



Municipal Employees' Retirement System of Michigan

Annual Actuarial Valuation Report
December 31, 2020 - Hastings, City of (0801)





Spring, 2021

Hastings, City of

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

This report presents the results of the Annual Actuarial Valuation, prepared for Hastings, City of (0801) 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. Hastings, City of is responsible for the employer contributions needed to provide MERS benefits for its employees and former employees.

The purposes of this valuation are to:

- Measure funding progress as of December 31, 2020,
- Establish contribution requirements for the fiscal year beginning July 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 Hastings, City of as of the valuation date. All calculations have been made in conformity with generally accepted actuarial principles and practices, with the Actuarial Standards of Practice issued by the Actuarial Standards Board, and with applicable statutes.

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

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



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

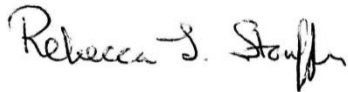
This report was prepared at the request of the MERS Retirement Board and may be provided only in its entirety by the municipality to other interested parties (MERS customarily provides the full report on request to associated third parties such as the auditor for the municipality). GRS is not responsible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

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

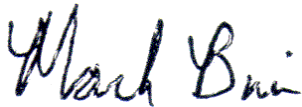
Sincerely,



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*	44%	46%

* 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:	July 1, 2022	July 1, 2022	July 1, 2021	July 1, 2021	July 1, 2022	July 1, 2022	July 1, 2021	July 1, 2021
Fiscal Year Beginning:	2022	2022	2021	2021	2022	2022	2021	2021
Division								
01 - General	-	-	-	-	\$ 33,283	\$ 35,878	\$ 31,413	\$ 33,168
02 - Police	-	-	-	-	13,762	15,235	13,604	14,564
05 - Fire FT	-	-	-	-	4,308	4,596	3,997	4,264
11 - Dpt Pblc Srv	-	-	-	-	15,377	16,472	14,315	15,260
12 - City Council	-	-	-	-	448	451	471	477
51 - Fire VInteer	-	-	-	-	0	0	0	0
HA - Dpt of Pub Svs hired af 7/1/0	4.67%	4.88%	4.32%	4.27%	2,119	2,212	1,695	1,677
HB - General hired after 7/1/08	5.97%	6.25%	5.53%	5.54%	3,838	4,021	3,214	3,220
HC - Fire FT after 7/1/07	-	-	-	-	0	0	0	0
HD - Police after 7/01/10	3.88%	3.90%	4.06%	4.01%	2,060	2,072	1,857	1,836
HE - City Cncil aft 1/1/16 -Volntr	4.79%	4.79%	5.51%	5.51%	14	14	15	15
Total Municipality -								
Estimated Monthly Contribution					\$ 75,209	\$ 80,951	\$ 70,581	\$ 74,481
Total Municipality -								
Estimated Annual Contribution					\$ 902,508	\$ 971,412	\$ 846,972	\$ 893,772

Employee contribution rates:

	Employee Contribution Rate			
	Phase-in	No Phase-in	Phase-in	No Phase-in
	12/31/2020	12/31/2020	12/31/2019	12/31/2019
Valuation Date:	July 1, 2022	July 1, 2022	July 1, 2021	July 1, 2021
Fiscal Year Beginning:	2022	2022	2021	2021
Division				
01 - General	0.00%	0.00%	0.00%	0.00%
02 - Police	2.10%	2.10%	2.10%	2.10%
05 - Fire FT	0.00%	0.00%	0.00%	0.00%
11 - Dpt Pblc Srv	0.00%	0.00%	0.00%	0.00%
12 - City Council	0.00%	0.00%	0.00%	0.00%
51 - Fire VInteer	3% < ; 5% >	3% < ; 5% >	3% < ; 5% >	3% < ; 5% >
HA - Dpt of Pub Svs hired af 7/1/0	0.00%	0.00%	0.00%	0.00%
HB - General hired after 7/1/08	0.00%	0.00%	0.00%	0.00%
HC - Fire FT after 7/1/07	0.00%	0.00%	0.00%	0.00%
HD - Police after 7/01/10	0.00%	0.00%	0.00%	0.00%
HE - City Cncil aft 1/1/16 -Volntr	0.00%	0.00%	0.00%	0.00%

This report reflects the second year of phase-in as a result of changing the economic assumptions and the first year of phase-in as a result of changing the demographic assumptions. Please see the section titled



“Assumption Change in 2020” for more information on the demographic assumption changes. The actuaries assume no responsibility if the allocation method conflicts with any particular employer cap agreement.

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 \$118,482, instead of \$80,951.

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 45% (instead of 44%); and
- Your total employer contribution requirement for the fiscal year starting July 1, 2022 would be \$951,456 (instead of \$971,412).

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	\$ 22,290,855	\$ 20,025,140	\$ 18,124,893
Valuation Assets ¹	\$ 7,909,455	\$ 7,909,455	\$ 7,909,455
Unfunded Accrued Liability	\$ 14,381,400	\$ 12,115,685	\$ 10,215,438
Funded Ratio	35%	39%	44%
Monthly Normal Cost	\$ 20,128	\$ 15,659	\$ 12,282
Monthly Amortization Payment	\$ 83,178	\$ 75,663	\$ 68,466
Total Employer Contribution²	\$ 103,377	\$ 91,425	\$ 80,951

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.

Note:

The above total employer contributions for the 6.35% and the 5.35% assumption scenarios do not reflect the changes in the employee contribution rates due to the impact of a cap, if any, on employer contributions. Those scenarios are based on the same employee contribution rates as the 7.35% (valuation assumption) scenario.

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.

Please note that one or more of your divisions trigger the 3 times benefit payout minimum contribution requirement during the projection period (see table following the projections and the graphs). This contribution requirement was designed so that a plan does not run out of money. This means that if assets in the plan are not enough to pay 3 years of benefit payouts, a minimum contribution is required to raise the level of the assets to be equal to at least 3 years of benefit payments. See the Appendix on MERS website for a full description of this contribution requirement.

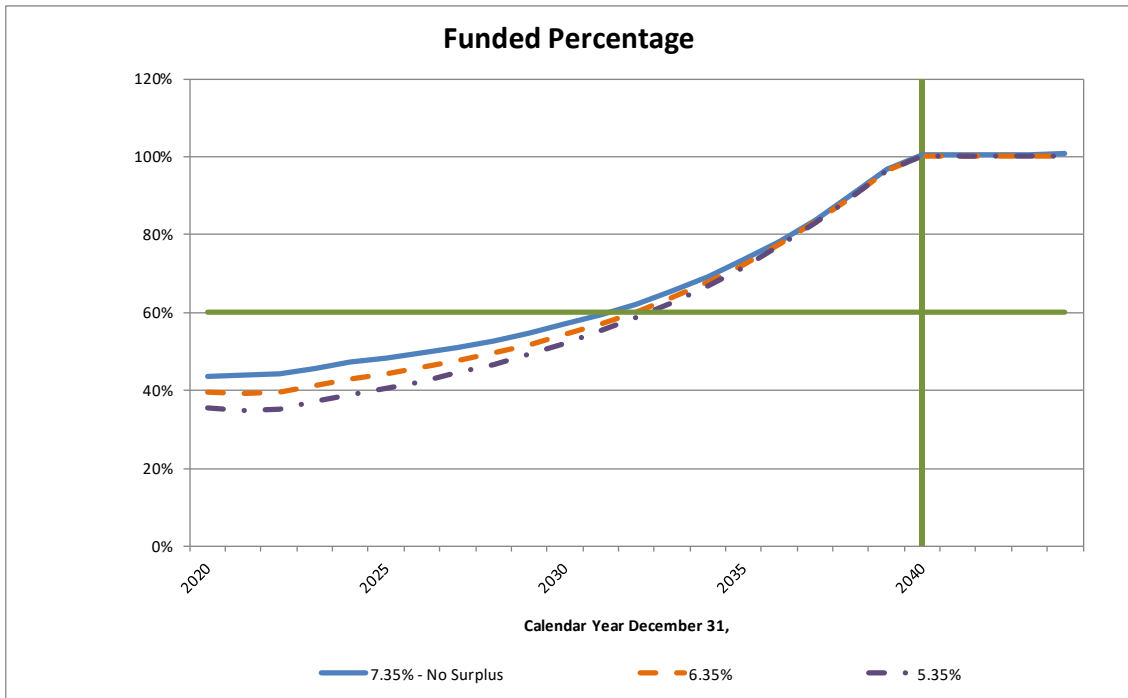
Valuation Year Ending 12/31	Fiscal Year Beginning 7/1	Actuarial Accrued Liability	Valuation Assets ²	Funded Percentage	Estimated Annual Employer Contribution
7.35%¹ - NO PHASE-IN					
2020	2022	\$ 18,124,893	\$ 7,909,455	44%	\$ 971,412
2021	2023	\$ 18,200,000	\$ 7,940,000	44%	\$ 994,000
2022	2024	\$ 18,200,000	\$ 8,040,000	44%	\$ 1,020,000
2023	2025	\$ 18,200,000	\$ 8,320,000	46%	\$ 1,040,000
2024	2026	\$ 18,200,000	\$ 8,610,000	47%	\$ 1,060,000
2025	2027	\$ 18,300,000	\$ 8,840,000	48%	\$ 1,090,000
6.35%¹ - NO PHASE-IN					
2020	2022	\$ 20,025,140	\$ 7,909,455	39%	\$ 1,097,100
2021	2023	\$ 20,000,000	\$ 7,870,000	39%	\$ 1,130,000
2022	2024	\$ 20,100,000	\$ 7,940,000	40%	\$ 1,160,000
2023	2025	\$ 20,100,000	\$ 8,270,000	41%	\$ 1,180,000
2024	2026	\$ 20,100,000	\$ 8,610,000	43%	\$ 1,200,000
2025	2027	\$ 20,100,000	\$ 8,900,000	44%	\$ 1,240,000
5.35%¹ - NO PHASE-IN					
2020	2022	\$ 22,290,855	\$ 7,909,455	35%	\$ 1,240,524
2021	2023	\$ 22,300,000	\$ 7,790,000	35%	\$ 1,280,000
2022	2024	\$ 22,300,000	\$ 7,850,000	35%	\$ 1,320,000
2023	2025	\$ 22,300,000	\$ 8,250,000	37%	\$ 1,340,000
2024	2026	\$ 22,300,000	\$ 8,660,000	39%	\$ 1,370,000
2025	2027	\$ 22,300,000	\$ 9,040,000	41%	\$ 1,410,000

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.

Note:

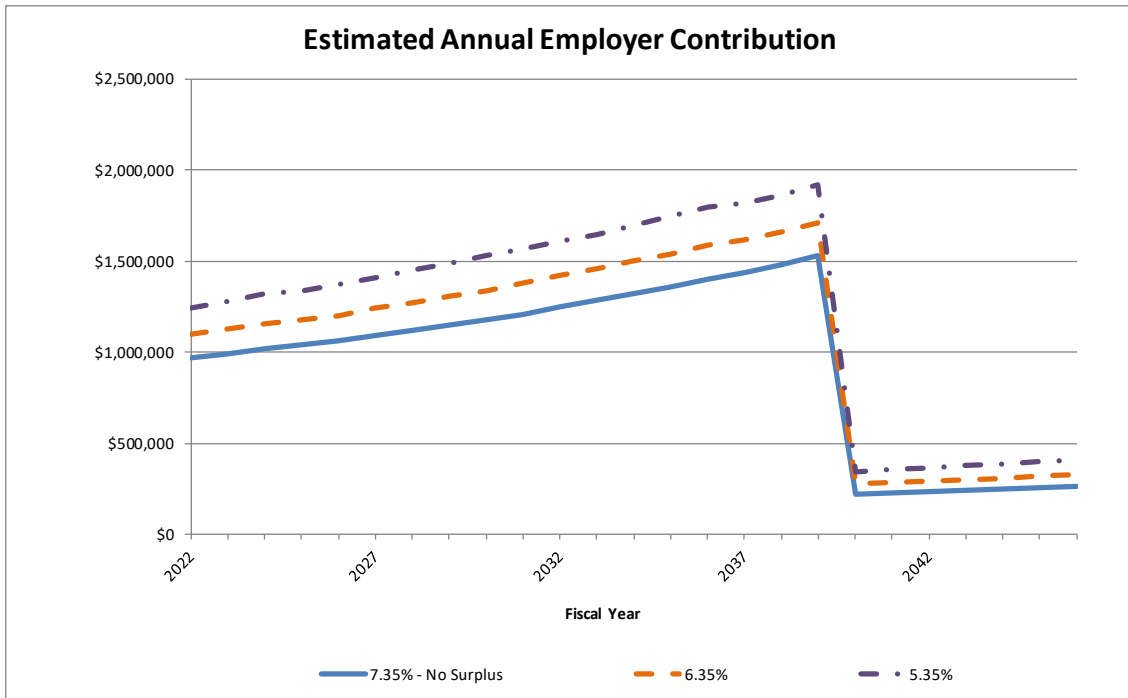
The above required annual employer contribution does not reflect future changes in the employee contribution rates due to the impact of a cap, if any, on employer contributions.



Notes:

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

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.

The above required annual employer contribution does not reflect future changes in the employee contribution rates due to the impact of a cap, if any, on employer contributions.

Valuation Year Ending 12/31	Fiscal Year Beginning 7/1	7.35% No Phase-In	6.35% No Phase-In	5.35% No Phase-In
2020	2022	12	12	12
2021	2023	12	12	12
2022	2024	12	12	12
2023	2025	12	12	12
2024	2026	12	12	12
2025	2027	12	12	12

This table shows in any given year which division(s) are impacted by the 3 times benefit payout minimum required contribution. If “No” appears in the table, it means none of the divisions are impacted.

Table 1: Employer Contribution Details for the Fiscal Year Beginning July 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 - General	8.35%	0.00%	-	-	-	-	43.99%	40.92%	
02 - Police	11.00%	2.10%	-	-	-	-	27.05%	24.73%	
05 - Fire FT	0.00%	0.00%	-	-	-	-			
11 - Dpt Pblc Srv	6.29%	0.00%	-	-	-	-	31.38%	29.38%	
12 - City Council	10.71%	0.00%	-	-	-	-	107.95%	107.25%	
51 - Fire Vlntr	6.20%	3% < ; 5% >	-	-	-	-			
HA - Dpt of Pub Svs hired af 7/1/0	4.60%	0.00%	4.60%	0.28%	4.88%	4.67%	31.38%	29.38%	
HB - General hired after 7/1/08	5.96%	0.00%	5.96%	0.29%	6.25%	5.97%	43.99%	40.92%	
HC - Fire FT after 7/1/07	0.00%	0.00%	-	-	-	-			
HD - Police after 7/01/10	4.19%	0.00%	4.19%	-0.29%	3.90%	3.88%	27.05%	24.73%	
HE - City Cncil aft 1/1/16 -Volntr	5.13%	0.00%	5.13%	-0.34%	4.79%	4.79%	107.95%	107.25%	
Estimated Monthly Contribution³									
01 - General			\$ 2,202	\$ 33,676	\$ 35,878	\$ 33,283			
02 - Police			971	14,264	15,235	13,762			
05 - Fire FT			0	4,596	4,596	4,308			
11 - Dpt Pblc Srv			896	15,576	16,472	15,377			
12 - City Council			15	436	451	448			
51 - Fire Vlntr			41	(111)	0	0			
HA - Dpt of Pub Svs hired af 7/1/0			2,084	128	2,212	2,119			
HB - General hired after 7/1/08			3,834	187	4,021	3,838			
HC - Fire FT after 7/1/07			0	(133)	0	0			
HD - Police after 7/01/10			2,224	(152)	2,072	2,060			
HE - City Cncil aft 1/1/16 -Volntr			15	(1)	14	14			
Total Municipality			\$ 12,282	\$ 68,466	\$ 80,951	\$ 75,209			
Estimated Annual Contribution³			\$ 147,384	\$ 821,592	\$ 971,412	\$ 902,508			

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.

Note that employer contribution caps are in effect for Division(s): HA, HB, HC, HD, HE. For these divisions the employee contribution rates in Table 1 do not reflect phase-in (for fiscal years beginning in 2022) of the increased employee contribution requirements associated with the new actuarial assumptions. The full employee contribution rate without phase-in is shown in Table 1 above. The employee contribution requirements including the phase-in are shown in the executive summary.

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

Table 2: Benefit Provisions

01 - General: Closed to new hires, linked to Division HB

	2020 Valuation	2019 Valuation
Benefit Multiplier:	Bridged Benefit: 2.50% Multiplier (80% max)-Frozen FAC; 2.00% Multiplier (no max)	Bridged Benefit: 2.50% Multiplier (80% max) Frozen FAC; 2.00% Multiplier (no max)
Bridged Benefit Date:	6/30/2011	6/30/2011
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:	0.00%	0.00%
Act 88:	Yes (Adopted 10/26/2015)	Yes (Adopted 10/26/2015)

02 - Police: Closed to new hires, linked to Division HD

	2020 Valuation	2019 Valuation
Benefit Multiplier:	Bridged Benefit: 2.50% Multiplier (80% max)-Frozen FAC; 2.25% Multiplier (80% max)	Bridged Benefit: 2.50% Multiplier (80% max) Frozen FAC; 2.25% Multiplier (80% max)
Bridged Benefit Date:	8/31/2011	8/31/2011
Normal Retirement Age:	60	60
Vesting:	10 years	10 years
Early Retirement (Unreduced):	50/25	50/25
Early Retirement (Reduced):	55/15	55/15
Final Average Compensation:	5 years	5 years
Employee Contributions:	2.10%	2.10%
Act 88:	Yes (Adopted 10/26/2015)	Yes (Adopted 10/26/2015)

05 - Fire FT: Closed to new hires

	2020 Valuation	2019 Valuation
Benefit Multiplier:	Bridged Benefit: 2.50% Multiplier (80% max)-Frozen FAC; 2.00% Multiplier (no max)	Bridged Benefit: 2.50% Multiplier (80% max) Frozen FAC; 2.00% Multiplier (no max)
Bridged Benefit Date:	1/31/2011	1/31/2011
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:	0.00%	0.00%
Act 88:	Yes (Adopted 10/26/2015)	Yes (Adopted 10/26/2015)



11 - Dpt Pblc Srv: Closed to new hires, linked to Division HA

	2020 Valuation	2019 Valuation
Benefit Multiplier:	Bridged Benefit: 2.50% Multiplier (80% max)-Frozen FAC; 2.00% Multiplier (no max)	Bridged Benefit: 2.50% Multiplier (80% max) Frozen FAC; 2.00% Multiplier (no max)
Bridged Benefit Date:	10/31/2011	10/31/2011
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:	0.00%	0.00%
Act 88:	Yes (Adopted 10/26/2015)	Yes (Adopted 10/26/2015)

12 - City Council: Closed to new hires, linked to Division HE

	2020 Valuation	2019 Valuation
Benefit Multiplier:	Bridged Benefit: 2.50% Multiplier (80% max)-Frozen FAC; 2.00% Multiplier (no max)	Bridged Benefit: 2.50% Multiplier (80% max) Frozen FAC; 2.00% Multiplier (no max)
Bridged Benefit Date:	6/30/2011	6/30/2011
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:	0.00%	0.00%
Act 88:	Yes (Adopted 10/26/2015)	Yes (Adopted 10/26/2015)

51 - Fire Vlnkeer: Closed to new hires

	2020 Valuation	2019 Valuation
Benefit Multiplier:	Svc x [1.20% x FAC<\$4,200, plus 1.70% x FAC>\$4,200] (no max)	Svc x [1.20% x FAC<\$4,200, plus 1.70% x FAC>\$4,200] (no max)
Normal Retirement Age:	60	60
Vesting:	10 years	10 years
Early Retirement (Unreduced):	-	-
Early Retirement (Reduced):	50/25 55/15	50/25 55/15
Final Average Compensation:	5 years	5 years
Employee Contributions:	3.00% under \$4,200; 5.00% over \$4,200	3.00% under \$4,200; 5.00% over \$4,200
Act 88:	Yes (Adopted 10/26/2015)	Yes (Adopted 10/26/2015)



HA - Dpt of Pub Svs hired af 7/1/0: Open Division, linked to Division 11

	2020 Valuation	2019 Valuation
Benefit Multiplier:	1.00% Multiplier (no max)	1.00% Multiplier (no max)
Normal Retirement Age:	60	60
Vesting:	6 years	6 years
Early Retirement (Unreduced):	-	-
Early Retirement (Reduced):	-	-
Final Average Compensation:	3 years	3 years
Employee Contributions:	0.00%	0.00%
Act 88:	Yes (Adopted 10/26/2015)	Yes (Adopted 10/26/2015)

HB - General hired after 7/1/08: Open Division, linked to Division 01

	2020 Valuation	2019 Valuation
Benefit Multiplier:	1.00% Multiplier (no max)	1.00% Multiplier (no max)
Normal Retirement Age:	60	60
Vesting:	6 years	6 years
Early Retirement (Unreduced):	-	-
Early Retirement (Reduced):	-	-
Final Average Compensation:	3 years	3 years
Employee Contributions:	0.00%	0.00%
Act 88:	Yes (Adopted 10/26/2015)	Yes (Adopted 10/26/2015)

HC - Fire FT after 7/1/07: Open Division

	2020 Valuation	2019 Valuation
Benefit Multiplier:	1.00% Multiplier (no max)	1.00% Multiplier (no max)
Normal Retirement Age:	60	60
Vesting:	6 years	6 years
Early Retirement (Unreduced):	-	-
Early Retirement (Reduced):	-	-
Final Average Compensation:	3 years	3 years
Employee Contributions:	0.00%	0.00%
Act 88:	Yes (Adopted 10/26/2015)	Yes (Adopted 10/26/2015)

HD - Police after 7/01/10: Open Division, linked to Division 02

	2020 Valuation	2019 Valuation
Benefit Multiplier:	1.00% Multiplier (no max)	1.00% Multiplier (no max)
Normal Retirement Age:	60	60
Vesting:	6 years	6 years
Early Retirement (Unreduced):	-	-
Early Retirement (Reduced):	-	-
Final Average Compensation:	3 years	3 years
Employee Contributions:	0.00%	0.00%
Act 88:	Yes (Adopted 10/26/2015)	Yes (Adopted 10/26/2015)



HE - City Cncil aft 1/1/16 -Volntr: Open Division, linked to Division 12

	2020 Valuation	2019 Valuation
Benefit Multiplier:	1.00% Multiplier (no max)	1.00% Multiplier (no max)
Normal Retirement Age:	60	60
Vesting:	6 years	6 years
Early Retirement (Unreduced):	-	-
Early Retirement (Reduced):	-	-
Final Average Compensation:	3 years	3 years
Employee Contributions:	0.00%	0.00%
Act 88:	No	No

Note that employer contribution caps are in effect for Division(s): HA, HB, HC, HD, HE. For these divisions the employee contribution rates in Table 2 do not reflect phase-in of the increased employee contribution requirements associated with the new actuarial assumptions. The full employee contribution rate without phase-in is shown in Table 2 above. The employee contribution requirements including the phase-in are shown in the executive summary.

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 - General							
Active Employees	7	\$ 380,675	9	\$ 438,592	54.5	21.3	22.1
Vested Former Employees	5	44,482	7	61,838	50.3	8.8	14.8
Retirees and Beneficiaries	34	643,323	32	607,047	73.3		
Pending Refunds	0		0				
02 - Police							
Active Employees	2	\$ 125,472	3	\$ 198,809	44.6	19.0	19.0
Vested Former Employees	4	58,272	3	51,304	49.5	11.1	22.2
Retirees and Beneficiaries	19	316,044	19	317,578	71.7		
Pending Refunds	0		0				
05 - Fire FT							
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	5	118,277	5	118,277	67.0		
Pending Refunds	0		0				
11 - Dpt Pblc Srv							
Active Employees	3	\$ 168,700	3	\$ 165,238	47.4	24.4	24.4
Vested Former Employees	3	62,089	3	62,089	48.4	18.0	18.4
Retirees and Beneficiaries	16	313,572	16	313,572	73.3		
Pending Refunds	0		0				
12 - City Council							
Active Employees	1	\$ 2,300	1	\$ 2,300	64.4	12.4	12.4
Vested Former Employees	0	0	0	0	0.0	0.0	0.0
Retirees and Beneficiaries	3	7,726	3	7,726	79.5		
Pending Refunds	0		0				
51 - Fire VInteer							
Active Employees	6	\$ 15,788	6	\$ 15,378	49.3	15.3	15.6
Vested Former Employees	5	1,987	6	2,513	49.0	11.0	12.6
Retirees and Beneficiaries	4	2,040	3	1,631	71.3		
Pending Refunds	14		15				
HA - Dpt of Pub Svs hired af 7/1/0							
Active Employees	12	\$ 494,917	11	\$ 431,287	41.0	5.0	5.3
Vested Former Employees	0	0	0	0	0.0	0.0	0.0
Retirees and Beneficiaries	0	0	0	0	0.0		
Pending Refunds	0		0				

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
HB - General hired after 7/1/08							
Active Employees	13	\$ 630,147	11	\$ 555,074	50.8	3.2	6.0
Vested Former Employees	0	0	1	4,780	0.0	0.0	0.0
Retirees and Beneficiaries	1	4,075	0	0	60.3		
Pending Refunds	0		0				
HC - Fire FT after 7/1/07							
Active Employees	0	\$ 0	0	\$ 0	0.0	0.0	0.0
Vested Former Employees	1	1,905	1	1,905	47.2	4.8	20.3
Retirees and Beneficiaries	0	0	0	0	0.0		
Pending Refunds	0		0				
HD - Police after 7/01/10							
Active Employees	11	\$ 587,631	10	\$ 479,988	32.1	2.3	4.1
Vested Former Employees	5	10,027	5	10,027	42.0	3.6	12.9
Retirees and Beneficiaries	0	0	0	0	0.0		
Pending Refunds	0		0				
HE - City Cncil aft 1/1/16 -Volntr							
Active Employees	1	\$ 2,500	1	\$ 2,300	62.4	3.9	3.9
Vested Former Employees	0	0	0	0	0.0	0.0	0.0
Retirees and Beneficiaries	0	0	0	0	0.0		
Pending Refunds	0		0				
Total Municipality							
Active Employees	56	\$ 2,408,130	55	\$ 2,288,966	45.4	8.8	10.0
Vested Former Employees	23	178,762	26	194,457	47.7	9.6	15.9
Retirees and Beneficiaries	82	1,405,057	78	1,365,831	72.5		
Pending Refunds	14		15				
Total Participants	175		174				

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 - General	\$ 3,018,277	\$ 7,791	\$ 2,988,210	\$ 7,784
02 - Police	2,049,237	32,091	1,998,809	29,544
05 - Fire FT	555,277	0	575,277	0
11 - Dpt Pblc Srv	1,786,564	38,794	1,747,501	38,607
12 - City Council	15,085	73	13,952	73
51 - Fire Vlntr	52,075	17,256	46,032	17,243
HA - Dpt of Pub Svs hired af 7/1/0	189,641	0	149,334	0
HB - General hired after 7/1/08	203,221	0	149,214	0
HC - Fire FT after 7/1/07	20,153	0	17,848	0
HD - Police after 7/01/10	147,862	0	103,099	0
HE - City Cncil aft 1/1/16 -Volntr	915	0	542	0
Municipality Total³	\$ 8,038,306	\$ 96,005	\$ 7,789,817	\$ 93,250
Combined Assets³	\$8,134,312		\$7,883,067	

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.

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	\$ 458,911		\$ 8,809	\$ 410,751	\$ (932,997)	\$ 0	\$ 0	\$ 9,169,295
2011	456,280	\$ 0	4,656	398,992	(981,373)	0	0	9,047,850
2012	412,447	110,000	9,272	341,883	(1,078,739)	0	0	8,842,713
2013	448,213	110,000	8,630	466,942	(1,089,562)	(1,903)	0	8,785,033
2014	488,213	110,000	8,466	473,375	(1,122,956)	0	0	8,742,131
2015	523,390	110,000	7,266	402,518	(1,128,342)	(22,517)	0	8,634,446
2016	567,651	150,000	5,649	404,019	(1,164,203)	0	0	8,597,562
2017	609,436	0	5,784	480,509	(1,223,752)	0	0	8,469,539
2018	638,128	0	7,647	295,757	(1,174,619)	0	0	8,236,452
2019	677,236	0	5,717	358,596	(1,290,204)	(839)	0	7,986,958
2020	731,101	0	3,562	577,262	(1,388,943)	(485)	0	7,909,455

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 - General	\$ 1,482,094	\$ 274,924	\$ 6,216,554	\$ 0	\$ 7,973,572	\$ 2,942,419	36.9%	\$ 5,031,153
02 - Police	462,216	408,396	3,287,876	0	4,158,488	2,023,794	48.7%	2,134,694
05 - Fire FT	0	0	1,226,228	0	1,226,228	539,928	44.0%	686,300
11 - Dpt Pblc Srv	686,296	343,029	3,076,778	0	4,106,103	1,774,899	43.2%	2,331,204
12 - City Council	5,309	0	45,115	0	50,424	14,739	29.2%	35,685
51 - Fire Vlnkeer	23,893	8,784	19,734	3,914	56,325	67,414	119.7%	(11,089)
HA - Dpt of Pub Svs hired af 7/1/0	198,443	0	0	0	198,443	184,398	92.9%	14,045
HB - General hired after 7/1/08	168,572	0	51,871	0	220,443	197,603	89.6%	22,840
HC - Fire FT after 7/1/07	0	8,310	0	0	8,310	19,596	235.8%	(11,286)
HD - Police after 7/01/10	87,385	38,429	0	0	125,814	143,775	114.3%	(17,961)
HE - City Cncil aft 1/1/16 -Volntr	743	0	0	0	743	890	119.8%	(147)
Total	\$ 3,114,951	\$ 1,081,872	\$ 13,924,156	\$ 3,914	\$ 18,124,893	\$ 7,909,455	43.6%	\$ 10,215,438

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 HA, 11	\$ 884,739	\$ 343,029	\$ 3,076,778	\$ 0	\$ 4,304,546	\$ 1,959,297	45.5%	\$ 2,345,249
Linked Divisions HB, 01	1,650,666	274,924	6,268,425	0	8,194,015	3,140,022	38.3%	5,053,993
Linked Divisions HD, 02	549,601	446,825	3,287,876	0	4,284,302	2,167,569	50.6%	2,116,733
Linked Divisions HE, 12	6,052	0	45,115	0	51,167	15,629	30.5%	35,538

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	\$ 12,967,213	\$ 8,831,735	68%	\$ 4,135,478
2007	13,435,723	9,216,984	69%	4,218,739
2008	14,139,867	9,294,160	66%	4,845,707
2009	14,320,650	9,223,821	64%	5,096,829
2010	14,677,293	9,169,295	62%	5,507,998
2011	14,403,069	9,047,850	63%	5,355,219
2012	14,666,667	8,842,713	60%	5,823,954
2013	14,930,370	8,785,033	59%	6,145,337
2014	15,294,232	8,742,131	57%	6,552,101
2015	16,073,035	8,634,446	54%	7,438,589
2016	16,343,213	8,597,562	53%	7,745,651
2017	16,543,931	8,469,539	51%	8,074,392
2018	16,439,540	8,236,452	50%	8,203,088
2019	17,547,641	7,986,958	46%	9,560,683
2020	18,124,893	7,909,455	44%	10,215,438

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 - General

Table 8-01: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2010	\$ 5,329,898	\$ 3,193,137	60%	\$ 2,136,761
2011	6,004,064	3,594,754	60%	2,409,310
2012	6,238,364	3,576,063	57%	2,662,301
2013	6,356,564	3,525,378	56%	2,831,186
2014	6,576,344	3,511,230	53%	3,065,114
2015	6,974,937	3,432,544	49%	3,542,393
2016	7,136,584	3,395,672	48%	3,740,912
2017	7,155,296	3,315,855	46%	3,839,441
2018	7,218,435	3,179,533	44%	4,038,902
2019	7,706,533	3,035,477	39%	4,671,056
2020	7,973,572	2,942,419	37%	5,031,153

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	16	\$ 685,089	\$ 15,959	0.00%
2011	17	754,145	\$ 16,870	0.00%
2012	17	787,189	\$ 18,634	0.00%
2013	17	800,324	\$ 19,807	0.00%
2014	17	821,890	\$ 21,868	0.00%
2015	17	782,441	\$ 25,436	0.00%
2016	15	753,180	\$ 26,689	0.00%
2017	11	554,903	\$ 26,413	0.00%
2018	11	576,615	\$ 28,353	0.00%
2019	9	438,592	\$ 33,168	0.00%
2020	7	380,675	\$ 35,878	0.00%

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

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

Note: The contributions shown in Table 9 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

Table 8-02: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2010	\$ 4,605,907	\$ 3,189,512	69%	\$ 1,416,395
2011	3,680,471	2,646,291	72%	1,034,180
2012	3,582,397	2,468,694	69%	1,113,703
2013	3,672,819	2,425,864	66%	1,246,955
2014	3,723,154	2,346,582	63%	1,376,572
2015	3,800,988	2,286,527	60%	1,514,461
2016	3,919,395	2,230,635	57%	1,688,760
2017	3,979,585	2,168,645	55%	1,810,940
2018	3,801,320	2,117,321	56%	1,683,999
2019	4,106,613	2,055,085	50%	2,051,528
2020	4,158,488	2,023,794	49%	2,134,694

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	12	\$ 680,343	21.62%	0.00%
2011	10	549,923	\$ 8,340	1.56%
2012	8	455,647	\$ 8,531	1.56%
2013	8	470,611	\$ 9,676	1.56%
2014	7	431,435	\$ 10,277	1.56%
2015	6	356,132	\$ 10,912	1.56%
2016	5	290,315	\$ 11,873	1.56%
2017	5	297,053	\$ 12,748	2.10%
2018	4	247,674	\$ 11,695	2.10%
2019	3	198,809	\$ 14,564	2.10%
2020	2	125,472	\$ 15,235	2.10%

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 - Fire FT

Table 8-05: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2010	\$ 1,038,731	\$ 654,835	63%	\$ 383,896
2011	1,107,802	656,969	59%	450,833
2012	1,149,037	657,403	57%	491,634
2013	1,139,401	661,894	58%	477,507
2014	1,126,048	662,133	59%	463,915
2015	1,172,742	648,081	55%	524,661
2016	1,166,923	645,480	55%	521,443
2017	1,157,218	639,564	55%	517,654
2018	1,137,378	621,281	55%	516,097
2019	1,232,478	582,859	47%	649,619
2020	1,226,228	539,928	44%	686,300

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	2	\$ 114,363	\$ 2,407	6.40%
2011	1	53,639	\$ 2,488	0.00%
2012	1	46,352	\$ 2,595	0.00%
2013	1	48,531	\$ 2,583	0.00%
2014	1	50,198	\$ 2,586	0.00%
2015	1	48,786	\$ 3,129	0.00%
2016	1	49,233	\$ 3,142	0.00%
2017	1	49,993	\$ 3,181	0.00%
2018	1	50,596	\$ 3,264	0.00%
2019	0	0	\$ 4,264	0.00%
2020	0	0	\$ 4,596	0.00%

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

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

Note: The contributions shown in Table 9 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 - Dpt Pblc Srv

Table 8-11: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2010	\$ 3,576,716	\$ 2,056,194	57%	\$ 1,520,522
2011	3,468,631	2,065,413	60%	1,403,218
2012	3,544,371	2,036,227	57%	1,508,144
2013	3,583,339	2,034,216	57%	1,549,123
2014	3,669,992	2,042,488	56%	1,627,504
2015	3,896,592	2,035,400	52%	1,861,192
2016	3,837,888	2,033,855	53%	1,804,033
2017	3,904,951	1,987,344	51%	1,917,607
2018	3,859,691	1,894,159	49%	1,965,532
2019	3,992,849	1,809,647	45%	2,183,202
2020	4,106,103	1,774,899	43%	2,331,204

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	11	\$ 487,938	\$ 10,795	0.00%
2011	9	408,298	\$ 9,202	0.00%
2012	8	367,932	\$ 9,775	0.00%
2013	8	375,141	\$ 10,293	0.00%
2014	7	349,846	\$ 10,828	0.00%
2015	7	336,785	\$ 12,756	0.00%
2016	5	249,944	\$ 11,830	0.00%
2017	4	201,536	\$ 12,627	0.00%
2018	4	202,248	\$ 13,254	0.00%
2019	3	165,238	\$ 15,260	0.00%
2020	3	168,700	\$ 16,472	0.00%

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

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

Note: The contributions shown in Table 9 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 - City Council

Table 8-12: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2010	\$ 58,479	\$ 12,403	21%	\$ 46,076
2011	57,084	8,333	15%	48,751
2012	56,269	5,268	9%	51,001
2013	55,674	3,499	6%	52,175
2014	55,208	5,145	9%	50,063
2015	57,935	14,022	24%	43,913
2016	57,485	13,857	24%	43,628
2017	56,235	14,901	27%	41,334
2018	54,182	16,270	30%	37,912
2019	53,525	14,209	27%	39,316
2020	50,424	14,739	29%	35,685

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	2	\$ 4,600	62.95%	1.00%
2011	2	4,600	65.73%	0.00%
2012	2	4,800	72.11%	0.00%
2013	2	4,600	76.88%	0.00%
2014	3	6,900	49.53%	0.00%
2015	2	4,600	\$ 1,073	0.00%
2016	1	2,300	\$ 350	0.00%
2017	1	2,300	\$ 509	0.00%
2018	1	2,300	\$ 708	0.00%
2019	1	2,300	\$ 477	0.00%
2020	1	2,300	\$ 451	0.00%

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

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

Note: The contributions shown in Table 9 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 51 - Fire VInteer

Table 8-51: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2010	\$ 45,320	\$ 46,018	102%	\$ (698)
2011	46,552	47,498	102%	(946)
2012	49,468	49,286	100%	182
2013	47,270	50,914	108%	(3,644)
2014	46,013	54,042	117%	(8,029)
2015	46,393	56,591	122%	(10,198)
2016	51,289	58,996	115%	(7,707)
2017	56,451	61,518	109%	(5,067)
2018	54,132	62,918	116%	(8,786)
2019	52,948	64,109	121%	(11,161)
2020	56,325	67,414	120%	(11,089)

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

Table 9-51: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution ¹	Employee Contribution Rate ²
	Number	Annual Payroll		
2010	16	\$ 40,953	2.71%	3.27%
2011	16	40,263	\$ 64	3.25%
2012	14	36,096	\$ 70	3.26%
2013	12	36,017	\$ 26	3.45%
2014	11	31,447	\$ 0	3.40%
2015	11	24,851	\$ 0	3.18%
2016	11	28,450	\$ 0	3% < ; 5% >
2017	9	28,530	\$ 21	3% < ; 5% >
2018	7	20,462	\$ 0	3% < ; 5% >
2019	6	15,378	\$ 0	3% < ; 5% >
2020	6	15,788	\$ 0	3% < ; 5% >

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 HA - Dpt of Pub Svs hired af 7/1/0

Table 8-HA: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2010	\$ 6,005	\$ 5,477	91%	\$ 528
2011	11,523	9,452	82%	2,071
2012	19,404	17,041	88%	2,363
2013	31,581	27,624	88%	3,957
2014	47,705	44,198	93%	3,507
2015	55,588	62,427	112%	(6,839)
2016	67,090	87,708	131%	(20,618)
2017	90,343	108,437	120%	(18,094)
2018	121,881	128,584	105%	(6,703)
2019	144,902	151,302	104%	(6,400)
2020	198,443	184,398	93%	14,045

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

Table 9-HA: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution ¹	Employee Contribution Rate ²
	Number	Annual Payroll		
2010	2	\$ 63,871	4.56%	0.00%
2011	4	105,774	4.34%	0.00%
2012	3	105,256	4.44%	0.00%
2013	6	198,551	4.41%	0.00%
2014	7	249,314	4.37%	0.00%
2015	6	222,012	3.87%	0.00%
2016	7	269,502	3.53%	0.00%
2017	10	378,089	3.76%	0.00%
2018	11	433,802	4.01%	0.00%
2019	11	431,287	4.27%	0.00%
2020	12	494,917	4.88%	0.00%

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

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

Note: The contributions shown in Table 9 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 HB - General hired after 7/1/08

Table 8-HB: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2010	\$ 8,719	\$ 5,726	66%	\$ 2,993
2011	15,864	10,222	64%	5,642
2012	24,776	18,605	75%	6,171
2013	35,650	33,596	94%	2,054
2014	33,470	45,145	135%	(11,675)
2015	40,530	57,268	141%	(16,738)
2016	55,122	72,280	131%	(17,158)
2017	86,176	95,228	111%	(9,052)
2018	121,777	119,908	98%	1,869
2019	162,082	151,180	93%	10,902
2020	220,443	197,603	90%	22,840

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

Table 9-HB: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution ¹	Employee Contribution Rate ²
	Number	Annual Payroll		
2010	2	\$ 80,235	5.43%	0.00%
2011	2	82,375	5.63%	0.00%
2012	3	119,166	5.51%	0.00%
2013	3	118,905	5.31%	0.00%
2014	3	115,070	4.70%	0.00%
2015	5	173,714	4.76%	0.00%
2016	6	238,581	4.47%	0.00%
2017	9	405,930	4.97%	0.00%
2018	10	468,685	5.33%	0.00%
2019	11	555,074	5.54%	0.00%
2020	13	630,147	6.25%	0.00%

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

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

Note: The contributions shown in Table 9 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 HC - Fire FT after 7/1/07

Table 8-HC: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2010	\$ 7,518	\$ 5,993	80%	\$ 1,525
2011	11,078	8,918	81%	2,160
2012	2,927	11,400	390%	(8,473)
2013	4,097	13,346	326%	(9,249)
2014	4,429	14,140	319%	(9,711)
2015	5,221	14,880	285%	(9,659)
2016	5,629	15,712	279%	(10,083)
2017	6,070	16,601	274%	(10,531)
2018	6,461	17,227	267%	(10,766)
2019	7,588	18,084	238%	(10,496)
2020	8,310	19,596	236%	(11,286)

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

Table 9-HC: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution ¹	Employee Contribution Rate ²
	Number	Annual Payroll		
2010	1	\$ 40,108	5.20%	0.00%
2011	0	0	0.00%	0.00%
2012	0	0	0.00%	0.00%
2013	0	0	0.00%	0.00%
2014	0	0	0.00%	0.00%
2015	0	0	0.00%	0.00%
2016	0	0	0.00%	0.00%
2017	0	0	0.00%	0.00%
2018	0	0	0.00%	0.00%
2019	0	0	\$ 0	0.00%
2020	0	0	\$ 0	0.00%

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

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

Note: The contributions shown in Table 9 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 HD - Police after 7/01/10

Table 8-HD: 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	(346)	2,726	0%	(3,072)
2013	3,975	8,702	219%	(4,727)
2014	11,869	17,028	144%	(5,159)
2015	22,109	26,706	121%	(4,597)
2016	45,808	43,367	95%	2,441
2017	51,454	61,289	119%	(9,835)
2018	63,975	78,933	123%	(14,958)
2019	87,609	104,457	119%	(16,848)
2020	125,814	143,775	114%	(17,961)

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

Table 9-HD: 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	2	73,768	4.84%	0.00%
2013	2	88,069	4.26%	0.00%
2014	4	195,314	4.55%	0.00%
2015	4	188,480	4.47%	0.00%
2016	6	305,317	4.92%	0.00%
2017	5	246,632	4.83%	0.00%
2018	7	351,380	4.58%	0.00%
2019	10	479,988	4.01%	0.00%
2020	11	587,631	3.90%	0.00%

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

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

Note: The contributions shown in Table 9 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 HE - City Cncil aft 1/1/16 -Volntr

Table 8-HE: 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	152	157	103%	(5)
2018	308	318	103%	(10)
2019	514	549	107%	(35)
2020	743	890	120%	(147)

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

Table 9-HE: 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	1	2,509	5.48%	0.00%
2018	1	2,300	5.42%	0.00%
2019	1	2,300	5.51%	0.00%
2020	1	2,500	4.79%	0.00%

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

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

Note: The contributions shown in Table 9 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.

Table 10: Division-Based Layered Amortization Schedule

Division 01 - General

Table 10-01: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance ¹	Original Amortization Period ²	Amounts for Fiscal Year Beginning 7/1/2022		
				Outstanding UAL Balance ³	Remaining Amortization Period ²	Annual Amortization Payment
Initial	12/31/2015	\$ 3,542,393	23	\$ 3,725,935	18	\$ 297,864
(Gain)/Loss	12/31/2016	112,363	22	126,536	18	10,116
(Gain)/Loss	12/31/2017	36,794	21	41,166	18	3,288
(Gain)/Loss	12/31/2018	160,697	20	178,959	18	14,304
(Gain)/Loss	12/31/2019	344,763	19	381,006	18	30,456
Assumption	12/31/2019	253,658	19	254,267	18	20,328
Experience	12/31/2020	312,179	18	347,222	18	27,756
Total				\$ 5,055,091		\$ 404,112

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

Table 10-02: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance ¹	Original Amortization Period ²	Amounts for Fiscal Year Beginning 7/1/2022		
				Outstanding UAL Balance ³	Remaining Amortization Period ²	Annual Amortization Payment
Initial	12/31/2015	\$ 1,514,461	23	\$ 1,573,429	18	\$ 125,784
(Gain)/Loss	12/31/2016	148,892	22	167,677	18	13,404
(Gain)/Loss	12/31/2017	97,935	21	109,544	18	8,760
Amendment	12/31/2017	(1,981)	21	(2,213)	18	(180)
(Gain)/Loss	12/31/2018	(154,207)	20	(171,736)	18	(13,728)
(Gain)/Loss	12/31/2019	219,726	19	242,817	18	19,416
Assumption	12/31/2019	147,037	19	151,274	18	12,096
Experience	12/31/2020	63,099	18	70,182	18	5,616
Total				\$ 2,140,974		\$ 171,168

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 - Fire FT

Table 10-05: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance ¹	Original Amortization Period ²	Amounts for Fiscal Year Beginning 7/1/2022		
				Outstanding UAL Balance ³	Remaining Amortization Period ²	Annual Amortization Payment
Initial	12/31/2015	\$ 524,661	23	\$ 550,886	18	\$ 44,040
(Gain)/Loss	12/31/2016	(14,423)	22	(16,237)	18	(1,296)
(Gain)/Loss	12/31/2017	(11,169)	21	(12,494)	18	(996)
(Gain)/Loss	12/31/2018	(4,583)	20	(5,104)	18	(408)
(Gain)/Loss	12/31/2019	93,135	19	102,922	18	8,232
Assumption	12/31/2019	38,747	19	39,203	18	3,132
Experience	12/31/2020	27,470	18	30,554	18	2,448
Total				\$ 689,730		\$ 55,152

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.

Table 10-11: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance ¹	Original Amortization Period ²	Amounts for Fiscal Year Beginning 7/1/2022		
				Outstanding UAL Balance ³	Remaining Amortization Period ²	Annual Amortization Payment
Initial	12/31/2015	\$ 1,861,192	23	\$ 1,952,612	18	\$ 156,096
(Gain)/Loss	12/31/2016	(101,112)	22	(113,868)	18	(9,108)
(Gain)/Loss	12/31/2017	97,137	21	108,673	18	8,688
(Gain)/Loss	12/31/2018	28,781	20	32,053	18	2,568
(Gain)/Loss	12/31/2019	56,868	19	62,840	18	5,028
Assumption	12/31/2019	144,351	19	147,544	18	11,796
Experience	12/31/2020	133,143	18	148,089	18	11,844
Total				\$ 2,337,943		\$ 186,912

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 - City Council

Table 10-12: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance ¹	Original Amortization Period ²	Amounts for Fiscal Year Beginning 7/1/2022		
				Outstanding UAL Balance ³	Remaining Amortization Period ²	Annual Amortization Payment
Experience	12/31/2020	\$ 26,402	23	\$ 29,366	18	\$ 5,232
Total				\$ 29,366		\$ 5,232

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 51 - Fire VInteer

Table 10-51: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance ¹	Original Amortization Period ²	Amounts for Fiscal Year Beginning 7/1/2022		
				Outstanding UAL Balance ³	Remaining Amortization Period ²	Annual Amortization Payment
Initial	12/31/2015	\$ (10,198)	10	\$ (8,096)	10	\$ (1,008)
(Gain)/Loss	12/31/2016	2,786	10	2,310	6	444
(Gain)/Loss	12/31/2017	2,182	10	1,999	7	336
(Gain)/Loss	12/31/2018	(4,478)	10	(4,440)	8	(660)
(Gain)/Loss	12/31/2019	(3,914)	10	(4,113)	9	(552)
Assumption	12/31/2019	1,254	10	1,391	9	192
Experience	12/31/2020	(585)	10	(651)	10	(84)
Total				\$ (11,600)		\$ (1,332)

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 HA - Dpt of Pub Svs hired af 7/1/0

Table 10-HA: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance ¹	Original Amortization Period ²	Amounts for Fiscal Year Beginning 7/1/2022		
				Outstanding UAL Balance ³	Remaining Amortization Period ²	Annual Amortization Payment
Experience	12/31/2020	\$ 15,182	15	\$ 16,886	15	\$ 1,536
Total				\$ 16,886		\$ 1,536

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 HB - General hired after 7/1/08

Table 10-HB: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance ¹	Original Amortization Period ²	Amounts for Fiscal Year Beginning 7/1/2022		
				Outstanding UAL Balance ³	Remaining Amortization Period ²	Annual Amortization Payment
(Gain)/Loss	12/31/2018	\$ 3,905	15	\$ 4,202	13	\$ 420
(Gain)/Loss	12/31/2019	3,721	15	4,058	14	384
Assumption	12/31/2019	3,547	15	3,812	14	360
Experience	12/31/2020	10,736	15	11,941	15	1,080
Total				\$ 24,013		\$ 2,244

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 HC - Fire FT after 7/1/07

Table 10-HC: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance ¹	Original Amortization Period ²	Amounts for Fiscal Year Beginning 7/1/2022		
				Outstanding UAL Balance ³	Remaining Amortization Period ²	Annual Amortization Payment
Initial	12/31/2015	\$ (9,659)	10	\$ (9,455)	10	\$ (1,176)
(Gain)/Loss	12/31/2016	325	15	320	11	36
(Gain)/Loss	12/31/2017	333	15	345	12	36
(Gain)/Loss	12/31/2018	(120)	15	(129)	13	(12)
(Gain)/Loss	12/31/2019	(2,688)	10	(2,824)	9	(384)
Assumption	12/31/2019	621	10	717	9	96
Experience	12/31/2020	(1,372)	10	(1,526)	10	(192)
Total				\$ (12,552)		\$ (1,596)

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 HD - Police after 7/01/10

Table 10-HD: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance ¹	Original Amortization Period ²	Amounts for Fiscal Year Beginning 7/1/2022		
				Outstanding UAL Balance ³	Remaining Amortization Period ²	Annual Amortization Payment
(Gain)/Loss	12/31/2017	\$ (9,895)	15	\$ (10,355)	12	\$ (1,116)
(Gain)/Loss	12/31/2018	(4,461)	15	(4,792)	13	(480)
(Gain)/Loss	12/31/2019	(3,753)	15	(4,083)	14	(396)
Assumption	12/31/2019	2,678	15	3,037	14	288
Experience	12/31/2020	(1,140)	15	(1,268)	15	(120)
Total				\$ (17,461)		\$ (1,824)

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 HE - City Cncil aft 1/1/16 -Volntr

Table 10-HE: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance ¹	Original Amortization Period ²	Amounts for Fiscal Year Beginning 7/1/2022		
				Outstanding UAL Balance ³	Remaining Amortization Period ²	Annual Amortization Payment
(Gain)/Loss	12/31/2017	\$ (4)	15	\$ (5)	12	\$ 0
(Gain)/Loss	12/31/2018	(5)	15	(6)	13	0
(Gain)/Loss	12/31/2019	(35)	15	(42)	14	0
Assumption	12/31/2019	9	15	11	14	0
Experience	12/31/2020	(109)	15	(121)	15	(12)
Total				\$ (163)		\$ (12)

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:	82
Inactive employees entitled to but not yet receiving benefits (including refunds):	37
Active employees:	<u>56</u>
	175
Total Pension Liability as of 12/31/2019 measurement date:	\$ 17,188,972
Total Pension Liability as of 12/31/2020 measurement date:	\$ 17,729,828
Service Cost for the year ending on the 12/31/2020 measurement date:	\$ 128,088
Change in the Total Pension Liability due to:	
- Benefit changes ¹ :	\$ 0
- Differences between expected and actual experience ² :	\$ 78,860
- Changes in assumptions ² :	\$ 464,905
Average expected remaining service lives of all employees (active and inactive):	3

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

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

Covered employee payroll (Needed for Required Supplementary Information):	\$ 2,408,130
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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:	\$ 1,832,786	\$ 0	\$ (1,551,907)

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 - General

12/1/2016	Service Credit Purchase Estimates - No
10/26/2015	Covered by Act 88
7/1/2011	Benefit B-2
6/30/2011	Frozen FAC
1/1/2007	E 2% COLA Adopted (01/01/2007)
1/1/2006	E 2% COLA Adopted (01/01/2006)
1/1/2005	E 2% COLA Adopted (01/01/2005)
1/1/2004	E 2% COLA Adopted (01/01/2004)
1/1/2003	E 2% COLA Adopted (01/01/2003)
1/1/2002	E 2% COLA Adopted (01/01/2002)
7/1/2001	Benefit B-4 (80% max)
1/1/2001	E 2% COLA Adopted (01/01/2001)
1/1/2000	E 2% COLA Adopted (01/01/2000)
1/1/1999	Flexible E 2% COLA Adopted (01/01/1999)
1/1/1998	E 2% COLA Adopted (01/01/1998)
1/1/1997	E 2% COLA Adopted (01/01/1997)
1/1/1996	E 2% COLA Adopted (01/01/1996)
1/1/1995	E 2% COLA Adopted (01/01/1995)
1/1/1994	E 2% COLA Adopted (01/01/1994)
1/1/1993	E 2% COLA Adopted (01/01/1993)
1/1/1992	Member Contribution Rate 0.00%
1/1/1992	E 2% COLA Adopted (01/01/1992)
1/1/1991	E 2% COLA Adopted (01/01/1991)
1/1/1990	Benefit B-2
1/1/1990	E 2% COLA Adopted (01/01/1990)
1/1/1989	E 2% COLA Adopted (01/01/1989)
1/1/1988	E 2% COLA Adopted (01/01/1988)
1/1/1987	E 2% COLA Adopted (01/01/1987)
7/1/1986	Benefit C-2/Base B-1
7/1/1986	Benefit F55 (With 25 Years of Service)
4/1/1986	Member Contribution Rate 1.00%
1/1/1986	E 2% COLA Adopted (01/01/1986)
1/1/1985	E 2% COLA Adopted (01/01/1985)
1/1/1984	E 2% COLA Adopted (01/01/1984)
1/1/1983	E 2% COLA Adopted (01/01/1983)
1/1/1982	E 2% COLA Adopted (01/01/1982)
1/1/1981	E 2% COLA Adopted (01/01/1981)
1/1/1980	E 2% COLA Adopted (01/01/1980)
1/1/1979	E 2% COLA Adopted (01/01/1979)
1/1/1978	E 2% COLA Adopted (01/01/1978)
9/12/1977	Exclude Temporary Employees
1/1/1977	E 2% COLA Adopted (01/01/1977)



01 - General

1/1/1976	E 2% COLA Adopted (01/01/1976)
1/1/1971	E 2% COLA Adopted (01/01/1971)
1/1/1967	Benefit C-1 (Old)
1/1/1957	Benefit FAC-5 (5 Year Final Average Compensation)
1/1/1957	10 Year Vesting
1/1/1957	Benefit C (Old)
1/1/1957	Member Contribution Rate 3.00% Under \$4,200.00 - Then 5.00%
1/1/1957	Fiscal Month - July
	Defined Benefit Normal Retirement Age - 60
	Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years

02 - Police

7/1/2017	Participant Contribution Rate 2.10%
12/1/2016	Service Credit Purchase Estimates - No
10/26/2015	Covered by Act 88
9/1/2011	Benefit B-3 (80% max)
9/1/2011	Member Contribution Rate 1.56%
8/31/2011	Frozen FAC
1/1/2007	E 2% COLA Adopted (01/01/2007)
1/1/2006	E 2% COLA Adopted (01/01/2006)
1/1/2005	E 2% COLA Adopted (01/01/2005)
1/1/2004	E 2% COLA Adopted (01/01/2004)
1/1/2003	E 2% COLA Adopted (01/01/2003)
1/1/2002	E 2% COLA Adopted (01/01/2002)
1/1/2001	E 2% COLA Adopted (01/01/2001)
7/1/2000	Benefit B-4 (80% max)
1/1/2000	E 2% COLA Adopted (01/01/2000)
1/1/1999	Flexible E 2% COLA Adopted (01/01/1999)
3/1/1998	Temporary Benefit B-4 (80% max) (03/01/1998 - 07/02/1998)
1/1/1998	E 2% COLA Adopted (01/01/1998)
1/1/1997	E 2% COLA Adopted (01/01/1997)
1/1/1996	E 2% COLA Adopted (01/01/1996)
1/1/1995	E 2% COLA Adopted (01/01/1995)
1/1/1994	E 2% COLA Adopted (01/01/1994)
1/1/1993	E 2% COLA Adopted (01/01/1993)
1/1/1992	E 2% COLA Adopted (01/01/1992)
1/1/1991	E 2% COLA Adopted (01/01/1991)
1/1/1990	E 2% COLA Adopted (01/01/1990)
7/1/1989	Benefit B-2
1/1/1989	Member Contribution Rate 0.00%
1/1/1989	E 2% COLA Adopted (01/01/1989)
7/1/1988	Member Contribution Rate 3.00%
1/1/1988	Benefit F50 (With 25 Years of Service)
1/1/1988	Member Contribution Rate 5.00%
1/1/1988	E 2% COLA Adopted (01/01/1988)
1/1/1987	E 2% COLA Adopted (01/01/1987)
1/1/1986	E 2% COLA Adopted (01/01/1986)
1/1/1985	E 2% COLA Adopted (01/01/1985)
1/1/1984	E 2% COLA Adopted (01/01/1984)

02 - Police

7/1/1983	Benefit C-2/Base B-1
7/1/1983	Member Contribution Rate 8.00%
1/1/1983	E 2% COLA Adopted (01/01/1983)
1/1/1982	E 2% COLA Adopted (01/01/1982)
1/1/1981	E 2% COLA Adopted (01/01/1981)
6/1/1980	Benefit F55 (With 25 Years of Service)
1/1/1980	E 2% COLA Adopted (01/01/1980)
1/1/1979	E 2% COLA Adopted (01/01/1979)
1/1/1978	E 2% COLA Adopted (01/01/1978)
9/12/1977	Exclude Temporary Employees
1/1/1977	E 2% COLA Adopted (01/01/1977)
1/1/1976	E 2% COLA Adopted (01/01/1976)
1/1/1971	E 2% COLA Adopted (01/01/1971)
1/1/1967	Benefit C-1 (Old)
1/1/1957	Benefit FAC-5 (5 Year Final Average Compensation)
1/1/1957	10 Year Vesting
1/1/1957	Benefit C (Old)
1/1/1957	Member Contribution Rate 3.00% Under \$4,200.00 - Then 5.00%
1/1/1957	Fiscal Month - July
	Defined Benefit Normal Retirement Age - 60
	Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years

05 - Fire FT

12/1/2016	Service Credit Purchase Estimates - No
10/26/2015	Covered by Act 88
2/1/2011	Benefit B-2
2/1/2011	Member Contribution Rate 0.00%
1/31/2011	Frozen FAC
1/1/2007	E 2% COLA Adopted (01/01/2007)
1/1/2006	E 2% COLA Adopted (01/01/2006)
12/1/2005	Benefit B-4 (80% max)
12/1/2005	Member Contribution Rate 6.40%
1/1/2005	E 2% COLA Adopted (01/01/2005)
1/1/2004	E 2% COLA Adopted (01/01/2004)
1/1/2003	E 2% COLA Adopted (01/01/2003)
1/1/2002	E 2% COLA Adopted (01/01/2002)
1/1/2001	E 2% COLA Adopted (01/01/2001)
1/1/2000	E 2% COLA Adopted (01/01/2000)
1/1/1999	Flexible E 2% COLA Adopted (01/01/1999)
3/1/1998	Temporary 2.5% Multiplier (no max) (03/01/1998 - 07/02/1998)
3/1/1998	Temporary Benefit F55 (With 20 Years of Service) (03/01/1998 - 07/02/1998)
1/1/1998	E 2% COLA Adopted (01/01/1998)
1/1/1997	E 2% COLA Adopted (01/01/1997)
1/1/1996	E 2% COLA Adopted (01/01/1996)
1/1/1995	E 2% COLA Adopted (01/01/1995)
1/1/1994	E 2% COLA Adopted (01/01/1994)
7/1/1993	Benefit F55 (With 25 Years of Service)
1/1/1993	E 2% COLA Adopted (01/01/1993)
7/1/1992	Benefit B-2

05 - Fire FT

1/1/1992	E 2% COLA Adopted (01/01/1992)
1/1/1991	E 2% COLA Adopted (01/01/1991)
1/1/1990	E 2% COLA Adopted (01/01/1990)
1/1/1989	E 2% COLA Adopted (01/01/1989)
7/1/1988	Member Contribution Rate 0.00%
1/1/1988	E 2% COLA Adopted (01/01/1988)
1/1/1987	E 2% COLA Adopted (01/01/1987)
1/1/1986	E 2% COLA Adopted (01/01/1986)
1/1/1985	E 2% COLA Adopted (01/01/1985)
1/1/1984	E 2% COLA Adopted (01/01/1984)
1/1/1983	E 2% COLA Adopted (01/01/1983)
1/1/1982	E 2% COLA Adopted (01/01/1982)
1/1/1981	E 2% COLA Adopted (01/01/1981)
1/1/1980	E 2% COLA Adopted (01/01/1980)
1/1/1979	E 2% COLA Adopted (01/01/1979)
1/1/1978	E 2% COLA Adopted (01/01/1978)
9/12/1977	Exclude Temporary Employees
1/1/1977	E 2% COLA Adopted (01/01/1977)
1/1/1976	E 2% COLA Adopted (01/01/1976)
1/1/1971	E 2% COLA Adopted (01/01/1971)
1/1/1967	Benefit C-1 (Old)
1/1/1957	Benefit FAC-5 (5 Year Final Average Compensation)
1/1/1957	10 Year Vesting
1/1/1957	Benefit C (Old)
1/1/1957	Member Contribution Rate 3.00% Under \$4,200.00 - Then 5.00%
1/1/1957	Fiscal Month - July
	Defined Benefit Normal Retirement Age - 60
	Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years

11 - Dpt Pblc Srv

12/1/2016	Service Credit Purchase Estimates - No
10/26/2015	Covered by Act 88
11/1/2011	Benefit B-2
10/31/2011	Frozen FAC
1/1/2007	E 2% COLA Adopted (01/01/2007)
1/1/2006	E 2% COLA Adopted (01/01/2006)
1/1/2005	E 2% COLA Adopted (01/01/2005)
1/1/2004	E 2% COLA Adopted (01/01/2004)
1/1/2003	E 2% COLA Adopted (01/01/2003)
7/1/2002	Member Contribution Rate 0.00%
1/1/2002	E 2% COLA Adopted (01/01/2002)
1/1/2001	E 2% COLA Adopted (01/01/2001)
1/1/2000	E 2% COLA Adopted (01/01/2000)
1/1/1999	Flexible E 2% COLA Adopted (01/01/1999)
1/1/1998	Member Contribution Rate 3.00%
1/1/1998	E 2% COLA Adopted (01/01/1998)
1/1/1997	Member Contribution Rate 4.00%
1/1/1997	E 2% COLA Adopted (01/01/1997)
1/1/1996	Benefit B-4 (80% max)



11 - Dpt Pblc Srv

1/1/1996	Benefit F55 (With 25 Years of Service)
1/1/1996	Member Contribution Rate 5.00%
1/1/1996	E 2% COLA Adopted (01/01/1996)
1/1/1995	E 2% COLA Adopted (01/01/1995)
1/1/1994	E 2% COLA Adopted (01/01/1994)
1/1/1993	E 2% COLA Adopted (01/01/1993)
7/1/1992	Member Contribution Rate 0.00%
1/1/1992	E 2% COLA Adopted (01/01/1992)
1/1/1991	E 2% COLA Adopted (01/01/1991)
1/1/1990	E 2% COLA Adopted (01/01/1990)
7/1/1989	Benefit B-2
7/1/1989	Member Contribution Rate 1.00%
1/1/1989	E 2% COLA Adopted (01/01/1989)
1/1/1988	E 2% COLA Adopted (01/01/1988)
1/1/1987	E 2% COLA Adopted (01/01/1987)
7/1/1986	Benefit FAC-5 (5 Year Final Average Compensation)
7/1/1986	10 Year Vesting
7/1/1986	Benefit C-2/Base B-1
1/1/1986	E 2% COLA Adopted (01/01/1986)
1/1/1985	E 2% COLA Adopted (01/01/1985)
1/1/1984	E 2% COLA Adopted (01/01/1984)
1/1/1983	E 2% COLA Adopted (01/01/1983)
1/1/1982	E 2% COLA Adopted (01/01/1982)
1/1/1981	E 2% COLA Adopted (01/01/1981)
1/1/1980	E 2% COLA Adopted (01/01/1980)
1/1/1957	Fiscal Month - July
	Defined Benefit Normal Retirement Age - 60
	Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years

12 - City Council

12/1/2016	Service Credit Purchase Estimates - No
10/26/2015	Covered by Act 88
7/1/2011	Benefit B-2
7/1/2011	Member Contribution Rate 0.00%
6/30/2011	Frozen FAC
1/1/2007	E 2% COLA Adopted (01/01/2007)
1/1/2006	E 2% COLA Adopted (01/01/2006)
1/1/2005	E 2% COLA Adopted (01/01/2005)
1/1/2004	E 2% COLA Adopted (01/01/2004)
1/1/2003	E 2% COLA Adopted (01/01/2003)
1/1/2002	E 2% COLA Adopted (01/01/2002)
1/1/2001	E 2% COLA Adopted (01/01/2001)
1/1/2000	Benefit B-4 (80% max)
1/1/2000	E 2% COLA Adopted (01/01/2000)
1/1/1999	Flexible E 2% COLA Adopted (01/01/1999)
1/1/1998	E 2% COLA Adopted (01/01/1998)
1/1/1997	E 2% COLA Adopted (01/01/1997)
1/1/1996	E 2% COLA Adopted (01/01/1996)
1/1/1995	E 2% COLA Adopted (01/01/1995)

12 - City Council

1/1/1994	E 2% COLA Adopted (01/01/1994)
1/1/1993	E 2% COLA Adopted (01/01/1993)
1/1/1992	Benefit FAC-5 (5 Year Final Average Compensation)
1/1/1992	10 Year Vesting
1/1/1992	Benefit B-2
1/1/1992	Benefit F55 (With 25 Years of Service)
1/1/1992	Member Contribution Rate 1.00%
1/1/1992	E 2% COLA Adopted (01/01/1992)
1/1/1991	E 2% COLA Adopted (01/01/1991)
1/1/1990	E 2% COLA Adopted (01/01/1990)
1/1/1989	E 2% COLA Adopted (01/01/1989)
1/1/1988	E 2% COLA Adopted (01/01/1988)
1/1/1987	E 2% COLA Adopted (01/01/1987)
1/1/1986	E 2% COLA Adopted (01/01/1986)
1/1/1985	E 2% COLA Adopted (01/01/1985)
1/1/1984	E 2% COLA Adopted (01/01/1984)
1/1/1983	E 2% COLA Adopted (01/01/1983)
1/1/1982	E 2% COLA Adopted (01/01/1982)
1/1/1981	E 2% COLA Adopted (01/01/1981)
1/1/1980	E 2% COLA Adopted (01/01/1980)
1/1/1957	Fiscal Month - July
	Defined Benefit Normal Retirement Age - 60
	Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years

51 - Fire Vnteer

12/1/2016	Service Credit Purchase Estimates - No
10/26/2015	Covered by Act 88
1/1/2007	E 2% COLA Adopted (01/01/2007)
1/1/2006	E 2% COLA Adopted (01/01/2006)
1/1/2005	E 2% COLA Adopted (01/01/2005)
1/1/2004	E 2% COLA Adopted (01/01/2004)
1/1/2003	E 2% COLA Adopted (01/01/2003)
1/1/2002	E 2% COLA Adopted (01/01/2002)
1/1/2001	E 2% COLA Adopted (01/01/2001)
1/1/2000	E 2% COLA Adopted (01/01/2000)
1/1/1999	Flexible E 2% COLA Adopted (01/01/1999)
1/1/1998	E 2% COLA Adopted (01/01/1998)
1/1/1997	E 2% COLA Adopted (01/01/1997)
1/1/1996	E 2% COLA Adopted (01/01/1996)
1/1/1995	E 2% COLA Adopted (01/01/1995)
1/1/1994	E 2% COLA Adopted (01/01/1994)
1/1/1993	E 2% COLA Adopted (01/01/1993)
1/1/1992	E 2% COLA Adopted (01/01/1992)
1/1/1991	E 2% COLA Adopted (01/01/1991)
1/1/1990	E 2% COLA Adopted (01/01/1990)
1/1/1989	E 2% COLA Adopted (01/01/1989)
1/1/1988	E 2% COLA Adopted (01/01/1988)
1/1/1987	E 2% COLA Adopted (01/01/1987)
1/1/1986	E 2% COLA Adopted (01/01/1986)



51 - Fire VInteer

1/1/1985	E 2% COLA Adopted (01/01/1985)
1/1/1984	E 2% COLA Adopted (01/01/1984)
1/1/1983	E 2% COLA Adopted (01/01/1983)
1/1/1982	E 2% COLA Adopted (01/01/1982)
1/1/1981	E 2% COLA Adopted (01/01/1981)
1/1/1980	E 2% COLA Adopted (01/01/1980)
1/1/1957	Benefit FAC-5 (5 Year Final Average Compensation)
1/1/1957	10 Year Vesting
1/1/1957	Benefit C-1 (Old)
1/1/1957	Member Contribution Rate 3.00% Under \$4,200.00 - Then 5.00%
1/1/1957	Fiscal Month - July
	Defined Benefit Normal Retirement Age - 60
	Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years

HA - Dpt of Pub Svs hired af 7/1/0

10/26/2015	Covered by ACT 88
9/1/2008	Benefit FAC-3 (3 Year Final Average Compensation)
9/1/2008	6 Year Vesting
9/1/2008	1.0% Multiplier
1/1/1957	Fiscal Month - July
	Defined Benefit Normal Retirement Age - 60
	No Early Reduced Conditions

HB - General hired after 7/1/08

10/26/2015	Covered by ACT 88
9/1/2008	Benefit FAC-3 (3 Year Final Average Compensation)
9/1/2008	6 Year Vesting
9/1/2008	1.0% Multiplier
1/1/1957	Fiscal Month - July
	Defined Benefit Normal Retirement Age - 60
	No Early Reduced Conditions

HC - Fire FT after 7/1/07

10/26/2015	Covered by ACT 88
2/1/2009	Benefit FAC-3 (3 Year Final Average Compensation)
2/1/2009	6 Year Vesting
2/1/2009	1.0% Multiplier
1/1/1957	Fiscal Month - July
	Defined Benefit Normal Retirement Age - 60
	No Early Reduced Conditions

HD - Police after 7/01/10

10/26/2015	Covered by ACT 88
7/1/2010	Benefit FAC-3 (3 Year Final Average Compensation)
7/1/2010	6 Year Vesting
7/1/2010	1.0% Multiplier
1/1/1957	Fiscal Month - July
	Defined Benefit Normal Retirement Age - 60
	No Early Reduced Conditions



HE - City Cncil aft 1/1/16 -Volntr

1/1/2016	Day of work defined as 1 hour a month (elected city councils)
1/1/2016	Benefit FAC-3 (3 Year Final Average Compensation)
1/1/2016	6 Year Vesting
1/1/2016	1.0% Multiplier
1/1/1957	Fiscal Month - July
	Defined Benefit Normal Retirement Age - 60
	No Early Reduced Conditions

Plan Provisions, Actuarial Assumptions, and Actuarial Funding Method

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

Increase in Final Average Compensation

Division	FAC Increase Assumption
All Divisions	1.00%

Miscellaneous and Technical Assumptions

Loads – None.

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

Risk Commentary

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

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

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

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

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

PLAN MATURITY MEASURES

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

	<u>12/31/2020</u>	<u>12/31/2019</u>	<u>12/31/2018</u>
1. Ratio of the market value of assets to total payroll	3.4	3.4	3.2
2. Ratio of actuarial accrued liability to payroll	7.5	7.7	7.0
3. Ratio of actives to retirees and beneficiaries	0.7	0.7	0.8
4. Ratio of market value of assets to benefit payments	5.9	6.1	6.4
5. Ratio of net cash flow to market value of assets (boy)	-8.3%	-8.1%	-6.3%

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	56
12	Indicate number of inactive members (excluding pending refunds)	23
13	Indicate number of retirees and beneficiaries	82
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	\$7,854,149
25	Enter retirement pension system's actuarial accrued liabilities using uniform assumptions ⁵	\$18,753,368
27	Actuarially Determined Contribution (ADC) using uniform assumptions, Fiscal Year Ending June 30, 2021	\$984,912

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%.

