



Municipal Employees' Retirement System of Michigan

Annual Actuarial Valuation Report
December 31, 2020 - Meridian Chtr Twp (3315)





Spring, 2021

Meridian Chtr Twp

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 Meridian Chtr Twp (3315) as of December 31, 2020. 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. Meridian Chtr Twp 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, 2020,
- Establish contribution requirements for the fiscal year beginning January 1, 2022,
- 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, 2020. The valuation was based upon information furnished by MERS concerning Retirement System benefits, financial transactions, plan provisions and active members, terminated members, retirees and beneficiaries. We checked for internal reasonability and year-to-year consistency, but did not audit the data. We are not responsible for the accuracy or completeness of the information provided by MERS.

The Municipal Employees' Retirement Act, PA 427 of 1984 and the MERS' Plan Document Article VI sec. 71 (1)(d), provides the MERS Board with the authority to set actuarial assumptions and methods after consultation with the actuary. As the fiduciary of the plan, MERS Retirement Board sets certain assumptions for funding and GASB purposes. These assumptions are checked regularly through a comprehensive study, called an Experience Study. Studies were completed in 2018 and 2020, and are the basis of the economic and demographic assumptions and methods currently in place. Updated economic assumptions were adopted by the MERS Retirement Board at the February 28, 2019 board meeting and were effective with the December 31, 2019 annual actuarial valuation. **At the February 27, 2020 board meeting, the MERS Retirement Board adopted demographic assumptions effective with the December 31, 2020 annual actuarial valuation, which will impact contributions beginning in 2022.**

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:

<http://www.mersofmich.com/Portals/0/Assets/Resources/AAV-Appendix/MERS-2020AnnualActuarialValuation-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, 2020. 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 Meridian Chtr Twp 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).

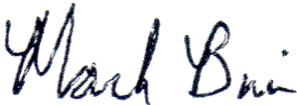
Sincerely,



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



Rebecca L. Stouffer, ASA, FCA, MAAA



Mark Buis, FSA, FCA, EA, MAAA



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Executive Summary

Funded Ratio

The funded ratio of a plan is the percentage of the dollar value of the actuarial accrued liability that is covered by the actuarial value of assets. While funding 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.

	12/31/2020	12/31/2019
Funded Ratio*	64%	62%

* 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, 2020 valuation, the MERS Retirement Board has adopted updated demographic assumptions. Changes to these assumptions are effective for contributions beginning in 2022. Effective with the 2019 valuation, the MERS Retirement Board adopted updated economic assumptions. The combined impact of these assumption changes may be phased in. This valuation reflects the second year of phase-in for the economic assumption update and the first year of phase-in for the demographic assumption update. The remaining combined phase-in period is four 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
	12/31/2020	12/31/2020	12/31/2019	12/31/2019	12/31/2020	12/31/2020	12/31/2019	12/31/2019
Valuation Date:	January 1, 2022	January 1, 2022	January 1, 2021	January 1, 2021	January 1, 2022	January 1, 2022	January 1, 2021	January 1, 2021
Fiscal Year Beginning:	2022	2022	2021	2021	2022	2022	2021	2021
Division								
01 - DPW	-	-	-	-	\$ 12,832	\$ 14,140	\$ 11,965	\$ 13,093
02 - Police Patrol	-	-	26.74%	28.95%	38,551	44,380	40,027	43,330
05 - Firefighters	-	-	-	-	124,049	136,133	118,361	125,690
10 - Admin Professional	-	-	-	-	7,907	9,893	8,560	9,370
11 - Teamsters	-	-	-	-	1,516	1,882	1,267	1,516
12 - Admin Prof on/aft 1/1/17	3.78%	3.88%	2.40%	2.43%	1,055	1,082	481	487
13 - DPW on/aft 01/1/17	3.40%	3.50%	3.15%	3.19%	1,248	1,284	789	798
20 - Police Command	-	-	72.16%	77.29%	55,625	61,220	51,765	55,443
21 - Command/Patrol on/aft 1/1/20	1.35%	1.35%	-	-	316	316	0	0
50 - Fire on/aft 1/1/17	2.76%	3.24%	2.24%	2.18%	1,094	1,283	588	573
Total Municipality - Estimated Monthly Contribution					\$ 244,193	\$ 271,613	\$ 233,803	\$ 250,300
Total Municipality - Estimated Annual Contribution					\$ 2,930,316	\$ 3,259,356	\$ 2,805,636	\$ 3,003,600

Employee contribution rates:

Valuation Date:	Employee Contribution Rate	
	12/31/2020	12/31/2019
Division		
01 - DPW	5.00%	5.00%
02 - Police Patrol	8.29%	8.29%
05 - Firefighters	7.76%	7.76%
10 - Admin Professional	5.00%	5.00%
11 - Teamsters	5.00%	5.00%
12 - Admin Prof on/aft 1/1/17	5.00%	5.00%
13 - DPW on/aft 01/1/17	5.00%	5.00%
20 - Police Command	11.24%	11.24%
21 - Command/Patrol on/aft 1/1/20	8.29%	0.00%
50 - Fire on/aft 1/1/17	7.76%	7.76%

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.

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 2022 for the entire employer would be \$395,145, instead of \$271,613.

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 **7.35%** 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 Change in 2020

A 5-year experience study analyzing historical experience from 2013 through 2018 was completed in February 2020. In addition to changes to the economic assumptions which took effect with the fiscal year 2021 contribution rates, the experience study recommended updated demographic assumptions, including adjustments to the following actuarial assumptions: mortality, retirement, disability, and termination rates. Changes to the demographic assumptions resulting from the experience study have been approved by the



MERS Retirement Board and are effective beginning with the December 31, 2020 actuarial valuation, first impacting 2022 contributions. A complete description of the assumptions may be found in the Appendix to the 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. 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 2020 was 8.17%, while the actual market rate of return was 12.70%.** 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, 2020, the actuarial value of assets is 97% of market value due to asset smoothing. This means that the 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 exceed the 7.35% 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).

If the December 31, 2020 valuation results were based on market value instead of actuarial value:

- The funded percent of your entire municipality would be 66% (instead of 64%); and
- Your total employer contribution requirement for the fiscal year starting January 1, 2022 would be \$3,148,668 (instead of \$3,259,356).

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 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, 2020 valuation, and are for the municipality in total, not by division. These results do not reflect a phase-in of the impact of the new actuarial assumptions.

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.

12/31/2020 Valuation Results	Lower Future Annual Returns	Lower Future Annual Returns	Valuation Assumptions
Investment Return Assumption	5.35%	6.35%	7.35%
Accrued Liability	\$ 102,284,770	\$ 89,527,590	\$ 79,103,874
Valuation Assets ¹	\$ 50,849,504	\$ 50,849,504	\$ 50,849,504
Unfunded Accrued Liability	\$ 51,435,266	\$ 38,678,086	\$ 28,254,370
Funded Ratio	50%	57%	64%
Monthly Normal Cost	\$ 106,054	\$ 71,979	\$ 46,952
Monthly Amortization Payment	\$ 328,734	\$ 274,964	\$ 224,661
Total Employer Contribution²	\$ 434,788	\$ 346,943	\$ 271,613

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 7.35% scenario provides an estimate of computed employer contributions based on current actuarial assumptions, and a projected 7.35% 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 6.35% and 5.35% 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. The assets 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 is discretionary.

The Funded Percentage graph shows projections of funded status under the 7.35% 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

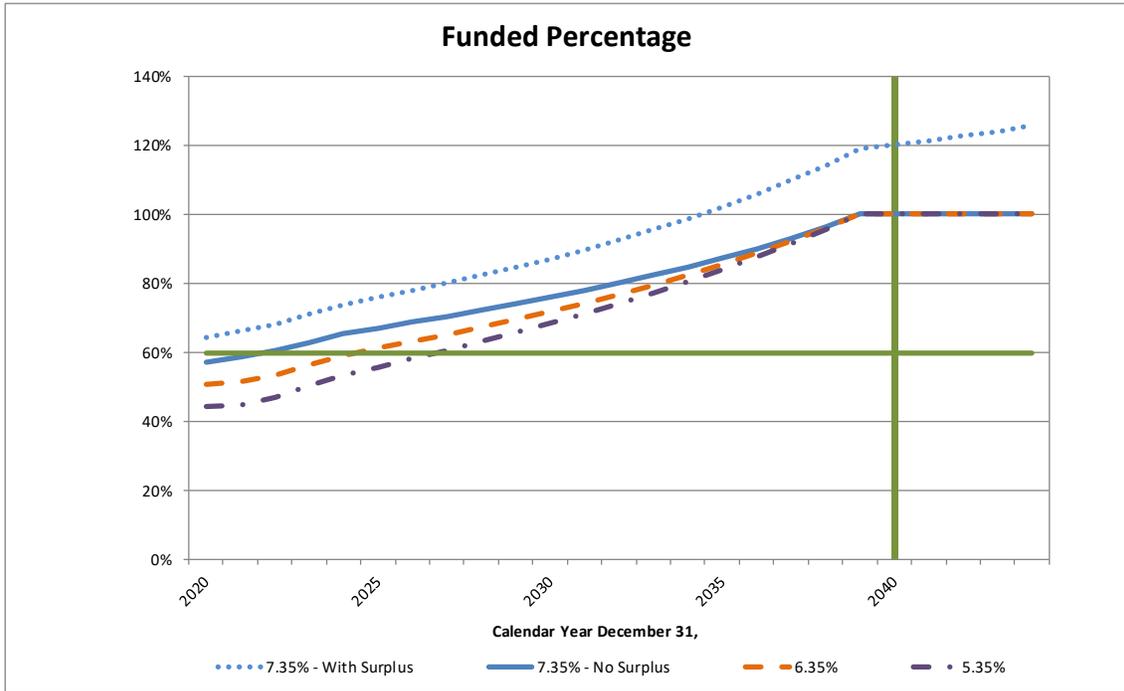


fashion because the use of these assets is discretionary by the employer and we do not know when and how the employer will use them. Once the employer uses these Surplus assets, any future employer contributions are expected to be lower than those shown in the projections.

Valuation Year Ending 12/31	Fiscal Year Beginning 1/1	Actuarial Accrued Liability	Valuation Assets ²	Funded Percentage	Estimated Annual Employer Contribution
7.35%¹ - NO PHASE-IN					
2020	2022	\$ 79,103,874	\$ 45,343,728	57%	\$ 3,259,356
2021	2023	\$ 81,500,000	\$ 48,000,000	59%	\$ 3,320,000
2022	2024	\$ 84,100,000	\$ 50,800,000	60%	\$ 3,400,000
2023	2025	\$ 86,600,000	\$ 54,600,000	63%	\$ 3,390,000
2024	2026	\$ 89,100,000	\$ 58,400,000	65%	\$ 3,410,000
2025	2027	\$ 91,500,000	\$ 61,500,000	67%	\$ 3,490,000
6.35%¹ - NO PHASE-IN					
2020	2022	\$ 89,527,590	\$ 45,343,728	51%	\$ 4,163,316
2021	2023	\$ 92,100,000	\$ 47,600,000	52%	\$ 4,270,000
2022	2024	\$ 94,900,000	\$ 50,800,000	53%	\$ 4,370,000
2023	2025	\$ 97,600,000	\$ 55,100,000	56%	\$ 4,390,000
2024	2026	\$ 100,300,000	\$ 59,300,000	59%	\$ 4,430,000
2025	2027	\$ 102,900,000	\$ 62,900,000	61%	\$ 4,530,000
5.35%¹ - NO PHASE-IN					
2020	2022	\$ 102,284,770	\$ 45,343,728	44%	\$ 5,217,456
2021	2023	\$ 105,100,000	\$ 47,100,000	45%	\$ 5,370,000
2022	2024	\$ 108,100,000	\$ 50,900,000	47%	\$ 5,500,000
2023	2025	\$ 111,000,000	\$ 55,800,000	50%	\$ 5,540,000
2024	2026	\$ 113,900,000	\$ 60,700,000	53%	\$ 5,610,000
2025	2027	\$ 116,600,000	\$ 65,000,000	56%	\$ 5,740,000

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.

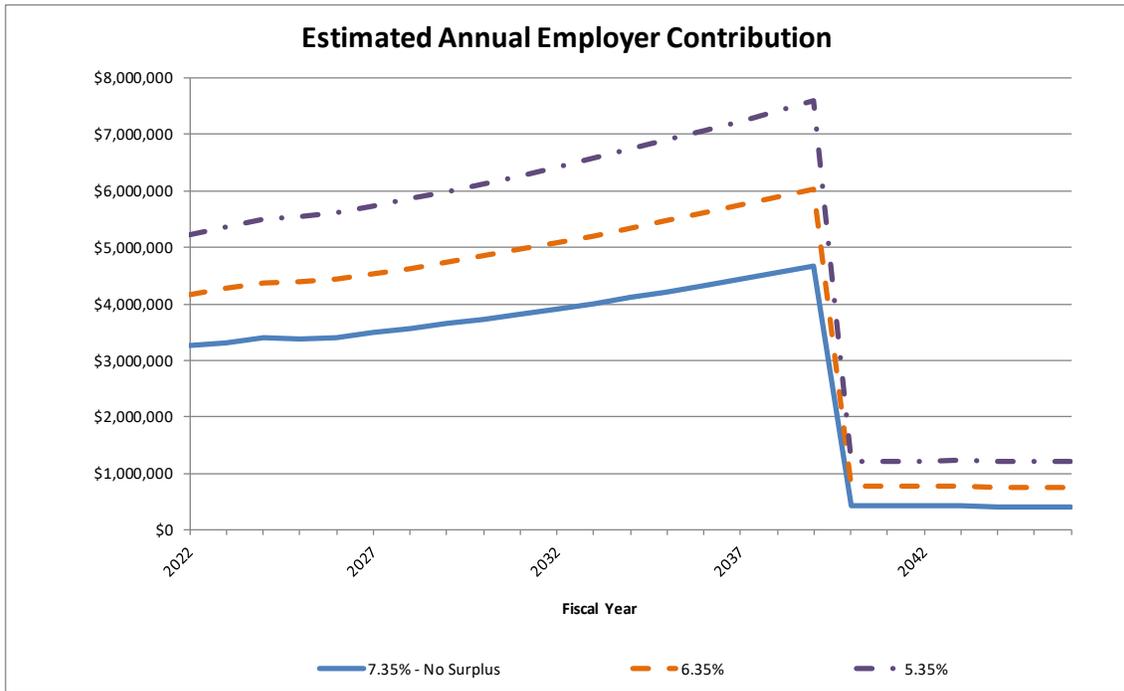


Notes:

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

Assumes assets from Surplus divisions will not be used to lower employer contributions during the projection period.

The green indicator lines have been added at 60% funded and 20 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 divisions.

Table 1: Employer Contribution Details for the Fiscal Year Beginning January 1, 2022

Division	Total Normal Cost	Employee Contribut. Rate	Employer Contributions ¹			Computed Employer Contribut. With Phase-In	Blended ER Rate No Phase-In ⁵	Blended ER Rate With Phase-In ⁵	Employee Contribut. Conversion Factor ²
			Employer Normal Cost ⁶	Payment of the Unfunded Accrued Liability ⁴	Computed Employer Contribut. No Phase-In				
Percentage of Payroll									
01 - DPW	11.49%	5.00%	-	-	-	-	15.81%	14.44%	
02 - Police Patrol	20.30%	8.29%	-	-	-	-	48.77%	43.51%	
05 - Firefighters	17.83%	7.76%	-	-	-	-	68.66%	62.53%	
10 - Admin Professional	10.51%	5.00%	-	-	-	-	17.70%	14.45%	
11 - Teamsters	0.00%	5.00%	-	-	-	-			
12 - Admin Prof on/aft 1/1/17	9.08%	5.00%	4.08%	-0.20%	3.88%	3.78%	17.70%	14.45%	0.84%
13 - DPW on/aft 01/1/17	8.29%	5.00%	3.29%	0.21%	3.50%	3.40%	15.81%	14.44%	0.87%
20 - Police Command	19.95%	11.24%	-	-	-	-	48.77%	43.51%	
21 - Command/Patrol on/aft 1/1/20	9.63%	8.29%	1.34%	0.01%	1.35%	1.35%	48.77%	43.51%	0.77%
50 - Fire on/aft 1/1/17	10.91%	7.76%	3.15%	0.09%	3.24%	2.76%	68.66%	62.53%	0.86%
Estimated Monthly Contribution³									
01 - DPW			\$ 3,950	\$ 10,190	\$ 14,140	\$ 12,832			
02 - Police Patrol			15,208	29,172	44,380	38,551			
05 - Firefighters			16,163	119,970	136,133	124,049			
10 - Admin Professional			1,880	8,013	9,893	7,907			
11 - Teamsters			0	1,882	1,882	1,516			
12 - Admin Prof on/aft 1/1/17			1,138	(56)	1,082	1,055			
13 - DPW on/aft 01/1/17			1,207	77	1,284	1,248			
20 - Police Command			5,844	55,376	61,220	55,625			
21 - Command/Patrol on/aft 1/1/20			314	2	316	316			
50 - Fire on/aft 1/1/17			1,248	35	1,283	1,094			
Total Municipality			\$ 46,952	\$ 224,661	\$ 271,613	\$ 244,193			
Estimated Annual Contribution³			\$ 563,424	\$ 2,695,932	\$ 3,259,356	\$ 2,930,316			

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 to not 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 - DPW: Closed to new hires, linked to Division 13

	2020 Valuation	2019 Valuation
Benefit Multiplier:	2.25% Multiplier (80% max)	2.25% Multiplier (80% max)
Normal Retirement Age:	60	60
Vesting:	6 years	6 years
Early Retirement (Unreduced):	55/20	55/20
Early Retirement (Reduced):	50/25 55/15	50/25 55/15
Final Average Compensation:	5 years	5 years
Employee Contributions:	5.00%	5.00%
Act 88:	Yes (Adopted 7/10/2001)	Yes (Adopted 7/10/2001)

02 - Police Patrol: Closed to new hires, linked to Division 21

	2020 Valuation	2019 Valuation
Benefit Multiplier:	2.75% Multiplier (80% max)	2.75% Multiplier (80% max)
Normal Retirement Age:	60	60
Vesting:	10 years	10 years
Early Retirement (Unreduced):	50/25	50/25
Early Retirement (Reduced):	55/15	55/15
Final Average Compensation:	3 years	3 years
COLA for Future Retirees:	2.50% (Non-Compound)	2.50% (Non-Compound)
Employee Contributions:	8.29%	8.29%
D-2:	D2 (25%)	D2 (25%)
Act 88:	Yes (Adopted 7/10/2001)	Yes (Adopted 7/10/2001)

05 - Firefighters: Closed to new hires, linked to Division 50

	2020 Valuation	2019 Valuation
Benefit Multiplier:	Bridged Benefit: 2.75% Multiplier (80% max)-Termination FAC; 2.50% Multiplier (80% max)	Bridged Benefit: 2.75% Multiplier (80% max) Termination FAC; 2.50% Multiplier (80% max)
Bridged Benefit Date:	12/31/2016	12/31/2016
Normal Retirement Age:	60	60
Vesting:	10 years	10 years
Early Retirement (Unreduced):	50/25	50/25
Early Retirement (Reduced):	55/15	55/15
Final Average Compensation:	3 years	3 years
COLA for Future Retirees:	2.50% (Non-Compound)	2.50% (Non-Compound)
Employee Contributions:	7.76%	7.76%
D-2:	D2 (25%)	D2 (25%)
Act 88:	Yes (Adopted 7/10/2001)	Yes (Adopted 7/10/2001)



10 - Admin Professional: Closed to new hires, linked to Division 12

	2020 Valuation	2019 Valuation
Benefit Multiplier:	Bridged Benefit: 2.50% Multiplier (80% max)-Termination FAC; 2.25% Multiplier (80% max)	Bridged Benefit: 2.50% Multiplier (80% max) Termination FAC; 2.25% Multiplier (80% max)
Bridged Benefit Date:	12/31/2016	12/31/2016
Normal Retirement Age:	60	60
Vesting:	10 years	10 years
Early Retirement (Unreduced):	55/25	55/25
Early Retirement (Reduced):	50/25 55/15	50/25 55/15
Final Average Compensation:	5 years	5 years
Employee Contributions:	5.00%	5.00%
Act 88:	Yes (Adopted 7/10/2001)	Yes (Adopted 7/10/2001)

11 - Teamsters: Open Division

	2020 Valuation	2019 Valuation
Benefit Multiplier:	2.00% Multiplier (no max)	2.00% Multiplier (no max)
Normal Retirement Age:	60	60
Vesting:	6 years	6 years
Early Retirement (Unreduced):	55/20	55/20
Early Retirement (Reduced):	50/25 55/15	50/25 55/15
Final Average Compensation:	5 years	5 years
Employee Contributions:	5.00%	5.00%
Act 88:	Yes (Adopted 7/10/2001)	Yes (Adopted 7/10/2001)

12 - Admin Prof on/aft 1/1/17: Open Division, linked to Division 10

	2020 Valuation	2019 Valuation
Benefit Multiplier:	1.50% Multiplier (no max)	1.50% Multiplier (no max)
Normal Retirement Age:	60	60
Vesting:	10 years	10 years
Early Retirement (Unreduced):	55/25	55/25
Early Retirement (Reduced):	50/25 55/15	50/25 55/15
Final Average Compensation:	5 years	5 years
Employee Contributions:	5.00%	5.00%
Act 88:	Yes (Adopted 7/10/2001)	Yes (Adopted 7/10/2001)



13 - DPW on/aft 01/1/17: Open Division, linked to Division 01

	2020 Valuation	2019 Valuation
Benefit Multiplier:	1.50% Multiplier (80% max)	1.50% Multiplier (80% max)
Normal Retirement Age:	60	60
Vesting:	6 years	6 years
Early Retirement (Unreduced):	55/20	55/20
Early Retirement (Reduced):	50/25	50/25
	55/15	55/15
Final Average Compensation:	5 years	5 years
Employee Contributions:	5.00%	5.00%
Act 88:	Yes (Adopted 7/10/2001)	Yes (Adopted 7/10/2001)

20 - Police Command: Closed to new hires, linked to Division 21

	2020 Valuation	2019 Valuation
Benefit Multiplier:	2.75% Multiplier (80% max)	2.75% Multiplier (80% max)
Normal Retirement Age:	60	60
Vesting:	10 years	10 years
Early Retirement (Unreduced):	50/25	50/25
Early Retirement (Reduced):	55/15	55/15
Final Average Compensation:	3 years	3 years
COLA for Future Retirees:	2.50% (Non-Compound)	2.50% (Non-Compound)
Employee Contributions:	11.24%	11.24%
D-2:	D2 (25%)	D2 (25%)
Act 88:	Yes (Adopted 7/10/2001)	Yes (Adopted 7/10/2001)

21 - Command/Patrol on/aft 1/1/20: Open Division, linked to Division 02, 20

	2020 Valuation	2019 Valuation
Benefit Multiplier:	1.75% Multiplier (no max)	-
Normal Retirement Age:	60	-
Vesting:	10 years	-
Early Retirement (Unreduced):	55/25	-
Early Retirement (Reduced):	50/25	-
	55/15	-
Final Average Compensation:	3 years	-
Employee Contributions:	8.29%	-
D-2:	D2 (25%)	-
Act 88:	Yes (Adopted 7/10/2001)	-



50 - Fire on/aft 1/1/17: Open Division, linked to Division 05

	2020 Valuation	2019 Valuation
Benefit Multiplier:	1.75% Multiplier (no max)	1.75% 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:	3 years	3 years
Employee Contributions:	7.76%	7.76%
D-2:	D2 (25%)	D2 (25%)
Act 88:	Yes (Adopted 7/10/2001)	Yes (Adopted 7/10/2001)

Table 3: Participant Summary

Division	2020 Valuation		2019 Valuation		2020 Valuation		
	Number	Annual Payroll ¹	Number	Annual Payroll ¹	Average Age	Average Benefit Service ²	Average Eligibility Service ²
01 - DPW							
Active Employees	14	\$ 741,003	15	\$ 717,406	45.3	10.3	10.7
Vested Former Employees	4	52,056	3	41,447	40.8	10.5	10.5
Retirees and Beneficiaries	23	409,247	23	409,247	68.5		
Pending Refunds	5		6				
02 - Police Patrol							
Active Employees	23	\$ 1,487,021	29	\$ 1,692,903	33.2	7.2	8.3
Vested Former Employees	12	224,457	11	181,673	47.8	10.6	15.1
Retirees and Beneficiaries	17	745,718	15	641,441	59.1		
Pending Refunds	18		15				
05 - Firefighters							
Active Employees	26	\$ 1,972,595	30	\$ 2,128,554	44.1	15.4	15.7
Vested Former Employees	7	242,823	4	112,095	49.7	17.8	18.3
Retirees and Beneficiaries	31	1,588,879	29	1,505,163	64.0		
Pending Refunds	5		5				
10 - Admin Professional							
Active Employees	10	\$ 477,667	13	\$ 556,959	53.0	17.5	17.5
Vested Former Employees	11	100,503	11	94,287	52.2	10.4	17.8
Retirees and Beneficiaries	13	266,344	12	251,853	71.1		
Pending Refunds	12		11				
11 - Teamsters							
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	6	163,830	6	161,932	71.8		
Pending Refunds	0		0				
12 - Admin Prof on/aft 1/1/17							
Active Employees	5	\$ 223,836	4	\$ 141,313	48.2	1.0	3.5
Vested Former Employees	0	0	0	0	0.0	0.0	0.0
Retirees and Beneficiaries	1	1,682	1	1,682	67.2		
Pending Refunds	6		3				
13 - DPW on/aft 01/1/17							
Active Employees	8	\$ 362,277	7	\$ 247,142	39.6	2.1	2.1
Vested Former Employees	0	0	0	0	0.0	0.0	0.0
Retirees and Beneficiaries	0	0	0	0	0.0		
Pending Refunds	2		2				

Table 3 (continued)

Division	2020 Valuation		2019 Valuation		2020 Valuation		
	Number	Annual Payroll ¹	Number	Annual Payroll ¹	Average Age	Average Benefit Service ²	Average Eligibility Service ²
20 - Police Command							
Active Employees	10	\$ 867,021	10	\$ 811,353	44.4	18.7	18.9
Vested Former Employees	0	0	0	0	0.0	0.0	0.0
Retirees and Beneficiaries	15	803,880	15	788,114	61.1		
Pending Refunds	0		0				
21 - Command/Patrol on/aft 1/1/20							
Active Employees	3	\$ 102,595	0	\$ 0	24.6	0.2	0.2
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				
50 - Fire on/aft 1/1/17							
Active Employees	6	\$ 291,070	4	\$ 149,751	34.0	1.4	6.0
Vested Former Employees	0	0	0	0	0.0	0.0	0.0
Retirees and Beneficiaries	0	0	0	0	0.0		
Pending Refunds	2		1				
Total Municipality							
Active Employees	105	\$ 6,525,085	112	\$ 6,445,381	41.5	10.5	11.3
Vested Former Employees	34	619,839	29	429,501	48.8	12.0	16.1
Retirees and Beneficiaries	106	3,979,580	101	3,759,433	65.1		
Pending Refunds	50		43				
Total Participants	295		285				

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	2020 Valuation		2019 Valuation	
	Employer and Retiree ¹	Employee ²	Employer and Retiree ¹	Employee ²
01 - DPW	\$ 4,398,606	\$ 275,930	\$ 4,157,930	\$ 241,565
02 - Police Patrol	10,471,052	1,467,558	9,255,268	1,444,120
05 - Firefighters	13,531,278	2,480,722	11,845,173	2,427,674
10 - Admin Professional	3,503,873	358,812	3,200,170	357,568
11 - Teamsters	1,306,330	0	1,310,331	0
12 - Admin Prof on/aft 1/1/17	42,653	17,575	29,343	8,216
13 - DPW on/aft 01/1/17	31,094	36,360	13,714	20,782
20 - Police Command	7,441,435	1,221,512	6,712,793	1,122,936
21 - Command/Patrol on/aft 1/1/20	507	2,101	0	0
50 - Fire on/aft 1/1/17	13,449	31,952	4,494	15,231
S1 - Surplus Assoc Fire	2,831,150	0	1,618,455	0
S2 - Surplus Assoc Police	2,831,150	0	1,618,455	0
Municipality Total³	\$ 46,402,577	\$ 5,892,521	\$ 39,766,124	\$ 5,638,093
Combined Assets³	\$52,295,098		\$45,404,217	

¹ Reserve for Employer Contributions and Benefit Payments.

² Reserve for Employee Contributions.

³ Totals may not add due to rounding.

The December 31, 2020 valuation assets (actuarial value of assets) are equal to 0.972357 times the reported market value of assets (compared to 1.013179 as of December 31, 2019). 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 January 1, 2022.

Table 5: Flow of Valuation Assets

Year Ended 12/31	Employer Contributions		Employee Contributions	Investment Income (Valuation Assets)	Benefit Payments	Employee Contribution Refunds	Net Transfers	Valuation Asset Balance
	Required	Additional						
2010	\$ 1,587,121		\$ 463,721	\$ 1,569,522	\$ (1,730,326)	\$ (27,856)	\$ 0	\$ 27,192,819
2011	1,443,888	\$ 0	447,636	1,497,200	(1,930,596)	(15,477)	0	28,635,470
2012	1,502,982	0	440,059	1,394,558	(2,073,753)	0	0	29,899,316
2013	1,727,389	0	446,814	1,873,685	(2,184,485)	(7,344)	0	31,755,375
2014	1,863,475	0	445,419	1,878,815	(2,457,430)	(3,012)	106,873	33,589,515
2015	2,065,675	0	434,297	1,678,089	(2,837,027)	0	0	34,930,549
2016	1,835,443	999,999	442,227	2,065,803	(3,002,485)	(62,383)	12,712	37,221,865
2017	2,318,478	1,141,890	473,016	2,351,814	(3,092,898)	0	46,837	40,461,002
2018	2,302,708	1,500,041	500,743	1,572,989	(3,319,579)	(7,832)	0	43,010,072
2019	2,264,527	1,590,180	503,378	2,210,081	(3,573,024)	(2,615)	0	46,002,599
2020	2,472,037	1,704,767	507,807	4,027,028	(3,852,948)	(11,786)	0	50,849,504

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.

Additional employer contributions, if any, are shown separately starting in 2011. Prior to 2011, additional contributions are combined with the required employer contributions.

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, 2020**

Division	Actuarial Accrued Liability					Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
	Active Employees	Vested Former Employees	Retirees and Beneficiaries	Pending Refunds	Total			
01 - DPW	\$ 1,494,052	\$ 153,663	\$ 4,419,519	\$ 5,905	\$ 6,073,139	\$ 4,545,318	74.8%	\$ 1,527,821
02 - Police Patrol	3,497,624	1,333,323	11,040,362	122,265	15,993,574	11,608,591	72.6%	4,384,983
05 - Firefighters	10,209,350	2,327,023	21,028,758	50,703	33,615,834	15,569,380	46.3%	18,046,454
10 - Admin Professional	1,682,901	701,164	2,534,864	36,314	4,955,243	3,755,909	75.8%	1,199,334
11 - Teamsters	0	0	1,550,922	0	1,550,922	1,270,219	81.9%	280,703
12 - Admin Prof on/aft 1/1/17	24,625	0	20,008	7,247	51,880	58,563	112.9%	(6,683)
13 - DPW on/aft 01/1/17	73,406	0	0	1,524	74,930	65,589	87.5%	9,341
20 - Police Command	5,600,167	0	11,137,002	0	16,737,169	8,423,476	50.3%	8,313,693
21 - Command/Patrol on/aft 1/1/20	2,727	0	0	0	2,727	2,537	93.0%	190
50 - Fire on/aft 1/1/17	44,904	0	0	3,552	48,456	44,146	91.1%	4,310
S1 - Surplus Assoc Fire	0	0	0	0	0	2,752,888		(2,752,888)
S2 - Surplus Assoc Police	0	0	0	0	0	2,752,888		(2,752,888)
Total	\$ 22,629,756	\$ 4,515,173	\$ 51,731,435	\$ 227,510	\$ 79,103,874	\$ 50,849,504	64.3%	\$ 28,254,370

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 12, 10	\$ 1,707,526	\$ 701,164	\$ 2,554,872	\$ 43,561	\$ 5,007,123	\$ 3,814,472	76.2%	\$ 1,192,651
Linked Divisions 13, 01	1,567,458	153,663	4,419,519	7,429	6,148,069	4,610,907	75.0%	1,537,162
Linked Divisions 21, 02, 20	9,100,518	1,333,323	22,177,364	122,265	32,733,470	20,034,604	61.2%	12,698,866
Linked Divisions 50, 05	10,254,254	2,327,023	21,028,758	54,255	33,664,290	15,613,526	46.4%	18,050,764

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

The December 31, 2020 valuation assets (actuarial value of assets) are equal to 0.972357 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
2006	\$ 35,846,996	\$ 18,966,620	53%	\$ 16,880,376
2007	38,924,237	21,360,928	55%	17,563,309
2008	42,180,888	23,244,719	55%	18,936,169
2009	43,641,255	25,330,637	58%	18,310,618
2010	45,576,292	27,192,819	60%	18,383,473
2011	48,645,859	28,635,470	59%	20,010,389
2012	50,274,592	29,899,316	60%	20,375,276
2013	53,345,909	31,755,375	60%	21,590,534
2014	56,783,968	33,589,515	59%	23,194,453
2015	61,743,003	34,930,549	57%	26,812,454
2016	64,160,503	37,221,865	58%	26,938,638
2017	65,850,156	40,461,002	61%	25,389,154
2018	68,549,666	43,010,072	63%	25,539,594
2019	74,014,966	46,002,599	62%	28,012,367
2020	79,103,874	50,849,504	64%	28,254,370

Notes: Actuarial assumptions were revised for the 2008, 2009, 2010, 2011, 2012, 2015, 2019 and 2020 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 - DPW

Table 8-01: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2010	\$ 4,005,919	\$ 3,442,780	86%	\$ 563,139
2011	4,234,114	3,605,216	85%	628,898
2012	4,028,810	3,732,886	93%	295,924
2013	4,289,392	3,964,718	92%	324,674
2014	4,594,329	4,144,956	90%	449,373
2015	5,065,997	4,235,234	84%	830,763
2016	5,135,243	4,351,046	85%	784,197
2017	5,244,386	4,462,325	85%	782,061
2018	5,384,787	4,459,467	83%	925,320
2019	5,810,793	4,457,476	77%	1,353,317
2020	6,073,139	4,545,318	75%	1,527,821

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

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		
2010	21	\$ 950,103	11.70%	2.30%
2011	19	881,149	12.86%	2.30%
2012	19	856,300	10.97%	2.30%
2013	20	946,020	11.06%	2.30%
2014	20	929,958	12.08%	2.30%
2015	20	901,017	15.07%	2.30%
2016	19	833,791	15.08%	2.30%
2017	18	851,342	\$ 9,180	5.00%
2018	18	840,383	\$ 10,172	5.00%
2019	15	717,406	\$ 13,093	5.00%
2020	14	741,003	\$ 14,140	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 for the 12/31/2015 through 12/31/2020 valuations do not reflect the phase-in of the change in contribution requirements associated with the new actuarial assumptions. The full contribution without phase-in is shown in Table 9 above.

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 02 - Police Patrol

Table 8-02: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2010	\$ 8,103,472	\$ 6,513,330	80%	\$ 1,590,142
2011	9,045,395	7,155,998	79%	1,889,397
2012	9,936,249	7,733,715	78%	2,202,534
2013	10,905,480	8,360,322	77%	2,545,158
2014	11,449,292	8,871,931	78%	2,577,361
2015	12,319,976	9,279,287	75%	3,040,689
2016	12,838,642	10,013,827	78%	2,824,815
2017	13,859,271	10,769,157	78%	3,090,114
2018	14,165,177	10,641,630	75%	3,523,547
2019	14,919,602	10,840,396	73%	4,079,206
2020	15,993,574	11,608,591	73%	4,384,983

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

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		
2010	29	\$ 1,806,921	14.01%	8.29%
2011	28	1,754,080	16.25%	8.29%
2012	27	1,723,624	17.93%	8.29%
2013	28	1,773,779	19.10%	8.29%
2014	25	1,587,254	20.72%	8.29%
2015	27	1,649,619	22.66%	8.29%
2016	27	1,699,331	21.59%	8.29%
2017	28	1,777,631	22.53%	8.29%
2018	29	1,734,688	25.07%	8.29%
2019	29	1,692,903	28.95%	8.29%
2020	23	1,487,021	\$ 44,380	8.29%

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 for the 12/31/2015 through 12/31/2020 valuations do not reflect the phase-in of the change in contribution requirements associated with the new actuarial assumptions. The full contribution without phase-in is shown in Table 9 above.

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 05 - Firefighters

Table 8-05: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2010	\$ 20,287,429	\$ 9,632,575	47%	\$ 10,654,854
2011	21,458,833	9,979,003	47%	11,479,830
2012	21,924,381	10,296,036	47%	11,628,345
2013	23,137,298	10,871,647	47%	12,265,651
2014	24,841,557	11,507,153	46%	13,334,404
2015	26,584,583	11,924,919	45%	14,659,664
2016	27,867,803	12,930,519	46%	14,937,284
2017	28,177,223	13,516,293	48%	14,660,930
2018	28,979,635	13,874,155	48%	15,105,480
2019	31,435,292	14,460,949	46%	16,974,343
2020	33,615,834	15,569,380	46%	18,046,454

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

Table 9-05: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution ¹	Employee Contribution Rate ²
	Number	Annual Payroll		
2010	33	\$ 2,183,250	35.34%	7.76%
2011	32	2,115,390	39.70%	7.76%
2012	32	2,070,575	43.48%	7.76%
2013	32	2,123,299	44.85%	7.76%
2014	32	2,061,494	49.38%	7.76%
2015	32	2,037,634	55.69%	7.76%
2016	32	2,086,805	56.20%	7.76%
2017	32	2,033,490	\$ 101,798	7.76%
2018	31	2,019,738	\$ 107,672	7.76%
2019	30	2,128,554	\$ 125,690	7.76%
2020	26	1,972,595	\$ 136,133	7.76%

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 for the 12/31/2015 through 12/31/2020 valuations do not reflect the phase-in of the change in contribution requirements associated with the new actuarial assumptions. The full contribution without phase-in is shown in Table 9 above.

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 - Admin Professional

Table 8-10: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2010	\$ 3,277,716	\$ 2,449,430	75%	\$ 828,286
2011	3,520,950	2,556,521	73%	964,429
2012	3,642,837	2,618,706	72%	1,024,131
2013	3,803,228	2,748,191	72%	1,055,037
2014	3,943,903	2,895,820	73%	1,048,083
2015	4,328,690	3,022,706	70%	1,305,984
2016	4,429,119	3,185,399	72%	1,243,720
2017	4,353,843	3,534,108	81%	819,735
2018	4,447,557	3,564,955	80%	882,602
2019	4,655,786	3,604,626	77%	1,051,160
2020	4,955,243	3,755,909	76%	1,199,334

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

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		
2010	18	\$ 723,841	14.20%	3.90%
2011	18	704,419	15.99%	3.90%
2012	18	696,170	17.13%	3.90%
2013	19	770,061	16.56%	3.90%
2014	17	699,196	17.51%	3.90%
2015	19	756,724	19.68%	3.90%
2016	19	783,370	18.67%	3.90%
2017	17	673,625	\$ 7,925	5.00%
2018	15	617,920	\$ 8,416	5.00%
2019	13	556,959	\$ 9,370	5.00%
2020	10	477,667	\$ 9,893	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 for the 12/31/2015 through 12/31/2020 valuations do not reflect the phase-in of the change in contribution requirements associated with the new actuarial assumptions. The full contribution without phase-in is shown in Table 9 above.

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 - Teamsters

Table 8-11: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2010	\$ 1,597,765	\$ 462,443	29%	\$ 1,135,322
2011	1,580,710	451,619	29%	1,129,091
2012	1,584,636	439,610	28%	1,145,026
2013	1,593,999	436,926	27%	1,157,073
2014	1,605,233	442,491	28%	1,162,742
2015	1,737,395	355,421	21%	1,381,974
2016	1,724,994	270,628	16%	1,454,366
2017	1,549,888	1,381,962	89%	167,926
2018	1,488,750	1,396,438	94%	92,312
2019	1,553,728	1,327,599	85%	226,129
2020	1,550,922	1,270,219	82%	280,703

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

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		
2010	2	\$ 129,971	53.28%	2.00%
2011	2	131,835	53.91%	2.00%
2012	2	132,347	58.92%	2.00%
2013	2	135,314	58.76%	2.00%
2014	2	136,484	58.89%	2.00%
2015	1	66,496	352.21%	2.00%
2016	1	74,010	121.95%	2.00%
2017	1	78,313	13.62%	5.00%
2018	1	81,544	14.04%	5.00%
2019	0	0	\$ 1,516	5.00%
2020	0	0	\$ 1,882	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 for the 12/31/2015 through 12/31/2020 valuations do not reflect the phase-in of the change in contribution requirements associated with the new actuarial assumptions. The full contribution without phase-in is shown in Table 9 above.

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 12 - Admin Prof on/aft 1/1/17

Table 8-12: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2010	\$ 0	\$ 0	0%	\$ 0
2011	0	0	0%	0
2012	0	0	0%	0
2013	0	0	0%	0
2014	0	0	0%	0
2015	0	0	0%	0
2016	0	0	0%	0
2017	222	3,915	1764%	(3,693)
2018	12,734	18,490	145%	(5,756)
2019	31,654	38,054	120%	(6,400)
2020	51,880	58,563	113%	(6,683)

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

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		
2010	0	\$ 0	\$ 0	0.00%
2011	0	0	\$ 0	0.00%
2012	0	0	\$ 0	0.00%
2013	0	0	\$ 0	0.00%
2014	0	0	\$ 0	0.00%
2015	0	0	\$ 0	0.00%
2016	0	0	\$ 0	0.00%
2017	2	77,819	5.59%	5.00%
2018	4	147,733	4.15%	5.00%
2019	4	141,313	2.43%	5.00%
2020	5	223,836	3.88%	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 for the 12/31/2015 through 12/31/2020 valuations do not reflect the phase-in of the change in contribution requirements associated with the new actuarial assumptions. The full contribution without phase-in is shown in Table 9 above.

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 - DPW on/aft 01/1/17

Table 8-13: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2010	\$ 0	\$ 0	0%	\$ 0
2011	0	0	0%	0
2012	0	0	0%	0
2013	0	0	0%	0
2014	0	0	0%	0
2015	0	0	0%	0
2016	0	0	0%	0
2017	5,967	5,217	87%	750
2018	20,539	17,555	85%	2,984
2019	40,155	34,950	87%	5,205
2020	74,930	65,589	88%	9,341

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

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		
2010	0	\$ 0	\$ 0	0.00%
2011	0	0	\$ 0	0.00%
2012	0	0	\$ 0	0.00%
2013	0	0	\$ 0	0.00%
2014	0	0	\$ 0	0.00%
2015	0	0	\$ 0	0.00%
2016	0	0	\$ 0	0.00%
2017	3	83,530	2.87%	5.00%
2018	4	152,299	2.97%	5.00%
2019	7	247,142	3.19%	5.00%
2020	8	362,277	3.50%	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 for the 12/31/2015 through 12/31/2020 valuations do not reflect the phase-in of the change in contribution requirements associated with the new actuarial assumptions. The full contribution without phase-in is shown in Table 9 above.

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

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

Division 20 - Police Command

Table 8-20: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2010	\$ 8,303,991	\$ 4,692,261	57%	\$ 3,611,730
2011	8,805,857	4,887,113	56%	3,918,744
2012	9,157,679	5,078,363	56%	4,079,316
2013	9,616,512	5,373,571	56%	4,242,941
2014	10,349,654	5,727,164	55%	4,622,490
2015	11,706,362	6,112,982	52%	5,593,380
2016	12,164,702	6,470,446	53%	5,694,256
2017	12,659,356	6,788,025	54%	5,871,331
2018	14,043,572	7,460,719	53%	6,582,853
2019	15,548,130	7,938,996	51%	7,609,134
2020	16,737,169	8,423,476	50%	8,313,693

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

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		
2010	9	\$ 675,028	35.90%	11.24%
2011	9	681,394	39.51%	11.24%
2012	9	687,414	43.46%	11.24%
2013	9	695,724	45.30%	11.24%
2014	9	685,804	49.49%	11.24%
2015	9	710,674	58.51%	11.24%
2016	9	720,662	59.49%	11.24%
2017	9	748,325	60.62%	11.24%
2018	10	822,149	63.21%	11.24%
2019	10	811,353	77.29%	11.24%
2020	10	867,021	\$ 61,220	11.24%

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 for the 12/31/2015 through 12/31/2020 valuations do not reflect the phase-in of the change in contribution requirements associated with the new actuarial assumptions. The full contribution without phase-in is shown in Table 9 above.

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 21 - Command/Patrol on/aft 1/1/20

Table 8-21: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2010	\$ 0	\$ 0	0%	\$ 0
2011	0	0	0%	0
2012	0	0	0%	0
2013	0	0	0%	0
2014	0	0	0%	0
2015	0	0	0%	0
2016	0	0	0%	0
2017	0	0	0%	0
2018	0	0	0%	0
2019	0	0	0%	0
2020	2,727	2,537	93%	190

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

Table 9-21: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution ¹	Employee Contribution Rate ²
	Number	Annual Payroll		
2010	0	\$ 0	\$ 0	0.00%
2011	0	0	\$ 0	0.00%
2012	0	0	\$ 0	0.00%
2013	0	0	\$ 0	0.00%
2014	0	0	\$ 0	0.00%
2015	0	0	\$ 0	0.00%
2016	0	0	\$ 0	0.00%
2017	0	0	\$ 0	0.00%
2018	0	0	\$ 0	0.00%
2019	0	0	\$ 0	0.00%
2020	3	102,595	1.35%	8.29%

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 for the 12/31/2015 through 12/31/2020 valuations do not reflect the phase-in of the change in contribution requirements associated with the new actuarial assumptions. The full contribution without phase-in is shown in Table 9 above.

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 50 - Fire on/aft 1/1/17

Table 8-50: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2010	\$ 0	\$ 0	0%	\$ 0
2011	0	0	0%	0
2012	0	0	0%	0
2013	0	0	0%	0
2014	0	0	0%	0
2015	0	0	0%	0
2016	0	0	0%	0
2017	0	0	0%	0
2018	6,915	7,943	115%	(1,028)
2019	19,826	19,985	101%	(159)
2020	48,456	44,146	91%	4,310

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

Table 9-50: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution ¹	Employee Contribution Rate ²
	Number	Annual Payroll		
2010	0	\$ 0	\$ 0	0.00%
2011	0	0	\$ 0	0.00%
2012	0	0	\$ 0	0.00%
2013	0	0	\$ 0	0.00%
2014	0	0	\$ 0	0.00%
2015	0	0	\$ 0	0.00%
2016	0	0	\$ 0	0.00%
2017	0	0	\$ 0	0.00%
2018	2	57,481	1.63%	7.76%
2019	4	149,751	2.18%	7.76%
2020	6	291,070	3.24%	7.76%

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 for the 12/31/2015 through 12/31/2020 valuations do not reflect the phase-in of the change in contribution requirements associated with the new actuarial assumptions. The full contribution without phase-in is shown in Table 9 above.

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 S1 - Surplus Assoc Fire

Table 8-S1: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2010	\$ 0	\$ 0		\$ 0
2011	0	0		0
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	784,360		(784,360)
2019	0	1,639,784		(1,639,784)
2020	0	2,752,888		(2,752,888)

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

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

Division S2 - Surplus Assoc Police

Table 8-S2: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2010	\$ 0	\$ 0		\$ 0
2011	0	0		0
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	784,360		(784,360)
2019	0	1,639,784		(1,639,784)
2020	0	2,752,888		(2,752,888)

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

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

Table 10: Division-Based Layered Amortization Schedule

Division 01 - DPW

Table 10-01: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance ¹	Original Amortization Period ²	Amounts for Fiscal Year Beginning 1/1/2022		
				Outstanding UAL Balance ³	Remaining Amortization Period ²	Annual Amortization Payment
Initial	12/31/2015	\$ 830,763	23	\$ 880,282	18	\$ 70,368
(Gain)/Loss	12/31/2016	(82,526)	22	(89,547)	18	(7,164)
(Gain)/Loss	12/31/2017	5,781	21	6,225	18	504
Amendment	12/31/2017	(9,047)	21	(9,755)	18	(780)
(Gain)/Loss	12/31/2018	138,266	20	148,337	18	11,856
(Gain)/Loss	12/31/2019	222,251	19	237,058	18	18,948
Assumption	12/31/2019	192,311	19	200,634	18	16,044
Experience	12/31/2020	145,727	18	156,438	18	12,504
Total				\$ 1,529,672		\$ 122,280

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, 2020 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2020 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 - Police Patrol

Table 10-02: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance ¹	Original Amortization Period ²	Amounts for Fiscal Year Beginning 1/1/2022		
				Outstanding UAL Balance ³	Remaining Amortization Period ²	Annual Amortization Payment
Initial	12/31/2015	\$ 3,040,689	23	\$ 3,153,351	18	\$ 252,096
(Gain)/Loss	12/31/2016	(280,062)	22	(303,855)	18	(24,288)
(Gain)/Loss	12/31/2017	260,150	21	280,376	18	22,416
(Gain)/Loss	12/31/2018	394,380	20	423,108	18	33,828
(Gain)/Loss	12/31/2019	(70,906)	19	(75,632)	18	(6,048)
Assumption	12/31/2019	581,584	19	606,913	18	48,516
Experience	12/31/2020	274,390	18	294,558	18	23,544
Total				\$ 4,378,819		\$ 350,064

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, 2020 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2020 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 05 - Firefighters

Table 10-05: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance ¹	Original Amortization Period ²	Amounts for Fiscal Year Beginning 1/1/2022		
				Outstanding UAL Balance ³	Remaining Amortization Period ²	Annual Amortization Payment
Initial	12/31/2015	\$ 14,659,664	23	\$ 15,175,926	18	\$ 1,213,212
(Gain)/Loss	12/31/2016	(5,596)	22	(6,071)	18	(480)
(Gain)/Loss	12/31/2017	(236,519)	21	(254,888)	18	(20,376)
Amendment	12/31/2017	(168,365)	21	(181,444)	18	(14,508)
(Gain)/Loss	12/31/2018	375,305	20	402,660	18	32,196
(Gain)/Loss	12/31/2019	654,589	19	698,190	18	55,812
Assumption	12/31/2019	1,120,922	19	1,134,697	18	90,708
Experience	12/31/2020	968,055	18	1,039,207	18	83,076
Total				\$ 18,008,277		\$ 1,439,640

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, 2020 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2020 valuation to take into account the expected future contributions that are based on past valuations. Each type of UAL (layer) is amortized over the appropriate period. Please see the Appendix on the MERS website for a detailed description of the amortization policy.

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

Division 10 - Admin Professional

Table 10-10: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance ¹	Original Amortization Period ²	Amounts for Fiscal Year Beginning 1/1/2022		
				Outstanding UAL Balance ³	Remaining Amortization Period ²	Annual Amortization Payment
Initial	12/31/2015	\$ 1,305,984	23	\$ 1,357,021	18	\$ 108,480
(Gain)/Loss	12/31/2016	(92,486)	22	(100,335)	18	(8,016)
(Gain)/Loss	12/31/2017	(403,688)	21	(435,060)	18	(34,776)
Amendment	12/31/2017	(24,631)	21	(26,552)	18	(2,124)
(Gain)/Loss	12/31/2018	87,723	20	94,109	18	7,524
(Gain)/Loss	12/31/2019	16,887	19	18,005	18	1,440
Assumption	12/31/2019	141,332	19	147,260	18	11,772
Experience	12/31/2020	138,093	18	148,243	18	11,856
Total				\$ 1,202,691		\$ 96,156

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, 2020 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2020 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 - Teamsters

Table 10-11: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance ¹	Original Amortization Period ²	Amounts for Fiscal Year Beginning 1/1/2022		
				Outstanding UAL Balance ³	Remaining Amortization Period ²	Annual Amortization Payment
Initial	12/31/2015	\$ 1,381,974	23	\$ 1,319,238	18	\$ 105,468
(Gain)/Loss	12/31/2016	982	22	1,061	18	84
(Gain)/Loss	12/31/2017	(1,143,013)	21	(1,231,851)	18	(98,484)
Amendment	12/31/2017	(907)	21	(976)	18	(84)
(Gain)/Loss	12/31/2018	4,855	20	5,200	18	420
(Gain)/Loss	12/31/2019	89,079	19	95,007	18	7,596
Assumption	12/31/2019	44,293	19	46,533	18	3,720
Experience	12/31/2020	44,969	18	48,274	18	3,864
Total				\$ 282,486		\$ 22,584

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, 2020 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2020 valuation to take into account the expected future contributions that are based on past valuations. Each type of UAL (layer) is amortized over the appropriate period. Please see the Appendix on the MERS website for a detailed description of the amortization policy.

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

Division 12 - Admin Prof on/aft 1/1/17

Table 10-12: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance ¹	Original Amortization Period ²	Amounts for Fiscal Year Beginning 1/1/2022		
				Outstanding UAL Balance ³	Remaining Amortization Period ²	Annual Amortization Payment
(Gain)/Loss	12/31/2017	\$ (3,693)	15	\$ (3,715)	12	\$ (396)
(Gain)/Loss	12/31/2018	(1,776)	15	(1,840)	13	(192)
(Gain)/Loss	12/31/2019	(1,355)	15	(1,425)	14	(132)
Assumption	12/31/2019	778	15	839	14	84
Experience	12/31/2020	(372)	15	(399)	15	(36)
Total				\$ (6,540)		\$ (672)

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, 2020 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2020 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 - DPW on/aft 01/1/17

Table 10-13: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance ¹	Original Amortization Period ²	Amounts for Fiscal Year Beginning 1/1/2022		
				Outstanding UAL Balance ³	Remaining Amortization Period ²	Annual Amortization Payment
(Gain)/Loss	12/31/2017	\$ 750	15	\$ 753	12	\$ 84
(Gain)/Loss	12/31/2018	2,176	15	2,261	13	228
(Gain)/Loss	12/31/2019	1,609	15	1,692	14	168
Assumption	12/31/2019	461	15	462	14	48
Experience	12/31/2020	4,040	15	4,337	15	396
Total				\$ 9,505		\$ 924

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, 2020 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2020 valuation to take into account the expected future contributions that are based on past valuations. Each type of UAL (layer) is amortized over the appropriate period. Please see the Appendix on the MERS website for a detailed description of the amortization policy.

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

Division 20 - Police Command

Table 10-20: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance ¹	Original Amortization Period ²	Amounts for Fiscal Year Beginning 1/1/2022		
				Outstanding UAL Balance ³	Remaining Amortization Period ²	Annual Amortization Payment
Initial	12/31/2015	\$ 5,593,380	23	\$ 5,805,919	18	\$ 464,148
(Gain)/Loss	12/31/2016	(22,439)	22	(24,349)	18	(1,944)
(Gain)/Loss	12/31/2017	129,426	21	139,492	18	11,148
(Gain)/Loss	12/31/2018	663,143	20	711,466	18	56,880
(Gain)/Loss	12/31/2019	374,994	19	399,972	18	31,980
Assumption	12/31/2019	574,489	19	585,730	18	46,824
Experience	12/31/2020	646,378	18	693,887	18	55,476
Total				\$ 8,312,117		\$ 664,512

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, 2020 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2020 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 21 - Command/Patrol on/aft 1/1/20

Table 10-21: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance ¹	Original Amortization Period ²	Amounts for Fiscal Year Beginning 1/1/2022		
				Outstanding UAL Balance ³	Remaining Amortization Period ²	Annual Amortization Payment
Experience	12/31/2020	190	15	204	15	24
Total				\$ 204		\$ 24

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, 2020 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2020 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 50 - Fire on/aft 1/1/17

Table 10-50: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance ¹	Original Amortization Period ²	Amounts for Fiscal Year Beginning 1/1/2022		
				Outstanding UAL Balance ³	Remaining Amortization Period ²	Annual Amortization Payment
Experience	12/31/2020	4,310	15	4,627	15	420
Total				\$ 4,627		\$ 420

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, 2020 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2020 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:	12/31/2020
Measurement Date of the Total Pension Liability (TPL):	12/31/2020
At 12/31/2020, the following employees were covered by the benefit terms:	
Inactive employees or beneficiaries currently receiving benefits:	106
Inactive employees entitled to but not yet receiving benefits (including refunds):	84
Active employees:	<u>105</u>
	295
Total Pension Liability as of 12/31/2019 measurement date:	\$ 71,804,504
Total Pension Liability as of 12/31/2020 measurement date:	\$ 76,714,010
Service Cost for the year ending on the 12/31/2020 measurement date:	\$ 983,064
Change in the Total Pension Liability due to:	
- Benefit changes ¹ :	\$ 0
- Differences between expected and actual experience ² :	\$ 83,960
- Changes in assumptions ² :	\$ 2,359,578
Average expected remaining service lives of all employees (active and inactive):	4

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):	\$ 6,525,085
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Note: Covered employee payroll may differ from the GASB Statement No. 68 definition.

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

	1% Decrease <u>(6.60%)</u>	Current Discount Rate <u>(7.60%)</u>	1% Increase <u>(8.60%)</u>
Change in Net Pension Liability as of 12/31/2020:	\$ 9,885,231	\$ 0	\$ (8,144,056)

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.



GASB Statement No. 68 Information

This page is for those municipalities who need to “roll-forward” their total pension liability due to the timing of completion of the actuarial valuation in relation to their fiscal year-end.

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 www.mersofmich.com.

Actuarial Valuation Date:		12/31/2020
Measurement Date of the Total Pension Liability (TPL):		12/31/2021
At 12/31/2020, the following employees were covered by the benefit terms:		
Inactive employees or beneficiaries currently receiving benefits:		106
Inactive employees entitled to but not yet receiving benefits (including refunds):		84
Active employees:		<u>105</u>
		295
Total Pension Liability as of 12/31/2020 measurement date:	\$	74,143,871
Total Pension Liability as of 12/31/2021 measurement date:	\$	79,066,731
Service Cost for the year ending on the 12/31/2021 measurement date:	\$	1,010,530
Change in the Total Pension Liability due to:		
- Benefit changes ¹ :	\$	0
- Differences between expected and actual experience ² :	\$	226,564
- Changes in assumptions ² :	\$	2,562,224
Average expected remaining service lives of all employees (active and inactive):		4

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

²Changes 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):	\$	6,525,085
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Note: Covered employee payroll may differ from the GASB Statement No. 68 definition.

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

	1% Decrease <u>(6.60%)</u>	Current Discount Rate <u>(7.60%)</u>	1% Increase <u>(8.60%)</u>
Change in Net Pension Liability as of 12/31/2021:	\$ 10,079,377	\$ 0	\$ (8,311,639)

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 - DPW

1/1/2017	Day of Work defined as 10 8 hour days
1/1/2017	Non Standard Compensation Definition
1/1/2017	Participant Contribution Rate 5%
12/1/2016	Service Credit Purchase Estimates - Yes
7/1/2005	Benefit B-3 (80% max)
7/1/2005	Member Contribution Rate 2.30%
7/10/2001	Covered by Act 88
7/1/1997	Benefit B-2
7/1/1997	Benefit F55 (With 20 Years of Service)
7/1/1995	Benefit FAC-5 (5 Year Final Average Compensation)
7/1/1995	6 Year Vesting
7/1/1995	Benefit C-1 (New)
7/1/1995	Member Contribution Rate 0.00%
7/1/1995	Fiscal Month - January
	Defined Benefit Normal Retirement Age - 60
	Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years

02 - Police Patrol

1/1/2019	Day of work defined as 80 Hours a Month for All employees.
12/1/2016	Service Credit Purchase Estimates - Yes
1/1/2007	Member Contribution Rate 8.29%
12/1/2005	Benefit D2 Plan
12/1/2005	Benefit FAC-3 (3 Year Final Average Compensation)
12/1/2005	2.75% Multiplier (80% max)
12/1/2005	Member Contribution Rate 8.79%
1/1/2002	Member Contribution Rate 4.50%
7/10/2001	Covered by Act 88
1/1/2000	Benefit B-4 (80% max)
1/1/2000	Member Contribution Rate 6.50%
1/1/2000	E2 2.5% COLA for future retirees (01/01/2000)
1/1/1999	Member Contribution Rate 2.50%
7/1/1996	Benefit FAC-5 (5 Year Final Average Compensation)
7/1/1996	10 Year Vesting
7/1/1996	Benefit B-3 (80% max)
7/1/1996	Benefit F50 (With 25 Years of Service)
7/1/1996	Member Contribution Rate 3.50%
7/1/1995	Fiscal Month - January
	Defined Benefit Normal Retirement Age - 60
	Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years

05 - Firefighters

1/1/2017	Day of work defined as 100.8 hours in a month
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05 - Firefighters

1/1/2017	Non Standard Compensation Definition
1/1/2017	Benefit B-4 (80% max)
12/31/2016	Current FAC
12/1/2016	Service Credit Purchase Estimates - Yes
1/1/2005	Member Contribution Rate 7.76%
1/1/2004	2.75% Multiplier (80% max)
1/1/2004	Member Contribution Rate 8.07%
7/10/2001	Covered by Act 88
7/1/1999	Benefit D2 Plan
7/1/1999	Benefit FAC-3 (3 Year Final Average Compensation)
7/1/1999	10 Year Vesting
7/1/1999	Benefit B-4 (80% max)
7/1/1999	Benefit F50 (With 25 Years of Service)
7/1/1999	Member Contribution Rate 4.19%
7/1/1999	E2 2.5% COLA for future retirees (07/01/1999)
7/1/1995	Fiscal Month - January
	Defined Benefit Normal Retirement Age - 60
	Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years

10 - Admin Professional

4/1/2017	Participant Contribution Rate 5%
1/1/2017	Day of Work defined as 10 8 hour days
1/1/2017	Non Standard Compensation Definition
1/1/2017	Benefit B-3 (80% max)
12/31/2016	Current FAC
12/1/2016	Service Credit Purchase Estimates - Yes
1/1/2007	Benefit B-4 (80% max)
1/1/2007	Member Contribution Rate 3.90%
1/1/2004	Benefit B-3 (80% max)
1/1/2004	Member Contribution Rate 1.50%
7/10/2001	Covered by Act 88
7/1/2000	Benefit B-2
7/1/2000	Member Contribution Rate 0.60%
1/1/1998	Benefit FAC-5 (5 Year Final Average Compensation)
1/1/1998	10 Year Vesting
1/1/1998	Benefit C-1 (New)
1/1/1998	Benefit F55 (With 25 Years of Service)
1/1/1998	Member Contribution Rate 0.00%
7/1/1995	Fiscal Month - January
	Defined Benefit Normal Retirement Age - 60
	Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years

11 - Teamsters

1/1/2018	Participant Contribution Rate 5%
12/1/2016	Service Credit Purchase Estimates - Yes
1/1/2004	6 Year Vesting
1/1/2002	Member Contribution Rate 2.00%
7/10/2001	Covered by Act 88
7/1/2000	Benefit FAC-5 (5 Year Final Average Compensation)



11 - Teamsters

7/1/2000	10 Year Vesting
7/1/2000	Benefit B-2
7/1/2000	Benefit F55 (With 20 Years of Service)
7/1/2000	Member Contribution Rate 0.00%
7/1/1995	Fiscal Month - January
	Defined Benefit Normal Retirement Age - 60
	Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years

12 - Admin Prof on/aft 1/1/17

1/1/2017	Day of Work defined as 10 8 hour days
1/1/2017	Benefit FAC-5 (5 Year Final Average Compensation)
1/1/2017	Non Standard Compensation Definition
1/1/2017	10 Year Vesting
1/1/2017	Defined Benefit Normal Retirement Age - 60
1/1/2017	Service Credit Purchase Estimates - Yes
1/1/2017	Benefit C-1 (New)
1/1/2017	Benefit F55 (With 25 Years of Service)
1/1/2017	Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years
1/1/2017	Participant Contribution Rate 5%
7/10/2001	Covered by Act 88
7/1/1995	Fiscal Month - January

13 - DPW on/aft 01/1/17

1/1/2017	Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years
1/1/2017	Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years
1/1/2017	Participant Contribution Rate 5%
1/1/2017	Day of Work defined as 10 8 hour days
1/1/2017	Benefit FAC-5 (5 Year Final Average Compensation)
1/1/2017	Non Standard Compensation Definition
1/1/2017	6 Year Vesting
1/1/2017	Defined Benefit Normal Retirement Age - 60
1/1/2017	Service Credit Purchase Estimates - Yes
1/1/2017	1.5% multiplier (80% max)
1/1/2017	Benefit F55 (With 20 Years of Service)
7/10/2001	Covered by Act 88
7/1/1995	Fiscal Month - January

20 - Police Command

1/1/2020	Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years
1/1/2019	Day of work defined as 80 Hours a Month for All employees.
7/1/2018	Non Standard Compensation Definition
12/1/2016	Service Credit Purchase Estimates - Yes
8/1/2005	2.75% Multiplier (80% max)
8/1/2005	Member Contribution Rate 11.24%
1/1/2005	Member Contribution Rate 5.50%
1/1/2003	Member Contribution Rate 8.00%
1/1/2002	Member Contribution Rate 7.00%
1/1/2002	E2 2.5% COLA for future retirees (07/01/2001)
7/10/2001	Covered by Act 88



20 - Police Command

7/1/2001	Benefit D2 Plan
7/1/2001	Benefit B-4 (80% max)
7/1/2001	Benefit F50 (With 25 Years of Service)
7/1/2001	Member Contribution Rate 6.00%
1/1/2001	Member Contribution Rate 4.50%
1/1/1998	Benefit FAC-3 (3 Year Final Average Compensation)
1/1/1998	10 Year Vesting
1/1/1998	Benefit B-3 (80% max)
1/1/1998	Benefit F55 (With 15 Years of Service)
1/1/1998	Eligible at Age 52 (With 25 Years of Service)
1/1/1998	Member Contribution Rate 5.50%
7/1/1995	Fiscal Month - January
	Defined Benefit Normal Retirement Age - 60
	Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years

21 - Command/Patrol on/aft 1/1/20

1/1/2020	Day of work defined as 80 Hours a Month for All employees.
1/1/2020	Benefit D2 Plan
1/1/2020	Benefit FAC-3 (3 Year Final Average Compensation)
1/1/2020	Non Standard Compensation Definition
1/1/2020	10 Year Vesting
1/1/2020	Defined Benefit Normal Retirement Age - 60
1/1/2020	Service Credit Purchase Estimates - Yes
1/1/2020	1.75% multiplier
1/1/2020	Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years
1/1/2020	Benefit F55 (With 25 Years of Service)
1/1/2020	Participant Contribution Rate 8.29%
7/10/2001	Covered by Act 88
7/1/1995	Fiscal Month - January

50 - Fire on/aft 1/1/17

1/1/2017	Day of work defined as 100.8 hours in a month
1/1/2017	Benefit D2 Plan
1/1/2017	Benefit FAC-3 (3 Year Final Average Compensation)
1/1/2017	Non Standard Compensation Definition
1/1/2017	10 Year Vesting
1/1/2017	Defined Benefit Normal Retirement Age - 60
1/1/2017	Service Credit Purchase Estimates - Yes
1/1/2017	1.75% multiplier
1/1/2017	Benefit F55 (With 25 Years of Service)
1/1/2017	Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years
1/1/2017	Participant Contribution Rate 7.76%
7/10/2001	Covered by Act 88
7/1/1995	Fiscal Month - January

S1 - Surplus Assoc Fire

7/1/1995	Fiscal Month - January
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S2 - Surplus Assoc Police

7/1/1995

Fiscal Month - January

Plan Provisions, Actuarial Assumptions, and Actuarial Funding Method

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

Increase in Final Average Compensation

Division	FAC Increase Assumption
All Divisions	1.00%

Miscellaneous and Technical Assumptions

Loads – None.

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

Risk Commentary

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

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

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

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

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

PLAN MATURITY MEASURES

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

	<u>12/31/2020</u>	<u>12/31/2019</u>	<u>12/31/2018</u>
1. Ratio of the market value of assets to total payroll	8.0	7.0	6.1
2. Ratio of actuarial accrued liability to payroll	12.1	11.5	10.6
3. Ratio of actives to retirees and beneficiaries	1.0	1.1	1.2
4. Ratio of market value of assets to benefit payments	13.5	12.7	11.8
5. Ratio of net cash flow to market value of assets (boy)	1.8%	2.0%	2.4%

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, 2020	
11	Indicate number of active members	105
12	Indicate number of inactive members (excluding pending refunds)	34
13	Indicate number of retirees and beneficiaries	106
14	Investment Performance for Calendar Year Ending December 31, 2020¹	
15	Enter actual rate of return - prior 1-year period	13.59%
16	Enter actual rate of return - prior 5-year period	9.35%
17	Enter actual rate of return - prior 10-year period	7.91%
18	Actuarial Assumptions	
19	Actuarial assumed rate of investment return ²	7.35%
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	18
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	\$50,493,949
25	Enter retirement pension system's actuarial accrued liabilities using uniform assumptions ⁵	\$82,521,741
27	Actuarially Determined Contribution (ADC) using uniform assumptions, Fiscal Year Ending December 31, 2021	\$3,589,584

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) indicate “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 7.00%.