859)	(598,879)	(390,843)	(702,598)	(189,069)	(126,427)
<b>Net change in total pension liability</b>	<b>665,767</b>	<b>430,247</b>	<b>456,516</b>	<b>1,028,327</b>	<b>254,694</b>	<b>861,039</b>	<b>605,554</b>
<b>Total pension liability - beginning</b>	<b>9,441,138</b>	<b>9,010,891</b>	<b>8,554,375</b>	<b>7,526,048</b>	<b>7,271,354</b>	<b>6,410,315</b>	<b>5,804,761</b>
<b>Total pension liability - ending (a)</b>	<b>\$ 10,106,905</b>	<b>\$ 9,441,138</b>	<b>\$ 9,010,891</b>	<b>\$ 8,554,375</b>	<b>\$ 7,526,048</b>	<b>\$ 7,271,354</b>	<b>\$ 6,410,315</b>
<b>Plan fiduciary net position</b>							
Employer contributions	\$ 141,013	\$ 158,176	\$ 159,583	\$ 156,263	\$ 136,768	\$ 158,319	\$ 142,437
Employee contributions	329,758	369,907	445,101	367,485	376,685	405,026	335,763
Pension plan net investment income	897,557	1,300,461	(253,859)	902,109	431,043	(55,411)	260,772
Benefit payments, including refunds of employee contributions	(500,565)	(512,859)	(598,879)	(390,843)	(702,598)	(189,069)	(126,427)
Pension plan administrative expense	(8,047)	(6,972)	(7,141)	(6,431)	(5,731)	(4,637)	(4,312)
Other	(323)	(327)	(292)	(602)	(301)	(276)	1,085
<b>Net change in plan fiduciary net position</b>	<b>859,393</b>	<b>1,308,386</b>	<b>(255,487)</b>	<b>1,027,981</b>	<b>235,866</b>	<b>313,952</b>	<b>609,318</b>
<b>Plan fiduciary net position - beginning</b>	<b>8,515,296</b>	<b>7,206,910</b>	<b>7,462,397</b>	<b>6,434,416</b>	<b>6,198,550</b>	<b>5,884,598</b>	<b>5,275,280</b>
<b>Plan fiduciary net position - ending (b)</b>	<b>\$ 9,374,689</b>	<b>\$ 8,515,296</b>	<b>\$ 7,206,910</b>	<b>\$ 7,462,397</b>	<b>\$ 6,434,416</b>	<b>\$ 6,198,550</b>	<b>\$ 5,884,598</b>
<b>Net pension liability - ending (a) - (b)</b>	<b>\$ 732,216</b>	<b>\$ 925,842</b>	<b>\$ 1,803,981</b>	<b>\$ 1,091,978</b>	<b>\$ 1,091,632</b>	<b>\$ 1,072,804</b>	<b>\$ 525,717</b>
<b>Plan fiduciary net position as a percentage of total pension liability</b>	<b>92.76 %</b>	<b>90.19 %</b>	<b>79.98 %</b>	<b>87.23 %</b>	<b>85.50 %</b>	<b>85.25 %</b>	<b>91.80 %</b>
<b>Covered-employee payroll</b>	<b>\$ 2,316,140</b>	<b>\$ 2,341,404</b>	<b>\$ 2,154,544</b>	<b>\$ 1,975,631</b>	<b>\$ 2,151,997</b>	<b>\$ 2,124,296</b>	<b>\$ 1,731,731</b>
<b>Projected valuation payroll</b>	<b>\$ 2,374,043</b>	<b>\$ 2,399,940</b>	<b>\$ 2,208,407</b>	<b>\$ 2,059,595</b>	<b>\$ 2,243,456</b>	<b>\$ 2,214,578</b>	<b>\$ 1,805,329</b>
<b>Net pension liability as a percentage of covered-employee payroll</b>	<b>31.61 %</b>	<b>39.54 %</b>	<b>83.73 %</b>	<b>55.27 %</b>	<b>50.73 %</b>	<b>50.50 %</b>	<b>30.36 %</b>

**Notes to Schedule:**

For 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

Last 10 Fiscal Years (which may be built prospectively)

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 %

\* 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 %

\* 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, 2020  
**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	28 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	7.00%
Retirement Age	Experience-based table of rates that are specific to the type of eligibility condition. Last updated for the 2018 valuation pursuant to an experience study of the period 2012 - 2016.
Post-Retirement Mortality	RP-2014 Healthy Annuitant Mortality Table, fully generational, projected with Scale MP-2017 Males: No set back with a multiplier of 100% Females: No set back with a multiplier of 88%
Pre-Retirement Mortality	RP-2014 Employee Mortality Table, fully generational, projected with Scale MP-2017 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 %

<sup>1</sup> Annual money-weighted rate of return, net of investment expenses.



## SECTION D

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### 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 7.00% 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 7.00%. 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 7.00%, 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
6.00%	7.00%	8.00%
\$ 2,149,353	\$ 732,216	\$ (427,106)

## Summary of Population Statistics

Inactive Plan Members or Beneficiaries Currently Receiving Benefits	13
Inactive Plan Members Entitled to But Not Yet Receiving Benefits	6
Active Plan Members	<u>41</u>
Total Plan Members	60

# SECTION E

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## 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
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**

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

## Actuarial Assumptions and Cost Method

The following methods and assumptions were used in preparing the January 1, 2020 actuarial valuation report.

### 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 7.00%), 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 a 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

7.00% per year, compounded annually, composed of an assumed 2.25% inflation rate and a 4.75% net real rate of return. This rate represents the assumed return, net of investment expenses.

b. Salary increase rate

Service	Rate	Service	Rate
1	6.50%	14	3.50%
2	6.50%	15	3.25%
3	6.50%	16	3.25%
4	6.00%	17	3.25%
5	5.25%	18	3.25%
6	4.75%	19	3.00%
7	4.25%	20	3.00%
8	4.00%	21	2.75%
9	4.00%	22	2.75%
10	4.00%	23	2.75%
11	3.75%	24	2.75%
12	3.50%	25	2.50%
13	3.50%	25+	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:

RP-2014 Employee Mortality Table, fully generational, projected with Scale MP-2017

Males: No set back with a multiplier of 100%

Females: No set back with a multiplier of 100%

Healthy Post-Retirement Mortality:

RP-2014 Healthy Annuitant Mortality Table, fully generational, projected with Scale MP-2017

Males: No set back with a multiplier of 100%

Females: No set back with a multiplier of 88%

Disabled Mortality

RP-2014 Disabled Mortality Table, fully generational, projected with Scale MP-2017

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 2020 using Scale MP-2017					
	Male	Female	Male	Female	Male	Female
20	0.04%	0.02%	0.04%	0.01%	0.04%	0.02%
25	0.05%	0.02%	0.06%	0.03%	0.20%	0.09%
30	0.05%	0.02%	0.09%	0.06%	0.50%	0.24%
35	0.06%	0.03%	0.13%	0.10%	0.92%	0.45%
40	0.07%	0.04%	0.19%	0.14%	1.32%	0.68%
45	0.09%	0.06%	0.27%	0.18%	1.63%	0.90%
50	0.16%	0.11%	0.38%	0.23%	1.90%	1.14%
55	0.27%	0.17%	0.55%	0.32%	2.24%	1.44%
60	0.47%	0.25%	0.78%	0.47%	2.65%	1.73%
65	0.83%	0.36%	1.10%	0.70%	3.17%	2.05%
70	1.34%	0.60%	1.62%	1.07%	3.91%	2.67%
75			2.54%	1.74%	5.14%	3.87%
80			4.23%	2.93%	7.24%	5.83%
85			7.37%	5.14%	10.78%	8.73%
90			13.01%	9.14%	16.56%	12.86%
95			20.87%	15.23%	23.60%	18.94%
100			30.32%	23.24%	31.55%	27.12%

b. Disability and Withdrawal

Age	Disability		Withdrawal	
	Male	Female	Male	Female
20	0.01%	0.01%	11.00%	10.00%
25	0.01%	0.01%	11.00%	10.00%
30	0.01%	0.01%	6.00%	6.00%
35	0.01%	0.01%	5.00%	5.00%
40	0.01%	0.01%	4.00%	5.00%
45	0.03%	0.03%	4.00%	5.00%
50	0.08%	0.08%	3.00%	4.00%
55	0.20%	0.20%	3.00%	4.00%
60	0.20%	0.20%	3.00%	4.00%

Service	Withdrawal	
	Male	Female
1	22.00%	25.00%
2	18.00%	21.00%
3	14.00%	15.00%
4	13.00%	15.00%
5	13.00%	14.00%

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

c. Retirement Rates

Age	Retirement	
	Unreduced	Reduced
<50	13.0%	1.0%
50	13.0%	0.5%
51	13.0%	0.5%
52	18.0%	0.5%
53	15.0%	0.5%
54	15.0%	0.5%
55	25.0%	1.0%
56	30.0%	1.0%
57	28.0%	1.0%
58	25.0%	1.0%
59	25.0%	2.5%
60	15.0%	
61	15.0%	
62	15.0%	
63	15.0%	
64	15.0%	
65	15.0%	
66	15.0%	
67	15.0%	
68	15.0%	
69	15.0%	
70+	100.0%	

## 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, 2016. 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, 2016 Wyoming Retirement System Experience Study.

## **SECTION G**

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### **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 7.00%; the municipal bond rate is 2.00%; and the resulting Single Discount Rate is 7.00%.

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 2020 to 2069

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)
2020	\$ 2,304,081	\$ 69,962	\$ 2,374,043	\$ 329,758	\$ 132,695	\$ 8,318	\$ 470,771
2021	2,168,913	264,481	2,433,394	361,124	154,427	31,444	546,995
2022	2,054,405	439,824	2,494,229	342,058	146,274	52,368	540,700
2023	1,959,392	597,193	2,556,585	326,239	139,509	71,182	536,930
2024	1,885,972	734,528	2,620,500	314,014	134,281	87,611	535,906
2025	1,820,047	865,966	2,686,013	303,038	129,587	103,358	535,983
2026	1,748,214	1,004,949	2,753,163	291,078	124,473	120,018	535,569
2027	1,681,121	1,140,871	2,821,992	279,907	119,696	136,331	535,934
2028	1,625,685	1,266,857	2,892,542	270,677	115,749	151,492	537,918
2029	1,579,454	1,385,402	2,964,856	262,979	112,457	165,779	541,215
2030	1,536,931	1,502,046	3,038,977	255,899	109,429	179,841	545,169
2031	1,496,508	1,618,443	3,114,951	249,169	106,551	193,863	549,583
2032	1,454,201	1,738,624	3,192,825	242,125	103,539	208,321	553,985
2033	1,403,597	1,869,049	3,272,646	233,699	99,936	223,972	557,607
2034	1,349,973	2,004,489	3,354,462	224,771	96,118	240,200	561,089
2035	1,292,279	2,146,045	3,438,324	215,164	92,010	257,138	564,312
2036	1,230,963	2,293,319	3,524,282	204,955	87,645	274,739	567,339
2037	1,163,160	2,449,229	3,612,389	193,666	82,817	293,349	569,832
2038	1,097,085	2,605,614	3,702,699	182,665	78,112	312,010	572,787
2039	1,032,631	2,762,635	3,795,266	171,933	73,523	330,797	576,253
2040	959,573	2,930,575	3,890,148	159,769	68,322	350,945	579,036
2041	887,096	3,100,306	3,987,402	147,701	63,161	371,370	582,232
2042	819,288	3,267,799	4,087,087	136,411	58,333	391,626	586,370
2043	747,696	3,441,568	4,189,264	124,491	53,236	412,700	590,427
2044	668,924	3,625,072	4,293,996	111,376	47,627	435,009	594,012
2045	582,642	3,818,704	4,401,346	97,010	41,484	458,607	597,101
2046	499,994	4,011,386	4,511,380	83,249	35,600	482,169	601,018
2047	428,860	4,195,305	4,624,165	71,405	30,535	504,744	606,684
2048	368,395	4,371,374	4,739,769	61,338	26,230	526,398	613,966
2049	315,150	4,543,113	4,858,263	52,472	22,439	547,521	622,432
2050	267,498	4,712,222	4,979,720	44,538	19,046	568,288	631,872
2051	226,690	4,877,523	5,104,213	37,744	16,140	588,550	642,434
2052	191,346	5,040,472	5,231,818	31,859	13,624	608,499	653,982
2053	159,660	5,202,953	5,362,613	26,583	11,368	628,351	666,302
2054	133,401	5,363,277	5,496,678	22,211	9,498	647,912	679,621
2055	111,153	5,522,942	5,634,095	18,507	7,914	667,367	693,788
2056	91,853	5,683,094	5,774,947	15,293	6,540	686,854	708,687
2057	75,843	5,843,478	5,919,321	12,628	5,400	706,348	724,376
2058	62,780	6,004,524	6,067,304	10,453	4,470	725,913	740,836
2059	50,773	6,168,214	6,218,987	8,454	3,615	745,789	757,858
2060	39,848	6,334,614	6,374,462	6,635	2,837	765,989	775,461
2061	31,273	6,502,551	6,533,824	5,207	2,227	786,371	793,805
2062	24,691	6,672,479	6,697,170	4,111	1,758	806,994	812,863
2063	19,411	6,845,188	6,864,599	3,232	1,382	827,950	832,564
2064	15,493	7,020,721	7,036,214	2,580	1,103	849,246	852,929
2065	12,635	7,199,484	7,212,119	2,104	900	870,934	873,938
2066	10,397	7,382,025	7,392,422	1,731	740	893,082	895,553
2067	8,273	7,568,960	7,577,233	1,377	589	915,768	917,734
2068	6,087	7,760,577	7,766,664	1,013	433	939,025	940,471
2069	4,723	7,956,108	7,960,831	786	336	962,760	963,882





# Single Discount Rate Development Projection of Contributions Ending December 31 for 2070 to 2119 (concluded)

Year	Payroll for Current Employees	Payroll for Future Employees	Total Employee Payroll	Contributions from Current Employees	Employer Contributions for Current Employees	Employer Contributions Related to Payroll of Future Employees	Total Contributions
	(a)	(b)=max(0,(c)-(a))	(c)	(d)	(e)=(a)*ER%	(f) = (b)*netER%	(g)=(d)+(e)+(f)
2070	\$ 3,594	\$ 8,156,258	\$ 8,159,852	\$ 598	\$ 256	\$ 987,059	\$ 987,913
2071	2,629	8,361,219	8,363,848	438	187	1,011,942	1,012,567
2072	2,167	8,570,777	8,572,944	361	154	1,037,384	1,037,899
2073	1,632	8,785,636	8,787,268	272	116	1,063,462	1,063,850
2074	1,045	9,005,905	9,006,950	174	74	1,090,187	1,090,435
2075	517	9,231,607	9,232,124	86	37	1,117,562	1,117,685
2076	222	9,462,705	9,462,927	37	16	1,145,581	1,145,634
2077	134	9,699,366	9,699,500	22	10	1,174,266	1,174,298
2078	115	9,941,873	9,941,988	19	8	1,203,650	1,203,677
2079	98	10,190,440	10,190,538	16	7	1,233,759	1,233,782
2080	46	10,445,255	10,445,301	8	3	1,264,618	1,264,629
2081	-	10,706,434	10,706,434	-	-	1,296,240	1,296,240
2082	-	10,974,095	10,974,095	-	-	1,328,643	1,328,643
2083	-	11,248,447	11,248,447	-	-	1,361,850	1,361,850
2084	-	11,529,658	11,529,658	-	-	1,395,883	1,395,883
2085	-	11,817,899	11,817,899	-	-	1,430,763	1,430,763
2086	-	12,113,346	12,113,346	-	-	1,466,513	1,466,513
2087	-	12,416,180	12,416,180	-	-	1,503,154	1,503,154
2088	-	12,726,585	12,726,585	-	-	1,540,710	1,540,710
2089	-	13,044,750	13,044,750	-	-	1,579,204	1,579,204
2090	-	13,370,869	13,370,869	-	-	1,618,661	1,618,661
2091	-	13,705,141	13,705,141	-	-	1,659,105	1,659,105
2092	-	14,047,770	14,047,770	-	-	1,700,563	1,700,563
2093	-	14,398,964	14,398,964	-	-	1,743,059	1,743,059
2094	-	14,758,938	14,758,938	-	-	1,786,622	1,786,622
2095	-	15,127,911	15,127,911	-	-	1,831,276	1,831,276
2096	-	15,506,109	15,506,109	-	-	1,877,051	1,877,051
2097	-	15,893,762	15,893,762	-	-	1,923,973	1,923,973
2098	-	16,291,106	16,291,106	-	-	1,972,071	1,972,071
2099	-	16,698,384	16,698,384	-	-	2,021,375	2,021,375
2100	-	17,115,844	17,115,844	-	-	2,071,913	2,071,913
2101	-	17,543,740	17,543,740	-	-	2,123,717	2,123,717
2102	-	17,982,334	17,982,334	-	-	2,176,818	2,176,818
2103	-	18,431,892	18,431,892	-	-	2,231,247	2,231,247
2104	-	18,892,689	18,892,689	-	-	2,287,038	2,287,038
2105	-	19,365,006	19,365,006	-	-	2,344,224	2,344,224
2106	-	19,849,131	19,849,131	-	-	2,402,839	2,402,839
2107	-	20,345,359	20,345,359	-	-	2,462,920	2,462,920
2108	-	20,853,993	20,853,993	-	-	2,524,502	2,524,502
2109	-	21,375,343	21,375,343	-	-	2,587,623	2,587,623
2110	-	21,909,727	21,909,727	-	-	2,652,321	2,652,321
2111	-	22,457,470	22,457,470	-	-	2,718,635	2,718,635
2112	-	23,018,907	23,018,907	-	-	2,786,606	2,786,606
2113	-	23,594,380	23,594,380	-	-	2,856,275	2,856,275
2114	-	24,184,240	24,184,240	-	-	2,927,684	2,927,684
2115	-	24,788,846	24,788,846	-	-	3,000,877	3,000,877
2116	-	25,408,567	25,408,567	-	-	3,075,899	3,075,899
2117	-	26,043,781	26,043,781	-	-	3,152,795	3,152,795
2118	-	26,694,876	26,694,876	-	-	3,231,613	3,231,613
2119	-	27,362,248	27,362,248	-	-	3,312,400	3,312,400



# Single Discount Rate Development Projection of Plan Net Position Ending December 31 for 2020 to 2069

Year	Projected Beginning Plan Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 7.000%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
2020	\$ 8,515,296	\$ 470,771	\$ 500,565	\$ 8,370	\$ 897,557	\$ 9,374,689
2021	9,374,689	546,995	520,668	7,544	656,875	10,050,346
2022	10,050,346	540,700	527,108	7,732	703,726	10,759,933
2023	10,759,933	536,930	535,902	7,925	752,958	11,505,993
2024	11,505,993	535,906	555,976	8,124	804,449	12,282,249
2025	12,282,249	535,983	583,172	8,327	857,847	13,084,580
2026	13,084,580	535,569	617,643	8,535	912,803	13,906,773
2027	13,906,773	535,934	656,943	8,748	969,009	14,746,026
2028	14,746,026	537,918	691,631	8,967	1,026,624	15,609,970
2029	15,609,970	541,215	717,274	9,191	1,086,324	16,511,044
2030	16,511,044	545,169	741,355	9,421	1,148,699	17,454,135
2031	17,454,135	549,583	762,749	9,656	1,214,123	18,445,435
2032	18,445,435	553,985	786,634	9,898	1,282,835	19,485,722
2033	19,485,722	557,607	816,250	10,145	1,354,752	20,571,686
2034	20,571,686	561,089	849,107	10,399	1,429,750	21,703,019
2035	21,703,019	564,312	884,903	10,659	1,507,814	22,879,583
2036	22,879,583	567,339	924,097	10,925	1,588,920	24,100,820
2037	24,100,820	569,832	966,669	11,198	1,673,018	25,365,803
2038	25,365,803	572,787	1,009,025	11,478	1,760,201	26,678,288
2039	26,678,288	576,253	1,053,845	11,765	1,850,642	28,039,574
2040	28,039,574	579,036	1,106,169	12,059	1,944,218	29,444,599
2041	29,444,599	582,232	1,155,221	12,361	2,040,981	30,900,231
2042	30,900,231	586,370	1,200,271	12,670	2,141,457	32,415,117
2043	32,415,117	590,427	1,252,974	12,987	2,245,814	33,985,398
2044	33,985,398	594,012	1,308,746	13,311	2,353,927	35,611,280
2045	35,611,280	597,101	1,370,365	13,644	2,465,714	37,290,086
2046	37,290,086	601,018	1,430,234	13,985	2,581,293	39,028,177
2047	39,028,177	606,684	1,481,433	14,335	2,701,381	40,840,474
2048	40,840,474	613,966	1,528,888	14,693	2,826,847	42,737,706
2049	42,737,706	622,432	1,564,207	15,061	2,958,717	44,739,587
2050	44,739,587	631,872	1,597,568	15,437	3,098,012	46,856,467
2051	46,856,467	642,434	1,620,364	15,823	3,245,760	49,108,473
2052	49,108,473	653,982	1,624,621	16,219	3,403,637	51,525,252
2053	51,525,252	666,302	1,629,145	16,624	3,573,066	54,118,852
2054	54,118,852	679,621	1,635,397	17,040	3,754,847	56,900,883
2055	56,900,883	693,788	1,639,889	17,466	3,949,907	59,887,222
2056	59,887,222	708,687	1,630,999	17,902	4,159,755	63,106,763
2057	63,106,763	724,376	1,606,252	18,350	4,386,498	66,593,035
2058	66,593,035	740,836	1,574,452	18,809	4,632,182	70,372,792
2059	70,372,792	757,858	1,540,656	19,279	4,898,498	74,469,213
2060	74,469,213	775,461	1,507,663	19,761	5,186,971	78,904,221
2061	78,904,221	793,805	1,471,155	20,255	5,499,292	83,705,907
2062	83,705,907	812,863	1,428,654	20,761	5,837,511	88,906,867
2063	88,906,867	832,564	1,384,095	21,280	6,203,771	94,537,827
2064	94,537,827	852,929	1,337,523	21,812	6,600,223	100,631,644
2065	100,631,644	873,938	1,289,382	22,358	7,029,151	107,222,993
2066	107,222,993	895,553	1,240,271	22,917	7,492,960	114,348,318
2067	114,348,318	917,734	1,190,836	23,489	7,994,177	122,045,904
2068	122,045,904	940,471	1,141,336	24,077	8,535,473	130,356,436
2069	130,356,436	963,882	1,090,753	24,679	9,119,736	139,324,622



# Single Discount Rate Development

## Projection of Plan Net Position

### Ending December 31 for 2070 to 2119 (concluded)

Year	Projected Beginning Plan Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 7.000%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
2070	\$ 139,324,622	\$ 987,913	\$ 1,039,905	\$ 25,296	\$ 9,750,064	\$ 148,997,398
2071	148,997,398	1,012,567	988,956	25,928	10,429,738	159,424,819
2072	159,424,819	1,037,899	937,616	26,576	11,162,273	170,660,799
2073	170,660,799	1,063,850	886,797	27,241	11,951,411	182,762,021
2074	182,762,021	1,090,435	836,602	27,922	12,801,115	195,789,047
2075	195,789,047	1,117,685	786,955	28,620	13,715,628	209,806,786
2076	209,806,786	1,145,634	737,657	29,335	14,699,503	224,884,931
2077	224,884,931	1,174,298	688,791	30,068	15,757,616	241,097,987
2078	241,097,987	1,203,677	640,618	30,820	16,895,172	258,525,398
2079	258,525,398	1,233,782	593,326	31,591	18,117,728	277,251,990
2080	277,251,990	1,264,629	547,071	32,380	19,431,215	297,368,383
2081	297,368,383	1,296,240	501,922	33,190	20,841,976	318,971,487
2082	318,971,487	1,328,643	457,974	34,020	22,356,792	342,164,927
2083	342,164,927	1,361,850	415,467	34,870	23,982,908	367,059,348
2084	367,059,348	1,395,883	374,542	35,742	25,728,067	393,773,014
2085	393,773,014	1,430,763	335,342	36,635	27,600,542	422,432,342
2086	422,432,342	1,466,513	298,019	37,551	29,609,177	453,172,463
2087	453,172,463	1,503,154	262,727	38,490	31,763,429	486,137,828
2088	486,137,828	1,540,710	229,646	39,452	34,073,402	521,482,842
2089	521,482,842	1,579,204	198,928	40,439	36,549,900	559,372,579
2090	559,372,579	1,618,661	170,664	41,450	39,204,477	599,983,603
2091	599,983,603	1,659,105	144,882	42,486	42,049,492	643,504,832
2092	643,504,832	1,700,563	121,574	43,548	45,098,170	690,138,443
2093	690,138,443	1,743,059	100,732	44,637	48,364,664	740,100,797
2094	740,100,797	1,786,622	82,340	45,753	51,864,123	793,623,449
2095	793,623,449	1,831,276	66,353	46,897	55,612,755	850,954,230
2096	850,954,230	1,877,051	52,665	48,069	59,627,916	912,358,463
2097	912,358,463	1,923,973	41,128	49,271	63,928,182	978,120,219
2098	978,120,219	1,972,071	31,570	50,502	68,533,447	1,048,543,665
2099	1,048,543,665	2,021,375	23,804	51,765	73,465,008	1,123,954,479
2100	1,123,954,479	2,071,913	17,619	53,059	78,745,672	1,204,701,386
2101	1,204,701,386	2,123,717	12,791	54,386	84,399,859	1,291,157,785
2102	1,291,157,785	2,176,818	9,102	55,745	90,453,714	1,383,723,470
2103	1,383,723,470	2,231,247	6,344	57,139	96,935,231	1,482,826,465
2104	1,482,826,465	2,287,038	4,330	58,567	103,874,381	1,588,924,987
2105	1,588,924,987	2,344,224	2,894	60,032	111,303,244	1,702,509,529
2106	1,702,509,529	2,402,839	1,894	61,532	119,256,162	1,824,105,104
2107	1,824,105,104	2,462,920	1,214	63,071	127,769,890	1,954,273,629
2108	1,954,273,629	2,524,502	762	64,647	136,883,767	2,093,616,488
2109	2,093,616,488	2,587,623	469	66,264	146,639,893	2,242,777,272
2110	2,242,777,272	2,652,321	281	67,920	157,083,324	2,402,444,715
2111	2,402,444,715	2,718,635	164	69,618	168,262,272	2,573,355,840
2112	2,573,355,840	2,786,606	94	71,359	180,228,332	2,756,299,326
2113	2,756,299,326	2,856,275	52	73,143	193,036,713	2,952,119,119
2114	2,952,119,119	2,927,684	28	74,971	206,746,494	3,161,718,297
2115	3,161,718,297	3,000,877	15	76,845	221,420,891	3,386,063,205
2116	3,386,063,205	3,075,899	7	78,767	237,127,550	3,626,187,879
2117	3,626,187,879	3,152,795	4	80,736	253,938,855	3,883,198,789
2118	3,883,198,789	3,231,613	2	82,754	271,932,261	4,158,279,908
2119	4,158,279,908	3,312,400	1	84,823	291,190,648	4,452,698,132



# Single Discount Rate Development

## Present Values of Projected Benefits

### Ending December 31 for 2020 to 2069

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> }
2020	\$ 8,515,296	\$ 500,565	\$ 500,565	\$ 0	\$ 483,914	\$ 0	\$ 483,914
2021	9,374,689	520,668	520,668	0	470,420	0	470,420
2022	10,050,346	527,108	527,108	0	445,082	0	445,082
2023	10,759,933	535,902	535,902	0	422,905	0	422,905
2024	11,505,993	555,976	555,976	0	410,043	0	410,043
2025	12,282,249	583,172	583,172	0	401,963	0	401,963
2026	13,084,580	617,643	617,643	0	397,872	0	397,872
2027	13,906,773	656,943	656,943	0	395,502	0	395,502
2028	14,746,026	691,631	691,631	0	389,146	0	389,146
2029	15,609,970	717,274	717,274	0	377,172	0	377,172
2030	16,511,044	741,355	741,355	0	364,332	0	364,332
2031	17,454,135	762,749	762,749	0	350,323	0	350,323
2032	18,445,435	786,634	786,634	0	337,657	0	337,657
2033	19,485,722	816,250	816,250	0	327,448	0	327,448
2034	20,571,686	849,107	849,107	0	318,345	0	318,345
2035	21,703,019	884,903	884,903	0	310,061	0	310,061
2036	22,879,583	924,097	924,097	0	302,611	0	302,611
2037	24,100,820	966,669	966,669	0	295,843	0	295,843
2038	25,365,803	1,009,025	1,009,025	0	288,604	0	288,604
2039	26,678,288	1,053,845	1,053,845	0	281,704	0	281,704
2040	28,039,574	1,106,169	1,106,169	0	276,347	0	276,347
2041	29,444,599	1,155,221	1,155,221	0	269,720	0	269,720
2042	30,900,231	1,200,271	1,200,271	0	261,905	0	261,905
2043	32,415,117	1,252,974	1,252,974	0	255,519	0	255,519
2044	33,985,398	1,308,746	1,308,746	0	249,432	0	249,432
2045	35,611,280	1,370,365	1,370,365	0	244,090	0	244,090
2046	37,290,086	1,430,234	1,430,234	0	238,088	0	238,088
2047	39,028,177	1,481,433	1,481,433	0	230,477	0	230,477
2048	40,840,474	1,528,888	1,528,888	0	222,299	0	222,299
2049	42,737,706	1,564,207	1,564,207	0	212,556	0	212,556
2050	44,739,587	1,597,568	1,597,568	0	202,887	0	202,887
2051	46,856,467	1,620,364	1,620,364	0	192,320	0	192,320
2052	49,108,473	1,624,621	1,624,621	0	180,210	0	180,210
2053	51,525,252	1,629,145	1,629,145	0	168,890	0	168,890
2054	54,118,852	1,635,397	1,635,397	0	158,447	0	158,447
2055	56,900,883	1,639,889	1,639,889	0	148,488	0	148,488
2056	59,887,222	1,630,999	1,630,999	0	138,021	0	138,021
2057	63,106,763	1,606,252	1,606,252	0	127,035	0	127,035
2058	66,593,035	1,574,452	1,574,452	0	116,373	0	116,373
2059	70,372,792	1,540,656	1,540,656	0	106,426	0	106,426
2060	74,469,213	1,507,663	1,507,663	0	97,333	0	97,333
2061	78,904,221	1,471,155	1,471,155	0	88,763	0	88,763
2062	83,705,907	1,428,654	1,428,654	0	80,559	0	80,559
2063	88,906,867	1,384,095	1,384,095	0	72,941	0	72,941
2064	94,537,827	1,337,523	1,337,523	0	65,875	0	65,875
2065	100,631,644	1,289,382	1,289,382	0	59,350	0	59,350
2066	107,222,993	1,240,271	1,240,271	0	53,354	0	53,354
2067	114,348,318	1,190,836	1,190,836	0	47,877	0	47,877
2068	122,045,904	1,141,336	1,141,336	0	42,885	0	42,885
2069	130,356,436	1,090,753	1,090,753	0	38,303	0	38,303



# Single Discount Rate Development

## Present Values of Projected Benefits

### Ending December 31 for 2070 to 2119 (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 <sup>a</sup> ((a)-.5)	(g)=(e)*vf <sup>a</sup> ((a)-.5)	(h)=((c)/(1+SDR)) <sup>a</sup> (a-.5)
2070	\$ 139,324,622	\$ 1,039,905	\$ 1,039,905	\$ 0	\$ 34,128	\$ 0	\$ 34,128
2071	148,997,398	988,956	988,956	0	30,333	0	30,333
2072	159,424,819	937,616	937,616	0	26,877	0	26,877
2073	170,660,799	886,797	886,797	0	23,757	0	23,757
2074	182,762,021	836,602	836,602	0	20,946	0	20,946
2075	195,789,047	786,955	786,955	0	18,414	0	18,414
2076	209,806,786	737,657	737,657	0	16,131	0	16,131
2077	224,884,931	688,791	688,791	0	14,077	0	14,077
2078	241,097,987	640,618	640,618	0	12,236	0	12,236
2079	258,525,398	593,326	593,326	0	10,592	0	10,592
2080	277,251,990	547,071	547,071	0	9,127	0	9,127
2081	297,368,383	501,922	501,922	0	7,826	0	7,826
2082	318,971,487	457,974	457,974	0	6,674	0	6,674
2083	342,164,927	415,467	415,467	0	5,658	0	5,658
2084	367,059,348	374,542	374,542	0	4,767	0	4,767
2085	393,773,014	335,342	335,342	0	3,989	0	3,989
2086	422,432,342	298,019	298,019	0	3,313	0	3,313
2087	453,172,463	262,727	262,727	0	2,730	0	2,730
2088	486,137,828	229,646	229,646	0	2,230	0	2,230
2089	521,482,842	198,928	198,928	0	1,805	0	1,805
2090	559,372,579	170,664	170,664	0	1,447	0	1,447
2091	599,983,603	144,882	144,882	0	1,148	0	1,148
2092	643,504,832	121,574	121,574	0	901	0	901
2093	690,138,443	100,732	100,732	0	697	0	697
2094	740,100,797	82,340	82,340	0	533	0	533
2095	793,623,449	66,353	66,353	0	401	0	401
2096	850,954,230	52,665	52,665	0	298	0	298
2097	912,358,463	41,128	41,128	0	217	0	217
2098	978,120,219	31,570	31,570	0	156	0	156
2099	1,048,543,665	23,804	23,804	0	110	0	110
2100	1,123,954,479	17,619	17,619	0	76	0	76
2101	1,204,701,386	12,791	12,791	0	52	0	52
2102	1,291,157,785	9,102	9,102	0	34	0	34
2103	1,383,723,470	6,344	6,344	0	22	0	22
2104	1,482,826,465	4,330	4,330	0	14	0	14
2105	1,588,924,987	2,894	2,894	0	9	0	9
2106	1,702,509,529	1,894	1,894	0	5	0	5
2107	1,824,105,104	1,214	1,214	0	3	0	3
2108	1,954,273,629	762	762	0	2	0	2
2109	2,093,616,488	469	469	0	1	0	1
2110	2,242,777,272	281	281	0	1	0	1
2111	2,402,444,715	164	164	0	0	0	0
2112	2,573,355,840	94	94	0	0	0	0
2113	2,756,299,326	52	52	0	0	0	0
2114	2,952,119,119	28	28	0	0	0	0
2115	3,161,718,297	15	15	0	0	0	0
2116	3,386,063,205	7	7	0	0	0	0
2117	3,626,187,879	4	4	0	0	0	0
2118	3,883,198,789	2	2	0	0	0	0
2119	4,158,279,908	0	0	0	0	0	0
<b>Totals</b>	\$		\$	\$	\$ 12,279,452	\$ 0	\$ 12,279,452



# SECTION H

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## 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>	<p>The total pension expense is the sum of the following items that are recognized at the end of the employer's fiscal year:</p> <ol style="list-style-type: none"><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.