

# Wyoming Retirement System Law Enforcement Retirement Fund

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 Law Enforcement Retirement Fund

Dear Board Members:

This report provides information required by the Wyoming Law Enforcement 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 Law Enforcement Retirement Fund only in its entirety and only with the permission of WRS. GRS is not responsible for unauthorized use of this report.

This report is based upon information, furnished to us by WRS, concerning retirement and ancillary benefits, active members, deferred vested members, retirees and beneficiaries, and financial data. We checked for internal reasonability and year-to-year consistency, but did not audit the data. We are not responsible for the accuracy or completeness of the information provided by WRS.

This report complements the actuarial valuation report that was provided to WRS and should be considered in conjunction with that report. Please see the actuarial valuation report as of January 1, 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 Law Enforcement Retirement Fund as of the valuation date.

All calculations have been made in conformity with generally accepted actuarial principles and practices as well as with the Actuarial Standards of Practice issued by the Actuarial Standards Board.

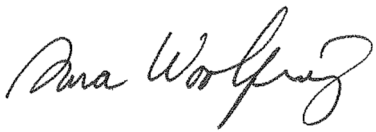
Paul T. Wood, Thomas A. Lyle, and Dana Woolfrey are members of the American Academy of Actuaries (MAAA) and are experienced in performing valuations for public retirement systems. These actuaries meet the Academy's Qualification Standards to render the actuarial opinions contained herein. The signing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

Respectfully submitted,

**Gabriel, Roeder, Smith & Company**

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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	1,363
- Inactive, Nonretired Members	1,467
- Active Members	2,660
- Total	5,490
Covered Payroll	\$ 160,739,444

## Net Pension Liability

Total Pension Liability	\$ 833,133,217
Plan Fiduciary Net Position	765,011,012
Net Pension Liability	\$ 68,122,205
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	91.82 %
Net Pension Liability as a Percentage of Covered Payroll	42.38 %

## 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

<b>Total Pension Expense</b>	<b>\$ 10,545,463</b>
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## 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	\$ 16,821,843	\$ 3,551,839
Changes in assumptions	40,251,528	60,661,822
Net difference between projected and actual earnings on pension plan investments	26,390,276	69,927,478
<b>Total</b>	<b>\$ 83,463,647</b>	<b>\$ 134,141,139</b>

\*Source: Fixed-income municipal bonds with 20 years to maturity that include only federally tax-exempt municipal bonds as reported in Fidelity Index's "20-Year Municipal GO AA Index" as of December 31, 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 remain level 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 over time.

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 Law Enforcement 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, 2020

### A. Expense

1. Service Cost	\$	23,499,547
2. Interest on the Total Pension Liability		55,065,772
3. Current-Period Benefit Changes		0
4. Employee Contributions (made negative for addition here)		(15,860,480)
5. Projected Earnings on Plan Investments (made negative for addition here)		(48,705,785)
6. Pension Plan Administrative Expense		695,251
7. Other Changes in Plan Fiduciary Net Position		26,531
8. Recognition of Outflow (Inflow) of Resources due to Liabilities		8,870,257
9. Recognition of Outflow (Inflow) of Resources due to Assets		<u>(13,045,630)</u>
<b>10. Total Pension Expense</b>	<b>\$</b>	<b>10,545,463 *</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	\$ 7,869,329
2. Assumption Changes (gains) or losses	\$ 0
3. Recognition period for Liabilities: Average of the expected remaining service lives of all employees {in years}	4.2374
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	\$ 1,857,113
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	\$ 1,857,113
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	\$ 6,012,216
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	\$ 6,012,216

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

1. Net difference between projected and actual earnings on pension plan investments (gains) or losses	\$ (25,773,169)
2. Recognition period for Assets {in years}	5.0000
3. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Assets	\$ (5,154,634)
4. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Assets	\$ (20,618,535)



# 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	5.2360	4.9669	4.8650	4.7436	4.5560	4.3883	4.2374		Deferred Net (Inflows)/Outflows at Measurement Date
	2014	2015	2016	2017	2018	2019	2020	Total	
<b>Total</b>	\$ -	\$ 1,710,375	\$ (3,501,453)	\$ (6,691,047)	\$ (7,328,715)	\$ 19,861,777	\$ 7,869,329		
2014	-	-	-	-	-	-	-	-	-
2015	-	344,355	-	-	-	-	-	344,355	344,355
2016	-	344,355	(719,723)	-	-	-	-	(375,368)	(375,368)
2017	-	344,355	(719,723)	(1,410,542)	-	-	-	(1,785,910)	(1,785,910)
2018	-	344,355	(719,723)	(1,410,542)	(1,608,585)	-	-	(3,394,495)	(3,394,495)
2019	-	332,955	(719,723)	(1,410,542)	(1,608,585)	4,526,075	-	1,120,180	1,120,180
2020	-	-	(622,561)	(1,410,542)	(1,608,585)	4,526,075	1,857,113	2,741,500	2,741,500
2021	-	-	-	(1,048,879)	(1,608,585)	4,526,075	1,857,113	3,725,724	3,725,724
2022	-	-	-	-	(894,375)	4,526,075	1,857,113	5,488,813	5,488,813
2023	-	-	-	-	-	1,757,477	1,857,113	3,614,590	3,614,590
2024	-	-	-	-	-	-	440,877	440,877	440,877
2025	-	-	-	-	-	-	-	-	-
Thereafter	-	-	-	-	-	-	-	-	-
	\$ -	\$ 1,710,375	\$ (3,501,453)	\$ (6,691,047)	\$ (7,328,715)	\$ 19,861,777	\$ 7,869,329	\$ 11,920,266	\$ 13,270,004

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

Recognition Period	5.2360	4.9669	4.8650	4.7436	4.5560	4.3883	4.2374		Deferred Net (Inflows)/Outflows at Measurement Date
	2014	2015	2016	2017	2018	2019	2020	Total	
<b>Total</b>	\$ -	\$ -	\$ -	\$ 51,421,521	\$ 94,255,216	\$ (111,460,988)	\$ -		
2014	-	-	-	-	-	-	-	-	-
2015	-	-	-	-	-	-	-	-	-
2016	-	-	-	-	-	-	-	-	-
2017	-	-	-	10,840,189	-	-	-	10,840,189	10,840,189
2018	-	-	-	10,840,189	20,688,151	-	-	31,528,340	31,528,340
2019	-	-	-	10,840,189	20,688,151	(25,399,583)	-	6,128,757	6,128,757
2020	-	-	-	10,840,189	20,688,151	(25,399,583)	-	6,128,757	6,128,757
2021	-	-	-	8,060,765	20,688,151	(25,399,583)	-	3,349,333	3,349,333
2022	-	-	-	-	11,502,612	(25,399,583)	-	(13,896,971)	(13,896,971)
2023	-	-	-	-	-	(9,862,656)	-	(9,862,656)	(9,862,656)
2024	-	-	-	-	-	-	-	-	-
2025	-	-	-	-	-	-	-	-	-
Thereafter	-	-	-	-	-	-	-	-	-
	\$ -	\$ -	\$ -	\$ 51,421,521	\$ 94,255,216	\$ (111,460,988)	\$ -	\$ 34,215,749	\$ (20,410,294)

#### 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		Deferred Net (Inflows)/Outflows at Measurement Date
	2014	2015	2016	2017	2018	2019	2020	Total	
<b>Total</b>	\$ 14,545,212	\$ 46,589,301	\$ 2,778,485	\$ (39,041,366)	\$ 65,975,687	\$ (69,167,783)	\$ (25,773,169)		
2014	2,909,042	-	-	-	-	-	-	2,909,042	2,909,042
2015	2,909,042	9,317,860	-	-	-	-	-	12,226,902	12,226,902
2016	2,909,042	9,317,860	555,697	-	-	-	-	12,782,599	12,782,599
2017	2,909,042	9,317,860	555,697	(7,808,273)	-	-	-	4,974,326	4,974,326
2018	2,909,042	9,317,860	555,697	(7,808,273)	13,195,137	-	-	18,169,465	18,169,465
2019	-	9,317,861	555,697	(7,808,273)	13,195,137	(13,833,557)	-	1,426,865	1,426,865
2020	-	-	555,697	(7,808,273)	13,195,137	(13,833,557)	(5,154,634)	(13,045,630)	(13,045,630)
2021	-	-	-	(7,808,274)	13,195,137	(13,833,557)	(5,154,634)	(13,601,328)	(13,601,328)
2022	-	-	-	-	13,195,139	(13,833,557)	(5,154,634)	(5,793,052)	(5,793,052)
2023	-	-	-	-	-	(13,833,555)	(5,154,634)	(18,988,189)	(18,988,189)
2024	-	-	-	-	-	-	(5,154,633)	(5,154,633)	(5,154,633)
2025	-	-	-	-	-	-	-	-	-
Thereafter	-	-	-	-	-	-	-	-	-
	\$ 14,545,212	\$ 46,589,301	\$ 2,778,485	\$ (39,041,366)	\$ 65,975,687	\$ (69,167,783)	\$ (25,773,169)	\$ (4,093,633)	\$ (43,537,202)

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

	2014	2015	2016	2017	2018	2019	2020	Total	Deferred Net (Inflows)/Outflows at Measurement Date
<b>Total</b>	\$ 14,545,212	\$ 48,299,676	\$ (722,968)	\$ 5,689,108	\$ 152,902,188	\$ (160,766,994)	\$ (17,903,840)		
2014	2,909,042	-	-	-	-	-	-	2,909,042	2,909,042
2015	2,909,042	9,662,215	-	-	-	-	-	12,571,257	12,571,257
2016	2,909,042	9,662,215	(164,026)	-	-	-	-	12,407,231	12,407,231
2017	2,909,042	9,662,215	(164,026)	1,621,374	-	-	-	14,028,605	14,028,605
2018	2,909,042	9,662,215	(164,026)	1,621,374	32,274,703	-	-	46,303,310	46,303,310
2019	-	9,650,816	(164,026)	1,621,374	32,274,703	(34,707,065)	-	8,675,802	8,675,802
2020	-	-	(66,864)	1,621,374	32,274,703	(34,707,065)	(3,297,521)	(4,175,373)	(4,175,373)
2021	-	-	-	(796,388)	32,274,703	(34,707,065)	(6,526,271)	(50,677,492)	(50,677,492)
2022	-	-	-	-	23,803,376	(34,707,065)	(3,297,521)	(14,201,210)	(14,201,210)
2023	-	-	-	-	-	(21,938,734)	(3,297,521)	(25,236,255)	(25,236,255)
2024	-	-	-	-	-	-	(4,713,756)	(4,713,756)	(4,713,756)
2025	-	-	-	-	-	-	-	-	-
Thereafter	-	-	-	-	-	-	-	-	-
	\$ 14,545,212	\$ 48,299,676	\$ (722,968)	\$ 5,689,108	\$ 152,902,188	\$ (160,766,994)	\$ (17,903,840)	\$ 42,042,382	



# 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	\$ 37,911,528	\$ 29,041,271	\$ 8,870,257
2. Due to Assets	13,750,834	26,796,464	(13,045,630)
<b>3. Total</b>	<b>\$ 51,662,362</b>	<b>\$ 55,837,735</b>	<b>\$ (4,175,373)</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	\$ 6,383,188	\$ 3,641,688	\$ 2,741,500
2. Assumption Changes	31,528,340	25,399,583	6,128,757
3. Net Difference between projected and actual earnings on pension plan investments	13,750,834	26,796,464	(13,045,630)
<b>4. Total</b>	<b>\$ 51,662,362</b>	<b>\$ 55,837,735</b>	<b>\$ (4,175,373)</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	\$ 16,821,843	\$ 3,551,839	\$ 13,270,004
2. Assumption Changes	40,251,528	60,661,822	(20,410,294)
3. Net Difference between projected and actual earnings on pension plan investments	26,390,276	69,927,478	(43,537,202)
<b>4. Total</b>	<b>\$ 83,463,647</b>	<b>\$ 134,141,139</b>	<b>\$ (50,677,492)</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	\$ (6,526,271)
2022	(14,201,210)
2023	(25,236,255)
2024	(4,713,756)
2025	0
Thereafter	0
<b>Total</b>	<b>\$ (50,677,492)</b>



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

	<b>2020</b>
<b>Assets</b>	
Cash and Deposits	\$ 14,921,739
Receivables	
Accounts Receivable - Sale of Investments	\$ 1,525,051
Accrued Interest and Other Dividends	1,419,124
Contributions	1,855,234
Accounts Receivable - Other	79,064,691
Total Receivables	\$ 83,864,100
Investments	
Fixed Income	\$ 162,881,756
Domestic Equities	380,685,123
International Equities	70,021,315
Real Estate	138,545,970
Other	29,245,332
Total Investments	\$ 781,379,496
<b>Total Assets</b>	<b>\$ 880,165,335</b>
<b>Liabilities</b>	
Payables	
Accounts Payable - Purchase of Investments	\$ 113,833,963
Accrued Expenses	1,213,941
Accounts Payable - Other	106,419
<b>Total Liabilities</b>	<b>\$ 115,154,323</b>
<b>Net Position Restricted for Pensions</b>	<b>\$ 765,011,012</b>



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

	<b>2020</b>
<b>Additions</b>	
Contributions	
Employer	\$ 14,489,569
Employee	14,446,521
Other Employer Contributions	403,943
Other Employee Contributions	1,413,959
<b>Total Contributions</b>	<b>\$ 30,753,992</b>
Investment Income	
Net Appreciation in Fair Value of Investments	\$ 69,308,702
Interest and Dividends	9,535,558
Less Investment Expense	(4,365,306)
<b>Net Investment Income</b>	<b>\$ 74,478,954</b>
Other	\$ 0
<b>Total Additions</b>	<b>\$ 105,232,946</b>
 <b>Deductions</b>	
Benefit Payments, including Refunds of Employee Contributions	\$ 40,386,827
Pension Plan Administrative Expense	695,251
Other	26,531
<b>Total Deductions</b>	<b>\$ 41,108,609</b>
<b>Net Increase in Net Position</b>	<b>\$ 64,124,337</b>
 <b>Net Position Restricted for Pensions</b>	
Beginning of Year	\$ 700,886,675
End of Year	<b>\$ 765,011,012</b>

## 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 Law Enforcement 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, 2020

<b>A. Total pension liability</b>	
1. Service cost	\$ 23,499,547
2. Interest on the total pension liability	55,065,772
3. Changes of benefit terms	0
4. Difference between expected and actual experience of the total pension liability	7,869,329
5. Changes of assumptions	0
6. Benefit payments, including refunds of employee contributions	(40,386,827)
<b>7. Net change in total pension liability</b>	<b>46,047,821</b>
<b>8. Total pension liability – beginning</b>	<b>787,085,396</b>
<b>9. Total pension liability – ending</b>	<b>\$ 833,133,217</b>
<b>B. Plan fiduciary net position</b>	
1. Contributions – employer	\$ 14,893,512
2. Contributions – employee	15,860,480
3. Net investment income	74,478,954
4. Benefit payments	(37,604,942)
5. Refunds	(2,781,885)
6. Pension plan administrative expense	(695,251)
7. Other	(26,531)
<b>8. Net change in plan fiduciary net position</b>	<b>64,124,337</b>
<b>9. Plan fiduciary net position – beginning</b>	<b>700,886,675</b>
<b>10. Plan fiduciary net position – ending</b>	<b>\$ 765,011,012</b>
<b>C. Net pension liability</b>	<b>\$ 68,122,205</b>
<b>D. Plan fiduciary net position as a percentage of the total pension liability</b>	<b>91.82 %</b>
<b>E. Covered-employee payroll</b>	<b>\$ 160,739,444</b>
<b>F. Net pension liability as a percentage of covered-employee payroll</b>	<b>42.38 %</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	\$ 23,499,547	\$ 22,866,557	\$ 26,657,347	\$ 23,241,982	\$ 23,339,214	\$ 22,790,835	\$ 22,432,708
Interest on the total pension liability	55,065,772	51,970,908	47,238,165	47,200,725	45,945,359	43,444,727	40,636,242
Changes of benefit terms	0	0	0	0	0	0	0
Difference between expected and actual experience	7,869,329	19,861,777	(7,328,715)	(6,691,047)	(3,501,453)	1,710,375	0
Changes of assumptions	0	(111,460,988)	94,255,216	51,421,521	0	0	0
Benefit payments, including refunds of employee contributions	(40,386,827)	(37,276,954)	(35,984,464)	(33,662,493)	(31,364,891)	(30,119,285)	(27,320,442)
<b>Net change in total pension liability</b>	<b>46,047,821</b>	<b>(54,038,700)</b>	<b>124,837,549</b>	<b>81,510,688</b>	<b>34,418,229</b>	<b>37,826,652</b>	<b>35,748,508</b>
<b>Total pension liability - beginning</b>	<b>787,085,396</b>	<b>841,124,096</b>	<b>716,286,547</b>	<b>634,775,859</b>	<b>600,357,630</b>	<b>562,530,978</b>	<b>526,782,470</b>
<b>Total pension liability - ending (a)</b>	<b>\$ 833,133,217</b>	<b>\$ 787,085,396</b>	<b>\$ 841,124,096</b>	<b>\$ 716,286,547</b>	<b>\$ 634,775,859</b>	<b>\$ 600,357,630</b>	<b>\$ 562,530,978</b>
<b>Plan fiduciary net position</b>							
Employer contributions	\$ 14,893,512	\$ 14,270,844	\$ 13,781,011	\$ 13,614,406	\$ 13,730,305	\$ 12,706,883	\$ 13,308,281
Employee contributions	15,860,480	14,671,686	13,846,377	13,691,494	14,442,190	15,397,475	13,314,132
Pension plan net investment income	74,478,954	110,793,173	(22,169,139)	77,946,645	37,782,650	(5,371,824)	24,853,352
Benefit payments	(37,604,942)	(34,850,971)	(32,013,552)	(29,621,411)	(27,873,802)	(25,459,574)	(23,209,837)
Refunds	(2,781,885)	(2,425,983)	(3,970,912)	(4,041,082)	(3,491,089)	(4,659,711)	(4,110,605)
Pension plan administrative expense	(695,251)	(596,769)	(639,428)	(580,221)	(518,486)	(417,893)	(408,470)
Other	(26,531)	(27,143)	(24,638)	(51,644)	(25,522)	(24,983)	797,291
<b>Net change in plan fiduciary net position</b>	<b>64,124,337</b>	<b>101,834,837</b>	<b>(31,190,281)</b>	<b>70,958,187</b>	<b>34,046,246</b>	<b>(7,829,627)</b>	<b>24,544,144</b>
<b>Plan fiduciary net position - beginning</b>	<b>700,886,675</b>	<b>599,051,838</b>	<b>630,242,119</b>	<b>559,283,932</b>	<b>525,237,686</b>	<b>533,067,313</b>	<b>508,523,169</b>
<b>Plan fiduciary net position - ending (b)</b>	<b>\$ 765,011,012</b>	<b>\$ 700,886,675</b>	<b>\$ 599,051,838</b>	<b>\$ 630,242,119</b>	<b>\$ 559,283,932</b>	<b>\$ 525,237,686</b>	<b>\$ 533,067,313</b>
<b>Net pension liability - ending (a) - (b)</b>	<b>\$ 68,122,205</b>	<b>\$ 86,198,721</b>	<b>\$ 242,072,258</b>	<b>\$ 86,044,428</b>	<b>\$ 75,491,927</b>	<b>\$ 75,119,944</b>	<b>\$ 29,463,665</b>
<b>Plan fiduciary net position as a percentage of total pension liability</b>	91.82 %	89.05 %	71.22 %	87.99 %	88.11 %	87.49 %	94.76 %
<b>Covered-employee payroll</b>	\$ 160,739,444	\$ 155,851,473	\$ 151,898,695	\$ 153,547,078	\$ 154,779,198	\$ 150,399,739	\$ 147,790,833
<b>Projected valuation payroll</b>	\$ 164,757,930	\$ 159,747,760	\$ 155,696,162	\$ 160,072,828	\$ 161,357,314	\$ 156,791,728	\$ 154,071,943
<b>Net pension liability as a percentage of covered-employee payroll</b>	42.38 %	55.31 %	159.36 %	56.04 %	48.77 %	49.95 %	19.94 %

**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	\$ 562,530,978	\$ 533,067,313	\$ 29,463,665	94.76 %	\$ 147,790,833	19.94 %
2015	600,357,630	525,237,686	75,119,944	87.49 %	150,399,739	49.95 %
2016	634,775,859	559,283,932	75,491,927	88.11 %	154,779,198	48.77 %
2017	716,286,547	630,242,119	86,044,428	87.99 %	153,547,078	56.04 %
2018	841,124,096	599,051,838	242,072,258	71.22 %	151,898,695	159.36 %
2019	787,085,396	700,886,675	86,198,721	89.05 %	155,851,473	55.31 %
2020	833,133,217	765,011,012	68,122,205	91.82 %	160,739,444	42.38 %

\* 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	\$ 11,812,078	\$ 13,308,281	\$ (1,496,203)	\$ 147,790,833	9.00 %
2015	11,708,248	12,706,883	(998,635)	150,399,739	8.45 %
2016	12,063,684	13,730,305	(1,666,621)	154,779,198	8.87 %
2017	11,623,441	13,614,406	(1,990,965)	153,547,078	8.87 %
2018	14,493,422	13,781,011	712,411	151,898,695	9.07 %
2019	16,754,321	14,270,844	2,483,477	155,851,473	9.16 %
2020	18,231,644	14,893,512	3,338,132	160,739,444	9.27 %

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

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



## Notes to Schedule of Contributions

**Valuation Date:** January 1, 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	25 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 8.60% of salary.  
Employees are currently contributing at the rate of 8.60% 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 Law Enforcement 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 2.00%. 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 and future contributions were sufficient to finance the benefit payments through the year 2119. As a result, the long-term expected rate of return on pension plan investments was applied to projected benefit payments through the year 2119, 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%
\$ 180,064,478	\$ 68,122,205	\$ (23,386,965)

## Summary of Population Statistics

Inactive Plan Members or Beneficiaries Currently Receiving Benefits	1,363
Inactive Plan Members Entitled to But Not Yet Receiving Benefits	1,467
Active Plan Members	<u>2,660</u>
Total Plan Members	5,490

# SECTION E

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## SUMMARY OF BENEFITS

## Summary of Benefits

### Covered Members

County sheriffs, deputy county sheriffs, municipal police officers; Investigator of the Wyoming Livestock Board; meeting the specifications of W.S.7-2-101(a)(iv)(E), investigators employed by the Wyoming State Board of Outfitters and professional guides meeting the specifications of W.S. 7-2-101(a)(iv)(J); Correctional officers, probation and parole agents employed by the Wyoming Department of Corrections, Wyoming Law Enforcement Academy instructors, University of Wyoming campus police officers; And full-time dispatchers or detention officers for law enforcement agencies.

### Final Average Salary

Employee's average annual salary for the highest paid five continuous years of service.

### Service Retirement

#### Eligibility

Age 60 with four or more years of service as a law enforcement officer or any age with at least twenty years of service as a law enforcement officer. Early retirement benefits are payable to any law enforcement officer who has at least four but less than twenty years of service and are at least age 50. Early retirement benefits are actuarially reduced by 5% per year before age 60.

#### Monthly Benefit

2.50% of employee's highest five-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 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.

### Duty Disability Retirement

#### Eligibility

No age or service eligibility requirements. Partial or total disability resulting from an individual and specific act, the type of which would normally occur only while employed as an employee, or as otherwise defined under W.S. 9-3-432(h).

#### Monthly Benefit

62.5% of Final Salary.



### **Non-duty Disability Retirement**

Eligibility	10 years of credited service. Partial or total disability, but not eligible for duty disability.
Monthly Benefit	50.0% of Final Salary.

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

Eligibility	No age or service requirements.
Monthly Benefit	62.5% of member's final actual salary, payable to the surviving spouse plus 6% of the member's final actual salary for each unmarried child under 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	50% of the member's final actual salary payable to the surviving spouse plus 6% of the member's final actual salary for each unmarried child under 18. Payment shall not exceed 100% of the member's final actual salary.

### **Contributions**

Employee	8.60% of salary. The employer may subsidize all or part of the employee contributions.
Employer	8.60% 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 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.
  
- Other Grandfathered group of retirees has an optional form which, upon death, 66.67% of the benefit continues to be paid to the beneficiary.

## **SECTION F**

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



## Summary of Actuarial Assumptions and Methods

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 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	7.00%
25	6.50%
30	5.00%
35	4.25%
40	4.25%
45	4.00%
50	3.50%
55	3.25%
60	3.00%

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 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%

30% of active deaths are assumed to be duty-related

b. Disability and Withdrawal

Age	Disability		Withdrawal		Withdrawal		
	Male	Female	Ultimate		Service	First five years	
			Male	Female		Male	Female
20	0.07%	0.07%	15.00%	15.00%	1	24%	25%
25	0.07%	0.07%	11.00%	11.00%	2	20%	22%
30	0.07%	0.07%	8.50%	8.50%	3	15%	19%
35	0.08%	0.08%	6.50%	6.50%	4	13%	18%
40	0.18%	0.18%	5.50%	5.50%	5	12%	15%
45	0.38%	0.38%	5.00%	5.00%			
50	0.67%	0.67%	3.00%	3.00%			
55	1.14%	1.14%	3.00%	3.00%			
60	2.22%	2.22%	3.00%	3.00%			

30% of active disabilities are assumed to be duty-related

c. Retirement Rates

Age	Reduced Rate	Unreduced Rate	Age	Reduced Rate	Unreduced Rate
50	2.0%	20.0%	61	NA	17.0%
51	2.0%	13.0%	62	NA	17.0%
52	2.0%	13.0%	63	NA	20.0%
53	2.0%	13.0%	64	NA	20.0%
54	2.0%	13.0%	65	NA	50.0%
55	2.0%	15.0%	66	NA	50.0%
56	2.0%	15.0%	67	NA	50.0%
57	2.0%	15.0%	68	NA	50.0%
58	2.0%	20.0%	69	NA	50.0%
59	2.0%	20.0%	70	NA	100.0%
60	NA	20.0%			

10% is assumed for members with at least 20 years of service before age 50

## 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: It is assumed that 45% of active members who terminate with a vested deferred benefit will elect to have their contributions refunded.
- 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 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. No children are assumed for purposes of valuing the ordinary death benefit.
- j. Administrative expenses: Assumed to be the average of the prior two years, with each year projected at 2.50% to the valuation date.
- k. 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.
- l. Decrement timing: Decrements of all types are assumed to occur mid-year.
- m. 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.
- n. Decrement relativity: Decrement rates are converted to probabilities in order to account for multiple decrements.
- o. 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.
- p. 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.

## **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	\$ 160,739,444	\$ 4,018,486	\$ 164,757,930	\$ 15,860,480	\$ 14,893,512	\$ 0	\$ 30,753,992	
2021	147,723,138	21,153,741	168,876,879	12,704,190	12,704,190	715,789	26,124,169	
2022	138,851,401	34,247,400	173,098,801	11,941,220	11,941,220	1,167,218	25,049,658	
2023	131,177,496	46,248,775	177,426,271	11,281,265	11,281,265	1,586,469	24,148,999	
2024	124,245,313	57,616,615	181,861,928	10,685,097	10,685,097	1,984,558	23,354,752	
2025	117,806,990	68,601,486	186,408,476	10,131,401	10,131,401	2,367,404	22,630,206	
2026	111,562,468	79,506,220	191,068,688	9,594,372	9,594,372	2,747,167	21,935,911	
2027	105,317,396	90,528,009	195,845,405	9,057,296	9,057,296	3,131,264	21,245,856	
2028	99,035,795	101,705,745	200,741,540	8,517,078	8,517,078	3,521,236	20,555,392	
2029	92,696,278	113,063,801	205,760,079	7,971,880	7,971,880	3,918,656	19,862,416	
2030	86,456,861	124,447,220	210,904,081	7,435,290	7,435,290	4,319,107	19,189,687	
2031	80,368,031	135,808,652	216,176,683	6,911,651	6,911,651	4,722,691	18,545,993	
2032	74,373,408	147,207,692	221,581,100	6,396,113	6,396,113	5,131,547	17,923,773	
2033	68,514,814	158,605,814	227,120,628	5,892,274	5,892,274	5,544,156	17,328,704	
2034	62,765,639	170,033,005	232,798,644	5,397,845	5,397,845	5,962,320	16,758,010	
2035	57,062,796	181,555,814	238,618,610	4,907,400	4,907,400	6,388,900	16,203,700	
2036	51,415,982	193,168,093	244,584,075	4,421,774	4,421,774	6,823,496	15,667,044	
2037	45,951,309	204,747,368	250,698,677	3,951,813	3,951,813	7,261,869	15,165,495	
2038	40,603,314	216,362,830	256,966,144	3,491,885	3,491,885	7,706,121	14,689,891	
2039	35,363,071	228,027,227	263,390,298	3,041,224	3,041,224	8,156,764	14,239,212	
2040	30,499,791	239,475,264	269,975,055	2,622,982	2,622,982	8,603,762	13,849,726	
2041	26,191,477	250,532,954	276,724,431	2,252,467	2,252,467	9,039,180	13,544,114	
2042	22,380,198	261,262,344	283,642,542	1,924,697	1,924,697	9,464,278	13,313,672	
2043	19,005,668	271,727,938	290,733,606	1,634,487	1,634,487	9,880,459	13,149,433	
2044	16,020,634	281,981,312	298,001,946	1,377,775	1,377,775	10,289,007	13,044,557	
2045	13,405,579	292,046,416	305,451,995	1,152,880	1,152,880	10,690,158	12,995,918	
2046	11,126,501	301,961,794	313,088,295	956,879	956,879	11,084,906	12,998,664	
2047	9,151,649	311,763,853	320,915,502	787,042	787,042	11,474,001	13,048,085	
2048	7,478,112	321,460,278	328,938,390	643,118	643,118	11,857,490	13,143,726	
2049	6,067,726	331,094,124	337,161,850	521,824	521,824	12,236,744	13,280,392	
2050	4,875,959	340,714,937	345,590,896	419,332	419,332	12,613,511	13,452,175	
2051	3,868,754	350,361,914	354,230,668	332,713	332,713	12,989,256	13,654,682	
2052	3,027,860	360,058,575	363,086,435	260,396	260,396	13,364,851	13,885,643	
2053	2,334,261	369,829,335	372,163,596	200,746	200,746	13,741,326	14,142,818	
2054	1,765,007	379,702,679	381,467,686	151,791	151,791	14,119,781	14,423,363	
2055	1,311,991	389,692,387	391,004,378	112,831	112,831	14,500,831	14,726,493	
2056	961,665	399,817,822	400,779,487	82,703	82,703	14,885,371	15,050,777	
2057	692,302	410,106,672	410,798,974	59,538	59,538	15,274,550	15,393,626	
2058	487,929	420,581,019	421,068,948	41,962	41,962	15,669,377	15,753,301	
2059	334,241	431,261,431	431,595,672	28,745	28,745	16,070,792	16,128,282	
2060	222,543	442,163,021	442,385,564	19,139	19,139	16,479,536	16,517,814	
2061	142,088	453,303,115	453,445,203	12,220	12,220	16,896,410	16,920,850	
2062	85,472	464,695,861	464,781,333	7,351	7,351	17,322,075	17,336,777	
2063	48,391	476,352,475	476,400,866	4,162	4,162	17,757,095	17,765,419	
2064	25,902	488,284,986	488,310,888	2,228	2,228	18,202,039	18,206,495	
2065	13,191	500,505,469	500,518,660	1,134	1,134	18,657,475	18,659,743	
2066	6,024	513,025,603	513,031,627	518	518	19,123,943	19,124,979	
2067	2,474	525,854,944	525,857,418	213	213	19,601,869	19,602,295	
2068	944	539,002,909	539,003,853	81	81	20,091,662	20,091,824	
2069	334	552,478,615	552,478,949	29	29	20,593,696	20,593,754	



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

Year	Payroll for Current	Payroll for Future	Total Employee	Contributions from	Employer	Employer Contributions	Total Contributions
	Employees	Employees	Payroll	Current Employees	Contributions for Current Employees	Related to Payroll of Future Employees	
	(a)	(b)=max(0,(c)-(a))	(c)	(d)	(e)=(a)*ER%	(f) = (b)*netER%	(g)=(d)+(e)+(f)
2070	106	566,290,817	566,290,923	9	9	21,108,325	21,108,343
2071	16	580,448,180	580,448,196	1	1	21,635,872	21,635,874
2072	0	594,959,401	594,959,401	0	0	22,176,664	22,176,664
2073	0	609,833,386	609,833,386	0	0	22,731,031	22,731,031
2074	0	625,079,221	625,079,221	0	0	23,299,309	23,299,309
2075	0	640,706,202	640,706,202	0	0	23,881,835	23,881,835
2076	0	656,723,857	656,723,857	0	0	24,478,959	24,478,959
2077	0	673,141,953	673,141,953	0	0	25,091,036	25,091,036
2078	0	689,970,502	689,970,502	0	0	25,718,431	25,718,431
2079	0	707,219,765	707,219,765	0	0	26,361,518	26,361,518
2080	0	724,900,259	724,900,259	0	0	27,020,683	27,020,683
2081	0	743,022,765	743,022,765	0	0	27,696,322	27,696,322
2082	0	761,598,334	761,598,334	0	0	28,388,840	28,388,840
2083	0	780,638,292	780,638,292	0	0	29,098,657	29,098,657
2084	0	800,154,249	800,154,249	0	0	29,826,202	29,826,202
2085	0	820,158,105	820,158,105	0	0	30,571,919	30,571,919
2086	0	840,662,058	840,662,058	0	0	31,336,260	31,336,260
2087	0	861,678,609	861,678,609	0	0	32,119,691	32,119,691
2088	0	883,220,574	883,220,574	0	0	32,922,693	32,922,693
2089	0	905,301,088	905,301,088	0	0	33,745,755	33,745,755
2090	0	927,933,615	927,933,615	0	0	34,589,383	34,589,383
2091	0	951,131,955	951,131,955	0	0	35,454,093	35,454,093
2092	0	974,910,254	974,910,254	0	0	36,340,414	36,340,414
2093	0	999,283,010	999,283,010	0	0	37,248,890	37,248,890
2094	0	1,024,265,085	1,024,265,085	0	0	38,180,077	38,180,077
2095	0	1,049,871,712	1,049,871,712	0	0	39,134,543	39,134,543
2096	0	1,076,118,505	1,076,118,505	0	0	40,112,874	40,112,874
2097	0	1,103,021,468	1,103,021,468	0	0	41,115,666	41,115,666
2098	0	1,130,597,005	1,130,597,005	0	0	42,143,532	42,143,532
2099	0	1,158,861,930	1,158,861,930	0	0	43,197,100	43,197,100
2100	0	1,187,833,478	1,187,833,478	0	0	44,277,012	44,277,012
2101	0	1,217,529,315	1,217,529,315	0	0	45,383,927	45,383,927
2102	0	1,247,967,548	1,247,967,548	0	0	46,518,520	46,518,520
2103	0	1,279,166,737	1,279,166,737	0	0	47,681,482	47,681,482
2104	0	1,311,145,905	1,311,145,905	0	0	48,873,521	48,873,521
2105	0	1,343,924,553	1,343,924,553	0	0	50,095,364	50,095,364
2106	0	1,377,522,667	1,377,522,667	0	0	51,347,756	51,347,756
2107	0	1,411,960,734	1,411,960,734	0	0	52,631,459	52,631,459
2108	0	1,447,259,752	1,447,259,752	0	0	53,947,255	53,947,255
2109	0	1,483,441,246	1,483,441,246	0	0	55,295,947	55,295,947
2110	0	1,520,527,277	1,520,527,277	0	0	56,678,355	56,678,355
2111	0	1,558,540,459	1,558,540,459	0	0	58,095,323	58,095,323
2112	0	1,597,503,970	1,597,503,970	0	0	59,547,714	59,547,714
2113	0	1,637,441,569	1,637,441,569	0	0	61,036,413	61,036,413
2114	0	1,678,377,608	1,678,377,608	0	0	62,562,329	62,562,329
2115	0	1,720,337,048	1,720,337,048	0	0	64,126,391	64,126,391
2116	0	1,763,345,474	1,763,345,474	0	0	65,729,553	65,729,553
2117	0	1,807,429,111	1,807,429,111	0	0	67,372,793	67,372,793
2118	0	1,852,614,839	1,852,614,839	0	0	69,057,113	69,057,113
2119	0	1,898,930,210	1,898,930,210	0	0	70,783,540	70,783,540



# 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	\$ 700,886,675	\$ 30,753,992	\$ 40,386,827	\$ 721,782	\$ 74,478,954	\$ 765,011,012
2021	765,011,012	26,124,169	43,216,469	692,395	52,938,834	800,165,151
2022	800,165,151	25,049,658	45,171,794	709,705	55,294,778	834,628,089
2023	834,628,089	24,148,999	47,218,317	727,448	57,605,166	868,436,488
2024	868,436,488	23,354,752	49,589,312	745,634	59,862,218	901,318,512
2025	901,318,512	22,630,206	52,018,908	764,275	62,054,791	933,220,326
2026	933,220,326	21,935,911	54,609,235	783,382	64,174,243	963,937,863
2027	963,937,863	21,245,856	57,264,427	802,966	66,208,693	993,325,020
2028	993,325,020	20,555,392	60,175,803	823,040	68,141,171	1,021,022,740
2029	1,021,022,740	19,862,416	63,086,832	843,616	69,955,297	1,046,910,005
2030	1,046,910,005	19,189,687	66,094,709	864,707	71,640,037	1,070,780,313
2031	1,070,780,313	18,545,993	69,075,460	886,324	73,185,505	1,092,550,027
2032	1,092,550,027	17,923,773	72,059,646	908,483	74,584,533	1,112,090,204
2033	1,112,090,204	17,328,704	75,015,999	931,195	75,829,367	1,129,301,081
2034	1,129,301,081	16,758,010	77,907,600	954,474	76,914,196	1,144,111,214
2035	1,144,111,214	16,203,700	80,754,095	978,336	77,833,070	1,156,415,553
2036	1,156,415,553	15,667,044	83,581,045	1,002,795	78,577,797	1,166,076,554
2037	1,166,076,554	15,165,495	86,333,898	1,027,865	79,141,226	1,173,021,513
2038	1,173,021,513	14,689,891	88,922,292	1,053,561	79,521,063	1,177,256,614
2039	1,177,256,614	14,239,212	91,400,178	1,079,900	79,715,848	1,178,731,596
2040	1,178,731,596	13,849,726	93,714,242	1,106,898	79,725,144	1,177,485,326
2041	1,177,485,326	13,544,114	95,630,847	1,134,570	79,560,491	1,173,824,513
2042	1,173,824,513	13,313,672	97,262,560	1,162,934	79,239,185	1,167,951,877
2043	1,167,951,877	13,149,433	98,477,621	1,192,008	78,779,641	1,160,211,321
2044	1,160,211,321	13,044,557	99,283,695	1,221,808	78,205,432	1,150,955,807
2045	1,150,955,807	12,995,918	99,814,661	1,252,353	77,536,552	1,140,421,263
2046	1,140,421,263	12,998,664	100,007,414	1,283,662	76,791,519	1,128,920,371
2047	1,128,920,371	13,048,085	99,882,467	1,315,754	75,991,352	1,116,761,587
2048	1,116,761,587	13,143,726	99,473,288	1,348,647	75,156,475	1,104,239,853
2049	1,104,239,853	13,280,392	98,763,608	1,382,364	74,307,915	1,091,682,188
2050	1,091,682,188	13,452,175	97,701,805	1,416,923	73,470,135	1,079,485,771
2051	1,079,485,771	13,654,682	96,338,842	1,452,346	72,669,031	1,068,018,296
2052	1,068,018,296	13,885,643	94,740,545	1,488,654	71,928,000	1,057,602,739
2053	1,057,602,739	14,142,818	92,933,663	1,525,871	71,268,651	1,048,554,675
2054	1,048,554,675	14,423,363	90,938,895	1,564,018	70,712,263	1,041,187,388
2055	1,041,187,388	14,726,493	88,735,864	1,603,118	70,281,439	1,035,856,338
2056	1,035,856,338	15,050,777	86,388,159	1,643,196	69,998,825	1,032,874,585
2057	1,032,874,585	15,393,626	83,902,147	1,684,276	69,886,024	1,032,567,813
2058	1,032,567,813	15,753,301	81,272,781	1,726,383	69,965,948	1,035,287,898
2059	1,035,287,898	16,128,282	78,529,684	1,769,542	70,262,156	1,041,379,111
2060	1,041,379,111	16,517,814	75,706,278	1,813,781	70,797,570	1,051,174,435
2061	1,051,174,435	16,920,850	72,836,346	1,859,125	71,594,299	1,064,994,113
2062	1,064,994,113	17,336,777	69,924,104	1,905,603	72,674,593	1,083,175,776
2063	1,083,175,776	17,765,419	66,988,875	1,953,244	74,061,414	1,106,060,490
2064	1,106,060,490	18,206,495	64,044,862	2,002,075	75,778,138	1,133,998,186
2065	1,133,998,186	18,659,743	61,100,640	2,052,127	77,848,955	1,167,354,117
2066	1,167,354,117	19,124,979	58,163,975	2,103,430	80,299,158	1,206,510,849
2067	1,206,510,849	19,602,295	55,241,041	2,156,015	83,155,316	1,251,871,403
2068	1,251,871,403	20,091,824	52,337,984	2,209,916	86,445,432	1,303,860,759
2069	1,303,860,759	20,593,754	49,460,943	2,265,164	90,199,050	1,362,927,456



# 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	1,362,927,456	21,108,343	46,615,893	2,321,793	94,447,369	1,429,545,482
2071	1,429,545,482	21,635,874	43,808,687	2,379,838	99,223,375	1,504,216,207
2072	1,504,216,207	22,176,664	41,045,088	2,439,334	104,561,976	1,587,470,425
2073	1,587,470,425	22,731,031	38,331,027	2,500,317	110,500,133	1,679,870,245
2074	1,679,870,245	23,299,309	35,672,712	2,562,825	117,076,991	1,782,011,008
2075	1,782,011,008	23,881,835	33,076,483	2,626,895	124,334,014	1,894,523,479
2076	1,894,523,479	24,478,959	30,548,768	2,692,568	132,315,147	2,018,076,250
2077	2,018,076,250	25,091,036	28,096,114	2,759,882	141,066,976	2,153,378,266
2078	2,153,378,266	25,718,431	25,725,127	2,828,879	150,638,912	2,301,181,602
2079	2,301,181,602	26,361,518	23,442,528	2,899,601	161,083,379	2,462,284,370
2080	2,462,284,370	27,020,683	21,255,027	2,972,091	172,456,027	2,637,533,962
2081	2,637,533,962	27,696,322	19,169,035	3,046,393	184,815,964	2,827,830,820
2082	2,827,830,820	28,388,840	17,190,387	3,122,553	198,226,033	3,034,132,754
2083	3,034,132,754	29,098,657	15,324,130	3,200,617	212,753,120	3,257,459,784
2084	3,257,459,784	29,826,202	13,574,391	3,280,632	228,468,498	3,498,899,460
2085	3,498,899,460	30,571,919	11,944,258	3,362,648	245,448,201	3,759,612,675
2086	3,759,612,675	31,336,260	10,435,808	3,446,714	263,773,436	4,040,839,850
2087	4,040,839,850	32,119,691	9,050,102	3,532,882	283,531,009	4,343,907,565
2088	4,343,907,565	32,922,693	7,787,057	3,621,204	304,813,799	4,670,235,797
2089	4,670,235,797	33,745,755	6,645,259	3,711,734	327,721,267	5,021,345,826
2090	5,021,345,826	34,589,383	5,621,900	3,804,528	352,360,016	5,398,868,797
2091	5,398,868,797	35,454,093	4,712,916	3,899,641	378,844,381	5,804,554,714
2092	5,804,554,714	36,340,414	3,913,118	3,997,132	407,297,056	6,240,281,934
2093	6,240,281,934	37,248,890	3,216,271	4,097,060	437,849,759	6,708,067,253
2094	6,708,067,253	38,180,077	2,615,323	4,199,487	470,643,925	7,210,076,445
2095	7,210,076,445	39,134,543	2,102,684	4,304,474	505,831,436	7,748,635,266
2096	7,748,635,266	40,112,874	1,670,400	4,412,086	543,575,388	8,326,241,042
2097	8,326,241,042	41,115,666	1,310,345	4,522,388	584,050,890	8,945,574,864
2098	8,945,574,864	42,143,532	1,014,322	4,635,448	627,445,919	9,609,514,546
2099	9,609,514,546	43,197,100	774,229	4,751,334	673,962,222	10,321,148,305
2100	10,321,148,305	44,277,012	582,293	4,870,117	723,816,260	11,083,789,167
2101	11,083,789,167	45,383,927	431,205	4,991,870	777,240,216	11,900,990,236
2102	11,900,990,236	46,518,520	314,165	5,116,667	834,483,063	12,776,560,987
2103	12,776,560,987	47,681,482	225,015	5,244,584	895,811,697	13,714,584,567
2104	13,714,584,567	48,873,521	158,300	5,375,698	961,512,148	14,719,436,238
2105	14,719,436,238	50,095,364	109,309	5,510,091	1,031,890,868	15,795,803,069
2106	15,795,803,069	51,347,756	74,029	5,647,843	1,107,276,112	16,948,705,066
2107	16,948,705,066	52,631,459	49,124	5,789,039	1,188,019,420	18,183,517,782
2108	18,183,517,782	53,947,255	31,922	5,933,765	1,274,497,197	19,505,996,547
2109	19,505,996,547	55,295,947	20,304	6,082,109	1,367,112,412	20,922,302,492
2110	20,922,302,492	56,678,355	12,639	6,234,162	1,466,296,426	22,439,030,472
2111	22,439,030,472	58,095,323	7,690	6,390,016	1,572,510,947	24,063,239,036
2112	24,063,239,036	59,547,714	4,571	6,549,766	1,686,250,131	25,802,482,544
2113	25,802,482,544	61,036,413	2,655	6,713,510	1,808,042,831	27,664,845,623
2114	27,664,845,623	62,562,329	1,504	6,881,348	1,938,455,015	29,658,980,115
2115	29,658,980,115	64,126,391	831	7,053,382	2,078,092,350	31,794,144,643
2116	31,794,144,643	65,729,553	440	7,229,716	2,227,602,975	34,080,247,015
2117	34,080,247,015	67,372,793	222	7,410,459	2,387,680,470	36,527,889,597
2118	36,527,889,597	69,057,113	106	7,595,721	2,559,067,034	39,148,417,917
2119	39,148,417,917	70,783,540	61	7,785,614	2,742,556,887	41,953,972,670



# 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	\$ 700,886,675	\$ 40,386,827	\$ 40,386,827	\$ 0	\$ 39,043,419	\$ 0	\$ 39,043,419
2021	765,011,012	43,216,469	43,216,469	0	39,045,736	0	39,045,736
2022	800,165,151	45,171,794	45,171,794	0	38,142,389	0	38,142,389
2023	834,628,089	47,218,317	47,218,317	0	37,262,096	0	37,262,096
2024	868,436,488	49,589,312	49,589,312	0	36,573,042	0	36,573,042
2025	901,318,512	52,018,908	52,018,908	0	35,855,060	0	35,855,060
2026	933,220,326	54,609,235	54,609,235	0	35,178,032	0	35,178,032
2027	963,937,863	57,264,427	57,264,427	0	34,475,183	0	34,475,183
2028	993,325,020	60,175,803	60,175,803	0	33,857,882	0	33,857,882
2029	1,021,022,740	63,086,832	63,086,832	0	33,173,618	0	33,173,618
2030	1,046,910,005	66,094,709	66,094,709	0	32,481,571	0	32,481,571
2031	1,070,780,313	69,075,460	69,075,460	0	31,725,636	0	31,725,636
2032	1,092,550,027	72,059,646	72,059,646	0	30,931,067	0	30,931,067
2033	1,112,090,204	75,015,999	75,015,999	0	30,093,514	0	30,093,514
2034	1,129,301,081	77,907,600	77,907,600	0	29,208,890	0	29,208,890
2035	1,144,111,214	80,754,095	80,754,095	0	28,295,410	0	28,295,410
2036	1,156,415,553	83,581,045	83,581,045	0	27,370,042	0	27,370,042
2037	1,166,076,554	86,333,898	86,333,898	0	26,421,973	0	26,421,973
2038	1,173,021,513	88,922,292	88,922,292	0	25,433,771	0	25,433,771
2039	1,177,256,614	91,400,178	91,400,178	0	24,432,245	0	24,432,245
2040	1,178,731,596	93,714,242	93,714,242	0	23,411,980	0	23,411,980
2041	1,177,485,326	95,630,847	95,630,847	0	22,327,844	0	22,327,844
2042	1,173,824,513	97,262,560	97,262,560	0	21,223,192	0	21,223,192
2043	1,167,951,877	98,477,621	98,477,621	0	20,082,546	0	20,082,546
2044	1,160,211,321	99,283,695	99,283,695	0	18,922,363	0	18,922,363
2045	1,150,955,807	99,814,661	99,814,661	0	17,779,028	0	17,779,028
2046	1,140,421,263	100,007,414	100,007,414	0	16,648,001	0	16,648,001
2047	1,128,920,371	99,882,467	99,882,467	0	15,539,440	0	15,539,440
2048	1,116,761,587	99,473,288	99,473,288	0	14,463,347	0	14,463,347
2049	1,104,239,853	98,763,608	98,763,608	0	13,420,710	0	13,420,710
2050	1,091,682,188	97,701,805	97,701,805	0	12,407,874	0	12,407,874
2051	1,079,485,771	96,338,842	96,338,842	0	11,434,375	0	11,434,375
2052	1,068,018,296	94,740,545	94,740,545	0	10,509,041	0	10,509,041
2053	1,057,602,739	92,933,663	92,933,663	0	9,634,219	0	9,634,219
2054	1,048,554,675	90,938,895	90,938,895	0	8,810,678	0	8,810,678
2055	1,041,187,388	88,735,864	88,735,864	0	8,034,800	0	8,034,800
2056	1,035,856,338	86,388,159	86,388,159	0	7,310,487	0	7,310,487
2057	1,032,874,585	83,902,147	83,902,147	0	6,635,618	0	6,635,618
2058	1,032,567,813	81,272,781	81,272,781	0	6,007,167	0	6,007,167
2059	1,035,287,898	78,529,684	78,529,684	0	5,424,686	0	5,424,686
2060	1,041,379,111	75,706,278	75,706,278	0	4,887,524	0	4,887,524
2061	1,051,174,435	72,836,346	72,836,346	0	4,394,620	0	4,394,620
2062	1,064,994,113	69,924,104	69,924,104	0	3,942,905	0	3,942,905
2063	1,083,175,776	66,988,875	66,988,875	0	3,530,273	0	3,530,273
2064	1,106,060,490	64,044,862	64,044,862	0	3,154,323	0	3,154,323
2065	1,133,998,186	61,100,640	61,100,640	0	2,812,444	0	2,812,444
2066	1,167,354,117	58,163,975	58,163,975	0	2,502,122	0	2,502,122
2067	1,206,510,849	55,241,041	55,241,041	0	2,220,917	0	2,220,917
2068	1,251,871,403	52,337,984	52,337,984	0	1,966,544	0	1,966,544
2069	1,303,860,759	49,460,943	49,460,943	0	1,736,862	0	1,736,862



# 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>n</sup> ((a)-.5)	(g)=(e)*vf <sup>n</sup> ((a)-.5)	(h)=((c)/(1+SDR)) <sup>n</sup> (a-.5)
2070	\$ 1,362,927,456	\$ 46,615,893	\$ 46,615,893	\$ 0	\$ 1,529,865	\$ 0	\$ 1,529,865
2071	1,429,545,482	43,808,687	43,808,687	0	1,343,679	0	1,343,679
2072	1,504,216,207	41,045,088	41,045,088	0	1,176,557	0	1,176,557
2073	1,587,470,425	38,331,027	38,331,027	0	1,026,877	0	1,026,877
2074	1,679,870,245	35,672,712	35,672,712	0	893,141	0	893,141
2075	1,782,011,008	33,076,483	33,076,483	0	773,962	0	773,962
2076	1,894,523,479	30,548,768	30,548,768	0	668,052	0	668,052
2077	2,018,076,250	28,096,114	28,096,114	0	574,221	0	574,221
2078	2,153,378,266	25,725,127	25,725,127	0	491,368	0	491,368
2079	2,301,181,602	23,442,528	23,442,528	0	418,475	0	418,475
2080	2,462,284,370	21,255,027	21,255,027	0	354,604	0	354,604
2081	2,637,533,962	19,169,035	19,169,035	0	298,881	0	298,881
2082	2,827,830,820	17,190,387	17,190,387	0	250,495	0	250,495
2083	3,034,132,754	15,324,130	15,324,130	0	208,692	0	208,692
2084	3,257,459,784	13,574,391	13,574,391	0	172,769	0	172,769
2085	3,498,899,460	11,944,258	11,944,258	0	142,076	0	142,076
2086	3,759,612,675	10,435,808	10,435,808	0	116,013	0	116,013
2087	4,040,839,850	9,050,102	9,050,102	0	94,026	0	94,026
2088	4,343,907,565	7,787,057	7,787,057	0	75,611	0	75,611
2089	4,670,235,797	6,645,259	6,645,259	0	60,303	0	60,303
2090	5,021,345,826	5,621,900	5,621,900	0	47,679	0	47,679
2091	5,398,868,797	4,712,916	4,712,916	0	37,355	0	37,355
2092	5,804,554,714	3,913,118	3,913,118	0	28,987	0	28,987
2093	6,240,281,934	3,216,271	3,216,271	0	22,266	0	22,266
2094	6,708,067,253	2,615,323	2,615,323	0	16,921	0	16,921
2095	7,210,076,445	2,102,684	2,102,684	0	12,714	0	12,714
2096	7,748,635,266	1,670,400	1,670,400	0	9,440	0	9,440
2097	8,326,241,042	1,310,345	1,310,345	0	6,921	0	6,921
2098	8,945,574,864	1,014,322	1,014,322	0	5,007	0	5,007
2099	9,609,514,546	774,229	774,229	0	3,572	0	3,572
2100	10,321,148,305	582,293	582,293	0	2,510	0	2,510
2101	11,083,789,167	431,205	431,205	0	1,737	0	1,737
2102	11,900,990,236	314,165	314,165	0	1,183	0	1,183
2103	12,776,560,987	225,015	225,015	0	792	0	792
2104	13,714,584,567	158,300	158,300	0	521	0	521
2105	14,719,436,238	109,309	109,309	0	336	0	336
2106	15,795,803,069	74,029	74,029	0	213	0	213
2107	16,948,705,066	49,124	49,124	0	132	0	132
2108	18,183,517,782	31,922	31,922	0	80	0	80
2109	19,505,996,547	20,304	20,304	0	48	0	48
2110	20,922,302,492	12,639	12,639	0	28	0	28
2111	22,439,030,472	7,690	7,690	0	16	0	16
2112	24,063,239,036	4,571	4,571	0	9	0	9
2113	25,802,482,544	2,655	2,655	0	5	0	5
2114	27,664,845,623	1,504	1,504	0	3	0	3
2115	29,658,980,115	831	831	0	1	0	1
2116	31,794,144,643	440	440	0	1	0	1
2117	34,080,247,015	222	222	0	0	0	0
2118	36,527,889,597	106	106	0	0	0	0
2119	39,148,417,917	61	61	0	0	0	0
<b>Totals</b>					\$ 961,044,654	\$ 0	\$ 961,044,654



# 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

<b>Discount Rate</b>	<p>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:</p> <ol style="list-style-type: none"><li>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</li><li>2. The present value of the benefit payments not in (1) above, discounted using the municipal bond rate.</li></ol>
<b>Entry Age Actuarial Cost Method (EAN)</b>	<p>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.</p>
<b>Fiduciary Net Position</b>	<p>The fiduciary net position is the market value of the assets of the trust dedicated to the defined benefit provisions.</p>
<b>GASB</b>	<p>The Governmental Accounting Standards Board is an organization that exists in order to promulgate accounting standards for governmental entities.</p>
<b>Money-Weighted Rate of Return</b>	<p>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.</p>
<b>Multiple-Employer Defined Benefit Pension Plan</b>	<p>A multiple-employer plan is a defined benefit pension plan that is used to provide pensions to the employees of more than one employer.</p>
<b>Municipal Bond Rate</b>	<p>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.</p>
<b>Net Pension Liability (NPL)</b>	<p>The NPL is the liability of employers and non-employer contributing entities to plan members for benefits provided through a defined benefit pension plan.</p>

## 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.