



Municipal Employees' Retirement System of Michigan

Annual Actuarial Valuation Report
December 31, 2021 - Eaton Rapids, City of (2307)





Spring, 2022

Eaton Rapids, City of

In care of:
Municipal Employees' Retirement System of Michigan
1134 Municipal Way
Lansing, Michigan 48917

This report presents the results of the Annual Actuarial Valuation, prepared for Eaton Rapids, City of (2307) as of December 31, 2021. The report includes the determination of liabilities and contribution rates resulting from the participation in the Municipal Employees' Retirement System of Michigan ("MERS"). This report contains the minimum actuarially determined contribution requirement, in alignment with the MERS Plan Document, Actuarial Policy, the Michigan Constitution, and governing statutes. Eaton Rapids, City of is responsible for the employer contributions needed to provide MERS benefits for its employees and former employees.

The purposes of this valuation are to:

- Measure funding progress as of December 31, 2021,
- Establish contribution requirements for the fiscal year beginning July 1, 2023,
- Provide information regarding the identification and assessment of risk,
- Provide actuarial information in connection with applicable Governmental Accounting Standards Board (GASB) statements, and
- Provide information to assist the local unit of government with state reporting requirements.

This valuation assumed the continuing ability of the plan sponsor to make the contributions necessary to fund this plan. A determination regarding whether or not the plan sponsor is actually able to do so is outside our scope of expertise and was not performed.

The findings in this report are based on data and other information through December 31, 2021. The valuation was based upon information furnished by MERS 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 MERS.

The Municipal Employees' Retirement Act, PA 427 of 1984 and the MERS' Plan Document Article VI Sec. 71 (1)(d), provides the MERS Board with the authority to set actuarial assumptions and methods after consultation with the actuary. As the fiduciary of the plan, the MERS Retirement Board sets certain assumptions for funding and GASB purposes. These assumptions are reviewed regularly through a comprehensive study, most recently in the Fall of 2021. The MERS Retirement Board adopted a Dedicated Gains Policy at the February 17, 2022 Board meeting. The Dedicated Gains Policy will automatically reduce the assumed rate of investment return in conjunction with recognizing excess investment gains to mitigate the impact on employer contributions the first year. The new policy is effective with this December 31, 2021 annual actuarial valuation, and is reflected in the funded status and fiscal year 2023 contributions as shown in the Executive Summary.

The Michigan Department of Treasury provides required assumptions to be used for purposes of Public Act 202 reporting. These assumptions are for reporting purposes only and do not impact required contributions. Please refer to the State Reporting page found at the end of this report for information for this filing.

For a full list of all the assumptions used, please refer to the division-specific assumptions described in table(s) in this report, and to the Appendix on the MERS website at:

<https://www.mersofmich.com/Portals/0/Assets/Resources/AAV-Appendix/MERS-2021AnnualActuarialValuation-Appendix.pdf>

The actuarial assumptions used for this valuation, including the assumed rate of investment return, are reasonable for purposes of the measurement.

This report reflects the impact of COVID-19 experience through December 31, 2021. It does not reflect the ongoing impact of COVID-19, which is likely to influence demographic and economic experience, at least in the short term. We will continue to monitor these developments and their impact on the MERS Defined Benefit and Hybrid plans. Actual future experience will be reflected in each subsequent annual valuation, as experience emerges.

This report has been prepared by actuaries who have substantial experience valuing public employee retirement systems. To the best of our knowledge, the information contained in this report is accurate and fairly presents the actuarial position of Eaton Rapids, City of as of the valuation date. All calculations have been made in conformity with generally accepted actuarial principles and practices, with the Actuarial Standards of Practice issued by the Actuarial Standards Board, and with applicable statutes.

David T. Kausch, Rebecca L. Stouffer, and Mark Buis are members of the American Academy of Actuaries. These actuaries meet the Academy's Qualification Standards to render the actuarial opinions contained herein. The signing actuaries are independent of the plan sponsor. GRS maintains independent consulting agreements with certain local units of government for services unrelated to the actuarial consulting services provided in this report.



The Retirement Board of the Municipal Employees' Retirement System of Michigan confirms that the System provides for payment of the required employer contribution as described in Section 20m of Act No. 314 of 1965 (MCL 38.1140m).

This information is purely actuarial in nature. It is not intended to serve as a substitute for legal, accounting, or investment advice.

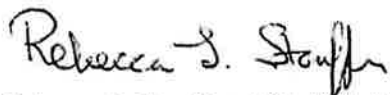
This report was prepared at the request of the MERS Retirement Board and may be provided only in its entirety by the municipality to other interested parties (MERS customarily provides the full report on request to associated third parties such as the auditor for the municipality). GRS is not responsible for the consequences of any unauthorized use. This report should not be relied on for any purpose other than the purposes described herein. Determinations of financial results, associated with the benefits described in this report, for purposes other than those identified above may be significantly different.

If you have reason to believe that the plan provisions are incorrectly described, that important plan provisions relevant to this valuation are not described, that conditions have changed since the calculations were made, that the information provided in this report is inaccurate or is in anyway incomplete, or if you need further information in order to make an informed decision on the subject matter in this report, please contact your Regional Manager at 1.800.767.MERS (6377).

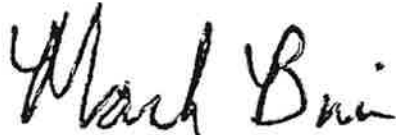
Sincerely,
Gabriel, Roeder, Smith & Company



David T. Kausch, FSA, FCA, EA, MAAA



Rebecca L. Stouffer, ASA, FCA, MAAA



Mark Buis, FSA, FCA, EA, MAAA



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Executive Summary

Funded Ratio

The funded ratio of a plan is the percentage of the dollar value of the actuarial accrued liability that is covered by the actuarial value of assets. While the funded ratio may be a useful plan measurement, understanding a plan's funding trend may be more important than a particular point in time. Refer to Table 7 to find a history of this information.

	12/31/2021	12/31/2020
Funded Ratio*	61%	56%

* Reflects assets from Surplus divisions, if any.

Throughout this report are references to valuation results generated prior to the 2018 valuation date. Results prior to 2018 were received directly from the prior actuary or extracted from the previous valuation system by MERS's technology service provider.

Required Employer Contributions

Your required employer contributions are shown in the following table. Employee contributions, if any, are in addition to the employer contributions.

Effective for the December 31, 2021 valuation, the MERS Retirement Board has adopted a Dedicated Gains Policy which allows for recognition of asset gains in excess of a set threshold in combination with lowering the assumed rate of investment return (discussed below). Changes to these assumptions and methods are effective for contributions beginning in 2023. Effective with the 2020 and 2019 valuations respectively, the MERS Retirement Board adopted updated demographic and economic assumptions. The combined impact of the prior demographic and economic assumption changes may be phased in. The remaining combined phase-in period is three years for all assumption changes.

By default, MERS will invoice you based on the amount in the "No Phase-in" columns. This amount will be considered the minimum required contribution unless you request to be billed the "Phase-in" rates. If you wish to be billed using the phased-in rates, please contact MERS, at which point the alternate minimum required contribution will be the amount in the "Phase-in" columns.

	Percentage of Payroll				Monthly \$ Based on Projected Payroll			
	Phase-In	No Phase-In	Phase-In	No Phase-In	Phase-In	No Phase-In	Phase-In	No Phase-In
Valuation Date:	12/31/2021	12/31/2021	12/31/2020	12/31/2020	12/31/2021	12/31/2021	12/31/2020	12/31/2020
	July 1,	July 1,	July 1,	July 1,	July 1,	July 1,	July 1,	July 1,
Fiscal Year Beginning:	2023	2023	2022	2022	2023	2023	2022	2022
Division								
01 - Admin	-	-	-	-	\$ 19,890	\$ 20,758	\$ 19,727	\$ 21,029
02 - Plc Empl	-	-	-	-	2,451	3,431	4,212	5,682
10 - Adm Asst	15.18%	17.05%	16.24%	18.12%	1,312	1,474	2,093	2,336
11 - DPW	-	-	-	-	21,316	22,700	22,731	24,807
12 - DPW after 12/1/2011	-	-	-	-	493	497	361	367
13 - DPW on/aft 03/01/2019	1.59%	1.59%	1.08%	1.08%	590	590	365	365
20 - Police Empl hired after 8/1/1	-	-	-	-	0	0	44	125
HA - City Manager	-	-	-	-	225	253	910	952
HB - Dept. Heads Hired after 11/1/1	-	-	-	-	2,895	2,987	2,649	2,787
Total Municipality -								
Estimated Monthly Contribution					\$ 49,172	\$ 52,690	\$ 53,092	\$ 58,450
Total Municipality -								
Estimated Annual Contribution					\$ 590,064	\$ 632,280	\$ 637,104	\$ 701,400

Employee contribution rates:

Valuation Date:	Employee Contribution Rate	
	12/31/2021	12/31/2020
Division		
01 - Admin	2.00%	2.00%
02 - Plc Empl	6.25%	6.25%
10 - Adm Asst	0.00%	0.00%
11 - DPW	6.25%	6.25%
12 - DPW after 12/1/2011	6.25%	6.25%
13 - DPW on/aft 03/01/2019	6.25%	6.25%
20 - Police Empl hired after 8/1/1	0.00%	0.00%
HA - City Manager	0.00%	0.00%
HB - Dept. Heads Hired after 11/1/1	0.00%	0.00%

The employer may contribute more than the minimum required contributions, as these additional contributions will earn investment income and may result in lower future contribution requirements. Employers making contributions in excess of the minimum requirements may elect to apply the excess contribution immediately to a particular division, or segregate the excess into one or more of what MERS calls "Surplus" divisions. An election in the first case would immediately reduce any unfunded accrued liability and lower the amortization payments throughout the remaining amortization period. An election to set up Surplus



divisions would not immediately lower future contributions, however the assets from the Surplus division could be transferred to an unfunded division in the future to reduce the unfunded liability in future years, or to be used to pay all or a portion of the minimum required contribution in a future year. For purposes of this report, the assets in any Surplus division have been included in the municipality's total assets, unfunded accrued liability, and funded status; however, these assets are not used in calculating the minimum required contribution.

MERS strongly encourages employers to contribute more than the minimum contribution shown above. With the implemented Dedicated Gains policy, market gains and losses will continue to be smoothed over five years; however, since excess return are being used to lower the investment assumption, there will be less gains to smooth in down markets. Having additional funds in Surplus divisions will assist plans with navigating any market volatility.

Assuming that experience of the plan meets actuarial assumptions:

- To accelerate to a 100% funding ratio in 10 years, estimated monthly employer contributions for the fiscal year beginning in 2023 for the entire employer would be \$75,165, instead of \$52,690.

How and Why Do These Numbers Change?

In a defined benefit plan, contributions vary from one annual actuarial valuation to the next as a result of the following:

- Changes in benefit provisions (see Table 2),
- Changes in actuarial assumptions and methods (see the Appendix), and
- Experience of the plan (investment experience and demographic experience); this is the difference between actual experience of the plan and the actuarial assumptions.

These impacts are reflected in various tables in the report. For more information, please contact your Regional Manager.

Comments on Investment Rate of Return Assumption

A defined benefit plan is funded by employer contributions, participant contributions, and investment earnings. Investment earnings have historically provided a significant portion of the funding. The larger the share of benefits being provided from investment returns, the smaller the required contributions, and vice versa. Determining the contributions required to prefund the promised retirement benefits requires an assumption of what investment earnings are expected to add to the fund over a long period of time. This is called the **Investment Return Assumption**.

The MERS Investment Return Assumption is **7.00%** per year. This, along with all of our other actuarial assumptions, is reviewed at least every five years in an Experience Study that compares the assumptions used against actual experience and recommends adjustments if necessary. If your municipality would like to explore contributions at lower assumed investment return assumptions, please review the "What If" projection scenarios later in this report.

Assumption and Method Change in 2021

Effective February 17, 2022, the MERS Retirement Board adopted a dedicated gains policy that automatically adjusts the assumed rate of investment return by using excess asset gains to mitigate large increases in



required contributions to the Plan. Full details of this dedicated gains policy are available in the Actuarial Policy found on the MERS [website](#). Some goals of the dedicated gains policy are to:

- Provide a systematic approach to lower the assumed rate of investment return between experience studies, and
- Use excess gains to cover both the increase in normal cost and any increase in UAL payment the first year after implementation (i.e., minimize the first-year impact (i.e., increase) in employer contributions).

The dedicated gains policy has been implemented with the December 31, 2021 annual actuarial valuation. After initial application of the smoothing method, remaining market gains were used to lower the assumed rate of investment return from 7.35% to 7.00%. The December 31, 2021 valuation liabilities were developed using this new, lower assumption. Additionally, as a result of recognizing excess market gains, the valuation assets used to fund these liabilities are 7.2% higher than if there were no dedicated gain policy. The combined impact of these changes will minimize the first-year impact on employer contributions and may result in an increase or a decrease in employer contributions.

Comments on Asset Smoothing

To avoid dramatic spikes and dips in annual contribution requirements due to short-term fluctuations in asset markets, MERS applies a technique called **asset smoothing**. This spreads out each year's investment gains or losses over the prior year and the following four years. After initial application of asset smoothing, remaining excess market gains are used to buy down the assumed rate of investment return and increase the level of valuation assets, to the extent allowed by the dedicated gains policy. This smoothing method is used to determine your actuarial value of assets (valuation assets), which is then used to determine both your funded ratio and your required contributions. **The (smoothed) actuarial rate of return for 2021 was 17.04%, while the actual market rate of return was 13.97%.** To see historical details of the market rate of return compared to the smoothed actuarial rate of return, refer to this report's Appendix or view the "[How Smoothing Works](#)" video on the [Defined Benefit resource page](#) of the MERS website.

As of December 31, 2021, the actuarial value of assets is just below 100% of market value due to asset smoothing and dedicated gains. This means that rate of return on the actuarial value of assets should exceed the actuarial assumption in the next few years provided that the annual market returns meet or exceed the 7.00% investment return assumption. When all assumptions are met, contribution rates are expected to stay approximately level as a percent of payroll (dollar amounts are expected to increase with wage inflation of 3.0% each year).

As of December 31, 2021, the market value of assets and actuarial value of assets are very similar, resulting in a funded percentage that is not materially different.

Alternate Scenarios to Estimate the Potential Volatility of Results ("What If Scenarios")

The calculations in this report are based on assumptions about long-term economic and demographic behavior. These assumptions will never materialize in a given year, except by coincidence. Therefore, the results will vary from one year to the next. The volatility of the results depends upon the characteristics of the plan. For example:

- Open divisions that have substantial assets compared to their active employee payroll will have more volatile employer contribution rates due to investment return fluctuations.



- Open divisions that have substantial accrued liability compared to their active employee payroll will have more volatile employer contribution rates due to demographic experience fluctuations.
- Small divisions will have more volatile contribution patterns than larger divisions because statistical fluctuations are relatively larger among small populations.
- Shorter amortization periods result in more volatile contribution patterns.

Many assumptions are important in determining the required employer contributions. In the following table, we show the impact of varying the Investment Return assumption. Lower investment returns would generally result in higher required employer contributions, and vice versa. The three economic scenarios below provide a quantitative risk assessment for the impact of investment returns on the plan's future financial condition for funding purposes.

The relative impact of the economic scenarios below will vary from year to year, as the participant demographics change. The impact of each scenario should be analyzed for a given year, not from year to year. The results in the table are based on the December 31, 2021 valuation and are for the municipality in total, not by division. These results do not reflect a phase-in of the impact of the actuarial assumptions updated in the 2020 and 2019 valuations. There is no phase-in with dedicated gains.

It is important to note that calculations in this report are mathematical estimates based upon assumptions regarding future events, which may or may not materialize. Actuarial calculations can and do vary from one valuation to the next, sometimes significantly depending on the group's size. Projections are not predictions. Future valuations will be based on actual future experience.

12/31/2021 Valuation Results	Lower Future Annual Returns	Lower Future Annual Returns	Valuation Assumptions
Investment Return Assumption	5.00%	6.00%	7.00%
Accrued Liability	\$ 21,718,528	\$ 19,343,402	\$ 17,373,131
Valuation Assets ¹	\$ 10,625,343	\$ 10,625,343	\$ 10,625,343
Unfunded Accrued Liability	\$ 11,093,185	\$ 8,718,059	\$ 6,747,788
Funded Ratio	49%	55%	61%
Monthly Normal Cost	\$ 16,194	\$ 11,495	\$ 8,013
Monthly Amortization Payment	\$ 64,102	\$ 53,778	\$ 43,953
Total Employer Contribution²	\$ 80,891	\$ 65,933	\$ 52,690

¹ The Valuation Assets include assets from Surplus divisions, if any.

² If assets exceed accrued liabilities for a division, the division may have an overfunding credit to reduce the division's employer contribution requirement. If the overfunding credit is larger than the normal cost, the division's full credit is included in the municipality's amortization payment above but the division's total contribution requirement is zero. This can cause the displayed normal cost and amortization payment to not add up to the displayed total employer contribution.

Projection Scenarios

The next two pages show projections of the plan's funded ratio and computed employer contributions under the actuarial assumptions used in the valuation and alternate economic assumption scenarios. All three projections take into account the past investment experience that will continue to affect the actuarial rate of return in the short term.

The 7.00% scenario provides an estimate of computed employer contributions based on current actuarial

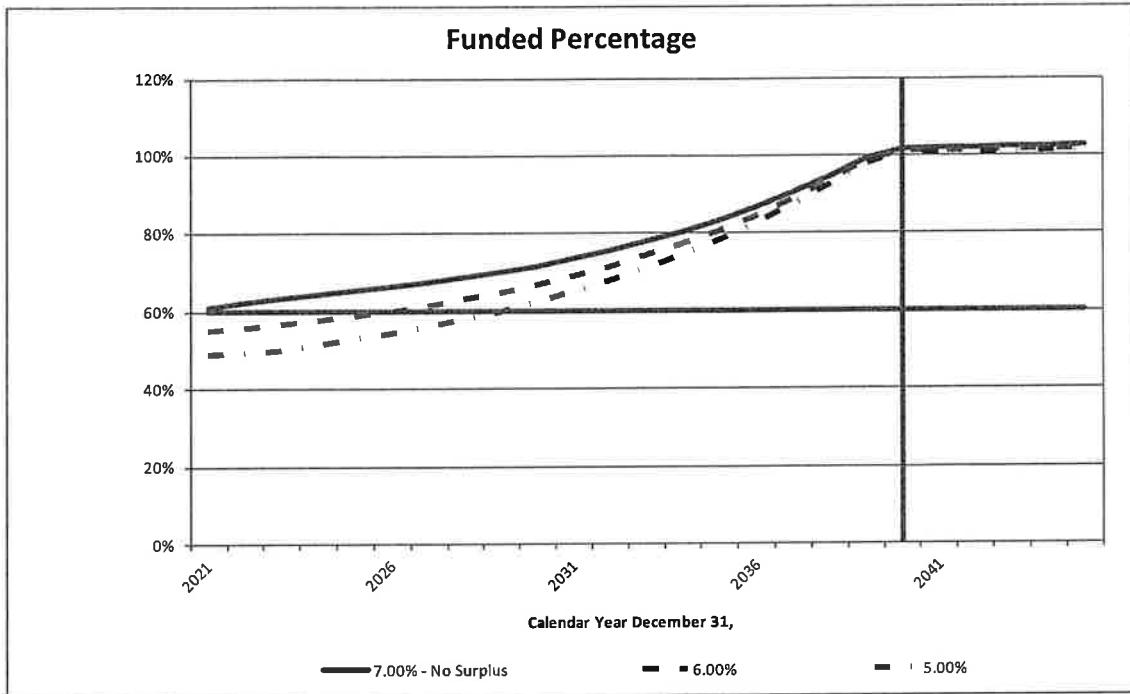


assumptions, and a projected 7.00% market return. The other two scenarios may be useful if the municipality chooses to budget more conservatively and make contributions in addition to the minimum requirements. The 6.00% and 5.00% projection scenarios provide an indication of the potential required employer contribution if these assumptions were met over the long term.

Valuation Year Ending 12/31	Fiscal Year Beginning 7/1	Actuarial Accrued Liability	Valuation Assets ²	Funded Percentage	Estimated Annual Employer Contribution
7.00%¹ - NO PHASE-IN					
2021	2023	\$ 17,373,131	\$ 10,625,343	61%	\$ 632,280
2022	2024	\$ 17,500,000	\$ 11,000,000	62%	\$ 642,000
2023	2025	\$ 17,700,000	\$ 11,200,000	64%	\$ 654,000
2024	2026	\$ 17,800,000	\$ 11,500,000	64%	\$ 667,000
2025	2027	\$ 17,900,000	\$ 11,700,000	65%	\$ 681,000
2026	2028	\$ 18,000,000	\$ 11,900,000	66%	\$ 696,000
6.00%¹ - NO PHASE-IN					
2021	2023	\$ 19,343,402	\$ 10,625,343	55%	\$ 791,196
2022	2024	\$ 19,500,000	\$ 10,900,000	56%	\$ 808,000
2023	2025	\$ 19,600,000	\$ 11,100,000	57%	\$ 825,000
2024	2026	\$ 19,800,000	\$ 11,400,000	58%	\$ 842,000
2025	2027	\$ 19,800,000	\$ 11,700,000	59%	\$ 860,000
2026	2028	\$ 19,900,000	\$ 12,000,000	60%	\$ 880,000
5.00%¹ - NO PHASE-IN					
2021	2023	\$ 21,718,528	\$ 10,625,343	49%	\$ 970,692
2022	2024	\$ 21,900,000	\$ 10,700,000	49%	\$ 995,000
2023	2025	\$ 22,000,000	\$ 11,000,000	50%	\$ 1,020,000
2024	2026	\$ 22,100,000	\$ 11,400,000	51%	\$ 1,040,000
2025	2027	\$ 22,200,000	\$ 11,700,000	53%	\$ 1,060,000
2026	2028	\$ 22,200,000	\$ 12,100,000	54%	\$ 1,090,000

¹ Represents both the interest rate for discounting liabilities and the future investment return assumption on the Market Value of assets.

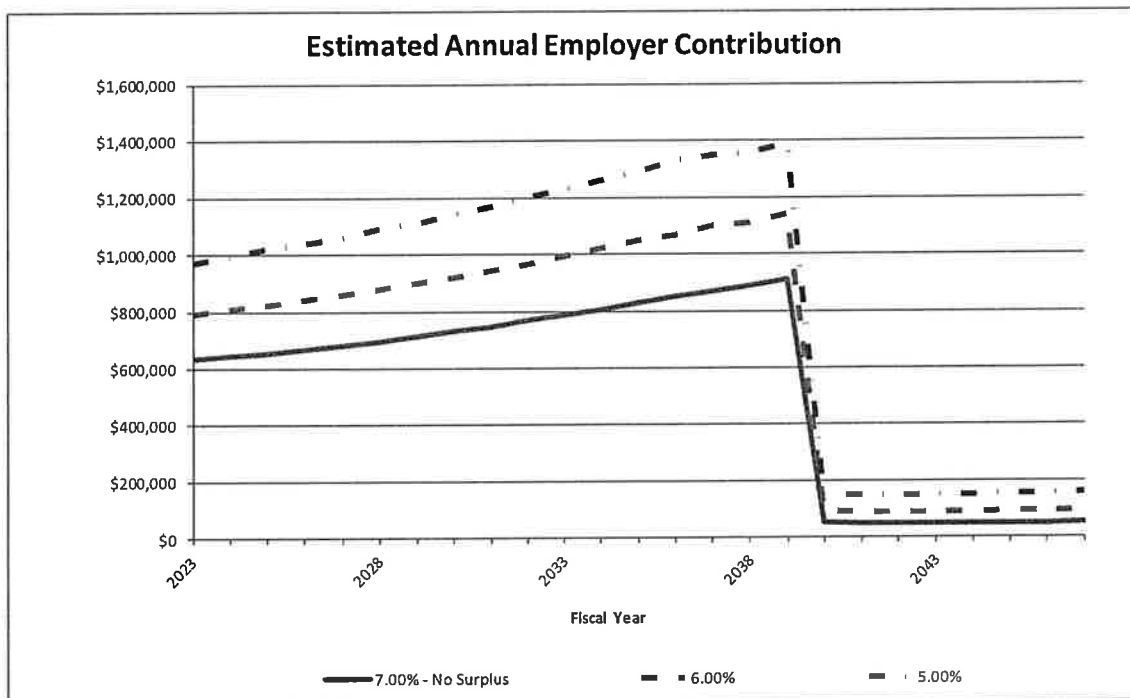
² Valuation Assets do not include assets from Surplus divisions, if any.



Notes:

All projected funded percentages are shown with no phase-in.

The green indicator lines have been added at 60% funded and 19 years following the valuation date for PA 202 purposes.



Notes:

All projected contributions are shown with no phase-in.

Table 1: Employer Contribution Details for the Fiscal Year Beginning July 1, 2023

Division	Total Normal Cost	Employee Contribut. Rate	Employer Contributions ¹				Computed Employer Contribut. With Phase-In	Blended ER Rate No Phase-In ⁵	Blended ER Rate With Phase-In ⁵	Employee Contribut. Conversion Factor ²
			Employer Normal Cost ⁶	Payment of the Unfunded Accrued Liability ⁴	Computed Employer Contribut. Phase-In					
Percentage of Payroll										
01 - Admin	0.00%	2.00%	-	-	-	-	-	-	-	-
02 - Plc Empl	18.94%	6.25%	-	-	-	-	-	-	-	-
10 - Adm Asst	7.89%	0.00%	7.89%	9.16%	17.05%	15.18%	-	-	-	0.82%
11 - DPW	12.09%	6.25%	-	-	-	-	-	27.04%	-	-
12 - DPW after 12/1/2011	8.94%	6.25%	-	-	-	-	-	27.04%	-	-
13 - DPW on/aft 03/01/2019	7.77%	6.25%	-	-	-	-	-	27.04%	-	-
20 - Police Empl hired after 8/1/1	0.00%	0.00%	1.52%	0.07%	1.59%	1.59%	-	-	-	0.70%
HA - City Manager	0.00%	0.00%	-	-	-	-	-	-	-	-
HB - Dept. Heads Hired after 11/1/1	10.19%	0.00%	-	-	-	-	-	-	-	-
Estimated Monthly Contribution³										
01 - Admin			\$ 0	\$ 20,758	\$ 20,758	\$ 19,890				
02 - Plc Empl			1,507	1,924	3,431	2,451				
10 - Adm Asst			682	792	1,474	1,312				
11 - DPW			1,890	20,810	22,700	21,316				
12 - DPW after 12/1/2011			497	0	497	493				
13 - DPW on/aft 03/01/2019			565	25	590	590				
20 - Police Empl hired after 8/1/1			0	(724)	0	0				
HA - City Manager			0	253	253	225				
HB - Dept. Heads Hired after 11/1/1			2,872	115	2,987	2,895				
Total Municipality			\$ 8,013	\$ 43,953	\$ 52,690	\$ 49,172				
Estimated Annual Contribution³			\$ 96,156	\$ 527,436	\$ 632,280	\$ 590,064				

¹ The above employer contribution requirements are in addition to the employee contributions, if any.

² If employee contributions are increased/decreased by 1.00% of pay, the employer contribution requirement will decrease/increase by the Employee Contribution Conversion Factor. The conversion factor is usually under 1% because employee contributions may be refunded at termination of employment and not used to fund retirement pensions. Employer contributions will all be used to fund pensions.

³ For divisions that are open to new hires, estimated contributions are based on projected fiscal year payroll. Actual contributions will be based on actual reported monthly pays, and will be different from the above amounts. For divisions that will have no new hires (i.e., closed divisions), invoices will be based on the above dollar amounts which are based on projected fiscal year payroll. See description of Open Divisions and Closed Divisions in the Appendix.

⁴ Note that if the overfunding credit is larger than the normal cost, the full credit is shown above but the total contribution requirement is zero. This will cause the displayed normal cost and unfunded accrued liability contributions not to add across.

- ⁵ For linked divisions, the employer will be invoiced the Computed Employer Contribution No Phase-in rate shown above for each linked division (a contribution rate for the open division; a contribution dollar for the closed-but-linked division), unless the employer elects to contribute the Blended Employer Contribution rate shown above, by contacting MERS at 800-767-MERS (6377).
- ⁶ For divisions with a negative employer normal cost, employee contributions cover the normal cost and a portion of the payment of any unfunded accrued liability.

Please see the Comments on Asset Smoothing in the Executive Summary of this report.



Table 2: Benefit Provisions

01 - Admin: Closed to new hires

	2021 Valuation	2020 Valuation
Benefit Multiplier:	2.50% Multiplier (80% max)	2.50% Multiplier (80% max)
Normal Retirement Age:	60	60
Vesting:	10 years	10 years
Early Retirement (Unreduced):	55/25	55/25
Early Retirement (Reduced):	50/25	50/25
	55/15	55/15
Final Average Compensation:	5 years	5 years
Employee Contributions:	2.00%	2.00%
Act 88:	Yes (Adopted 4/28/2003)	Yes (Adopted 4/28/2003)

02 - Plc Empl: Closed to new hires

	2021 Valuation	2020 Valuation
Benefit Multiplier:	2.50% Multiplier (80% max)	2.50% Multiplier (80% max)
Normal Retirement Age:	60	60
Vesting:	10 years	10 years
Early Retirement (Unreduced):	50/25	50/25
Early Retirement (Reduced):	55/15	55/15
Final Average Compensation:	3 years	3 years
COLA for Future Retirees:	2.50% (Non-Compound)	2.50% (Non-Compound)
Employee Contributions:	6.25%	6.25%
Act 88:	Yes (Adopted 4/28/2003)	Yes (Adopted 4/28/2003)

10 - Adm Asst: Open Division

	2021 Valuation	2020 Valuation
Benefit Multiplier:	1.70% Multiplier (no max)	1.70% Multiplier (no max)
Normal Retirement Age:	60	60
Vesting:	10 years	10 years
Early Retirement (Unreduced):	55/25	55/25
Early Retirement (Reduced):	50/25	50/25
	55/15	55/15
Final Average Compensation:	5 years	5 years
Employee Contributions:	0.00%	0.00%
Act 88:	Yes (Adopted 4/28/2003)	Yes (Adopted 4/28/2003)

11 - DPW: Closed to new hires, linked to Division 13

	2021 Valuation	2020 Valuation
Benefit Multiplier:	2.50% Multiplier (80% max)	2.50% Multiplier (80% max)
Normal Retirement Age:	60	60
Vesting:	10 years	10 years
Early Retirement (Unreduced):	55/25	55/25
Early Retirement (Reduced):	50/25	50/25
	55/15	55/15
Final Average Compensation:	5 years	5 years
Employee Contributions:	6.25%	6.25%
Act 88:	Yes (Adopted 4/28/2003)	Yes (Adopted 4/28/2003)

12 - DPW after 12/1/2011: Closed to new hires, linked to Division 13

	2021 Valuation	2020 Valuation
Benefit Multiplier:	1.70% Multiplier (no max)	1.70% Multiplier (no max)
Normal Retirement Age:	60	60
Vesting:	10 years	10 years
Early Retirement (Unreduced):	55/25	55/25
Early Retirement (Reduced):	50/25	50/25
	55/15	55/15
Final Average Compensation:	5 years	5 years
Employee Contributions:	6.25%	6.25%
Act 88:	Yes (Adopted 4/28/2003)	Yes (Adopted 4/28/2003)

13 - DPW on/aft 03/01/2019: Open Division, linked to Division 11, 12

	2021 Valuation	2020 Valuation
Benefit Multiplier:	1.50% Multiplier (no max)	1.50% Multiplier (no max)
Normal Retirement Age:	60	60
Vesting:	10 years	10 years
Early Retirement (Unreduced):	55/25	55/25
Early Retirement (Reduced):	50/25	50/25
	55/15	55/15
Final Average Compensation:	5 years	5 years
Employee Contributions:	6.25%	6.25%
Act 88:	Yes (Adopted 4/28/2003)	Yes (Adopted 4/28/2003)

20 - Police Empl hired after 8/1/1: Closed to new hires

	2021 Valuation	2020 Valuation
Benefit Multiplier:	1.70% Multiplier (no max)	1.70% Multiplier (no max)
Normal Retirement Age:	60	60
Vesting:	10 years	10 years
Early Retirement (Unreduced):	50/25	50/25
Early Retirement (Reduced):	55/15	55/15
Final Average Compensation:	3 years	3 years
Employee Contributions:	0.00%	0.00%
Act 88:	Yes (Adopted 4/28/2003)	Yes (Adopted 4/28/2003)



HA - City Manager: Closed to new hires

	2021 Valuation	2020 Valuation
Benefit Multiplier:	1.50% Multiplier (no max)	1.50% Multiplier (no max)
Normal Retirement Age:	60	60
Vesting:	6 years	6 years
Early Retirement (Unreduced):	-	-
Early Retirement (Reduced):	-	-
Final Average Compensation:	3 years	3 years
Employee Contributions:	0.00%	0.00%
Act 88:	Yes (Adopted 4/28/2003)	Yes (Adopted 4/28/2003)

HB - Dept. Heads Hired after 11/1/1: Closed to new hires

	2021 Valuation	2020 Valuation
Benefit Multiplier:	1.50% Multiplier (no max)	1.50% Multiplier (no max)
Normal Retirement Age:	60	60
Vesting:	6 years	6 years
Early Retirement (Unreduced):	-	-
Early Retirement (Reduced):	-	-
Final Average Compensation:	3 years	3 years
Employee Contributions:	0.00%	0.00%
Act 88:	Yes (Adopted 4/28/2003)	Yes (Adopted 4/28/2003)

Table 3: Participant Summary

Division	2021 Valuation		2020 Valuation		2021 Valuation		
	Number	Annual Payroll ¹	Number	Annual Payroll ¹	Average Age	Average Benefit Service ²	Average Eligibility Service ²
01 - Admin							
Active Employees	0	\$ 0	0	\$ 0	0.0	0.0	0.0
Vested Former Employees	1	3,074	2	69,119	46.9	2.7	10.4
Retirees and Beneficiaries	16	469,432	15	409,315	69.6		
Pending Refunds	1		1				
02 - Plc Empl							
Active Employees	2	\$ 137,801	3	\$ 197,617	38.0	9.4	9.4
Vested Former Employees	11	124,162	10	99,589	47.2	8.0	16.6
Retirees and Beneficiaries	3	98,181	3	96,331	59.1		
Pending Refunds	2		2				
10 - Adm Asst							
Active Employees	2	\$ 96,372	3	\$ 143,686	55.8	18.5	18.5
Vested Former Employees	1	17,287	0	0	46.7	20.6	20.6
Retirees and Beneficiaries	2	12,761	2	12,761	72.6		
Pending Refunds	0		0				
11 - DPW							
Active Employees	7	\$ 457,787	8	\$ 522,811	55.1	24.2	24.2
Vested Former Employees	3	77,439	2	40,069	52.3	17.2	17.2
Retirees and Beneficiaries	17	535,315	17	520,585	67.5		
Pending Refunds	0		0				
12 - DPW after 12/1/2011							
Active Employees	4	\$ 228,340	4	\$ 222,502	38.7	6.4	6.4
Vested Former Employees	0	0	0	0	0.0	0.0	0.0
Retirees and Beneficiaries	0	0	0	0	0.0		
Pending Refunds	0		0				
13 - DPW on/aft 03/01/2019							
Active Employees	5	\$ 294,257	5	\$ 267,722	31.3	2.4	2.4
Vested Former Employees	0	0	0	0	0.0	0.0	0.0
Retirees and Beneficiaries	0	0	0	0	0.0		
Pending Refunds	1		1				
20 - Police Empl hired after 8/1/1							
Active Employees	0	\$ 0	1	\$ 61,118	0.0	0.0	0.0
Vested Former Employees	2	1,717	2	1,717	53.8	1.5	14.8
Retirees and Beneficiaries	0	0	0	0	0.0		
Pending Refunds	3		2				

Table 3 (continued)

Division	2021 Valuation		2020 Valuation		2021 Valuation		
	Number	Annual Payroll ¹	Number	Annual Payroll ¹	Average Age	Average Benefit Service ²	Average Eligibility Service ²
HA - City Manager							
Active Employees	0	\$ 0	1	\$ 95,210	0.0	0.0	0.0
Vested Former Employees	1	4,999	0	0	36.5	3.5	6.3
Retirees and Beneficiaries	1	11,028	1	11,028	63.7		
Pending Refunds	0		0				
HB - Dept. Heads Hired after 11/1/1							
Active Employees	5	\$ 370,425	5	\$ 354,188	53.5	6.3	14.6
Vested Former Employees	2	4,004	2	4,004	48.2	2.4	11.0
Retirees and Beneficiaries	0	0	0	0	0.0		
Pending Refunds	0		0				
Total Municipality							
Active Employees	25	\$ 1,584,982	30	\$ 1,864,854	46.1	11.8	13.4
Vested Former Employees	21	232,682	18	214,498	48.1	8.3	15.4
Retirees and Beneficiaries	39	1,126,717	38	1,050,020	67.9		
Pending Refunds	7		6				
Total Participants	92		92				

¹ Annual payroll for active employees; annual deferred benefits payable for vested former employees; annual benefits being paid for retirees and beneficiaries.

² Descriptions can be found under Miscellaneous and Technical Assumptions in the Appendix.

Table 4: Reported Assets (Market Value)

Division	2021 Valuation		2020 Valuation	
	Employer and Retiree ¹	Employee ²	Employer and Retiree ¹	Employee ²
01 - Admin	\$ 1,673,426	\$ 4,461	\$ 1,677,448	\$ 18,112
02 - Plc Empl	2,079,121	267,732	1,735,848	298,907
10 - Adm Asst	407,494	0	353,513	0
11 - DPW	4,779,101	659,942	4,380,988	628,156
12 - DPW after 12/1/2011	95,947	87,220	67,930	72,665
13 - DPW on/aft 03/01/2019	16,390	41,463	7,726	23,304
20 - Police Empl hired after 8/1/1	84,678	3,702	70,755	2,053
HA - City Manager	104,217	312	93,805	0
HB - Dept. Heads Hired after 11/1/1	334,843	1,011	261,399	0
Municipality Total³	\$ 9,575,217	\$ 1,065,843	\$ 8,649,411	\$ 1,043,197
Combined Assets³	\$10,641,059		\$9,692,608	

¹ Reserve for Employer Contributions and Benefit Payments.

² Reserve for Employee Contributions.

³ Totals may not add due to rounding.

The December 31, 2021 valuation assets (actuarial value of assets) are equal to 0.998523 times the reported market value of assets (compared to 0.972357 as of December 31, 2020). Refer to the Appendix for a description of the valuation asset derivation and a detailed calculation of valuation assets.

Table 5: Flow of Valuation Assets

Year Ended 12/31	Employer Contributions		Employee Contributions	Investment Income (Valuation Assets)	Benefit Payments	Employee Contribution Refunds	Net Transfers	Valuation Asset Balance
	Required	Additional						
2011	\$ 332,438	\$ 0	\$ 105,427	\$ 443,895	\$ (362,902)	\$ (31,674)	\$ 0	\$ 8,327,342
2012	325,022	0	98,949	415,263	(437,294)	(1,202)	0	8,728,080
2013	350,399	38	90,820	512,373	(657,525)	(60,989)	0	8,963,196
2014	386,982	0	79,309	507,317	(761,549)	0	0	9,175,255
2015	400,478	0	78,083	434,963	(864,911)	0	0	9,223,868
2016	380,317	557	74,369	445,454	(928,190)	0	0	9,196,375
2017	459,794	1,118	76,225	539,506	(950,257)	(6,060)	0	9,316,701
2018	481,795	471	75,470	332,993	(985,309)	0	0	9,222,121
2019	498,732	2,750	74,524	418,502	(1,058,726)	(9,429)	28,511	9,176,985
2020	552,580	0	80,438	698,875	(1,075,649)	(8,555)	0	9,424,674
2021	643,190	60	75,909	1,579,968	(1,098,458)	0	0	10,625,343

Notes:

Transfers in and out are usually related to the transfer of participants between municipalities, and to employer and employee payments for service credit purchases (if any) that the governing body has approved.

The investment income column reflects the recognized investment income based on Valuation Assets. It does not reflect the market value investment return in any given year.

The Valuation Asset balance includes assets from Surplus divisions, if any.

Years where historical information is not available will be displayed with zero values.

**Table 6: Actuarial Accrued Liabilities and Valuation Assets
as of December 31, 2021**

	Actuarial Accrued Liability					Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities						
	Active Employees	Vested Former Employees	Retirees and Beneficiaries	Pending Refunds	Total									
Division	\$	0	\$	14,456	\$	4,786,387	\$	4,805,304	\$	1,675,409	34.9%	\$	3,129,895	
01 - Admin		339,716		1,066,962		1,273,363		7,604		2,687,645			344,258	
02 - Plc Empl		318,600		86,153		130,998		0		535,751			128,858	
10 - Adm Asst		2,354,460		593,143		5,645,104		0		8,592,707			3,161,698	
11 - DPW		176,974		0		0		0		176,974			(5,922)	
12 - DPW after 12/1/2011		60,078		0		0		653		60,731			2,964	
13 - DPW on/after 03/01/2019		0		13,641		0		3,702		17,343			(70,907)	
20 - Police Empl hired after 8/1/1		0		11,260		132,938		0		144,198			39,823	
HA - City Manager		334,885		17,593		0		0		352,478			17,121	
HB - Dept. Heads Hired after 11/1/1														
Total	\$	3,584,713	\$	1,803,203	\$	11,968,790	\$	16,420	\$	17,373,131	\$	10,625,843	\$	6,747,788

The following results show the combined accrued liabilities and assets for each set of linked divisions. These results are already shown in the table on the prior page(s).

Table 6 (continued)

Division	Actuarial Accrued Liability					Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
	Active Employees	Vested Former Employees	Retirees and Beneficiaries	Pending Refunds	Total			
Linked Divisions 13, 11, 12	\$ 2,591,512	\$ 593,143	\$ 5,645,104	\$ 653	\$ 8,830,412	\$ 5,671,672	64.2%	\$ 3,158,740

Please see the Comments on Asset Smoothing in the Executive Summary of this report.

The December 31, 2021 valuation assets (actuarial value of assets) are equal to 0.998523 times the reported market value of assets. Refer to the Appendix for a description of the valuation asset derivation and a detailed calculation of valuation assets.



Table 7: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2007	\$ 9,288,439	\$ 6,091,049	66%	\$ 3,197,390
2008	9,734,200	6,592,128	68%	3,142,072
2009	10,370,047	7,161,986	69%	3,208,061
2010	10,987,065	7,840,158	71%	3,146,907
2011	11,594,517	8,327,342	72%	3,267,175
2012	12,365,466	8,728,080	71%	3,637,386
2013	12,945,118	8,963,196	69%	3,981,922
2014	13,097,800	9,175,255	70%	3,922,545
2015	14,639,798	9,223,868	63%	5,415,930
2016	14,910,045	9,196,375	62%	5,713,670
2017	15,120,710	9,316,701	62%	5,804,009
2018	15,428,074	9,222,121	60%	6,205,953
2019	16,819,087	9,176,985	55%	7,642,102
2020	16,856,769	9,424,674	56%	7,432,095
2021	17,373,131	10,625,343	61%	6,747,788

Notes: Actuarial assumptions were revised for the 2008, 2009, 2010, 2011, 2012, 2015, 2019, 2020 and 2021 actuarial valuations.

The Valuation Assets include assets from Surplus divisions, if any.

Years where historical information is not available will be displayed with zero values.

Throughout this report are references to valuation results generated prior to the 2018 valuation date. Results prior to 2018 were received directly from the prior actuary or extracted from the previous valuation system by MERS's technology service provider.

Tables 8 and 9: Division-Based Comparative Schedules

Division 01 - Admin

Table 8-01: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2011	\$ 3,561,629	\$ 2,440,328	69%	\$ 1,121,301
2012	3,694,068	2,465,735	67%	1,228,333
2013	3,983,461	2,500,981	63%	1,482,480
2014	4,154,972	2,486,501	60%	1,668,471
2015	4,481,569	2,369,971	53%	2,111,598
2016	4,477,759	2,214,573	50%	2,263,186
2017	4,427,789	2,101,971	48%	2,325,818
2018	4,389,666	1,939,772	44%	2,449,894
2019	4,839,550	1,769,099	37%	3,070,451
2020	4,800,520	1,648,689	34%	3,151,831
2021	4,805,304	1,675,409	35%	3,129,895

Notes: Actuarial assumptions were revised for the 2011, 2012, 2015, 2019, 2020 and 2021 actuarial valuations.

The percent funded does not reflect valuation assets from Surplus divisions, if any.

Table 9-01: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution ¹	Employee Contribution Rate ²
	Number	Annual Payroll		
2011	9	\$ 570,203	20.64%	2.00%
2012	9	590,506	22.41%	2.00%
2013	7	482,861	\$ 11,150	2.00%
2014	3	222,083	\$ 10,089	2.00%
2015	2	169,399	\$ 13,191	2.00%
2016	1	81,688	\$ 13,524	2.00%
2017	1	75,504	\$ 14,298	2.00%
2018	1	81,133	\$ 15,474	2.00%
2019	0	0	\$ 20,165	2.00%
2020	0	0	\$ 21,029	2.00%
2021	0	0	\$ 20,758	2.00%

¹ For open divisions, a percent of pay contribution is shown. For closed divisions, a monthly dollar contribution is shown.

² For each valuation year, the computed employer contribution is based on the employee rate. If the employee rate changes during the applicable fiscal year, the computed employer contribution will be adjusted.

Note: The contributions shown in Table 9 reflect the employer contribution requirement without phase-in. If applicable, the current phase-in contribution is shown in Table 1.

See the Benefit Provision History, later in this report, for past benefit provision changes.

Years where historical information is not available will be displayed with zero values.

Table 8-02: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2011	\$ 2,042,731	\$ 1,427,113	70%	\$ 615,618
2012	2,139,748	1,560,696	73%	579,052
2013	2,152,343	1,580,300	73%	572,043
2014	2,156,838	1,639,471	76%	517,367
2015	2,347,943	1,660,556	71%	687,387
2016	2,436,434	1,688,338	69%	748,096
2017	2,651,205	1,744,019	66%	907,186
2018	2,689,788	1,766,351	66%	923,437
2019	3,024,373	1,848,363	61%	1,176,010
2020	2,599,785	1,978,508	76%	621,277
2021	2,687,645	2,343,387	87%	344,258

Notes: Actuarial assumptions were revised for the 2011, 2012, 2015, 2019, 2020 and 2021 actuarial valuations.

The percent funded does not reflect valuation assets from Surplus divisions, if any.

Table 9-02: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution ¹	Employee Contribution Rate ²
	Number	Annual Payroll		
2011	9	\$ 477,016	16.68%	5.65%
2012	9	431,041	17.87%	5.65%
2013	6	319,542	\$ 5,455	6.25%
2014	5	256,445	\$ 4,834	6.25%
2015	5	271,953	\$ 6,408	6.25%
2016	5	299,100	\$ 7,035	6.25%
2017	5	336,434	\$ 8,702	6.25%
2018	5	308,779	\$ 8,489	6.25%
2019	5	276,989	\$ 10,224	6.25%
2020	3	197,617	\$ 5,682	6.25%
2021	2	137,801	\$ 3,431	6.25%

1 For open divisions, a percent of pay contribution is shown. For closed divisions, a monthly dollar contribution is shown.

2 For each valuation year, the computed employer contribution is based on the employee rate. If the employee rate changes during the applicable fiscal year, the computed employer contribution will be adjusted.

Note: The contributions shown in Table 9 reflect the employer contribution requirement without phase-in. If applicable, the current phase-in contribution is shown in Table 1.

See the Benefit Provision History, later in this report, for past benefit provision changes.

Years where historical information is not available will be displayed with zero values.

Table 8-10: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2011	\$ 237,439	\$ 182,504	77%	\$ 54,935
2012	251,679	196,689	78%	54,990
2013	287,499	215,628	75%	71,871
2014	307,142	232,247	76%	74,895
2015	360,160	245,119	68%	115,041
2016	379,119	259,525	68%	119,594
2017	395,799	277,745	70%	118,054
2018	433,862	292,041	67%	141,821
2019	482,186	310,989	64%	171,197
2020	558,329	343,740	62%	214,589
2021	535,751	406,893	76%	128,858

Notes: Actuarial assumptions were revised for the 2011, 2012, 2015, 2019, 2020 and 2021 actuarial valuations.

The percent funded does not reflect valuation assets from Surplus divisions, if any.

Table 9-10: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution ¹	Employee Contribution Rate ²
	Number	Annual Payroll		
2011	3	\$ 102,222	9.52%	0.00%
2012	3	109,374	9.68%	0.00%
2013	3	118,621	10.39%	0.00%
2014	3	118,614	10.52%	0.00%
2015	3	128,937	12.61%	0.00%
2016	3	128,289	12.89%	0.00%
2017	3	125,837	13.01%	0.00%
2018	3	134,012	14.09%	0.00%
2019	3	138,128	15.98%	0.00%
2020	3	143,686	18.12%	0.00%
2021	2	96,372	17.05%	0.00%

1 For open divisions, a percent of pay contribution is shown. For closed divisions, a monthly dollar contribution is shown.

2 For each valuation year, the computed employer contribution is based on the employee rate. If the employee rate changes during the applicable fiscal year, the computed employer contribution will be adjusted.

Note: The contributions shown in Table 9 reflect the employer contribution requirement without phase-in. If applicable, the current phase-in contribution is shown in Table 1.

See the Benefit Provision History, later in this report, for past benefit provision changes.

Years where historical information is not available will be displayed with zero values.

Table 8-11: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2011	\$ 5,737,217	\$ 4,265,253	74%	\$ 1,471,964
2012	6,252,675	4,483,001	72%	1,769,674
2013	6,477,129	4,630,264	72%	1,846,865
2014	6,390,544	4,748,138	74%	1,642,406
2015	7,253,309	4,805,619	66%	2,447,690
2016	7,332,534	4,812,801	66%	2,519,733
2017	7,302,981	4,885,523	67%	2,417,458
2018	7,498,587	4,836,972	65%	2,661,615
2019	7,976,883	4,783,984	60%	3,192,899
2020	8,284,028	4,870,676	59%	3,413,352
2021	8,592,707	5,431,009	63%	3,161,698

Notes: Actuarial assumptions were revised for the 2011, 2012, 2015, 2019, 2020 and 2021 actuarial valuations.

The percent funded does not reflect valuation assets from Surplus divisions, if any.

Table 9-11: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution ¹	Employee Contribution Rate ²
	Number	Annual Payroll		
2011	21	\$ 1,073,780	12.36%	6.25%
2012	16	856,780	\$ 11,903	6.25%
2013	14	756,767	\$ 12,150	6.25%
2014	14	785,156	\$ 11,440	6.25%
2015	13	771,700	\$ 17,022	6.25%
2016	11	653,107	\$ 16,901	6.25%
2017	11	624,036	\$ 16,534	6.25%
2018	10	575,892	\$ 18,542	6.25%
2019	9	522,848	\$ 23,068	6.25%
2020	8	522,811	\$ 24,807	6.25%
2021	7	457,787	\$ 22,700	6.25%

¹ For open divisions, a percent of pay contribution is shown. For closed divisions, a monthly dollar contribution is shown.

² For each valuation year, the computed employer contribution is based on the employee rate. If the employee rate changes during the applicable fiscal year, the computed employer contribution will be adjusted.

Note: The contributions shown in Table 9 reflect the employer contribution requirement without phase-in. If applicable, the current phase-in contribution is shown in Table 1.

See the Benefit Provision History, later in this report, for past benefit provision changes.

Years where historical information is not available will be displayed with zero values.

Table 8-12: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2011	\$ 0	\$ 0	0%	\$ 0
2012	0	0	0%	0
2013	2,768	2,654	96%	114
2014	7,223	6,697	93%	526
2015	23,290	19,156	82%	4,134
2016	44,674	37,602	84%	7,072
2017	57,473	55,459	97%	2,014
2018	87,222	82,036	94%	5,186
2019	102,890	102,148	99%	742
2020	130,900	136,708	104%	(5,808)
2021	176,974	182,896	103%	(5,922)

Notes: Actuarial assumptions were revised for the 2011, 2012, 2015, 2019, 2020 and 2021 actuarial valuations.

The percent funded does not reflect valuation assets from Surplus divisions, if any.

Table 9-12: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution ¹	Employee Contribution Rate ²
	Number	Annual Payroll		
2011	0	\$ 0	\$ 0	0.00%
2012	0	0	\$ 0	0.00%
2013	1	38,905	1.90%	6.25%
2014	1	44,459	1.84%	6.25%
2015	3	143,742	2.54%	6.25%
2016	5	236,675	2.52%	6.25%
2017	5	233,258	2.12%	6.25%
2018	6	295,036	2.17%	6.25%
2019	4	222,499	\$ 368	6.25%
2020	4	222,502	\$ 367	6.25%
2021	4	228,340	\$ 497	6.25%

1 For open divisions, a percent of pay contribution is shown. For closed divisions, a monthly dollar contribution is shown.

2 For each valuation year, the computed employer contribution is based on the employee rate. If the employee rate changes during the applicable fiscal year, the computed employer contribution will be adjusted.

Note: The contributions shown in Table 9 reflect the employer contribution requirement without phase-in. If applicable, the current phase-in contribution is shown in Table 1.

See the Benefit Provision History, later in this report, for past benefit provision changes.

Years where historical information is not available will be displayed with zero values.

Table 8-13: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2011	\$ 0	\$ 0	0%	\$ 0
2012	0	0	0%	0
2013	0	0	0%	0
2014	0	0	0%	0
2015	0	0	0%	0
2016	0	0	0%	0
2017	0	0	0%	0
2018	0	0	0%	0
2019	8,155	8,023	98%	132
2020	30,836	30,173	98%	663
2021	60,731	57,767	95%	2,964

Notes: Actuarial assumptions were revised for the 2011, 2012, 2015, 2019, 2020 and 2021 actuarial valuations.

The percent funded does not reflect valuation assets from Surplus divisions, if any.

Table 9-13: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution ¹	Employee Contribution Rate ²
	Number	Annual Payroll		
2011	0	\$ 0	\$ 0	0.00%
2012	0	0	\$ 0	0.00%
2013	0	0	\$ 0	0.00%
2014	0	0	\$ 0	0.00%
2015	0	0	\$ 0	0.00%
2016	0	0	\$ 0	0.00%
2017	0	0	\$ 0	0.00%
2018	0	0	\$ 0	0.00%
2019	5	216,774	1.25%	6.25%
2020	5	267,722	1.08%	6.25%
2021	5	294,257	1.59%	6.25%

1 For open divisions, a percent of pay contribution is shown. For closed divisions, a monthly dollar contribution is shown.

2 For each valuation year, the computed employer contribution is based on the employee rate. If the employee rate changes during the applicable fiscal year, the computed employer contribution will be adjusted.

Note: The contributions shown in Table 9 reflect the employer contribution requirement without phase-in. If applicable, the current phase-in contribution is shown in Table 1.

See the Benefit Provision History, later in this report, for past benefit provision changes.

Years where historical information is not available will be displayed with zero values.

Division 20 - Police Empl hired after 8/1/1

Table 8-20: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2011	\$ 0	\$ 0	0%	\$ 0
2012	0	0	0%	0
2013	(109)	396	0%	(505)
2014	5,545	5,063	91%	482
2015	34,844	25,863	74%	8,981
2016	49,618	37,410	75%	12,208
2017	27,067	49,013	181%	(21,946)
2018	29,950	57,353	191%	(27,403)
2019	41,116	68,249	166%	(27,133)
2020	33,826	70,795	209%	(36,969)
2021	17,343	88,250	509%	(70,907)

Notes: Actuarial assumptions were revised for the 2011, 2012, 2015, 2019, 2020 and 2021 actuarial valuations.

The percent funded does not reflect valuation assets from Surplus divisions, if any.

Table 9-20: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution ¹	Employee Contribution Rate ²
	Number	Annual Payroll		
2011	0	\$ 0	\$ 0	0.00%
2012	0	0	\$ 0	0.00%
2013	1	31,298	7.79%	0.00%
2014	2	56,589	9.67%	0.00%
2015	2	79,314	9.89%	0.00%
2016	2	92,005	9.77%	0.00%
2017	2	88,255	6.66%	0.00%
2018	1	48,741	3.89%	0.00%
2019	2	100,148	\$ 343	0.00%
2020	1	61,118	\$ 125	0.00%
2021	0	0	\$ 0	0.00%

1 For open divisions, a percent of pay contribution is shown. For closed divisions, a monthly dollar contribution is shown.

2 For each valuation year, the computed employer contribution is based on the employee rate. If the employee rate changes during the applicable fiscal year, the computed employer contribution will be adjusted.

Note: The contributions shown in Table 9 reflect the employer contribution requirement without phase-in. If applicable, the current phase-in contribution is shown in Table 1.

See the Benefit Provision History, later in this report, for past benefit provision changes.

Years where historical information is not available will be displayed with zero values.

Division HA - City Manager

Table 8-HA: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2011	\$ 15,501	\$ 12,144	78%	\$ 3,357
2012	27,296	21,959	80%	5,337
2013	42,224	32,342	77%	9,882
2014	61,660	43,457	71%	18,203
2015	89,002	56,172	63%	32,830
2016	101,605	70,403	69%	31,202
2017	126,439	86,389	68%	40,050
2018	127,016	91,280	72%	35,736
2019	136,513	90,056	66%	46,457
2020	147,212	91,212	62%	56,000
2021	144,198	104,375	72%	39,823

Notes: Actuarial assumptions were revised for the 2011, 2012, 2015, 2019, 2020 and 2021 actuarial valuations.

The percent funded does not reflect valuation assets from Surplus divisions, if any.

Table 9-HA: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution ¹	Employee Contribution Rate ²
	Number	Annual Payroll		
2011	1	\$ 88,250	8.09%	0.00%
2012	1	94,081	8.24%	0.00%
2013	1	96,930	8.51%	0.00%
2014	1	102,928	8.97%	0.00%
2015	1	109,902	10.22%	0.00%
2016	1	108,695	10.10%	0.00%
2017	0	0	\$ 243	0.00%
2018	1	86,824	9.27%	0.00%
2019	1	86,768	\$ 695	0.00%
2020	1	95,210	\$ 952	0.00%
2021	0	0	\$ 253	0.00%

1 For open divisions, a percent of pay contribution is shown. For closed divisions, a monthly dollar contribution is shown.

2 For each valuation year, the computed employer contribution is based on the employee rate. If the employee rate changes during the applicable fiscal year, the computed employer contribution will be adjusted.

Note: The contributions shown in Table 9 reflect the employer contribution requirement without phase-in. If applicable, the current phase-in contribution is shown in Table 1.

See the Benefit Provision History, later in this report, for past benefit provision changes.

Years where historical information is not available will be displayed with zero values.

Division HB - Dept.Heads Hired after 11/1/1

Table 8-HB: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2011	\$ 0	\$ 0	0%	\$ 0
2012	0	0	0%	0
2013	(197)	631	0%	(828)
2014	13,876	13,681	99%	195
2015	49,681	41,412	83%	8,269
2016	88,302	75,723	86%	12,579
2017	131,957	116,582	88%	15,375
2018	171,983	156,316	91%	15,667
2019	207,421	196,074	95%	11,347
2020	271,333	254,173	94%	17,160
2021	352,478	335,357	95%	17,121

Notes: Actuarial assumptions were revised for the 2011, 2012, 2015, 2019, 2020 and 2021 actuarial valuations.

The percent funded does not reflect valuation assets from Surplus divisions, if any.

Table 9-HB: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution ¹	Employee Contribution Rate ²
	Number	Annual Payroll		
2011	0	\$ 0	\$ 0	0.00%
2012	0	0	\$ 0	0.00%
2013	2	57,504	8.06%	0.00%
2014	3	163,867	7.67%	0.00%
2015	6	355,111	9.14%	0.00%
2016	6	370,447	8.85%	0.00%
2017	6	376,832	8.84%	0.00%
2018	6	388,653	8.88%	0.00%
2019	5	340,157	\$ 2,532	0.00%
2020	5	354,188	\$ 2,787	0.00%
2021	5	370,425	\$ 2,987	0.00%

¹ For open divisions, a percent of pay contribution is shown. For closed divisions, a monthly dollar contribution is shown.

² For each valuation year, the computed employer contribution is based on the employee rate. If the employee rate changes during the applicable fiscal year, the computed employer contribution will be adjusted.

Note: The contributions shown in Table 9 reflect the employer contribution requirement without phase-in. If applicable, the current phase-in contribution is shown in Table 1.

See the Benefit Provision History, later in this report, for past benefit provision changes.

Years where historical information is not available will be displayed with zero values.

Table 10: Division-Based Layered Amortization Schedule

Division 01 - Admin

Table 10-01: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance ¹	Original Amortization Period ²	Amounts for Fiscal Year Beginning 7/1/2023		
				Outstanding UAL Balance ³	Remaining Amortization Period ²	Annual Amortization Payment
Initial	12/31/2015	\$ 2,111,598	23	\$ 2,178,138	17	\$ 176,640
(Gain)/Loss	12/31/2016	98,259	22	105,598	17	8,568
(Gain)/Loss	12/31/2017	51,345	21	56,897	17	4,620
(Gain)/Loss	12/31/2018	97,601	20	107,686	17	8,736
(Gain)/Loss	12/31/2019	448,438	19	490,941	17	39,816
Assumption	12/31/2019	151,890	19	149,171	17	12,096
Experience	12/31/2020	34,968	18	38,531	17	3,120
Experience	12/31/2021	(50,090)	17	(55,440)	17	(4,500)
Total				\$ 3,071,522		\$ 249,096

¹ For each type of UAL (layer), this is the original balance as of the date the layer was established.

² According to the MERS amortization policy, each type of UAL (layer) is amortized over a specific period (see Appendix on MERS website).

³ This is the remaining balance as of the valuation date, projected to the beginning of the fiscal year shown above.

The unfunded accrued liability (UAL) as of December 31, 2021 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2021 valuation to take into account the expected future contributions that are based on past valuations. Each type of UAL (layer) is amortized over the appropriate period. Please see the Appendix on the MERS website for a detailed description of the amortization policy.

Note: The original balance and original amortization periods prior to 12/31/2018 were received from the prior actuary.

Table 10-02: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance ¹	Original Amortization Period ²	Amounts for Fiscal Year Beginning 7/1/2023		
				Outstanding UAL Balance ³	Remaining Amortization Period ²	Annual Amortization Payment
Initial	12/31/2015	\$ 687,387	23	\$ 715,878	17	\$ 58,056
(Gain)/Loss	12/31/2016	36,556	22	39,287	17	3,192
(Gain)/Loss	12/31/2017	155,316	21	172,123	17	13,956
(Gain)/Loss	12/31/2018	(3,457)	20	(3,814)	17	(312)
(Gain)/Loss	12/31/2019	114,601	19	125,462	17	10,176
Assumption	12/31/2019	127,857	19	133,849	17	10,860
Experience	12/31/2020	(571,889)	18	(630,134)	17	(51,096)
Experience	12/31/2021	(242,293)	17	(268,174)	17	(21,744)
Total				\$ 284,477		\$ 23,088

¹ For each type of UAL (layer), this is the original balance as of the date the layer was established.

² According to the MERS amortization policy, each type of UAL (layer) is amortized over a specific period (see Appendix on MERS website).

³ This is the remaining balance as of the valuation date, projected to the beginning of the fiscal year shown above.

The unfunded accrued liability (UAL) as of December 31, 2021 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2021 valuation to take into account the expected future contributions that are based on past valuations. Each type of UAL (layer) is amortized over the appropriate period. Please see the Appendix on the MERS website for a detailed description of the amortization policy.

Note: The original balance and original amortization periods prior to 12/31/2018 were received from the prior actuary.

Division 10 - Adm Asst

Table 10-10: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance ¹	Original Amortization Period ²	Amounts for Fiscal Year Beginning 7/1/2023		
				Outstanding UAL Balance ³	Remaining Amortization Period ²	Annual Amortization Payment
Initial	12/31/2015	\$ 115,041	23	\$ 119,687	17	\$ 9,708
(Gain)/Loss	12/31/2016	623	22	665	17	60
(Gain)/Loss	12/31/2017	(1,988)	21	(2,199)	17	(180)
(Gain)/Loss	12/31/2018	22,896	20	25,257	17	2,052
(Gain)/Loss	12/31/2019	14,300	19	15,662	17	1,272
Assumption	12/31/2019	12,793	19	13,081	17	1,056
Experience	12/31/2020	40,601	18	44,734	17	3,624
Experience	12/31/2021	(90,091)	17	(99,714)	17	(8,088)
Total				\$ 117,173		\$ 9,504

¹ For each type of UAL (layer), this is the original balance as of the date the layer was established.

² According to the MERS amortization policy, each type of UAL (layer) is amortized over a specific period (see Appendix on MERS website).

³ This is the remaining balance as of the valuation date, projected to the beginning of the fiscal year shown above.

The unfunded accrued liability (UAL) as of December 31, 2021 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2021 valuation to take into account the expected future contributions that are based on past valuations. Each type of UAL (layer) is amortized over the appropriate period. Please see the Appendix on the MERS website for a detailed description of the amortization policy.

Note: The original balance and original amortization periods prior to 12/31/2018 were received from the prior actuary.

Table 10-11: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance ¹	Original Amortization Period ²	Amounts for Fiscal Year Beginning 7/1/2023		
				Outstanding UAL Balance ³	Remaining Amortization Period ²	Annual Amortization Payment
Initial	12/31/2015	\$ 2,447,690	23	\$ 2,551,714	17	\$ 206,928
(Gain)/Loss	12/31/2016	(16,501)	22	(17,730)	17	(1,440)
(Gain)/Loss	12/31/2017	(110,710)	21	(122,707)	17	(9,948)
(Gain)/Loss	12/31/2018	232,252	20	256,240	17	20,784
(Gain)/Loss	12/31/2019	241,843	19	264,754	17	21,468
Assumption	12/31/2019	263,260	19	271,068	17	21,984
Experience	12/31/2020	175,894	18	193,814	17	15,720
Experience	12/31/2021	(287,205)	17	(317,883)	17	(25,776)
Total				\$ 3,079,270		\$ 249,720

¹ For each type of UAL (layer), this is the original balance as of the date the layer was established.

² According to the MERS amortization policy, each type of UAL (layer) is amortized over a specific period (see Appendix on MERS website).

³ This is the remaining balance as of the valuation date, projected to the beginning of the fiscal year shown above.

The unfunded accrued liability (UAL) as of December 31, 2021 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2021 valuation to take into account the expected future contributions that are based on past valuations. Each type of UAL (layer) is amortized over the appropriate period. Please see the Appendix on the MERS website for a detailed description of the amortization policy.

Note: The original balance and original amortization periods prior to 12/31/2018 were received from the prior actuary.

Division 12 - DPW after 12/1/2011

Table 10-12: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance ¹	Original Amortization Period ²	Amounts for Fiscal Year Beginning 7/1/2023		
				Outstanding UAL Balance ³	Remaining Amortization Period ²	Annual Amortization Payment
Experience	12/31/2020	\$ (6,025)	15	\$ (6,559)	14	\$ (612)
Experience	12/31/2021	(8)	15	(9)	15	0
Total				\$ (6,568)		\$ (612)

¹ For each type of UAL (layer), this is the original balance as of the date the layer was established.

² According to the MERS amortization policy, each type of UAL (layer) is amortized over a specific period (see Appendix on MERS website).

³ This is the remaining balance as of the valuation date, projected to the beginning of the fiscal year shown above.

The unfunded accrued liability (UAL) as of December 31, 2021 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2021 valuation to take into account the expected future contributions that are based on past valuations. Each type of UAL (layer) is amortized over the appropriate period. Please see the Appendix on the MERS website for a detailed description of the amortization policy.

Note: The original balance and original amortization periods prior to 12/31/2018 were received from the prior actuary.

Table 10-13: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance ¹	Original Amortization Period ²	Amounts for Fiscal Year Beginning 7/1/2023		
				Outstanding UAL Balance ³	Remaining Amortization Period ²	Annual Amortization Payment
(Gain)/Loss	12/31/2019	\$ 72	15	\$ 66	13	\$ 12
Assumption	12/31/2019	61	15	52	13	0
Experience	12/31/2020	521	15	573	14	60
Experience	12/31/2021	2,261	15	2,502	15	228
Total				\$ 3,193		\$ 300

¹ For each type of UAL (layer), this is the original balance as of the date the layer was established.

² According to the MERS amortization policy, each type of UAL (layer) is amortized over a specific period (see Appendix on MERS website).

³ This is the remaining balance as of the valuation date, projected to the beginning of the fiscal year shown above.

The unfunded accrued liability (UAL) as of December 31, 2021 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2021 valuation to take into account the expected future contributions that are based on past valuations. Each type of UAL (layer) is amortized over the appropriate period. Please see the Appendix on the MERS website for a detailed description of the amortization policy.

Note: The original balance and original amortization periods prior to 12/31/2018 were received from the prior actuary.

Division 20 - Police Empl hired after 8/1/1

Table 10-20: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance ¹	Original Amortization Period ²	Amounts for Fiscal Year Beginning 7/1/2023		
				Outstanding UAL Balance ³	Remaining Amortization Period ²	Annual Amortization Payment
(Gain)/Loss	12/31/2017	\$ (23,064)	15	\$ (23,226)	11	\$ (2,628)
(Gain)/Loss	12/31/2018	(2,976)	15	(3,092)	12	(324)
(Gain)/Loss	12/31/2019	41	10	40	8	12
Assumption	12/31/2019	1,641	10	1,756	8	264
Experience	12/31/2020	(10,413)	10	(10,941)	9	(1,452)
Experience	12/31/2021	(33,769)	10	(37,376)	10	(4,560)
Total				\$ (72,839)		\$ (8,688)

¹ For each type of UAL (layer), this is the original balance as of the date the layer was established.

² According to the MERS amortization policy, each type of UAL (layer) is amortized over a specific period (see Appendix on MERS website).

³ This is the remaining balance as of the valuation date, projected to the beginning of the fiscal year shown above.

The unfunded accrued liability (UAL) as of December 31, 2021 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2021 valuation to take into account the expected future contributions that are based on past valuations. Each type of UAL (layer) is amortized over the appropriate period. Please see the Appendix on the MERS website for a detailed description of the amortization policy.

Note: The original balance and original amortization periods prior to 12/31/2018 were received from the prior actuary.

Table 10-HA: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance ¹	Original Amortization Period ²	Amounts for Fiscal Year Beginning 7/1/2023		
				Outstanding UAL Balance ³	Remaining Amortization Period ²	Annual Amortization Payment
Initial	12/31/2015	\$ 32,830	23	\$ 34,761	17	\$ 2,820
(Gain)/Loss	12/31/2016	(3,356)	22	(3,604)	17	(288)
(Gain)/Loss	12/31/2017	8,858	21	9,821	17	792
(Gain)/Loss	12/31/2018	(5,152)	20	(5,685)	17	(456)
(Gain)/Loss	12/31/2019	6,224	19	6,805	17	552
Assumption	12/31/2019	4,370	19	4,528	17	372
Experience	12/31/2020	8,985	18	9,895	17	804
Experience	12/31/2021	(17,326)	17	(19,177)	17	(1,560)
Total				\$ 37,344		\$ 3,036

¹ For each type of UAL (layer), this is the original balance as of the date the layer was established.

² According to the MERS amortization policy, each type of UAL (layer) is amortized over a specific period (see Appendix on MERS website).

³ This is the remaining balance as of the valuation date, projected to the beginning of the fiscal year shown above.

The unfunded accrued liability (UAL) as of December 31, 2021 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2021 valuation to take into account the expected future contributions that are based on past valuations. Each type of UAL (layer) is amortized over the appropriate period. Please see the Appendix on the MERS website for a detailed description of the amortization policy.

Note: The original balance and original amortization periods prior to 12/31/2018 were received from the prior actuary.

Division HB - Dept.Heads Hired after 11/1/1

Table 10-HB: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance ¹	Original Amortization Period ²	Amounts for Fiscal Year Beginning 7/1/2023		
				Outstanding UAL Balance ³	Remaining Amortization Period ²	Annual Amortization Payment
Initial	12/31/2015	\$ 8,269	23	\$ 13,773	17	\$ 1,116
(Gain)/Loss	12/31/2016	(1,113)	22	(1,197)	17	(96)
(Gain)/Loss	12/31/2017	2,787	21	3,090	17	252
(Gain)/Loss	12/31/2018	6	20	10	17	0
(Gain)/Loss	12/31/2019	(9,431)	19	(10,324)	17	(840)
Assumption	12/31/2019	4,864	19	5,279	17	432
Experience	12/31/2020	6,152	18	6,774	17	552
Experience	12/31/2021	(341)	17	(377)	17	(36)
Total				\$ 17,028		\$ 1,380

¹ For each type of UAL (layer), this is the original balance as of the date the layer was established.

² According to the MERS amortization policy, each type of UAL (layer) is amortized over a specific period (see Appendix on MERS website).

³ This is the remaining balance as of the valuation date, projected to the beginning of the fiscal year shown above.

The unfunded accrued liability (UAL) as of December 31, 2021 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2021 valuation to take into account the expected future contributions that are based on past valuations. Each type of UAL (layer) is amortized over the appropriate period. Please see the Appendix on the MERS website for a detailed description of the amortization policy.

Note: The original balance and original amortization periods prior to 12/31/2018 were received from the prior actuary.

GASB Statement No. 68 Information

The following information has been prepared to provide some of the information necessary to complete GASB Statement No. 68 disclosures. GASB Statement No. 68 is effective for fiscal years beginning after June 15, 2014. Additional resources, including an Implementation Guide, are available at <http://www.mersofmich.com/>.

Actuarial Valuation Date:	12/31/2021
Measurement Date of the Total Pension Liability (TPL):	12/31/2021
At 12/31/2021, the following employees were covered by the benefit terms:	
Inactive employees or beneficiaries currently receiving benefits:	39
Inactive employees entitled to but not yet receiving benefits (including refunds):	28
Active employees:	<u>25</u>
	92
Total Pension Liability as of 12/31/2020 measurement date:	\$ 16,432,447
Total Pension Liability as of 12/31/2021 measurement date:	\$ 16,933,312
Service Cost for the year ending on the 12/31/2021 measurement date:	\$ 150,815
Change in the Total Pension Liability due to:	
- Benefit changes ¹ :	\$ 0
- Differences between expected and actual experience ² :	\$ (349,534)
- Changes in assumptions ² :	\$ 585,187
Average expected remaining service lives of all employees (active and inactive):	2

¹ A change in liability due to benefit changes is immediately recognized when calculating pension expense for the year.

² Changes in liability due to differences between actual and expected experience, and changes in assumptions, are recognized in pension expense over the average remaining service lives of all employees.

Covered employee payroll (Needed for Required Supplementary Information):	\$ 1,584,982
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Note: Covered employee payroll may differ from the GASB Statement No. 68 definition.

Sensitivity of the Net Pension Liability to changes in the discount rate:

	1% Decrease (6.25%)	Current Discount Rate (7.25%)	1% Increase (8.25%)
Change in Net Pension Liability as of 12/31/2021:	\$ 1,883,391	\$ 0	\$ (1,582,516)

Note: The current discount rate shown for GASB Statement No. 68 purposes is higher than the MERS assumed rate of return. This is because for GASB Statement No. 68 purposes, the discount rate must be gross of administrative expenses, whereas for funding purposes it is net of administrative expenses.



Benefit Provision History

The following benefit provision history is provided by MERS. Any corrections to this history or discrepancies between this information and information displayed elsewhere in the valuation report should be reported to MERS. All provisions are listed by date of adoption.

01 - Admin

1/1/2019	Non-Accelerated Amortization
12/1/2016	Service Credit Purchase Estimates - Yes
7/1/2010	Member Contribution Rate 2.00%
4/28/2003	Covered by Act 88
6/1/2000	Benefit B-4 (80% max)
1/1/1999	Benefit FAC-5 (5 Year Final Average Compensation)
1/1/1999	10 Year Vesting
1/1/1999	Benefit B-3 (80% max)
1/1/1999	Benefit F55 (With 25 Years of Service)
1/1/1999	Member Contribution Rate 0.00%
1/1/1995	Fiscal Month - July
1/1/1991	Day of work defined as 8 Hours a Day for All employees.
	Defined Benefit Normal Retirement Age - 60
	Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years

02 - Plc Empl

1/1/2021	Short Term Disability - Service Granted
1/1/2021	FMLA - Service Granted
1/1/2021	Public Safety Employees - Yes
1/1/2021	Long Term Disability - Service Granted
1/1/2021	Workers Compensation - Service Granted
1/1/2021	Service Credit Qualification - 160 hours
1/1/2021	Gross Wages
12/1/2016	Service Credit Purchase Estimates - Yes
8/1/2013	Member Contribution Rate 6.25%
1/1/2004	Member Contribution Rate 5.65%
4/28/2003	Covered by Act 88
1/1/2003	Member Contribution Rate 4.26%
1/1/2003	E2 2.5% COLA for future retirees (04/01/2002)
4/1/2002	Benefit FAC-3 (3 Year Final Average Compensation)
4/1/2002	Member Contribution Rate 5.65%
1/1/2002	Member Contribution Rate 3.91%
1/1/2001	Member Contribution Rate 3.44%
1/1/2000	Member Contribution Rate 3.87%
1/1/1999	Day of work defined as 8 Hours a Day for All employees.
1/1/1998	Benefit B-4 (80% max)
1/1/1998	Benefit F50 (With 25 Years of Service)
1/1/1998	Member Contribution Rate 4.40%
1/1/1995	Benefit FAC-5 (5 Year Final Average Compensation)
1/1/1995	10 Year Vesting
1/1/1995	Benefit B-2
1/1/1995	Member Contribution Rate 0.00%



02 - Plc Empl

1/1/1995 Fiscal Month - July
Defined Benefit Normal Retirement Age - 60
Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years

10 - Adm Asst

1/1/2021 Short Term Disability - Service Granted
1/1/2021 FMLA - Service Granted
1/1/2021 Public Safety Employees - Yes
1/1/2021 Long Term Disability - Service Granted
1/1/2021 Workers Compensation - Service Granted
1/1/2021 Service Credit Qualification - 160 hours
1/1/2021 Gross Wages
12/1/2016 Service Credit Purchase Estimates - Yes
4/28/2003 Covered by Act 88
1/1/1999 Day of work defined as 8 Hours a Day for All employees.
1/1/1999 Benefit FAC-5 (5 Year Final Average Compensation)
1/1/1999 10 Year Vesting
1/1/1999 Benefit B-1
1/1/1999 Benefit F55 (With 25 Years of Service)
1/1/1999 Member Contribution Rate 0.00%
1/1/1995 Fiscal Month - July
Defined Benefit Normal Retirement Age - 60
Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years

11 - DPW

1/1/2021 Short Term Disability - Service Granted
1/1/2021 FMLA - Service Granted
1/1/2021 Long Term Disability - Service Granted
1/1/2021 Workers Compensation - Service Granted
1/1/2021 Service Credit Qualification - 160 hours
1/1/2021 Gross Wages
12/1/2016 Service Credit Purchase Estimates - Yes
6/1/2003 Member Contribution Rate 6.25%
4/28/2003 Covered by Act 88
1/1/2003 Member Contribution Rate 7.06%
1/1/2002 Member Contribution Rate 6.63%
1/1/2001 Member Contribution Rate 6.36%
1/1/1999 Day of work defined as 8 Hours a Day for All employees.
1/1/1999 Benefit FAC-5 (5 Year Final Average Compensation)
1/1/1999 10 Year Vesting
1/1/1999 Benefit B-4 (80% max)
1/1/1999 Benefit F55 (With 25 Years of Service)
1/1/1999 Member Contribution Rate 2.00%
1/1/1995 Fiscal Month - July
Defined Benefit Normal Retirement Age - 60
Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years

12 - DPW after 12/1/2011

1/1/2021 Short Term Disability - Service Granted



12 - DPW after 12/1/2011

1/1/2021	FMLA - Service Granted
1/1/2021	Long Term Disability - Service Granted
1/1/2021	Other Leave - Service Granted
1/1/2021	Workers Compensation - Service Granted
1/1/2021	Service Credit Qualification - 160 hours
1/1/2021	Gross Wages
12/1/2016	Service Credit Purchase Estimates - Yes
12/1/2011	Day of work defined as 8 Hours a Day for All employees.
12/1/2011	Benefit FAC-5 (5 Year Final Average Compensation)
12/1/2011	10 Year Vesting
12/1/2011	Benefit B-1
12/1/2011	Benefit F55 (With 25 Years of Service)
12/1/2011	Member Contribution Rate 6.25%
4/28/2003	Covered by Act 88
1/1/1995	Fiscal Month - July
	Defined Benefit Normal Retirement Age - 60
	Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years

13 - DPW on/aft 03/01/2019

1/1/2021	Short Term Disability - Service Granted
1/1/2021	FMLA - Service Granted
1/1/2021	Public Safety Employees - Yes
1/1/2021	Long Term Disability - Service Granted
1/1/2021	Workers Compensation - Service Granted
1/1/2021	Service Credit Qualification - 160 hours
1/1/2021	Gross Wages
3/1/2019	Day of Work defined as 10 8 hour days
3/1/2019	Benefit FAC-5 (5 Year Final Average Compensation)
3/1/2019	10 Year Vesting
3/1/2019	Defined Benefit Normal Retirement Age - 60
3/1/2019	Service Credit Purchase Estimates - Yes
3/1/2019	Benefit C-1 (New)
3/1/2019	Benefit F55 (With 25 Years of Service)
3/1/2019	Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years
3/1/2019	Participant Contribution Rate 6.25%
4/28/2003	Covered by Act 88
1/1/1995	Fiscal Month - July

20 - Police Empl hired after 8/1/1

1/1/2021	Short Term Disability - Service Granted
1/1/2021	FMLA - Service Granted
1/1/2021	Public Safety Employees - Yes
1/1/2021	Long Term Disability - Service Granted
1/1/2021	Workers Compensation - Service Granted
1/1/2021	Service Credit Qualification - 60 hours
1/1/2021	Gross Wages
12/1/2016	Service Credit Purchase Estimates - Yes
8/1/2013	Day of work defined as 8 Hours a Day for All employees.
8/1/2013	Benefit FAC-3 (3 Year Final Average Compensation)



20 - Police Empl hired after 8/1/1

8/1/2013	10 Year Vesting
8/1/2013	Benefit B-1
8/1/2013	Benefit F50 (With 25 Years of Service)
8/1/2013	Member Contribution Rate 0.00%
4/28/2003	Covered by Act 88
1/1/1995	Fiscal Month - July
	Defined Benefit Normal Retirement Age - 60
	Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years

HA - City Manager

1/1/2021	Workers Compensation - Service Granted
1/1/2021	Custom Wages
1/1/2021	Short Term Disability - Service Granted
1/1/2021	Long Term Disability - Service Granted
1/1/2021	Service Credit Qualification - 160 hours
1/1/2019	Non-Accelerated Amortization
8/1/2010	1.5% Multiplier
8/1/2010	Day of work defined as 8 Hours a Day for Group employees.
8/1/2010	Benefit FAC-3 (3 Year Final Average Compensation)
8/1/2010	6 Year Vesting
4/28/2003	Covered by ACT 88
1/1/1995	Fiscal Month - July
	No Early Reduced Conditions
	Defined Benefit Normal Retirement Age - 60

HB - Dept.Heads Hired after 11/1/1

1/1/2021	Workers Compensation - Service Granted
1/1/2021	Custom Wages
1/1/2021	Public Safety Employees - Yes
1/1/2021	Short Term Disability - Service Granted
1/1/2021	Long Term Disability - Service Granted
1/1/2021	Service Credit Qualification - 160 hours
1/1/2019	Non-Accelerated Amortization
11/1/2013	Benefit FAC-3 (3 Year Final Average Compensation)
11/1/2013	6 Year Vesting
11/1/2013	1.5% Multiplier
4/28/2003	Covered by ACT 88
1/1/1995	Fiscal Month - July
	Defined Benefit Normal Retirement Age - 60
	No Early Reduced Conditions



Plan Provisions, Actuarial Assumptions, and Actuarial Funding Method

Details on MERS plan provisions, actuarial assumptions, and actuarial methodology can be found in the Appendix. Some actuarial assumptions are specific to this municipality and its divisions. These are listed below.

Increase in Final Average Compensation

Division	FAC Increase Assumption
All Divisions	1.00%

Miscellaneous and Technical Assumptions

Loads – None.

Amortization Policy for Closed Not Linked Divisions: The default funding policy for closed not linked divisions, including open divisions with zero active members, is to follow a non-accelerated amortization, where each closed period decreases by one year each year until the period is exhausted. In select instances, closed not linked division(s) may follow an accelerated amortization policy.

Risk Commentary

Determination of the accrued liability, the employer contribution, and the funded ratio requires the use of assumptions regarding future economic and demographic experience. Risk measures, as illustrated in this report, are intended to aid in the understanding of the effects of future experience differing from the assumptions used in the course of the actuarial valuation. Risk measures may also help with illustrating the potential volatility in the accrued liability, the actuarially determined contribution and the funded ratio that result from the differences between actual experience and the actuarial assumptions.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions due to changing conditions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period, or additional cost or contribution requirements based on the Plan's funded status); and changes in plan provisions or applicable law. The scope of an actuarial valuation does not include an analysis of the potential range of such future measurements.

Examples of risk that may reasonably be anticipated to significantly affect the plan's future financial condition include:

- **Investment Risk** – actual investment returns may differ from the expected returns;
- **Asset/Liability Mismatch** – changes in asset values may not match changes in liabilities, thereby altering the gap between the accrued liability and assets and consequently altering the funded status and contribution requirements;
- **Salary and Payroll Risk** – actual salaries and total payroll may differ from expected, resulting in actual future accrued liability and contributions differing from expected;
- **Longevity Risk** – members may live longer or shorter than expected and receive pensions for a period of time other than assumed; and
- **Other Demographic Risks** – members may terminate, retire or become disabled at times or with benefits other than assumed resulting in actual future accrued liability and contributions differing from expected.

The effects of certain trends in experience can generally be anticipated. For example, if the investment return since the most recent actuarial valuation is less (or more) than the assumed rate, the cost of the plan can be expected to increase (or decrease). Likewise, if longevity is improving (or worsening), increases (or decreases) in cost can be anticipated.

PLAN MATURITY MEASURES

Risks facing a pension plan evolve over time. A young plan with virtually no investments and paying few benefits may experience little investment risk. An older plan with a large number of members in pay status and a significant trust may be much more exposed to investment risk. Generally accepted plan maturity measures include the following:

	<u>12/31/2021</u>	<u>12/31/2020</u>	<u>12/31/2019</u>	<u>12/31/2018</u>
1. Ratio of the market value of assets to total payroll	6.7	5.2	4.8	4.4
2. Ratio of actuarial accrued liability to payroll	11.0	9.0	8.8	8.0
3. Ratio of actives to retirees and beneficiaries	0.6	0.8	0.9	0.9
4. Ratio of market value of assets to benefit payments	9.7	8.9	8.5	8.5
5. Ratio of net cash flow to market value of assets (boy)	-3.9%	-5.0%	-5.5%	-4.6%

RATIO OF MARKET VALUE OF ASSETS TO TOTAL PAYROLL

The relationship between assets and payroll is a useful indicator of the potential volatility of contributions. For example, if the market value of assets is 2.0 times the payroll, a return on assets 5% different than assumed would equal 10% of payroll. A higher (lower) or increasing (decreasing) level of this maturity measure generally indicates a higher (lower) or increasing (decreasing) volatility in plan sponsor contributions as a percentage of payroll.

RATIO OF ACTUARIAL ACCRUED LIABILITY TO PAYROLL

The relationship between actuarial accrued liability and payroll is a useful indicator of the potential volatility of contributions for a fully funded plan. A funding policy that targets a funded ratio of 100% is expected to result in the ratio of assets to payroll and the ratio of liability to payroll converging over time.

RATIO OF ACTIVES TO RETIREES AND BENEFICIARIES

A young plan with many active members and few retirees will have a high ratio of actives to retirees. A mature open plan may have close to the same number of actives to retirees resulting in a ratio near 1.0. A super-mature or closed plan may have significantly more retirees than actives resulting in a ratio below 1.0.

RATIO OF MARKET VALUE OF ASSETS TO BENEFIT PAYMENTS

The MERS' Actuarial Policy requires a total minimum contribution equal to the excess (if any) of three times the expected annual benefit payments over the projected market value of assets as of the participating municipality or court's Fiscal Year for which the contribution applies. The ratio of market value of assets to benefit payments as of the valuation date provides an indication of whether the division is at risk for triggering the minimum contribution rule in the near term. If the division triggers this minimum contribution rule, the required employer contributions could increase dramatically relative to previous valuations.

RATIO OF NET CASH FLOW TO MARKET VALUE OF ASSETS

A positive net cash flow means contributions exceed benefits and expenses. A negative cash flow means existing funds are being used to make payments. A certain amount of negative net cash flow is generally expected to occur when benefits are prefunded through a qualified trust. Large negative net cash flows as a percent of assets may indicate a super-mature plan or a need for additional contributions.



State Reporting

The following information has been prepared to provide some of the information necessary to complete the Public Act 202 pension reporting requirements for the State of Michigan's Local Government Retirement System Annual Report (Form No. 5572). Additional resources are available at www.mersofmich.com and on the State [website](#).

Form 5572		
Line Reference	Description	Result
10	Membership as of December 31, 2021	
11	Indicate number of active members	25
12	Indicate number of inactive members (excluding pending refunds)	21
13	Indicate number of retirees and beneficiaries	39
14	Investment Performance for Calendar Year Ending December 31, 2021¹	
15	Enter actual rate of return - prior 1-year period	14.13%
16	Enter actual rate of return - prior 5-year period	9.96%
17	Enter actual rate of return - prior 10-year period	9.11%
18	Actuarial Assumptions	
19	Actuarial assumed rate of investment return ²	7.00%
20	Amortization method utilized for funding the system's unfunded actuarial accrued liability, if any	Level Percent
21	Amortization period utilized for funding the system's unfunded actuarial accrued liability, if any ³	17
22	Is each division within the system closed to new employees? ⁴	No
23	Uniform Assumptions	
24	Enter retirement pension system's actuarial value of assets using uniform assumptions	\$9,836,137
25	Enter retirement pension system's actuarial accrued liabilities using uniform assumptions ⁵	\$17,646,488
27	Actuarially Determined Contribution (ADC) using uniform assumptions, Fiscal Year Ending June 30, 2022	\$783,036

- ¹ The Municipal Employees' Retirement System's investment performance has been provided to GRS from MERS Investment Staff and is included here for reporting purposes. The investment performance figures reported are net of investment expenses on a rolling calendar year basis for the previous 1-, 5-, and 10-year periods as required under PA 530.
- ² Net of administrative and investment expenses.
- ³ Populated with the longest amortization period remaining in the amortization schedule, across all divisions in the plan. This is when each division and the plan in total is expected to reach 100% funded if all assumptions are met.
- ⁴ If all divisions within the employer are closed, "yes." If at least one division is open (including shadow divisions), "no."
- ⁵ Line 25 actuarial accrued liability is determined under PA 202 uniform assumptions which differ from the valuation assumptions. In particular, the assumed rate of return for PA 202 purposes is 6.85%.

