

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

GASB Statement Nos. 67 and 68 Accounting and Financial  
Reporting for Pensions  
For Measurement Date as of December 31, 2019

Draft





March 29, 2020

Board of Trustees

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

Dear Board Members:

This report provides information required by the Wyoming State Highway Patrol, Game & Fish Warden and Criminal Investigator Retirement Fund (WRS) in connection with the Governmental Accounting Standards Board (GASB) Statement No. 67 and 68 for the Wyoming Retirement System ("WRS"). These calculations have been made on a basis that is consistent with our understanding of these Statements.

GASB Statement No. 67 is the accounting standard that applies to the stand-alone financial reports issued by retirement systems. GASB Statement No. 68 establishes accounting and financial reporting for state and local government employers who provide their employees (including former employees) pension benefits through a trust.

Our calculation of the liability associated with the benefits described in this report was performed for the purpose of providing reporting and disclosure information that satisfies the requirements of GASB Statement Nos. 67 and 68. The Net Pension Liability is not an appropriate measure for measuring the sufficiency of plan assets to cover the estimated cost of settling the employer's benefit obligation. The Net Pension Liability is not an appropriate measure for assessing the need for or amount of future employer contributions. A calculation of the plan's liability for purposes other than satisfying the requirements of GASB Statement Nos. 67 and 68 may produce significantly different results. This report may be provided to parties other than the Wyoming State Highway Patrol, Game & Fish Warden and Criminal Investigator Retirement Fund only in its entirety and only with the permission of WRS. GRS is not responsible for unauthorized use of this report.

This report is based upon information, furnished to us by WRS, concerning retirement and ancillary benefits, active members, deferred vested members, retirees and beneficiaries, and financial data. This information was checked for internal consistency, but it was not audited.

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, 2018 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.

To the best of our knowledge, the information contained with this report is accurate and fairly represents the actuarial position of the Wyoming State Highway Patrol, Game & Fish Warden and Criminal Investigator Retirement Fund. 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.

The signing individuals are independent of the plan sponsor.

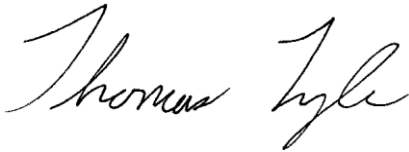
Paul T. Wood and Thomas A. Lyle are members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Respectfully submitted,

**Gabriel, Roeder, Smith & Company**



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



By \_\_\_\_\_  
Thomas A. Lyle, ASA, EA, MAAA

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**SECTION A**

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**EXECUTIVE SUMMARY**

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# Executive Summary as of December 31, 2019

	<b>2019</b>
Actuarial Valuation Date	January 1, 2019
Measurement Date of the Net Pension Liability	December 31, 2019
Employer's Fiscal Year Ending Date (Reporting Date)	December 31, 2019

## Membership

Number of	
- Retirees and Beneficiaries	340
- Inactive, Nonretired Members	72
- Active Members	304
- Total	716
Covered Payroll	\$ 23,118,850

## Net Pension Liability

Total Pension Liability	\$ 192,847,885
Plan Fiduciary Net Position	154,294,266
Net Pension Liability	\$ 38,553,619
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	80.01 %
Net Pension Liability as a Percentage of Covered Payroll	166.76 %

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## 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*	2.75 %
Last year ending December 31 in the 2019 to 2118 projection period for which projected benefit payments are fully funded	2118

**Total Pension Expense** \$ 2,250,571

## 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	\$ 1,114,982	\$ 2,624,086
Changes in assumptions	6,962,551	20,119,717
Net difference between projected and actual earnings on pension plan investments	8,958,228	15,734,988
Total	\$ 17,035,761	\$ 38,478,791

*\*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, 2019. 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, 2019.

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 slightly decrease as a percentage of payroll.
2. The unfunded liability is expected to increase as a percentage of payroll each year for several years before decreasing in the future.
3. The unfunded liability is not expected to be fully amortized during the lifetimes of current members.
4. The funded status of the plan is expected to decrease for several years before increasing 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 2118. 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.

The single discount rate increased from 6.33% to 7.00% since the last valuation. This change in discount rate is measured as a change in assumptions.

## 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, 2019 and rolled forward to the measurement date of December 31, 2019.



## 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 2.75% (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.

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## SECTION B

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### FINANCIAL STATEMENTS

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Auditor's Note – This information is intended to assist in preparation of the financial statements of the Wyoming State Highway Patrol, Game & Fish Warden and Criminal Investigator Retirement Fund. Financial statements are the responsibility of management, subject to the auditor's review. Please let us know if the auditor recommends any changes.

# Statement of Pension Expense under GASB Statement No. 68

## Fiscal Year Ended December 31, 2019

### A. Expense

1. Service Cost	\$	4,614,951
2. Interest on the Total Pension Liability		12,833,018
3. Current-Period Benefit Changes		0
4. Employee Contributions (made negative for addition here)		(4,196,524)
5. Projected Earnings on Plan Investments (made negative for addition here)		(9,210,438)
6. Pension Plan Administrative Expense		138,770
7. Other Changes in Plan Fiduciary Net Position		6,039
8. Recognition of Outflow (Inflow) of Resources due to Liabilities		(2,353,088) *
9. Recognition of Outflow (Inflow) of Resources due to Assets		417,843
<b>10. Total Pension Expense</b>	<b>\$</b>	<b>2,250,571 **</b>

\* Includes change in the blended single discount rate from 6.33% to 7.00%

\*\* In accordance with GASB 71, employers may need to illustrate contributions made after the measurement date.

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# Statement of Outflows and Inflows Arising from Current Reporting Period Fiscal Year Ended December 31, 2019

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

1. Difference between expected and actual experience of the Total Pension Liability (gains) or losses	\$	1,453,141
2. Assumption Changes (gains) or losses	\$	(15,224,856)
3. Recognition period for Liabilities: Average of the expected remaining service lives of all employees {in years}		4.1483
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	\$	350,298
5. Outflow (Inflow) of Resources to be recognized in the current pension expense for assumption changes	\$	(3,670,143)
6. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Liabilities	\$	(3,319,845)
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	\$	1,102,843
8. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for assumption changes	\$	(11,554,713)
9. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Liabilities	\$	(10,451,870)

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

1. Net difference between projected and actual earnings on pension plan investments (gains) or losses	\$	(15,256,127)
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	\$	(3,051,225)
4. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Assets	\$	(12,204,902)



# History of Deferred Outflows and Inflows of Resources by Source

## Fiscal Year Ended December 31, 2019

**Differences between expected and actual experience - Net (inflows)/outflows of resources**

Recognition Period	4.8205	4.8865	4.9676	4.4724	4.2551	4.1483		Deferred Net (Inflows)/Outflows at Measurement Date
	2014	2015	2016	2017	2018	2019	Total	
<b>Total</b>	\$ -	\$ (1,821,706)	\$ 62,315	\$ (4,722,830)	\$ (2,017,522)	\$ 1,453,141		
2014	-	-	-	-	-	-	-	-
2015	-	(372,804)	-	-	-	-	(372,804)	
2016	-	(372,804)	12,544	-	-	-	(360,260)	
2017	-	(372,804)	12,544	(1,055,994)	-	-	(1,416,254)	
2018	-	(372,804)	12,544	(1,055,994)	(474,142)	-	(1,890,396)	
2019	-	(330,490)	12,544	(1,055,994)	(474,142)	350,298	(1,497,784)	
2020	-	-	12,139	(1,055,994)	(474,142)	350,298	(1,167,699)	\$ (1,509,104)
2021	-	-	-	(498,854)	(474,142)	350,298	(622,698)	
2022	-	-	-	-	(120,954)	350,298	229,344	
2023	-	-	-	-	-	51,949	51,949	
2024	-	-	-	-	-	-	-	
Thereafter	-	-	-	-	-	-	-	
	\$ -	\$ (1,821,706)	\$ 62,315	\$ (4,722,830)	\$ (2,017,522)	\$ 1,453,141	\$ (7,046,602)	

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

Recognition Period	4.8205	4.8865	4.9676	4.4724	4.2551	4.1483		
	2014	2015	2016	2017	2018	2019	Total	
<b>Total</b>	\$ -	\$ 32,535,213	\$ (5,188,326)	\$ (22,946,444)	\$ 13,137,489	\$ (15,224,856)		
2014	-	-	-	-	-	-	-	-
2015	-	6,658,183	-	-	-	-	6,658,183	
2016	-	6,658,183	(1,044,433)	-	-	-	5,613,750	
2017	-	6,658,183	(1,044,433)	(5,130,678)	-	-	483,072	
2018	-	6,658,183	(1,044,433)	(5,130,678)	3,087,469	-	3,570,541	
2019	-	5,902,481	(1,044,433)	(5,130,678)	3,087,469	(3,670,143)	(855,304)	
2020	-	-	(1,010,594)	(5,130,678)	3,087,469	(3,670,143)	(6,723,946)	\$ (13,157,166)
2021	-	-	-	(2,423,732)	3,087,469	(3,670,143)	(3,006,406)	
2022	-	-	-	-	787,613	(3,670,143)	(2,882,530)	
2023	-	-	-	-	-	(544,284)	(544,284)	
2024	-	-	-	-	-	-	-	
Thereafter	-	-	-	-	-	-	-	
	\$ -	\$ 32,535,213	\$ (5,188,326)	\$ (22,946,444)	\$ 13,137,489	\$ (15,224,856)	\$ 2,313,076	

**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		
	2014	2015	2016	2017	2018	2019	Total	
<b>Total</b>	\$ 3,410,288	\$ 10,785,198	\$ 682,472	\$ (8,825,212)	\$ 14,702,888	\$ (15,256,127)		
2014	682,058	-	-	-	-	-	682,058	
2015	682,058	2,157,040	-	-	-	-	2,839,098	
2016	682,058	2,157,040	136,494	-	-	-	2,975,592	
2017	682,058	2,157,040	136,494	(1,765,042)	-	-	1,210,550	
2018	682,056	2,157,040	136,494	(1,765,042)	2,940,578	-	4,151,126	
2019	-	2,157,038	136,494	(1,765,042)	2,940,578	(3,051,225)	417,843	
2020	-	-	136,496	(1,765,042)	2,940,578	(3,051,225)	(1,739,193)	\$ (6,776,760)
2021	-	-	-	(1,765,044)	2,940,578	(3,051,225)	(1,875,691)	
2022	-	-	-	-	2,940,576	(3,051,225)	(110,649)	
2023	-	-	-	-	-	(3,051,227)	(3,051,227)	
2024	-	-	-	-	-	-	-	
Thereafter	-	-	-	-	-	-	-	
	\$ 3,410,288	\$ 10,785,198	\$ 682,472	\$ (8,825,212)	\$ 14,702,888	\$ (15,256,127)	\$ 5,499,507	

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

	2014	2015	2016	2017	2018	2019	Total	
<b>Total</b>	\$ 3,410,288	\$ 41,498,705	\$ (4,443,539)	\$ (36,494,486)	\$ 25,822,855	\$ (29,027,842)		
2014	682,058	-	-	-	-	-	682,058	
2015	682,058	8,442,419	-	-	-	-	9,124,477	
2016	682,058	8,442,419	(895,395)	-	-	-	8,229,082	
2017	682,058	8,442,419	(895,395)	(7,951,714)	-	-	277,368	
2018	682,056	8,442,419	(895,395)	(7,951,714)	5,553,905	-	5,831,271	
2019	-	7,729,029	(895,395)	(7,951,714)	5,553,905	(6,371,070)	(1,935,245)	
2020	-	-	(861,959)	(7,951,714)	5,553,905	(6,371,070)	(9,630,838)	\$ (21,443,030)
2021	-	-	-	(4,687,630)	5,553,905	(6,371,070)	(5,504,795)	
2022	-	-	-	-	3,607,235	(6,371,070)	(2,763,835)	
2023	-	-	-	-	-	(3,543,562)	(3,543,562)	
2024	-	-	-	-	-	-	-	
Thereafter	-	-	-	-	-	-	-	
	\$ 3,410,288	\$ 41,498,705	\$ (4,443,539)	\$ (36,494,486)	\$ 25,822,855	\$ (29,027,842)	\$ 765,981	



# Statement of Outflows and Inflows Arising from Current and Prior Reporting Periods Fiscal Year Ended December 31, 2019

## 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	\$ 9,352,792	\$ 11,705,880	\$ (2,353,088)
2. Due to Assets	5,234,110	4,816,267	417,843
<b>3. Total</b>	<b>\$ 14,586,902</b>	<b>\$ 16,522,147</b>	<b>\$ (1,935,245)</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	\$ 362,842	\$ 1,860,626	\$ (1,497,784)
2. Assumption Changes	8,989,950	9,845,254	(855,304)
3. Net Difference between projected and actual earnings on pension plan investments	5,234,110	4,816,267	417,843
<b>4. Total</b>	<b>\$ 14,586,902</b>	<b>\$ 16,522,147</b>	<b>\$ (1,935,245)</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	\$ 1,114,982	\$ 2,624,086	\$ (1,509,104)
2. Assumption Changes	6,962,551	20,119,717	(13,157,166)
3. Net Difference between projected and actual earnings on pension plan investments	8,958,228	15,734,988	(6,776,760)
<b>4. Total</b>	<b>\$ 17,035,761</b>	<b>\$ 38,478,791</b>	<b>\$ (21,443,030)</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
2020	\$ (9,630,838)
2021	(5,504,795)
2022	(2,763,835)
2023	(3,543,562)
2024	0
Thereafter	0
<b>Total</b>	<b>\$ (21,443,030)</b>



## Statement of Fiduciary Net Position as of December 31, 2019

	<b>2019</b>
<b>Assets</b>	
Cash and Deposits	\$ 6,041,586
Receivables	
Accounts Receivable - Sale of Investments	\$ 562,123
Accrued Interest and Other Dividends	341,038
Contributions	2,560
Accounts Receivable - Other	3,475,438
Total Receivables	\$ 4,381,159
Investments	
Fixed Income	\$ 26,075,174
Equities	71,840,491
Private Markets	24,875,752
Marketable Alternatives	25,788,788
Other	6,987,707
Total Investments	\$ 155,567,912
<b>Total Assets</b>	<b>\$ 165,990,657</b>
<b>Liabilities</b>	
Payables	
Accounts Payable - Purchase of Investments	\$ 11,175,413
Accrued Expenses	520,978
Accounts Payable - Other	0
Total Liabilities	\$ 11,696,391
<b>Net Position Restricted for Pensions</b>	<b>\$ 154,294,266</b>

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## Statement of Changes in Fiduciary Net Position for Year Ended December 31, 2019

	2019
<b>Additions</b>	
Contributions	
Employer	\$ 3,603,557
Employee	3,527,287
Other Employer Contributions	35,607
Other Employee Contributions	669,237
<b>Total Contributions</b>	<b>\$ 7,835,688</b>
Investment Income	
Net Appreciation in Fair Value of Investments	\$ 23,241,359
Interest and Dividends	2,386,208
Less Investment Expense	(1,161,002)
<b>Net Investment Income</b>	<b>\$ 24,466,565</b>
Other	\$ 0
<b>Total Additions</b>	<b>\$ 32,302,253</b>
 <b>Deductions</b>	
Benefit Payments, including Refunds of Employee Contributions	\$ 11,132,637
Pension Plan Administrative Expense	138,770
Other	6,039
<b>Total Deductions</b>	<b>\$ 11,277,446</b>
<b>Net Increase in Net Position</b>	<b>\$ 21,024,807</b>
 <b>Net Position Restricted for Pensions</b>	
Beginning of Year	\$ 133,269,459
End of Year	<b>\$ 154,294,266</b>



## SECTION C

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### REQUIRED SUPPLEMENTARY INFORMATION

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Auditor's Note – This information is intended to assist in preparation of the financial statements of the Wyoming State Highway Patrol, Game & Fish Warden and Criminal Investigator Retirement Fund. Financial statements are the responsibility of management, subject to the auditor's review. Please let us know if the auditor recommends any changes.

# Schedule of Changes in Net Pension Liability and Related Ratios

## Current Reporting Period

### Fiscal Year Ended December 31, 2019

<b>A. Total pension liability</b>	
1. Service cost	\$ 4,614,951
2. Interest on the total pension liability	12,833,018
3. Changes of benefit terms	0
4. Difference between expected and actual experience of the total pension liability	1,453,141
5. Changes of assumptions	(15,224,856)
6. Benefit payments, including refunds of employee contributions	(11,132,637)
<b>7. Net change in total pension liability</b>	<b>(7,456,383)</b>
<b>8. Total pension liability – beginning</b>	<b>200,304,268</b>
<b>9. Total pension liability – ending</b>	<b>\$ 192,847,885</b>
<b>B. Plan fiduciary net position</b>	
1. Contributions – employer	\$ 3,639,164
2. Contributions – employee	4,196,524
3. Net investment income	24,466,565
4. Benefit payments	(10,843,842)
5. Refunds	(288,795)
6. Pension plan administrative expense	(138,770)
7. Other	(6,039)
<b>8. Net change in plan fiduciary net position</b>	<b>21,024,807</b>
<b>9. Plan fiduciary net position – beginning</b>	<b>133,269,459</b>
<b>10. Plan fiduciary net position – ending</b>	<b>\$ 154,294,266</b>
<b>C. Net pension liability</b>	<b>\$ 38,553,619</b>
<b>D. Plan fiduciary net position as a percentage of the total pension liability</b>	<b>80.01 %</b>
<b>E. Covered-employee payroll</b>	<b>\$ 23,118,850</b>
<b>F. Net pension liability as a percentage of covered-employee payroll</b>	<b>166.76 %</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,	2019	2018	2017	2016	2015	2014
<b>Total pension liability</b>						
Service cost	\$ 4,614,951	\$ 5,078,748	\$ 4,764,423	\$ 7,631,559	\$ 7,511,738	\$ 5,276,236
Interest on the total pension liability	12,833,018	12,084,646	12,129,167	12,213,078	11,513,094	11,490,234
Changes of benefit terms	0	0	0	0	0	0
Difference between expected and actual experience	1,453,141	(2,017,522)	(4,722,830)	62,315	(1,821,706)	0
Changes of assumptions	(15,224,856)	13,137,489	(22,946,444)	(5,188,326)	32,535,213	0
Benefit payments, including refunds of employee contributions	(11,132,637)	(10,612,051)	(10,304,469)	(9,719,868)	(9,046,994)	(8,732,855)
<b>Net change in total pension liability</b>	(7,456,383)	17,671,310	(21,080,153)	4,998,758	40,691,345	8,033,615
<b>Total pension liability - beginning</b>	200,304,268	182,632,958	203,713,111	198,714,353	158,023,008	149,989,393
<b>Total pension liability - ending (a)</b>	<u>\$ 192,847,885</u>	<u>\$ 200,304,268</u>	<u>\$ 182,632,958</u>	<u>\$ 203,713,111</u>	<u>\$ 198,714,353</u>	<u>\$ 158,023,008</u>
<b>Plan fiduciary net position</b>						
Employer contributions	\$ 3,639,164	\$ 3,529,976	\$ 3,552,582	\$ 3,574,065	\$ 3,355,688	\$ 3,006,277
Employee contributions	4,196,524	3,796,060	3,485,756	3,678,081	3,524,286	3,150,559
Pension plan net investment income	24,466,565	(4,908,329)	17,623,232	8,622,074	(1,199,475)	5,900,708
Benefit payments	(10,843,842)	(10,260,821)	(9,795,108)	(9,396,540)	(8,926,088)	(8,364,762)
Refunds	(288,795)	(351,230)	(509,361)	(323,328)	(120,906)	(368,093)
Pension plan administrative expense	(138,770)	(139,377)	(128,991)	(114,832)	(95,918)	(96,479)
Other	(6,039)	(5,536)	(5,897)	(5,897)	(5,850)	229,589
<b>Net change in plan fiduciary net position</b>	21,024,807	(8,339,257)	14,222,213	6,033,623	(3,468,263)	3,457,799
<b>Plan fiduciary net position - beginning</b>	133,269,459	141,608,716	127,386,503	121,352,880	124,821,143	121,363,344
<b>Plan fiduciary net position - ending (b)</b>	<u>\$ 154,294,266</u>	<u>\$ 133,269,459</u>	<u>\$ 141,608,716</u>	<u>\$ 127,386,503</u>	<u>\$ 121,352,880</u>	<u>\$ 124,821,143</u>
<b>Net pension liability - ending (a) - (b)</b>	<u>\$ 38,553,619</u>	<u>\$ 67,034,809</u>	<u>\$ 41,024,242</u>	<u>\$ 76,326,608</u>	<u>\$ 77,361,473</u>	<u>\$ 33,201,865</u>
<b>Plan fiduciary net position as a percentage of total pension liability</b>	80.01 %	66.53 %	77.54 %	62.53 %	61.07 %	78.99 %
<b>Covered-employee payroll</b>	\$ 23,118,850	\$ 23,063,176	\$ 23,641,495	\$ 23,636,482	\$ 22,196,930	\$ 21,817,686
<b>Projected valuation payroll</b>	\$ 23,696,821	\$ 23,639,756	\$ 24,646,258	\$ 24,641,033	\$ 23,140,300	\$ 22,744,938
<b>Net pension liability as a percentage of covered-employee payroll</b>	166.76 %	290.66 %	173.53 %	322.92 %	348.52 %	152.18 %

**Notes to Schedule:**

For 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	\$ 158,023,008	\$ 124,821,143	\$ 33,201,865	78.99 %	\$ 21,817,686	152.18 %
2015	198,714,353	121,352,880	77,361,473	61.07 %	22,196,930	348.52 %
2016	203,713,111	127,386,503	76,326,608	62.53 %	23,636,482	322.92 %
2017	182,632,958	141,608,716	41,024,242	77.54 %	23,641,495	173.53 %
2018	200,304,268	133,269,459	67,034,809	66.53 %	23,063,176	290.66 %
2019	192,847,885	154,294,266	38,553,619	80.01 %	23,118,850	166.76 %

\* Covered payroll is the amount in force as of the valuation date and likely differs from the actual payroll paid during the year.

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## Schedule of Contributions Multiyear Last 10 Fiscal Years

FY Ending December 31,	Actuarially Determined Contribution	Actual Contribution*	Contribution Deficiency (Excess)	Covered Payroll**	Actual Contribution as a % of Covered Payroll
2014	\$ 4,037,681	\$ 3,077,515	\$ 960,166	\$ 21,817,686	14.11 %
2015	3,784,380	3,355,688	428,692	22,196,930	15.12 %
2016	4,097,473	3,574,065	523,408	23,636,482	15.12 %
2017	4,041,445	3,552,582	488,863	23,641,495	15.03 %
2018	3,607,303	3,529,976	77,327	23,063,176	15.31 %
2019	3,997,559	3,639,164	358,395	23,118,850	15.74 %

\* Includes other funding sources but excludes member redeposits and member service purchase contributions.

\*\* Covered payroll is the amount in force as of the valuation date and likely differs from the actual payroll paid during the year.

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## Notes to Schedule of Contributions

**Valuation Date:** January 1, 2019  
**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	29 years
Asset Valuation Method	5-Year smoothed market
Inflation	2.25%
Salary Increases	2.50% to 8.50% including inflation
Payroll Growth Rate	2.50%
Cost-of-Living Increase	0.00%
Investment Rate of Return	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 contributing at the rate of 14.88% of salary.  
Employees are contributing at the rate of 14.56% of salary.  
The roll-forward methodology employed for purposes of the GASB disclosures is based on generally accepted actuarial methods.



## Schedule of Investment Returns Multiyear Last 10 Fiscal Years

<u>FY Ending December 31,</u>	<u>Annual Return<sup>1</sup></u>
2014	4.70 %
2015	(0.26)%
2016	7.60 %
2017	14.20 %
2018	(3.52)%
2019	18.72 %

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

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## SECTION D

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### NOTES TO FINANCIAL STATEMENTS

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Auditor's Note – This information is intended to assist in preparation of the financial statements of the Wyoming State Highway Patrol, Game & Fish Warden and Criminal Investigator Retirement Fund. Financial statements are the responsibility of management, subject to the auditor's review. Please let us know if the auditor recommends any changes.

## Single Discount Rate

A Single Discount Rate of 7.00% was used to measure the total pension liability. This Single Discount Rate was based on an expected rate of return on pension plan investments of 7.00% and a municipal bond rate of 2.75%. The projection of cash flows used to determine this Single Discount Rate assumed that plan member contributions will be made at the current contribution rate and that employer contributions will be made at rates equal to the statutory required contribution rate. Based on these assumptions, the pension plan's fiduciary net position and future contributions were sufficient to finance the benefit payments through the year 2118. As a result, the long-term expected rate of return on pension plan investments was applied to projected benefit payments through the year 2118, and the municipal bond rate was applied to all benefit payments after that date.

## 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%
\$ 62,695,798	\$ 38,553,619	\$ 18,673,307

## Summary of Population Statistics

Inactive Plan Members or Beneficiaries Currently Receiving Benefits	340
Inactive Plan Members Entitled to But Not Yet Receiving Benefits	72
Active Plan Members	<u>304</u>
Total Plan Members	716

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**SECTION E**

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**SUMMARY OF BENEFITS**

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## Summary of Benefits

<b>Covered Members</b>	<p>Any person who is employed by the Wyoming state highway patrol division as a sworn law enforcement officer;</p> <p>Any person who is commissioned as a full time law enforcement officer of the Wyoming state game and fish department;</p> <p>Any criminal investigator as defined under W.S. 9-3-602(a)(iv);</p> <p>Any person designated and appointed as capitol police under W.S. 9-1-612 and qualified pursuant to W.S. 9-1-701 through 9-1-707.</p>
<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 50 with six or more years of service.
Monthly Benefit	2.50% of employee's highest three-year average salary for each year of credited service, not to exceed 75.0% of final average salary.
Vesting	Any employee who has left employment with six or more years of service, and who has not withdrawn accumulated contributions, is eligible to receive the above benefit or can elect to receive a lump-sum refund of contributions with interest. An employee who terminates with less than six years of service is only eligible for the lump-sum benefit.
<b>Duty Disability Retirement</b>	
Eligibility	No age or service eligibility requirements. Partial or total disability resulting from an individual and specific act, the type of which would normally occur only while employed as an employee, or as otherwise defined under W.S. 9-3-611(a).
Monthly Benefit	62.5% of Final Average Salary.
<b>Non-duty Disability Retirement</b>	
Eligibility	10 years of credited service. Partial or total disability, but not eligible for duty disability.
Monthly Benefit	50.0% of Final Average Salary.



### **Pre-retirement Duty Death Benefit**

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

### **Pre-retirement Non-duty Death Benefit**

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

### **Post-retirement Death Benefit**

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

Employee	14.56% of salary. The Employer may subsidize all except 1.62% of the employee contributions, which shall be paid through salary reductions.
Employer	14.88% of salary.
Interest	3.00% annually effective January 1, 2016.

### **Cost-of-Living Improvements**

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



## Optional Forms of Payment

Option 1	Monthly benefit for life. Upon death, 50% of the benefit continues to be paid to the beneficiary.
Option 2	Monthly benefit for life. Upon death, 100% of the benefit continues to be paid to the beneficiary.
Option 3	Not available under this plan.
Option 4	Monthly benefit for life with a guarantee of 120 monthly payments
Option 5	The largest possible monthly benefit payable for life with no lump-sum death benefit.

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## **SECTION F**

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

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## Summary of Actuarial Assumptions and Methods

The following methods and assumptions were used in preparing the January 1, 2019 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 percentage of payroll. Under this method, the employer contribution rate is the sum of (i) the employer normal cost rate, and (ii) the rate that will amortize the unfunded actuarial accrued liability (UAAL).

- a. The valuation is prepared on the projected benefit basis, under which the present value, at the investment return rate assumed to be earned in the future (currently 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 accrued liability contributions are determined by subtracting the actuarial value of assets from the actuarial accrued liability. Amortization bases are established each year and amortized based on the Board's policy. The Board's policy consists of amortizing the unfunded liability as of January 1, 2018, over a closed 30 year period with each subsequent amortization base created as a result of year to year experience changes over individual 20 year closed periods. The current year amortization base is determined by taking the current unfunded liability less the outstanding amounts of prior year bases.



3. Actuarial Value of Assets

The actuarial value of assets is based on the market value of assets with a five-year phase-in of actual investment return in excess of (less than) expected investment income, with interest, dividends, and other income recognized immediately. Expected investment income is determined using the assumed investment return rate and the market value of assets (adjusted for receipts and disbursements during the year). The returns are computed net of administrative and investment expenses. An adjustment is made if the actuarial value is not within 20% of the Market Value. For any year following a year in which the 20% of market value adjustment was applied, the actuarial value is determined as if the adjustment was not applied in the previous year.

4. Economic Assumptions

a. Investment return

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

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

c. Payroll growth rate

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

d. Cost-of-Living adjustment

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

5. Demographic Assumptions

a. Rates Before Retirement

Healthy Pre-Retirement Mortality:

RP-2014 Mortality Table for Healthy Employees, 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 Mortality Table for Healthy Annuitants, 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 2019 using Scale MP-2017					
	Male	Female	Male	Female	Male	Female
20	0.04%	0.02%	0.04%	0.01%	0.05%	0.02%
25	0.05%	0.02%	0.06%	0.03%	0.20%	0.09%
30	0.05%	0.02%	0.09%	0.06%	0.51%	0.24%
35	0.06%	0.03%	0.13%	0.09%	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%	0.24%	1.92%	1.15%
55	0.27%	0.17%	0.55%	0.32%	2.26%	1.45%
60	0.47%	0.25%	0.78%	0.47%	2.67%	1.74%
65	0.83%	0.36%	1.11%	0.70%	3.18%	2.05%
70	1.35%	0.60%	1.63%	1.08%	3.92%	2.69%
75			2.56%	1.76%	5.18%	3.91%
80			4.27%	2.96%	7.31%	5.88%
85			7.44%	5.18%	10.87%	8.80%
90			13.11%	9.20%	16.69%	12.94%
95			21.02%	15.32%	23.77%	19.05%
100			30.49%	23.34%	31.73%	27.24%

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

b. Disability and Withdrawal

Age	Disability		Withdrawal	
	Male	Female	Ultimate	
			Male	Female
20	0.10%	0.10%	18.00%	18.00%
25	0.10%	0.10%	6.00%	6.00%
30	0.23%	0.23%	6.00%	6.00%
35	0.39%	0.39%	6.00%	6.00%
40	0.57%	0.57%	5.00%	5.00%
45	0.73%	0.73%	5.00%	5.00%
50	0.75%	0.75%	2.50%	2.50%
55	0.75%	0.75%	1.00%	1.00%
60	0.75%	0.75%	1.00%	1.00%

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

c. Retirement Rates

Age	Rate	Age	Rate
50	15%	56	10%
51	5%	57	15%
52	5%	58	15%
53	5%	59	15%
54	10%	60	35%
55	10%	61	40%
		62	100%

6. Other Assumptions

- a. Percent married: 85.00% of employees are assumed to be married. (No beneficiaries other than the spouse assumed.)
- b. Age difference: Male members are assumed to be three years older than their spouses, and female members are assumed to be three years younger than their spouses.
- c. Percent electing annuity on death (when eligible): All of the spouses of vested, married participants are assumed to elect an annuity.
- d. Percent electing deferred termination benefit: Vested terminating members are assumed to elect a refund or a deferred benefit, whichever is more valuable at the time of termination.
- e. Assumed age for commencement of deferred benefits: Members electing to receive a deferred benefit are assumed to commence receipt at the first age at which unreduced benefits are available, which for this plan is age 50.
- f. No benefit data is available for members entitled to deferred benefits. The benefit is estimated using the final average compensation and service provided by WRS.
- g. There will be no recoveries once disabled.
- h. No surviving spouse will remarry.
- i. Administrative expenses: Average of actual expenses for the prior two years, with each year projected at 2.50% to the valuation date.
- j. Pay increase timing: Beginning of (fiscal) year. This is equivalent to assuming that reported pay represents amount paid to members during the year ended on the valuation date.
- k. Decrement timing: Decrements of all types are assumed to occur mid-year.
- l. Eligibility testing: Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.
- m. Decrement relativity: Decrement rates are converted to probabilities in order to account for multiple decrements.
- n. Incidence of contributions: Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in the report, and the actual payroll payable at the time contributions are made.
- o. Benefit service: All members are assumed to accrue one year of service each year.

## Experience Analysis

An experience study was conducted on behalf of all WRS' plans covering the five year period ending December 31, 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.

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## **SECTION G**

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### **CALCULATION OF THE SINGLE DISCOUNT RATE**

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## 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 2.75%; 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 2019 to 2068

Year	Payroll for Current Employees		Payroll for Future Employees		Total Employee Payroll		Contributions from 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)				
2019	\$ 22,954,602	\$ 742,219	\$ 23,696,821	\$ 4,196,524	\$ 3,562,938	\$ 76,226	\$ 7,835,688				
2020	21,760,187	2,529,055	24,289,242	3,168,283	3,272,732	263,780	6,704,795				
2021	20,766,987	4,129,486	24,896,473	3,023,673	3,119,201	430,183	6,573,057				
2022	19,816,289	5,702,596	25,518,885	2,885,252	2,974,425	594,248	6,453,925				
2023	18,804,001	7,352,856	26,156,857	2,737,863	2,818,720	765,821	6,322,404				
2024	17,686,336	9,124,442	26,810,778	2,575,131	2,647,644	949,731	6,172,506				
2025	16,593,092	10,887,955	27,481,047	2,415,954	2,482,327	1,133,863	6,032,144				
2026	15,601,832	12,566,241	28,168,073	2,271,627	2,332,474	1,309,872	5,913,973				
2027	14,650,864	14,221,411	28,872,275	2,133,166	2,188,839	1,484,198	5,806,203				
2028	13,709,324	15,884,758	29,594,082	1,996,078	2,046,802	1,660,142	5,703,022				
2029	12,765,067	17,568,867	30,333,934	1,858,594	1,904,548	1,839,027	5,602,169				
2030	11,856,590	19,235,692	31,092,282	1,726,319	1,767,818	2,016,788	5,510,925				
2031	10,958,720	20,910,869	31,869,589	1,595,590	1,633,945	2,198,257	5,427,792				
2032	10,103,392	22,562,937	32,666,329	1,471,054	1,505,405	2,375,695	5,352,154				
2033	9,303,134	24,179,853	33,482,987	1,354,536	1,386,167	2,552,458	5,293,161				
2034	8,521,695	25,798,367	34,320,062	1,240,759	1,268,880	2,727,329	5,236,968				
2035	7,774,507	27,403,557	35,178,064	1,131,968	1,157,624	2,904,095	5,193,687				
2036	7,052,547	29,004,969	36,057,516	1,026,851	1,050,124	3,080,969	5,157,944				
2037	6,400,826	30,558,128	36,958,954	931,960	953,083	3,253,413	5,138,456				
2038	5,786,250	32,096,678	37,882,928	842,478	861,573	3,424,931	5,128,982				
2039	5,180,050	33,649,951	38,830,001	754,215	770,791	3,595,297	5,120,303				
2040	4,616,358	35,184,393	39,800,751	672,142	686,914	3,767,380	5,126,436				
2041	4,107,113	36,688,657	40,795,770	597,996	611,138	3,936,966	5,146,100				
2042	3,625,041	38,190,623	41,815,664	527,806	539,406	4,106,656	5,173,868				
2043	3,162,719	39,698,337	42,861,056	460,492	470,613	4,277,266	5,208,371				
2044	2,714,899	41,217,683	43,932,582	395,289	403,977	4,449,237	5,248,503				
2045	2,297,230	42,733,667	45,030,897	334,477	341,828	4,620,998	5,297,303				
2046	1,906,011	44,250,658	46,156,669	277,515	283,614	4,792,809	5,353,938				
2047	1,547,857	45,762,729	47,310,586	225,368	230,321	4,963,985	5,419,674				
2048	1,236,410	47,256,941	48,493,351	180,021	183,978	5,133,113	5,497,112				
2049	967,477	48,738,208	49,705,685	140,865	143,961	5,300,593	5,585,419				
2050	731,265	50,217,062	50,948,327	106,472	108,812	5,467,328	5,682,612				
2051	530,494	51,691,541	52,222,035	77,240	78,937	5,632,987	5,789,164				
2052	368,475	53,159,111	53,527,586	53,650	54,829	5,797,178	5,905,657				
2053	250,416	54,615,360	54,865,776	36,461	37,262	5,959,380	6,033,103				
2054	154,250	56,083,170	56,237,420	22,459	22,952	6,122,079	6,167,490				
2055	81,287	57,562,069	57,643,356	11,835	12,095	6,285,063	6,308,993				
2056	34,394	59,050,046	59,084,440	5,008	5,118	6,448,455	6,458,581				
2057	7,287	60,554,264	60,561,551	1,061	1,084	6,612,917	6,615,062				
2058	1,937	62,073,653	62,075,590	282	288	6,778,682	6,779,252				
2059	0	63,627,480	63,627,480	0	0	6,948,021	6,948,021				
2060	0	65,218,167	65,218,167	0	0	7,121,376	7,121,376				
2061	0	66,848,621	66,848,621	0	0	7,299,091	7,299,091				
2062	0	68,519,837	68,519,837	0	0	7,481,275	7,481,275				
2063	0	70,232,833	70,232,833	0	0	7,668,067	7,668,067				
2064	0	71,988,654	71,988,654	0	0	7,859,605	7,859,605				
2065	0	73,788,370	73,788,370	0	0	8,055,990	8,055,990				
2066	0	75,633,079	75,633,079	0	0	8,257,335	8,257,335				
2067	0	77,523,906	77,523,906	0	0	8,463,756	8,463,756				
2068	0	79,462,004	79,462,004	0	0	8,675,384	8,675,384				



# Single Discount Rate Development Projection of Contributions Ending December 31 for 2069 to 2118 (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)
2067	0	81,448,554	81,448,554	0	0	8,892,349	8,892,349
2068	0	83,484,768	83,484,768	0	0	9,114,782	9,114,782
2069	0	85,571,887	85,571,887	0	0	9,342,820	9,342,820
2070	0	87,711,184	87,711,184	0	0	9,576,590	9,576,590
2071	0	89,903,964	89,903,964	0	0	9,816,226	9,816,226
2072	0	92,151,563	92,151,563	0	0	10,061,861	10,061,861
2073	0	94,455,352	94,455,352	0	0	10,313,635	10,313,635
2074	0	96,816,736	96,816,736	0	0	10,571,692	10,571,692
2075	0	99,237,154	99,237,154	0	0	10,836,173	10,836,173
2076	0	101,718,083	101,718,083	0	0	11,107,231	11,107,231
2077	0	104,261,035	104,261,035	0	0	11,385,031	11,385,031
2078	0	106,867,561	106,867,561	0	0	11,669,736	11,669,736
2079	0	109,539,250	109,539,250	0	0	11,961,520	11,961,520
2080	0	112,277,731	112,277,731	0	0	12,260,564	12,260,564
2081	0	115,084,674	115,084,674	0	0	12,567,057	12,567,057
2082	0	117,961,791	117,961,791	0	0	12,881,192	12,881,192
2083	0	120,910,836	120,910,836	0	0	13,203,162	13,203,162
2084	0	123,933,607	123,933,607	0	0	13,533,169	13,533,169
2085	0	127,031,947	127,031,947	0	0	13,871,418	13,871,418
2086	0	130,207,746	130,207,746	0	0	14,218,117	14,218,117
2087	0	133,462,940	133,462,940	0	0	14,573,481	14,573,481
2088	0	136,799,514	136,799,514	0	0	14,937,732	14,937,732
2089	0	140,219,502	140,219,502	0	0	15,311,096	15,311,096
2090	0	143,724,990	143,724,990	0	0	15,693,803	15,693,803
2091	0	147,318,115	147,318,115	0	0	16,086,089	16,086,089
2092	0	151,001,068	151,001,068	0	0	16,488,196	16,488,196
2093	0	154,776,095	154,776,095	0	0	16,900,368	16,900,368
2094	0	158,645,497	158,645,497	0	0	17,322,858	17,322,858
2095	0	162,611,634	162,611,634	0	0	17,755,921	17,755,921
2096	0	166,676,925	166,676,925	0	0	18,199,820	18,199,820
2097	0	170,843,848	170,843,848	0	0	18,654,824	18,654,824
2098	0	175,114,944	175,114,944	0	0	19,121,209	19,121,209
2099	0	179,492,818	179,492,818	0	0	19,599,260	19,599,260
2100	0	183,980,138	183,980,138	0	0	20,089,266	20,089,266
2101	0	188,579,641	188,579,641	0	0	20,591,525	20,591,525
2102	0	193,294,132	193,294,132	0	0	21,106,343	21,106,343
2103	0	198,126,485	198,126,485	0	0	21,634,031	21,634,031
2104	0	203,079,647	203,079,647	0	0	22,174,911	22,174,911
2105	0	208,156,638	208,156,638	0	0	22,729,312	22,729,312
2106	0	213,360,554	213,360,554	0	0	23,297,570	23,297,570
2107	0	218,694,568	218,694,568	0	0	23,880,031	23,880,031
2108	0	224,161,932	224,161,932	0	0	24,477,050	24,477,050
2109	0	229,765,980	229,765,980	0	0	25,088,990	25,088,990
2110	0	235,510,130	235,510,130	0	0	25,716,224	25,716,224
2111	0	241,397,883	241,397,883	0	0	26,359,134	26,359,134
2112	0	247,432,830	247,432,830	0	0	27,018,113	27,018,113
2113	0	253,618,651	253,618,651	0	0	27,693,562	27,693,562
2114	0	259,959,117	259,959,117	0	0	28,385,895	28,385,895
2115	0	266,458,095	266,458,095	0	0	29,095,533	29,095,533
2116	0	273,119,547	273,119,547	0	0	29,822,911	29,822,911



# Single Discount Rate Development Projection of Plan Net Position Ending December 31 for 2019 to 2068

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)
2019	\$ 133,269,459	\$ 7,835,688	\$ 11,132,637	\$ 144,809	\$ 24,466,565	\$ 154,294,266
2020	154,294,266	6,704,795	11,528,213	148,164	10,629,536	159,952,221
2021	159,952,221	6,573,057	11,904,466	151,868	11,007,987	165,476,930
2022	165,476,930	6,453,925	12,277,342	155,665	11,377,657	170,875,504
2023	170,875,504	6,322,404	12,698,173	159,557	11,736,418	176,076,596
2024	176,076,596	6,172,506	13,209,112	163,546	12,077,619	180,954,062
2025	180,954,062	6,032,144	13,743,321	167,634	12,395,690	185,470,941
2026	185,470,941	5,913,973	14,212,504	171,825	12,691,517	189,692,103
2027	189,692,103	5,806,203	14,670,158	176,121	12,967,396	193,619,422
2028	193,619,422	5,703,022	15,168,204	180,524	13,221,470	197,195,186
2029	197,195,186	5,602,169	15,710,986	185,037	13,449,472	200,350,803
2030	200,350,803	5,510,925	16,180,797	189,663	13,650,901	203,142,169
2031	203,142,169	5,427,792	16,643,367	194,404	13,827,357	205,559,547
2032	205,559,547	5,352,154	17,098,762	199,265	13,978,134	207,591,808
2033	207,591,808	5,293,161	17,507,679	204,246	14,104,121	209,277,166
2034	209,277,166	5,236,968	17,922,715	209,352	14,205,706	210,587,773
2035	210,587,773	5,193,687	18,355,673	214,586	14,280,882	211,492,084
2036	211,492,084	5,157,944	18,761,786	219,951	14,328,796	211,997,086
2037	211,997,086	5,138,456	19,083,783	225,450	14,352,207	212,178,516
2038	212,178,516	5,128,982	19,365,176	231,086	14,354,705	212,065,942
2039	212,065,942	5,120,303	19,648,184	236,863	14,336,590	211,637,789
2040	211,637,789	5,126,436	19,895,241	242,785	14,298,126	210,924,325
2041	210,924,325	5,146,100	20,027,262	248,854	14,244,108	210,038,416
2042	210,038,416	5,173,868	20,122,317	255,076	14,179,566	209,014,457
2043	209,014,457	5,208,371	20,171,504	261,452	14,107,164	207,897,035
2044	207,897,035	5,248,503	20,189,877	267,989	14,029,468	206,717,140
2045	206,717,140	5,297,303	20,151,121	274,688	13,949,658	205,538,292
2046	205,538,292	5,353,938	20,012,738	281,556	13,873,612	204,471,548
2047	204,471,548	5,419,674	19,824,986	288,595	13,807,420	203,585,061
2048	203,585,061	5,497,112	19,578,721	295,809	13,756,255	202,963,898
2049	202,963,898	5,585,419	19,286,889	303,205	13,725,599	202,684,822
2050	202,684,822	5,682,612	18,958,133	310,785	13,720,459	202,818,975
2051	202,818,975	5,789,164	18,593,088	318,554	13,745,809	203,442,307
2052	203,442,307	5,905,657	18,191,712	326,518	13,806,988	204,636,721
2053	204,636,721	6,033,103	17,752,382	334,681	13,909,817	206,492,578
2054	206,492,578	6,167,490	17,293,159	343,048	14,059,864	209,083,725
2055	209,083,725	6,308,993	16,813,591	351,624	14,262,319	212,489,824
2056	212,489,824	6,458,581	16,313,811	360,415	14,522,787	216,796,966
2057	216,796,966	6,615,062	15,798,770	369,425	14,847,083	222,090,915
2058	222,090,915	6,779,252	15,268,576	378,661	15,241,234	228,464,164
2059	228,464,164	6,948,021	14,736,699	388,128	15,711,144	235,998,502
2060	235,998,502	7,121,376	14,204,592	397,831	16,262,487	244,779,942
2061	244,779,942	7,299,091	13,673,908	407,777	16,901,220	254,898,568
2062	254,898,568	7,481,275	13,144,913	417,971	17,633,644	266,450,603
2063	266,450,603	7,668,067	12,617,829	428,420	18,466,489	279,538,910
2064	279,538,910	7,859,605	12,092,850	439,131	19,406,956	294,273,490
2065	294,273,490	8,055,990	11,570,264	450,109	20,462,738	310,771,845
2066	310,771,845	8,257,335	11,050,472	461,362	21,642,048	329,159,394
2067	329,159,394	8,463,756	10,533,931	472,896	22,953,655	349,569,979
2068	349,569,979	8,675,384	10,021,144	484,718	24,406,915	372,146,416



# Single Discount Rate Development

## Projection of Plan Net Position

### Ending December 31 for 2069 to 2118 (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)
2069	\$ 372,146,416	\$ 8,892,349	\$ 9,512,690	\$ 496,836	\$ 26,011,809	\$ 397,041,048
2070	397,041,048	9,114,782	9,009,168	509,257	27,778,985	424,416,389
2071	424,416,389	9,342,820	8,511,211	521,989	29,719,801	454,445,810
2072	454,445,810	9,576,590	8,019,503	535,038	31,846,373	487,314,233
2073	487,314,233	9,816,226	7,534,748	548,414	34,171,628	523,218,925
2074	523,218,925	10,061,861	7,057,702	562,125	36,709,350	562,370,309
2075	562,370,309	10,313,635	6,589,171	576,178	39,474,248	604,992,843
2076	604,992,843	10,571,692	6,130,053	590,582	42,482,006	651,325,906
2077	651,325,906	10,836,173	5,681,383	605,347	45,749,351	701,624,701
2078	701,624,701	11,107,231	5,244,216	620,480	49,294,114	756,161,350
2079	756,161,350	11,385,031	4,819,638	635,992	53,135,314	815,226,065
2080	815,226,065	11,669,736	4,408,753	651,892	57,293,230	879,128,386
2081	879,128,386	11,961,520	4,012,651	668,189	61,789,501	948,198,567
2082	948,198,567	12,260,564	3,632,444	684,894	66,647,211	1,022,789,003
2083	1,022,789,003	12,567,057	3,269,211	702,017	71,890,996	1,103,275,829
2084	1,103,275,829	12,881,192	2,923,981	719,567	77,547,157	1,190,060,630
2085	1,190,060,630	13,203,162	2,597,710	737,556	83,643,779	1,283,572,305
2086	1,283,572,305	13,533,169	2,291,276	755,995	90,210,861	1,384,269,064
2087	1,384,269,064	13,871,418	2,005,450	774,895	97,280,457	1,492,640,593
2088	1,492,640,593	14,218,117	1,740,851	794,267	104,886,831	1,609,210,423
2089	1,609,210,423	14,573,481	1,497,900	814,124	113,066,622	1,734,538,502
2090	1,734,538,502	14,937,732	1,276,767	834,477	121,859,030	1,869,224,019
2091	1,869,224,019	15,311,096	1,077,347	855,339	131,306,006	2,013,908,436
2092	2,013,908,436	15,693,803	899,326	876,722	141,452,473	2,169,278,663
2093	2,169,278,663	16,086,089	742,160	898,641	152,346,541	2,336,070,492
2094	2,336,070,492	16,488,196	605,032	921,107	164,039,750	2,515,072,299
2095	2,515,072,299	16,900,368	486,901	944,134	176,587,330	2,707,128,962
2096	2,707,128,962	17,322,858	386,510	967,738	190,048,476	2,913,146,048
2097	2,913,146,048	17,755,921	302,410	991,931	204,486,634	3,134,094,262
2098	3,134,094,262	18,199,820	233,030	1,016,729	219,969,817	3,371,014,140
2099	3,371,014,140	18,654,824	176,704	1,042,147	236,570,928	3,625,021,041
2100	3,625,021,041	19,121,209	131,742	1,068,201	254,368,109	3,897,310,415
2101	3,897,310,415	19,599,260	96,483	1,094,906	273,445,108	4,189,163,395
2102	4,189,163,395	20,089,266	69,345	1,122,279	293,891,669	4,501,952,705
2103	4,501,952,705	20,591,525	48,869	1,150,336	315,803,941	4,837,148,966
2104	4,837,148,966	21,106,343	33,732	1,179,094	339,284,925	5,196,327,408
2105	5,196,327,408	21,634,031	22,779	1,208,572	364,444,935	5,581,175,023
2106	5,581,175,023	22,174,911	15,033	1,238,786	391,402,105	5,993,498,220
2107	5,993,498,220	22,729,312	9,680	1,269,755	420,282,924	6,435,231,021
2108	6,435,231,021	23,297,570	6,074	1,301,499	451,222,804	6,908,443,822
2109	6,908,443,822	23,880,031	3,713	1,334,037	484,366,703	7,415,352,807
2110	7,415,352,807	24,477,050	2,209	1,367,388	519,869,779	7,958,330,039
2111	7,958,330,039	25,088,990	1,280	1,401,572	557,898,096	8,539,914,274
2112	8,539,914,274	25,716,224	720	1,436,612	598,629,388	9,162,822,554
2113	9,162,822,554	26,359,134	393	1,472,527	642,253,865	9,829,962,633
2114	9,829,962,633	27,018,113	207	1,509,340	688,975,084	10,544,446,283
2115	10,544,446,283	27,693,562	100	1,547,074	739,010,886	11,309,603,557
2116	11,309,603,557	28,385,895	46	1,585,751	792,594,388	12,128,998,042
2117	12,128,998,042	29,095,533	18	1,625,394	849,975,056	13,006,443,219
2118	13,006,443,219	29,822,911	6	1,666,029	911,419,848	13,946,019,943



# Single Discount Rate Development

## Present Values of Projected Benefits

### Ending December 31 for 2019 to 2068

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)
2019	\$ 133,269,459	\$ 11,132,637	\$ 11,132,637	\$ 0	\$ 10,762,326	\$ 0	\$ 10,762,326
2020	154,294,266	11,528,213	11,528,213	0	10,415,648	0	10,415,648
2021	159,952,221	11,904,466	11,904,466	0	10,051,954	0	10,051,954
2022	165,476,930	12,277,342	12,277,342	0	9,688,603	0	9,688,603
2023	170,875,504	12,698,173	12,698,173	0	9,365,139	0	9,365,139
2024	176,076,596	13,209,112	13,209,112	0	9,104,641	0	9,104,641
2025	180,954,062	13,743,321	13,743,321	0	8,853,136	0	8,853,136
2026	185,470,941	14,212,504	14,212,504	0	8,556,423	0	8,556,423
2027	189,692,103	14,670,158	14,670,158	0	8,254,156	0	8,254,156
2028	193,619,422	15,168,204	15,168,204	0	7,976,057	0	7,976,057
2029	197,195,186	15,710,986	15,710,986	0	7,721,004	0	7,721,004
2030	200,350,803	16,180,797	16,180,797	0	7,431,671	0	7,431,671
2031	203,142,169	16,643,367	16,643,367	0	7,144,042	0	7,144,042
2032	205,559,547	17,098,762	17,098,762	0	6,859,361	0	6,859,361
2033	207,591,808	17,507,679	17,507,679	0	6,563,928	0	6,563,928
2034	209,277,166	17,922,715	17,922,715	0	6,279,936	0	6,279,936
2035	210,587,773	18,355,673	18,355,673	0	6,010,879	0	6,010,879
2036	211,492,084	18,761,786	18,761,786	0	5,741,932	0	5,741,932
2037	211,997,086	19,083,783	19,083,783	0	5,458,390	0	5,458,390
2038	212,178,516	19,365,176	19,365,176	0	5,176,519	0	5,176,519
2039	212,065,942	19,648,184	19,648,184	0	4,908,570	0	4,908,570
2040	211,637,789	19,895,241	19,895,241	0	4,645,131	0	4,645,131
2041	210,924,325	20,027,262	20,027,262	0	4,370,052	0	4,370,052
2042	210,038,416	20,122,317	20,122,317	0	4,103,545	0	4,103,545
2043	209,014,457	20,171,504	20,171,504	0	3,844,463	0	3,844,463
2044	207,897,035	20,189,877	20,189,877	0	3,596,229	0	3,596,229
2045	206,717,140	20,151,121	20,151,121	0	3,354,510	0	3,354,510
2046	205,538,292	20,012,738	20,012,738	0	3,113,527	0	3,113,527
2047	204,471,548	19,824,986	19,824,986	0	2,882,539	0	2,882,539
2048	203,585,061	19,578,721	19,578,721	0	2,660,498	0	2,660,498
2049	202,963,898	19,286,889	19,286,889	0	2,449,385	0	2,449,385
2050	202,684,822	18,958,133	18,958,133	0	2,250,125	0	2,250,125
2051	202,818,975	18,593,088	18,593,088	0	2,062,428	0	2,062,428
2052	203,442,307	18,191,712	18,191,712	0	1,885,893	0	1,885,893
2053	204,636,721	17,752,382	17,752,382	0	1,719,952	0	1,719,952
2054	206,492,578	17,293,159	17,293,159	0	1,565,850	0	1,565,850
2055	209,083,725	16,813,591	16,813,591	0	1,422,829	0	1,422,829
2056	212,489,824	16,313,811	16,313,811	0	1,290,220	0	1,290,220
2057	216,796,966	15,798,770	15,798,770	0	1,167,745	0	1,167,745
2058	222,090,915	15,268,576	15,268,576	0	1,054,725	0	1,054,725
2059	228,464,164	14,736,699	14,736,699	0	951,387	0	951,387
2060	235,998,502	14,204,592	14,204,592	0	857,042	0	857,042
2061	244,779,942	13,673,908	13,673,908	0	771,049	0	771,049
2062	254,898,568	13,144,913	13,144,913	0	692,729	0	692,729
2063	266,450,603	12,617,829	12,617,829	0	621,450	0	621,450
2064	279,538,910	12,092,850	12,092,850	0	556,630	0	556,630
2065	294,273,490	11,570,264	11,570,264	0	497,734	0	497,734
2066	310,771,845	11,050,472	11,050,472	0	444,275	0	444,275
2067	329,159,394	10,533,931	10,533,931	0	395,801	0	395,801
2068	349,569,979	10,021,144	10,021,144	0	351,901	0	351,901



# Single Discount Rate Development

## Present Values of Projected Benefits

### Ending December 31 for 2069 to 2118 (concluded)

Year	Projected Plan Net Position	Projected Benefit Payments	Funded Portion of Projected Benefit Payments	Unfunded Portion of Projected Benefit Payments	Present Value of Funded Benefit Payments using Expected Return Rate (v)	Present Value of Unfunded Benefit Payments using Municipal Bond Rate (vf)	Present Value of All Benefit Payments using Single Discount Rate (SDR)
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v <sup>a</sup> ((a)-.5)	(g)=(e)*vf <sup>a</sup> ((a)-.5)	(h)=((c)/(1+SDR)) <sup>a</sup> ((a)-.5)
2069	\$ 372,146,416	\$ 9,512,690	\$ 9,512,690	\$ 0	\$ 312,193	\$ 0	\$ 312,193
2070	397,041,048	9,009,168	9,009,168	0	276,325	0	276,325
2071	424,416,389	8,511,211	8,511,211	0	243,974	0	243,974
2072	454,445,810	8,019,503	8,019,503	0	214,840	0	214,840
2073	487,314,233	7,534,748	7,534,748	0	188,648	0	188,648
2074	523,218,925	7,057,702	7,057,702	0	165,144	0	165,144
2075	562,370,309	6,589,171	6,589,171	0	144,094	0	144,094
2076	604,992,843	6,130,053	6,130,053	0	125,284	0	125,284
2077	651,325,906	5,681,383	5,681,383	0	108,518	0	108,518
2078	701,624,701	5,244,216	5,244,216	0	93,615	0	93,615
2079	756,161,350	4,819,638	4,819,638	0	80,407	0	80,407
2080	815,226,065	4,408,753	4,408,753	0	68,741	0	68,741
2081	879,128,386	4,012,651	4,012,651	0	58,472	0	58,472
2082	948,198,567	3,632,444	3,632,444	0	49,469	0	49,469
2083	1,022,789,003	3,269,211	3,269,211	0	41,609	0	41,609
2084	1,103,275,829	2,923,981	2,923,981	0	34,781	0	34,781
2085	1,190,060,630	2,597,710	2,597,710	0	28,878	0	28,878
2086	1,283,572,305	2,291,276	2,291,276	0	23,805	0	23,805
2087	1,384,269,064	2,005,450	2,005,450	0	19,473	0	19,473
2088	1,492,640,593	1,740,851	1,740,851	0	15,798	0	15,798
2089	1,609,210,423	1,497,900	1,497,900	0	12,704	0	12,704
2090	1,734,538,502	1,276,767	1,276,767	0	10,120	0	10,120
2091	1,869,224,019	1,077,347	1,077,347	0	7,981	0	7,981
2092	2,013,908,436	899,326	899,326	0	6,226	0	6,226
2093	2,169,278,663	742,160	742,160	0	4,802	0	4,802
2094	2,336,070,492	605,032	605,032	0	3,658	0	3,658
2095	2,515,072,299	486,901	486,901	0	2,752	0	2,752
2096	2,707,128,962	386,510	386,510	0	2,041	0	2,041
2097	2,913,146,048	302,410	302,410	0	1,493	0	1,493
2098	3,134,094,262	233,030	233,030	0	1,075	0	1,075
2099	3,371,014,140	176,704	176,704	0	762	0	762
2100	3,625,021,041	131,742	131,742	0	531	0	531
2101	3,897,310,415	96,483	96,483	0	363	0	363
2102	4,189,163,395	69,345	69,345	0	244	0	244
2103	4,501,952,705	48,869	48,869	0	161	0	161
2104	4,837,148,966	33,732	33,732	0	104	0	104
2105	5,196,327,408	22,779	22,779	0	65	0	65
2106	5,581,175,023	15,033	15,033	0	40	0	40
2107	5,993,498,220	9,680	9,680	0	24	0	24
2108	6,435,231,021	6,074	6,074	0	14	0	14
2109	6,908,443,822	3,713	3,713	0	8	0	8
2110	7,415,352,807	2,209	2,209	0	5	0	5
2111	7,958,330,039	1,280	1,280	0	2	0	2
2112	8,539,914,274	720	720	0	1	0	1
2113	9,162,822,554	393	393	0	1	0	1
2114	9,829,962,633	207	207	0	0	0	0
2115	10,544,446,283	100	100	0	0	0	0
2116	11,309,603,557	46	46	0	0	0	0
2117	12,128,998,042	18	18	0	0	0	0
2118	13,006,443,219	6	6	0	0	0	0
<b>Totals</b>	\$ 220,253,204	\$ 220,253,204	\$ 220,253,204	\$ 0	\$ 220,253,204	\$ 0	\$ 220,253,204



## **SECTION H**

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### **GLOSSARY OF TERMS**

Draft

# 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.