Minnesota State Retirement System
Judges Retirement Fund

GASB Statements No. 67 and No. 68
Accounting and Financial Reporting for Pensions
June 30, 2020

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November 30, 2020

Minnesota State Retirement System
Judges Retirement Fund
St. Paul, Minnesota

Dear Board of Directors:

This report provides accounting and financial reporting information that is intended to comply with the Governmental Accounting Standards Board (GASB) Statements No. 67 and No. 68 for the Judges Retirement Fund ("JRF"), as amended by Statement No. 82. These calculations have been made on a basis that is consistent with our understanding of these accounting standards.

GASB Statement No. 67 is the accounting standard that applies to the 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. GASB Statement No. 82 is an amendment to Statements No. 67, No. 68, and No. 73, intended to improve consistency in the application of the accounting standards.

Our calculation of the liability associated with the benefits described in this report was performed for the purpose of providing financial reporting and disclosure information that satisfies the requirements of GASB Statements No. 67 and No. 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. The calculation of the plan's liability for this report may not be applicable for purposes of funding the plan. A calculation of the plan's liability for purposes other than satisfying the requirements of GASB Statements No. 67 and No. 68 may produce significantly different results. The information in this report is calculated on a total plan basis. The Minnesota State Retirement System (MSRS) is responsible for preparing the Schedule of Employer Allocations and the Schedule of Pension Amounts by Employer, as applicable. This report may be provided to parties other than MSRS only in its entirety and only with the permission of MSRS. GRS is not responsible for unauthorized use of this report.

This report is based upon information, furnished to us by MSRS, concerning retirement and ancillary benefits, active members, deferred vested members, retirees and beneficiaries, and financial data. If your understanding of this information is different, please let us know. This information was checked for internal consistency, but it was not audited.

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This report does not fully reflect the recent and still developing impact of COVID-19, which is likely to influence demographic and investment experience, at least in the short term. We will continue to monitor these developments and their impact on the plan.

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. We performed tests to ensure that the model reasonably represents that which is intended to be modeled.

This report complements the actuarial valuation report for funding purposes that was or will be provided to the System and should be considered in conjunction with that report. Please see the actuarial valuation report as of June 30, 2020 for additional discussion of the nature of actuarial calculations and more information related to participant data, economic and demographic assumptions, and benefit provisions.

To the best of our knowledge, the information contained within this report is accurate and fairly represents the actuarial position of the Judges Retirement Fund as of the measurement 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.

The signing actuaries are independent of the plan sponsor.

Brian B. Murphy and Bonita J. Wurst are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

Respectfully submitted,

Brian B. Murphy, FSA, EA, FCA, MAAA, PhD

Bonita J. Wurst, ASA, EA, FCA, MAAA

BBM/BJW:sc

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SECTION A

EXECUTIVE SUMMARY

Executive Summary
as of June 30, 2020 (Dollars in Thousands)

	2020
Actuarial Valuation Date	June 30, 2020
Measurement Date of the Net Pension Liability	June 30, 2020
Membership	
Number of	
- Service Retirements	298
- Survivors	76
- Disability Retirements	16
- Deferred Retirements	17
- Terminated other non-vested	0
- Active Members	322
- Total	729
Covered-Employee Payroll	$ 52,298 [1]
Net Pension Liability	
Total Pension Liability	$ 402,660
Plan Fiduciary Net Position	216,737
Net Pension Liability	$ 185,923
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	53.83%
Net Pension Liability as a Percentage of Covered-Employee Payroll	355.51%
Development of the Single Discount Rate	
Single Discount Rate	7.50%
Long-Term Expected Rate of Investment Return	7.50%
Long-Term Municipal Bond Rate	2.45% [2]
Last year ending June 30 in the 2021 to 2120 projection period for which projected benefit payments are fully funded	2120
Total Pension Expense/(Income)	$ 5,303

Deferred Outflows and Deferred Inflows of Resources by Source Arising from Current and Prior Periods to be Recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources
Difference between expected and actual experience in the measurement of Total Pension Liability	$ 1,051	$ 1,633
Changes in assumptions	2,331	-
Net difference between projected and actual earnings on pension plan investments	5,733	4,690
Total	$ 9,115	$ 6,323

[1] *Assumed equal to actual employer contributions divided by employer contribution rate.*

[2] *Based on the 20-Year Municipal GO Index of mixed maturity general obligation municipal bonds as of the weekly rate closest to but not later than the Measurement Date.*

Discussion

Accounting Standard

For pension plans that are administered through trusts or equivalent arrangements, Governmental Accounting Standards Board (GASB) Statement No. 67, *Financial Reporting for Pension Plans,* 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, *Accounting and Financial Reporting for Pensions,* 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 and local governmental employers 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 57 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 JRF subsequent to the measurement date of June 30, 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 difference between expected and actual experience in the measurement of the Total Pension Liability, assumption changes, 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 to 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.

Both GASB Statements No. 67 and No. 68 require the notes to the financial statements for the employers and pension plans to include certain descriptive information about the pension plans through which the pension benefits are provided. The list of disclosure items should include:

- A description of benefits provided by the plan;
- The classes 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, net pension liability, and the pension plan's fiduciary net position as a percentage of the total pension liability;
- The net pension liability using a discount rate that is 1% higher and 1% lower than the current discount rate 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 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; and
- Annual money-weighted rate of return.

MSRS' comprehensive annual financial report, which contains the basic financial statements and related note disclosures for the Judges Retirement Fund can be found online at www.msrs.state.mn.us/annual-reports-fy-2020 or obtained from MSRS at 60 Empire Drive, Suite 300, St. Paul, Minnesota, 55103 or requested via email at info@msrs.us or telephone at 1.800.657.5757.

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
- Comparison of the actual employer contributions to the actuarially determined contributions based on the plan's funding policy.

Measurement of the Net Pension Liability

The net pension liability is to be measured as the total pension liability, less the amount of the pension plan's fiduciary net position. In actuarial terms, this will be 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).

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 7.50%), then the following outcomes are expected:

1. The employer normal cost as a percentage of pay is expected to decline as a percentage of payroll,
2. The funded status of the plan is expected to gradually improve and is expected to be 100% funded within the next 43 years, and
3. The unfunded liability will grow initially as a dollar amount before beginning to decline.

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.

Limitations of Funded Status Measurements

Unless otherwise indicated, a funded status measurement presented in this report is based upon the actuarial accrued liability and the market value of assets. Unless otherwise indicated, with regard to any funded status measurements presented in this report:

1. The measurement is inappropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations; in other words, of transferring the obligations to an unrelated third party in an arm's length market value type transaction.
2. The measurement is dependent upon the actuarial cost method which, in combination with the plan's amortization policy, affects the timing and amounts of future contributions. The amounts of future contributions will most certainly differ from those assumed in this report due to future actual experience differing from assumed experience based upon the actuarial assumptions. A funded status measurement in this report of 100% is not synonymous with no required future contributions. If the funded status were 100%, the plan would still require future normal cost contributions (i.e., contributions to cover the cost of the active membership accruing an additional year of service credit).
3. The measurement would produce a different result if the actuarial value of assets were used instead of the market value of assets.

Limitation of Project Scope

Actuarial standards do not require the actuary to evaluate the ability of the plan sponsor or other contributing entity to make required contributions to the plan when due. Such an evaluation was not within the scope of this project and is not within the actuary's domain of expertise. Consequently, the actuary performed no such evaluation.

Timing of the Valuation

An actuarial valuation to determine the total pension liability is required to be performed at least every two years. For employer reporting, the net pension liability and pension expense should be measured as of a date (measurement date) no earlier than the end of the employer's prior fiscal year, consistently applied from period to period. 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 June 30, 2020 and a measurement date of June 30, 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 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 long-term expected rate of return on pension plan investments is 7.50%; the municipal bond rate is 2.45% (based on the weekly rate closest to but not later than the measurement date of the "20-Year Municipal GO AA Index" as published by Fidelity); and the resulting single discount rate is 7.50%.

SECTION B

FINANCIAL STATEMENTS

Statement of Pension Expense under GASB Statement No. 68
Fiscal Year Ended June 30, 2020 (Dollars in Thousands)

A. Expense			
1.	Service Cost	$	9,897
2.	Interest on the Total Pension Liability		28,721
3.	Current-Period Benefit Changes		-
4.	Employee Contributions (made negative for addition here)		(4,168)
5.	Projected Earnings on Plan Investments (made negative for addition here)		(15,752)
6.	Pension Plan Administrative Expense		113
7.	Other Changes in Plan Fiduciary Net Position		-
8.	Recognition of Outflow (Inflow) of Resources due to differences between expected and actual experience in the measurement of the Total Pension Liability		
	Arising from Current Reporting Period		(160)
9.	Recognition of Outflow (Inflow) of Resources due to assumption changes		
	Arising from Current Reporting Period		-
10.	Recognition of Outflow (Inflow) of Resources due to the difference between projected (7.50%) and actual earnings on Pension Plan Investments		
	Arising from Current Reporting Period		1,359
11.	**Increases/(Decreases) from Experience in the Current Reporting Period**	**$**	**20,010**
12.	Recognition of Outflow (Inflow) of Resources due to differences between expected and actual experience in the measurement of the Total Pension Liability		
	Arising from Prior Reporting Periods	$	882
13.	Recognition of Outflow (Inflow) of Resources due to assumption changes		
	Arising from Prior Reporting Periods		(14,821)
14.	Recognition of Outflow (Inflow) of Resources due to the difference between projected and actual earnings on Pension Plan Investments		
	Arising from Prior Reporting Periods		(768)
15.	**Total Pension Expense / (Income)**	**$**	**5,303**

Differences between expected and actual experience and changes in assumptions are recognized in pension expense using a systematic and rational method over a closed period equal to the average of the expected remaining service lives of all employees that are provided with pension through the pension plan (active employees and inactive employees) determined as of the beginning of the measurement period.

At the beginning of the current measurement period, the expected remaining service lives of all active employees in the plan was approximately 3,454 years. Additionally, the total plan membership (active employees and inactive employees) was 718. As a result, the average of the expected remaining service lives for purposes of recognizing the applicable deferred outflows and inflows of resources established in the current measurement period is 5.0000 year.

Additionally, differences between projected and actual earnings on plan investments should be recognized in pension expense using a systematic and rational method over a closed five-year period. For this purpose, the deferred outflows and inflows of resources are recognized in the pension expense as a level dollar amount over the closed period identified above.

Statement of Outflows and Inflows
Arising from Current Reporting Period
Fiscal Year Ended June 30, 2020 (Dollars in Thousands)

A. Outflows (Inflows) of Resources due to Liabilities		
1. Difference between expected and actual experience of the Total Pension Liability (gains) or losses	$	(802)
2. Assumption Changes (gains) or losses		-
3. Recognition period for Liabilities: Average of the expected remaining service lives of all employees {in years}		5
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		(160)
5. Outflow (Inflow) of Resources to be recognized in the current pension expense for Assumption Changes		-
6. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Liabilities	$	(160)
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	$	(642)
8. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for Assumption Changes		-
9. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Liabilities	$	(642)
B. Outflows (Inflows) of Resources due to Assets		
1. Net difference between projected and actual earnings on pension plan investments (gains) or losses	$	6,797
2. Recognition period for Assets {in years}		5
3. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Assets		1,359
4. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Assets	$	5,438

Statement of Outflows and Inflows Arising from Current and Prior Reporting Periods Fiscal Year Ended June 30, 2020 (Dollars in Thousands)

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/ (Inflows) of Resources
1. Due to Liabilities	$ 4,204	$ 18,303	$ (14,099)
2. Due to Assets	4,186	3,595	591
3. Total	$ 8,390	$ 21,898	$ (13,508)

B. Outflows and Inflows of Resources by Source to be Recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows/ (Inflows) of Resources
1. Differences between expected and actual experience	$ 1,873	$ 1,151	$ 722
2. Assumption Changes	2,331	17,152	(14,821)
3. Net Difference between projected and actual earnings on pension plan investments	4,186	3,595	591
4. Total	**$ 8,390**	**$ 21,898**	**$ (13,508)**

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/ (Inflows) of Resources
1. Differences between expected and actual experience	$ 1,051	$ 1,633	$ (582)
2. Assumption Changes	2,331	-	2,331
3. Net Difference between projected and actual earnings on pension plan investments*	5,733	4,690	1,043
4. Total	**$ 9,115**	**$ 6,323**	**$ 2,792**

D. Deferred Outflows and Deferred Inflows of Resources by Year to be Recognized in Future Pension Expenses

Year Ending June 30	Net Deferred Outflows/ (Inflows) of Resources
2021	$ (512)
2022	647
2023	1,458
2024	1,199
2025	-
Thereafter	-
Total	**$ 2,792**

** Paragraph 71(b) of GASB Statement No. 68 requires deferred outflows and inflows arising from differences between projected and actual earnings on pension plan investments to be aggregated and shown as a net amount. For purposes of this valuation, amounts are shown separately for calculation purposes.*

Recognition of Deferred Outflows and Inflows of Resources
Fiscal Year Ended June 30, 2020 (Dollars in Thousands)

Year Established	Initial Amount	Initial Recognition Period	Current Year Recognition	Remaining Recognition	Remaining Recognition Period
Deferred Outflow (Inflow) Due to Differences Between Expected and Actual Experience on Liabilities					
2016	$ 7,135	5.0000	$ 1,427	$ 0	0.0000
2017	(4,958)	5.0000	(991)	(991)	1.0000
2018	1,424	5.0000	285	569	2.0000
2019	804	5.0000	161	482	3.0000
2020	(802)	5.0000	(160)	(642)	4.0000
Total			**$ 722**	**$ (582)**	
Deferred Outflow (Inflow) Due to Assumption Changes					
2016	$ (85,756)	5.0000	$ (17,152)	$ 0	0.0000
2017	11,652	5.0000	2,331	2,331	1.0000
Total			**$ (14,821)**	**$ 2,331**	
Deferred Outflow (Inflow) Due to Differences Between Projected and Actual Earnings on Plan Investments					
2016	$ 13,642	5.0000	$ 2,729	$ 0	0.0000
2017	(12,492)	5.0000	(2,499)	(2,499)	1.0000
2018	(5,479)	5.0000	(1,096)	(2,191)	2.0000
2019	491	5.0000	98	295	3.0000
2020	6,797	5.0000	1,359	5,438	4.0000
Total			**$ 591**	**$ 1,043**	
Deferred Outflow (Inflow) due to All Sources					
Total			**$ (13,508)**	**$ 2,792**	

Statement of Fiduciary Net Position as of June 30, 2020 (Dollars in Thousands)

Assets		June 30, 2020
Cash & Short-term Investments	$	10,096
Receivables		500
Investment Pools (at fair value)		206,303
Securities Lending Collateral		15,165
Capital Assets		-
Total Assets	**$**	**232,064**
Total Deferred Outflows of Resources	**$**	**-**
Total Liabilities	**$**	**(15,327)**
Total Deferred Inflows of Resources	**$**	**-**
Net Position Restricted for Pensions	**$**	**216,737**

Statement of Changes in Fiduciary Net Position for the Fiscal Year Ended June 30, 2020 (Dollars in Thousands)

1. Net position at market value at beginning of year	**$ 212,262**
Additions	
2. Contributions	
a. Employee	$ 4,168
b. Employer	11,767
c. Other sources	6,000
d. Total contributions	$ 21,935
3. Investment income	
a. Investment income/(loss)	$ 9,155
b. Investment expenses	(200)
c. Net investment income/(loss)	$ 8,955
4. Other Additions	-
5. Total Additions *(2.d.) + (3.c.) + (4.)*	**$ 30,890**
Deductions	
6. Benefits Paid	
a. Annuity benefits	$ (26,272)
b. Refunds	(30)
c. Total benefits paid	$ (26,302)
7. Expenses	
a. Other deductions	$ -
b. Administrative	(113)
c. Total expenses	$ (113)
8. Total deductions *(6.c.) + (7.c.)*	**$ (26,415)**
9. Net increase/(decrease) in fiduciary net position *(5.) + (8.)*	**$ 4,475**
10. Net position at market value at end of year *(1.) + (9.)*	**$ 216,737**
11. State Board of Investment calculated annual investment return for the Judges Retirement Fund*	4.2%

** The fiscal year 2020 investment return for the Combined Funds is 4.2%.*

SECTION C

REQUIRED SUPPLEMENTARY INFORMATION

Schedule of Changes in Net Pension Liability and Related Ratios
Current Period
Fiscal Year Ended June 30, 2020 (Dollars in Thousands)

A. Total pension liability		
1. Service Cost	$	9,897
2. Interest on the Total Pension Liability		28,721
3. Changes of benefit terms		-
4. Difference between expected and actual experience of the Total Pension Liability		(802) [1]
5. Changes of assumptions		-
6. Benefit payments, including refunds of employee contributions		(26,302)
7. Net change in total pension liability	$	11,514
8. Total pension liability – beginning		391,146
9. Total pension liability – ending	**$**	**402,660**
B. Plan fiduciary net position		
1. Contributions – employer	$	17,767 [2]
2. Contributions – employee		4,168
3. Net investment income		8,955
4. Benefit payments, including refunds of employee contributions		(26,302)
5. Pension Plan Administrative Expense		(113)
6. Other changes		-
7. Net change in plan fiduciary net position	$	4,475
8. Plan fiduciary net position – beginning		212,262
9. Plan fiduciary net position – ending	**$**	**216,737**
C. Net pension liability, *A.9 - B.9.*	**$**	**185,923**
D. Plan fiduciary net position as a percentage of the total pension liability, *B.9 / A.9.*		**53.83%**
E. Covered-employee payroll	**$**	**52,298** [3]
F. Net pension liability as a percentage of covered-employee payroll, *C. / E.*		**355.51%**

[1] *Includes impact of changes in expected timing of future post-retirement benefit increases.*
[2] *Includes $6 million supplemental state aid.*
[3] *Assumed equal to actual employer contributions divided by employer contribution rate.*

Schedule of Changes in Net Pension Liability and Related Ratios Multiyear
(Dollars in Thousands)

Last 10 Fiscal Years (which will be built prospectively)

Fiscal year ending June 30,	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Total Pension Liability										
Service Cost	$ 9,897	$ 9,881	$ 9,857	$ 9,483	$ 13,711	$ 12,251	$ 12,075			
Interest on the Total Pension Liability	28,721	27,769	26,746	25,367	21,349	21,773	20,535			
Benefit Changes	-	-	-	-	0	0	0			
Experience[1]	(802)	804	1,424	(4,958)	7,135	(4,366)	5,080			
Assumption Changes	-	-	-	11,652	(85,756)	21,696	(8,416)			
Benefit Payments	(26,272)	(25,233)	(23,585)	(22,785)	(22,378)	(21,893)	(20,802)			
Refunds	(30)	-	-	(309)	0	0	0			
Net Change in Total Pension Liability	$ 11,514	$ 13,221	$ 14,442	$ 18,450	(65,939)	29,461	8,472			
Total Pension Liability - Beginning	391,146	377,925	363,483	345,033	410,972	381,511	373,039			
Total Pension Liability - Ending (a)	**$ 402,660**	**$ 391,146**	**$ 377,925**	**$ 363,483**	**$ 345,033**	**$ 410,972**	**$ 381,511**			
Plan Fiduciary Net Position										
Employer Contributions [2]	$ 17,767	$ 17,287	$ 17,027	$ 13,758	$ 10,219	$ 9,776	$ 9,426			
Employee Contributions	4,168	4,049	3,973	3,932	3,763	3,629	3,578			
Pension Plan Net Investment Income	8,955	14,491	19,265	24,729	(186)	7,572	28,011			
Benefit Payments	(26,272)	(25,233)	(23,585)	(22,785)	(22,378)	(21,893)	(20,802)			
Refunds	(30)	-	-	(309)	0	0	0			
Pension Plan Administrative Expense	(113)	(87)	(66)	(89)	(93)	(60)	(55)			
Other Changes	-	-	-	-	0	0	0			
Net Change in Plan Fiduciary Net Position	**$ 4,475**	**$ 10,507**	**$ 16,614**	**$ 19,236**	**(8,675)**	**(976)**	**20,158**			
Plan Fiduciary Net Position - Beginning	**$ 212,262**	**$ 201,755**	**$ 185,141**	**$ 165,905**	**174,580**	**175,556**	**155,398**			
Plan Fiduciary Net Position - Ending (b)	**$ 216,737**	**$ 212,262**	**$ 201,755**	**$ 185,141**	**$ 165,905**	**$ 174,580**	**$ 175,556**			
Net Pension Liability - Ending (a) - (b)	**$ 185,923**	**$ 178,884**	**$ 176,170**	**$ 178,342**	**179,128**	**236,392**	**205,955**			
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	**53.83 %**	**54.27 %**	**53.38 %**	**50.94 %**	**48.08 %**	**42.48 %**	**46.02 %**			
Covered-Employee Payroll[3]	**$ 52,298**	**$ 50,164**	**$ 49,009**	**$ 47,813**	**$ 45,418**	**$ 43,449**	**$ 41,893**			
Net Pension Liability as a Percentage of Covered-Employee Payroll	**355.51 %**	**356.60 %**	**359.46 %**	**373.00 %**	**394.40 %**	**544.07 %**	**491.62 %**			

[1] Includes impact of changes in expected timing of future post-retirement benefit increases.
[2] Includes $3 million supplemental state aid for fiscal year ending 2017 and $6 million annual supplemental state aid thereafter.
[3] Assumed equal to actual employer contributions divided by employer contribution rate.

Schedule of Net Pension Liability Multiyear (Dollars in Thousands)

Last 10 Fiscal Years (which will be built prospectively)

Fiscal Year Ending June 30,	Total Pension Liability	Plan Net Position	Net Pension Liability	Plan Net Position as a % of Total Pension Liability	Covered-Employee Payroll	Net Pension Liability as a % of Covered-Employee Payroll
	(a)	(b)	(a) - (b) = (c)	(b)/(c)	(d)	(c)/(d)
2011						
2012						
2013						
2014	$381,511	$175,556	$205,955	46.02%	$41,893	491.62%
2015	410,972	174,580	236,392	42.48	43,449	544.07
2016	345,033	165,905	179,128	48.08	45,418	394.40
2017	363,483	185,141	178,342	50.94	47,813	373.00
2018	377,925	201,755	176,170	53.38	49,009	359.46
2019	391,146	212,262	178,884	54.27	50,164	356.60
2020	402,660	216,737	185,923	53.83	52,298	355.51

Schedule of Contributions Multiyear (Dollars in Thousands)

Last 10 Fiscal Years

Fiscal Year Ending June 30,	Actuarially Determined Contribution [1]	Actual Contributions	Contribution Deficiency (Excess)	Covered-Employee Payroll	Actual Contributions as a % of Covered-Employee Payroll
	(a)	(b)	(a) - (b) = (c)	(d)	(b)/(d)
2011	$ 9,804	$ 8,297	$ 1,507	$ 40,473	20.50%
2012	9,879	7,922	1,957	38,644 [2]	20.50
2013	13,524	8,177	5,347	39,888 [2]	20.50
2014	14,193	9,426	4,767	41,893 [2]	22.50
2015	14,298	9,776	4,522	43,449 [2]	22.50
2016	15,644	10,219	5,425	45,418 [2]	22.50
2017	16,790	13,758 [3]	3,032	47,813 [2]	28.77
2018	18,032	17,027 [3]	1,005	49,009 [2]	34.74
2019	17,491	17,287 [3]	204	50,164 [2]	34.46
2020	18,304	17,767 [3]	537	52,298 [2]	33.97

Notes to Schedule of Contributions

Methods and Assumptions Used to Determine Fiscal Year Ending June 30, 2020 Contribution Rates Reported in this Schedule:

Notes	[1] Actuarially determined contribution rates are calculated as of each June 30 and apply to the fiscal year beginning on the day after the measurement date. [2] Assumed equal to actual employer contributions divided by employer contribution rate. [3] Includes supplemental state aid of $3,000 for fiscal year ending June 30, 2017 and $6,000 annual supplemental state aid thereafter.
Valuation Date	June 30, 2019
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; no corridor
Inflation	2.50%
Payroll Increases	2.50%
Salary Increases	2.50%
Investment Rate of Return	7.50%
Retirement Age	Experience-based table of rates that are specific to the type of eligibility condition. Last updated for the 2017 valuation pursuant to an experience study of the period 2011 - 2015, dated July 26, 2016.
Healthy Post-Retirement Mortality	RP-2014 annuitant generational mortality table projected with mortality improvement Scale MP-2015 from a base year of 2006, white collar adjustment.
Other Information	
Benefit Increases After Retirement	The post-retirement increase is assumed to be 1.75% per year through 2037, 2% per year from 2038 through 2051 and 2.5% per year thereafter.
	See separate funding actuarial valuation report as of July 1, 2019 for additional detail. To obtain this report, contact MSRS at 60 Empire Drive, Suite 300, St. Paul, Minnesota, 55103 or request via email at info@msrs.us or telephone at 1.800.651.5757.
	This report can be found online at www.msrs.state.mn.us/annual-reports-fy-2019.

Schedule of Investment Returns Multiyear

Last 10 Fiscal Years

Fiscal Year Ending June 30,	Annual Return[1]
2011	
2012	
2013	
2014	18.7 %
2015	4.5
2016	-0.1
2017	15.2
2018	10.5
2019	7.2
2020	4.2

[1] *Annual money-weighted rate of return, net of investment expenses.*

The Minnesota State Board of Investment (SBI) compiled this data and the related investment notes and provided it to MSRS for GASB-compliance purposes. MSRS furnished this information to us for inclusion within this report. We did not audit this information. We are not responsible for its accuracy or completeness.

Rate of Return

For the fiscal year ended June 30, 2020, the annual money-weighted rate of return for the Judges Retirement Fund was 4.2%. The money-weighted rate of return is a method of calculating period-by-period returns on pension plan investments that adjusts for the changing amounts actually invested. For purposes of this schedule, the money-weighted rate of return is calculated as the internal rate of return on pension plan investments, net of pension plan investment expense.

Ten-Year Schedule of Money-Weighted Investment Return

Ten-year data is not available. Additional years will be provided when they become available.

To request additional information about the computation of the annual money-weighted rate of return and the investments for the Minnesota Retirement Systems (including the investments for MSRS' defined benefit retirement funds), contact SBI at 60 Empire Drive, Suite 355, St. Paul, Minnesota, 55103, via email at minn.sbi@state.mn.us or telephone at 1.651.296.3328.

SECTION D

ADDITIONAL FINANCIAL STATEMENT DISCLOSURES

Asset Allocation

Long-Term Expected Return on Plan Assets

The long-term expected rate of return on pension plan investments was determined using a building-block method. Estimates for expected future real rates of return (expected returns, net of inflation) were developed for each asset class using both long-term historical returns and long-term capital market expectation from a number of investment management and consulting organizations. The asset class estimates and the target allocations were then combined to produce a geometric, long-term expected real rate of return for the portfolio. Inflation expectations were applied to derive the nominal rate of return for the portfolio. For each asset class that is included in the pension fund's target asset allocation as of June 30, 2020, these estimates are summarized in the following table:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return (Geometric Mean)
Domestic Equity	36%	5.10%
International Equity	17%	5.30%
Private Markets	25%	5.90%
Fixed Income	20%	0.75%
Cash	2%	0.00%
Total	100%	

The Minnesota State Board of Investment (SBI) compiled this data and the related investment notes and provided it to MSRS for GASB-compliance purposes. MSRS furnished this information to us for inclusion within this report. We did not audit this information. We are not responsible for its accuracy or completeness.

For purposes of this valuation, the long-term expected rate of return assumption is 7.50%. This assumption is based on a review of inflation and investment return assumptions in our experience study report for the State Employees Retirement Fund dated June 27, 2019.

Sensitivity of Net Pension Liability to the Single Discount Rate Assumption

Single Discount Rate

A single discount rate of 7.50% was used to measure the total pension liability. This single discount rate was based on the expected rate of return on pension plan investments of 7.50%. The projection of cash flows used to determine this single discount rate assumed that member, employer, and state contributions will be made at the current statutory contribution rates. Based on these assumptions, the pension plan's fiduciary net position and future contributions were projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

Regarding the sensitivity of the net pension liability to changes in the single discount rate, the following presents the fund's net pension liability, calculated using a single discount rate of 7.50%, as well as what the fund's net pension liability would be if it were calculated using a single discount rate that is 1-percentage-point lower (6.50%) or 1-percentage-point higher (8.50%) than the current rate:

Sensitivity of Net Pension Liability to the Single Discount Rate Assumption

(Dollars in Thousands)

	1% Decrease 6.50%	Current Single Discount Rate Assumption 7.50%	1% Increase 8.50%
Total Pension Liability	$443,368	$402,660	$367,777
Net Position Restricted for Pensions	216,737	216,737	216,737
Net Pension Liabitliy	**$226,631**	**$185,923**	**$151,040**

For more information on the calculation of the single discount rate, refer to Section G of this report.

Note that we believe the 8.5% interest rate assumption would not comply with Actuarial Standards of Practice.

GASB Statement No. 68 Reconciliation (Dollars in Thousands)

	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a) - (b)	Deferred Outflows	Deferred Inflows	Total Pension Expense
Balance Beginning of Year	**$ 391,146**	**$ 212,262**	**$ 178,884**	**$ 10,708**	**$ 27,419**	
Changes for the Year:						
Service Cost	$ 9,897		$ 9,897			$ 9,897
Interest on Total Pension Liability	28,721		28,721			28,721
Interest on Plan Fiduciary Net Position		$ 15,752 (1)	(15,752)			(15,752)
Changes in Benefit Terms						
Liability Experience Gains and Losses	(802)		(802)	$ -	$ 642	(160)
Changes in Assumptions	-		-			-
Recognition of Deferred Outflows/(Inflows) of Resources Arising from Prior Reporting Periods						
Liability Experience Gains/(Losses)				(1,873)	(991)	882
Assumption Changes				(2,331)	(17,152)	(14,821)
Investment Gains/(Losses)				(2,827)	(3,595)	(768)
Contributions - Employer		17,767	(17,767)			
Contributions - Employees		4,168	(4,168)			(4,168)
Asset Gain/(Loss)		(6,797) (1)	6,797	5,438	-	1,359
Benefit Payments and Refunds	(26,302)	(26,302)	-			
Administrative Expenses		(113)	113			113
Other Changes						
Net Changes	**$ 11,514**	**$ 4,475**	**$ 7,039**	**$ (1,593)**	**$ (21,096)**	**$ 5,303**
Balance End of Year	**$ 402,660**	**$ 216,737**	**$ 185,923**	**$ 9,115**	**$ 6,323**	

(1) The sum of these items in column (b) equals the net investment income of $8,955.

Summary of Population Statistics

		Terminated		Recipients			
	Actives*	Deferred Retirement	Other Non-Vested	Service Retirement	Disability Retirement	Survivor	Total
Members on 7/1/2019	**315**	**19**	**1**	**293**	**16**	**74**	**718**
New members	21	0	0	0	0	0	**21**
Return to active	0	0	0	0	0	0	**0**
Terminated non-vested	0	0	0	0	0	0	**0**
Service retirements	(12)	(3)	0	15	0	0	**0**
Terminated deferred	(1)	1	0	0	0	0	**0**
Terminated refund/transfer	0	0	(1)	0	0	0	**(1)**
Deaths	(1)	0	0	(11)	0	(5)	**(17)**
New beneficiary	0	0	0	0	0	7	**7**
Disabled	0	0	0	0	0	0	**0**
Unexpected status changes	0	0	0	1	0	0	**1**
Net change	7	(2)	(1)	5	0	2	**11**
Members on 6/30/2020	**322**	**17**	**0**	**298**	**16**	**76**	**729**

* *Includes active Judges who have reached the maximum benefit formula (employee contributions are directed to the Unclassified Employees Retirement Plan).*

SECTION E

SUMMARY OF BENEFITS

Summary of Plan Provisions

Following is a summary of the major plan provisions used in the valuation of this report. MSRS is solely responsible for the validity, accuracy and comprehensiveness of this information. If any of the plan provisions shown below are not accurate and complete, the valuation results may differ significantly from those shown in this report and may require a revision of this report.

Plan year	July 1 through June 30.
Eligibility	A judge or justice of any court. If the member was active prior to January 1, 1974, benefits may be computed according to provisions of the prior plan.
Tier 1 / Tier 2 member	Tier 1 includes judges or justices first appointed or elected before July 1, 2013, and Tier 2 includes judges or justices first appointed or elected after June 30, 2013. A judge or justice with less than five years of service as of December 30, 2013, may make a one-time irrevocable election into Tier 2. For the purpose of this valuation, we have assumed no Tier 1 members elected Tier 2 benefits as of the valuation date.
Contributions	
Member	9.00% of salary for Tier 1 members, 7.00% of salary for Tier 2 members. Tier 1 member contributions after maximum benefit is reached are redirected to the Unclassified Employees Retirement Plan.
Employer	22.50% of salary. Member contributions are "picked up" according to the provisions of Internal Revenue Code 414(h).
State contributions	$6,000,000 per year until the earlier of 1) the year after the plan reaches full funding on an actuarial value of assets basis, and 2) July 1, 2048.
Allowable service	Service as a judge. Credit may also be earned for uncredited judicial service if the appropriate employee contributions, with interest, are made.
Salary	Salary set by law.
Average salary	Average of the five highest years of salary of the last 10 years prior to termination of judicial service.

Summary of Plan Provisions (Continued)

Retirement	
<u>Normal retirement benefit</u>	
Age/Service requirement	First appointed as a judge before July 1, 2013 (Tier 1): (a.) Age 65 and five years of Allowable Service (b.) Age 70 (mandatory retirement age) First appointed as a judge after June 30, 2013 (Tier 2): (a.) Age 66 and five years of Allowable Service (b.) Age 70 (mandatory retirement age) Judges appointed before July 1, 2013, with less than five years of allowable service on or before December 31, 2013, may make a one-time election for the Tier 2 benefit package.
Amount	First appointed as a judge before July 1, 2013 (Tier 1): 2.70% of Average Salary for each year of Allowable Service prior to July 1, 1980, and 3.20% of Average Salary for each year of Allowable Service after June 30, 1980. Maximum benefit equal to 76.80% of Average Salary. First appointed as a judge after June 30, 2013 (Tier 2): 2.50% of Average Salary for each year of Allowable Service. Tier 1 who elected into Tier 2: 3.20% of Average Salary for each year of Allowable Service prior to January 1, 2014, plus 2.50% of Average Salary for each year of Allowable Service after December 31, 2013.
<u>Early retirement</u>	
Age/Service requirement	Age 60 and five years of Allowable Service.
Amount	Normal Retirement Benefit based on Allowable Service and Average Salary at retirement date with reduction of 0.50% for each month the member is under Normal Retirement Age at time of retirement.
<u>Form of payment</u>	Life annuity. Actuarially equivalent options are: (a.) 50%,75% or 100% joint and survivor with no bounce back feature (b.) 50%, 75% or 100% with bounce back feature (c.) 15-year certain and life thereafter
<u>Benefit increases</u>	Since January 1, 2014, benefit recipients receive annual 1.75% benefit increases. If the accrued liability funding ratio reaches or exceeds 70% for two consecutive years (on a Market Value of Assets basis), the benefit increase will revert to 2.00%. If the accrued liability funding ratio reaches or exceeds 90% for two consecutive years (on a Market Value of Assets basis), the benefit increase will revert to 2.50%.

Summary of Plan Provisions (Continued)

Benefit increases (Continued)	A benefit recipient who has been receiving a benefit for at least 12 full months as of the June 30 of the calendar year immediately before the adjustment will receive a full increase. Members receiving benefits for at least one month but less than 12 full months as of the June 30 of the calendar year immediately before the adjustment will receive a pro rata increase.
Disability	
Disability benefit	
Age/Service requirement	Permanent inability to perform the function of judge.
Amount	No benefit is paid by the Fund. Instead salary is continued for one year but not beyond age 70. Employee contributions continue and Allowable Service is earned. If disability continues after the first year (or at age 70 if earlier), the larger of 25.00% of Average Salary or the Normal Retirement Benefit, without reduction.
Retirement after disability	
Age/Service requirement	Member is still disabled after salary payments cease after one year or at age 70, if earlier.
Amount	No change in disability benefit amount from pre-retirement computed benefit amount.
Form of payment	Same as for retirement.
Benefit increases	Same as for retirement.
Death	
Survivor's benefit	
Age/service requirement	Active or disabled member dies before retirement or a former member eligible for a deferred annuity dies.
Amount	Larger of 25% of Average Salary or 60% of Normal Retirement Benefit earned at date of death. If member dies after age 60 with five or more years of service, spouse may receive the 100% joint and survivor benefit the member had earned as of date of death. Benefit paid to spouse for life. If no spouse, benefit is paid to surviving dependent children until child marries, dies, or attains age 18 (age 22 if full-time student).
Benefit increases	Same as for retirement.
Refund of contributions	
Age/service requirement	Member dies prior to retirement or former member eligible for a deferred annuity dies and survivors' benefits are not payable.
Amount	Member's contributions with 6.00% interest through June 30, 2011. Beginning July 1, 2011, a member's contributions increase at 4.00% interest. Beginning July 1, 2018, a member's contributions increase at 3.00% interest.

Summary of Plan Provisions (Concluded)

Termination	
Refund of contributions	
Age/Service requirement	Termination of service as a judge.
Amount	Member's contributions with 6.00% interest through June 30, 2011. Beginning July 1, 2011, a member's contributions increase at 4.00% interest. Beginning July 1, 2018, a member's contributions increase at 3.00% interest. If a member is vested, a deferred annuity may be elected in lieu of a refund.
Deferred benefit	
Age/service requirement	Five years of Allowable Service.
Amount	Benefit computed under law in effect at termination. Amount is payable at normal or early retirement. If a member terminated employment prior to July 1, 1997 but was not eligible to commence their pension before July 1, 1997, an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%.
Form of payment	Same as for retirement.
Optional form conversion factors	Effective July 1, 2019 and phased in over a 24-month period, actuarially equivalent factors based on the RP-2014 mortality table for healthy annuitants for a member turning age 66 in 2021, reflecting projected mortality improvements using Scale MP-2017, white collar adjustment, blended 70% males, 5.65% post-retirement interest, and 7.50% pre-retirement interest. Reflecting statutory requirements, joint and survivor factors are based on an interest assumption of 6.50%.
Combined service annuity	Members are eligible for combined service benefits if they: (a.) Have sufficient allowable service in total that equals or exceeds the applicable service credit vesting requirement of the retirement plan with the longest applicable service credit vesting requirement; (b.) Have at least six months of allowable service credit in each plan worked under; and (c.) Are not in receipt of a benefit from another plan, or have applied for benefits with an effective date within one year. Members who meet the above requirements must have their benefit based on the following: (a.) Allowable service in all covered plans are combined in order to determine eligibility for early retirement; and (b.) Average salary is based on the high five consecutive years during their entire service in all covered plans.
Changes in plan provisions	There have been no changes in plan provisions since the previous valuation.

SECTION F

ACTUARIAL COST METHOD AND ACTUARIAL ASSUMPTIONS

Actuarial Methods Used for the Determination of Total Pension Liability and Related Values

Actuarial Cost Method

Normal cost and the allocation of benefit values between service rendered before and after the valuation date were determined using an **Individual Entry-Age Actuarial Cost Method** having the following characteristics:

(i) the annual normal cost for each individual active member, payable from the date of employment to the date of retirement, is sufficient to accumulate the value of the member's benefit at the time of retirement; and

(ii) each annual normal cost is a constant percentage of the member's year by year projected covered pay.

Actuarial gains/(losses), as they occur, reduce (increase) the Total Pension Liability.

Valuation of Future Post-Retirement Benefit Increases

Benefit recipients receive a future annual 1.75% post-retirement benefit increase. If the funding ratio (determined on a market value of assets basis) reaches 70% (based on a 2.00% post-retirement benefit increase assumption) for two consecutive years, the benefit increase will increase to 2.00%, if the funding ratio reaches 90% (based on a 2.50% post-retirement benefit increase assumption) for two consecutive years, the benefit increase reverts to 2.50%.

To determine an assumption regarding a future change in the post-retirement benefit increase, we performed a projection of liabilities and assets based on the following methods and assumptions:

- Future investment returns of 7.50%
- Liabilities and normal cost based on statutory funding assumptions
    - Discount rate of 7.50%
    - Statutory salary increases of 2.50%
- Open group; stable active population (new member profile based on average new members hired in recent years)
- The post-retirement benefit increase rate is assumed to be 1.75% per year until the funding ratio threshold required to pay a 2.00% post-retirement benefit increase is reached and is assumed to be 2.00% per year until the threshold required to pay a 2.50% post-retirement benefit increase is reached
- Current statutory contributions as directed by MSRS

Based on these assumptions and methods, the projection indicates that this plan is expected to pay 1.75% per annum through 2041, 2.00% per annum for the years 2042 through 2058, and 2.50% per annum thereafter. This assumption is reflected in our calculations.

Asset Valuation Method

Fair value of assets.

Summary of Actuarial Assumptions Used for the Determination of Total Pension Liability and Related Values

The following assumptions were used in valuing the liabilities and benefits under the plan. The assumptions are based on the last experience study, dated July 26, 2016, and a review of inflation and investment return assumptions, in the last experience study for the State Employees Retirement Fund, dated June 27, 2019.

Investment return	7.50% per annum.
Single discount rate	7.50% per annum.
Benefit increases after retirement	1.75% per annum through 2041, 2.00% per annum from 2042 to 2058, and 2.50% per annum thereafter.
Salary increases	2.50% per year.
Payroll growth	2.50% per year.
Inflation	2.50% per year.
Mortality rates	
Healthy pre-retirement	RP-2014 employee generational mortality table projected with mortality improvement Scale MP-2015 from a base year of 2006, white collar adjustment.
Healthy post-retirement	RP-2014 annuitant generational mortality table projected with mortality improvement Scale MP-2015 from a base year of 2006, white collar adjustment.
Disabled	RP-2014 annuitant generational mortality table projected with mortality improvement Scale MP-2015 from a base year of 2006, white collar adjustment.
Notes	The RP-2014 employee mortality table as published by the Society of Actuaries (SOA) contains mortality rates for ages 18 to 80 and the annuitant mortality table contains mortality rates for ages 50 to 120. We have extended the annuitant mortality table as needed for members and beneficiaries younger than age 50 who are receiving a benefit by deriving rates based on the employee table and the juvenile table. Similarly, we have extended the employee table as needed for members older than age 80 by deriving rates based on the annuitant table.
Retirement	Members retiring from active status are assumed to retire according to the age related rates shown in the rate table. Members who have attained the highest assumed retirement age are assumed to retire in one year.
Withdrawal	None.
Disability	Age-related rates based on experience; see table of sample rates.
Administrative expenses	In the valuation year, equal to prior year administrative expenses expressed as a percentage of prior year projected payroll. In each subsequent year, equal to the initial administrative expense percentage applied to payroll for the closed group.

Summary of Actuarial Assumptions (Continued)

Refund of contributions	Account balances for deferred members accumulate interest until normal retirement date and are discounted back to the valuation date.
Commencement of deferred benefits	Members receiving deferred annuities (including current terminated deferred members) are assumed to begin receiving benefits at age 65.
Percentage married	Marital status as indicated by data.
Age of spouse	Females are assumed to be three years younger than their male spouses.
Form of payment	Members are assumed to elect a life annuity.
Allowance for Combined Service Annuity	None.
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.
Decrement operation	Decrements are assumed to occur mid-fiscal year.
Service credit accruals	It is assumed that members accrue one year of service credit per year.
Pay increases	Pay increases are assumed to happen at the beginning of the fiscal year. This is equivalent to assuming that reported earnings are pensionable earnings for the year ending on the valuation date.
Unknown data for certain members	To prepare this report, GRS has used and relied on participant data supplied by the Fund. Although GRS has reviewed the data in accordance with Actuarial Standards of Practice No. 23, GRS has not verified or audited any of the data or information provided. There were no members reported with missing or invalid birth dates. In cases where submitted data was missing or incomplete, the following assumptions were applied: <u>Data for active members</u>: There were 6 members who have reached the 24-year service cap. We assumed these members earned the greater of the salary reported under the Unclassified Employees Retirement Plan or $161,108 for the July 1, 2019 to June 30, 2020 plan year. There were no members reported with missing service. There were no members reported with a missing or invalid gender.

Summary of Actuarial Assumptions (Continued)

Unknown data for certain members	Data for terminated members: There were no members reported without a benefit and no members reported with a missing or invalid gender. Data for members receiving benefits: There were no members reported without a benefit. There were two members reported with a missing gender. We assumed male gender for retirees and female gender for survivors. There were no retirees reported with a bounceback survivor option and a survivor date of death. There were 3 retirees reported with a bounceback annuity and an unreasonable reduction factor. A factor of 0.80, 0.85 and 0.90 was assumed for the 100%, 75% and 50% joint and survivor annuity, respectively. There were no survivors reported on the data file with an expired benefit. There were retired members reported with a survivor option and an invalid or missing survivor gender (39 members) and/or survivor date of birth (31 members). We used the valuation assumptions if the survivor gender or date of birth was missing or invalid.
Changes in actuarial assumptions	The assumed benefit increase was changed from 1.75% per year through 2039, 2.00% per year from 2040 to 2056 and 2.50% thereafter to 1.75% per year through 2041, 2.00% per year from 2042 to 2058 and 2.50% thereafter. For accounting purposes, this change was treated as a difference between expected and actual experience.

Summary of Actuarial Assumptions (Concluded)

Age in 2020	Percentage of Members Dying each Year*					
	Healthy Post-Retirement Mortality**		Healthy Pre-Retirement Mortality**		Disability Mortality**	
	Male	Female	Male	Female	Male	Female
20	0.02%	0.01%	0.02%	0.01%	0.02%	0.01%
25	0.03	0.02	0.03	0.01	0.03	0.02
30	0.05	0.04	0.03	0.02	0.05	0.04
35	0.07	0.08	0.03	0.03	0.07	0.08
40	0.11	0.11	0.04	0.03	0.11	0.11
45	0.16	0.14	0.06	0.05	0.16	0.14
50	0.24	0.19	0.10	0.08	0.24	0.19
55	0.36	0.27	0.18	0.14	0.36	0.27
60	0.50	0.39	0.31	0.20	0.50	0.39
65	0.72	0.62	0.55	0.30	0.72	0.62
70	1.17	0.99	0.97	0.51	1.17	0.99
75	2.03	1.67	1.74	0.90	2.03	1.67
80	3.61	2.97	3.12	1.61	3.61	2.97
85	6.65	5.44	6.50	4.31	6.65	5.44
90	12.20	9.94	12.34	9.62	12.20	9.94

* *Generally, mortality rates are expected to increase as age increases. These standard mortality rates have been adjusted slightly to prevent decreasing mortality rates. The adjustment has no material effect on results.*

** *Rates are adjusted for mortality improvements using Scale MP-2015 from a base year of 2006.*

Percentage of Eligible Members Retiring each Year				
	Disability Retirement			
Age	Male	Female	Age	Retirement
20	0.00%	0.00%	60	0%
25	0.00	0.00	61	0
30	0.00	0.00	62	8
35	0.00	0.00	63	8
40	0.01	0.01	64	5
45	0.03	0.03	65	20
50	0.05	0.05	66	23
55	0.12	0.12	67	23
60	0.31	0.31	68	20
65	0.00	0.00	69	20
70	0.00	0.00	70	100

SECTION G

CALCULATION OF THE SINGLE DISCOUNT RATE

Calculation of the Single Discount Rate

GASB Statement No. 67 includes a specific requirement for the discount rate that is used for the purpose of the measurement of the Total Pension Liability. This rate considers the ability of the fund to meet benefit obligations in the future. To make this determination, employer contributions, employee contributions, benefit payments, expenses and investment returns are projected into the future. The Plan Fiduciary 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 long-term rate of return is used as the discount rate. 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 plan 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 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 7.50%; the municipal bond rate is 2.45% (based on the weekly rate closest to but not later than the measurement date of the "20-Year Municipal GO Index" as published by Fidelity) and **the resulting single discount rate as of June 30, 2020 is 7.50%.** 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.

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 Fiduciary 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. It breaks down the benefit payments into present values for funded and unfunded portions and shows the equivalent total at the SDR.

Single Discount Rate Development
Projection of Contributions (Dollars in Thousands)

	Projected Covered-Employee Payroll			Projected Contributions				
Fiscal Year Ending	Payroll for Current Employees	Payroll for New Employees	Total Employee Payroll	Contributions from Current Employees	Employer Contributions for Current Employees	Contributions on Future Payroll toward Current UAL*	Additional State Contributions	Total Contributions
	(a)	(b)	(c) = (a) + (b)	(d)	(e)	(f)		(g) = (d) + (e) + (f)
2020	$ 52,298		$ 52,298					
2021	52,057	$ 1,114	53,171	$ 4,163	$ 11,713	$ 124	$ 6,000	$ 22,000
2022	50,351	4,150	54,501	4,009	11,329	461	6,000	21,799
2023	48,089	7,774	55,863	3,810	10,820	867	6,000	21,497
2024	46,121	11,139	57,260	3,636	10,377	1,245	6,000	21,258
2025	44,202	14,489	58,691	3,468	9,946	1,624	6,000	21,038
2026	42,336	17,823	60,159	3,305	9,526	2,003	6,000	20,834
2027	40,493	21,170	61,663	3,146	9,111	2,386	6,000	20,643
2028	38,564	24,640	63,204	2,981	8,677	2,784	6,000	20,442
2029	36,448	28,336	64,784	2,804	8,201	3,210	6,000	20,215
2030	34,127	32,277	66,404	2,612	7,678	3,667	6,000	19,957
2031	31,884	36,180	68,064	2,428	7,174	4,121	6,000	19,723
2032	29,640	40,126	69,766	2,246	6,669	4,582	6,000	19,497
2033	27,303	44,207	71,510	2,058	6,143	5,062	6,000	19,263
2034	25,075	48,222	73,297	1,881	5,642	5,536	6,000	19,059
2035	23,007	52,123	75,130	1,717	5,177	5,999	6,000	18,893
2036	20,832	56,176	77,008	1,546	4,687	6,483	6,000	18,716
2037	18,465	60,468	78,933	1,364	4,155	6,996	6,000	18,515
2038	16,251	64,656	80,907	1,194	3,656	7,500	6,000	18,350
2039	14,294	68,635	82,929	1,045	3,216	7,982	6,000	18,243
2040	12,451	72,552	85,003	905	2,802	8,459	6,000	18,166
2041	10,623	76,505	87,128	768	2,390	8,943	6,000	18,101
2042	8,990	80,316	89,306	647	2,023	9,413	6,000	18,083
2043	7,445	84,093	91,538	533	1,675	9,881	6,000	18,089
2044	5,993	87,834	93,827	426	1,348	10,347	6,000	18,121
2045	4,806	91,367	96,173	340	1,081	10,790	6,000	18,211
2046	3,687	94,890	98,577	260	830	11,235	6,000	18,325
2047	2,673	98,368	101,041	187	601	11,676	6,000	18,464
2048	1,901	101,666	103,567	133	428	12,068	-	12,629
2049	1,334	104,822	106,156	93	300	12,442	-	12,835
2050	870	107,940	108,810	61	196	12,813	-	13,070
2051	498	111,033	111,531	35	112	13,180	-	13,327
2052	285	114,034	114,319	20	64	13,536	-	13,620
2053	113	117,064	117,177	8	25	13,896	-	13,929
2054	-	120,106	120,106	-	-	14,257	-	14,257
2055	-	123,109	123,109	-	-	14,613	-	14,613
2056	-	126,187	126,187	-	-	14,978	-	14,978
2057	-	129,341	129,341	-	-	15,353	-	15,353
2058	-	132,575	132,575	-	-	15,737	-	15,737
2059	-	135,889	135,889	-	-	16,130	-	16,130
2060	-	139,287	139,287	-	-	16,533	-	16,533
2061	-	142,769	142,769	-	-	16,947	-	16,947
2062	-	146,338	146,338	-	-	17,370	-	17,370
2063	-	149,996	149,996	-	-	17,805	-	17,805
2064	-	153,746	153,746	-	-	18,250	-	18,250
2065	-	157,590	157,590	-	-	18,706	-	18,706
2066	-	161,530	161,530	-	-	19,174	-	19,174
2067	-	165,568	165,568	-	-	19,653	-	19,653
2068	-	169,707	169,707	-	-	20,144	-	20,144
2069	-	173,950	173,950	-	-	20,648	-	20,648
2070	-	178,299	178,299	-	-	21,164	-	21,164

* *Equal to total contributions (29.50% of payroll for new employees) net of normal cost and expenses. Normal cost and expenses initially total 19.41% of pay but trend down over the projection period (based on the projection assumptions) due to the recognition of lower normal costs for Judges hired after June 30, 2013.*

Single Discount Rate Development
Projection of Contributions (Dollars in Thousands, Concluded)

	Projected Covered-Employee Payroll			Projected Contributions				
Fiscal Year Ending	Payroll for Current Employees	Payroll for New Employees	Total Employee Payroll	Contributions from Current Employees	Employer Contributions for Current Employees	Contributions on Future Payroll toward Current UAL*	Additional State Contributions	Total Contributions
	(a)	(b)	(c) = (a) + (b)	(d)	(e)	(f)		(g) = (d) + (e) + (f)
2071	$ -	$ 182,756	$ 182,756	$ -	$ -	$ 21,693	$ -	$ 21,693
2072	-	187,325	187,325	-	-	22,235	-	22,235
2073	-	192,008	192,008	-	-	22,791	-	22,791
2074	-	196,808	196,808	-	-	23,361	-	23,361
2075	-	201,728	201,728	-	-	23,945	-	23,945
2076	-	206,772	206,772	-	-	24,544	-	24,544
2077	-	211,941	211,941	-	-	25,157	-	25,157
2078	-	217,239	217,239	-	-	25,786	-	25,786
2079	-	222,670	222,670	-	-	26,431	-	26,431
2080	-	228,237	228,237	-	-	27,092	-	27,092
2081	-	233,943	233,943	-	-	27,769	-	27,769
2082	-	239,792	239,792	-	-	28,463	-	28,463
2083	-	245,786	245,786	-	-	29,175	-	29,175
2084	-	251,931	251,931	-	-	29,904	-	29,904
2085	-	258,229	258,229	-	-	30,652	-	30,652
2086	-	264,685	264,685	-	-	31,418	-	31,418
2087	-	271,302	271,302	-	-	32,204	-	32,204
2088	-	278,085	278,085	-	-	33,009	-	33,009
2089	-	285,037	285,037	-	-	33,834	-	33,834
2090	-	292,163	292,163	-	-	34,680	-	34,680
2091	-	299,467	299,467	-	-	35,547	-	35,547
2092	-	306,954	306,954	-	-	36,435	-	36,435
2093	-	314,627	314,627	-	-	37,346	-	37,346
2094	-	322,493	322,493	-	-	38,280	-	38,280
2095	-	330,555	330,555	-	-	39,237	-	39,237
2096	-	338,819	338,819	-	-	40,218	-	40,218
2097	-	347,290	347,290	-	-	41,223	-	41,223
2098	-	355,972	355,972	-	-	42,254	-	42,254
2099	-	364,871	364,871	-	-	43,310	-	43,310
2100	-	373,993	373,993	-	-	44,393	-	44,393
2101	-	383,343	383,343	-	-	45,503	-	45,503
2102	-	392,927	392,927	-	-	46,640	-	46,640
2103	-	402,750	402,750	-	-	47,806	-	47,806
2104	-	412,819	412,819	-	-	49,002	-	49,002
2105	-	423,139	423,139	-	-	50,227	-	50,227
2106	-	433,717	433,717	-	-	51,482	-	51,482
2107	-	444,560	444,560	-	-	52,769	-	52,769
2108	-	455,674	455,674	-	-	54,089	-	54,089
2109	-	467,066	467,066	-	-	55,441	-	55,441
2110	-	478,743	478,743	-	-	56,827	-	56,827
2111	-	490,711	490,711	-	-	58,247	-	58,247
2112	-	502,979	502,979	-	-	59,704	-	59,704
2113	-	515,554	515,554	-	-	61,196	-	61,196
2114	-	528,443	528,443	-	-	62,726	-	62,726
2115	-	541,654	541,654	-	-	64,294	-	64,294
2116	-	555,195	555,195	-	-	65,902	-	65,902
2117	-	569,075	569,075	-	-	67,549	-	67,549
2118	-	583,302	583,302	-	-	69,238	-	69,238
2119	-	597,884	597,884	-	-	70,969	-	70,969
2120	-	612,831	612,831	-	-	73,417	-	73,417

* *Equal to total contributions (29.50% of payroll for new employees) net of normal cost and expenses. Normal cost and expenses initially total 19.41% of pay but trend down over the projection period (based on the projection assumptions) due to the recognition of lower normal costs for Judges hired after June 30, 2013.*

Single Discount Rate Development
Projection of Plan Fiduciary Net Position (Dollars in Thousands)

Fiscal Year Ending	Projected Beginning Plan Fiduciary Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 7.50%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
2021	$ 216,737	$ 22,000	$ 26,980	$ 115	$ 16,068	$ 227,710
2022	227,710	21,799	28,123	111	16,841	238,116
2023	238,116	21,497	29,572	106	17,558	247,493
2024	247,493	21,258	30,925	101	18,203	255,928
2025	255,928	21,038	32,211	97	18,780	263,438
2026	263,438	20,834	33,393	93	19,292	270,078
2027	270,078	20,643	34,571	89	19,740	275,801
2028	275,801	20,442	35,764	85	20,118	280,512
2029	280,512	20,215	36,893	80	20,421	284,175
2030	284,175	19,957	38,152	75	20,641	286,546
2031	286,546	19,723	39,244	70	20,770	287,725
2032	287,725	19,497	40,281	65	20,812	287,688
2033	287,688	19,263	41,277	60	20,764	286,378
2034	286,378	19,059	42,065	55	20,629	283,946
2035	283,946	18,893	42,676	51	20,418	280,530
2036	280,530	18,716	43,228	46	20,135	276,107
2037	276,107	18,515	43,832	41	19,774	270,523
2038	270,523	18,350	44,236	36	19,335	263,936
2039	263,936	18,243	44,398	31	18,831	256,581
2040	256,581	18,166	44,436	27	18,275	248,559
2041	248,559	18,101	44,331	23	17,675	239,981
2042	239,981	18,083	44,077	20	17,041	231,008
2043	231,008	18,089	43,743	16	16,380	221,718
2044	221,718	18,121	43,270	13	15,702	212,258
2045	212,258	18,211	42,554	11	15,023	202,927
2046	202,927	18,325	41,727	8	14,357	193,874
2047	193,874	18,464	40,785	6	13,718	185,265
2048	185,265	12,629	39,659	4	12,899	171,130
2049	171,130	12,835	38,385	3	11,894	157,471
2050	157,471	13,070	37,032	2	10,928	144,435
2051	144,435	13,327	35,611	1	10,012	132,162
2052	132,162	13,620	34,096	1	9,158	120,843
2053	120,843	13,929	32,562	-	8,377	110,587
2054	110,587	14,257	31,001	-	7,678	101,521
2055	101,521	14,613	29,393	-	7,070	93,811
2056	93,811	14,978	27,805	-	6,564	87,548
2057	87,548	15,353	26,237	-	6,165	82,829
2058	82,829	15,737	24,693	-	5,882	79,755
2059	79,755	16,130	23,229	-	5,720	78,376
2060	78,376	16,533	21,839	-	5,683	78,753
2061	78,753	16,947	20,465	-	5,777	81,012
2062	81,012	17,370	19,109	-	6,012	85,285
2063	85,285	17,805	17,775	-	6,397	91,712
2064	91,712	18,250	16,465	-	6,944	100,441
2065	100,441	18,706	15,181	-	7,663	111,629
2066	111,629	19,174	13,929	-	8,565	125,439
2067	125,439	19,653	12,712	-	9,664	142,044
2068	142,044	20,144	11,536	-	10,970	161,622
2069	161,622	20,648	10,406	-	12,499	184,363
2070	184,363	21,164	9,327	-	14,263	210,463

For purposes of this projection, we assumed the current fixed rate contribution would continue after the plan becomes fully funded. If we reflected a decrease in contribution rates due to full funding, future assets and contributions would be less than what is shown herein.

Single Discount Rate Development
Projection of Plan Fiduciary Net Position
(Dollars in Thousands, Concluded)

Fiscal Year Ending	Projected Beginning Plan Fiduciary Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 7.50%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
2071	$ 210,463	$ 21,693	$ 8,303	$ -	$ 16,278	$ 240,131
2072	240,131	22,235	7,339	-	18,558	273,585
2073	273,585	22,791	6,437	-	21,121	311,060
2074	311,060	23,361	5,600	-	23,984	352,805
2075	352,805	23,945	4,829	-	27,164	399,085
2076	399,085	24,544	4,125	-	30,683	450,187
2077	450,187	25,157	3,489	-	34,562	506,417
2078	506,417	25,786	2,920	-	38,823	568,106
2079	568,106	26,431	2,415	-	43,492	635,614
2080	635,614	27,092	1,973	-	48,596	709,329
2081	709,329	27,769	1,590	-	54,164	789,672
2082	789,672	28,463	1,263	-	60,227	877,099
2083	877,099	29,175	987	-	66,821	972,108
2084	972,108	29,904	759	-	73,982	1,075,235
2085	1,075,235	30,652	573	-	81,750	1,187,064
2086	1,187,064	31,418	424	-	90,171	1,308,229
2087	1,308,229	32,204	307	-	99,292	1,439,418
2088	1,439,418	33,009	218	-	109,164	1,581,373
2089	1,581,373	33,834	151	-	119,844	1,734,900
2090	1,734,900	34,680	102	-	131,391	1,900,869
2091	1,900,869	35,547	67	-	143,872	2,080,221
2092	2,080,221	36,435	42	-	157,357	2,273,971
2093	2,273,971	37,346	26	-	171,922	2,483,213
2094	2,483,213	38,280	16	-	187,650	2,709,127
2095	2,709,127	39,237	9	-	204,629	2,952,984
2096	2,952,984	40,218	5	-	222,955	3,216,152
2097	3,216,152	41,223	3	-	242,730	3,500,102
2098	3,500,102	42,254	1	-	264,064	3,806,419
2099	3,806,419	43,310	1	-	287,076	4,136,804
2100	4,136,804	44,393	-	-	311,895	4,493,092
2101	4,493,092	45,503	-	-	338,658	4,877,253
2102	4,877,253	46,640	-	-	367,512	5,291,405
2103	5,291,405	47,806	-	-	398,616	5,737,827
2104	5,737,827	49,002	-	-	432,142	6,218,971
2105	6,218,971	50,227	-	-	468,273	6,737,471
2106	6,737,471	51,482	-	-	507,206	7,296,159
2107	7,296,159	52,769	-	-	549,155	7,898,083
2108	7,898,083	54,089	-	-	594,348	8,546,520
2109	8,546,520	55,441	-	-	643,031	9,244,992
2110	9,244,992	56,827	-	-	695,467	9,997,286
2111	9,997,286	58,247	-	-	751,941	10,807,474
2112	10,807,474	59,704	-	-	812,759	11,679,937
2113	11,679,937	61,196	-	-	878,249	12,619,382
2114	12,619,382	62,726	-	-	948,764	13,630,872
2115	13,630,872	64,294	-	-	1,024,683	14,719,849
2116	14,719,849	65,902	-	-	1,106,416	15,892,167
2117	15,892,167	67,549	-	-	1,194,400	17,154,116
2118	17,154,116	69,238	-	-	1,289,108	18,512,462
2119	18,512,462	70,969	-	-	1,391,048	19,974,479
2120	19,974,479	73,417	-	-	1,500,790	21,548,686

For purposes of this projection, we assumed the current fixed rate contribution would continue after the plan becomes fully funded. If we reflected a decrease in contribution rates due to full funding, future assets and contributions would be less than what is shown herein.

Single Discount Rate Development
Present Values of Projected Benefits (Dollars in Thousands)

Fiscal Year Ending	Projected Beginning Plan Fiduciary Net Position	Projected Benefit Payments	Funded Portion of Benefit Payments	Unfunded Portion of 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 Benefit Payments using Single Discount Rate (sdr)
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v^((a)-.5)	(g)=(e)*vf ^((a)-.5)	(h)=(c)/(1+sdr)^(a-.5)
2018	$ 216,737	$ 26,980	$ 26,980	$ -	$ 26,022	$ -	$ 26,022
2019	227,710	28,123	28,123	-	25,232	-	25,232
2020	238,116	29,572	29,572	-	24,681	-	24,681
2021	247,493	30,925	30,925	-	24,009	-	24,009
2022	255,928	32,211	32,211	-	23,263	-	23,263
2023	263,438	33,393	33,393	-	22,434	-	22,434
2024	270,078	34,571	34,571	-	21,605	-	21,605
2025	275,801	35,764	35,764	-	20,791	-	20,791
2026	280,512	36,893	36,893	-	19,951	-	19,951
2027	284,175	38,152	38,152	-	19,193	-	19,193
2028	286,546	39,244	39,244	-	18,365	-	18,365
2029	287,725	40,281	40,281	-	17,535	-	17,535
2030	287,688	41,277	41,277	-	16,715	-	16,715
2031	286,378	42,065	42,065	-	15,846	-	15,846
2032	283,946	42,676	42,676	-	14,954	-	14,954
2033	280,530	43,228	43,228	-	14,091	-	14,091
2034	276,107	43,832	43,832	-	13,291	-	13,291
2035	270,523	44,236	44,236	-	12,477	-	12,477
2036	263,936	44,398	44,398	-	11,650	-	11,650
2037	256,581	44,436	44,436	-	10,846	-	10,846
2038	248,559	44,331	44,331	-	10,066	-	10,066
2039	239,981	44,077	44,077	-	9,310	-	9,310
2040	231,008	43,743	43,743	-	8,595	-	8,595
2041	221,718	43,270	43,270	-	7,908	-	7,908
2042	212,258	42,554	42,554	-	7,235	-	7,235
2043	202,927	41,727	41,727	-	6,599	-	6,599
2044	193,874	40,785	40,785	-	6,000	-	6,000
2045	185,265	39,659	39,659	-	5,428	-	5,428
2046	171,130	38,385	38,385	-	4,887	-	4,887
2047	157,471	37,032	37,032	-	4,386	-	4,386
2048	144,435	35,611	35,611	-	3,923	-	3,923
2049	132,162	34,096	34,096	-	3,494	-	3,494
2050	120,843	32,562	32,562	-	3,104	-	3,104
2051	110,587	31,001	31,001	-	2,749	-	2,749
2052	101,521	29,393	29,393	-	2,425	-	2,425
2053	93,811	27,805	27,805	-	2,134	-	2,134
2054	87,548	26,237	26,237	-	1,873	-	1,873
2055	82,829	24,693	24,693	-	1,640	-	1,640
2056	79,755	23,229	23,229	-	1,435	-	1,435
2057	78,376	21,839	21,839	-	1,255	-	1,255
2058	78,753	20,465	20,465	-	1,094	-	1,094
2059	81,012	19,109	19,109	-	950	-	950
2060	85,285	17,775	17,775	-	822	-	822
2061	91,712	16,465	16,465	-	708	-	708
2062	100,441	15,181	15,181	-	608	-	608
2063	111,629	13,929	13,929	-	519	-	519
2064	125,439	12,712	12,712	-	440	-	440
2065	142,044	11,536	11,536	-	372	-	372
2066	161,622	10,406	10,406	-	312	-	312
2067	184,363	9,327	9,327	-	260	-	260

Single Discount Rate Development
Present Values of Projected Benefits
(Dollars in Thousands, Concluded)

Fiscal Year Ending	Projected Beginning Plan Fiduciary Net Position	Projected Benefit Payments	Funded Portion of Benefit Payments	Unfunded Portion of 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 Benefit Payments using Single Discount Rate (sdr)
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v^((a)-.5)	(g)=(e)*vf ^((a)-.5)	(h)=(c)/(1+sdr)^(a-.5)
2068	$ 210,463	$ 8,303	$ 8,303	$ -	$ 26,022	$ -	$ 215
2069	240,131	7,339	7,339	-	25,232	-	177
2070	273,585	6,437	6,437	-	24,681	-	144
2071	311,060	5,600	5,600	-	24,009	-	117
2072	352,805	4,829	4,829	-	23,263	-	94
2073	399,085	4,125	4,125	-	22,434	-	75
2074	450,187	3,489	3,489	-	21,605	-	59
2075	506,417	2,920	2,920	-	20,791	-	46
2076	568,106	2,415	2,415	-	19,951	-	35
2077	635,614	1,973	1,973	-	19,193	-	27
2078	709,329	1,590	1,590	-	18,365	-	20
2079	789,672	1,263	1,263	-	17,535	-	15
2080	877,099	987	987	-	16,715	-	11
2081	972,108	759	759	-	15,846	-	8
2082	1,075,235	573	573	-	14,954	-	5
2083	1,187,064	424	424	-	14,091	-	4
2084	1,308,229	307	307	-	13,291	-	3
2085	1,439,418	218	218	-	12,477	-	2
2086	1,581,373	151	151	-	11,650	-	1
2087	1,734,900	102	102	-	10,846	-	1
2088	1,900,869	67	67	-	10,066	-	0
2089	2,080,221	42	42	-	9,310	-	0
2090	2,273,971	26	26	-	8,595	-	0
2091	2,483,213	16	16	-	7,908	-	0
2092	2,709,127	9	9	-	7,235	-	0
2093	2,952,984	5	5	-	6,599	-	0
2094	3,216,152	3	3	-	6,000	-	0
2095	3,500,102	1	1	-	5,428	-	0
2096	3,806,419	1	1	-	4,887	-	0
2097	4,136,804	-	-	-	4,386	-	0
2098	4,493,092	-	-	-	3,923	-	0
2099	4,877,253	-	-	-	3,494	-	0
2100	5,291,405	-	-	-	3,104	-	0
2101	5,737,827	-	-	-	2,749	-	0
2102	6,218,971	-	-	-	2,425	-	-
2103	6,737,471	-	-	-	2,134	-	-
2104	7,296,159	-	-	-	1,873	-	-
2105	7,898,083	-	-	-	1,640	-	-
2106	8,546,520	-	-	-	1,435	-	-
2107	9,244,992	-	-	-	1,255	-	-
2108	9,997,286	-	-	-	1,094	-	-
2109	10,807,474	-	-	-	950	-	-
2110	11,679,937	-	-	-	822	-	-
2111	12,619,382	-	-	-	708	-	-
2112	13,630,872	-	-	-	608	-	-
2113	14,719,849	-	-	-	519	-	-
2114	15,892,167	-	-	-	440	-	-
2115	17,154,116	-	-	-	372	-	-
2116	18,512,462	-	-	-	312	-	-
2117	19,974,479	-	-	-	260	-	-
				Totals	$ 474,536	$ -	$ 474,536

SECTION H

GLOSSARY OF TERMS

Glossary of Terms

Accrued Service	Service credited under the system which was rendered before the date of the actuarial valuation.
Actuarial Accrued Liability (AAL)	The AAL is the difference between the actuarial present value of all benefits and the actuarial value of future normal costs. The definition comes from the fundamental equation of funding which states that the present value of all benefits is the sum of the Actuarial Accrued Liability and the present value of future normal costs. The AAL may also be referred to as "accrued liability" or "actuarial liability."
Actuarial Assumptions	These assumptions are estimates of future experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and compensation increases. Actuarial assumptions are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (compensation increases, payroll growth, inflation and investment return) consist of an underlying real rate of return plus an assumption for a long-term average rate of inflation.
Actuarial Cost Method	A mathematical budgeting procedure for allocating the dollar amount of the actuarial present value of the pension trust benefits between future normal cost and actuarial accrued liability. The actuarial cost method may also be referred to as the actuarial funding method.
Actuarial Equivalent	A single amount or series of amounts of equal actuarial value to another single amount or series of amounts, computed on the basis of appropriate actuarial assumptions.
Actuarial Gain (Loss)	The difference in liabilities between actual experience and expected experience during the period between two actuarial valuations is the gain (loss) on the accrued liabilities.
Actuarial Present Value (APV)	The amount of funds currently required to provide a payment or series of payments in the future. The present value is determined by discounting future benefit payments at predetermined rates of interest to reflect the expected effects of the time value (present value) of money and the probabilities of payment.
Actuarial Valuation	The actuarial valuation report determines, as of the actuarial valuation date, the service cost, total pension liability, and related actuarial present value of projected benefit payments for pensions performed in conformity with Actuarial Standards of Practice unless otherwise specified by the GASB.
Actuarial Valuation Date	The date as of which an actuarial valuation is performed.
Actuarially Determined Contribution (ADC)	A calculated contribution into a defined benefit pension plan for the reporting period, most often determined based on the funding policy of the plan. Typically, the Actuarially Determined Contribution has a normal cost payment and an amortization payment.

Glossary of Terms

Amortization Payment	The amortization payment is the periodic payment required to pay off an interest-discounted amount with payments of interest and principal.
Amortization Method	The method used to determine the periodic amortization payment may be a level dollar amount, or a level percent of pay amount. The period will typically be expressed in years, and the method will either be "open" (meaning, reset each year) or "closed" (the number of years remaining will decline each year).
Cost-of-Living Adjustments	Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.
Cost-Sharing Multiple-Employer Defined Benefit Pension Plan (cost-sharing pension plan)	A multiple-employer defined benefit pension plan in which the pension obligations to the employees of more than one employer are pooled and pension plan assets can be used to pay the benefits of the employees of any employer that provides pensions through the pension plan.
Covered-Employee Payroll	The payroll of covered employees, which is typically only the pensionable pay and does not include pay above any pay cap.
Deferred Inflows and Outflows of Resources	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.
Discount Rate or Single 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 or Entry Age Normal (EAN)	The EAN is a funding 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 age(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.

Glossary of Terms

Fiduciary Net Position	The fiduciary net position is the value of the net assets of the trust restricted for pension benefits.
GASB	The Governmental Accounting Standards Board is an organization that exists with authority to promulgate accounting standards for state and local governmental entities.
Long-Term Expected Rate of Return	The long-term rate of return is the expected return to be earned over the entire trust portfolio based on the asset allocation of the portfolio.
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.
Non-Employer Contributing Entities	Non-employer contributing entities are entities that make contributions to a pension plan that is used to provide pensions to the employees of other entities. For purposes of the GASB Accounting Statements No. 67 and No. 68 plan members are not considered non-employer contributing entities.
Normal Cost	The actuarial present value of the pension trust benefits allocated to the current year by the actuarial cost method.
Other Postemployment Benefits (OPEB)	All postemployment benefits other than retirement income (such as death benefits, life insurance, disability, and long-term care) that are provided separately from a pension plan, as well as postemployment healthcare benefits regardless of the manner in which they are provided. Other post-employment benefits do not include termination benefits.
Real Rate of Return	The real rate of return is the rate of return on an investment after adjustment to eliminate inflation.
Service Cost	The service cost is the portion of the actuarial present value of projected benefit payments that is attributed to a valuation year.

Glossary of Terms

Total Pension Expense The total pension expense is the sum of the following items that are recognized at the end of the employer's fiscal year:

1. Service Cost
2. Interest on the Total Pension Liability
3. Current-Period Changes in Benefit Terms
4. Employee Contributions
5. Projected Earnings on Plan Investments
6. Pension Plan Administrative Expense
7. Other Changes in Plan Fiduciary Net Position
8. Recognition of Outflow (Inflow) of Resources due to the difference between expected and actual in measurement of the Total Pension Liability
9. Recognition of Outflow (Inflow) of Resources due to Assumption Changes
10. Recognition of Outflow (Inflow) of Resources due to the difference between projected and actual earnings on pension plan investments

Total Pension Liability (TPL) The TPL is the portion of the actuarial present value of projected benefit payments that is attributed to past periods of member service.

Unfunded Actuarial Accrued Liability (UAAL) The UAAL is the difference between actuarial accrued liability and valuation assets.

Valuation Assets The valuation assets are the plan fiduciary net position used in determining the net position liability of the plan. For purposes of the GASB Statement No. 67, the asset valuation method is equal to the market value of assets.