Municipal Employees' Retirement System

Municipal Employees' Retirement System of Michigan

Annual Actuarial Valuation Report
December 31, 2021 - Milford, Vlg of (6313)

GRS

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Spring, 2022

Milford, Vlg 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 Milford, Vlg of (6313) 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. Milford, Vlg 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.

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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 Milford, Vlg 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

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Rebecca L. Stouffer

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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*	80%	77%

* 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
Fiscal Year Beginning:	July 1, 2023	July 1, 2023	July 1, 2022	July 1, 2022	July 1, 2023	July 1, 2023	July 1, 2022	July 1, 2022
Division								
01 - Gnrl Union	-	-	-	-	$ 0	$ 0	$ 0	$ 0
02 - Cmnd Ofcrs	-	-	-	-	12,145	13,285	11,142	12,852
10 - Non Union	-	-	-	-	946	1,206	1,153	1,543
11 - NonUnion Slrd	-	-	-	-	0	0	417	600
12 - Wastewater Dp	-	-	-	-	4,237	4,813	4,448	5,312
20 - Patrol Dsp	-	-	-	-	20,796	23,348	16,021	19,849
HA - Ptrl Disp and Cmnd aft 5/1/12	7.32%	7.32%	6.39%	6.39%	3,607	3,607	2,750	2,750
Total Municipality - Estimated Monthly Contribution					**$ 41,731**	**$ 46,259**	**$ 35,931**	**$ 42,906**
Total Municipality - Estimated Annual Contribution					**$ 500,772**	**$ 555,108**	**$ 431,172**	**$ 514,872**

Employee contribution rates:

	Employee Contribution Rate	
Valuation Date:	12/31/2021	12/31/2020
Division		
01 - Gnrl Union	0.00%	0.00%
02 - Cmnd Ofcrs	5.73%	5.73%
10 - Non Union	0.00%	0.00%
11 - NonUnion Slrd	0.00%	0.00%
12 - Wastewater Dp	0.00%	0.00%
20 - Patrol Dsp	5.73%	5.73%
HA - Ptrl Disp and Cmnd aft 5/1/12	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 $56,171, instead of $46,259.

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	$ 24,991,858	$ 21,739,661	$ 19,088,809
Valuation Assets[1]	$ 15,327,678	$ 15,327,678	$ 15,327,678
Unfunded Accrued Liability	$ 9,664,180	$ 6,411,983	$ 3,761,131
Funded Ratio	61%	71%	80%
Monthly Normal Cost	$ 34,160	$ 24,016	$ 16,593
Monthly Amortization Payment	$ 64,163	$ 45,660	$ 28,307
Total Employer Contribution[2]	$ 98,323	$ 69,676	$ 46,259

[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

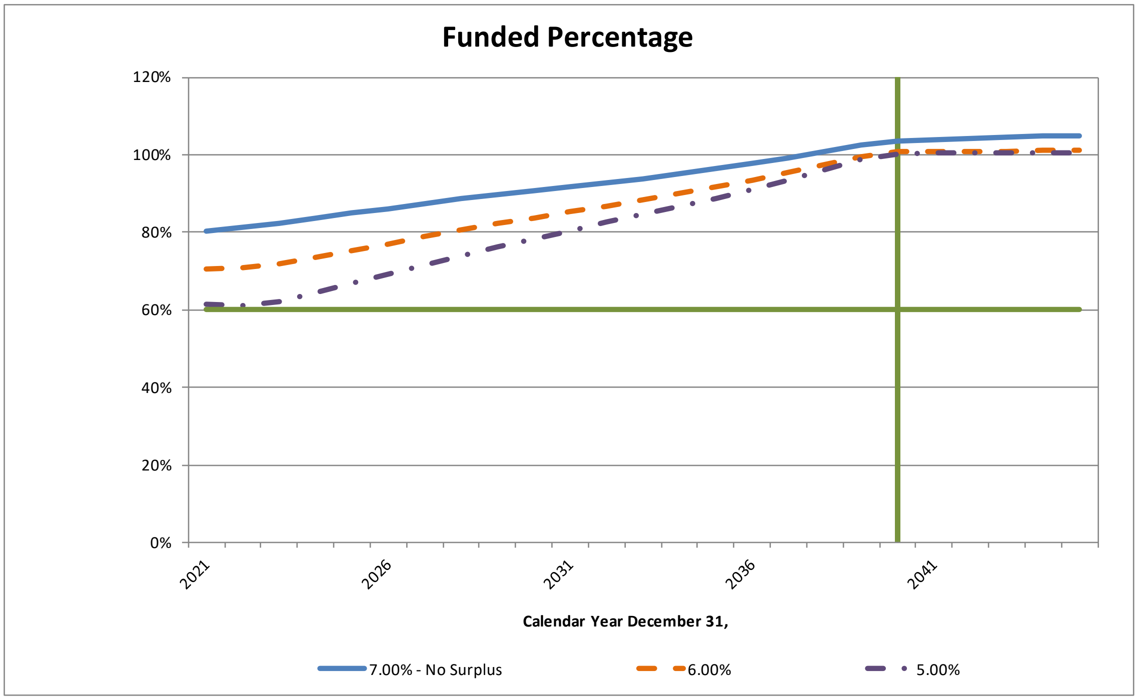
The next two pages show projections of the plan's funded ratio and computed employer contributions under the actuarial assumptions used in the valuation and alternate economic assumption scenarios. All three projections take into account the past investment experience that will continue to affect the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

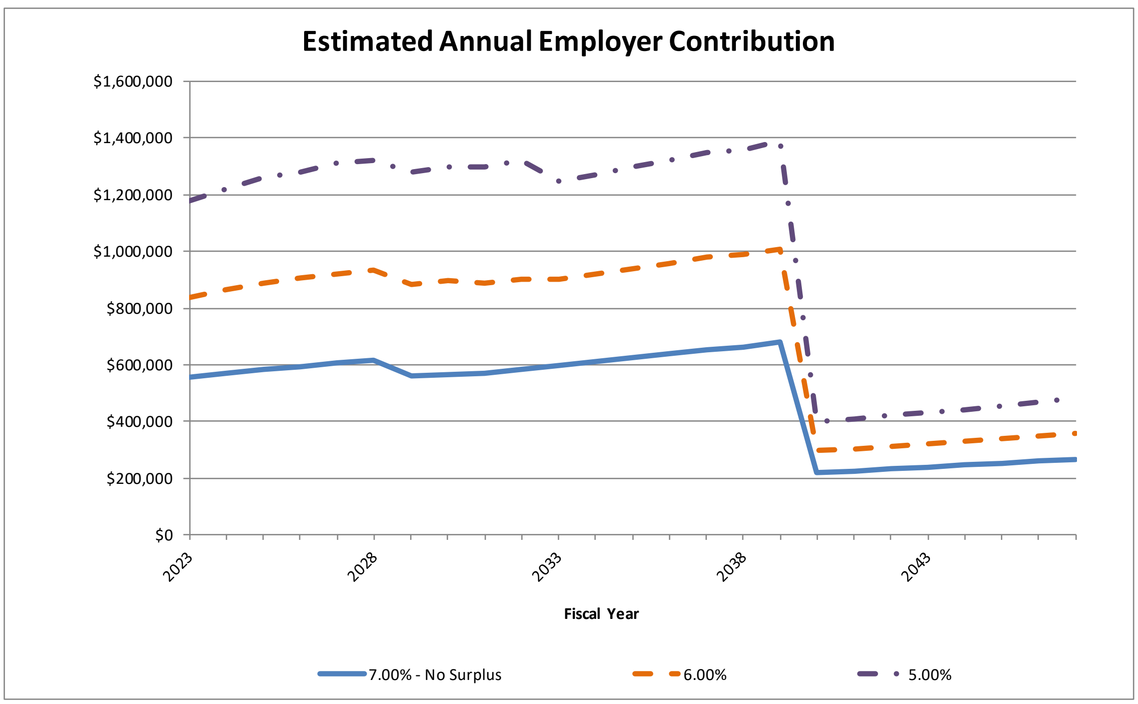
Valuation Year Ending 12/31	Fiscal Year Beginning 7/1	Actuarial Accrued Liability	Valuation Assets[2]	Funded Percentage	Estimated Annual Employer Contribution
7.00%[1] - NO PHASE-IN					
2021	2023	$ 19,088,809	$ 15,327,678	80%	$ 555,108
2022	2024	$ 19,800,000	$ 16,100,000	81%	$ 569,000
2023	2025	$ 20,500,000	$ 16,900,000	82%	$ 583,000
2024	2026	$ 21,200,000	$ 17,700,000	84%	$ 595,000
2025	2027	$ 22,000,000	$ 18,600,000	85%	$ 607,000
2026	2028	$ 22,700,000	$ 19,500,000	86%	$ 615,000
6.00%[1] - NO PHASE-IN					
2021	2023	$ 21,739,661	$ 15,327,678	71%	$ 836,112
2022	2024	$ 22,500,000	$ 15,900,000	71%	$ 863,000
2023	2025	$ 23,300,000	$ 16,700,000	72%	$ 887,000
2024	2026	$ 24,100,000	$ 17,700,000	74%	$ 905,000
2025	2027	$ 24,800,000	$ 18,700,000	75%	$ 922,000
2026	2028	$ 25,600,000	$ 19,800,000	77%	$ 935,000
5.00%[1] - NO PHASE-IN					
2021	2023	$ 24,991,858	$ 15,327,678	61%	$ 1,179,876
2022	2024	$ 25,800,000	$ 15,800,000	61%	$ 1,220,000
2023	2025	$ 26,700,000	$ 16,600,000	62%	$ 1,260,000
2024	2026	$ 27,500,000	$ 17,700,000	64%	$ 1,280,000
2025	2027	$ 28,400,000	$ 18,900,000	67%	$ 1,310,000
2026	2028	$ 29,200,000	$ 20,200,000	69%	$ 1,320,000

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]: Employer Normal Cost[6]	Employer Contributions[1]: Payment of the Unfunded Accrued Liability[4]	Employer Contributions[1]: Computed Employer Contribut. No Phase-In	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]
Percentage of Payroll									
01 - Gnrl Union	0.00%	0.00%	-	-	-	-			
02 - Cmnd Ofcrs	15.31%	5.73%	-	-	-	-	25.08%	22.78%	
10 - Non Union	0.00%	0.00%	-	-	-	-			
11 - NonUnion Slrd	0.00%	0.00%	-	-	-	-			
12 - Wastewater Dp	8.93%	0.00%	-	-	-	-			
20 - Patrol Dsp	17.97%	5.73%	-	-	-	-	25.08%	22.78%	
HA - Ptrl Disp and Cmnd aft 5/1/12	6.85%	0.00%	6.85%	0.47%	7.32%	7.32%	25.08%	22.78%	
Estimated Monthly Contribution[3]									
01 - Gnrl Union			$ 0	$ 0	$ 0	$ 0			
02 - Cmnd Ofcrs			2,644	10,641	13,285	12,145			
10 - Non Union			0	1,206	1,206	946			
11 - NonUnion Slrd			0	(1,359)	0	0			
12 - Wastewater Dp			348	4,465	4,813	4,237			
20 - Patrol Dsp			10,225	13,123	23,348	20,796			
HA - Ptrl Disp and Cmnd aft 5/1/12			3,376	231	3,607	3,607			
Total Municipality			**$ 16,593**	**$ 28,307**	**$ 46,259**	**$ 41,731**			
Estimated Annual Contribution[3]			**$ 199,116**	**$ 339,684**	**$ 555,108**	**$ 500,772**			

[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 - Gnrl Union: Closed to new hires

	2021 Valuation	2020 Valuation
Benefit Multiplier:	2.25% Multiplier (80% max)	2.25% 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:	0.00%	0.00%
DC Plan for New Hires:	10/4/1999	10/4/1999
Act 88:	No	No

02 - Cmnd Ofcrs: Closed to new hires, linked to Division HA

	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
COLA for Future Retirees:	2.50% (Non-Compound)	2.50% (Non-Compound)
Employee Contributions:	5.73%	5.73%
Act 88:	No	No

10 - Non Union: Closed to new hires

	2021 Valuation	2020 Valuation
Benefit Multiplier:	2.00% Multiplier (no max)	2.00% 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%
DC Plan for New Hires:	1/1/2001	1/1/2001
Act 88:	No	No

11 - NonUnion Slrd: Closed to new hires

	2021 Valuation	2020 Valuation
Benefit Multiplier:	2.00% Multiplier (no max)	2.00% Multiplier (no max)
Normal Retirement Age:	60	60
Vesting:	8 years	8 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%
DC Plan for New Hires:	1/1/2001	1/1/2001
Act 88:	No	No

12 - Wastewater Dp: Closed to new hires

	2021 Valuation	2020 Valuation
Benefit Multiplier:	2.25% Multiplier (80% max)	2.25% 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:	0.00%	0.00%
DC Plan for New Hires:	12/1/2006	12/1/2006
Act 88:	No	No

20 - Patrol Dsp: Closed to new hires, linked to Division HA

	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:	5 years	5 years
COLA for Future Retirees:	2.50% (Non-Compound)	2.50% (Non-Compound)
Employee Contributions:	5.73%	5.73%
Act 88:	No	No

HA - Ptrl Disp and Cmnd aft 5/1/12: Open Division, linked to Division 02, 20

	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):	55/25	55/25
Early Retirement (Reduced):	-	-
Final Average Compensation:	3 years	3 years
Employee Contributions:	0.00%	0.00%
Act 88:	No	No

Table 3: Participant Summary

Division	2021 Valuation Number	2021 Valuation Annual Payroll[1]	2020 Valuation Number	2020 Valuation Annual Payroll[1]	2021 Valuation Average Age	2021 Valuation Average Benefit Service[2]	2021 Valuation Average Eligibility Service[2]
01 - Gnrl Union							
Active Employees	0	$ 0	0	$ 0	0.0	0.0	0.0
Vested Former Employees	0	0	0	0	0.0	0.0	0.0
Retirees and Beneficiaries	3	121,863	3	121,863	61.0		
Pending Refunds	0		0				
02 - Cmnd Ofcrs							
Active Employees	3	$ 317,835	3	$ 302,585	46.8	23.8	23.8
Vested Former Employees	1	27,824	1	27,824	48.0	13.1	13.1
Retirees and Beneficiaries	8	357,457	8	348,058	67.3		
Pending Refunds	0		1				
10 - Non Union							
Active Employees	0	$ 0	0	$ 0	0.0	0.0	0.0
Vested Former Employees	0	0	0	0	0.0	0.0	0.0
Retirees and Beneficiaries	4	80,844	4	80,844	74.1		
Pending Refunds	0		0				
11 - NonUnion Slrd							
Active Employees	0	$ 0	0	$ 0	0.0	0.0	0.0
Vested Former Employees	1	7,091	1	7,091	63.8	8.7	21.5
Retirees and Beneficiaries	3	41,778	3	56,359	73.8		
Pending Refunds	0		0				
12 - Wastewater Dp							
Active Employees	1	$ 83,598	1	$ 76,543	64.8	38.3	38.3
Vested Former Employees	0	0	0	0	0.0	0.0	0.0
Retirees and Beneficiaries	3	126,339	3	126,339	63.8		
Pending Refunds	0		0				
20 - Patrol Dsp							
Active Employees	11	$ 1,017,948	11	$ 933,840	44.5	17.9	18.4
Vested Former Employees	6	46,107	6	46,201	43.5	5.2	12.7
Retirees and Beneficiaries	4	138,403	4	135,973	69.5		
Pending Refunds	2		2				
HA - Ptrl Disp and Cmnd aft 5/1/12							
Active Employees	5	$ 451,987	5	$ 417,060	31.0	4.4	4.7
Vested Former Employees	2	1,922	1	1,243	43.5	1.8	12.5
Retirees and Beneficiaries	0	0	0	0	0.0		
Pending Refunds	0		0				
Total Municipality							
Active Employees	**20**	**$ 1,871,368**	**20**	**$ 1,730,028**	**42.5**	**16.4**	**16.8**
Vested Former Employees	**10**	**82,944**	**9**	**82,359**	**46.0**	**5.7**	**13.6**
Retirees and Beneficiaries	**25**	**866,684**	**25**	**869,436**	**68.3**		
Pending Refunds	**2**		**3**				
Total Participants	**57**		**57**				

[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 - Gnrl Union	$ 1,625,629	$ 0	$ 1,500,491	$ 0
02 - Cmnd Ofcrs	4,489,234	262,055	4,093,090	242,990
10 - Non Union	707,615	0	634,392	0
11 - NonUnion Slrd	570,838	0	495,750	0
12 - Wastewater Dp	1,720,074	1,662	1,580,695	1,656
20 - Patrol Dsp	4,746,364	1,040,290	3,999,314	845,979
HA - Ptrl Disp and Cmnd aft 5/1/12	186,589	0	136,891	0
Municipality Total[3]	**$ 14,046,342**	**$ 1,304,007**	**$ 12,440,623**	**$ 1,090,625**
Combined Assets[3]	**$15,350,349**		**$13,531,247**	

[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 Required	Employer Contributions Additional	Employee Contributions	Investment Income (Valuation Assets)	Benefit Payments	Employee Contribution Refunds	Net Transfers	Valuation Asset Balance
2011	$ 331,333	$ 0	$ 82,098	$ 405,200	$ (559,832)	$ (12,482)	$ 62,836	$ 7,970,392
2012	312,111	400,000	76,134	438,409	(616,970)	(15,057)	16,144	8,581,163
2013	424,528	450,000	85,114	596,286	(612,483)	0	0	9,524,608
2014	397,005	0	77,485	553,738	(609,472)	0	0	9,943,364
2015	412,140	350,000	77,542	537,248	(617,966)	(15,029)	0	10,687,299
2016	428,973	200,000	70,800	597,092	(700,696)	(9,798)	0	11,273,670
2017	450,032	35,304	68,895	683,784	(793,697)	0	0	11,717,988
2018	475,351	61,782	68,279	431,725	(828,460)	0	0	11,926,665
2019	512,396	44,130	71,349	572,757	(859,344)	0	0	12,267,953
2020	588,083	26,478	69,995	1,003,656	(874,843)	0	75,882	13,157,204
2021	561,547	8,826	74,297	2,248,089	(857,116)	(96)	134,927	15,327,678

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

Division	Actuarial Accrued Liability: Active Employees	Vested Former Employees	Retirees and Beneficiaries	Pending Refunds	Total	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
01 - Gnrl Union	$ 0	$ 0	$ 1,494,425	$ 0	$ 1,494,425	$ 1,623,228	108.6%	$ (128,803)
02 - Cmnd Ofcrs	2,113,647	172,045	4,074,336	0	6,360,028	4,744,271	74.6%	1,615,757
10 - Non Union	0	0	806,227	0	806,227	706,570	87.6%	99,657
11 - NonUnion Slrd	0	81,696	377,370	0	459,066	569,995	124.2%	(110,929)
12 - Wastewater Dp	542,341	0	1,495,932	0	2,038,273	1,719,193	84.3%	319,080
20 - Patrol Dsp	5,737,864	214,331	1,748,517	15,815	7,716,527	5,778,107	74.9%	1,938,420
HA - Ptrl Disp and Cmnd aft 5/1/12	206,422	7,841	0	0	214,263	186,314	87.0%	27,949
Total	**$ 8,600,274**	**$ 475,913**	**$ 9,996,807**	**$ 15,815**	**$ 19,088,809**	**$ 15,327,678**	**80.3%**	**$ 3,761,131**

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 Active Employees	Vested Former Employees	Retirees and Beneficiaries	Pending Refunds	Total	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
Linked Divisions HA, 02, 20	$ 8,057,933	$ 394,217	$ 5,822,853	$ 15,815	$ 14,290,818	$ 10,708,692	74.9%	$ 3,582,126

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	$ 10,029,580	$ 6,814,366	68%	$ 3,215,214
2008	10,278,000	7,111,423	69%	3,166,577
2009	10,584,215	7,367,729	70%	3,216,486
2010	10,918,349	7,661,239	70%	3,257,110
2011	11,706,788	7,970,392	68%	3,736,396
2012	11,753,396	8,581,163	73%	3,172,233
2013	12,284,772	9,524,608	78%	2,760,164
2014	12,692,716	9,943,364	78%	2,749,352
2015	13,959,023	10,687,299	77%	3,271,724
2016	14,331,446	11,273,670	79%	3,057,776
2017	14,927,055	11,717,988	79%	3,209,067
2018	15,618,815	11,926,665	76%	3,692,150
2019	16,397,728	12,267,953	75%	4,129,775
2020	17,196,132	13,157,204	77%	4,038,928
2021	19,088,809	15,327,678	80%	3,761,131

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 - Gnrl Union

Table 8-01: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2011	$ 1,123,429	$ 999,203	89%	$ 124,226
2012	1,201,079	1,043,694	87%	157,385
2013	1,281,640	1,097,294	86%	184,346
2014	1,318,763	1,156,554	88%	162,209
2015	1,497,889	1,215,127	81%	282,762
2016	1,509,859	1,227,340	81%	282,519
2017	1,439,993	1,271,313	88%	168,680
2018	1,466,489	1,320,709	90%	145,780
2019	1,340,365	1,392,650	104%	(52,285)
2020	1,460,028	1,459,013	100%	1,015
2021	1,494,425	1,623,228	109%	(128,803)

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	2	$ 127,780	$ 2,011	0.00%
2012	2	129,468	$ 2,611	0.00%
2013	2	137,527	$ 3,365	0.00%
2014	2	137,127	$ 3,134	0.00%
2015	1	54,782	$ 6,199	0.00%
2016	1	54,709	$ 6,575	0.00%
2017	1	52,756	$ 5,868	0.00%
2018	1	56,095	$ 6,568	0.00%
2019	1	53,644	$ 191	0.00%
2020	0	0	$ 0	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.

Table 8-02: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2011	$ 4,344,710	$ 2,363,206	54%	$ 1,981,504
2012	4,093,248	2,700,582	66%	1,392,666
2013	4,619,308	3,737,832	81%	881,476
2014	4,720,229	3,765,410	80%	954,819
2015	5,157,657	4,119,670	80%	1,037,987
2016	5,258,167	4,335,646	82%	922,521
2017	5,456,695	4,329,085	79%	1,127,610
2018	5,648,892	4,209,601	75%	1,439,291
2019	6,001,239	4,127,246	69%	1,873,993
2020	5,853,407	4,216,218	72%	1,637,189
2021	6,360,028	4,744,271	75%	1,615,757

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	3	$ 250,717	50.52%	5.73%
2012	2	166,822	$ 7,749	5.73%
2013	4	343,852	$ 6,394	5.73%
2014	4	339,362	$ 7,097	5.73%
2015	4	360,123	$ 8,093	5.73%
2016	4	357,389	$ 7,287	5.73%
2017	3	276,752	$ 8,548	5.73%
2018	3	290,035	$ 10,894	5.73%
2019	3	304,247	$ 14,321	5.73%
2020	3	302,585	$ 12,852	5.73%
2021	3	317,835	$ 13,285	5.73%

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	$ 888,610	$ 456,073	51%	$ 432,537
2012	874,518	415,759	48%	458,759
2013	858,523	390,982	46%	467,541
2014	819,439	385,905	47%	433,534
2015	824,469	395,138	48%	429,331
2016	810,637	417,345	52%	393,292
2017	796,265	451,807	57%	344,458
2018	783,969	488,343	62%	295,626
2019	791,228	538,051	68%	253,177
2020	802,655	616,856	77%	185,799
2021	806,227	706,570	88%	99,657

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	0	$ 0	$ 4,244	0.00%
2012	0	0	$ 5,324	0.00%
2013	0	0	$ 6,737	0.00%
2014	0	0	$ 6,793	0.00%
2015	0	0	$ 8,035	0.00%
2016	0	0	$ 8,507	0.00%
2017	0	0	$ 8,972	0.00%
2018	0	0	$ 9,620	0.00%
2019	0	0	$ 1,169	0.00%
2020	0	0	$ 1,543	0.00%
2021	0	0	$ 1,206	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	$ 644,417	$ 408,053	63%	$ 236,364
2012	636,960	379,412	60%	257,548
2013	625,329	360,136	58%	265,193
2014	617,582	348,974	57%	268,608
2015	639,380	344,478	54%	294,902
2016	630,959	338,939	54%	292,020
2017	622,954	356,739	57%	266,215
2018	612,720	380,105	62%	232,615
2019	570,873	418,269	73%	152,604
2020	565,773	482,046	85%	83,727
2021	459,066	569,995	124%	(110,929)

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	0	$ 0	$ 2,319	0.00%
2012	0	0	$ 3,009	0.00%
2013	0	0	$ 3,833	0.00%
2014	0	0	$ 4,323	0.00%
2015	0	0	$ 5,737	0.00%
2016	0	0	$ 6,237	0.00%
2017	0	0	$ 6,631	0.00%
2018	0	0	$ 7,109	0.00%
2019	0	0	$ 523	0.00%
2020	0	0	$ 600	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.

Table 8-12: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2011	$ 1,410,186	$ 1,051,190	75%	$ 358,996
2012	1,439,773	1,126,657	78%	313,116
2013	1,502,302	1,220,341	81%	281,961
2014	1,558,191	1,308,564	84%	249,627
2015	1,717,451	1,388,887	81%	328,564
2016	1,702,328	1,478,044	87%	224,284
2017	1,784,729	1,538,274	86%	246,455
2018	1,877,391	1,540,884	82%	336,507
2019	1,950,628	1,515,044	78%	435,584
2020	1,980,332	1,538,610	78%	441,722
2021	2,038,273	1,719,193	84%	319,080

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	3	$ 216,155	18.83%	0.00%
2012	3	216,265	$ 2,705	0.00%
2013	3	227,326	$ 2,732	0.00%
2014	3	231,251	$ 2,666	0.00%
2015	3	240,393	$ 3,454	0.00%
2016	3	232,269	$ 2,643	0.00%
2017	2	156,066	$ 2,544	0.00%
2018	1	73,186	$ 3,312	0.00%
2019	1	82,938	$ 4,847	0.00%
2020	1	76,543	$ 5,312	0.00%
2021	1	83,598	$ 4,813	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 20 - Patrol Dsp

Table 8-20: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2011	$ 3,295,436	$ 2,692,667	82%	$ 602,769
2012	3,507,818	2,915,059	83%	592,759
2013	3,394,965	2,717,456	80%	677,509
2014	3,651,329	2,972,642	81%	678,687
2015	4,119,650	3,204,319	78%	915,331
2016	4,409,660	3,441,498	78%	968,162
2017	4,798,816	3,719,207	78%	1,079,609
2018	5,176,706	3,916,559	76%	1,260,147
2019	5,655,480	4,180,191	74%	1,475,289
2020	6,395,877	4,711,354	74%	1,684,523
2021	7,716,527	5,778,107	75%	1,938,420

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	18	$ 1,087,074	11.63%	5.73%
2012	19	1,158,652	$ 10,983	5.73%
2013	16	1,117,638	$ 11,160	5.73%
2014	16	1,085,090	$ 11,194	5.73%
2015	12	912,469	$ 11,917	5.73%
2016	11	861,481	$ 12,168	5.73%
2017	11	893,120	$ 13,258	5.73%
2018	11	901,558	$ 14,800	5.73%
2019	11	940,946	$ 16,909	5.73%
2020	11	933,840	$ 19,849	5.73%
2021	11	1,017,948	$ 23,348	5.73%

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-HA: 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	2,705	567	21%	2,138
2014	7,183	5,315	74%	1,868
2015	2,527	19,680	779%	(17,153)
2016	9,836	34,858	354%	(25,022)
2017	27,603	51,563	187%	(23,960)
2018	52,648	70,464	134%	(17,816)
2019	87,915	96,502	110%	(8,587)
2020	138,060	133,107	96%	4,953
2021	214,263	186,314	87%	27,949

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	0	$ 0	$ 0	0.00%
2012	0	0	$ 0	0.00%
2013	1	33,157	9.96%	0.00%
2014	2	78,079	8.10%	0.00%
2015	2	135,327	6.14%	0.00%
2016	3	152,269	6.06%	0.00%
2017	4	203,638	6.03%	0.00%
2018	5	274,641	6.31%	0.00%
2019	5	358,248	6.43%	0.00%
2020	5	417,060	6.39%	0.00%
2021	5	451,987	7.32%	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 - Gnrl Union

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
(Gain)/Loss	12/31/2019	$ (156,735)	10	$ (153,812)	8	$ (22,632)
Experience	12/31/2020	111,703	10	117,419	9	15,636
Experience	12/31/2021	(95,922)	10	(106,168)	10	(12,960)
Total				**$ (142,561)**		**$ (19,956)**

[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 02 - Cmnd Ofcrs

Table 10-02: Layered Amortization Schedule

				Amounts for Fiscal Year Beginning 7/1/2023		
Type of UAL	Date Established	Original Balance[1]	Original Amortization Period[2]	Outstanding UAL Balance[3]	Remaining Amortization Period[2]	Annual Amortization Payment
Initial	12/31/2015	$ 1,037,987	23	$ 1,080,464	17	$ 87,624
(Gain)/Loss	12/31/2016	(140,454)	22	(156,698)	17	(12,708)
(Gain)/Loss	12/31/2017	201,283	21	223,074	17	18,096
(Gain)/Loss	12/31/2018	293,307	20	323,596	17	26,244
(Gain)/Loss	12/31/2019	202,638	19	221,850	17	17,988
Assumption	12/31/2019	196,491	19	205,256	17	16,644
Experience	12/31/2020	(276,567)	18	(304,741)	17	(24,708)
Experience	12/31/2021	(16,531)	17	(18,297)	17	(1,488)
Total				**$ 1,574,504**		**$ 127,692**

[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 10-10: 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
(Gain)/Loss	12/31/2016	$ 14,918	10	$ 10,855	5	$ 2,424
(Gain)/Loss	12/31/2017	12,902	10	10,650	6	2,016
(Gain)/Loss	12/31/2018	27,259	10	24,862	7	4,104
(Gain)/Loss	12/31/2019	20,966	10	20,572	8	3,024
Assumption	12/31/2019	22,625	10	21,374	8	3,144
Experience	12/31/2020	29,522	10	31,034	9	4,128
Experience	12/31/2021	(32,373)	10	(35,831)	10	(4,368)
Total				**$ 83,516**		**$ 14,472**

[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
Experience	12/31/2021	$ (120,743)	10	$ (133,640)	10	$ (16,308)
Total				**$ (133,640)**		**$ (16,308)**

[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 10-12: 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
Initial	12/31/2015	$ 328,564	18	$ 282,937	6	$ 53,532
(Gain)/Loss	12/31/2016	(116,569)	16	(106,299)	6	(20,112)
(Gain)/Loss	12/31/2017	24,604	14	22,680	6	4,296
(Gain)/Loss	12/31/2018	94,506	12	88,866	6	16,812
(Gain)/Loss	12/31/2019	29,937	10	29,376	8	4,320
Assumption	12/31/2019	64,494	10	61,364	8	9,036
Experience	12/31/2020	4,495	10	4,721	9	624
Experience	12/31/2021	(110,522)	10	(122,328)	10	(14,928)
Total				**$ 261,317**		**$ 53,580**

[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 - Patrol Dsp

Table 10-20: Layered Amortization Schedule

				Amounts for Fiscal Year Beginning 7/1/2023		
Type of UAL	Date Established	Original Balance[1]	Original Amortization Period[2]	Outstanding UAL Balance[3]	Remaining Amortization Period[2]	Annual Amortization Payment
Initial	12/31/2015	$ 915,331	23	$ 945,765	17	$ 76,692
(Gain)/Loss	12/31/2016	35,486	22	39,590	17	3,216
(Gain)/Loss	12/31/2017	98,126	21	108,748	17	8,820
(Gain)/Loss	12/31/2018	163,366	20	180,236	17	14,616
(Gain)/Loss	12/31/2019	(5,395)	19	(5,897)	17	(480)
Assumption	12/31/2019	198,009	19	209,320	17	16,980
Experience	12/31/2020	189,458	18	208,753	17	16,932
Experience	12/31/2021	230,561	17	255,189	17	20,700
Total				**$ 1,941,704**		**$ 157,476**

[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

				Amounts for Fiscal Year Beginning 7/1/2023		
Type of UAL	Date Established	Original Balance[1]	Original Amortization Period[2]	Outstanding UAL Balance[3]	Remaining Amortization Period[2]	Annual Amortization Payment
Experience	12/31/2020	$ 7,057	15	$ 7,692	14	$ 720
Experience	12/31/2021	20,910	15	23,144	15	2,052
Total				**$ 30,836**		**$ 2,772**

[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:		25
Inactive employees entitled to but not yet receiving benefits (including refunds):		12
Active employees:		20
		57
Total Pension Liability as of 12/31/2020 measurement date:	$	16,681,364
Total Pension Liability as of 12/31/2021 measurement date:	$	18,503,988
Service Cost for the year ending on the 12/31/2021 measurement date:	$	231,075
Change in the Total Pension Liability due to:		
- Benefit changes[1]:	$	0
- Differences between expected and actual experience[2]:	$	431,086
- Changes in assumptions[2]:	$	773,684
Average expected remaining service lives of all employees (active and inactive):		3

[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):	$	1,871,368

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:	$ 2,522,573	$ 0	$ (2,084,202)

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 - Gnrl Union

12/31/2018	Accelerated to 5-year Amortization
12/1/2016	Service Credit Purchase Estimates - Yes
7/1/2003	Benefit B-3 (80% max)
10/4/1999	DC Adoption Date 10-04-1999
2/15/1999	Day of work defined as 155 Hours a Month for All employees.
7/1/1997	Benefit B-2
7/1/1992	Benefit B-1
7/1/1984	Member Contribution Rate 0.00%
7/1/1979	Benefit F55 (With 25 Years of Service)
7/1/1974	Benefit C-1 (Old)
7/1/1966	Benefit FAC-5 (5 Year Final Average Compensation)
7/1/1966	10 Year Vesting
7/1/1966	Benefit C (Old)
7/1/1966	Member Contribution Rate 3.00% Under $4,200.00 - Then 5.00%
7/1/1966	Fiscal Month - July
	Defined Benefit Normal Retirement Age - 60
	Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years

02 - Cmnd Ofcrs

1/1/2021	Public Safety Employees - Yes
1/1/2021	Workers Compensation - Service Granted
1/1/2021	Service Credit Qualification - 155 hours
1/1/2021	Custom Wages
12/1/2016	Service Credit Purchase Estimates - Yes
1/1/2008	E2 2.5% COLA for future retirees (12/01/2007)
12/1/2007	Member Contribution Rate 5.73%
7/1/2001	Benefit B-4 (80% max)
2/15/1999	Day of work defined as 155 Hours a Month for All employees.
2/1/1997	Member Contribution Rate 1.73%
7/1/1996	Benefit B-3 (80% max)
7/1/1994	Benefit B-2
7/1/1991	Benefit B-1
7/1/1982	Member Contribution Rate 0.00%
7/1/1979	Benefit F55 (With 25 Years of Service)
7/1/1974	Benefit C-1 (Old)
7/1/1966	Benefit FAC-5 (5 Year Final Average Compensation)
7/1/1966	10 Year Vesting
7/1/1966	Benefit C (Old)
7/1/1966	Member Contribution Rate 3.00% Under $4,200.00 - Then 5.00%
7/1/1966	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 - Non Union

12/31/2018	Accelerated to 5-year Amortization
12/1/2016	Service Credit Purchase Estimates - Yes
1/1/2001	DC Adoption Date 01-01-2001
2/15/1999	Day of work defined as 155 Hours a Month for All employees.
7/1/1996	Benefit B-2
7/1/1990	Benefit FAC-5 (5 Year Final Average Compensation)
7/1/1990	10 Year Vesting
7/1/1990	Benefit B-1
7/1/1990	Benefit F55 (With 25 Years of Service)
7/1/1966	Fiscal Month - July
	Defined Benefit Normal Retirement Age - 60
	Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years
	Member Contribution Rate 0.00%

11 - NonUnion Slrd

12/31/2018	Accelerated to 5-year Amortization
12/1/2016	Service Credit Purchase Estimates - Yes
1/1/2001	DC Adoption Date 01-01-2001
2/15/1999	Day of work defined as 155 Hours a Month for All employees.
7/1/1996	Benefit B-2
7/1/1990	Benefit FAC-5 (5 Year Final Average Compensation)
7/1/1990	8 Year Vesting
7/1/1990	Benefit B-1
7/1/1990	Benefit F55 (With 25 Years of Service)
7/1/1990	Member Contribution Rate 0.00%
7/1/1966	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 - Wastewater Dp

1/1/2021	Workers Compensation - Service Granted
1/1/2021	Service Credit Qualification - 155 hours
1/1/2021	Custom Wages
12/31/2018	Accelerated to 5-year Amortization
12/1/2016	Service Credit Purchase Estimates - Yes
12/1/2006	DC Adoption Date 12-01-2006
7/1/2000	Benefit FAC-5 (5 Year Final Average Compensation)
7/1/2000	10 Year Vesting
7/1/2000	Benefit B-3 (80% max)
7/1/2000	Benefit F55 (With 25 Years of Service)
7/1/2000	Member Contribution Rate 0.00%
2/15/1999	Day of work defined as 155 Hours a Month for All employees.
7/1/1966	Fiscal Month - July
	Defined Benefit Normal Retirement Age - 60
	Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years

20 - Patrol Dsp

1/1/2021	Public Safety Employees - Yes
1/1/2021	Workers Compensation - Service Granted

20 - Patrol Dsp

1/1/2021	Service Credit Qualification - 155 hours
1/1/2021	Custom Wages
12/1/2016	Service Credit Purchase Estimates - Yes
1/1/2007	E2 2.5% COLA for future retirees (06/01/2006)
6/1/2006	Benefit B-4 (80% max)
6/1/2006	Member Contribution Rate 5.73%
7/1/2001	Benefit B-3 (80% max)
2/15/1999	Day of work defined as 155 Hours a Month for All employees.
7/1/1995	Benefit F50 (With 25 Years of Service)
7/1/1995	Member Contribution Rate 0.00%
6/30/1995	Member Contribution Rate 1.00%
7/1/1994	Benefit FAC-5 (5 Year Final Average Compensation)
7/1/1994	10 Year Vesting
7/1/1994	Benefit B-2
7/1/1994	Member Contribution Rate 0.00%
7/1/1966	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 - Ptrl Disp and Cmnd aft 5/1/12

1/1/2021	Workers Compensation - Service Granted
1/1/2021	Custom Wages
1/1/2021	Public Safety Employees - Yes
1/1/2021	Service Credit Qualification - 155 hours
5/1/2012	Day of work defined as 155 Hours a Month for All employees.
5/1/2012	Benefit FAC-3 (3 Year Final Average Compensation)
5/1/2012	6 Year Vesting
5/1/2012	1.5% Multiplier
5/1/2012	Benefit F55 (With 25 Years of Service)
7/1/1966	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:

	12/31/2021	12/31/2020	12/31/2019	12/31/2018
1. Ratio of the market value of assets to total payroll	8.2	7.8	7.0	6.8
2. Ratio of actuarial accrued liability to payroll	10.2	9.9	9.4	9.8
3. Ratio of actives to retirees and beneficiaries	0.8	0.8	0.8	0.8
4. Ratio of market value of assets to benefit payments	17.9	15.5	14.1	13.1
5. Ratio of net cash flow to market value of assets (boy)	-0.6%	-0.9%	-2.1%	-1.9%

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	20
12	Indicate number of inactive members (excluding pending refunds)	10
13	Indicate number of retirees and beneficiaries	25
14	**Investment Performance for Calendar Year Ending December 31, 2021**[1]	
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	$14,189,201
25	Enter retirement pension system's actuarial accrued liabilities using uniform assumptions[5]	$19,454,019
27	Actuarially Determined Contribution (ADC) using uniform assumptions, Fiscal Year Ending June 30, 2022	$626,628

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%.