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, 2019

GASB No. 68 Reporting Date: June 30, 2020

May 8, 2020

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.

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, 2019 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 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 individuals 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,

James D. Anderson

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

David K. Hoffman

David L. Hoffman

Jeffrey T. Tebeau

Jeffrey T. Tebeau, FSA, EA, MAAA

JDA/DLH/JTT:ah

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SECTION A

EXECUTIVE SUMMARY

Executive Summary

Actuarial Valuation Date	December 31, 2019
Measurement Date of the Net Pension Liability	December 31, 2019
Employer's Fiscal Year Ending Date (Reporting Date)	June 30, 2020

Membership

Number of	
- Retirees and Beneficiaries	724
- Inactive, Nonretired Members	28
- Active Members	466
- Total	1,218
Covered Payroll#	$ 39,566,105

Net Pension Liability

Total Pension Liability	$ 551,402,087
Plan Fiduciary Net Position	445,827,489
Net Pension Liability	$ 105,574,598
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	80.85%
Net Pension Liability as a Percentage of Covered Payroll	266.83%

Development of the Single Discount Rate

Single Discount Rate	7.15%
Long-Term Expected Rate of Investment Return	7.15%
Long-Term Municipal Bond Rate*	2.75%
Last year ending January 1 in the 2020 to 2119 projection period for which projected benefit payments are fully funded	2119

Total Pension Expense	$ 25,973,477

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	$ 5,036,829	$ -
Changes in assumptions	1,342,631	-
Net difference between projected and actual earnings on pension plan investments	32,943,216	45,656,607
Total	**$ 39,322,676**	**$ 45,656,607**

 # Reported rates of pay adjusted by gross-up factors to estimate covered payroll. The amount provided may not necessarily represent Covered Payroll 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 30, 2019. In describing this index, Fidelity notes that the municipal curves are constructed using option-adjusted analytics of a diverse population of over 10,000 tax-exempt securities.*

Discussion

Accounting Standard

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

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

Financial Statements

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

Paragraph 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, 2019.

The pension expense recognized each fiscal year is equal to the change in the net pension liability from the beginning of the year to the end of the year, adjusted for deferred recognition of the liability and investment experience.

Pension plans that prepare their own, stand-alone financial statements are required to present two financial statements – a statement of fiduciary net position and a statement of changes in fiduciary net position in accordance with GASB Statement No. 67. The statement of fiduciary net position presents the assets and liabilities of the pension plan at the end of the pension plan's reporting period. The statement of changes in fiduciary net position presents the additions, such as contributions and investment income, and deductions, such as benefit payments and expenses, and net increase or decrease in the fiduciary net position.

Notes to Financial Statements

GASB Statement No. 68 requires the notes of the employer's financial statements to disclose the total pension expense, the pension plan's liabilities and assets, and deferred outflows and inflows of resources related to pensions.

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

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

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

- the composition of the pension plan's Board and the authority under which benefit terms may be amended;
- a description of how fair value is determined;
- information regarding certain reserves and investments, which include concentrations of investments greater than or equal to 5%, receivables, and insurance contracts excluded from plan assets; 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 7.15% 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, 2019.
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, 2019.

This funding policy results in the expectation that the plan's assets will be able to fully pay for promised benefits through at least 2119. The projections in this report are strictly for the purpose of determining the GASB single discount rate and are different from a funding projection for the ongoing plan.

Timing of the Valuation

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

The total pension liability shown in this report is based on an actuarial valuation performed as of December 31, 2019 and a measurement date of December 31, 2019.

Single Discount Rate

Projected benefit payments are required to be discounted to their actuarial present values using a Single Discount Rate that reflects (1) a long-term expected rate of return on pension plan investments (to the extent that the plan's fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating (which is published by the 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 7.15%; the municipal bond rate is 2.75% (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 7.15%.

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, 2019
Reporting Date – June 30, 2020

A. Expense	
1. Service Cost	$ 9,071,101
2. Interest on the Total Pension Liability	37,279,003
3. Current Period Benefit Changes	-
4. Employee Contributions (made negative for addition here)	(5,832,668)
5. Projected Earnings on Plan Investments (made negative for addition here)	(27,250,378)
6. Pension Plan Administrative Expense	592,306
7. Other Changes in Plan Fiduciary Net Position	44,775
8. Recognition of Outflow (Inflow) of Resources due to Liabilities	7,275,993
9. Recognition of Outflow (Inflow) of Resources due to Assets	4,793,345
10. Total Pension Expense	**$ 25,973,477**

Statement of Outflows and Inflows Arising from the Current Reporting Period
Measurement Date – December 31, 2019
Reporting Date – June 30, 2020

A. Outflows (Inflows) of Resources Due to Liabilities

1. Difference between expected and actual experience of the Total Pension Liability (gains) or losses	$ 2,068,208
2. Assumption Changes (gains) or losses	$ -
3. Recognition period for Liabilities: Average of the expected remaining service lives of all employees {in years}	4.0000
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	$ 517,052
5. Outflow (Inflow) of Resources to be recognized in the current pension expense for Assumption Changes	$ -
6. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Liabilities	$ 517,052
7. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for the difference between expected and actual experience of the Total Pension Liability	$ 1,551,156
8. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for Assumption Changes	$ -
9. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Liabilities	$ 1,551,156

B. Outflows (Inflows) of Resources Due to Assets

1. Net difference between projected and actual earnings on pension plan investments (gains) or losses	$ (43,884,445)
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	$ (8,776,889)
4. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Assets	$ (35,107,556)

Statement of Outflows and Inflows Arising from the Current and Prior Reporting Periods
Measurement Date – December 31, 2019
Reporting Date – June 30, 2020

A. Outflows and Inflows of Resources due to Liabilities and Assets to be Recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows of Resources
1. Due to Liabilities	$ 7,275,993	$ -	$ 7,275,993
2. Due to Assets	18,844,759	14,051,414	4,793,345
3. Total	**$ 26,120,752**	**$ 14,051,414**	**$ 12,069,338**

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	$ 4,626,608	$ -	$ 4,626,608
2. Assumption Changes	2,649,385	-	2,649,385
3. Net Difference between projected and actual earnings on pension plan investments	18,844,759	14,051,414	4,793,345
4. Total	**$ 26,120,752**	**$ 14,051,414**	**$ 12,069,338**

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	$ 5,036,829	$ -	$ 5,036,829
2. Assumption Changes	1,342,631	-	1,342,631
3. Net Difference between projected and actual earnings on pension plan investments	32,943,216	45,656,607	(12,713,391)
4. Total	**$ 39,322,676**	**$ 45,656,607**	**$ (6,333,931)**

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
2021	$ 1,138,231
2022	(1,473,576)
2023	2,778,303
2024	(8,776,889)
2025	-
Thereafter	-
Total	**$ (6,333,931)**

Recognition of Deferred Outflows and Inflows of Resources
Measurement Date – December 31, 2019
Reporting Date – June 30, 2020

Year Established	Initial Amount	Initial Recognition Period	Current Year Recognition	Remaining Recognition	Remaining Recognition Period
Deferred Outflow (Inflow) due to Differences Between Expected and Actual Experience on Liabilities					
2016	$ 16,663,107	4.1	$ 406,419	$ -	0.0
2017	7,264,098	4.2	1,729,547	345,910	0.2
2018	3,265,534	3.9	837,316	753,586	0.9
2019	4,658,725	4.1	1,136,274	2,386,177	2.1
2020	2,068,208	4.0	517,052	1,551,156	3.0
Total			**4,626,608**	**5,036,829**	
Deferred Outflow (Inflow) due to Assumption Changes					
2016	$ 35,683,769	4.1	$ 870,337	$ -	0.0
2017	1,551,086	4.2	369,306	73,862	0.2
2018	5,497,995	3.9	1,409,742	1,268,769	0.9
2019	0	4.1	0	0	2.1
2020	0	4.0	0	0	3.0
Total			**2,649,385**	**1,342,631**	
Deferred Outflow (Inflow) due to Differences Between Projected and Actual Earnings on Plan Investments					
2016	$ 38,752,839	5.0	$ 7,750,567	$ -	0.0
2017	848,395	5.0	169,679	169,679	1.0
2018	(26,372,626)	5.0	(5,274,525)	(10,549,051)	2.0
2019	54,622,563	5.0	10,924,513	32,773,537	3.0
2020	(43,884,445)	5.0	(8,776,889)	(35,107,556)	4.0
Total			**4,793,345**	**(12,713,391)**	

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 4,863 years. Additionally, the total plan membership (active employees and inactive employees) was 1,208. 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 4.0 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, 2019

Assets	
Cash and Deposits	$ 7,323,183
Receivables	
Accounts Receivable - Sale of Investments	$ -
Accrued Interest and Other Dividends	551,746
Contributions	764,959
Accounts Receivable - Other	18,412,738
Total Receivables	$ 19,729,443
Investments	
Fixed Income	129,782,055
Domestic Equities	167,734,091
International Equities	57,231,176
Real Estate	22,162,714
Other	60,019,460
Total Investments	$ 436,929,496
Total Assets	**$ 463,982,122**
Liabilities	
Payables	
Accounts Payable	$ 17,796,394
Accrued Expenses	358,239
Other	-
Total Liabilities	**$ 18,154,633**
Net Position Restricted for Pensions	**$ 445,827,489**

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

Additions	
Contributions	
Employer	$ 9,672,074
Employee	5,832,668
Other	-
Total Contributions	$ 15,504,742
Investment Income	
Net Appreciation in Fair Value of Investments	$ 67,197,369
Interest and Dividends	4,985,391
Less Investment Expense	(1,047,937)
Net Investment Income	$ 71,134,823
Other	$ -
Total Additions	**$ 86,639,565**
Deductions	
Benefit Payments, including Refunds of Employee Contributions	$ 27,730,677
Pension Plan Administrative Expense	592,306
Other	44,775
Total Deductions	**$ 28,367,758**
Net Increase in Net Position	**$ 58,271,807**
Net Position Restricted for Pensions	
Beginning of Year	**$ 387,555,682**
End of Year	**$ 445,827,489**

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,	2019	2018	2017	2016	2015	2014
Total Pension Liability						
Service Cost	$ 9,071,101	$ 8,780,168	$ 8,723,494	$ 8,588,314	$ 7,482,069	$ 7,794,219
Interest on the Total Pension Liability	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	2,068,208	4,658,725	3,265,534	7,264,098	16,663,107	2,978,624
Assumption/Method Changes	-	-	5,497,995	1,551,086	35,683,769	-
Benefit Payments	(27,511,480)	(27,117,475)	(24,794,055)	(29,338,856)	(32,070,933)	(21,079,038)
Refunds	(219,197)	(286,684)	(19,080)	(21,606)	(11,369)	(24,749)
Net Change in Total Pension Liability	**$ 20,687,635**	**$ 21,759,225**	**$ 27,030,203**	**$ 20,833,281**	**$ 57,121,874**	**$ 18,109,477**
Total Pension Liability - Beginning	**$ 530,714,452**	**$ 508,955,227**	**$ 481,925,024**	**$ 461,091,743**	**$ 403,969,869**	**$ 385,860,392**
Total Pension Liability - Ending (a)	**$ 551,402,087**	**$ 530,714,452**	**$ 508,955,227**	**$ 481,925,024**	**$ 461,091,743**	**$ 403,969,869**
Plan Fiduciary Net Position						
Employer Contributions	$ 9,672,074	$ 9,421,305	$ 8,911,489	$ 7,166,351	$ 5,630,297	$ 6,331,848
Employee Contributions	5,832,668	5,313,127	5,114,841	4,929,842	4,557,165	4,563,692
Pension Plan Net Investment Income	71,134,823	(24,672,147)	53,740,592	25,712,942	(9,083,712)	29,390,902
Benefit Payments	(27,511,480)	(27,117,475)	(24,794,055)	(29,338,856)	(32,070,933)	(21,079,038)
Refunds	(219,197)	(286,684)	(19,080)	(21,606)	(11,369)	(24,749)
Pension Plan Administrative Expense	(592,306)	(602,512)	(580,690)	(542,277)	(581,364)	(523,607)
Other	(44,775)	(45,967)	-	-	-	(15,065)
Net Change in Plan Fiduciary Net Position	**58,271,807**	**(37,990,353)**	**42,373,097**	**7,906,396**	**(31,559,916)**	**18,643,983**
Plan Fiduciary Net Position - Beginning	**387,555,682**	**425,546,035**	**383,172,938**	**375,266,542**	**406,826,458**	**388,182,475**
Plan Fiduciary Net Position - Ending (b)	**$ 445,827,489**	**$ 387,555,682**	**$ 425,546,035**	**$ 383,172,938**	**$ 375,266,542**	**$ 406,826,458**
Net Pension Liability - Ending (a) - (b)	**$ 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	**80.85 %**	**73.03 %**	**83.61 %**	**79.51 %**	**81.39 %**	**100.71 %**
Covered-Employee Payroll #	**$ 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	**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**

 # Reported rates of pay adjusted by gross-up factors to estimate covered payroll.

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 %

 # Reported rates of pay adjusted by gross-up factors to estimate covered payroll.

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%

Reported rates of pay adjusted by gross-up factors to estimate covered payroll.

* *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, 2019
Notes:	Actuarially determined contribution rates are calculated as of December 31, which is six months prior to the beginning of the fiscal year in which contributions are reported.

Methods and Assumptions Used to Determine Contribution Rates:

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, 2018.
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 January 2020, 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%	5.75%	6.90%	7.28%
Non-U.S. Equity	17.75%	6.50%	7.38%	7.67%
Private Equity	5.00%	7.95%	9.43%	9.92%
Global Low Volatility Equity	10.00%	6.14%	7.19%	7.54%
Private Credit	5.00%	6.65%	7.21%	7.39%
Core Fixed Income	24.50%	2.85%	4.08%	4.48%
Global REITs	5.00%	5.00%	6.13%	6.50%
U.S. TIPS	5.00%	2.15%	3.73%	4.25%
MLPs	5.00%	7.70%	8.25%	8.43%
Commodities	5.00%	3.60%	4.68%	5.03%
Total	**100.00%**	**5.67%**	**6.75%**	**7.11%**
Inflation		*1.75%*	*2.13%*	*2.25%*

**All return assumptions are geometric.*

For more information about the analysis of the investment return assumption, please see our memorandum to the Board of Trustees dated February 8, 2019.

Single Discount Rate

A single discount rate of 7.15% was used to measure the total pension liability. This single discount rate was based on the expected rate of return on pension plan investments of 7.15%. 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 7.15% 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
	6.15%	**7.15%**	**8.15%**
Total Pension Liability	$ 615,023,923	$ 551,402,087	$ 498,736,803
Plan Net Position	445,827,489	445,827,489	445,827,489
Net Pension Liability	**$ 169,196,434**	**$ 105,574,598**	**$ 52,909,314**

Summary of Population Statistics
As of December 31, 2019

Inactive Plan Members or Beneficiaries Currently Receiving Benefits	724
Inactive Plan Members Entitled to But Not Yet Receiving Benefits	28
Active Plan Members	466
Total Plan Members	1,218

Section E

Summary of Benefits

Summary of Benefit Provisions Evaluated
December 31, 2019

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 13.2% for Police members for the period January 1, 2019 to June 30, 2019, and 14.0% for Police members for the period July 1, 2019 to December 31, 2019, 10.2% for Firefighter members for the period January 1, 2019 to June 30, 2019, and 11.7% for Firefighter members for the period July 1, 2019 to December 31, 2019. 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%

* *Firefighter members hired on or after January 10, 2012 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%).*

[@] *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%).*

[#] *Police Officers and Sergeants 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%).*

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, 2019 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:

- Firefighter members hired on or after January 10, 2012 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%).
- 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%).
- Police Officers and Sergeants 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%).

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, Firefighter service, and beneficiaries having had at least 10 years of service under either bargaining unit shall be increased by 20%.

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, 2019 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

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. New assumptions were adopted for the December 31, 2015 valuation pursuant to the Experience Study dated December 7, 2015. The investment return assumption was updated for the December 31, 2017 valuation. All assumptions are based on future expectations, not market measures.

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%	3.25%	20.25%
2	7.00	3.25	10.25
3	6.00	3.25	9.25
4	5.00	3.25	8.25
5	4.00	3.25	7.25
6 and over	1.00	3.25	4.25

These rates were first used for the December 31, 2016 valuation.

If the number of active members remains constant, then the total active member payroll will increase 3.25% annually, the base portion of the individual salary increase assumptions. This increasing payroll was recognized in amortizing unfunded actuarial accrued liabilities. Note that the 3.25% wage inflation assumption consists of 2.50% for price inflation and 0.75% for real wage growth.

The rate of investment return was 7.15% 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, 2017 valuation.

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

The mortality table was the RP-2014 Healthy Annuity Mortality Table projected to 2019 using the MP-2014 Mortality Improvement Scale. Related values are shown below.

Sample Ages	Value at Retirement of $1 Monthly for Life: Men	Value at Retirement of $1 Monthly for Life: Women	Future Life Expectancy (Years): Men	Future Life Expectancy (Years): Women
50	$148.41	$152.79	33.25	35.95
55	141.60	146.69	28.92	31.44
60	133.30	138.87	24.73	27.02
65	123.05	129.07	20.70	22.74
70	110.64	117.14	16.85	18.67
75	96.10	103.11	13.26	14.86
80	79.84	87.27	10.01	11.41

This assumption is used to measure the probabilities of members dying before retirement and the probabilities of each benefit payment being made after retirement. For disabled lives the RP-2014 Disabled Retirees projected to 2019 using the MP-2014 Mortality Improvement Scale was used. For death in service the RP-2014 Mortality Tables for employees projected to 2019 using the MP-2014 Mortality Improvement Scale was used. We assume that one-half of pre-retirement deaths are duty related and that one-half are not. The margin for future mortality improvement is the projection to 2019. This assumption was first used for the December 31, 2015 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	25%	60	50%
51	25%	61	60%
52	25%	62	70%
53	25%	63	80%
54	25%	64	90%
55	25%	65	100%
56	25%	66	100%
57	25%	67	100%
58	25%	68	100%
59	25%	69	100%
		70	100%

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.

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, 2010 valuation.

Sample	% of Active Members Separating Within Next Year	
Ages	Police	Fire
25	4.60%	2.76%
30	3.80	2.28
35	2.60	1.56
40	1.80	1.08
45	1.40	0.84
50	1.20	0.72
55	1.20	0.72
60	1.20	0.72

The rates of disability were as follows:

Sample	% of Active Members Becoming Disabled Within Next Year	
Ages	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, 2019
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 14.0% and 11.7% for police and fire, respectively, to account for the FAS Adjustment Factor.

13th Check. A 7.15% load was placed on affected liabilities for members eligible to participate in the 13th Check program.

Service Purchase. An $11.0 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 7.15%; the municipal bond rate is 2.75%; and the resulting single discount rate is 7.15%.

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 (SDR). 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
2020	$ 4,830,127	$ 3,830,603	$ -	$ 6,012,781	$ 14,673,511
2021	4,738,191	3,754,715	-	6,283,757	14,776,664
2022	4,621,196	3,660,143	-	6,264,964	14,546,303
2023	4,492,299	3,558,314	-	7,003,906	15,054,519
2024	4,336,128	3,439,381	-	7,221,008	14,996,517
2025	4,154,781	3,303,857	-	7,455,690	14,914,328
2026	3,972,831	3,166,493	-	7,698,000	14,837,325
2027	3,796,100	3,033,890	-	7,948,185	14,778,175
2028	3,624,312	2,904,146	-	8,206,501	14,734,960
2029	3,456,257	2,773,734	-	8,473,213	14,703,203
2030	3,299,718	2,651,354	-	8,748,592	14,699,664
2031	3,171,157	2,549,627	-	9,032,921	14,753,705
2032	3,057,037	2,456,066	-	9,326,491	14,839,594
2033	2,938,917	2,356,569	-	9,629,602	14,925,089
2034	2,819,271	2,253,591	-	9,942,564	15,015,426
2035	2,696,423	2,144,171	-	10,265,698	15,106,292
2036	2,567,866	2,024,290	-	10,599,333	15,191,489
2037	2,433,816	1,895,096	-	10,943,811	15,272,724
2038	2,292,201	1,761,539	-	11,299,485	15,353,225
2039	2,144,766	1,625,767	-	11,666,718	15,437,251
2040	1,984,016	1,481,125	-	12,045,887	15,511,027
2041	1,802,639	1,324,403	-	12,437,378	15,564,420
2042	1,614,865	1,166,116	-	12,841,593	15,622,573
2043	1,426,173	1,014,321	-	13,258,944	15,699,438
2044	1,222,553	859,601	-	13,689,860	15,772,014
2045	1,023,344	710,764	-	14,134,781	15,868,889
2046	851,582	581,971	-	5,015,768	6,449,321
2047	692,456	466,841	-	4,709,301	5,868,598
2048	547,245	366,257	-	4,350,920	5,264,422
2049	419,169	279,451	-	982,104	1,680,724
2050	313,677	208,081	-	-	521,758
2051	233,447	153,300	-	-	386,746
2052	171,655	111,373	-	-	283,028
2053	124,919	79,982	-	-	204,901
2054	86,919	54,784	-	-	141,703
2055	54,307	33,567	-	-	87,874
2056	32,007	19,378	-	-	51,384
2057	18,012	10,651	-	-	28,662
2058	7,212	4,083	-	-	11,295
2059	1,764	906	-	-	2,670
2060	515	258	-	-	773
2061	107	39	-	-	146
2062	13	7	-	-	20
2063	1	0	-	-	1
2064	-	-	-	-	-
2065	-	-	-	-	-
2066	-	-	-	-	-
2067	-	-	-	-	-
2068	-	-	-	-	-
2069	-	-	-	-	-

Single Discount Rate Development
Projection of Plan Fiduciary Net Position

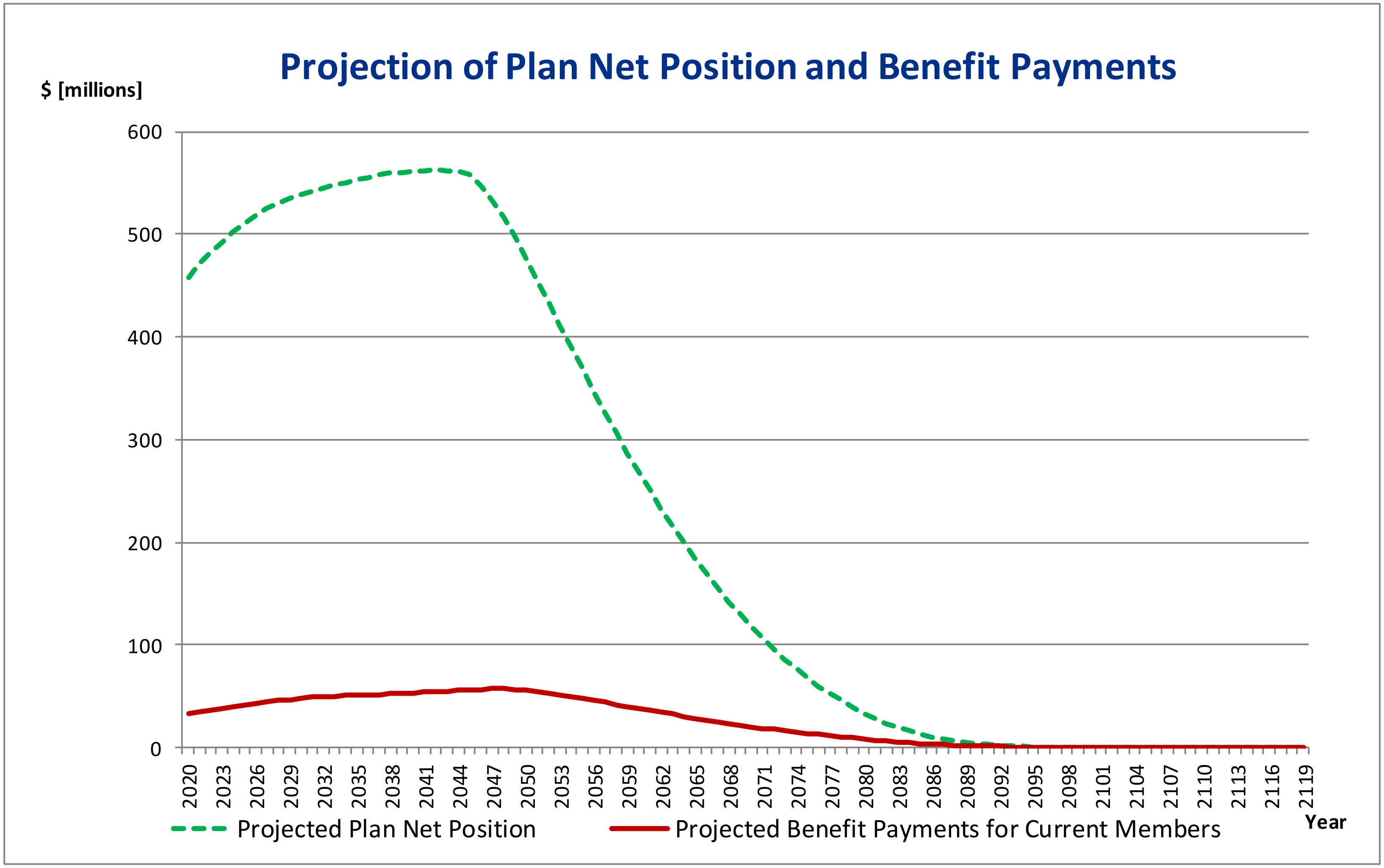
Year	Projected Beginning Plan Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 7.15%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
2020	$ 445,827,489	$ 14,673,511	$ 33,366,008	$ 579,576	$ 31,799,521	$ 458,354,937
2021	458,354,937	14,776,664	34,674,694	595,861	32,669,165	470,530,210
2022	470,530,210	14,546,303	36,218,919	611,689	33,493,179	481,739,084
2023	481,739,084	15,054,519	37,868,078	626,261	34,269,100	492,568,365
2024	492,568,365	14,996,517	39,597,521	640,339	34,994,674	502,321,696
2025	502,321,696	14,914,328	41,265,705	653,018	35,643,221	510,960,522
2026	510,960,522	14,837,325	42,948,519	664,249	36,210,300	518,395,379
2027	518,395,379	14,778,175	44,244,566	673,914	36,703,946	524,959,019
2028	524,959,019	14,734,960	45,605,555	682,447	37,132,445	530,538,422
2029	530,538,422	14,703,203	46,900,170	689,700	37,492,026	535,143,782
2030	535,143,782	14,699,664	48,052,802	695,687	37,786,677	538,881,633
2031	538,881,633	14,753,705	48,687,326	700,546	38,038,398	542,285,864
2032	542,285,864	14,839,594	49,368,671	704,972	38,265,306	545,317,122
2033	545,317,122	14,925,089	49,929,980	708,912	38,469,265	548,072,583
2034	548,072,583	15,015,426	50,327,878	712,494	38,659,057	550,706,694
2035	550,706,694	15,106,292	50,799,754	715,919	38,837,435	553,134,748
2036	553,134,748	15,191,489	51,262,663	719,075	39,000,927	555,345,426
2037	555,345,426	15,272,724	51,653,370	721,949	39,150,992	557,393,822
2038	557,393,822	15,353,225	52,277,217	724,612	39,281,025	559,026,243
2039	559,026,243	15,437,251	52,665,231	726,734	39,389,186	560,460,715
2040	560,460,715	15,511,027	53,198,316	728,599	39,477,478	561,522,306
2041	561,522,306	15,564,420	53,659,542	729,979	39,540,434	562,237,639
2042	562,237,639	15,622,573	54,330,820	730,909	39,570,969	562,369,453
2043	562,369,453	15,699,438	55,083,283	731,080	39,556,830	561,811,357
2044	561,811,357	15,772,014	55,619,756	730,355	39,499,902	560,733,162
2045	560,733,162	15,868,889	56,335,297	728,953	39,399,674	558,937,476
2046	558,937,476	6,449,321	56,758,861	726,619	38,923,131	546,824,448
2047	546,824,448	5,868,598	56,948,816	710,872	38,014,227	533,047,584
2048	533,047,584	5,264,422	56,880,758	692,962	36,992,436	517,730,722
2049	517,730,722	1,680,724	56,475,987	673,050	35,765,683	498,028,093
2050	498,028,093	521,758	55,406,741	647,437	34,328,180	476,823,853
2051	476,823,853	386,746	54,241,021	619,871	32,820,723	455,170,431
2052	455,170,431	283,028	52,820,045	591,722	31,290,633	433,332,325
2053	433,332,325	204,901	51,199,600	563,332	29,755,005	411,529,298
2054	411,529,298	141,703	49,657,853	534,988	28,219,690	389,697,851
2055	389,697,851	87,874	47,896,955	506,607	26,690,335	368,072,498
2056	368,072,498	51,384	45,845,455	478,494	25,186,802	346,986,735
2057	346,986,735	28,662	43,978,657	451,083	23,716,546	326,302,204
2058	326,302,204	11,295	42,040,913	424,193	22,278,181	306,126,573
2059	306,126,573	2,670	39,959,712	397,965	20,882,210	286,653,777
2060	286,653,777	773	38,001,776	372,650	19,533,312	267,813,436
2061	267,813,436	146	36,058,310	348,157	18,229,992	249,637,107
2062	249,637,107	20	34,136,600	324,528	16,974,266	232,150,266
2063	232,150,266	1	32,244,355	301,795	15,767,704	215,371,821
2064	215,371,821	-	30,390,401	279,983	14,611,367	199,312,804
2065	199,312,804	-	28,583,238	259,107	13,505,762	183,976,220
2066	183,976,220	-	26,829,704	239,169	12,450,865	169,358,212
2067	169,358,212	-	25,134,618	220,166	11,446,227	155,449,655
2068	155,449,655	-	23,500,795	202,085	10,491,085	142,237,861
2069	142,237,861	-	21,929,236	184,909	9,584,480	129,708,196

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)
2020	$ 445,827,489	$ 33,366,008	$ 33,366,008	$ -	$ 32,233,552	$ -	$ 32,233,552
2021	458,354,937	34,674,694	34,674,694	-	31,262,548	-	31,262,548
2022	470,530,210	36,218,919	36,218,919	-	30,475,795	-	30,475,795
2023	481,739,084	37,868,078	37,868,078	-	29,737,239	-	29,737,239
2024	492,568,365	39,597,521	39,597,521	-	29,020,388	-	29,020,388
2025	502,321,696	41,265,705	41,265,705	-	28,224,893	-	28,224,893
2026	510,960,522	42,948,519	42,948,519	-	27,415,682	-	27,415,682
2027	518,395,379	44,244,566	44,244,566	-	26,358,374	-	26,358,374
2028	524,959,019	45,605,555	45,605,555	-	25,356,205	-	25,356,205
2029	530,538,422	46,900,170	46,900,170	-	24,335,975	-	24,335,975
2030	535,143,782	48,052,802	48,052,802	-	23,270,241	-	23,270,241
2031	538,881,633	48,687,326	48,687,326	-	22,004,217	-	22,004,217
2032	542,285,864	49,368,671	49,368,671	-	20,823,285	-	20,823,285
2033	545,317,122	49,929,980	49,929,980	-	19,654,727	-	19,654,727
2034	548,072,583	50,327,878	50,327,878	-	18,489,368	-	18,489,368
2035	550,706,694	50,799,754	50,799,754	-	17,417,383	-	17,417,383
2036	553,134,748	51,262,663	51,262,663	-	16,403,264	-	16,403,264
2037	555,345,426	51,653,370	51,653,370	-	15,425,370	-	15,425,370
2038	557,393,822	52,277,217	52,277,217	-	14,569,922	-	14,569,922
2039	559,026,243	52,665,231	52,665,231	-	13,698,612	-	13,698,612
2040	560,460,715	53,198,316	53,198,316	-	12,913,926	-	12,913,926
2041	561,522,306	53,659,542	53,659,542	-	12,156,686	-	12,156,686
2042	562,237,639	54,330,820	54,330,820	-	11,487,415	-	11,487,415
2043	562,369,453	55,083,283	55,083,283	-	10,869,353	-	10,869,353
2044	561,811,357	55,619,756	55,619,756	-	10,242,849	-	10,242,849
2045	560,733,162	56,335,297	56,335,297	-	9,682,335	-	9,682,335
2046	558,937,476	56,758,861	56,758,861	-	9,104,184	-	9,104,184
2047	546,824,448	56,948,816	56,948,816	-	8,525,108	-	8,525,108
2048	533,047,584	56,880,758	56,880,758	-	7,946,729	-	7,946,729
2049	517,730,722	56,475,987	56,475,987	-	7,363,676	-	7,363,676
2050	498,028,093	55,406,741	55,406,741	-	6,742,194	-	6,742,194
2051	476,823,853	54,241,021	54,241,021	-	6,159,909	-	6,159,909
2052	455,170,431	52,820,045	52,820,045	-	5,598,260	-	5,598,260
2053	433,332,325	51,199,600	51,199,600	-	5,064,408	-	5,064,408
2054	411,529,298	49,657,853	49,657,853	-	4,584,140	-	4,584,140
2055	389,697,851	47,896,955	47,896,955	-	4,126,536	-	4,126,536
2056	368,072,498	45,845,455	45,845,455	-	3,686,225	-	3,686,225
2057	346,986,735	43,978,657	43,978,657	-	3,300,163	-	3,300,163
2058	326,302,204	42,040,913	42,040,913	-	2,944,241	-	2,944,241
2059	306,126,573	39,959,712	39,959,712	-	2,611,749	-	2,611,749
2060	286,653,777	38,001,776	38,001,776	-	2,318,039	-	2,318,039
2061	267,813,436	36,058,310	36,058,310	-	2,052,722	-	2,052,722
2062	249,637,107	34,136,600	34,136,600	-	1,813,647	-	1,813,647
2063	232,150,266	32,244,355	32,244,355	-	1,598,800	-	1,598,800
2064	215,371,821	30,390,401	30,390,401	-	1,406,322	-	1,406,322
2065	199,312,804	28,583,238	28,583,238	-	1,234,433	-	1,234,433
2066	183,976,220	26,829,704	26,829,704	-	1,081,383	-	1,081,383
2067	169,358,212	25,134,618	25,134,618	-	945,462	-	945,462
2068	155,449,655	23,500,795	23,500,795	-	825,015	-	825,015
2069	142,237,861	21,929,236	21,929,236	-	718,474	-	718,474

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)
2070	$ 129,708,196	$ 20,419,463	$ 20,419,463	$ -	$ 624,366	$ -	$ 624,366
2071	117,845,475	18,969,831	18,969,831	-	541,335	-	541,335
2072	106,635,132	17,577,928	17,577,928	-	468,143	-	468,143
2073	96,064,053	16,240,983	16,240,983	-	403,674	-	403,674
2074	86,121,058	14,956,195	14,956,195	-	346,935	-	346,935
2075	76,797,065	13,721,031	13,721,031	-	297,044	-	297,044
2076	68,084,965	12,533,481	12,533,481	-	253,229	-	253,229
2077	59,979,223	11,392,254	11,392,254	-	214,813	-	214,813
2078	52,475,241	10,296,926	10,296,926	-	181,203	-	181,203
2079	45,568,535	9,247,998	9,247,998	-	151,884	-	151,884
2080	39,253,779	8,246,943	8,246,943	-	126,406	-	126,406
2081	33,523,743	7,296,232	7,296,232	-	104,371	-	104,371
2082	28,368,121	6,399,231	6,399,231	-	85,431	-	85,431
2083	23,772,387	5,559,815	5,559,815	-	69,272	-	69,272
2084	19,716,966	4,781,814	4,781,814	-	55,603	-	55,603
2085	16,176,917	4,068,515	4,068,515	-	44,152	-	44,152
2086	13,122,113	3,422,245	3,422,245	-	34,660	-	34,660
2087	10,517,865	2,844,083	2,844,083	-	26,883	-	26,883
2088	8,325,889	2,333,771	2,333,771	-	20,587	-	20,587
2089	6,505,427	1,889,727	1,889,727	-	15,558	-	15,558
2090	5,014,446	1,509,085	1,509,085	-	11,595	-	11,595
2091	3,810,875	1,187,831	1,187,831	-	8,518	-	8,518
2092	2,853,790	921,023	921,023	-	6,164	-	6,164
2093	2,104,455	703,070	703,070	-	4,391	-	4,391
2094	1,527,152	528,021	528,021	-	3,078	-	3,078
2095	1,089,771	389,863	389,863	-	2,121	-	2,121
2096	764,130	282,773	282,773	-	1,436	-	1,436
2097	526,059	201,306	201,306	-	954	-	954
2098	355,294	140,532	140,532	-	621	-	621
2099	235,227	96,117	96,117	-	397	-	397
2100	152,552	64,351	64,351	-	248	-	248
2101	96,848	42,139	42,139	-	151	-	151
2102	60,153	26,971	26,971	-	90	-	90
2103	36,536	16,862	16,862	-	53	-	53
2104	21,693	10,293	10,293	-	30	-	30
2105	12,589	6,133	6,133	-	17	-	17
2106	7,141	3,566	3,566	-	9	-	9
2107	3,961	2,023	2,023	-	5	-	5
2108	2,149	1,121	1,121	-	2	-	2
2109	1,142	607	607	-	1	-	1
2110	595	322	322	-	1	-	1
2111	305	167	167	-	-	-	-
2112	153	86	86	-	-	-	-
2113	75	43	43	-	-	-	-
2114	36	21	21	-	-	-	-
2115	16	10	10	-	-	-	-
2116	7	5	5	-	-	-	-
2117	3	2	2	-	-	-	-
2118	1	1	1	-	-	-	-
2119	0	0	0	-	-	-	-
				Totals	**$ 629,386,851**	**$ -**	**$ 629,386,851**



Projection of Plan Net Position and Benefit Payments
$ [millions]
600
500
400
300
200
100
0
2020
2023
2026
2029
2032
2035
2038
2041
2044
2047
2050
2053
2056
2059
2062
2065
2068
2071
2074
2077
2080
2083
2086
2089
2092
2095
2098
2101
2104
2107
2110
2113
2116
2119
Year
Projected Plan Net Position
Projected Benefit Payments for Current Members

SECTION H

MICHIGAN PUBLIC ACT 202

State Reporting Assumptions
as of June 30, 2020

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 October 21, 2019.

Uniform Assumption	PA 202	Valuation Assumption Used	Uniform Assumption Used
Investment Rate of Return Discount Rate	Maximum of 7.00%^	7.15%	**7.00%**
Salary Increase	Minimum of 3.50% or based on experience study within last 5 years	3.25% + Merit and longevity (based on experience study dated December 7, 2015)	3.25% + Merit and longevity (based on experience study dated December 7, 2015)
Mortality	Version of Pub-2010 or based on experience study within last 5 years	A version of RP-2014	Pub-2010 Mortality Tables
Amortization of the Unfunded Accrued Actuarial Liability: Period	Maximum Period of 19 Years	26-30 years	**19 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 7.00%; for periods in which projected plan assets are NOT sufficient to make projected benefit payments – 3.00%.*

State Reporting as of June 30, 2020

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 No. 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	$437,029,237
25	Enter retirement pension system's actuarial accrued liabilities using uniform assumptions	$570,859,937
26	Funded ratio using uniform assumptions	Auto[4]
27	Actuarially Determined Contribution (ADC) using uniform assumptions[3]	$ 15,178,553
28	All systems combined ADC/Governmental fund revenues	Auto[4]

1 *Information on lines 24-28 is based on assumptions listed on the prior page as of the most recent valuation date, December 31, 2019, after reflecting uniform assumptions.*

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

3 *For the fiscal year ending June 30, 2020.*

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.

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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.