City of Grand Rapids Police and Fire Retirement System

GASB Statement Nos. 67 and 68 Accounting and Financial Reporting for Pensions

Measurement Date: December 31, 2021

GASB No. 68 Reporting Date: June 30, 2022

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April 20, 2022

Ms. Peggy Korzen
Board of Trustees
City of Grand Rapids Police
and Fire Retirement System
Grand Rapids, Michigan

Dear Ms. Korzen:

This report provides accounting and financial reporting information that is intended to comply with the Governmental Accounting Standards Board (GASB) Statement Nos. 67 and 68 for the City of Grand Rapids Police and Fire Retirement System ("the System"). These calculations have been made on a basis that is consistent with our understanding of these Statements.

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

This report was prepared at the request of the City and is intended for use by the Retirement System and those designated or approved by the City. This report may be provided to parties other than the System only in its entirety and only with the permission of the City. GRS is not responsible for unauthorized use of this report.

Our calculation of the liability associated with the benefits described in this report was performed for the purpose of providing reporting and disclosure information that satisfies the requirements of GASB Statement Nos. 67 and 68. The calculation of the plan's liability for this report is not applicable for funding purposes of the plan. A calculation of the plan's liability for purposes other than satisfying the requirements of GASB Statement No. 67 may produce significantly different results. The Net Pension Liability is not an appropriate measure for assessing the sufficiency of plan assets to cover the estimated cost of settling the employer's benefit obligation. The Net Pension Liability also is not an appropriate measure for assessing the need for or amount of future employer contributions.

The valuation was based upon information furnished by the City and Plan Administrator, concerning Retirement System benefits, financial transactions, plan provisions, and active members, terminated members, retirees and beneficiaries. We checked for internal reasonability and year-to-year consistency, but did not audit the data. We are not responsible for the accuracy or completeness of the information provided by the City.

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This report complements the actuarial valuation report that was provided to the Board and should be considered in conjunction with that report. Please see the actuarial valuation report as of December 31, 2021 for additional discussion of the nature of actuarial calculations and more information related to participant data, economic and demographic assumptions, and benefit provisions.

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.

To the best of our knowledge, the information contained within this report is accurate and fairly represents the actuarial position of the City of Grand Rapids Police and Fire Retirement System. All calculations have been made in conformity with generally accepted actuarial principles and practices as well as with the Actuarial Standards of Practice issued by the Actuarial Standards Board.

The signing actuaries are independent of the plan sponsor.

James D. Anderson and Jeffrey T. Tebeau 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

James D. Anderson

James D. Anderson, FSA, EA, FCA, MAAA

Jeffrey T. Tebeau

Jeffrey T. Tebeau, FSA, EA, FCA, MAAA

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SECTION A

EXECUTIVE SUMMARY

Executive Summary

Actuarial Valuation Date	December 31, 2021
Measurement Date of the Net Pension Liability	December 31, 2021
Employer's Fiscal Year Ending Date (Reporting Date)	June 30, 2022

Membership

Number of		
- Retirees and Beneficiaries		783
- Inactive, Nonretired Members		17
- Active Members		433
- Total		1,233
Covered Payroll#	$	41,018,362

Net Pension Liability

Total Pension Liability	$	630,404,345
Plan Fiduciary Net Position		543,311,869
Net Pension Liability	$	87,092,476
Plan Fiduciary Net Position as a Percentage of Total Pension Liability		86.18%
Net Pension Liability as a Percentage of Covered Payroll		212.33%

Development of the Single Discount Rate

Single Discount Rate	6.75%
Long-Term Expected Rate of Investment Return	6.75%
Long-Term Municipal Bond Rate*	1.84%
Last year ending January 1 in the 2022 to 2121 projection period for which projected benefit payments are fully funded	2121

Total Pension Expense	$	8,628,323

Deferred Outflows and Deferred Inflows of Resources by Source to be Recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources
Difference between expected and actual experience	$ 7,926,385	$ -
Changes in assumptions	21,486,793	-
Net difference between projected and actual earnings on pension plan investments	10,924,511	66,313,885
Total	**$ 40,337,689**	**$ 66,313,885**

 # Covered payroll was provided by the System as defined in GASB Statement Nos. 67 and 68.

** Source: Fixed-income municipal bonds with 20 years to maturity that include only federally tax-exempt municipal bonds as reported in Fidelity Index's "20-Year Municipal GO AA Index" as of December 31, 2021. In describing this index, Fidelity notes that the municipal curves are constructed using option-adjusted analytics of a diverse population of over 10,000 tax-exempt securities.*

Discussion

Accounting Standard

For pension plans that are administered through trusts or equivalent arrangements, Governmental Accounting Standards Board (GASB) Statement No. 67 establishes standards of financial reporting for separately issued financial reports and specifies the required approach for measuring the pension liability. Similarly, GASB Statement No. 68 establishes standards for state and local government employers (as well as non-employer contributing entities) to account for and disclose the net pension liability, pension expense, and other information associated with providing retirement benefits to their employees (and former employees) on their basic financial statements.

The following discussion provides a summary of the information that is required to be disclosed under these accounting standards. A number of these disclosure items are provided in this report. However, certain information, such as notes regarding accounting policies and investments, is not included in this report and the retirement system and/or plan sponsor will be responsible for preparing and disclosing that information to comply with these accounting standards.

Financial Statements

GASB Statement No. 68 requires state or local governments to recognize the net pension liability and the pension expense on their financial statements. The net pension liability is the difference between the total pension liability and the plan's fiduciary net position. In traditional actuarial terms, this is analogous to the accrued liability less the market value of assets (not the smoothed actuarial value of assets that is often encountered in actuarial valuations performed to determine the employer's contribution requirement).

Paragraph 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 the System subsequent to the measurement date of December 31, 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 of the employer's financial statements to disclose the total pension expense, the pension plan's liabilities and assets, and deferred outflows and inflows of resources related to pensions.

GASB Statement Nos. 67 and 68 require the notes of the financial statements for the employers and pension plans to include certain additional information. The list of disclosure items should include:

- A description of benefits provided by the plan;
- The type of employees and number of members covered by the pension plan;
- A description of the plan's funding policy, which includes member and employer contribution requirements;
- The pension plan's investment policies;
- The pension plan's fiduciary net position and the net pension liability;
- The net pension liability using a discount rate that is 1% higher and 1% lower than used to calculate the total pension liability and net pension liability for financial reporting purposes;
- Significant assumptions and methods used to calculate the total pension liability;
- Inputs to the discount rates; and
- Certain information about mortality assumptions and the dates of experience studies.

Retirement systems that issue stand-alone financial statements are required to disclose additional information in accordance with GASB Statement No. 67. This information includes:

- The composition of the pension plan's Board and the authority under which benefit terms may be amended;
- A description of how fair value is determined;
- Information regarding certain reserves and investments, which include concentrations of investments greater than or equal to 5%, receivables, and insurance contracts excluded from plan assets; and
- Annual money-weighted rate of return.

Required Supplementary Information

GASB Statement No. 67 requires a 10-year fiscal history of:

- Sources of changes in the net pension liability;
- Information about the components of the net pension liability and related ratios, including the pension plan's fiduciary net position as a percentage of the total pension liability, and the net pension liability as a percent of covered payroll; and
- A comparison of the actual employer contributions to the actuarially determined contributions based on the plan's funding policy.

General Implications of Contribution Allocation Procedure or Funding Policy on Future Expected Plan Contributions and Funded Status

Given the plan's contribution allocation procedure, if all actuarial assumptions are met (including the assumption of the plan earning 6.75% on the actuarial value of assets), then the following outcomes are expected:

1. The employer normal cost as a percentage of pay is expected to remain level as a percentage of payroll.
2. The unfunded liability is expected to be paid off in approximately 30 years, which is the number of years remaining in the closed amortization schedule of the unfunded liability for December 31, 2021.
3. The funded status of the plan is expected to reach a 100% funded ratio in approximately 30 years, which is the number of years remaining in the closed amortization schedule of the unfunded liability for December 31, 2021.

This funding policy results in the expectation that the plan's assets will be able to fully pay for promised benefits through at least 2121. The projections in this report are strictly for the purpose of determining the GASB single discount rate and are different from a funding projection for the ongoing plan.

Timing of the Valuation

An actuarial valuation to determine the total pension liability is required to be performed at least every two years. The net pension liability and pension expense should be measured as of the pension plan's fiscal year end (measurement date) on a date that is within the employer's prior fiscal year. If the actuarial valuation used to determine the total pension liability is not calculated as of the measurement date, the total pension liability is required to be rolled forward from the actuarial valuation date to the measurement date.

The total pension liability shown in this report is based on an actuarial valuation performed as of December 31, 2021 and a measurement date of December 31, 2021.

Single Discount Rate

Projected benefit payments are required to be discounted to their actuarial present values using a Single Discount Rate that reflects (1) a long-term expected rate of return on pension plan investments (to the extent that the plan's fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating (which is published by the Bond Buyer Index) 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 6.75%; the municipal bond rate is 1.84% (based on the weekly rate closest to but not later than the measurement date of the "20-Bond GO Index" rate from the Bond Buyer Index, general obligation, 20 years to maturity, mixed quality); and the resulting Single Discount Rate is 6.75%.

Effective Date and Transition

GASB Statement Nos. 67 and 68 became effective for fiscal years beginning after June 15, 2013, and June 15, 2014 respectively.

SECTION B

FINANCIAL STATEMENTS

Statement of Pension Expense under GASB Statement No. 68
Measurement Date – December 31, 2021
Reporting Date – June 30, 2022

A. Expense	
1. Service Cost	$ 10,109,359
2. Interest on the Total Pension Liability	40,340,298
3. Current Period Benefit Changes	-
4. Employee Contributions (made negative for addition here)	(5,930,546)
5. Projected Earnings on Plan Investments (made negative for addition here)	(32,727,698)
6. Pension Plan Administrative Expense	550,780
7. Other Changes in Plan Fiduciary Net Position	46,903
8. Recognition of Outflow (Inflow) of Resources due to Liabilities	12,218,801
9. Recognition of Outflow (Inflow) of Resources due to Assets	(15,979,574)
10. Total Pension Expense	**$ 8,628,323**

Statement of Outflows and Inflows Arising from the Current Reporting Period
Measurement Date – December 31, 2021
Reporting Date – June 30, 2022

A. Outflows (Inflows) of Resources Due to Liabilities	
1. Difference between expected and actual experience of the Total Pension Liability (gains) or losses	$ 7,963,985
2. Assumption Changes (gains) or losses	$ 17,216,930
3. Recognition period for Liabilities: Average of the expected remaining service lives of all employees {in years}	4.2000
4. Outflow (Inflow) of Resources to be recognized in the current pension expense for the difference between expected and actual experience of the Total Pension Liability	$ 1,896,187
5. Outflow (Inflow) of Resources to be recognized in the current pension expense for Assumption Changes	$ 4,099,269
6. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Liabilities	$ 5,995,456
7. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for the difference between expected and actual experience of the Total Pension Liability	$ 6,067,798
8. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for Assumption Changes	$ 13,117,661
9. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Liabilities	$ 19,185,459
B. Outflows (Inflows) of Resources Due to Assets	
1. Net difference between projected and actual earnings on pension plan investments (gains) or losses	$ (51,010,445)
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	$ (10,202,089)
4. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Assets	$ (40,808,356)

Statement of Outflows and Inflows Arising from the Current and Prior Reporting Periods
Measurement Date – December 31, 2021
Reporting Date – June 30, 2022

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	$ 12,218,801	$ -	$ 12,218,801
2. Due to Assets	10,924,513	26,904,087	(15,979,574)
3. Total	**$ 23,143,314**	**$ 26,904,087**	**$ (3,760,773)**

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	$ 4,134,231	$ -	$ 4,134,231
2. Assumption Changes	8,084,570	-	8,084,570
3. Net Difference between projected and actual earnings on pension plan investments	10,924,513	26,904,087	(15,979,574)
4. Total	**$ 23,143,314**	**$ 26,904,087**	**$ (3,760,773)**

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	$ 7,926,385	$ -	$ 7,926,385
2. Assumption Changes	21,486,793	-	21,486,793
3. Net Difference between projected and actual earnings on pension plan investments	10,924,511	66,313,885	(55,389,374)
4. Total	**$ 40,337,689**	**$ 66,313,885**	**$ (25,976,196)**

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
2023	$ 491,106
2024	(11,064,086)
2025	(6,400,218)
2026	(9,002,998)
2027	-
Thereafter	-
Total	**$ (25,976,196)**

Recognition of Deferred Outflows and Inflows of Resources
Measurement Date – December 31, 2021
Reporting Date – June 30, 2022

Year Established	Initial Amount	Initial Recognition Period	Current Year Recognition	Remaining Recognition	Remaining Recognition Period
Deferred Outflow (Inflow) due to Differences Between Expected and Actual Experience on Liabilities					
2018	$ 3,265,534	3.9	$ -	$ -	0.0
2019	4,658,725	4.1	1,136,274	113,629	0.1
2020	2,068,208	4.0	517,052	517,052	1.0
2021	2,397,342	4.1	584,718	1,227,906	2.1
2022	7,963,985	4.2	1,896,187	6,067,798	3.2
Total			**4,134,231**	**7,926,385**	
Deferred Outflow (Inflow) due to Assumption Changes					
2018	$ 5,497,995	3.9	$ -	$ -	0.0
2019	0	4.1	-	-	0.1
2020	0	4.0	-	-	1.0
2021	16,339,734	4.1	3,985,301	8,369,132	2.1
2022	17,216,930	4.2	4,099,269	13,117,661	3.2
Total			**8,084,570**	**21,486,793**	
Deferred Outflow (Inflow) due to Differences Between Projected and Actual Earnings on Plan Investments					
2018	$ (26,372,626)	5.0	$ (5,274,526)	$ -	0.0
2019	54,622,563	5.0	10,924,513	10,924,511	1.0
2020	(43,884,445)	5.0	(8,776,889)	(17,553,778)	2.0
2021	(13,252,917)	5.0	(2,650,583)	(7,951,751)	3.0
2022	(51,010,445)	5.0	(10,202,089)	(40,808,356)	4.0
Total			**(15,979,574)**	**(55,389,374)**	

According to paragraph 33 of GASB No. 68, 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 pensions 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 5,220 years. Additionally, the total plan membership (active employees and inactive employees) was 1,237. 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 4.2 years.

Additionally, differences between projected and actual earnings on pension 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 Fiduciary Net Position
as of December 31, 2021

Assets	
Cash and Deposits	$ 8,485,048
Receivables	
Accounts Receivable - Sale of Investments	$ -
Accrued Interest and Other Dividends	488,377
Contributions	1,657,073
Accounts Receivable - Other	1,739,860
Total Receivables	$ 3,885,310
Investments	
Fixed Income	150,492,620
Domestic Equities	195,181,766
International Equities	68,584,830
Real Estate	29,424,653
Other	89,499,949
Total Investments	$ 533,183,818
Total Assets	**$ 545,554,176**
Liabilities	
Payables	
Accounts Payable	$ 1,728,117
Accrued Expenses	514,190
Other	-
Total Liabilities	**$ 2,242,307**
Net Position Restricted for Pensions	**$ 543,311,869**

Statement of Changes in Fiduciary Net Position for Year Ended December 31, 2021

Additions	
Contributions	
Employer	$ 11,660,533
Employee	5,930,546
Other	-
Total Contributions	$ 17,591,079
Investment Income	
Net Appreciation in Fair Value of Investments	$ 79,813,330
Interest and Dividends	5,087,561
Less Investment Expense	(1,162,748)
Net Investment Income	$ 83,738,143
Other	$ -
Total Additions	**$ 101,329,222**
Deductions	
Benefit Payments, including Refunds of Employee Contributions	$ 32,923,031
Pension Plan Administrative Expense	550,780
Other	46,903
Total Deductions	**$ 33,520,714**
Net Increase in Net Position	**$ 67,808,508**
Net Position Restricted for Pensions	
Beginning of Year	**$ 475,503,361**
End of Year	**$ 543,311,869**

SECTION C

REQUIRED SUPPLEMENTARY INFORMATION

Schedules of Required Supplementary Information
Schedule of Changes in the Employers' Net Pension Liability and Related Ratios
Ultimately 10 Fiscal Years Will Be Displayed

Measurement Date - December 31,	2021	2020	2019	2018	2017	2016	2015	2014
Total Pension Liability								
Service Cost	$ 10,109,359	$ 9,269,719	$ 9,071,101	$ 8,780,168	$ 8,723,494	$ 8,588,314	$ 7,482,069	$ 7,794,219
Interest on the Total Pension Liability	40,340,298	38,670,466	37,279,003	35,724,491	34,356,315	32,676,161	29,375,231	28,440,421
Benefit Changes	-	-	-	-	-	114,084	-	-
Difference between Expected and Actual Experience	7,963,985	2,397,342	2,068,208	4,658,725	3,265,534	7,264,098	16,663,107	2,978,624
Assumption/Method Changes	17,216,930	16,339,734	-	-	5,497,995	1,551,086	35,683,769	-
Benefit Payments	(31,391,289)	(29,880,788)	(27,511,480)	(27,117,475)	(24,794,055)	(29,338,856)	(32,070,933)	(21,079,038)
Refunds	(1,531,742)	(501,756)	(219,197)	(286,684)	(19,080)	(21,606)	(11,369)	(24,749)
Net Change in Total Pension Liability	**$ 42,707,541**	**$ 36,294,717**	**$ 20,687,635**	**$ 21,759,225**	**$ 27,030,203**	**$ 20,833,281**	**$ 57,121,874**	**$ 18,109,477**
Total Pension Liability - Beginning	**$ 587,696,804**	**$ 551,402,087**	**$ 530,714,452**	**$ 508,955,227**	**$ 481,925,024**	**$ 461,091,743**	**$ 403,969,869**	**$ 385,860,392**
Total Pension Liability - Ending (a)	**$ 630,404,345**	**$ 587,696,804**	**$ 551,402,087**	**$ 530,714,452**	**$ 508,955,227**	**$ 481,925,024**	**$ 461,091,743**	**$ 403,969,869**
Plan Fiduciary Net Position								
Employer Contributions	$ 11,660,533	$ 10,716,480	$ 9,672,074	$ 9,421,305	$ 8,911,489	$ 7,166,351	$ 5,630,297	$ 6,331,848
Employee Contributions	5,930,546	5,379,200	5,832,668	5,313,127	5,114,841	4,929,842	4,557,165	4,563,692
Pension Plan Net Investment Income	83,738,143	44,596,181	71,134,823	(24,672,147)	53,740,592	25,712,942	(9,083,712)	29,390,902
Benefit Payments	(31,391,289)	(29,880,788)	(27,511,480)	(27,117,475)	(24,794,055)	(29,338,856)	(32,070,933)	(21,079,038)
Refunds	(1,531,742)	(501,756)	(219,197)	(286,684)	(19,080)	(21,606)	(11,369)	(24,749)
Pension Plan Administrative Expense	(550,780)	(576,813)	(592,306)	(602,512)	(580,690)	(542,277)	(581,364)	(523,607)
Other	(46,903)	(56,632)	(44,775)	(45,967)	-	-	-	(15,065)
Net Change in Plan Fiduciary Net Position	**67,808,508**	**29,675,872**	**58,271,807**	**(37,990,353)**	**42,373,097**	**7,906,396**	**(31,559,916)**	**18,643,983**
Plan Fiduciary Net Position - Beginning	**475,503,361**	**445,827,489**	**387,555,682**	**425,546,035**	**383,172,938**	**375,266,542**	**406,826,458**	**388,182,475**
Plan Fiduciary Net Position - Ending (b)	**$ 543,311,869**	**$ 475,503,361**	**$ 445,827,489**	**$ 387,555,682**	**$ 425,546,035**	**$ 383,172,938**	**$ 375,266,542**	**$ 406,826,458**
Net Pension Liability - Ending (a) - (b)	**$ 87,092,476**	**$ 112,193,443**	**$ 105,574,598**	**$ 143,158,770**	**$ 83,409,192**	**$ 98,752,086**	**$ 85,825,201**	**$ (2,856,589)**
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	**86.18 %**	**80.91 %**	**80.85 %**	**73.03 %**	**83.61 %**	**79.51 %**	**81.39 %**	**100.71 %**
Covered-Employee Payroll #	**$ 41,018,362**	**$ 40,201,129**	**$ 39,566,105**	**$ 38,122,879**	**$ 38,919,488**	**$ 38,129,771**	**$ 36,827,593**	**$ 35,710,964**
Net Pension Liability as a Percentage of Covered-Employee Payroll	**212.33 %**	**279.08 %**	**266.83 %**	**375.52 %**	**214.31 %**	**258.99 %**	**233.05 %**	**(8.00)%**
Notes to Schedule:	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**

Reported rates of pay adjusted by gross-up factors to estimate covered payroll. Beginning with the fiscal year ending 2021, covered payroll was reported by the System.

Schedules of Required Supplementary Information
Schedule of the Employers' Net Pension Liability
Ultimately 10 Fiscal Years Will Be Displayed

FY Ending December 31,	Total Pension Liability	Plan Net Position	Net Pension Liability	Plan Net Position as a % of Total Pension Liability	Covered Payroll#	Net Pension Liability as a % of Covered Payroll
2014	$ 403,969,869	$ 406,826,458	$ (2,856,589)	100.71%	$ 35,710,964	(8.00)%
2015	461,091,743	375,266,542	85,825,201	81.39%	36,827,593	233.05 %
2016	481,925,024	383,172,938	98,752,086	79.51%	38,129,771	258.99 %
2017	508,955,227	425,546,035	83,409,192	83.61%	38,919,488	214.31 %
2018	530,714,452	387,555,682	143,158,770	73.03%	38,122,879	375.52 %
2019	551,402,087	445,827,489	105,574,598	80.85%	39,566,105	266.83 %
2020	587,696,804	475,503,361	112,193,443	80.91%	40,201,129	279.08 %
2021	630,404,345	543,311,869	87,092,476	86.18%	41,018,362	212.33 %

 # Reported rates of pay adjusted by gross-up factors to estimate covered payroll. Beginning with the fiscal year ending 2021, covered payroll was reported by the System.

Schedule of Contributions
Ultimately 10 Fiscal Years Will Be Displayed

FY Ending December 31,	Actuarially Determined Contribution	Actual Contribution*	Contribution Deficiency (Excess)	Covered Payroll #	Actual Contribution as a % of Covered Payroll
2014	$ 6,331,848	$ 6,331,848	$ -	$ 35,710,964	17.73%
2015	5,630,297	5,630,297	0	36,827,593	15.29%
2016	7,166,351	7,166,351	0	38,129,771	18.79%
2017	8,911,489	8,911,489	0	38,919,488	22.90%
2018	9,421,305	9,421,305	0	38,122,879	24.71%
2019	9,672,074	9,672,074	0	39,566,105	24.45%
2020	10,716,480	10,716,480	0	40,201,129	26.66%
2021	11,660,533	11,660,533	0	41,018,362	28.43%

\# *Reported rates of pay adjusted by gross-up factors to estimate covered payroll. Beginning with the fiscal year ending 2021, covered payroll was reported by the System.*

* *Actual contributions are based on covered payroll at the time of the contribution. Since it was reported to the actuary that the City's practice is to contribute the percent-of-payroll employer contribution rate shown in the actuarial valuation report, the annual required contributions shown in the Schedule of Employer Contributions are the actual contributions made by the City in the fiscal year.*

Notes to Schedule of Contributions

Valuation Date:	December 31, 2021
Notes:	Actuarially determined contribution rates are calculated as of December 31, which is eighteen months prior to the beginning of the fiscal year in which contributions are reported.

Methods and Assumptions Used to Determine Contribution Rates for the Fiscal Year Beginning July 1, 2021:

Actuarial Cost Method	Individual Entry Age
Amortization Method	Level Percentage of Payroll, Closed
Remaining Amortization Period	Multiple periods (26 to 30 years as of December 31, 2019)
Asset Valuation Method	5-year smoothed market
Inflation	3.25% wage inflation, 2.50% price inflation
Salary Increases	3.25% to 20.25% including inflation
Investment Rate of Return	7.15% as of December 31, 2019
Cost-of-Living Adjustments	Ad hoc "13th check" tied to plan investments for benefit recipients who do not have an automatic benefit increase. 1.5% simple escalator for firefighters retired on or after July 1, 2007 with commencement delayed 2 years after retirement. 1.5% simple escalator for Fire Chief retired on or after January 1, 2016 and Deputy Fire Chief retired on or after October 6, 2016 with commencement delayed 2 years after retirement. 1.0% simple escalator for police command officer retired on or after February 19, 2010 with commencement delayed 5 years after retirement. 1.0% simple escalator for police officers and sergeants retired on or after December 17, 2008 with commencement delayed 5 years after retirement. 1.0% simple escalator for Police Chief and Deputy Police Chief retired on or after January 1, 2016 with commencement delayed 5 years after retirement.
Retirement Age	Experience-based table of rates that are specific to the type of eligibility condition.
Mortality	RP-2014 Healthy Annuitant Mortality Table projected to 2019 using the MP-2014 Mortality Improvement Scale as of December 31, 2015. Prior to that, 1983 Group Annuity Male and Female Mortality Tables set back 3 years for males and 2 years for females.

Other Information:

Notes

SECTION D

NOTES TO FINANCIAL STATEMENTS

Long-Term Expected Return on Plan Assets

The following table shows the long-term expected returns as of December 2021, as provided by the System's investment consultant, Wilshire Consulting.

Asset Class	Target Allocation	Long-Term Expected Return* 10-Year	20-Year	30-Year
U.S. Equity	17.75%	4.50%	5.39%	6.28%
Non-U.S. Equity	17.75%	5.75%	6.39%	7.03%
Private Equity	5.00%	8.10%	8.79%	9.48%
Global Low Volatility Equity	10.00%	5.18%	5.95%	6.72%
Private Credit	5.00%	6.92%	7.06%	7.19%
Core Fixed Income	24.50%	2.00%	2.83%	3.65%
U.S. REITs	5.00%	4.55%	5.23%	5.90%
U.S. TIPS	5.00%	1.45%	2.41%	3.38%
Midstream Energy Infrastructure	5.00%	6.60%	7.15%	7.70%
Commodities	5.00%	4.30%	4.66%	5.03%
Total	100.00%	4.97%	5.68%	6.40%
Inflation		*2.60%*	*2.58%*	*2.55%*

**All return assumptions are geometric.*

For more information about the analysis of the investment return assumption, please see our experience study dated July 27, 2020.

Single Discount Rate

A single discount rate of 6.75% 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 6.75%. The projection of cash flows used to determine this single discount rate assumed that plan member contributions will be made at the current contribution rate and that employer contributions will be made at rates equal to the difference between actuarially determined contribution rates and the member rate. Based on these assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

Sensitivity of the Net 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 6.75% as well as what the plan's net pension liability would be if it were calculated using a single discount rate that is 100 basis points lower or 100 basis points higher.

	100 Basis Point Decrease	Current Single Discount Rate Assumption	100 Basis Point Increase
	5.75%	**6.75%**	**7.75%**
Total Pension Liability	$ 709,095,251	$ 630,404,345	$ 566,069,338
Plan Net Position	543,311,869	543,311,869	543,311,869
Net Pension Liability	**$ 165,783,382**	**$ 87,092,476**	**$ 22,757,469**

Summary of Population Statistics
as of December 31, 2021

Inactive Plan Members or Beneficiaries Currently Receiving Benefits	783
Inactive Plan Members Entitled to But Not Yet Receiving Benefits	17
Active Plan Members	433
Total Plan Members	1,233

SECTION E

SUMMARY OF BENEFITS

Summary of Benefit Provisions Evaluated
December 31, 2021

Voluntary Retirement. Police members may retire after attaining age 50 and completing 10 years of service. Firefighter members are eligible for retirement after attaining age 55 with 10 or more years of service. Firefighter members may also retire at the age their service reaches the service credit limit.

Compulsory Retirement. None.

Final Average Salary (FAS). The average of member's highest annual salary rates during the three consecutive calendar years of credited service when such compensation rates are the highest increased by the applicable FAS Adjustment Factor 14.8% for Police members for the period January 1, 2021 to June 30, 2021, and 15.9% for Police members for the period July 1, 2021 to December 31, 2021, 12.6% for Firefighter members for the period January 1, 2021 to June 30, 2021, and 13.6% for Firefighter members for the period July 1, 2021 to December 31, 2021. The FAS Adjustment Factor for Non-Represented members (Fire Chief, Deputy Fire Chief, Police Chief, and Deputy Police Chiefs) is based upon the ratio of years of service while in a collective bargaining unit to total years of service. (Highest salary rates that occur in calendar years after the calendar year in which the member reaches their service credit limit will not be included in the FAS).

Benefit Multiplier Description. See page 20.

Benefit Multiplier. The member's benefit multiplier, used to compute full age and service allowance, is defined in the following table:

Benefit Multipliers and Allowance Caps for Member Groups

Covered Group	*Date of Hire*	*Benefit Multiplier*	*Allowance Cap*
Firefighters	Prior to July 1, 1992	2.5%	100%
	-or-		
	Prior to July 1, 1992	2.8%	94.5%
	July 1, 1992 to January 9, 2012	2.8%	90%
	January 10, 2012 or after	2.0%*	90%
Fire Chief or Deputy Fire Chief	At any time (must be member of System at time of hire)	2.8%	94.5%
Police Command	Prior to July 1, 2001	2.8%	100%
	July 1, 2001 to December 19, 2011	2.8%	80%
	December 20, 2011 or after	2.0%[@]	80%
Police Chief or Deputy Police Chief	At any time (must be member of System at time of hire)	2.8%	100%
Police Officers and Sergeants	Before March 9, 1995	2.8%	100%
	March 9, 1995 to June 30, 2001	2.8%	87.5%
	July 1, 2001 to December 19, 2011	2.8%	80%
	December 20, 2011 or after	2.0%[#]	80%

* *Per the most recent contract between the Fire members and the City of Grand Rapids, Firefighter members hired between January 10, 2012 and August 13, 2019 may choose one of the higher multipliers (2.2%, 2.4%, 2.6%, or 2.8%) and have this multiplier take effect as early as six months after their date of hire. Firefighter members hired after August 13, 2019 may select one of the higher multipliers listed above beginning at six months of service, but their election will not be retroactive.*

[@] *Police Command members hired on or after December 20, 2011 will have a 2.0% multiplier for the first five years of employment. Members may then irrevocably elect that multiplier, or, by making higher member contributions, elect a higher multiplier for all future service (2.2%, 2.4%, 2.6%, or 2.8%).*

[#] *Per the most recent contract between the Police Officers and Sergeants members and the City of Grand Rapids, Police Officer members hired between December 20, 2011 and August 31, 2019 may choose one of the higher multipliers (2.2%, 2.4%, 2.6%, or 2.8%) and have this multiplier take effect as early as six months after their date of hire. Police Officer members hired on or after September 1, 2019 must make their election no later than six months following their date of hire and the election will be effective as of the member's six-month employment anniversary.*

Full Age and Service Allowance. Allowance, payable monthly for life to the retired member, equals the member's benefit multiplier times the member's FAS times years of credited service. In lieu of this single life-level amount form of payment, a retiring member may elect from a variety of optional forms of payment, each of which is the actuarial equivalent (same lump sum value at time of retirement) of the single life-level payment form.

Deferred Allowance. A member with 10 or more years of service who leaves covered employment before retirement is eligible to receive an allowance computed in the same manner as an age and service allowance but based upon the member's employment record to the time of leaving. Such deferred allowance commences the first day of the calendar month next following the later of the date of the member's attainment of age 50 or the date when written application therefore is received by the Board. Benefits may be actuarially reduced in accordance with the Early Retirement provision if applicable.

Early Allowance. A Firefighter member who leaves covered employment after both attaining age 50 and completing 10 years of service is eligible to receive an immediate early allowance (in lieu of a deferred allowance), computed in the same manner as a deferred allowance based upon the member's employment record to the time of early retirement, but actuarially reduced (per schedule in ordinance) to reflect the fact that the age when payments begin is younger than age 55.

Duty Disability Allowance. A member who becomes totally and permanently disabled from duty-connected causes is eligible to receive, subject to offsets, a duty disability allowance computed in the same manner as a full age and service allowance based upon the member's employment record to the time of disability with a minimum allowance before offset of 72% of FAS. The maximum allowance after offsets is 90% of final salary less amounts received from (i) Worker's Compensation, (ii) gainful employment as a law enforcement officer or firefighter, and (iii) Social Security disability income.

Non-Duty Disability Allowance. A member with 1 or more years of credited service and who has not attained the minimum service retirement age, who becomes totally and permanently disabled from other than duty-connected causes is eligible to receive a non-duty disability allowance computed in the same manner as a full age and service allowance, based upon the member's employment record to the time of disability. Minimum benefit for Police Officers is 48% of FAS if credited service is less than 20 years or 60% of FAS if credited service is 20 or more years. Minimum benefit for Police Command Officers is based on the earlier of (i) the date the member would have completed 20 (if credited service is less than 20 years) or 25 years of service (if credited service is 20 or more years) or (ii) the date the member would have reached 50 years of age. Minimum benefit for Firefighters is based on the earlier of (i) the date the member would have completed 20 (if credited service is less than 20 years) or 25 years of service (if credited service is 20 or more years) or (ii) the date the member would have reached 55 years of age. For Fire members hired on or after July 1, 2016 or any Police members, until a member reaches the Pension System vesting requirement of 10 years of service, the benefit the member is entitled to is 50% for service years 1-5, then an additional 10% of the above formula for every year of service accrued in the System (e.g., 1-5 years of service = 50% of Non-Duty Disability Allowance, 6 years = 60%, …, 10 years = 100%).

Death-in-Service Benefits. Upon the death of a member, surviving dependents are eligible to receive the following benefits, subject to offsets for Worker's Compensation and Social Security.

(a) The widow receives an allowance equal to the Option B-100 allowance (joint and 100% survivor actuarial equivalent benefit) which would have been payable to her had the deceased member retired the day preceding the date of his death and elected Option B-100. The minimum allowance payable to the widow is 20% of the member's FAS. If the death was determined to be duty-related, the minimum allowance payable to the widow is 72% of the member's final average salary (60% for Command or Firefighters hired after June 30, 1992).

(b) Dependent children under age 18 (up to age 23 if they are continuous full-time students) each are eligible to receive an allowance of 15% of the member's FAS. If there are four or more dependent children, each child receives an equal share of 50% of the member's FAS.

(c) If there are neither a widow nor children, each dependent parent is eligible to receive an allowance equal to 15% of FAS.

Compensation. Compensation upon which members contribute includes base pay, longevity pay, educational increment and vacation pay, plus the following additional compensation items:

Firefighters: Overtime pay (assumed to be 4.2% for calendars years before 2010 and actual overtime in 2010 and later), holiday pay, clothing allowance, acting assignment pay, shop pay and shift pay. For Firefighters retiring after January 1, 2012 up to six (6) days of unused vacation time may be converted to compensation.

Police Officers and Police Command Officers: Overtime pay, comp. payoff, holiday pay, clothing allowance, acting assignment, witness fees and shift pay.

The average of the additional compensation items is used to annually adjust the FAS Adjustment Factor. In addition, compensation will not include any amount that would cause the System to be in violation of IRC Sections 401(a) (17) or 415(d).

Member Contributions. Effective July 1, 2013, member contribution rates shall be payable in accordance with the following table.

System Funding Represented as a Percentage of Valuation Assets to Actuarial Accrued Liabilities	Firefighters	Police Officers & Sergeants	Police Command Officers
Below 100%	10.70%	9.86%	10.89%
100% - 104.999%	9.70%	8.86%	9.89%
105% - 109.999%	8.70%	7.86%	8.89%
110% - 114.999%	7.70%	6.86%	7.89%
115% - 119.999%	6.70%	5.86%	6.89%
120% - 124.999%	6.70%	5.20%	6.06%
125% - 129.999%	6.70%	4.54%	5.23%
130% - 134.999%	6.70%	3.88%	4.40%
135+%	6.70%	3.22%	3.57%

The member contribution rates used for the December 31, 2021 valuation were 10.70% (Firefighters), 9.86% (Police Officers and Sergeants), 10.89% (Police Command Officers) and 10.20% (Police Chief, Deputy Police Chiefs, Fire Chief and Deputy Fire Chief).

Members may elect their benefit multiplier/employee contributions based on the following:

- Per the most recent contract between the Fire members and the City of Grand Rapids, Firefighter members hired between January 10, 2012 and August 13, 2019 may choose one of the higher multipliers (2.2%, 2.4%, 2.6%, or 2.8%) and have this multiplier take effect as early as six months after their date of hire. Firefighter members hired after August 13, 2019 may select one of the higher multipliers listed above beginning at six months of service, but their election will not be retroactive.

- Police Command members hired on or after December 20, 2011 will have a 2.0% multiplier for the first five years of employment. Members may then irrevocably elect that multiplier, or, by making higher member contributions, elect a higher multiplier for all future service (2.2%, 2.4%, 2.6%, or 2.8%).

- Per the most recent contract between the Police Officers and Sergeants members and the City of Grand Rapids, Police Officer members hired between December 20, 2011 and August 31, 2019 may choose one of the higher multipliers (2.2%, 2.4%, 2.6%, or 2.8%) and have this multiplier take effect as early as six months after their date of hire. Police Officer members hired on or after September 1, 2019 must make their election no later than six months following their date of hire and the election will be effective as of the member’s six-month employment anniversary.

The additional member contributions for the multiplier elections are as follows:

Multiplier for Future Service	Firefighters	Police Officers & Sergeants / Police Command
2.0%	0.00%	0.00%
2.2%	1.23%	1.21%
2.4%	2.49%	2.46%
2.6%	3.77%	3.61%
2.8%	5.08%	4.80%

If a member terminates employment before any allowance is payable, accumulated contributions (contributions plus regular interest) are refunded.

Employer Contributions. The City contributes the remainder amounts necessary to maintain the Retirement System in sound financial condition in accordance with its funding objectives.

Automatic Post-Retirement Benefit Increases. Post-retirement benefit increases are paid to eligible groups as described in the following table.

	Firefighters	Deputy Fire Chief	Fire Chief	Police Officers and Sergeants	Police Command Officers	Police Chief and Deputy Police Chief
Effective date	Retired on or after July 1, 2007	Retired on or after October 6, 2016	Retired on or after January 1, 2016	Retired on or after December 17, 2008	Retired on or after February 19, 2010	Retired on or after January 1, 2016
Amount of increase	1.5% of original benefit	1.5% of original benefit	1.5% of original benefit	1.0% of original benefit	1.0% of original benefit	1.0% of original benefit
First increase to occur	2 years after retirement	2 years after retirement	2 years after retirement	5 years after retirement	5 years after retirement	5 years after retirement

The increase is paid on January or July following the end of the delay period. Benefit recipients who are eligible for the automatic post-retirement increase do not participate in the 13th check program.

13th Check. For members not eligible for automatic post-retirement increases, one-half of net investment income over 8% which is attributable to retired life assets is distributed annually (in January) to retired members and beneficiaries who have been on the retirement rolls for five years in the form of a 13th check. Net investment income is based on a market value rate of return averaged over the preceding five plan years. The distribution is in proportion to points. An individual's points are determined by multiplying (i) the number of full years of retirement, to a maximum of 15, by (ii) the number of years, and fractions thereof, of service at retirement. Subsequent to the calculations above, the benefit so calculated for Chief of Police, Deputy Chief, Police Command Officers, Police Officers and Sergeants, Fire Service, and beneficiaries having had at least 10 years of service under either bargaining unit shall be increased by 20 percent.

Key Employee Incentive Program (KEIP). Participation is open to any employee of the City of Grand Rapids Police and Fire Retirement System who attains service retirement eligibility and maintains a minimum leave accrual balance of 100 hours. A regular retirement benefit is computed for the member as of his KEIP election date based upon Final Average Compensation (FAC), credited service and benefit multiplier as of this date. Monthly payments equal to 75% of the computed monthly benefit are deposited into the KEIP Reserve Account (KRA) on behalf of this member. Interest is credited monthly to this balance in the KRA at the rate of 3%, compounded annually. Employer and member contributions shall cease as of the member's KEIP election date. The members may remain in the KEIP for up to five years and then must cease participation in the KEIP. The member's monthly benefit at retirement will be the original monthly payment determined at the KEIP election date plus any applicable post-retirement benefit increases.

***Eligibility*.** The Plan is closed to individuals hired from outside of the organization to fill the position of Fire Chief, Deputy Fire Chief, Police Chief or Deputy Police Chief.

SECTION F

ACTUARIAL COST METHOD AND ACTUARIAL ASSUMPTIONS

Valuation Methods

Normal cost and the allocation of benefit values between service rendered before and after the valuation date was determined using the individual entry-age actuarial cost method having the following characteristics:

(i) The annual normal costs for each individual active member, payable from the date of employment to the date of retirement, are sufficient to accumulate the value of the portion 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.

Financing of Unfunded Actuarial Accrued Liabilities. Unfunded actuarial accrued liabilities arising in a given year are amortized over a closed 30-year period. Detail can be found on page A-17 of the December 31, 2021 valuation report.

Valuation Asset Method. Valuation Assets were determined using a method which phases-in each year's differences between actual and assumed investment return over a closed five-year period. For GASB reporting purposes, the market value of assets is used.

Actuarial Assumptions Used for the Valuation Adopted by the Board of Trustees

The actuary calculates contribution requirements and actuarial present values of the System by applying assumptions to the benefit provisions and census data information furnished, using the valuation methods described on the previous page.

The principal areas of financial risk which require assumptions about future experiences are:

(i) Long-term rates of investment return to be generated by the assets of the System,
(ii) Patterns of pay increases to members,
(iii) Rates of mortality among members, retirants and beneficiaries,
(iv) Rates of withdrawal of active members,
(v) Rates of disability among members, and
(vi) The age patterns of actual retirement.

In a valuation, the actuary calculates the monetary effect of each assumption for as long as a present covered person survives - - - a period of time which can be as long as a century.

Actual experience will not coincide exactly with assumed experience, regardless of the wisdom of the assumptions, or the skill of the actuary and the precision of the many calculations made. Each valuation provides a complete recalculation of assumed future experience and takes into account all past differences between assumed and actual experience. The result is a continual series of adjustments (usually small) to the computed contribution rate.

From time to time it becomes appropriate to modify one or more of the assumptions, to reflect experience trends (but not random year-to-year fluctuations).

The assumptions are established by the Board after consulting with the actuary. Updated assumptions were adopted for the December 31, 2020 valuation pursuant to the Experience Study dated July 27, 2020. All assumptions are based on future expectations, not market measures. The investment return assumption was updated for the December 31, 2021 valuation.

The rates of salary increase used for individual members are in accordance with the following table. This assumption is used to project a member's current salary to the salaries upon which benefit amounts will be based.

Service at Beginning of Year	Salary Increase Assumptions For an Individual Member: Merit & Seniority	Base (Economic)	Increase Next Year
1	17.00%	3.00%	20.00%
2	7.00	3.00	10.00
3	6.00	3.00	9.00
4	5.00	3.00	8.00
5	4.00	3.00	7.00
6 and over	1.00	3.00	4.00

These rates were first used for the December 31, 2020 valuation.

If the number of active members remains constant, then the total active member payroll will increase 3.0% annually, the base portion of the individual salary increase assumptions. This increasing payroll was recognized in amortizing unfunded actuarial accrued liabilities. Note that the 3.0% wage inflation assumption consists of 2.25% for price inflation and 0.75% for real wage growth.

The rate of investment return was 6.75% a year compounded yearly (net after expenses). This assumption is used to make money payable at one point in time equal in value to a different amount of money payable at another point in time. This assumption was first used for the December 31, 2021 valuation.

The assumed real return for funding purposes is the rate of return in excess of average salary increases.

The mortality tables

- **Healthy Pre-Retirement:** The Pub-2010 Amount-Weighted, Public Safety, Employee, Male and Female tables, with a base year of 2010 and future mortality improvements projected using scale MP-2019 on a fully generational basis.

- **Healthy Post-Retirement:** The Pub-2010 Amount-Weighted, Public Safety, Healthy Retiree, Male and Female tables, with a base year of 2010 and future mortality improvements projected using scale MP-2019 on a fully generational basis.

- **Disability Retirement:** The Pub-2010 Amount-Weighted, Public Safety, Disabled Retiree, Male and Female, with a base year of 2010 and future mortality improvements projected using scale MP-2019 on a fully generational basis.

The following sample rates are based on the Healthy Post-Retirement tables:

Sample Ages in 2021	Value at Retirement of $1 Monthly for Life		Future Life Expectancy (Years)*	
	Men	Women	Men	Women
50	$159.45	$161.84	35.67	37.68
55	151.25	154.32	30.60	32.56
60	140.88	145.03	25.71	27.65
65	128.35	133.74	21.09	23.00
70	113.45	119.96	16.79	18.59
75	96.21	103.67	12.86	14.50
80	77.59	85.84	9.42	10.88

* *Applicable to the year ended December 31, 2021. Life expectancy in future years is based on the MP-2019 projection scale.*

These rates were first used for the December 31, 2020 valuation.

The rates of retirement used to measure the probability of eligible members retiring during the next year were as follows:

Retirement Ages	Percent	Retirement Ages	Percent
50	30%	60	50%
51	30%	61	60%
52	30%	62	70%
53	30%	63	80%
54	30%	64	90%
55	35%	65	100%
56	35%		
57	35%		
58	35%		
59	35%		

A Police member is eligible for retirement after both attaining age 50 and completing 10 or more years of service. Fire members are eligible after attaining age 55 with 10 or more years of service or at the age their service reaches the service credit limit. A 100% decrement pattern is applied to Firefighters once achieving 34 years of service regardless of age.

These rates were first used for the December 31, 2020 valuation.

Rates of separation from active membership were as follows:

(Rates do not apply to members eligible to retire and do not include separation on account of death or disability.) This assumption measures the probabilities of members remaining in employment. These rates were first used for the December 31, 2020 valuation.

Sample Ages	% of Active Members Separating Within Next Year: Police	Fire
25	3.45%	2.07%
30	2.85	1.71
35	1.95	1.17
40	1.35	0.81
45	1.05	0.63
50	0.90	0.54
55	0.90	0.54
60	0.90	0.54

The rates of disability were as follows:

Sample Ages	% of Active Members Becoming Disabled Within Next Year: Police	Fire
20	0.12%	0.12%
25	0.12	0.12
30	0.12	0.12
35	0.27	0.27
40	0.59	0.59
45	1.05	1.05
50	1.68	1.68
55	2.51	2.51

		Duty Related	Non-Duty Related
Cause of Disability:	Male	75%	25%
	Female	75%	25%

These rates were first used for the December 31, 2015 valuation.

Summary of Assumptions Used
December 31, 2021
Miscellaneous and Technical Assumptions

Marriage Assumption. 90% of males and 90% of females are assumed to be married for purposes of death-in-service benefits.

Pay Increase Timing. Beginning of (Fiscal) year. Reported pays represent amounts paid to members during the year ended on the valuation date.

Decrement Timing. Decrements of all types are assumed to occur mid-year.

Eligibility Testing. Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.

Benefit Service. Exact fractional service is used to determine the amount of benefit payable.

Decrement Relativity. Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.

Liability Adjustments. Retirement present values were increased by 15.9% and 13.6% for police and fire, respectively, to account for the FAS Adjustment Factor.

13th Check. A 7.5% load was placed on affected liabilities for members eligible to participate in the 13th Check program.

Service Purchase. An $3.9 million liability was applied for the liability for service purchases.

Normal Form of Benefit. The assumed normal form of benefit is the straight life form.

Incidence of Contributions. Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in this report, and the actual payroll payable at the time contributions are made. New entrant normal cost contributions are applied to the funding of new entrant benefits.

New Benefit Multiplier. Benefits for new hires will be modeled using the 2.8% benefit multiplier for all future years of service until such time that they elect another benefit multiplier.

SECTION G

CALCULATION OF THE SINGLE DISCOUNT RATE

Calculation of the Single Discount Rate

GASB Statement No. 67 includes a specific requirement for the discount rate that is used for the purpose of the measurement of the Total Pension Liability. This rate considers the ability of the fund to meet benefit obligations in the future. To make this determination, employer contributions, employee contributions, benefit payments, expenses and investment returns are projected into the future. The Plan Net Position (assets) in future years can then be determined and compared to its obligation to make benefit payments in those years. As long as assets are projected to be on hand in a future year, the assumed valuation discount rate is used. In years where assets are not projected to be sufficient to meet benefit payments, the use of a “risk-free” 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 6.75%; the municipal bond rate is 1.84%; and the resulting single discount rate is 6.75%.

The tables in this section provide background for the development of the single discount rate. Note that these projections are specifically used to determine the GASB SDR and should not be interpreted as a funding projection or recommendation.

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

Year	Contributions from Current Employees	Normal Cost	Administrative Expense Contributions	UAL Contributions	Total Contributions
2022	$ 5,590,150	$ 4,949,734	$ -	$ 4,143,061	$ 14,682,946
2023	5,511,091	4,877,179	-	4,826,869	15,215,139
2024	5,377,906	4,770,343	-	5,334,853	15,483,102
2025	5,198,313	4,631,314	-	5,808,055	15,637,682
2026	5,027,535	4,497,981	-	5,955,393	15,480,908
2027	4,858,437	4,363,129	-	6,113,428	15,334,994
2028	4,671,015	4,214,886	-	6,288,486	15,174,387
2029	4,494,491	4,071,062	-	6,477,141	15,042,694
2030	4,354,759	3,952,983	-	6,671,455	14,979,197
2031	4,243,978	3,854,936	-	6,871,599	14,970,512
2032	4,137,316	3,753,962	-	7,077,746	14,969,025
2033	4,007,377	3,631,962	-	7,290,079	14,929,419
2034	3,873,979	3,503,127	-	7,508,781	14,885,888
2035	3,733,790	3,359,578	-	7,734,045	14,827,413
2036	3,581,401	3,196,094	-	7,966,066	14,743,560
2037	3,419,785	3,015,914	-	8,205,048	14,640,747
2038	3,237,756	2,823,110	-	8,451,199	14,512,066
2039	3,062,328	2,640,004	-	8,704,735	14,407,068
2040	2,869,517	2,442,209	-	8,965,877	14,277,603
2041	2,629,903	2,206,834	-	9,234,854	14,071,592
2042	2,363,935	1,952,809	-	9,511,899	13,828,643
2043	2,087,441	1,699,622	-	9,797,256	13,584,320
2044	1,768,251	1,427,471	-	10,091,174	13,286,896
2045	1,455,742	1,163,084	-	10,393,909	13,012,735
2046	1,217,330	956,180	-	6,230,485	8,403,995
2047	1,002,583	775,927	-	6,198,757	7,977,267
2048	788,829	604,463	-	6,147,357	7,540,649
2049	584,573	443,090	-	5,340,365	6,368,028
2050	401,824	301,023	-	5,033,372	5,736,218
2051	263,834	195,989	-	598,308	1,058,131
2052	173,249	127,013	-	-	300,262
2053	107,923	78,045	-	-	185,968
2054	60,013	42,156	-	-	102,168
2055	33,037	22,272	-	-	55,309
2056	20,952	13,975	-	-	34,927
2057	12,851	8,501	-	-	21,352
2058	7,250	4,697	-	-	11,947
2059	3,681	2,373	-	-	6,054
2060	1,643	1,019	-	-	2,662
2061	613	376	-	-	989
2062	188	103	-	-	292
2063	45	25	-	-	70
2064	7	2	-	-	9
2065	1	-	-	-	1
2066	-	-	-	-	-
2067	-	-	-	-	-
2068	-	-	-	-	-
2069	-	-	-	-	-
2070	-	-	-	-	-
2071	-	-	-	-	-

Single Discount Rate Development
Projection of Plan Fiduciary Net Position

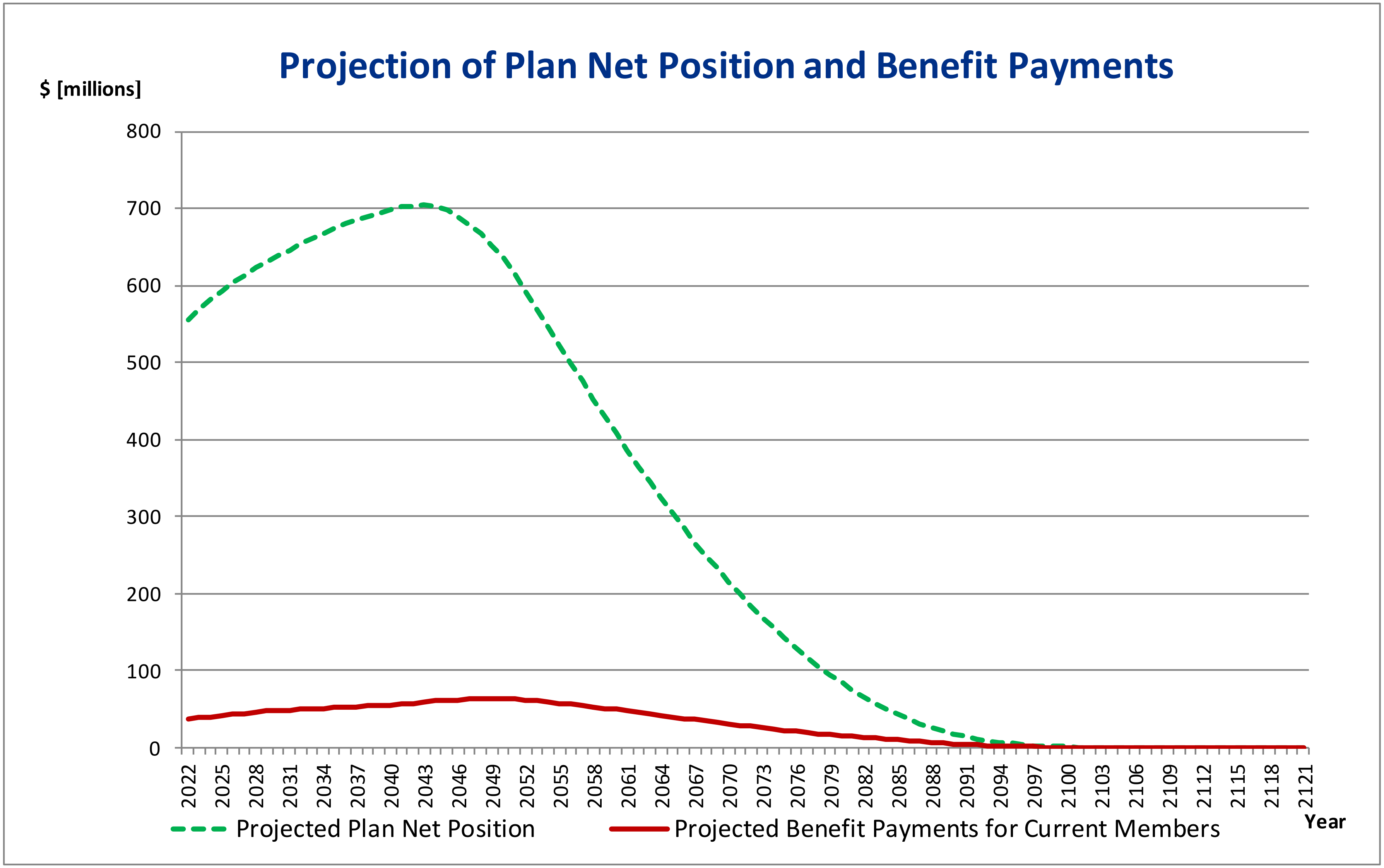
Year	Projected Beginning Plan Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 6.75%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
2022	$ 543,311,869	$ 14,682,946	$ 38,100,722	$ 543,312	$ 36,439,418	$ 555,790,199
2023	555,790,199	15,215,139	39,189,843	555,790	37,275,694	568,535,399
2024	568,535,399	15,483,102	40,680,022	568,535	38,108,164	580,878,108
2025	580,878,108	15,637,682	42,202,581	580,878	38,908,225	592,640,556
2026	592,640,556	15,480,908	43,670,145	592,641	39,660,026	603,518,704
2027	603,518,704	15,334,994	45,084,444	603,519	40,353,382	613,519,118
2028	613,519,118	15,174,387	46,594,321	613,519	40,982,952	622,468,616
2029	622,468,616	15,042,694	47,595,290	622,469	41,558,389	630,851,941
2030	630,851,941	14,979,197	48,544,113	630,852	42,099,039	638,755,212
2031	638,755,212	14,970,512	49,400,564	638,755	42,611,692	646,298,097
2032	646,298,097	14,969,025	50,206,232	646,298	43,101,583	653,516,174
2033	653,516,174	14,929,419	51,027,754	653,516	43,567,432	660,331,756
2034	660,331,756	14,885,888	51,485,932	660,332	44,017,643	667,089,023
2035	667,089,023	14,827,413	52,308,352	667,089	44,451,272	673,392,267
2036	673,392,267	14,743,560	52,869,693	673,392	44,861,624	679,454,366
2037	679,454,366	14,640,747	53,735,151	679,454	45,244,732	684,925,239
2038	684,925,239	14,512,066	54,277,895	684,925	45,597,196	690,071,681
2039	690,071,681	14,407,068	55,002,639	690,072	45,922,181	694,708,219
2040	694,708,219	14,277,603	55,818,988	694,708	46,208,384	698,680,510
2041	698,680,510	14,071,592	56,877,051	698,681	46,438,520	701,614,891
2042	701,614,891	13,828,643	58,032,621	701,615	46,593,096	703,302,393
2043	703,302,393	13,584,320	59,273,885	703,302	46,659,370	703,568,896
2044	703,568,896	13,286,896	60,892,498	703,569	46,614,015	701,873,740
2045	701,873,740	13,012,735	61,976,809	701,874	46,452,797	698,660,589
2046	698,660,589	8,403,995	62,645,379	698,661	46,057,495	689,778,039
2047	689,778,039	7,977,267	63,247,010	689,778	45,414,900	679,233,417
2048	679,233,417	7,540,649	63,716,457	679,233	44,662,513	667,040,890
2049	667,040,890	6,368,028	64,207,999	667,041	43,772,077	652,305,954
2050	652,305,954	5,736,218	64,117,456	652,306	42,744,764	636,017,174
2051	636,017,174	1,058,131	63,337,325	636,017	41,499,575	614,601,537
2052	614,601,537	300,262	62,409,535	614,602	40,038,245	591,915,907
2053	591,915,907	185,968	61,258,033	591,916	38,518,713	568,770,640
2054	568,770,640	102,168	59,865,653	568,771	36,976,706	545,415,090
2055	545,415,090	55,309	58,175,749	545,415	35,431,398	522,180,633
2056	522,180,633	34,927	56,574,922	522,181	33,892,307	499,010,764
2057	499,010,764	21,352	54,931,464	499,011	32,359,281	475,960,922
2058	475,960,922	11,947	53,221,504	475,961	30,836,824	453,112,227
2059	453,112,227	6,054	51,450,464	453,112	29,330,289	430,544,993
2060	430,544,993	2,662	49,635,505	430,545	27,844,575	408,326,181
2061	408,326,181	989	47,784,672	408,326	26,383,977	386,518,149
2062	386,518,149	292	45,910,869	386,518	24,952,312	365,173,365
2063	365,173,365	70	44,023,230	365,173	23,552,854	344,337,885
2064	344,337,885	9	42,130,933	344,338	22,188,444	324,051,068
2065	324,051,068	1	40,243,241	324,051	20,861,466	304,345,243
2066	304,345,243	-	38,368,926	304,345	19,573,842	285,245,814
2067	285,245,814	-	36,516,173	285,246	18,327,041	266,771,436
2068	266,771,436	-	34,692,265	266,771	17,122,098	248,934,497
2069	248,934,497	-	32,903,302	248,934	15,959,659	231,741,920
2070	231,741,920	-	31,154,206	231,742	14,840,036	215,196,008
2071	215,196,008	-	29,448,540	215,196	13,763,267	199,295,539

Single Discount Rate Development
Present Values of Projected Benefit Payments

Year	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^((a)-.5)	(g)=(e)*vf ^((a)-.5)	(h)=(c)/(1+sdr)^(a-.5)
2022	$ 543,311,869	$ 38,100,722	$ 38,100,722	$ -	$ 36,876,463	$ -	$ 36,876,463
2023	555,790,199	39,189,843	39,189,843	-	35,532,167	-	35,532,167
2024	568,535,399	40,680,022	40,680,022	-	34,551,067	-	34,551,067
2025	580,878,108	42,202,581	42,202,581	-	33,577,737	-	33,577,737
2026	592,640,556	43,670,145	43,670,145	-	32,548,364	-	32,548,364
2027	603,518,704	45,084,444	45,084,444	-	31,477,726	-	31,477,726
2028	613,519,118	46,594,321	46,594,321	-	30,474,862	-	30,474,862
2029	622,468,616	47,595,290	47,595,290	-	29,161,163	-	29,161,163
2030	630,851,941	48,544,113	48,544,113	-	27,861,825	-	27,861,825
2031	638,755,212	49,400,564	49,400,564	-	26,560,547	-	26,560,547
2032	646,298,097	50,206,232	50,206,232	-	25,286,857	-	25,286,857
2033	653,516,174	51,027,754	51,027,754	-	24,075,526	-	24,075,526
2034	660,331,756	51,485,932	51,485,932	-	22,755,691	-	22,755,691
2035	667,089,023	52,308,352	52,308,352	-	21,657,315	-	21,657,315
2036	673,392,267	52,869,693	52,869,693	-	20,505,600	-	20,505,600
2037	679,454,366	53,735,151	53,735,151	-	19,523,437	-	19,523,437
2038	684,925,239	54,277,895	54,277,895	-	18,473,659	-	18,473,659
2039	690,071,681	55,002,639	55,002,639	-	17,536,607	-	17,536,607
2040	694,708,219	55,818,988	55,818,988	-	16,671,555	-	16,671,555
2041	698,680,510	56,877,051	56,877,051	-	15,913,413	-	15,913,413
2042	701,614,891	58,032,621	58,032,621	-	15,210,048	-	15,210,048
2043	703,302,393	59,273,885	59,273,885	-	14,553,046	-	14,553,046
2044	703,568,896	60,892,498	60,892,498	-	14,005,106	-	14,005,106
2045	701,873,740	61,976,809	61,976,809	-	13,353,157	-	13,353,157
2046	698,660,589	62,645,379	62,645,379	-	12,643,750	-	12,643,750
2047	689,778,039	63,247,010	63,247,010	-	11,958,012	-	11,958,012
2048	679,233,417	63,716,457	63,716,457	-	11,285,030	-	11,285,030
2049	667,040,890	64,207,999	64,207,999	-	10,653,010	-	10,653,010
2050	652,305,954	64,117,456	64,117,456	-	9,965,328	-	9,965,328
2051	636,017,174	63,337,325	63,337,325	-	9,221,618	-	9,221,618
2052	614,601,537	62,409,535	62,409,535	-	8,511,978	-	8,511,978
2053	591,915,907	61,258,033	61,258,033	-	7,826,628	-	7,826,628
2054	568,770,640	59,865,653	59,865,653	-	7,165,088	-	7,165,088
2055	545,415,090	58,175,749	58,175,749	-	6,522,557	-	6,522,557
2056	522,180,633	56,574,922	56,574,922	-	5,941,991	-	5,941,991
2057	499,010,764	54,931,464	54,931,464	-	5,404,572	-	5,404,572
2058	475,960,922	53,221,504	53,221,504	-	4,905,230	-	4,905,230
2059	453,112,227	51,450,464	51,450,464	-	4,442,155	-	4,442,155
2060	430,544,993	49,635,505	49,635,505	-	4,014,477	-	4,014,477
2061	408,326,181	47,784,672	47,784,672	-	3,620,405	-	3,620,405
2062	386,518,149	45,910,869	45,910,869	-	3,258,489	-	3,258,489
2063	365,173,365	44,023,230	44,023,230	-	2,926,946	-	2,926,946
2064	344,337,885	42,130,933	42,130,933	-	2,624,013	-	2,624,013
2065	324,051,068	40,243,241	40,243,241	-	2,347,956	-	2,347,956
2066	304,345,243	38,368,926	38,368,926	-	2,097,050	-	2,097,050
2067	285,245,814	36,516,173	36,516,173	-	1,869,591	-	1,869,591
2068	266,771,436	34,692,265	34,692,265	-	1,663,896	-	1,663,896
2069	248,934,497	32,903,302	32,903,302	-	1,478,308	-	1,478,308
2070	231,741,920	31,154,206	31,154,206	-	1,311,216	-	1,311,216
2071	215,196,008	29,448,540	29,448,540	-	1,161,057	-	1,161,057

Single Discount Rate Development
Present Values of Projected Benefit Payments
(Concluded)

Year	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^((a)-.5)	(g)=(e)*vf ^((a)-.5)	(h)=(c)/(1+sdr)^(a-.5)
2072	$ 199,295,539	$ 27,788,466	$ 27,788,466	$ -	$ 1,026,329	$ -	$ 1,026,329
2073	184,036,974	26,174,935	26,174,935	-	905,607	-	905,607
2074	169,415,555	24,607,647	24,607,647	-	797,547	-	797,547
2075	155,426,511	23,085,145	23,085,145	-	700,892	-	700,892
2076	142,066,253	21,605,158	21,605,158	-	614,480	-	614,480
2077	129,333,299	20,164,982	20,164,982	-	537,255	-	537,255
2078	117,228,859	18,762,144	18,762,144	-	468,271	-	468,271
2079	105,756,780	17,394,849	17,394,849	-	406,694	-	406,694
2080	94,923,023	16,062,237	16,062,237	-	351,791	-	351,791
2081	84,734,841	14,764,907	14,764,907	-	302,930	-	302,930
2082	75,199,358	13,505,173	13,505,173	-	259,563	-	259,563
2083	66,321,785	12,286,601	12,286,601	-	221,211	-	221,211
2084	58,104,002	11,113,345	11,113,345	-	187,436	-	187,436
2085	50,543,727	9,989,752	9,989,752	-	157,832	-	157,832
2086	43,634,027	8,919,638	8,919,638	-	132,014	-	132,014
2087	37,363,564	7,906,066	7,906,066	-	109,614	-	109,614
2088	31,717,065	6,952,045	6,952,045	-	90,292	-	90,292
2089	26,675,121	6,060,571	6,060,571	-	73,736	-	73,736
2090	22,213,917	5,234,378	5,234,378	-	59,658	-	59,658
2091	18,305,202	4,475,771	4,475,771	-	47,786	-	47,786
2092	14,916,441	3,786,360	3,786,360	-	37,869	-	37,869
2093	12,011,238	3,166,783	3,166,783	-	29,670	-	29,670
2094	9,550,079	2,616,484	2,616,484	-	22,964	-	22,964
2095	7,491,361	2,133,757	2,133,757	-	17,543	-	17,543
2096	5,792,432	1,715,798	1,715,798	-	13,215	-	13,215
2097	4,410,661	1,359,065	1,359,065	-	9,805	-	9,805
2098	3,304,195	1,059,382	1,059,382	-	7,160	-	7,160
2099	2,432,676	811,765	811,765	-	5,139	-	5,139
2100	1,758,167	610,665	610,665	-	3,622	-	3,622
2101	1,245,905	450,420	450,420	-	2,502	-	2,502
2102	864,631	325,365	325,365	-	1,693	-	1,693
2103	586,826	229,857	229,857	-	1,121	-	1,121
2104	388,948	158,533	158,533	-	724	-	724
2105	251,406	106,570	106,570	-	456	-	456
2106	158,268	69,719	69,719	-	279	-	279
2107	96,917	44,318	44,318	-	166	-	166
2108	57,670	27,328	27,328	-	96	-	96
2109	33,327	16,329	16,329	-	54	-	54
2110	18,706	9,451	9,451	-	29	-	29
2111	10,204	5,306	5,306	-	15	-	15
2112	5,411	2,898	2,898	-	8	-	8
2113	2,781	1,536	1,536	-	4	-	4
2114	1,382	788	788	-	2	-	2
2115	661	393	393	-	1	-	1
2116	300	192	192	-	-	-	-
2117	122	86	86	-	-	-	-
2118	41	32	32	-	-	-	-
2119	11	10	10	-	-	-	-
2120	1	1	1	-	-	-	-
2121	-	-	-	-	-	-	-
				Totals	**$ 730,568,360**	**$ -**	**$ 730,568,360**


Projection of Plan Net Position and Benefit Payments
$ [millions]
800
700
600
500
400
300
200
100
0
2022
2025
2028
2031
2034
2037
2040
2043
2046
2049
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2076
2079
2082
2085
2088
2091
2094
2097
2100
2103
2106
2109
2112
2115
2118
2121
Year
Projected Plan Net Position
Projected Benefit Payments for Current Members

SECTION H

MICHIGAN PUBLIC ACT 202

State Reporting Assumptions as of June 30, 2022

The Protecting Local Government Retirement and Benefits Act, Public Act 202 of 2017 (PA 202), was put into law effective December 20, 2017. One outcome of the law is the requirement for the local unit of government to provide select reporting disclosures to the State. Section 5(1) of the Act provides the State treasurer with the authority to annually establish uniform actuarial assumptions for purposes of developing the requisite disclosures. Below you will find information which may be used to assist the local unit of government with required reporting.

Uniform Assumptions, as applicable to the measurement and the required disclosures under uniform assumptions are denoted below. Additional discussion of the PA 202 and uniform assumptions may be found on the State website in the uniform assumption memo dated December 17, 2021.

Uniform Assumption	PA 202	Valuation Assumption Used	Uniform Assumption Used
Investment Rate of Return Discount Rate	Maximum of 6.85%^	6.75%	6.75%
Salary Increase	Minimum of 3.0% or based on experience study within last 5 years	3.0% + Merit and longevity (based on experience study dated July 27, 2020)	3.0% + Merit and longevity (based on experience study dated July 27, 2020)
Mortality	Version of Pub-2010 or based on experience study within last 5 years	Pub-2010 Mortality Tables	Pub-2010 Mortality Tables
Amortization of the Unfunded Accrued Actuarial Liability: Period	Maximum Period of 17 Years	24-30 years	**17 years**
Method	Closed Plans: Level Dollar Open Plans: Level Percent of Payroll or Level Dollar	Level Percent of Payroll	Level Percent of Payroll
Type	Closed	Closed	Closed

^ *A blended rate calculated using GASB Statement No. 68 methodology. For periods in which projected plan assets are sufficient to make projected benefit payments – maximum of 6.85%; for periods in which projected plan assets are NOT sufficient to make projected benefit payments – 2.16%.*

State Reporting
as of June 30, 2022

The following information has been prepared to provide some of the information necessary to complete the pension reporting requirements for the State of Michigan's Local Government Retirement System Annual Report (Form 5572). Additional resources are available on the State website.

Line	Descriptive Information	
23	**Uniform Assumptions**[1]	
24	Enter retirement pension system's actuarial value of assets using uniform assumptions	$488,856,294
25	Enter retirement pension system's actuarial accrued liabilities using uniform assumptions	$630,404,345
26	Funded ratio using uniform assumptions	Auto[2]
27	Actuarially Determined Contribution (ADC) using uniform assumptions[3]	$ 18,008,892
28	All systems combined ADC/Governmental fund revenues	Auto[2]

[1] *Information on lines 24-28 is based on assumptions listed on the prior page as of the most recent valuation date, December 31, 2021, after reflecting uniform assumptions.*

[2] *Automatically calculated by State of Michigan Form 5572.*

[3] *For the fiscal year ending June 30, 2022.*

SECTION I

GLOSSARY OF TERMS

Glossary of Terms

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

Glossary of Terms

Amortization Payment	The amortization payment is the periodic payment required to pay off an interest-discounted amount with payments of interest and principal.
Amortization Method	The method used to determine the periodic amortization payment may be a level dollar amount, or a level percent of pay amount. The period will typically be expressed in years, and the method will either be "open" (meaning, reset each year) or "closed" (the number of years remaining will decline each year).
Cost-of-Living Adjustments	Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.
Cost-Sharing Multiple-Employer Defined Benefit Pension Plan (cost-sharing pension plan)	A multiple-employer defined benefit pension plan in which the pension obligations to the employees of more than one employer are pooled and pension plan assets can be used to pay the benefits of the employees of any employer that provides pensions through the pension plan.
Covered-Employee Payroll	The payroll of covered employees, which is typically only the pensionable pay and does not include pay above any pay cap.
Deferred Retirement Option Program (DROP)	A program that permits a plan member to elect a calculation of benefit payments based on service credits and salary, as applicable, as of the DROP entry date. The plan member continues to provide service to the employer and is paid for the service by the employer after the DROP entry date; however, the pensions that would have been paid to the plan member are credited to an individual member account within the defined benefit pension plan until the end of the DROP period. Other variations for DROP exist and will be more fully detailed in the plan provision section of the valuation report.
Deferred Inflows and Outflows	The deferred inflows and outflows of pension resources are amounts used under GASB Statement No. 68 in developing the annual pension expense. Deferred inflows and outflows arise with differences between expected and actual experiences; changes of assumptions. The portion of these amounts not included in pension expense should be included in the deferred inflows or outflows of resources.
Discount Rate	For GASB purposes, the discount rate is the single rate of return that results in the present value of all projected benefit payments to be equal to the sum of the funded and unfunded projected benefit payments, specifically: 1. The benefit payments to be made while the pension plans' fiduciary net position is projected to be greater than the benefit payments that are projected to be made in the period; and 2. The present value of the benefit payments not in (1) above, discounted using the municipal bond rate.

Glossary of Terms

Entry Age Actuarial Cost Method (EAN)	The EAN is a funding method for allocating the costs of the plan between the normal cost and the accrued liability. The actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis (either level dollar or level percent of pay) over the earnings or service of the individual between entry age and assumed exit age(s). The portion of the actuarial present value allocated to a valuation year is the normal cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future normal costs is the actuarial accrued liability. The sum of the accrued liability plus the present value of all future normal costs is the present value of all benefits.
GASB	The Governmental Accounting Standards Board is an organization that exists in order to promulgate accounting standards for governmental entities.
Fiduciary Net Position	The fiduciary net position is the value of the assets of the trust.
Long-Term Expected Rate of Return	The long-term rate of return is the expected return to be earned over the entire trust portfolio based on the asset allocation of the portfolio.
Money-Weighted Rate of Return	The money-weighted rate of return is a method of calculating the returns that adjusts for the changing amounts actually invested. For purposes of GASB Statement No. 67, money-weighted rate of return is calculated as the internal rate of return on pension plan investments, net of pension plan investment expense.
Multiple-Employer Defined Benefit Pension Plan	A multiple-employer plan is a defined benefit pension plan that is used to provide pensions to the employees of more than one employer.
Municipal Bond Rate	The Municipal Bond Rate is the discount rate to be used for those benefit payments that occur after the assets of the trust have been depleted.
Net Pension Liability (NPL)	The NPL is the liability of employers and non-employer contribution entities to plan members for benefits provided through a defined benefit pension plan.
Non-Employer Contribution Entities	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 statement plan members are not considered non-employer contribution entities.
Normal Cost	The actuarial present value of the pension trust benefits allocated to the current year by the actuarial cost method.

Glossary of Terms

Other Postemployment Benefits (OPEB)	All postemployment benefits other than retirement income (such as death benefits, life insurance, disability, and long-term care) that are provided separately from a pension plan, as well as postemployment healthcare benefits regardless of the manner in which they are provided. Other post-employment benefits do not include termination benefits.
Real Rate of Return	The real rate of return is the rate of return on an investment after adjustment to eliminate inflation.
Service Cost	The service cost is the portion of the actuarial present value of projected benefit payments that is attributed to a valuation year.
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 Benefit Changes 4. Employee Contributions (made negative for addition here) 5. Projected Earnings on Plan Investments (made negative for addition here) 6. Pension Plan Administrative Expense 7. Other Changes in Plan Fiduciary Net Position 8. Recognition of Outflow (Inflow) of Resources due to Liabilities 9. Recognition of Outflow (Inflow) of Resources due to Assets
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 assets used in determining the unfunded liability of the plan. For purposes of the GASB Statement No. 67, the valuation asset is equal to the market value of assets.