Municipal Employees' Retirement System

Municipal Employees' Retirement System of Michigan

Annual Actuarial Valuation Report
December 31, 2022 - Newaygo CRC (6212)

GRS

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Spring 2023

Newaygo CRC

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 Newaygo CRC (6212) as of December 31, 2022. 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. Newaygo CRC 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, 2022,
- Establish contribution requirements for the fiscal year beginning October 1, 2024,
- 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, 2022. 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 automatically reduces the assumed rate of investment return in conjunction with recognizing excess investment gains to mitigate the impact on employer contributions the first year. The policy was effective with the December 31, 2021 annual actuarial valuation.

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-2022AnnualActuarialValuation-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, 2022. At this time, no future assumptions have been adjusted as a result of COVID-19. 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 Newaygo CRC 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.

Rebecca L. Stouffer, Mark Buis, Kurt Dosson, and Shana M. Neeson 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

Rebecca L. Stouffer

Rebecca L. Stouffer, ASA, FCA, MAAA

Mark Buis

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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.

	12/31/2022	12/31/2021
Funded Ratio*	86%	87%

* 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 with the December 31, 2021 valuation, the MERS Retirement Board 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. Effective with the 2020 and 2019 valuations respectively, the MERS Retirement Board adopted updated demographic and economic assumptions. The combined impact of the prior 2020 and 2019 demographic and economic assumption changes may be phased in. This valuation reflects the last year of phase-in. The combined impact of the past economic and demographic changes will be fully reflected in the 2023 annual actuarial valuation.

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:	12/31/2022	12/31/2022	12/31/2021	12/31/2021	12/31/2022	12/31/2022	12/31/2021	12/31/2021
Fiscal Year Beginning:	October 1, 2024	October 1, 2024	October 1, 2023	October 1, 2023	October 1, 2024	October 1, 2024	October 1, 2023	October 1, 2023
Division								
01 - Mgmt Post 7-99	21.39%	21.45%	19.95%	20.07%	$ 15,095	$ 15,134	$ 12,591	$ 12,669
10 - Union	-	-	-	-	7,997	8,344	6,439	7,133
11 - Mgmt Pre 7-99	-	-	-	-	3,081	3,235	2,414	2,722
12 - Commissioners	-	-	-	-	35	35	0	0
13 - Union hired after 8/1/2010	-	-	-	-	91	91	47	47
14 - Union Hired after 9/1/2013	-	-	-	-	2,503	2,503	2,309	2,309
15 - Union after 12/01/19	2.63%	2.63%	2.57%	2.57%	1,443	1,443	1,206	1,206
Total Municipality - Estimated Monthly Contribution					$ 30,245	$ 30,785	$ 25,006	$ 26,086
Total Municipality - Estimated Annual Contribution					$ 362,940	$ 369,420	$ 300,072	$ 313,032

Employee contribution rates:

	Employee Contribution Rate	
Valuation Date:	12/31/2022	12/31/2021
Division		
01 - Mgmt Post 7-99	4.00%	4.00%
10 - Union	2.00%	2.00%
11 - Mgmt Pre 7-99	4.00%	4.00%
12 - Commissioners	0.00%	0.00%
13 - Union hired after 8/1/2010	2.00%	2.00%
14 - Union Hired after 9/1/2013	3.00%	3.00%
15 - Union after 12/01/19	5.00%	5.00%

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 "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 one or more Surplus divisions would not immediately lower future contributions, however the assets from the Surplus division(s) 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 returns are used to lower the investment assumption, there will be fewer 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 2024 for the entire employer would be $39,542, instead of $30,785.

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 2022

Effective February 17, 2022, the MERS Retirement Board adopted a dedicated gains policy that automatically lowers 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 contribution year after application (i.e., minimize the first-year impact (i.e., increase) in employer contributions).

The dedicated gains policy was implemented with the December 31, 2021 annual actuarial valuation and was reflected in the computed employer contribution amounts beginning in fiscal year 2023.

Investment performance measured for the one-year period ending December 31, 2022 did not result in excess gains for use in lowering the assumed rate of investment return. As a result, this assumption remains at 7.00%.

Furthermore, there were no other assumption or method changes in 2022.

Protecting MI Pension Grant Program

On July 1, 2022, Michigan lawmakers passed the state budget for the 2022-23 fiscal year. As a part of the budget, $750 million was earmarked for underfunded municipal pension plans in counties, cities, townships, villages and road commissions across the state. Known as the ***Protecting MI Pension Grant Program***, the legislation is designed to support municipal plans that are under 60% funded.

As of the valuation date the amount of funds and list of grant recipients is not yet known. Any funds received by municipalities will be considered in a future valuation.

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 2022 was 3.51%, while the actual market rate of return was (10.61%).** 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, 2022, the actuarial value of assets is 116% of market value due to asset smoothing. This means that there are deferred investment losses, which will put upward pressure on contributions in the short term.

If the December 31, 2022 valuation results were based on market value instead of actuarial value:

- The funded percent of your entire municipality would be 74% (instead of 86%); and
- Your total employer contribution requirement for the fiscal year starting October 1, 2024 would be $509,352 (instead of $369,420).

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 projected 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, 2022 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 of 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.

12/31/2022 Valuation Results	**Lower Future Annual Returns**	**Lower Future Annual Returns**	**Valuation Assumptions**
Investment Return Assumption	**5.00%**	**6.00%**	**7.00%**
Accrued Liability	$ 17,309,811	$ 15,259,234	$ 13,557,524
Valuation Assets[1]	$ 11,644,552	$ 11,644,552	$ 11,644,552
Unfunded Accrued Liability	$ 5,665,259	$ 3,614,682	$ 1,912,972
Funded Ratio	67%	76%	86%
Monthly Normal Cost	$ 22,908	$ 15,883	$ 10,737
Monthly Amortization Payment	$ 42,088	$ 30,943	$ 20,048
Total Employer Contribution[2]	$ 64,996	$ 46,826	$ 30,785

[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 account for 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.

Your municipality includes one or more Surplus divisions. Extra contributions in a Surplus division may be used to reduce future employer contributions or to accelerate the date by which the municipality becomes 100% funded. The timing and use of these Surplus assets within the plan is discretionary. Certain employers have special funding arrangements that may differ from the Actuarial Policy.

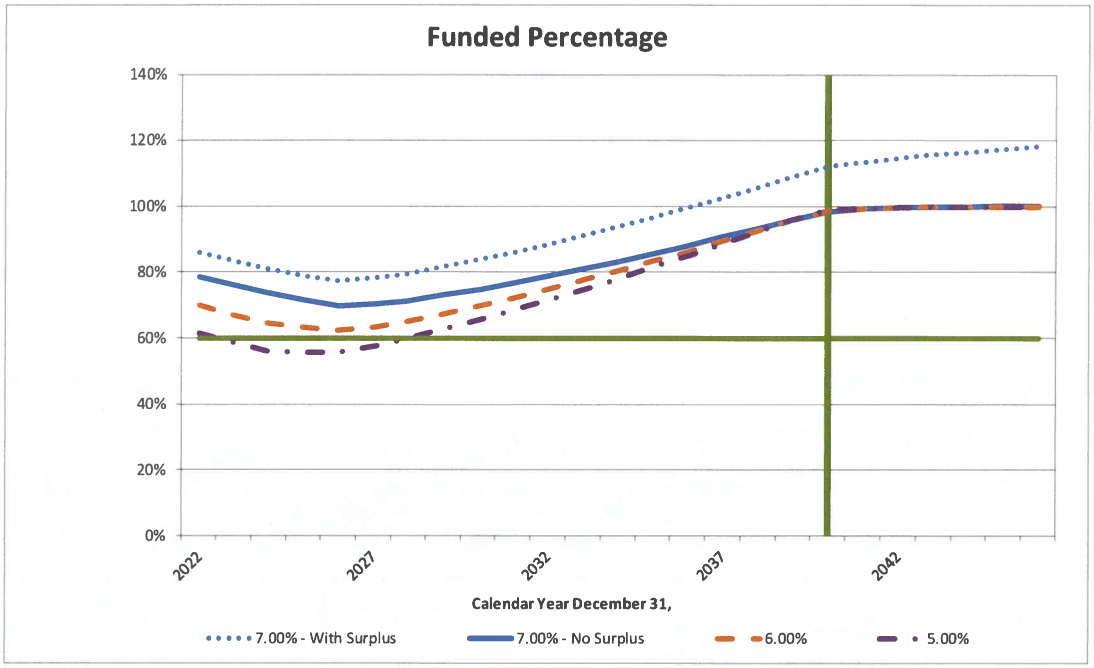
The Funded Percentage graph shows projections of funded status under the 7.00% investment return assumption, both including the Surplus assets (contributed as of the valuation date), and without the Surplus assets. The graph including the Surplus assets assumes these Surplus assets grow with interest and are not used to lower future employer contributions. We modeled the projections including the Surplus assets in this fashion because the use of these assets within the plan is discretionary by the employer and we do not know when and how the employer will use them. Once the employer uses these Surplus assets, any future employer contributions are expected to be lower than those shown in the projections.

Valuation Year Ending 12/31	Fiscal Year Beginning 10/1	Actuarial Accrued Liability	Valuation Assets[2]	Funded Percentage	Estimated Annual Employer Contribution[3]
7.00%[1] - NO PHASE-IN					
2022	2024	$ 13,557,524	$ 10,674,134	79%	$ 369,420
2023	2025	$ 13,800,000	$ 10,500,000	76%	$ 421,000
2024	2026	$ 14,100,000	$ 10,400,000	74%	$ 474,000
2025	2027	$ 14,400,000	$ 10,300,000	72%	$ 525,000
2026	2028	$ 14,800,000	$ 10,300,000	70%	$ 576,000
2027	2029	$ 15,100,000	$ 10,600,000	70%	$ 597,000
6.00%[1] - NO PHASE-IN					
2022	2024	$ 15,259,234	$ 10,674,134	70%	$ 561,912
2023	2025	$ 15,600,000	$ 10,400,000	67%	$ 621,000
2024	2026	$ 15,900,000	$ 10,300,000	65%	$ 677,000
2025	2027	$ 16,200,000	$ 10,300,000	63%	$ 730,000
2026	2028	$ 16,600,000	$ 10,400,000	62%	$ 785,000
2027	2029	$ 16,900,000	$ 10,700,000	63%	$ 815,000
5.00%[1] - NO PHASE-IN					
2022	2024	$ 17,309,811	$ 10,674,134	62%	$ 779,952
2023	2025	$ 17,600,000	$ 10,300,000	59%	$ 848,000
2024	2026	$ 18,000,000	$ 10,100,000	56%	$ 913,000
2025	2027	$ 18,400,000	$ 10,300,000	56%	$ 968,000
2026	2028	$ 18,800,000	$ 10,500,000	56%	$ 1,030,000
2027	2029	$ 19,200,000	$ 11,000,000	58%	$ 1,060,000

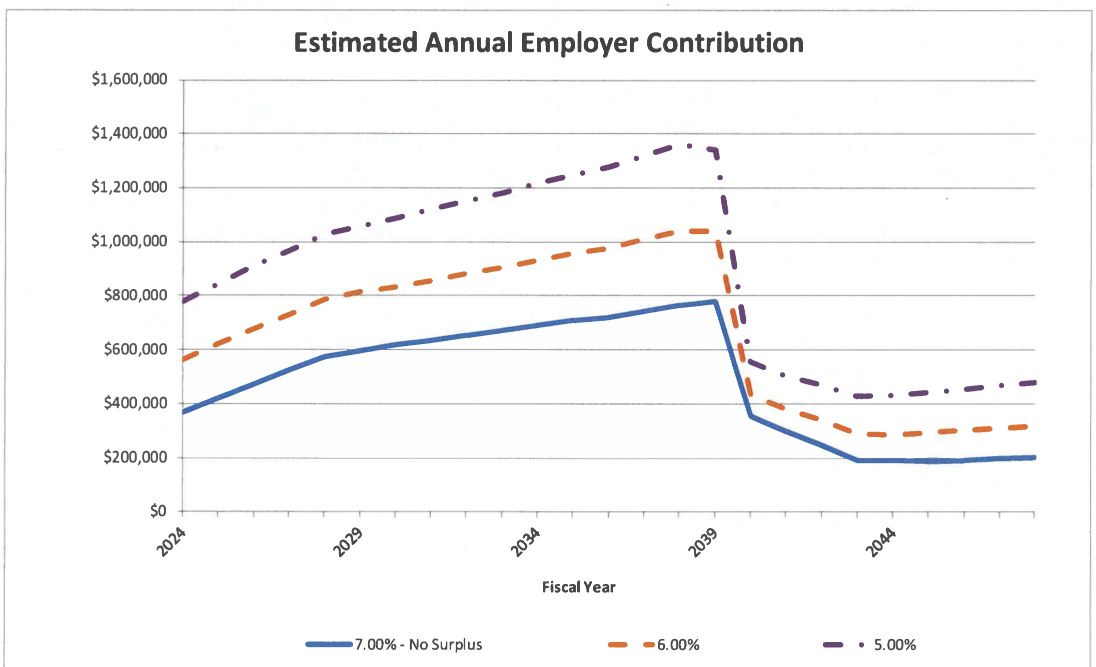
[1] Represents both the interest rate for discounting liabilities and the future investment return assumption on the Market Value of assets.

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

[3] All projected contributions are shown with no phase-in.



Notes:
All projected funded percentages are shown with no phase-in.
Assumes assets from the Surplus division(s) will not be used to lower employer contributions during the projection period.
The green indicator lines have been added at 60% funded and 18 years following the valuation date for PA 202 purposes.



Notes:
All projected contributions are shown with no phase-in.
Projected employer contributions do not reflect the use of any assets from the Surplus division(s).

Table 1: Employer Contribution Details for the Fiscal Year Beginning October 1, 2024

Division	Total Normal Cost	Employee Contribution Rate	Employer Contributions[1]: Employer Normal Cost[6]	Employer Contributions[1]: Payment of the Unfunded Accrued Liability[4]	Employer Contributions[1]: Computed Employer Contribution No Phase-In	Computed Employer Contribution With Phase-In	Blended ER Rate No Phase-In[5]	Blended ER Rate With Phase-In[5]	Employee Contribution Conversion Factor[2]
Percentage of Payroll									
01 - Mgmt Post 7-99	**11.07%**	**4.00%**	**7.07%**	**14.38%**	**21.45%**	**21.39%**	**26.03%**	**25.76%**	**0.92%**
10 - Union	8.28%	2.00%	-	-	-	-	8.96%	8.71%	
11 - Mgmt Pre 7-99	**0.00%**	**4.00%**	**-**	**-**	**-**	**-**	**26.03%**	**25.76%**	
12 - Commissioners	10.85%	0.00%	-	-	-	-			
13 - Union hired after 8/1/2010	**9.86%**	**2.00%**	**-**	**-**	**-**	**-**	**8.96%**	**8.71%**	
14 - Union Hired after 9/1/2013	7.56%	3.00%	-	-	-	-	8.96%	8.71%	
15 - Union after 12/01/19	**7.30%**	**5.00%**	**2.30%**	**0.33%**	**2.63%**	**2.63%**	**8.96%**	**8.71%**	**0.82%**
Estimated Monthly Contribution[3]									
01 - Mgmt Post 7-99			**$ 4,989**	**$ 10,145**	**$ 15,134**	**$ 15,095**			
10 - Union			1,863	6,481	8,344	7,997			
11 - Mgmt Pre 7-99			**0**	**3,235**	**3,235**	**3,081**			
12 - Commissioners			35	0	35	35			
13 - Union hired after 8/1/2010			**326**	**(235)**	**91**	**91**			
14 - Union Hired after 9/1/2013			2,264	239	2,503	2,503			
15 - Union after 12/01/19			**1,260**	**183**	**1,443**	**1,443**			
Total Municipality			**$ 10,737**	**$ 20,048**	**$ 30,785**	**$ 30,245**			
Estimated Annual Contribution[3]			**$ 128,844**	**$ 240,576**	**$ 369,420**	**$ 362,940**			

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 - Mgmt Post 7-99: Open Division, linked to Division 11

	2022 Valuation	2021 Valuation
Benefit Multiplier:	2.00% Multiplier (no max)	2.00% Multiplier (no max)
Normal Retirement Age:	60	60
Vesting:	5 years	5 years
Early Retirement (Unreduced):	-	-
Early Retirement (Reduced):	50/25	50/25
	55/10	55/10
Final Average Compensation:	2 years	2 years
Employee Contributions:	4.00%	4.00%
	SLIF (100 Days)	SLIF (100 Days)
Act 88:	No	No

10 - Union: Closed to new hires, linked to Division 15

	2022 Valuation	2021 Valuation
Benefit Multiplier:	2.00% Multiplier (no max)	2.00% Multiplier (no max)
Normal Retirement Age:	60	60
Vesting:	5 years	5 years
Early Retirement (Unreduced):	-	-
Early Retirement (Reduced):	50/25	50/25
	55/10	55/10
Final Average Compensation:	5 years	5 years
Employee Contributions:	2.00%	2.00%
Act 88:	No	No

11 - Mgmt Pre 7-99: Closed to new hires, linked to Division 01

	2022 Valuation	2021 Valuation
Benefit Multiplier:	2.00% Multiplier (no max)	2.00% Multiplier (no max)
Normal Retirement Age:	60	60
Vesting:	5 years	5 years
Early Retirement (Unreduced):	55/30	55/30
Early Retirement (Reduced):	50/25	50/25
	55/10	55/10
Final Average Compensation:	2 years	2 years
Employee Contributions:	4.00%	4.00%
	SLIF (100 Days)	SLIF (100 Days)
Act 88:	Yes (Adopted 2/24/2010)	No

12 - Commissioners: Closed to new hires

	2022 Valuation	2021 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
	55/10	55/10
Final Average Compensation:	5 years	5 years
Employee Contributions:	0.00%	0.00%
DC Plan for New Hires:	3/1/2010	3/1/2010
Act 88:	Yes (Adopted 2/24/2010)	Yes (Adopted 7/1/1965)

13 - Union hired after 8/1/2010: Closed to new hires, linked to Division 15

	2022 Valuation	2021 Valuation
Benefit Multiplier:	1.50% Multiplier (no max)	1.50% Multiplier (no max)
Normal Retirement Age:	60	60
Vesting:	5 years	5 years
Early Retirement (Unreduced):	-	-
Early Retirement (Reduced):	50/25	50/25
	55/10	55/10
Final Average Compensation:	5 years	5 years
Employee Contributions:	2.00%	2.00%
Act 88:	Yes (Adopted 2/24/2010)	No

14 - Union Hired after 9/1/2013: Closed to new hires, linked to Division 15

	2022 Valuation	2021 Valuation
Benefit Multiplier:	1.50% Multiplier (no max)	1.50% Multiplier (no max)
Normal Retirement Age:	60	60
Vesting:	5 years	5 years
Early Retirement (Unreduced):	-	-
Early Retirement (Reduced):	50/25	50/25
	55/10	55/10
Final Average Compensation:	5 years	5 years
Employee Contributions:	3.00%	3.00%
Act 88:	Yes (Adopted 2/24/2010)	No

15 - Union after 12/01/19: Open Division, linked to Division 10, 13, 14

	2022 Valuation	2021 Valuation
Benefit Multiplier:	1.50% Multiplier (no max)	1.50% Multiplier (no max)
Normal Retirement Age:	60	60
Vesting:	5 years	5 years
Early Retirement (Unreduced):	-	-
Early Retirement (Reduced):	50/25	50/25
	55/10	55/10
Final Average Compensation:	5 years	5 years
Employee Contributions:	5.00%	5.00%
Act 88:	Yes (Adopted 2/24/2010)	No

Table 3: Participant Summary

Division	2022 Valuation Number	2022 Valuation Annual Payroll[1]	2021 Valuation Number	2021 Valuation Annual Payroll[1]	2022 Valuation Average Age	2022 Valuation Average Benefit Service[2]	2022 Valuation Average Eligibility Service[2]
01 - Mgmt Post 7-99							
Active Employees	10	$ 780,606	9	$ 698,477	44.2	13.2	13.7
Vested Former Employees	3	73,860	3	73,860	53.4	13.0	17.1
Retirees and Beneficiaries	15	336,488	15	313,403	73.7		
Pending Refunds	0		0				
10 - Union							
Active Employees	8	$ 384,040	9	$ 419,340	52.2	23.0	23.0
Vested Former Employees	0	0	0	0	0.0	0.0	0.0
Retirees and Beneficiaries	31	368,025	31	355,228	72.0		
Pending Refunds	0		0				
11 - Mgmt Pre 7-99							
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	135,845	3	135,845	64.8		
Pending Refunds	0		0				
12 - Commissioners							
Active Employees	1	$ 6,676	2	$ 12,494	76.3	22.0	22.0
Vested Former Employees	0	0	0	0	0.0	0.0	0.0
Retirees and Beneficiaries	2	5,139	1	1,777	74.3		
Pending Refunds	0		0				
13 - Union hired after 8/1/2010							
Active Employees	1	$ 49,232	1	$ 47,852	55.4	11.5	11.5
Vested Former Employees	1	7,282	2	13,592	38.3	10.2	10.2
Retirees and Beneficiaries	0	0	0	0	0.0		
Pending Refunds	0		0				
14 - Union Hired after 9/1/2013							
Active Employees	13	$ 613,018	13	$ 600,680	41.2	7.2	9.0
Vested Former Employees	1	3,883	1	3,883	37.9	6.0	6.0
Retirees and Beneficiaries	0	0	0	0	0.0		
Pending Refunds	3		3				
15 - Union after 12/01/19							
Active Employees	11	$ 482,977	9	$ 389,386	35.3	3.3	3.3
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				
Total Municipality							
Active Employees	**44**	**$ 2,316,549**	**43**	**$ 2,168,229**	**43.5**	**10.9**	**11.5**
Vested Former Employees	**5**	**85,025**	**6**	**91,335**	**47.3**	**11.0**	**13.5**
Retirees and Beneficiaries	**51**	**845,497**	**50**	**806,253**	**72.2**		
Pending Refunds	**3**		**3**				
Total Participants	**103**		**102**				

[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)

	2022 Valuation		2021 Valuation	
Division	**Employer and Retiree[1]**	**Employee[2]**	**Employer and Retiree[1]**	**Employee[2]**
01 - Mgmt Post 7-99	$ 3,439,692	$ 201,033	$ 4,039,127	$ 181,604
10 - Union	3,829,555	70,604	4,555,823	66,707
11 - Mgmt Pre 7-99	999,671	0	1,222,158	0
12 - Commissioners	70,417	0	72,921	7,624
13 - Union hired after 8/1/2010	91,872	14,770	126,184	18,772
14 - Union Hired after 9/1/2013	231,179	143,295	243,654	119,159
15 - Union after 12/01/19	76,820	51,495	47,588	24,975
S1 - Surplus Unassoc.	838,255	0	811,849	0
Municipality Total[3]	**$ 9,577,459**	**$ 481,197**	**$ 11,119,303**	**$ 418,841**
Combined Assets[3]	**$10,058,656**		**$11,538,144**	

1 Reserve for Employer Contributions and Benefit Payments.

2 Reserve for Employee Contributions.

3 Totals may not add due to rounding.

The December 31, 2022 valuation assets (actuarial value of assets) are equal to 1.157665 times the reported market value of assets (compared to 0.998523 as of December 31, 2021). Refer to the Appendix for a description of the valuation asset derivation and a detailed calculation of valuation assets.

Assets in the Surplus division(s) are employer assets that have been reserved separately and may be used within the plan at the employer's discretion at some point in the future. These assets are not used in calculating the employer contribution for the fiscal year beginning October 1, 2024.

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
2012	$ 248,447	$ 111,825	$ 0	$ 318,910	$ (514,176)	$ 0	$ 53,696	$ 6,984,754
2013	252,346	244,107	11,322	441,319	(504,213)	0	0	7,429,635
2014	258,203	209,479	33,092	435,507	(542,029)	0	0	7,823,887
2015	264,535	204,823	42,411	407,188	(544,804)	0	0	8,198,040
2016	257,188	222,785	44,466	448,667	(555,508)	0	0	8,615,638
2017	261,715	214,794	49,626	526,707	(608,179)	0	0	9,060,301
2018	285,483	194,517	58,663	335,939	(686,546)	0	0	9,248,357
2019	287,302	202,048	65,074	444,602	(690,786)	0	0	9,556,597
2020	283,987	196,012	68,153	763,434	(798,194)	0	0	10,069,989
2021	323,459	156,557	72,822	1,702,763	(804,486)	0	0	11,521,104
2022	368,089	112,957	81,688	385,384	(824,671)	0	1	11,644,552

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, 2022

Division	Actuarial Accrued Liability: Active Employees	Vested Former Employees	Retirees and Beneficiaries	Pending Refunds	Total	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
01 - Mgmt Post 7-99	$ 2,033,056	$ 569,017	$ 3,075,851	$ 0	$ 5,677,924	$ 4,214,739	74.2%	$ 1,463,185
10 - Union	1,507,713	0	3,948,040	0	5,455,753	4,515,076	82.8%	940,677
11 - Mgmt Pre 7-99	0	0	1,622,079	0	1,622,079	1,157,284	71.3%	464,795
12 - Commissioners	22,443	0	52,938	0	75,381	81,519	108.1%	(6,138)
13 - Union hired after 8/1/2010	75,675	18,778	0	0	94,453	123,455	130.7%	(29,002)
14 - Union Hired after 9/1/2013	446,184	10,012	0	4,897	461,093	433,515	94.0%	27,578
15 - Union after 12/01/19	170,841	0	0	0	170,841	148,546	86.9%	22,295
S1 - Surplus Unassoc.	0	0	0	0	0	970,418		(970,418)
Total	**$ 4,255,912**	**$ 597,807**	**$ 8,698,908**	**$ 4,897**	**$ 13,557,524**	**$ 11,644,552**	**85.9%**	**$ 1,912,972**

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 01, 11	$ 2,033,056	$ 569,017	$ 4,697,930	$ 0	$ 7,300,003	$ 5,372,023	73.6%	$ 1,927,980
Linked Divisions 15, 10, 13, 14	2,200,413	28,790	3,948,040	4,897	6,182,140	5,220,592	84.4%	961,548

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

The December 31, 2022 valuation assets (actuarial value of assets) are equal to 1.157665 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
2008	$ 7,498,562	$ 6,012,567	80%	$ 1,485,995
2009	7,495,572	6,289,995	84%	1,205,577
2010	7,975,612	6,573,492	82%	1,402,120
2011	8,169,713	6,766,052	83%	1,403,661
2012	8,482,618	6,984,754	82%	1,497,864
2013	8,881,182	7,429,635	84%	1,451,547
2014	9,407,630	7,823,887	83%	1,583,743
2015	10,497,333	8,198,040	78%	2,299,293
2016	10,716,476	8,615,638	80%	2,100,838
2017	10,952,076	9,060,301	83%	1,891,775
2018	11,440,694	9,248,357	81%	2,192,337
2019	12,139,074	9,556,597	79%	2,582,477
2020	12,683,398	10,069,989	79%	2,613,409
2021	13,269,808	11,521,104	87%	1,748,704
2022	13,557,524	11,644,552	86%	1,912,972

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 - Mgmt Post 7-99

Table 8-01: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2012	$ 4,097,820	$ 3,272,346	80%	$ 825,474
2013	3,619,957	2,616,875	72%	1,003,082
2014	3,883,683	2,756,283	71%	1,127,400
2015	4,261,511	2,920,786	69%	1,340,725
2016	4,445,693	3,200,563	72%	1,245,130
2017	4,523,902	3,427,368	76%	1,096,534
2018	4,780,965	3,449,184	72%	1,331,781
2019	4,973,796	3,587,601	72%	1,386,195
2020	5,241,884	3,722,767	71%	1,519,117
2021	5,563,188	4,214,497	76%	1,348,691
2022	5,677,924	4,214,739	74%	1,463,185

Notes: Actuarial assumptions were revised for the 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		
2012	8	$ 452,611	22.90%	0.00%
2013	10	578,489	19.90%	2.00%
2014	10	631,740	20.26%	2.00%
2015	10	663,912	21.89%	2.00%
2016	10	674,943	20.83%	2.00%
2017	9	567,077	20.15%	3.00%
2018	10	692,499	20.15%	3.50%
2019	10	727,518	19.82%	4.00%
2020	10	731,764	20.21%	4.00%
2021	9	698,477	20.07%	4.00%
2022	10	780,606	21.45%	4.00%

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 10 - Union

Table 8-10: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2012	$ 3,238,901	$ 2,660,218	82%	$ 578,683
2013	3,977,027	3,704,518	93%	272,509
2014	4,153,290	3,888,594	94%	264,696
2015	4,645,366	4,006,345	86%	639,021
2016	4,636,383	4,098,447	88%	537,936
2017	4,698,440	4,183,131	89%	515,309
2018	4,777,100	4,167,468	87%	609,632
2019	5,087,455	4,131,085	81%	956,370
2020	5,319,276	4,172,922	78%	1,146,354
2021	5,425,845	4,615,703	85%	810,142
2022	5,455,753	4,515,076	83%	940,677

Notes: Actuarial assumptions were revised for the 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		
2012	22	$ 848,864	$ 9,795	0.00%
2013	20	757,671	$ 6,555	1.00%
2014	18	721,287	$ 5,885	2.00%
2015	17	714,745	$ 8,498	2.00%
2016	16	664,881	$ 7,383	2.00%
2017	14	591,681	$ 6,665	2.00%
2018	13	540,782	$ 7,103	2.00%
2019	11	483,241	$ 9,411	2.00%
2020	11	479,657	$ 10,107	2.00%
2021	9	419,340	$ 7,133	2.00%
2022	8	384,040	$ 8,344	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.

Division 11 - Mgmt Pre 7-99

Table 8-11: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2012	$ 1,091,199	$ 980,777	90%	$ 110,422
2013	1,211,575	1,017,980	84%	193,595
2014	1,237,565	1,042,787	84%	194,778
2015	1,406,225	1,048,855	75%	357,370
2016	1,401,354	1,067,040	76%	334,314
2017	1,435,219	1,114,794	78%	320,425
2018	1,514,768	1,126,212	74%	388,556
2019	1,642,263	1,148,456	70%	493,807
2020	1,606,321	1,132,904	71%	473,417
2021	1,641,685	1,220,353	74%	421,332
2022	1,622,079	1,157,284	71%	464,795

Notes: Actuarial assumptions were revised for the 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		
2012	2	$ 140,774	$ 1,809	0.00%
2013	1	88,118	$ 1,872	2.00%
2014	1	85,793	$ 1,911	2.00%
2015	1	99,207	$ 3,097	2.00%
2016	1	94,253	$ 2,848	2.00%
2017	1	94,561	$ 2,578	3.00%
2018	1	101,490	$ 2,918	3.50%
2019	1	106,152	$ 3,578	4.00%
2020	0	0	$ 3,138	4.00%
2021	0	0	$ 2,722	4.00%
2022	0	0	$ 3,235	4.00%

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
2012	$ 38,857	$ 57,873	149%	$ (19,016)
2013	42,344	63,526	150%	(21,182)
2014	68,530	68,640	100%	(110)
2015	74,782	72,238	97%	2,544
2016	75,803	76,318	101%	(515)
2017	76,636	81,260	106%	(4,624)
2018	76,564	84,379	110%	(7,815)
2019	77,289	66,401	86%	10,888
2020	65,370	69,953	107%	(4,583)
2021	66,634	80,426	121%	(13,792)
2022	75,381	81,519	108%	(6,138)

Notes: Actuarial assumptions were revised for the 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		
2012	2	$ 12,769	$ 0	0.00%
2013	2	12,709	$ 0	0.00%
2014	2	12,349	$ 15	0.00%
2015	2	12,894	$ 30	0.00%
2016	2	12,388	$ 0	0.00%
2017	2	11,755	$ 0	0.00%
2018	2	11,795	$ 0	0.00%
2019	2	12,854	$ 127	0.00%
2020	2	12,418	$ 63	0.00%
2021	2	12,494	$ 0	0.00%
2022	1	6,676	$ 35	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 13 - Union hired after 8/1/2010

Table 8-13: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2012	$ 15,841	$ 13,540	86%	$ 2,301
2013	30,655	23,209	76%	7,446
2014	47,320	43,495	92%	3,825
2015	67,796	66,905	99%	891
2016	81,995	85,141	104%	(3,146)
2017	101,321	108,823	107%	(7,502)
2018	123,632	127,586	103%	(3,954)
2019	134,101	123,704	92%	10,397
2020	156,853	148,851	95%	8,002
2021	113,797	144,742	127%	(30,945)
2022	94,453	123,455	131%	(29,002)

Notes: Actuarial assumptions were revised for the 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		
2012	4	$ 151,708	7.87%	0.00%
2013	4	157,086	$ 923	1.00%
2014	4	161,505	$ 813	2.00%
2015	4	168,797	$ 867	2.00%
2016	4	164,099	$ 818	2.00%
2017	4	169,313	$ 807	2.00%
2018	4	177,799	$ 878	2.00%
2019	4	163,534	$ 930	2.00%
2020	3	140,144	$ 612	2.00%
2021	1	47,852	$ 47	2.00%
2022	1	49,232	$ 91	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.

Division 14 - Union Hired after 9/1/2013

Table 8-14: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2012	$ 0	$ 0	0%	$ 0
2013	(376)	3,527	0%	(3,903)
2014	17,242	24,088	140%	(6,846)
2015	41,653	82,911	199%	(41,258)
2016	75,248	88,129	117%	(12,881)
2017	116,558	144,925	124%	(28,367)
2018	167,665	208,294	124%	(40,629)
2019	224,170	194,334	87%	29,836
2020	282,967	263,512	93%	19,455
2021	380,264	362,277	95%	17,987
2022	461,093	433,515	94%	27,578

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

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

Table 9-14: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution[1]	Employee Contribution Rate[2]
	Number	Annual Payroll		
2012	0	$ 0	$ 0	0.00%
2013	4	144,580	5.79%	3.00%
2014	6	233,736	3.60%	3.00%
2015	9	330,650	2.87%	3.00%
2016	10	411,388	4.14%	3.00%
2017	13	509,666	3.96%	3.00%
2018	15	628,611	4.02%	3.00%
2019	15	644,620	$ 2,876	3.00%
2020	13	589,502	$ 2,012	3.00%
2021	13	600,680	$ 2,309	3.00%
2022	13	613,018	$ 2,503	3.00%

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 15 - Union after 12/01/19

Table 8-15: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
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	0	0	0%	0
2020	10,727	8,382	78%	2,345
2021	78,395	72,456	92%	5,939
2022	170,841	148,546	87%	22,295

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

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

Table 9-15: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution[1]	Employee Contribution Rate[2]
	Number	Annual Payroll		
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	0	0	0.00%	5.00%
2020	4	153,215	2.25%	5.00%
2021	9	389,386	2.57%	5.00%
2022	11	482,977	2.63%	5.00%

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-S1: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2012	$ 0	$ 0		$ 0
2013	0	0		0
2014	0	0		0
2015	0	0		0
2016	0	0		0
2017	0	0		0
2018	0	85,234		(85,234)
2019	0	305,016		(305,016)
2020	0	550,698		(550,698)
2021	0	810,650		(810,650)
2022	0	970,418		(970,418)

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

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

Table 10: Division-Based Layered Amortization Schedule

Division 01 - Mgmt Post 7-99

Table 10-01: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance[1]	Original Amortization Period[2]	Amounts for Fiscal Year Beginning 10/1/2024: Outstanding UAL Balance[3]	Remaining Amortization Period[2]	Annual Amortization Payment
Initial	12/31/2015	$ 1,340,725	23	$ 1,378,061	16	$ 116,724
(Gain)/Loss	12/31/2016	(122,978)	22	(137,849)	16	(11,676)
(Gain)/Loss	12/31/2017	(162,138)	21	(180,536)	16	(15,288)
Amendment	12/31/2017	(192)	21	(214)	16	(24)
(Gain)/Loss	12/31/2018	244,379	20	270,879	16	22,944
Amendment	12/31/2018	(569)	20	(639)	16	(60)
(Gain)/Loss	12/31/2019	(54,407)	19	(59,777)	16	(5,064)
Assumption	12/31/2019	92,075	19	92,393	16	7,824
Amendment	12/31/2019	(3)	19	(3)	16	0
Experience	12/31/2020	115,826	18	128,093	16	10,848
Experience	12/31/2021	(185,173)	17	(205,547)	16	(17,412)
Experience	12/31/2022	135,518	16	152,552	16	12,924
Total				**$ 1,437,413**		**$ 121,740**

[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, 2022 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2022 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 10/1/2024: Outstanding UAL Balance[3]	Remaining Amortization Period[2]	Annual Amortization Payment
Initial	12/31/2015	$ 639,021	23	$ 691,399	16	$ 58,560
(Gain)/Loss	12/31/2016	(133,339)	22	(149,454)	16	(12,660)
(Gain)/Loss	12/31/2017	(39,108)	21	(43,550)	16	(3,684)
(Gain)/Loss	12/31/2018	99,921	20	110,758	16	9,384
(Gain)/Loss	12/31/2019	192,520	19	211,546	16	17,916
Assumption	12/31/2019	146,796	19	155,740	16	13,188
Experience	12/31/2020	159,271	18	176,155	16	14,916
Experience	12/31/2021	(371,585)	17	(412,474)	16	(34,944)
Experience	12/31/2022	158,305	16	178,203	16	15,096
Total				**$ 918,323**		**$ 77,772**

[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, 2022 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2022 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 11 - Mgmt Pre 7-99

Table 10-11: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance[1]	Original Amortization Period[2]	Amounts for Fiscal Year Beginning 10/1/2024: Outstanding UAL Balance[3]	Remaining Amortization Period[2]	Annual Amortization Payment
Initial	12/31/2015	$ 357,370	23	$ 383,354	16	$ 32,472
(Gain)/Loss	12/31/2016	(39,755)	22	(44,577)	16	(3,780)
(Gain)/Loss	12/31/2017	(25,014)	21	(27,857)	16	(2,364)
Amendment	12/31/2017	1,233	21	1,380	16	120
(Gain)/Loss	12/31/2018	68,298	20	75,703	16	6,408
Amendment	12/31/2018	904	20	996	16	84
(Gain)/Loss	12/31/2019	45,280	19	49,768	16	4,212
Assumption	12/31/2019	53,605	19	55,904	16	4,740
Amendment	12/31/2019	683	19	753	16	60
Experience	12/31/2020	(31,746)	18	(35,112)	16	(2,976)
Experience	12/31/2021	(56,722)	17	(62,958)	16	(5,328)
Experience	12/31/2022	54,261	16	61,081	16	5,172
Total				**$ 458,435**		**$ 38,820**

[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, 2022 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2022 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 10/1/2024: Outstanding UAL Balance[3]	Remaining Amortization Period[2]	Annual Amortization Payment
Experience	12/31/2020	$ (5,977)	10	$ (5,960)	8	$ (876)
Experience	12/31/2021	(9,226)	10	(9,797)	9	(1,308)
Experience	12/31/2022	8,564	10	9,641	10	1,176
Total				**$ (6,116)**		**$ (1,008)**

[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, 2022 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2022 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 13 - Union hired after 8/1/2010

Table 10-13: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance[1]	Original Amortization Period[2]	Amounts for Fiscal Year Beginning 10/1/2024: Outstanding UAL Balance[3]	Remaining Amortization Period[2]	Annual Amortization Payment
Experience	12/31/2021	$ (32,535)	15	$ (35,823)	14	$ (3,348)
Experience	12/31/2022	5,222	15	5,878	15	528
Total				**$ (29,945)**		**$ (2,820)**

[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, 2022 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2022 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 10-14: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance[1]	Original Amortization Period[2]	Amounts for Fiscal Year Beginning 10/1/2024: Outstanding UAL Balance[3]	Remaining Amortization Period[2]	Annual Amortization Payment
(Gain)/Loss	12/31/2019	$ 36,750	15	$ 38,422	12	$ 4,044
Experience	12/31/2020	(16,534)	15	(17,837)	13	(1,764)
Experience	12/31/2021	(5,781)	15	(6,368)	14	(600)
Experience	12/31/2022	11,841	15	13,329	15	1,188
Total				**$ 27,546**		**$ 2,868**

[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, 2022 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2022 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 15 - Union after 12/01/19

Table 10-15: Layered Amortization Schedule

				Amounts for Fiscal Year Beginning 10/1/2024		
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	$ 2,345	15	$ 2,535	13	$ 252
Experience	12/31/2021	3,408	15	3,757	14	348
Experience	12/31/2022	16,001	15	18,012	15	1,596
Total				**$ 24,304**		**$ 2,196**

[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, 2022 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2022 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:		12/31/2022
Measurement Date of the Total Pension Liability (TPL):		12/31/2022
At 12/31/2022, the following employees were covered by the benefit terms:		
Inactive employees or beneficiaries currently receiving benefits:		51
Inactive employees entitled to but not yet receiving benefits (including refunds):		8
Active employees:		44
		103
Total Pension Liability as of 12/31/2021 measurement date:	$	12,897,706
Total Pension Liability as of 12/31/2022 measurement date:	$	13,178,306
Service Cost for the year ending on the 12/31/2022 measurement date:	$	186,948
Change in the Total Pension Liability due to:		
- Benefit changes[1]:	$	0
- Differences between expected and actual experience[2]:	$	6,358
- Changes in assumptions[2]:	$	0
Average expected remaining service lives of all employees (active and inactive):		5

[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):	$	2,316,549

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 12/31/2022:	$ 1,625,747	$ 0	$ (1,358,805)

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 - Mgmt Post 7-99

6/1/2019	Participant Contribution Rate 4%
4/1/2019	Non Standard Compensation Definition
6/1/2018	Participant Contribution Rate 3.5%
6/1/2017	Participant Contribution Rate 3%
12/1/2016	Service Credit Purchase Estimates - Yes
7/1/2013	Non Standard Compensation Definition
6/1/2013	Member Contribution Rate 2.00%
5/1/2007	Day of work defined as 8 Hours a Day for All employees.
5/1/2007	Benefit FAC-2 (2 Year Final Average Compensation)
5/1/2007	Sick Eligibility - 800 Hours
5/1/2007	5 Year Vesting
5/1/2007	Benefit B-2 (No Max)
5/1/2007	Early Reduced at Age 55 with 10 Years or Age 50 with 25 Years
5/1/2007	Member Contribution Rate 0.00%
5/1/2007	Fiscal Month - October
	Defined Benefit Normal Retirement Age - 60

10 - Union

12/1/2016	Service Credit Purchase Estimates - Yes
9/1/2014	Member Contribution Rate 2.00%
9/1/2013	Member Contribution Rate 1.00%
5/1/2007	Day of work defined as 8 Hours a Day for All employees.
5/1/2007	Benefit FAC-5 (5 Year Final Average Compensation)
5/1/2007	5 Year Vesting
5/1/2007	Benefit B-2 (No Max)
5/1/2007	Early Reduced at Age 55 with 10 Years or Age 50 with 25 Years
5/1/2007	Member Contribution Rate 0.00%
5/1/2007	Fiscal Month - October
	Defined Benefit Normal Retirement Age - 60

11 - Mgmt Pre 7-99

6/1/2019	Participant Contribution Rate 4%
6/1/2018	Participant Contribution Rate 3.5%
6/1/2017	Participant Contribution Rate 3%
12/1/2016	Service Credit Purchase Estimates - Yes
6/1/2013	Member Contribution Rate 2.00%
5/1/2007	Day of work defined as 8 Hours a Day for All employees.
5/1/2007	Benefit FAC-2 (2 Year Final Average Compensation)
5/1/2007	Sick Eligibility - 800 Hours
5/1/2007	5 Year Vesting
5/1/2007	Benefit B-2 (No Max)
5/1/2007	Benefit F55 (With 30 Years of Service)

11 - Mgmt Pre 7-99

5/1/2007	Early Reduced at Age 55 with 10 Years or Age 50 with 25 Years
5/1/2007	Member Contribution Rate 0.00%
5/1/2007	Fiscal Month - October
7/1/1965	Covered by Act 88
	Defined Benefit Normal Retirement Age - 60

12 - Commissioners

12/1/2016	Service Credit Purchase Estimates - Yes
3/1/2010	Day of work defined as 2 Hours a Month for Commissioners employees.
3/1/2010	Benefit FAC-5 (5 Year Final Average Compensation)
3/1/2010	10 Year Vesting
3/1/2010	Benefit B-3 (80% max)
3/1/2010	Benefit F55 (With 25 Years of Service)
3/1/2010	Early Reduced at Age 55 with 10 Years or Age 50 with 25 Years
3/1/2010	Member Contribution Rate 0.00%
3/1/2010	DC Adoption Date 03-01-2010
2/24/2010	Covered by Act 88
5/1/2007	Fiscal Month - October
	Defined Benefit Normal Retirement Age - 60

13 - Union hired after 8/1/2010

12/1/2016	Service Credit Purchase Estimates - Yes
9/1/2014	Member Contribution Rate 2.00%
9/1/2013	Member Contribution Rate 1.00%
8/1/2010	Day of work defined as 8 Hours a Day for Group employees.
8/1/2010	Benefit FAC-5 (5 Year Final Average Compensation)
8/1/2010	5 Year Vesting
8/1/2010	Benefit C-1 (New) (No Max)
8/1/2010	Early Reduced at Age 55 with 10 Years or Age 50 with 25 Years
8/1/2010	Member Contribution Rate 0.00%
2/24/2010	Covered by Act 88
5/1/2007	Fiscal Month - October
	Defined Benefit Normal Retirement Age - 60

14 - Union Hired after 9/1/2013

12/1/2016	Service Credit Purchase Estimates - Yes
9/1/2013	Day of work defined as 8 Hours a Day for All employees.
9/1/2013	Benefit FAC-5 (5 Year Final Average Compensation)
9/1/2013	Non Standard Compensation Definition
9/1/2013	5 Year Vesting
9/1/2013	Benefit C-1 (New) (No Max)
9/1/2013	Early Reduced at Age 55 with 10 Years or Age 50 with 25 Years
9/1/2013	Member Contribution Rate 3.00%
2/24/2010	Covered by Act 88
5/1/2007	Fiscal Month - October
	Defined Benefit Normal Retirement Age - 60

15 - Union after 12/01/19

12/1/2019	Day of Work defined as 10 8 hour days

15 - Union after 12/01/19

12/1/2019	Benefit FAC-5 (5 Year Final Average Compensation)
12/1/2019	Non Standard Compensation Definition
12/1/2019	5 Year Vesting
12/1/2019	Defined Benefit Normal Retirement Age - 60
12/1/2019	Service Credit Purchase Estimates - Yes
12/1/2019	Benefit C-1 (New) (No Max)
12/1/2019	Early Reduced at Age 55 with 10 Years or Age 50 with 25 Years
12/1/2019	Participant Contribution Rate 5%
2/24/2010	Covered by Act 88
5/1/2007	Fiscal Month - October

S1 - Surplus Unassoc.

5/1/2007	Fiscal Month - October

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	SLIF Increase Assumption
01 - Mgmt Post 7-99	0.00%	19.23%
10 - Union	1.00%	0.00%
11 - Mgmt Pre 7-99	0.00%	19.23%
12 - Commissioners	1.00%	0.00%
13 - Union hired after 8/1/2010	1.00%	0.00%
14 - Union Hired after 9/1/2013	0.00%	0.00%
15 - Union after 12/01/19	0.00%	0.00%

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:

	12/31/2022	12/31/2021	12/31/2020	12/31/2019	12/31/2018
1. Ratio of the market value of assets to total payroll	4.3	5.3	4.9	4.4	3.9
2. Ratio of actuarial accrued liability to payroll	5.9	6.1	6.0	5.7	5.3
3. Ratio of actives to retirees and beneficiaries	0.9	0.9	0.8	0.9	0.9
4. Ratio of market value of assets to benefit payments	12.2	14.3	13.0	13.7	12.3
5. Ratio of net cash flow to market value of assets (boy)	-2.3%	-2.4%	-2.7%	-1.6%	-1.7%

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, 2022	
11	Indicate number of active members	44
12	Indicate number of inactive members (excluding pending refunds)	5
13	Indicate number of retirees and beneficiaries	51
14	Investment Performance for Calendar Year Ending December 31, 2022[1]	
15	Enter actual rate of return - prior 1-year period	(10.37)%
16	Enter actual rate of return - prior 5-year period	4.95%
17	Enter actual rate of return - prior 10-year period	6.79%
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]	16
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	$10,865,671
25	Enter retirement pension system's actuarial accrued liabilities using uniform assumptions[5]	$13,793,357
27	Actuarially Determined Contribution (ADC) using uniform assumptions, Fiscal Year Ending September 30, 2023	$447,660

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%.