

# Public Employees Retirement Association of Minnesota

Public Employees Police and Fire Plan

GASB Statements No. 67 and No. 68 Accounting and  
Financial Reporting for Pensions

June 30, 2021





November 12, 2021

Public Employees Retirement Association of Minnesota  
Public Employees Police and Fire Plan  
St. Paul, Minnesota

Dear Trustees of the Public Employees Police and Fire Plan:

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 Public Employees Police and Fire Plan ("PEPFP"), 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 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 obligations. 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. PERA is responsible for preparing the Schedule of Employer Allocations and the Schedule of Pension Amounts by Employer. This report may be provided to parties other than the Public Employees Retirement Association (PERA) only in its entirety and only with the permission of PERA. GRS is not responsible for unauthorized use of this report.

This report is based upon information, furnished to us by PERA, 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.

This report complements the actuarial valuation report for funding purposes that was or will be provided to the Plan and should be considered in conjunction with that report. Please see the actuarial valuation report as of June 30, 2021 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 Public Employees Police and Fire Plan 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.

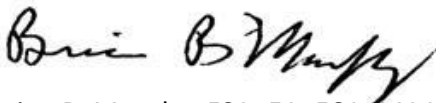
This report reflects the impact of COVID-19 through June 30, 2021. It does not reflect the ongoing impact of COVID-19, which is likely to influence demographic and investment experience, at least in the short term. We will continue to monitor these developments and their impact on the plan.

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 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.

The signing actuaries are independent of the plan sponsor. We are not aware of any relationship that would impair the objectivity of our work.

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,  
Gabriel, Roeder, Smith & Company



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



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



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## **SECTION A**

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### **EXECUTIVE SUMMARY**

# Executive Summary

## as of June 30, 2021 (Dollars in Thousands)

	<b>2021</b>
Actuarial Valuation Date	June 30, 2021
Measurement Date of the Net Pension Liability	June 30, 2021
Employer's Fiscal Year Ending Date (Reporting Date)	Varies by Employer

### Membership

Number of	
- Service Retirements	8,021
- Survivors	1,951
- Disability Retirements	1,684
- Deferred Retirements	1,813
- Terminated other non-vested	912
- Active Members	11,705
- Total	26,086
Covered Payroll	\$ 1,096,195

### Net Pension Liability

Total Pension Liability	\$ 12,169,995
Plan Fiduciary Net Position	\$ 11,398,101
Net Pension Liability	\$ 771,894
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	93.66%
Net Pension Liability as a Percentage of Covered Payroll	70.42%

### Development of the Single Discount Rate

Single Discount Rate	6.50%
Long-Term Expected Rate of Investment Return	6.50%
Long-Term Municipal Bond Rate*	1.92%
Last year ending June 30 in the 2022 to 2121 projection period for which projected benefit payments are fully funded	2121

**Total Pension Expense/(Income)** **\$ (55,463)**

### Deferred Outflows and Inflows 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	\$ 148,252	\$ -
Changes in assumptions	\$ 1,134,482	\$ 424,107
Net difference between projected and actual earnings on pension plan investments	\$ 178,260	\$ 1,653,152
Total	\$ 1,460,994	\$ 2,077,259

\* Source: 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. Governmental Accounting Standards Board (GASB) Statement No. 82, *Pension Issues*, is an amendment to Statements No. 67, No. 68, and No. 73, intended to improve consistency in the application of the accounting standards.

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 PEPFP subsequent to the measurement date of June 30, 2021.

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 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 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; and
- Annual money-weighted rate of return.

## Required Supplementary Information

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.



## 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, 2021 and a measurement date of June 30, 2021.

## 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 there are no changes in benefits, Chapter 356 required contributions are made, and all actuarial assumptions are met (including the assumption of the plan earning 7.50% on an actuarial value of assets basis, as prescribed by statutes), then the following outcomes are expected:

1. The normal cost of the plan is expected to remain approximately level as a percent of pay,
2. The funded status of the plan is expected to gradually improve and is expected to be 100% funded within the next 27 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.

## 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 6.50%; the municipal bond rate is 1.92% (based on the weekly rate closest to but not later than the measurement date of the Fidelity "20-Year Municipal GO AA Index") and the resulting single discount rate is 6.50%.

## **SECTION B**

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### **FINANCIAL STATEMENTS**

# Statement of Pension Expense under GASB Statement No. 68

## Fiscal Year Ended June 30, 2021 (Dollars in Thousands)

### A. Expense

1. Service Cost	\$	226,012
2. Interest on the Total Pension Liability	\$	758,002
3. Current-Period Benefit Changes	\$	-
4. Employee Contributions (made negative for addition here)	\$	(129,351)
5. Projected Earnings on Plan Investments (made negative for addition here)	\$	(663,703)
6. Pension Plan Administrative Expense	\$	941
7. Other Changes in Plan Fiduciary Net Position	\$	(23)
8. Recognition of Outflow (Inflow) of Resources due to differences between expected and actual experience in the measurement of the Total Pension Liability <i>Arising from Current Reporting Period</i>	\$	21,464
9. Recognition of Outflow (Inflow) of Resources due to assumption changes <i>Arising from Current Reporting Period</i>	\$	226,897
10. Recognition of Outflow (Inflow) of Resources due to the difference between projected (7.50%) and actual earnings on Pension Plan Investments <i>Arising from Current Reporting Period</i>	\$	(401,825)
<b>11. Increase/(Decrease) from Experience in the Current Reporting Period</b>	<b>\$</b>	<b><u>38,414</u></b>
12. Recognition of Outflow (Inflow) of Resources due to differences between expected and actual experience in the measurement of the Total Pension Liability <i>Arising from Prior Reporting Periods</i>	\$	(45,286)
13. Recognition of Outflow (Inflow) of Resources due to assumption changes <i>Arising from Prior Reporting Periods</i>	\$	43,777
14. Recognition of Outflow (Inflow) of Resources due to the difference between projected and actual earnings on Pension Plan Investments <i>Arising from Prior Reporting Periods</i>	\$	(92,368)
<b>15. Total Pension Expense / (Income)</b>	<b>\$</b>	<b><u>(55,463)</u></b>

### Recognition of Deferred Outflows and Inflows of Resources

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 157,354 years. Additionally, the total plan membership (active employees and inactive employees) was 25,806. 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 6.00 years (rounded).

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, 2021 (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	\$	128,782
2. Assumption Changes (gains) or losses		1,361,379
3. Recognition period for Liabilities: Average of the expected remaining service lives of all employees {in years}		6.0000
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	\$	21,464
5. Outflow (Inflow) of Resources to be recognized in the current pension expense for Assumption Changes		226,897
6. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Liabilities		248,361
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	\$	107,318
8. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for Assumption Changes		1,134,482
9. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Liabilities		1,241,800

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

1. Net difference between projected and actual earnings on pension plan investments (gains) or losses	\$	(2,009,123)
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	\$	(401,825)
4. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Assets	\$	(1,607,298)

# Statement of Outflows and Inflows Arising from Current and Prior Reporting Periods Fiscal Year Ended June 30, 2021 (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 of Resources
1. Due to Liabilities	\$ 707,395	\$ 460,543	\$ 246,852
2. Due to Assets	60,590	554,783	(494,193)
<b>3. Total</b>	<b>\$ 767,985</b>	<b>\$ 1,015,326</b>	<b>\$ (247,341)</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	\$ 38,773	\$ 62,595	\$ (23,822)
2. Assumption Changes	668,622	397,948	270,674
3. Net Difference between projected and actual earnings on pension plan investments	60,590	554,783	(494,193)
<b>4. Total</b>	<b>\$ 767,985</b>	<b>\$ 1,015,326</b>	<b>\$ (247,341)</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	\$ 148,252	\$ -	\$ 148,252
2. Assumption Changes	1,134,482	424,107	710,375
3. Net Difference between projected and actual earnings on pension plan investments	178,260	1,653,152	(1,474,892)
<b>4. Total</b>	<b>\$ 1,460,994</b>	<b>\$ 2,077,259</b>	<b>\$ (616,265)</b>

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

Year Ending June 30	Net Deferred Outflows of Resources
2022	\$ (519,366)
2023	(96,362)
2024	(96,359)
2025	(152,537)
2026	248,359
Thereafter	0
<b>Total</b>	<b>\$ (616,265)</b>



## Recognition of Deferred Outflows and Inflows of Resources Fiscal Year Ended June 30, 2021 (Dollars in Thousands)

Year Established	Initial Amount	Initial Recognition Period	Current Year Recognition	Remaining Recognition	Remaining Recognition Period
<b>Deferred Outflow (Inflow) Due to Differences Between Expected and Actual Experience on Liabilities</b>					
2016	\$ (375,575)	6.0000	\$ (62,595)	\$ 0	0.0000
2017	37,292	6.0000	6,216	6,216	1.0000
2018	21,720	6.0000	3,620	7,240	2.0000
2019	14,491	6.0000	2,415	7,246	3.0000
2020	30,348	6.0000	5,058	20,232	4.0000
2021	128,782	6.0000	21,464	107,318	5.0000
<b>Total</b>			<b>\$ (23,822)</b>	<b>\$ 148,252</b>	
<b>Deferred Outflow (Inflow) Due to Assumption Changes</b>					
2016	\$ 2,650,350	6.0000	\$ 441,725	\$ 0	0.0000
2017	(2,300,201)	6.0000	(383,367)	(383,366)	1.0000
2018	(42,807)	6.0000	(7,134)	(14,268)	2.0000
2019	(19,898)	6.0000	(3,316)	(9,950)	3.0000
2020	(24,785)	6.0000	(4,131)	(16,523)	4.0000
2021	1,361,379	6.0000	226,897	1,134,482	5.0000
<b>Total</b>			<b>\$ 270,674</b>	<b>\$ 710,375</b>	
<b>Deferred Outflow (Inflow) Due to Differences Between Projected and Actual Earnings on Plan Investments</b>					
2017	\$ (535,516)	5.0000	\$ (107,104)	\$ 0	0.0000
2018	(229,273)	5.0000	(45,854)	(45,854)	1.0000
2019	17,561	5.0000	3,512	7,025	2.0000
2020	285,391	5.0000	57,078	171,235	3.0000
2021	(2,009,123)	5.0000	(401,825)	(1,607,298)	4.0000
<b>Total</b>			<b>\$ (494,193)</b>	<b>\$ (1,474,892)</b>	
<b>Deferred Outflow (Inflow) Due to All Sources</b>					
<b>Total</b>			<b>\$ (247,341)</b>	<b>\$ (616,265)</b>	

## Statement of Fiduciary Net Position (Dollars in Thousands)

Assets in Trust	Market Value	
	June 30, 2021	June 30, 2020
Cash, Equivalents, Short Term Securities	\$ 181,935	\$ 389,655
Fixed Income	\$ 2,585,324	\$ 1,826,327
Equity	\$ 6,647,336	\$ 5,347,942
SBI Alternative	\$ 1,978,079	\$ 1,402,246
Other	\$ -	\$ -
<b>Total Assets in Trust</b>	<b>\$ 11,392,674</b>	<b>\$ 8,966,170</b>
Assets Receivable	\$ 12,147 *	\$ 13,148 *
Amounts Payable	\$ 6,720	\$ 5,858
<b>Net Position Restricted for Pensions</b>	<b>\$ 11,398,101</b>	<b>\$ 8,973,460</b>

\* Includes \$7.679 million contribution receivable from Minneapolis to be paid July 15.



## Statement of Changes in Fiduciary Net Position (Dollars in Thousands)

Change in Assets		Market Value	
Year Ending		June 30, 2021	June 30, 2020
1.	Fund balance at market value at beginning of year	\$ 8,973,460	\$ 8,844,552
2.	Contributions		
	a. Member	\$ 129,351	\$ 123,525
	b. Employer	\$ 201,129 *	\$ 193,819 *
	c. Other sources	\$ 18,000	\$ 13,500
	d. Total contributions	\$ 348,480	\$ 330,844
3.	Investment income		
	a. Investment income/(loss)	\$ 2,683,628	\$ 377,183
	b. Investment expenses	\$ (10,802)	\$ (8,234)
	c. Net subtotal	\$ 2,672,826	\$ 368,949
4.	Other	\$ 23	\$ 260
<b>5.</b>	<b>Total additions: (2.d.) + (3.c.) + (4.)</b>	<b>\$ 3,021,329</b>	<b>\$ 700,053</b>
6.	Benefits Paid		
	a. Annuity benefits	\$ (592,687)	\$ (567,040)
	b. Refunds	\$ (3,060)	\$ (3,181)
	c. Total benefits paid	\$ (595,747)	\$ (570,221)
7.	Expenses		
	a. Other	\$ -	\$ -
	b. Administrative	\$ (941)	\$ (924)
	c. Total expenses	\$ (941)	\$ (924)
<b>8.</b>	<b>Total deductions: (6.c.) + (7.c.)</b>	<b>\$ (596,688)</b>	<b>\$ (571,145)</b>
9.	Net increase (decrease) in net position: (5) + (8)	\$ 2,424,641	\$ 128,908
<b>10.</b>	<b>Net position restricted for pensions</b>	<b>\$ 11,398,101</b>	<b>\$ 8,973,460</b>
11.	State Board of Investment calculated investment return	30.3%	4.2%

\* Includes \$7.679 million contribution receivable from Minneapolis to be paid July 15.

## SECTION C

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### REQUIRED SUPPLEMENTARY INFORMATION

# Schedule of Changes in Net Pension Liability and Related Ratios

## Current Period

### Fiscal Year Ended June 30, 2021 (Dollars in Thousands)

<b>A. Total pension liability</b>	
1. Service cost	\$ 226,012
2. Interest on the total pension liability	\$ 758,002
3. Changes of benefit terms	\$ -
4. Difference between expected and actual experience of the total pension liability	\$ 128,782
5. Changes of assumptions	\$ 1,361,379
6. Benefit payments, including refunds of employee contributions	\$ (595,747)
7. Net change in total pension liability	\$ 1,878,428
8. Total pension liability – beginning	\$ 10,291,567
9. Total pension liability – ending	<u>\$ 12,169,995</u>
<b>B. Plan fiduciary net position</b>	
1. Contributions – employer	\$ 219,129
2. Contributions – employee	\$ 129,351
3. Net investment income	\$ 2,672,826
4. Benefit payments, including refunds of employee contributions	\$ (595,747)
5. Pension Plan Administrative Expense	\$ (941)
6. Other	\$ 23
7. Net change in plan fiduciary net position	\$ 2,424,641
8. Plan fiduciary net position – beginning	\$ 8,973,460
9. Plan fiduciary net position – ending	<u>\$ 11,398,101</u>
<b>C. Net pension liability</b>	<u>\$ 771,894</u>
<b>D. Plan fiduciary net position as a percentage of the total pension liability</b>	<b>93.66%</b>
<b>E. Covered-employee payroll*</b>	<b>\$ 1,096,195</b>
<b>F. Net pension liability as a percentage of covered-employee payroll</b>	<b>70.42%</b>

\*Assumed equal to actual member contributions divided by employee contribution rate.

# Schedules of Required Supplementary Information

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

### Last 10 Fiscal Years (which may be built prospectively)

Fiscal year ending June 30,	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
<b>Total Pension Liability</b>										
Service Cost	\$ 226,012	\$ 217,127	\$ 209,098	\$ 203,131	\$ 318,401	\$ 194,352	\$ 187,959	\$ 169,124		
Interest on the Total Pension Liability	\$ 758,002	\$ 729,945	\$ 703,640	\$ 682,903	\$ 616,740	\$ 658,198	\$ 648,233	\$ 598,165		
Benefit Changes	\$ -	\$ -	\$ -	\$ (50,771)	\$ -	\$ -	\$ -	\$ -		
Difference between Expected and Actual Experience Assumption Changes	\$ 128,782	\$ 30,348	\$ 14,491	\$ 21,720	\$ 37,292	\$ (375,575)	\$ (221,112)	\$ 1,813		
Benefit Payments	\$ (592,687)	\$ (567,040)	\$ (547,699)	\$ (528,468)	\$ (512,379)	\$ (498,608)	\$ (481,330)	\$ (452,462)		
Refunds	\$ (3,060)	\$ (3,181)	\$ (3,283)	\$ (1,902)	\$ (2,119)	\$ (2,391)	\$ (1,953)	\$ (1,633)		
<b>Net Change in Total Pension Liability</b>	<b>\$ 1,878,428</b>	<b>\$ 382,414</b>	<b>\$ 356,349</b>	<b>\$ 283,806</b>	<b>\$ (1,842,266)</b>	<b>\$ 2,626,326</b>	<b>\$ 131,797</b>	<b>\$ 638,952</b>		
<b>Total Pension Liability - Beginning</b>	<b>\$ 10,291,567</b>	<b>\$ 9,909,153</b>	<b>\$ 9,552,804</b>	<b>\$ 9,268,998</b>	<b>\$ 11,111,264</b>	<b>\$ 8,484,938</b>	<b>\$ 8,353,141</b>	<b>\$ 7,714,189</b>		
<b>Total Pension Liability - Ending (a)</b>	<b>\$ 12,169,995</b>	<b>\$ 10,291,567</b>	<b>\$ 9,909,153</b>	<b>\$ 9,552,804</b>	<b>\$ 9,268,998</b>	<b>\$ 11,111,264</b>	<b>\$ 8,484,938</b>	<b>\$ 8,353,141</b>		
<b>Plan Fiduciary Net Position</b>										
Employer Contributions	\$ 219,129	\$ 207,319	\$ 188,317	\$ 179,781	\$ 175,329	\$ 165,065	\$ 153,317	\$ 141,632		
Employee Contributions	\$ 129,351	\$ 123,525	\$ 111,762	\$ 105,479	\$ 101,984	\$ 95,172	\$ 88,733	\$ 81,213		
Pension Plan Net Investment Income	\$ 2,672,826	\$ 368,949	\$ 609,512	\$ 813,966	\$ 1,058,942	\$ (8,949)	\$ 317,556	\$ 1,158,389		
Benefit Payments	\$ (592,687)	\$ (567,040)	\$ (547,699)	\$ (528,468)	\$ (512,379)	\$ (498,608)	\$ (481,330)	\$ (452,462)		
Refunds	\$ (3,060)	\$ (3,181)	\$ (3,283)	\$ (1,902)	\$ (2,119)	\$ (2,391)	\$ (1,953)	\$ (1,633)		
Pension Plan Administrative Expense	\$ (941)	\$ (924)	\$ (1,018)	\$ (886)	\$ (992)	\$ (906)	\$ (803)	\$ (798)		
Other	\$ 23	\$ 260	\$ 54	\$ 58	\$ 24	\$ 3	\$ 84	\$ 18		
<b>Net Change in Plan Fiduciary Net Position</b>	<b>\$ 2,424,641</b>	<b>\$ 128,908</b>	<b>\$ 357,645</b>	<b>\$ 568,028</b>	<b>\$ 820,789</b>	<b>\$ (250,614)</b>	<b>\$ 75,604</b>	<b>\$ 926,359</b>		
<b>Plan Fiduciary Net Position - Beginning</b>	<b>\$ 8,973,460</b>	<b>\$ 8,844,552</b>	<b>\$ 8,486,907</b>	<b>\$ 7,918,879</b>	<b>\$ 7,098,090</b>	<b>\$ 7,348,704</b>	<b>\$ 7,273,100</b>	<b>\$ 6,346,741</b>		
<b>Plan Fiduciary Net Position - Ending (b)</b>	<b>\$ 11,398,101</b>	<b>\$ 8,973,460</b>	<b>\$ 8,844,552</b>	<b>\$ 8,486,907</b>	<b>\$ 7,918,879</b>	<b>\$ 7,098,090</b>	<b>\$ 7,348,704</b>	<b>\$ 7,273,100</b>		
<b>Net Pension Liability - Ending (a) - (b)</b>	<b>\$ 771,894</b>	<b>\$ 1,318,107</b>	<b>\$ 1,064,601</b>	<b>\$ 1,065,897</b>	<b>\$ 1,350,119</b>	<b>\$ 4,013,174</b>	<b>\$ 1,136,234</b>	<b>\$ 1,080,041</b>		
<b>Plan Fiduciary Net Position as a Percentage of Total Pension Liability</b>	93.66 %	87.19 %	89.26 %	88.84 %	85.43 %	63.88 %	86.61 %	87.07 %		
<b>Covered Employee Payroll</b>	\$ 1,096,195	\$ 1,069,481	\$ 1,011,421	\$ 976,657	\$ 944,296	\$ 881,222	\$ 845,076	\$ 820,333		
<b>Net Pension Liability as a Percentage of Covered Employee Payroll</b>	70.42 %	123.25 %	105.26 %	109.14 %	142.98 %	455.41 %	134.45 %	131.66 %		

**Notes to Schedule:**

N/A



# Schedules of Required Supplementary Information

## Schedule of the Net Pension Liability Multiyear (Dollars in Thousands)

### Last 10 Fiscal Years (which may be built prospectively)

FY Ending June 30,	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
2012						
2013						
2014	\$ 8,353,141	\$ 7,273,100	\$ 1,080,041	87.07%	\$ 820,333	131.66%
2015	\$ 8,484,938	\$ 7,348,704	\$ 1,136,234	86.61%	\$ 845,076	134.45%
2016	\$ 11,111,264	\$ 7,098,090	\$ 4,013,174	63.88%	\$ 881,222	455.41%
2017	\$ 9,268,998	\$ 7,918,879	\$ 1,350,119	85.43%	\$ 944,296	142.98%
2018	\$ 9,552,804	\$ 8,486,907	\$ 1,065,897	88.84%	\$ 976,657	109.14%
2019	\$ 9,909,153	\$ 8,844,552	\$ 1,064,601	89.26%	\$ 1,011,421	105.26%
2020	\$ 10,291,567	\$ 8,973,460	\$ 1,318,107	87.19%	\$ 1,069,481	123.25%
2021	\$ 12,169,995	\$ 11,398,101	\$ 771,894	93.66%	\$ 1,096,195	70.42%

# Schedule of Contributions Multiyear (Dollars in Thousands)

## Last 10 Fiscal Years

FY Ending June 30,	Actuarially Determined Contribution	Actual Contribution	Contribution Deficiency (Excess)	Covered Payroll	Actual Contribution as a % of Covered Payroll
2012	\$ 152,369	\$ 121,891	\$ 30,478	\$ 794,417	15.34%
2013	\$ 189,254	\$ 125,995	\$ 63,259	\$ 796,188	15.82
2014	\$ 163,985	\$ 141,632	\$ 22,353	\$ 820,333	17.27
2015	\$ 197,325	\$ 153,317	\$ 44,008	\$ 845,076	18.14
2016	\$ 189,375	\$ 165,065	\$ 24,310	\$ 881,222	18.73
2017	\$ 165,252	\$ 175,329	\$ (10,077)	\$ 944,296	18.57
2018	\$ 193,183	\$ 179,781	\$ 13,402	\$ 976,657	18.41
2019	\$ 173,459	\$ 188,317	\$ (14,858)	\$ 1,011,421	18.62
2020	\$ 177,855	\$ 207,319	\$ (29,464)	\$ 1,069,481	19.39
2021	\$ 174,405	\$ 219,129	\$ (44,724)	\$ 1,096,195	19.99

## Notes to Schedule of Contributions

### Methods and Assumptions Used to Determine Contribution Rates for Fiscal Year Ending June 30, 2021:

Valuation Date	June 30, 2020
Notes	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.
Actuarial Cost Method	Entry Age Normal
Amortization Method	Level Percentage of Payroll, Closed
Remaining Amortization Period	28 years
Asset Valuation Method	5-Year smoothed market; no corridor
Inflation	2.50%
Payroll Growth	3.25%
Salary Increases	3.25% to 12.25% including inflation
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.
Mortality	RP-2014 annuitant generational mortality table projected with mortality improvement scale MP-2019, from a base year of 2006. Male rates adjusted by a factor of 0.96.

### Other Information:

Notes	The plan is assumed to pay a 1.00% post retirement benefit increase for all future years. See separate funding report as of June 30, 2020 for additional detail.
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# Schedule of Investment Returns Multiyear

## Last 10 Fiscal Years

<u>FY Ending June 30,</u>	<u>Annual Return<sup>1</sup></u>
2012	
2013	
2014	18.7 %
2015	4.5
2016	(0.1)
2017	15.2
2018	10.5
2019	7.3
2020	4.2
2021	30.3

<sup>1</sup> 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 PERA for GASB-compliance purposes. PERA 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, 2021, the annual money-weighted rate of return for the Public Employees Police and Fire Plan was 30.3%. 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 Public Employees Retirement Association of Minnesota (including the investments for PERA' defined benefit retirement funds), contact SBI at 60 Empire Drive, Suite 355, St. Paul, Minnesota, 55103, via email at [minn.sbi@state.mn.us](mailto:minn.sbi@state.mn.us) or telephone at 651.296.3328.

## **SECTION D**

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### **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 rate of return for the portfolio. Inflation expectations were applied to derive the nominal rate of return for the portfolio. For each major asset class that is included in the pension fund's target asset allocation as of June 30, 2021, these estimates are summarized in the following table:

<u>Asset Class</u>	<u>Target Allocation</u>	<u>Long-Term Expected Real Rate of Return (geometric)</u>
Domestic Equity	33.5%	5.10%
International Equity	16.5%	5.30%
Private Markets	25.0%	5.90%
Fixed Income	25.0%	0.75%
Unallocated Cash	0.0%	0.00%
<b>Total</b>	<u>100%</u>	

The Minnesota State Board of Investment (SBI) compiled this data and the related investment notes and provided it to PERA for GASB compliance purposes. PERA 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 6.50%. This assumption is based on reviews of inflation and investment return assumptions in our report dated June 24, 2021.

## Single Discount Rate

A single discount rate of 6.50% 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 6.50% and the municipal bond rate of 1.92%. The projection of cash flows used to determine this single discount rate assumed that plan member and employer contributions will be made at the current statutory rates. Based on these assumptions, the pension plan's fiduciary net position and future contributions were sufficient to finance 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 plan's net pension liability, calculated using a single discount rate of 6.50%, as well as what the plan's net pension liability would be if it were calculated using a single discount rate that is 1-percentage-point lower or 1-percentage-point higher:

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

*(Dollars in Thousands)*

	1% Decrease 5.50%	Current Single Discount Rate Assumption 6.50%	1% Increase 7.50%
Total Pension Liability	\$ 13,848,734	\$ 12,169,995	\$ 10,793,845
Net Position Restricted for Pensions	\$ 11,398,101	\$ 11,398,101	\$ 11,398,101
Net Pension Liability	\$ 2,450,633	\$ 771,894	\$ (604,256)

Note that we believe the 7.5% interest rate assumption does not comply with Actuarial Standards of Practice.

## GASB Statement No. 68 Reconciliation (Dollars in Thousands)

### Current Reporting Period

	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a) - (b)	Current Period		Pension Expense*
				Deferred Outflows	Deferred Inflows	
<b>Balance Beginning of Year</b>	<b>\$ 10,291,567</b>	<b>\$ 8,973,460</b>	<b>\$ 1,318,107</b>			
<b>Changes for the Year:</b>						
Service Cost	\$ 226,012		\$ 226,012			\$ 226,012
Interest on Total Pension Liability	\$ 758,002		\$ 758,002			\$ 758,002
Interest on Fiduciary Net Position		\$ 663,703	\$ (663,703)			\$ (663,703)
Changes in Benefit Terms	\$ -		\$ -			\$ -
Liability Experience Gains and Losses	\$ 128,782		\$ 128,782	\$ 107,318	\$ -	\$ 21,464
Changes in Assumptions	\$ 1,361,379		\$ 1,361,379	\$ 1,134,482	\$ -	\$ 226,897
Contributions - Employer		\$ 219,129	\$ (219,129)			
Contributions - Employees		\$ 129,351	\$ (129,351)			\$ (129,351)
Asset Gain/(Loss)		\$ 2,009,123	\$ (2,009,123)	\$ -	\$ 1,607,298	\$ (401,825)
Benefit Payouts	\$ (595,747)	\$ (595,747)				
Administrative Expenses		\$ (941)	\$ 941			\$ 941
Other		\$ 23	\$ (23)			\$ (23)
<b>Net Changes</b>	<b>\$ 1,878,428</b>	<b>\$ 2,424,641</b>	<b>\$ (546,213)</b>	<b>\$ 1,241,800</b>	<b>\$ 1,607,298</b>	<b>\$ 38,414</b>
<b>Balance End of Year</b>	<b>\$ 12,169,995</b>	<b>\$ 11,398,101</b>	<b>\$ 771,894</b>			

\* Pension Expense from Experience in the Current Reporting Period.

## GASB Statement No. 68 Reconciliation (Dollars in Thousands)

### Current and Prior Reporting Periods

	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a) - (b)	Deferred Outflows	Deferred Inflows	Net Deferred Outflows Prior Year	Total Pension Expense*
<b>Balance Beginning of Year</b>	<b>\$ 10,291,567</b>	<b>\$ 8,973,460</b>	<b>\$ 1,318,107</b>				
<b>Changes for the Year:</b>							
Service Cost	\$ 226,012		\$ 226,012				\$ 226,012
Interest on Total Pension Liability	\$ 758,002		\$ 758,002				\$ 758,002
Interest on Fiduciary Net Position		\$ 663,703	\$ (663,703)				\$ (663,703)
Changes in Benefit Terms	\$ -		\$ -				\$ -
Liability Experience Gains and Losses	\$ 128,782		\$ 128,782	\$ 148,252	\$ -	\$ (4,352)	\$ (23,822)
Changes in Assumptions	\$ 1,361,379		\$ 1,361,379	\$ 1,134,482	\$ 424,107	\$ (380,330)	\$ 270,674
Contributions - Employer		\$ 219,129	\$ (219,129)				
Contributions - Employees		\$ 129,351	\$ (129,351)				\$ (129,351)
Asset Gain/(Loss)		\$ 2,009,123	\$ (2,009,123)	\$ 178,260	\$ 1,653,152	\$ 40,038	\$ (494,193)
Benefit Payouts	\$ (595,747)	\$ (595,747)					
Administrative Expenses		\$ (941)	\$ 941				\$ 941
Other		\$ 23	\$ (23)				\$ (23)
<b>Net Changes</b>	<b>\$ 1,878,428</b>	<b>\$ 2,424,641</b>	<b>\$ (546,213)</b>				<b>\$ (55,463)</b>
<b>Balance End of Year</b>	<b>\$ 12,169,995</b>	<b>\$ 11,398,101</b>	<b>\$ 771,894</b>	<b>\$ 1,460,994</b>	<b>\$ 2,077,259</b>	<b>\$ (344,644)</b>	

\* Pension Expense from Experience in the Current and Prior Reporting Period.

## Summary of Population Statistics

	Terminated			Recipients			Total
	Actives	Deferred Retirement	Other Non-Vested	Service Retirement	Disability Retirement	Survivor	
<b>Members on 7/1/2020</b>	<b>12,025</b>	<b>1,686</b>	<b>894</b>	<b>7,793</b>	<b>1,477</b>	<b>1,931</b>	<b>25,806</b>
New members	586						586
Return to active	61	(21)	(40)	0	0	0	0
Terminated non-vested	(118)	0	118	0	0	0	0
Service retirements	(318)	(109)	0	427	0	0	0
Terminated deferred	(265)	265	0	0	0	0	0
Terminated refund/transfer	(43)	(19)	(84)	0	0	0	(146)
Deaths	(8)	(4)	(1)	(200)	(24)	(101)	(338)
New beneficiary	0	0	0	0	0	128	128
Disabled	(215)	0	0	0	215	0	0
Data adjustments	0	15	25	1	16	(7)	50
Net change	(320)	127	18	228	207	20	280
<b>Members on 6/30/2021</b>	<b>11,705</b>	<b>1,813</b>	<b>912</b>	<b>8,021</b>	<b>1,684</b>	<b>1,951</b>	<b>26,086</b>

**SECTION E**

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**SUMMARY OF BENEFITS**

## Summary of Plan Provisions – Police & Fire Plan

Following is a summary of the major plan provisions used in the valuation of this report. PERA 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.

<b>Plan year</b>	July 1 through June 30.			
<b>Eligibility</b>	All full-time and certain part-time police officers and fire fighters, and certain paramedics, who are not contributing to any other local retirement fund.			
<b>Contributions</b>	<u>Effective as of</u>	<u>Member</u>	<u>Employer</u>	<u>Total</u>
	January 1, 2020 and later	11.80%	17.70%	29.50%
	Member contributions are “picked up” according to the provisions of Internal Revenue Code 414(h).			
<b>State contributions</b>	<p>\$9 million paid annually on October 1 until both PERA P&amp;F and MSRS State Patrol become 90% funded (on an actuarial value of assets basis), or July 1, 2048, if earlier.</p> <p>In addition, \$4.5 million in fiscal years 2019 and 2020, and \$9.0 million thereafter, until the plan reaches 100% funding on an actuarial value of assets basis, or July 1, 2048, if earlier.</p>			
<b>Allowable service</b>	Police and Fire service during which member contributions were made. May also include certain leaves of absence and military service.			
<b>Salary</b>	Includes amounts deducted for deferred compensation or supplemental retirement plans, net income from fees and sick leave payments funded by the employer. Excludes unused annual leaves and sick leave payments, severance payments, Workers’ Compensation benefits and employer-paid flexible spending accounts, cafeteria plans, healthcare expense accounts, day-care expenses, fringe benefits and the cost of insurance coverage.			
<b>Average salary</b>	Average of the five highest successive years of salary. Average Salary is based on all Allowable Service if less than five years.			

## Summary of Plan Provisions – Police & Fire Plan (Continued)

Vesting	Years of Service	Vesting Percent if First Hired		
		Before 7/1/2010	After 6/30/2010 & before 7/1/2014	After 6/30/2014
	<3	0%	0%	0%
	3 – 4	100	0	0
	5	100	50	0
	6	100	60	0
	7	100	70	0
	8	100	80	0
	9	100	90	0
	10	100	100	50
	11	100	100	55
	12	100	100	60
	13	100	100	65
	14	100	100	70
	15	100	100	75
	16	100	100	80
	17	100	100	85
	18	100	100	90
	19	100	100	95
	20+	100	100	100



## Summary of Plan Provisions – Police & Fire Plan (Continued)

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### Retirement

#### Normal retirement benefit

Age/service requirement Age 55 and at least partially vested. Proportionate Retirement Annuity is available at age 65 and one year of Allowable Service.

Amount 3.00% of Average Salary for each year of Allowable Service (up to 33 years if hired after June 30, 2014), pro-rata for completed months, adjusted for partial vesting if applicable. A pro-rata share of member contributions will be refunded at retirement for excess service.

#### Early retirement

Age/service requirement Age 50 and at least partially vested.

Amount Normal Retirement Benefit based on Allowable Service and Average Salary at retirement date and 0.10% (0.20% for members enrolled in the plan after June 30, 2007) reduction for each month the member is under age 55. If the effective date of retirement is after June 30, 2019, the reduction is 5/12% for each month that the member is under age 55 at the time of retirement.

Form of payment Life annuity with return on death of any balance of contributions over aggregate monthly payments. Actuarially equivalent options are:

25%, 50%, 75% or 100% Joint and Survivor with bounce back feature. The Joint and Survivor options are determined on an actuarially equivalent basis, but with no actuarial reduction for the bounce back feature.

Benefit Increases Benefit recipients receive 1.00% increases each year in January. A benefit recipient who has been receiving a benefit for at least 12 full months as of June 30 will receive a full increase. Members receiving benefits for at least one month but less than 12 full months as of June 30 will receive a pro rata increase. For retirements after May 31, 2014, the first increase will be delayed two years.

Members retired under laws in effect before July 1, 1973 receive an additional lump sum payment each year. In 1989, this lump sum payment is the greater of \$25 times each full year of Allowable Service or the difference between \$400 times each full year of Allowable Service and the sum of benefits paid from any Minnesota public pension plan plus cash payments from the Social Security Administration for the preceding fiscal year July 1, 1988 through June 30, 1989. In each following year, the lump sum payment will increase by the same percentage increase that is applied to regular annuities paid from the Fund. Effective January 1, 2002, annual lump sum payment is divided by 12 and paid as a monthly life annuity in the annuity form elected.

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## Summary of Plan Provisions – Police & Fire Plan (Continued)

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### **Disability**

#### Duty disability benefit

Age/service requirement      Physically or mentally unable to perform normal duties as a police officer or fire fighter as a direct result of an act of duty specific to protecting property and personal safety of others. Members age 55 or older with 20 or more years of Allowable Service are not eligible to apply for duty disability benefits.

Amount      60.0%, plus an additional 3.00% for each year of service in excess of 20 years, of Average Salary paid until Normal Retirement Age, or for 60 months, whichever is later. The retirement benefit is then recalculated but is never lower than the disability benefit.

If a member became disabled prior to July 1, 1997 but did not commence their benefit before July 1, 1997, the benefit is calculated under the laws in effect before July 1, 1997, and an actuarial increase shall be made for the change in post-retirement interest rates from 5.00% to 6.00%.

#### Regular disability benefit

Age/service requirement      Physically or mentally unable to perform normal duties as a police officer or fire fighter with one year of Allowable Service. Members age 55 or older with 15 or more years of Allowable Service are not eligible to apply for regular disability benefits.

Amount      45.00% of Average Salary, paid until Normal Retirement Age, or for 60 months, whichever is later. The retirement benefit is then recalculated but is never lower than the disability benefit. Benefits for total and permanent regular disability are calculated as 3.00% of Average Salary for each year of Allowable Service, with a minimum of 45.00% of Average Salary.

If a member became disabled prior to July 1, 1997 but did not commence his or her benefit before July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997, and an actuarial increase shall be made for the change in post-retirement interest rates from 5.00% to 6.00%.

Benefit increases      Same as for retirement.

#### Retirement benefit

Age/service requirement      Upon cessation of disability benefits.

Amount      Any optional annuity continues. Otherwise, the larger of the disability benefit paid before age 55 or the normal retirement benefit available at age 55, or an actuarially equivalent optional annuity.

Form of payment      Same as for retirement.

Benefit increases      Same as for retirement.

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## Summary of Plan Provisions – Police & Fire Plan (Continued)

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### Death

#### Surviving spouse benefit

Age/service requirement      Death of active member or regular disabled member with surviving spouse whose disability benefit accrued before July 1, 2007, who is vested at death (service requirement is waived if death occurs in the line of duty).

Amount      50.00% of salary (60.00% if death occurs in the line of duty after June 30, 2007) averaged over last six months. Benefit paid until spouse's death but no payments while spouse is remarried prior to July 1, 1991.

If a member died prior to July 1, 1997 and the beneficiary was not eligible to commence their survivor benefits before July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997, and an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%.

Benefit increases      Same as for retirement.

#### Surviving dependent children's benefit

Age/service requirement      Non-duty related death of active member or regular disabled member with eligible dependent child.

Amount      10.00% of salary averaged over last six months for each child. Family benefit minimum (including spouse's benefit) of 50.00% of salary and maximum of 70.00% of salary. Benefits paid until child marries, dies, or attains age 18 (age 23 if full-time student).

#### Duty disability surviving spouse benefit

Age/service requirement      Member who is totally and permanently disabled who dies before age 55 or within five years of the effective date of the disability benefit, whichever is later.

Amount      60.00% of salary averaged over last six months. Benefits paid until spouse's death but no payments while spouse is remarried prior to July 1, 1991.

Benefit increases      Same as for retirement.

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## Summary of Plan Provisions – Police & Fire Plan (Continued)

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### Death (Concluded)

#### Duty disability surviving dependent children's benefit

Age/service requirement      Death of a member with an eligible dependent child who was disabled in the line of duty and died as a direct result of the disability.

Amount      10.00% of salary averaged over last six months for each child. Family benefit minimum (including spouse's benefit) of 60.00% of salary and maximum of 80.00% of salary. Benefits paid until child marries, dies, or attains age 18 (age 23 if full-time student).

If a member died prior to July 1, 1997 and the beneficiary was not eligible to commence their survivor benefits before July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997, and an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%.

#### Surviving spouse optional annuity

Age/service requirement      Active member dies before age 55. Benefits commence when member would have been age 55 or as early as age 50 if qualified for early retirement, benefits commence immediately if member had 30 years of service.

Amount      Survivor's payment of the 100% joint and survivor benefit the member could have elected if terminated. Alternatively, spouse may elect refund of deceased's contributions with interest if there are no dependent children.

If a member died prior to July 1, 1997 and the beneficiary was not eligible to commence their survivor benefits before July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997, and an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%.

Benefit increases      Same as for retirement.

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## Summary of Plan Provisions – Police & Fire Plan (Continued)

### Termination

#### Refund of contributions

Age/service requirement                      Termination of public service.

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                      Partially or fully vested.

Amount    Benefit computed under law in effect at termination and increased by the following percentage (augmentation) compounded annually for terminations prior to 2012:

- (a.) 0.00% before July 1, 1971;
- (b.) 5.00% from July 1, 1971 to January 1, 1981;
- (c.) 3.00% (2.50% if hired after June 30, 2006) thereafter until the earlier of January 1 of the year following attainment of age 55 and January 1, 2012;
- (d.) 5.00% (2.50% if hired after June 30, 2006) thereafter until the earlier of the date the annuity begins and January 1, 2012;
- (e.) 1.00% from January 1, 2012 through December 31, 2018; and
- (f.) 0.00% from January 1, 2019, thereafter.

Members who terminate after 2011 will receive no future augmentation.

If a member terminated employment prior to July 1, 1997 but was not eligible to commence their pension before July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997 and 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.

#### **Actuarial equivalent factors**

Effective July 1, 2019, actuarially equivalent factors based on the RP-2014 mortality table for healthy annuitants for a member turning age 55 in 2021, reflecting projected mortality improvements using Scale MP-2017, male rates multiplied by 0.96, blended 90% males, and 6.50% interest.

## Summary of Plan Provisions – Police & Fire Plan (Concluded)

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### **Combined service annuity**

Members are eligible for combined service benefits if they:

- (a.) Meet minimum retirement age for each plan participated in and total public service meets the vesting requirements of each plan; or
- (b.) Have three or more years of service under PERA and the covered fund(s) (if hired prior to July 1, 2010).

Other requirements for combined service include:

- (a.) Member must have at least six months of allowable service credit in each plan worked under; and
- (b.) Member may not be in receipt of a benefit from another plan.

Members who meet the above requirements must have their benefits based on the following:

- (a.) Allowable service in all covered plans is combined in order to determine eligibility for early retirement.
- (b.) Average salary is based on the high five consecutive years during their entire service in all covered plans.

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### **Changes in plan provisions**

There have been no changes in plan provisions since the prior valuation.

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## Summary of Plan Provisions – Minneapolis Police Relief Association

<b>Normal retirement benefit</b>	<p>Monthly benefits are equal to the number of units multiplied by the unit values described herein. Units are based on service, as follows:</p> <table style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;"><u>Service</u></th> <th style="text-align: center;"><u>Units</u></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">20</td> <td style="text-align: center;">35.0 units</td> </tr> <tr> <td style="text-align: center;">21</td> <td style="text-align: center;">36.6 units</td> </tr> <tr> <td style="text-align: center;">22</td> <td style="text-align: center;">38.2 units</td> </tr> <tr> <td style="text-align: center;">23</td> <td style="text-align: center;">39.8 units</td> </tr> <tr> <td style="text-align: center;">24</td> <td style="text-align: center;">41.4 units</td> </tr> <tr> <td style="text-align: center;">25 or more</td> <td style="text-align: center;">43.0 units</td> </tr> </tbody> </table>	<u>Service</u>	<u>Units</u>	20	35.0 units	21	36.6 units	22	38.2 units	23	39.8 units	24	41.4 units	25 or more	43.0 units
<u>Service</u>	<u>Units</u>														
20	35.0 units														
21	36.6 units														
22	38.2 units														
23	39.8 units														
24	41.4 units														
25 or more	43.0 units														
Members must be at least age 50 with 5 years of service to receive this benefit.															
<b>Unit values</b>	<table style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;"><u>Calendar Year</u></th> <th style="text-align: center;"><u>Unit Value</u></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">2012</td> <td style="text-align: center;">\$ 104.651</td> </tr> <tr> <td style="text-align: center;">2013</td> <td style="text-align: center;">109.011</td> </tr> <tr> <td style="text-align: center;">2014</td> <td style="text-align: center;">114.825</td> </tr> <tr> <td style="text-align: center;">2015</td> <td style="text-align: center;">124.031</td> </tr> </tbody> </table> <p>Unit values after 2015 are assumed to increase the same percentage as the post-retirement benefit increase.</p>	<u>Calendar Year</u>	<u>Unit Value</u>	2012	\$ 104.651	2013	109.011	2014	114.825	2015	124.031				
<u>Calendar Year</u>	<u>Unit Value</u>														
2012	\$ 104.651														
2013	109.011														
2014	114.825														
2015	124.031														
<b>Surviving spouse's benefit</b>	Annual benefit based on 23 units for the surviving spouse of an active or retired member. Upon retirement, members may choose an alternative form of payment that provides 50%, 75%, or 100% of their benefit to their spouse after their death. The units are adjusted if one of these alternate forms is selected.														
<b>Surviving children's benefit</b>	Annual benefit based on 8 units for each surviving child of an active or retired member. Benefits continue to age 18 or if the child is a full-time student, to age 22. The total benefit for surviving children and spouse combined is limited to 41 units.														
<b>Contributions</b>	<p>Member and employer contributions equal to 8.00% of the monthly unit value multiplied by 80 are required for each member. After 25 years of service, member contributions are paid to a separate health insurance account.</p> <p>Until July 15, 2018, the employer contributed annually an amount to amortize the unfunded liability by December 31, 2031. Beginning July 15, 2019, the employer will contribute \$4,489,837 each July 15 through 2031.</p>														
<b>Benefit increases</b>	Benefit recipients receive 1.00% increases each year in January.														

## Summary of Plan Provisions – Minneapolis Firefighters’ Relief Association

**Normal retirement benefit** Monthly benefits are equal to the number of units multiplied by the unit values described herein. Units are based on service, as follows:

<u>Service</u>	<u>Units</u>
15	25.0 units
16	26.6 units
17	28.2 units
18	29.8 units
19	31.4 units
20	35.0 units
21	36.6 units
22	38.2 units
23	39.8 units
24	41.4 units
25 or more	43.0 units

Members must be at least age 50 with 5 years of service to receive this benefit.

Members may choose among alternative survivor payment forms which modify the number of units payable to the member and their spouse. A member who is single at the time of retirement and who has at least 25 years of service may choose to receive 43.3 units on the condition of a reduced survivor payment to any future spouse.

<b>Unit values</b>	<u>Calendar Year</u>	<u>Unit Value</u>
	2013	100.775
	2014	104.264
	2015	124.031

Unit values after 2015 are assumed to increase the same percentage as the post-retirement benefit increase.

**Disability benefit** Annual benefit based on 41 units for the disabled member.

**Surviving spouse’s benefit** Annual benefit based on 23 units for the surviving spouse of an active or retired member and 22 units for the surviving spouse of a disabled member. Upon retirement, members may choose an alternative form of payment that provides 50%, 75% or 100% of their benefit to their spouse after their death. The units are adjusted if one of these alternate forms is selected.

**Surviving children’s benefit** Annual benefit based on 8 units for each surviving child of an active or retired member. Benefits continue to age 18 or if the child is a full-time student, to age 22. The total benefit for surviving children and spouse combined is limited to 43 units.

**Contributions** Member and employer contributions equal to 8.00% of the monthly unit value multiplied by 80 are required for each member. After 25 years of service, member contributions are paid to a separate health insurance account.

Until July 15, 2018, the employer contributed annually an amount to amortize the unfunded liability by December 31, 2031. Beginning July 15, 2019, the employer will contribute \$3,188,735 each July 15 through 2031.

**Benefit increases** Benefit recipients receive 1.00% increases each year in January.





## **SECTION F**

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**ACTUARIAL COST METHOD AND ACTUARIAL ASSUMPTIONS  
USED FOR THE DETERMINATION OF TOTAL PENSION LIABILITY  
AND RELATED VALUES**

# 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.

## Asset Valuation Method

Fair value of assets.

## Summary of Actuarial Assumptions

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 14, 2020, and a review of inflation and investment assumptions dated June 24, 2021.

The Allowance for Combined Service Annuity assumptions are based on an analysis completed by the LCPR actuary and documented in a report dated October 2016.

Investment return	6.50% per annum.
Single Discount Rate	6.50% per annum.
Salary increases	Reported salary at valuation date increased according to the rate table, to current fiscal year and annually for each future year. Prior fiscal year salary is annualized for members with less than one year of service earned during the year.
Inflation	2.25% per year.
Payroll growth	3.00% per year.
Mortality rates	
Healthy pre-retirement	Pub-2010 Public Safety Employee Mortality Table adjusted for mortality improvements using projection scale MP-2020.
Healthy post-retirement	Pub-2010 Healthy Retired Public Safety Mortality Table adjusted for mortality improvements using projection scale MP-2020. Male rates are multiplied by a factor of 0.98.
Disabled	Pub-2010 Public Safety Disabled Retiree Mortality Table, adjusted for mortality improvements using projection scale MP-2020. Male rates are multiplied by a factor of 1.05.
Notes	The Pub-2010 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. Note that plan changes reflected in this report may ultimately result in behavior changes that are not anticipated in the current retirement rates.
Withdrawal	Service-related rates based on actual experience; see table of sample rates

## Summary of Actuarial Assumptions (Continued)

Disability	Age-related rates based on experience; see table of sample rates. All incidences are assumed to be duty-related.
Allowance for combined service annuity	Liabilities for former members are increased by 33.0% for vested members and 2.0% for non-vested members to account for the effect of some participants having eligibility for a Combined Service Annuity.
Administrative expenses	In the valuation year, equal to prior year administrative expenses expressed as percentage of prior year projected payroll. In each subsequent year, equal to the initial administrative expense percentage applied to payroll for the closed group.
Refund of contributions	For non-vested members, account balances accumulate interest until the assumed commencement date and are discounted back to the valuation date. Active members decrementing after becoming eligible for a benefit are assumed to take the contributions accumulated with interest if larger than the value of the benefit.
Commencement of deferred benefits	Members receiving deferred annuities (including current terminated deferred members) are assumed to begin receiving benefits at age 55.
Percentage married	85% of male and 70% of female active members are assumed to be married. Actual marital status is used for members in payment status.
Age of spouse	Males are assumed to be two years older than females. For members in payment status, actual spouse date of birth is used, if provided.
Eligible children	Retiring members are assumed to have no dependent children.
Form of payment	<p>Married members retiring from active status are assumed to elect subsidized joint and survivor form of annuity as follows:</p> <p>Males:           7.5% elect 25% Joint &amp; Survivor option                            15.0% elect 50% Joint &amp; Survivor option                            12.5% elect 75% Joint &amp; Survivor option                            55.0% elect 100% Joint &amp; Survivor option</p> <p>Females:       15.0% elect 25% Joint &amp; Survivor option                            30.0% elect 50% Joint &amp; Survivor option                            5.0% elect 75% Joint &amp; Survivor option                            20.0% elect 100% Joint &amp; Survivor option</p> <p>Remaining married members and unmarried members are assumed to elect the Straight Life option.</p> <p>Members receiving deferred annuities (including current terminated deferred members) are assumed to elect a straight life annuity.</p>
Eligibility testing	Eligibility for benefits is determined based upon the age nearest birthday and service on the date the decrement is assumed to occur.
Decrement operation	Withdrawal decrements do not operate during retirement eligibility. Decrement are assumed to occur mid-fiscal year.
Service credit accruals	It is assumed that members accrue one year of service credit per year.

## Summary of Actuarial Assumptions (Continued)

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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.
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Unknown data for certain members	<p>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.</p> <p>In cases where submitted data was missing or incomplete, the following assumptions, based on average results for applicable members at the time of the last experience study, were applied:</p> <p><u>Data for active members:</u> There were 27 members reported with a salary less than \$100. We used prior year salary (20 members), if available; otherwise high five salary with a 10% load to account for salary increases (7 members). If neither prior year salary nor high five salary was available, we assumed a value of \$60,000.</p> <p>There were also 184 members reported without a gender. We assumed male gender. There were three members reported without a date of birth. We assumed these members were hired at age 30.</p> <p><u>Data for terminated members:</u> We calculated benefits for these members using the reported Average Salary and credited service. If Average Salary was not reported (1 member), we assumed a value of \$24,000. If credited service was not reported (19 members), we used elapsed time from hire date to termination date (8 members); if elapsed time was not available, we assumed nine years of service. If termination date was invalid or not reported (11 members), we assumed the termination date was equal to the hire date plus credited service, otherwise the valuation date. If the reported termination date occurs prior to the reported hire date, the two dates were swapped.</p> <p>There were 10 members reported without a gender; male was assumed.</p> <p>There were no members reported without a date of birth.</p> <p><u>Data for retired members:</u> There were no members with missing or invalid dates of birth or benefit amounts. There were 22 members reported without a gender. We assumed retirees are male and beneficiaries are female.</p>
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## Summary of Actuarial Assumptions (Continued)

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Unknown data for certain members (Continued)	<u>Data for retired members (Continued):</u> Because PERA reclassifies disabled members as retirees once the member reaches Normal Retirement Age, we compare the members that PERA reports as retirees to our disabled group from the last valuation. If a member was disabled in the prior valuation, we reclassify that member as a disabled retiree in this year's valuation. We reclassified 250 retirees as disabled retirees in this valuation.
Changes in actuarial assumptions	<hr/> <p>The investment return and single discount rates were changed from 7.50% to 6.50%.</p> <p>The inflation assumption was changed from 2.50% to 2.25%.</p> <p>The payroll growth assumption was changed from 3.25% to 3.00%.</p> <p>The base mortality table for healthy annuitants and employees was changed from the RP-2014 table to the Pub-2010 Public Safety Mortality table. The mortality improvement scale was changed from MP-2019 to MP-2020.</p> <p>The base mortality table for disabled annuitants was changed from the RP-2014 healthy annuitant mortality table (with future mortality improvement according to Scale MP-2019) to the Pub-2010 Public Safety disabled annuitant mortality table (with future mortality improvement according to Scale MP-2020).</p> <p>Assumed rates of salary increase were modified as recommended in the July 14, 2020 experience study. The overall impact is a decrease in gross salary increase rates.</p> <p>Assumed rates of retirement were changed as recommended in the July 14, 2020 experience study. The changes result in slightly more unreduced retirements and fewer assumed early retirements.</p> <p>Assumed rates of withdrawal were changed from select and ultimate rates to service-based rates. The changes result in more assumed terminations.</p> <p>Assumed rates of disability were increased for ages 25-44 and decreased for ages over 49. Overall, proposed rates result in more projected disabilities.</p> <p>Assumed percent married for active female members was changed from 60% to 70%. Minor changes to form of payment assumptions were applied.</p>

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## Summary of Actuarial Assumptions (Continued)

Age in 2021	Percentage of Members Dying Each Year*					
	Healthy Post- Retirement Mortality		Healthy Pre- Retirement Mortality		Disability Mortality	
	Males	Females	Males	Females	Males	Females
20	0.04%	0.02%	0.04%	0.02%	0.13%	0.06%
25	0.04	0.02	0.04	0.02	0.13	0.08
30	0.06	0.04	0.06	0.04	0.18	0.12
35	0.07	0.05	0.07	0.05	0.21	0.17
40	0.08	0.06	0.08	0.06	0.24	0.19
45	0.13	0.09	0.09	0.07	0.27	0.22
50	0.18	0.14	0.11	0.09	0.35	0.29
55	0.29	0.27	0.17	0.13	0.49	0.47
60	0.52	0.47	0.27	0.18	0.80	0.74
65	0.88	0.74	0.42	0.22	1.26	1.02
70	1.44	1.19	0.72	0.41	1.87	1.44
75	2.51	2.07	1.30	0.81	3.08	2.20
80	4.57	3.70	2.44	1.68	5.37	3.70
85	8.34	6.55	7.62	5.74	9.01	6.55
90	14.70	11.39	15.00	11.39	15.75	11.39

\* 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.

Age	Rates of Disability Retirement	
	Males	Females
20	0.11%	0.11%
25	0.14	0.14
30	0.21	0.21
35	0.34	0.34
40	0.54	0.54
45	0.62	0.62
50	0.95	0.95
55	1.30	1.30
60	1.30	1.30



## Summary of Actuarial Assumptions (Concluded)

Age	Rates of Service	Year	Withdrawal	Salary Scale	
	Retirement		Rates	Year	Increase
50	7.50%	1	6.00%	1	11.75%
51	5.00	2	4.00	2	9.25%
52	5.00	3	2.75	3	8.00%
53	7.50	4	2.50	4	7.00%
54	10.00	5	2.50	5	5.50%
55	30.00	6	2.25	6	4.80%
56	20.00	7	2.25	7	4.60%
57	22.50	8	2.00	8	4.30%
58	25.00	9	2.00	9	4.10%
59	25.00	10	2.00	10	4.00%
60	20.00	11	1.75	11	3.90%
61	25.00	12	1.50	12	3.80%
62	30.00	13	1.50	13	3.70%
63	27.50	14	1.50	14	3.60%
64	27.50	15	1.50	15	3.50%
65	50.00	16	1.50	16	3.50%
66	40.00	17	1.50	17	3.50%
67	50.00	18	1.25	18	3.50%
68	50.00	19	1.25	19	3.40%
69	50.00	20	1.25	20	3.40%
70+	100.00	21+	1.00	21	3.40%
				22	3.30%
				23	3.15%
				24	3.00%
				25+	3.00%

## **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 long-term rate of return 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 as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the expected rate of return on pension plan investments is 6.50%, the municipal bond rate is 1.92%; and **the resulting single discount rate is 6.50%**.

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)

Fiscal Year Ending	Payroll			Projected Contributions					
	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*	Contributions due from Mergers	Additional State Contributions**	Total Contributions
2021	\$ 1,096,195	\$ 0	\$ 1,096,195						
2022	1,067,816	12,056	1,079,872	\$ 126,002	\$ 189,003	\$ 436	\$ 7,679	\$ 18,000	\$ 341,120
2023	1,055,268	57,001	1,112,269	124,522	186,782	2,063	7,679	18,000	339,046
2024	1,038,585	107,052	1,145,637	122,553	183,830	3,875	7,679	0	317,937
2025	1,017,976	162,030	1,180,006	120,121	180,182	5,865	7,679	0	313,847
2026	993,965	221,441	1,215,406	117,288	175,932	8,016	7,679	0	308,915
2027	967,689	284,179	1,251,868	114,187	171,281	10,287	7,679	0	303,434
2028	940,081	349,343	1,289,424	110,930	166,394	12,646	7,679	0	297,649
2029	911,909	416,198	1,328,107	107,605	161,408	15,066	7,679	0	291,758
2030	882,640	485,310	1,367,950	104,151	156,227	17,568	7,679	0	285,625
2031	851,984	557,004	1,408,988	100,534	150,801	20,164	7,679	0	279,178
2032	820,662	630,596	1,451,258	96,838	145,257	22,828	7,679	0	272,602
2033	788,267	706,529	1,494,796	93,016	139,523	25,576	0	0	258,115
2034	754,888	784,752	1,539,640	89,077	133,615	28,408	0	0	251,100
2035	720,561	865,268	1,585,829	85,026	127,539	31,323	0	0	243,888
2036	685,159	948,245	1,633,404	80,849	121,273	34,326	0	0	236,448
2037	648,588	1,033,818	1,682,406	76,533	114,800	37,424	0	0	228,757
2038	610,909	1,121,969	1,732,878	72,087	108,131	40,615	0	0	220,833
2039	572,524	1,212,340	1,784,864	67,558	101,337	43,887	0	0	212,782
2040	533,530	1,304,880	1,838,410	62,957	94,435	47,237	0	0	204,629
2041	494,327	1,399,236	1,893,563	58,331	87,496	50,652	0	0	196,479
2042	455,141	1,495,229	1,950,370	53,707	80,560	54,127	0	0	188,394
2043	415,989	1,592,892	2,008,881	49,087	73,630	57,663	0	0	180,380
2044	377,152	1,691,995	2,069,147	44,504	66,756	61,250	0	0	172,510
2045	338,836	1,792,386	2,131,222	39,983	59,974	64,884	0	0	164,841
2046	301,027	1,894,131	2,195,158	35,521	53,282	68,568	0	0	157,371
2047	263,679	1,997,334	2,261,013	31,114	46,671	72,303	0	0	150,088
2048	227,340	2,101,503	2,328,843	26,826	40,239	76,074	0	0	143,139
2049	193,125	2,205,584	2,398,709	22,789	34,183	79,842	0	0	136,814
2050	161,403	2,309,267	2,470,670	19,046	28,568	83,595	0	0	131,209
2051	132,258	2,412,532	2,544,790	15,606	23,410	87,334	0	0	126,350
2052	106,088	2,515,046	2,621,134	12,518	18,778	91,045	0	0	122,341
2053	83,390	2,616,378	2,699,768	9,840	14,760	94,713	0	0	119,313
2054	64,448	2,716,313	2,780,761	7,605	11,407	98,331	0	0	117,343
2055	49,053	2,815,131	2,864,184	5,788	8,682	101,908	0	0	116,378
2056	36,918	2,913,191	2,950,109	4,356	6,534	105,458	0	0	116,348
2057	27,407	3,011,205	3,038,612	3,234	4,851	109,006	0	0	117,091
2058	19,972	3,109,799	3,129,771	2,357	3,535	112,575	0	0	118,467
2059	14,231	3,209,433	3,223,664	1,679	2,519	116,181	0	0	120,379
2060	9,870	3,310,504	3,320,374	1,165	1,747	119,840	0	0	122,752
2061	6,607	3,413,378	3,419,985	780	1,169	123,564	0	0	125,513
2062	4,225	3,518,359	3,522,584	499	748	127,365	0	0	128,612
2063	2,559	3,625,703	3,628,262	302	453	131,250	0	0	132,005
2064	1,463	3,735,647	3,737,110	173	259	135,230	0	0	135,662
2065	781	3,848,442	3,849,223	92	138	139,314	0	0	139,544
2066	390	3,964,310	3,964,700	46	69	143,508	0	0	143,623
2067	177	4,083,464	4,083,641	21	31	147,821	0	0	147,873
2068	70	4,206,080	4,206,150	8	12	152,260	0	0	152,280
2069	23	4,332,312	4,332,335	3	4	156,830	0	0	156,837
2070	5	4,462,300	4,462,305	1	1	161,535	0	0	161,537
2071	1	4,596,173	4,596,174	0	-	166,381	0	0	166,381

\* Equal to contributions (29.50% of payroll for new employees) net of normal cost and expenses (25.88% of payroll).

\*\* State contributions equal to \$9.0 million are assumed to end after 2 years. Additional state contributions of \$9.0 million until 100% funded on an actuarial value of assets basis are assumed to stop after 2 years. Actual end dates will depend on the funding status of this plan and the MSRS State Patrol Plan.



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

Fiscal Year Ending	Payroll			Projected Contributions						
	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*	Contributions due from Mergers	Additional State Contributions**	Total Contributions	
2072	\$ 0	\$ 4,734,059	\$ 4,734,059	\$ 0	\$ 0	\$ 171,373	\$ 0	\$ 0	\$ 171,373	
2073	0	4,876,081	4,876,081	0	0	176,514	0	0	176,514	
2074	0	5,022,363	5,022,363	0	0	181,810	0	0	181,810	
2075	0	5,173,034	5,173,034	0	0	187,264	0	0	187,264	
2076	0	5,328,225	5,328,225	0	0	192,882	0	0	192,882	
2077	0	5,488,072	5,488,072	0	0	198,668	0	0	198,668	
2078	0	5,652,714	5,652,714	0	0	204,628	0	0	204,628	
2079	0	5,822,295	5,822,295	0	0	210,767	0	0	210,767	
2080	0	5,996,964	5,996,964	0	0	217,090	0	0	217,090	
2081	0	6,176,873	6,176,873	0	0	223,603	0	0	223,603	
2082	0	6,362,179	6,362,179	0	0	230,311	0	0	230,311	
2083	0	6,553,045	6,553,045	0	0	237,220	0	0	237,220	
2084	0	6,749,636	6,749,636	0	0	244,337	0	0	244,337	
2085	0	6,952,125	6,952,125	0	0	251,667	0	0	251,667	
2086	0	7,160,689	7,160,689	0	0	259,217	0	0	259,217	
2087	0	7,375,510	7,375,510	0	0	266,993	0	0	266,993	
2088	0	7,596,775	7,596,775	0	0	275,003	0	0	275,003	
2089	0	7,824,678	7,824,678	0	0	283,253	0	0	283,253	
2090	0	8,059,418	8,059,418	0	0	291,751	0	0	291,751	
2091	0	8,301,201	8,301,201	0	0	300,503	0	0	300,503	
2092	0	8,550,237	8,550,237	0	0	309,519	0	0	309,519	
2093	0	8,806,744	8,806,744	0	0	318,804	0	0	318,804	
2094	0	9,070,946	9,070,946	0	0	328,368	0	0	328,368	
2095	0	9,343,075	9,343,075	0	0	338,219	0	0	338,219	
2096	0	9,623,367	9,623,367	0	0	348,366	0	0	348,366	
2097	0	9,912,068	9,912,068	0	0	358,817	0	0	358,817	
2098	0	10,209,430	10,209,430	0	0	369,581	0	0	369,581	
2099	0	10,515,713	10,515,713	0	0	380,669	0	0	380,669	
2100	0	10,831,184	10,831,184	0	0	392,089	0	0	392,089	
2101	0	11,156,120	11,156,120	0	0	403,852	0	0	403,852	
2102	0	11,490,804	11,490,804	0	0	415,967	0	0	415,967	
2103	0	11,835,528	11,835,528	0	0	428,446	0	0	428,446	
2104	0	12,190,594	12,190,594	0	0	441,299	0	0	441,299	
2105	0	12,556,311	12,556,311	0	0	454,538	0	0	454,538	
2106	0	12,933,001	12,933,001	0	0	468,175	0	0	468,175	
2107	0	13,320,991	13,320,991	0	0	482,220	0	0	482,220	
2108	0	13,720,620	13,720,620	0	0	496,686	0	0	496,686	
2109	0	14,132,239	14,132,239	0	0	511,587	0	0	511,587	
2110	0	14,556,206	14,556,206	0	0	526,935	0	0	526,935	
2111	0	14,992,892	14,992,892	0	0	542,743	0	0	542,743	
2112	0	15,442,679	15,442,679	0	0	559,025	0	0	559,025	
2113	0	15,905,959	15,905,959	0	0	575,796	0	0	575,796	
2114	0	16,383,138	16,383,138	0	0	593,070	0	0	593,070	
2115	0	16,874,632	16,874,632	0	0	610,862	0	0	610,862	
2116	0	17,380,871	17,380,871	0	0	629,188	0	0	629,188	
2117	0	17,902,298	17,902,298	0	0	648,063	0	0	648,063	
2118	0	18,439,366	18,439,366	0	0	667,505	0	0	667,505	
2119	0	18,992,547	18,992,547	0	0	687,530	0	0	687,530	
2120	0	19,562,324	19,562,324	0	0	708,156	0	0	708,156	
2121	0	20,149,194	20,149,194	0	0	729,401	0	0	729,401	

\* Equal to contributions (29.50% of payroll for new employees) net of normal cost and expenses (25.88% of payroll).

\*\* State contributions equal to \$9.0 million are assumed to end after 2 years. Additional state contributions of \$9.0 million until 100% funded on an actuarial value of assets basis are assumed to stop after 2 years. Actual end dates will depend on the funding status of this plan and the MSRS State Patrol Plan.



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

Fiscal Year Ending	Projected Beginning Plan Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 6.50%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
2022	\$ 11,398,101	\$ 341,121	\$ 634,263	\$ 961	\$ 731,469	\$ 11,835,467
2023	11,835,467	339,046	658,143	950	759,068	12,274,488
2024	12,274,488	317,937	683,832	935	786,107	12,693,765
2025	12,693,765	313,847	709,933	916	812,395	13,109,158
2026	13,109,158	308,915	737,484	895	838,357	13,518,051
2027	13,518,051	303,435	765,834	871	863,854	13,918,635
2028	13,918,635	297,649	794,777	846	888,782	14,309,443
2029	14,309,443	291,758	822,234	821	913,119	14,691,265
2030	14,691,265	285,626	850,880	794	936,825	15,062,042
2031	15,062,042	279,178	879,798	767	959,795	15,420,450
2032	15,420,450	272,602	909,017	739	981,948	15,765,244
2033	15,765,244	258,115	938,594	709	1,002,951	16,087,007
2034	16,087,007	251,100	968,111	679	1,022,698	16,392,015
2035	16,392,015	243,888	997,900	649	1,041,341	16,678,695
2036	16,678,695	236,448	1,028,185	617	1,058,769	16,945,110
2037	16,945,110	228,758	1,059,032	584	1,074,854	17,189,106
2038	17,189,106	220,833	1,089,809	550	1,089,477	17,409,057
2039	17,409,057	212,781	1,120,559	515	1,102,534	17,603,298
2040	17,603,298	204,628	1,151,505	480	1,113,910	17,769,851
2041	17,769,851	196,479	1,181,286	445	1,123,524	17,908,123
2042	17,908,123	188,394	1,210,249	410	1,131,328	18,017,186
2043	18,017,186	180,380	1,238,078	374	1,137,271	18,096,385
2044	18,096,385	172,510	1,264,692	339	1,141,317	18,145,181
2045	18,145,181	164,841	1,290,466	305	1,143,420	18,162,671
2046	18,162,671	157,370	1,315,238	271	1,143,527	18,148,059
2047	18,148,059	150,089	1,339,154	237	1,141,580	18,100,337
2048	18,100,337	143,140	1,361,752	205	1,137,534	18,019,054
2049	18,019,054	136,814	1,381,707	174	1,131,411	17,905,398
2050	17,905,398	131,209	1,398,663	145	1,123,303	17,761,102
2051	17,761,102	126,350	1,412,556	119	1,113,324	17,588,101
2052	17,588,101	122,341	1,422,771	95	1,101,625	17,389,201
2053	17,389,201	119,313	1,428,471	75	1,088,418	17,168,386
2054	17,168,386	117,343	1,429,109	58	1,073,982	16,930,544
2055	16,930,544	116,378	1,424,842	44	1,058,628	16,680,664
2056	16,680,664	116,348	1,415,919	33	1,042,671	16,423,731
2057	16,423,731	117,091	1,403,038	25	1,026,406	16,164,165
2058	16,164,165	118,467	1,386,731	18	1,010,101	15,905,984
2059	15,905,984	120,379	1,367,310	13	994,001	15,653,041
2060	15,653,041	122,752	1,345,038	9	978,349	15,409,095
2061	15,409,095	125,513	1,320,176	6	963,376	15,177,802
2062	15,177,802	128,611	1,292,943	4	949,312	14,962,778
2063	14,962,778	132,005	1,263,534	2	936,385	14,767,632
2064	14,767,632	135,662	1,232,146	1	924,821	14,595,968
2065	14,595,968	139,544	1,199,006	1	914,848	14,451,353
2066	14,451,353	143,623	1,164,322	0	906,688	14,337,342
2067	14,337,342	147,873	1,128,297	0	900,565	14,257,483
2068	14,257,483	152,281	1,091,093	0	896,705	14,215,376
2069	14,215,376	156,836	1,052,843	0	895,338	14,214,707
2070	14,214,707	161,537	1,013,660	0	896,698	14,259,282
2071	14,259,282	166,382	973,640	0	901,030	14,353,054

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 (Concluded)

### (Dollars in Thousands)

Fiscal Year Ending	Projected Beginning Plan Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 6.50%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
2072	\$ 14,353,054	\$ 171,373	\$ 932,867	\$ 0	\$ 908,590	\$ 14,500,150
2073	14,500,150	176,514	891,417	0	919,641	14,704,888
2074	14,704,888	181,810	849,368	0	934,464	14,971,794
2075	14,971,794	187,264	806,800	0	953,349	15,305,607
2076	15,305,607	192,882	763,807	0	976,601	15,711,283
2077	15,711,283	198,668	720,494	0	1,004,541	16,193,998
2078	16,193,998	204,628	676,981	0	1,037,500	16,759,145
2079	16,759,145	210,767	633,402	0	1,075,825	17,412,335
2080	17,412,335	217,090	589,907	0	1,119,876	18,159,394
2081	18,159,394	223,603	546,664	0	1,170,026	19,006,359
2082	19,006,359	230,311	503,852	0	1,226,663	19,959,481
2083	19,959,481	237,220	461,665	0	1,290,186	21,025,222
2084	21,025,222	244,337	420,311	0	1,361,010	22,210,258
2085	22,210,258	251,667	380,009	0	1,439,561	23,521,477
2086	23,521,477	259,217	340,987	0	1,526,280	24,965,987
2087	24,965,987	266,993	303,478	0	1,621,622	26,551,124
2088	26,551,124	275,003	267,715	0	1,726,056	28,284,468
2089	28,284,468	283,253	233,923	0	1,840,068	30,173,866
2090	30,173,866	291,751	202,309	0	1,964,162	32,227,470
2091	32,227,470	300,503	173,050	0	2,098,863	34,453,786
2092	34,453,786	309,519	146,288	0	2,244,717	36,861,734
2093	36,861,734	318,804	122,117	0	2,402,304	39,460,725
2094	39,460,725	328,368	100,581	0	2,572,234	42,260,746
2095	42,260,746	338,219	81,668	0	2,755,155	45,272,452
2096	45,272,452	348,366	65,314	0	2,951,764	48,507,268
2097	48,507,268	358,817	51,400	0	3,162,806	51,977,491
2098	51,977,491	369,581	39,766	0	3,389,087	55,696,393
2099	55,696,393	380,669	30,215	0	3,631,476	59,678,323
2100	59,678,323	392,089	22,527	0	3,890,913	63,938,798
2101	63,938,798	403,852	16,465	0	4,168,414	68,494,599
2102	68,494,599	415,967	11,789	0	4,465,078	73,363,855
2103	73,363,855	428,446	8,264	0	4,782,091	78,566,128
2104	78,566,128	441,299	5,670	0	5,120,733	84,122,490
2105	84,122,490	454,538	3,807	0	5,482,380	90,055,601
2106	90,055,601	468,175	2,503	0	5,868,510	96,389,783
2107	96,389,783	482,220	1,612	0	6,280,710	103,151,101
2108	103,151,101	496,686	1,020	0	6,720,677	110,367,444
2109	110,367,444	511,587	636	0	7,190,228	118,068,623
2110	118,068,623	526,935	393	0	7,691,304	126,286,469
2111	126,286,469	542,743	243	0	8,225,974	135,054,943
2112	135,054,943	559,025	151	0	8,796,449	144,410,266
2113	144,410,266	575,796	95	0	9,405,083	154,391,050
2114	154,391,050	593,070	62	0	10,054,387	165,038,445
2115	165,038,445	610,862	41	0	10,747,038	176,396,304
2116	176,396,304	629,188	29	0	11,485,885	188,511,348
2117	188,511,348	648,063	20	0	12,273,967	201,433,358
2118	201,433,358	667,505	14	0	13,114,520	215,215,369
2119	215,215,369	687,530	10	0	14,010,991	229,913,880
2120	229,913,880	708,156	7	0	14,967,054	245,589,083
2121	245,589,083	729,401	5	0	15,986,622	262,305,101

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 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 <sup>a</sup> ((a)-.5)	(g)=(e)*vf <sup>a</sup> ((a)-.5)	(h)=(c)/(1+sdr) <sup>a</sup> ((a)-.5)
2022	\$ 11,398,101	\$ 634,263	\$ 634,263	\$ 0	\$ 614,603	\$ 0	\$ 614,603
2023	11,835,466	658,143	658,143	0	598,819	0	598,819
2024	12,274,488	683,832	683,832	0	584,218	0	584,218
2025	12,693,766	709,933	709,933	0	569,500	0	569,500
2026	13,109,159	737,484	737,484	0	555,494	0	555,494
2027	13,518,052	765,834	765,834	0	541,641	0	541,641
2028	13,918,637	794,777	794,777	0	527,804	0	527,804
2029	14,309,444	822,234	822,234	0	512,712	0	512,712
2030	14,691,267	850,880	850,880	0	498,192	0	498,192
2031	15,062,043	879,798	879,798	0	483,684	0	483,684
2032	15,420,452	909,017	909,017	0	469,247	0	469,247
2033	15,765,246	938,594	938,594	0	454,943	0	454,943
2034	16,087,008	968,111	968,111	0	440,611	0	440,611
2035	16,392,015	997,900	997,900	0	426,449	0	426,449
2036	16,678,696	1,028,185	1,028,185	0	412,574	0	412,574
2037	16,945,111	1,059,032	1,059,032	0	399,016	0	399,016
2038	17,189,107	1,089,809	1,089,809	0	385,551	0	385,551
2039	17,409,059	1,120,559	1,120,559	0	372,235	0	372,235
2040	17,603,300	1,151,505	1,151,505	0	359,168	0	359,168
2041	17,769,853	1,181,286	1,181,286	0	345,969	0	345,969
2042	17,908,125	1,210,249	1,210,249	0	332,819	0	332,819
2043	18,017,188	1,238,078	1,238,078	0	319,692	0	319,692
2044	18,096,387	1,264,692	1,264,692	0	306,633	0	306,633
2045	18,145,182	1,290,466	1,290,466	0	293,786	0	293,786
2046	18,162,672	1,315,238	1,315,238	0	281,150	0	281,150
2047	18,148,061	1,339,154	1,339,154	0	268,791	0	268,791
2048	18,100,339	1,361,752	1,361,752	0	256,645	0	256,645
2049	18,019,056	1,381,707	1,381,707	0	244,513	0	244,513
2050	17,905,400	1,398,663	1,398,663	0	232,407	0	232,407
2051	17,761,104	1,412,556	1,412,556	0	220,390	0	220,390
2052	17,588,103	1,422,771	1,422,771	0	208,436	0	208,436
2053	17,389,202	1,428,471	1,428,471	0	196,498	0	196,498
2054	17,168,387	1,429,109	1,429,109	0	184,588	0	184,588
2055	16,930,545	1,424,842	1,424,842	0	172,804	0	172,804
2056	16,680,665	1,415,919	1,415,919	0	161,242	0	161,242
2057	16,423,732	1,403,038	1,403,038	0	150,023	0	150,023
2058	16,164,167	1,386,731	1,386,731	0	139,230	0	139,230
2059	15,905,985	1,367,310	1,367,310	0	128,901	0	128,901
2060	15,653,043	1,345,038	1,345,038	0	119,062	0	119,062
2061	15,409,096	1,320,176	1,320,176	0	109,729	0	109,729
2062	15,177,803	1,292,943	1,292,943	0	100,907	0	100,907
2063	14,962,779	1,263,534	1,263,534	0	92,593	0	92,593
2064	14,767,633	1,232,146	1,232,146	0	84,782	0	84,782
2065	14,595,969	1,199,006	1,199,006	0	77,466	0	77,466
2066	14,451,354	1,164,322	1,164,322	0	70,634	0	70,634
2067	14,337,342	1,128,297	1,128,297	0	64,271	0	64,271
2068	14,257,483	1,091,093	1,091,093	0	58,359	0	58,359
2069	14,215,376	1,052,843	1,052,843	0	52,876	0	52,876
2070	14,214,708	1,013,660	1,013,660	0	47,801	0	47,801
2071	14,259,282	973,640	973,640	0	43,111	0	43,111



# Single Discount Rate Development

## Present Values of Projected Benefits (Concluded)

### (Dollars in Thousands)

Fiscal Year Ending	Projected Beginning Plan 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 <sup>(a)-.5</sup>	(g)=(e)*vf <sup>(a)-.5</sup>	(h)=(c)/(1+sdr) <sup>(a)-.5</sup>
2072	\$ 14,353,054	\$ 932,867	\$ 932,867	\$ 0	\$ 38,785	\$ 0	\$ 38,785
2073	14,500,149	891,417	891,417	0	34,800	0	34,800
2074	14,704,887	849,368	849,368	0	31,134	0	31,134
2075	14,971,792	806,800	806,800	0	27,769	0	27,769
2076	15,305,605	763,807	763,807	0	24,685	0	24,685
2077	15,711,280	720,494	720,494	0	21,864	0	21,864
2078	16,193,995	676,981	676,981	0	19,290	0	19,290
2079	16,759,142	633,402	633,402	0	16,946	0	16,946
2080	17,412,332	589,907	589,907	0	14,819	0	14,819
2081	18,159,391	546,664	546,664	0	12,895	0	12,895
2082	19,006,356	503,852	503,852	0	11,160	0	11,160
2083	19,959,478	461,665	461,665	0	9,601	0	9,601
2084	21,025,220	420,311	420,311	0	8,208	0	8,208
2085	22,210,256	380,009	380,009	0	6,968	0	6,968
2086	23,521,475	340,987	340,987	0	5,871	0	5,871
2087	24,965,986	303,478	303,478	0	4,906	0	4,906
2088	26,551,123	267,715	267,715	0	4,064	0	4,064
2089	28,284,467	233,923	233,923	0	3,334	0	3,334
2090	30,173,865	202,309	202,309	0	2,707	0	2,707
2091	32,227,469	173,050	173,050	0	2,175	0	2,175
2092	34,453,785	146,288	146,288	0	1,726	0	1,726
2093	36,861,733	122,117	122,117	0	1,353	0	1,353
2094	39,460,724	100,581	100,581	0	1,046	0	1,046
2095	42,260,746	81,668	81,668	0	798	0	798
2096	45,272,452	65,314	65,314	0	599	0	599
2097	48,507,267	51,400	51,400	0	443	0	443
2098	51,977,490	39,766	39,766	0	322	0	322
2099	55,696,392	30,215	30,215	0	229	0	229
2100	59,678,322	22,527	22,527	0	161	0	161
2101	63,938,796	16,465	16,465	0	110	0	110
2102	68,494,597	11,789	11,789	0	74	0	74
2103	73,363,852	8,264	8,264	0	49	0	49
2104	78,566,126	5,670	5,670	0	31	0	31
2105	84,122,488	3,807	3,807	0	20	0	20
2106	90,055,600	2,503	2,503	0	12	0	12
2107	96,389,782	1,612	1,612	0	7	0	7
2108	103,151,099	1,020	1,020	0	4	0	4
2109	110,367,442	636	636	0	3	0	3
2110	118,068,621	393	393	0	1	0	1
2111	126,286,465	243	243	0	1	0	1
2112	135,054,939	151	151	0	1	0	1
2113	144,410,262	95	95	0	0	0	0
2114	154,391,045	62	62	0	0	0	0
2115	165,038,440	41	41	0	0	0	0
2116	176,396,298	29	29	0	0	0	0
2117	188,511,342	20	20	0	0	0	0
2118	201,433,352	14	14	0	0	0	0
2119	215,215,363	10	10	0	0	0	0
2120	229,913,874	7	7	0	0	0	0
2121	245,589,077	5	5	0	0	0	0
<b>Totals</b>					\$ 14,881,627	\$ 0	\$ 14,881,627



## **SECTION H**

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### **GLOSSARY OF TERMS**

## Glossary of Terms

<b><i>Actuarial Accrued Liability (AAL)</i></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><i>Actuarial Assumptions</i></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><i>Accrued Service</i></b>	Service credited under the system which was rendered before the date of the actuarial valuation.
<b><i>Actuarial Equivalent</i></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><i>Actuarial Cost Method</i></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><i>Actuarial Gain (Loss)</i></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><i>Actuarial Present Value (APV)</i></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 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.
<b><i>Actuarial Valuation</i></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 performed in conformity with Actuarial Standards of Practice unless otherwise specified by the GASB.
<b><i>Actuarial Valuation Date</i></b>	The date as of which an actuarial valuation is performed.
<b><i>Actuarially Determined Contribution (ADC)</i></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><i>Amortization Payment</i></b>	The amortization payment is the periodic payment required to pay off an interest-discounted amount with payments of interest and principal.
<b><i>Amortization Method</i></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><i>Cost-of-Living Adjustments</i></b>	Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.
<b><i>Cost-Sharing Multiple-Employer Defined Benefit Pension Plan (cost-sharing pension plan)</i></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><i>Covered-Employee Payroll</i></b>	The payroll of covered employees, which is typically only the pensionable pay (meets the statutory salary definition) and does not include pay above any pay cap.
<b><i>Deferred Inflows and Outflows of Resources</i></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><i>Discount Rate or Single Discount Rate</i></b>	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: <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><i>Entry Age Actuarial Cost Method or Entry Age Normal (EAN)</i></b>	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

<b><i>GASB</i></b>	The Governmental Accounting Standards Board is an organization that exists with authority to promulgate accounting standards for state and local governmental entities.
<b><i>Fiduciary Net Position</i></b>	The fiduciary net position is the value of the net assets of the trust restricted for pension benefits.
<b><i>Long-Term Expected Rate of Return</i></b>	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.
<b><i>Money-Weighted Rate of Return</i></b>	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.
<b><i>Multiple-Employer Defined Benefit Pension Plan</i></b>	A multiple-employer plan is a defined benefit pension plan that is used to provide pensions to the employees of more than one employer.
<b><i>Municipal Bond Rate</i></b>	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.
<b><i>Net Pension Liability (NPL)</i></b>	The NPL is the liability of employers and non-employer contribution entities to plan members for benefits provided through a defined benefit pension plan.
<b><i>Non-Employer Contribution Entities</i></b>	Non-employer contribution 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 contribution entities.
<b><i>Normal Cost</i></b>	The actuarial present value of the pension trust benefits allocated to the current year by the actuarial cost method.
<b><i>Other Postemployment Benefits (OPEB)</i></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 postemployment benefits do not include termination benefits.
<b><i>Real Rate of Return</i></b>	The real rate of return is the rate of return on an investment after adjustment to eliminate inflation.
<b><i>Service Cost</i></b>	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 Outflows (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.