



MUNICIPAL EMPLOYEES' RETIREMENT SYSTEM OF MICHIGAN
ANNUAL ACTUARIAL VALUATION REPORT DECEMBER 31, 2016
SPRINGFIELD, CITY OF (1303)



Spring, 2017

Springfield, 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 as of December 31, 2016. The report includes the determination of liabilities and contribution rates resulting from the participation of Springfield, City of (1303) in the Municipal Employees' Retirement System of Michigan ("MERS"). MERS is a nonprofit organization, independent from the State, that has provided retirement plans for municipal employees for 70 years. Springfield, City of is responsible for the employer contributions needed to provide MERS benefits for its employees and former employees under the Michigan Constitution and the MERS Plan Document.

The purpose of the December 31, 2016 annual actuarial valuation is to:

- Measure funding progress
- Establish contribution requirements for the fiscal year beginning July 1, 2018
- Provide actuarial information in connection with applicable Governmental Accounting Standards Board (GASB) statements

This valuation report should not be relied upon for any other purpose. Reliance on information contained in this report by anyone for anything other than the intended purpose could be misleading.

The valuation uses financial data, plan provision data, and participant data as of December 31, 2016 furnished by MERS. In accordance with Actuarial Standards of Practice No. 23, the data was checked for internal and year to year consistency as well as general reasonableness, but was not otherwise audited. CBIZ Retirement Plan Services does not assume responsibility for the accuracy or completeness of the data used in this valuation.

The actuarial assumptions and methods are adopted by the MERS Retirement Board, and are reviewed every five years in an Experience Study. The most recent study was completed in 2015. Please refer to the division-specific assumptions described in table(s) in this report, and to the Appendix on the MERS website at:
www.mersofmich.com/Portals/0/Assets/Resources/AAV-Appendix/MERS-2016AnnualActuarialValuation-Appendix.pdf.



The actuarial assumptions used for this valuation produce results that we believe are reasonable.

To the best of our knowledge, this report is complete and accurate, was prepared in conformity with generally recognized actuarial principles and practices, with the Actuarial Standards of Practice issued by the Actuarial Standards Board, and is in compliance with Act No. 220 of the Public Acts of 1996, as amended, and the MERS Plan Document as revised. All of the undersigned are members of the American Academy of Actuaries (MAAA), and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein. 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 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). CBIZ Retirement Plan Services is not responsible for the consequences of any unauthorized use.

You should notify MERS if you disagree with anything contained in the report or are aware of any information that would affect the results of the report that have not been communicated to us. 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,

Cathy Nagy, MAAA, FSA
Jim Koss, MAAA, ASA
Curtis Powell, MAAA, EA

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Executive Summary

Actuarial Assumptions and Methods Adopted with the December 31, 2015 Valuations

The actuarial assumptions and methods are adopted by the MERS Retirement Board, and are reviewed every five years in an Experience Study. The Experience Study is a comprehensive, detailed analysis that reviews MERS' funding policy and compares actual experience with the current actuarial assumptions; the study recommends adjustments as necessary. The most recent study was completed in 2015 and changes to the assumptions and methods based on the 2015 Experience Study were first reflected in the December 31, 2015 valuations. The impact of these changes is being phased-in over a 5 year period. The phase-in allows the employer to spread the impact of the new assumptions over 5 fiscal years. This report continues to provide contributions both with and without the phase-in adjustments.

The assumptions and methods are described in the [Appendix](#) on the MERS website.

As part of the recent Experience Study, the following changes are first reflected in the December 31, 2016 annual valuation:

- The asset smoothing was changed from 10 to 5 years. The gain (loss) recognized each year will be 20% of the current year's gain (loss) plus 20% of the gain (loss) from each of the 4 preceding years. The cumulative difference between the market value and valuation assets as of December 31, 2015 will be recognized over 4 years.
- Annual changes in Unfunded Accrued Liability (UAL) will be amortized over fixed periods, creating "layers" of UAL. This will require removing and creating "layers" of UAL on an annual basis.
 - o Once the amortization period drops below 15 years (10 years for closed divisions), any future liability and asset gains or losses will be spread over a 15-year fixed period for open divisions and a 10-year fixed period for closed divisions — creating "layers" of UAL on an annual basis.
 - o This transparent method allows tracking of what changed your UAL, and sets a fixed period in time in which that UAL change will be fully funded.

MERS created a dedicated resource page on their website for additional information on these topics (<http://www.mersofmich.com/Employer/Work-Scenarios/Unfunded-Liability>).

Funded Ratio and Required Employer Contributions

The MERS Defined Benefit Plan is an agent multiple-employer plan, meaning that assets are pooled for investment purposes but separate accounts are maintained for each individual employer. Each municipality is responsible for their own plan liabilities; MERS does not borrow from one municipality's account to pay for another.

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

Your Funded Ratio:

	12/31/2016	12/31/2015
Funded Ratio	67%	70%

Michigan Law requires that pension plans be pre-funded, meaning money is set aside now to pay for future benefits. Pension plans are usually funded by employer and employee contributions, and investment income.

How quickly a plan attains the 100% funding goal depends on many factors such as:

- The current funded ratio
- The future experience of the plan
- The amortization period

It is more important to look at the trend in the funded ratio over a period of time than at a particular point in time.

Your Required Employer Contributions:

Your computed employer contributions are shown in the following table. Employee contributions, if any, are in addition to the computed employer contributions. Changes to the assumptions and methods based on the 2015 Experience Study were first reflected in the December 31, 2015 valuations. The impact of these changes is being phased-in over a 5 year period. The phase-in allows the employer to spread the impact of the new assumptions over 5 fiscal years. This valuation reflects the second year of the phase-in.

Your minimum required contribution is the amount in the “Phase-in” columns. By default, MERS will invoice you the phased-in contribution amount, but strongly encourages you to contribute more than the minimum required contribution. If for 2017 your municipality is making employer contributions based on rates without the phase-in applied, contact MERS to ensure this rate is used again for 2018 and not the defaulted phase-in rates.

	Percentage of Payroll				Monthly \$ Based on Projected Payroll			
	Phase-in	No Phase-in	Phase-in	No Phase-in	Phase-in	No Phase-in	Phase-in	No Phase-in
Valuation Date:	12/31/2016	12/31/2016	12/31/2015	12/31/2015	12/31/2016	12/31/2016	12/31/2015	12/31/2015
Fiscal Year Beginning:	July 1, 2018	July 1, 2018	July 1, 2017	July 1, 2017	July 1, 2018	July 1, 2018	July 1, 2017	July 1, 2017
Division								
01 - AFSCME	14.90%	15.76%	14.21%	15.47%	\$ 4,040	\$ 4,274	\$ 3,515	\$ 3,827
02 - PubSafety	-	-	-	-	10,422	11,820	7,941	9,805
10 - Non Union	26.85%	28.67%	26.06%	28.60%	9,518	10,163	8,835	9,695
Municipality Total					\$ 23,980	\$ 26,257	\$ 20,291	\$ 23,327

Employee contribution rates reflected in the valuations are shown below:

Valuation Date:	Employee Contribution Rate	
	12/31/2016	12/31/2015
Division		
01 - AFSCME	2.00%	2.00%
02 - PubSafety	7.00%	7.00%
10 - Non Union	2.00%	2.00%

The employer may contribute more than the minimum required contributions, as these additional contributions will earn investment income and may result in lower future contribution requirements. **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 entire employer would be \$ 40,347, instead of \$ 26,257.

If you are interested in making additional contributions, please contact MERS and they can assist you with evaluating your options.

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](#))
- Experience of the plan (investment experience and demographic experience); this is the difference between actual experience of the plan and the actuarial assumptions. For example:
 - o Lower actual investment returns would result in higher required employer contributions, and vice-versa.
 - o Smaller than assumed pay increases would lower required employer contributions.
 - o Reductions in the number of active employees would lower required contribution dollars, but would usually increase the contribution rate expressed as a percentage of (the now lower) payroll.
 - o Retirements at earlier ages than assumed would usually increase required employer contributions.
 - o More non-vested terminations of employment than assumed would decrease required contributions.
 - o More disabilities or survivor (death) benefits than assumed would increase required contributions.
 - o Longer lifetimes after retirement than assumed would increase required employer contributions.

Actuarial valuations do not affect the ultimate cost of the plan; the benefit payments (current and future) determine the cost of the plan. Actuarial valuations only affect the timing of the contributions into the plan. Because assumptions are for the long term, plan experience will not match the actuarial assumptions in any given year (except by coincidence). Each annual actuarial valuation will adjust the required employer contributions up or down based on the prior year's actual experience.

Comments on Asset Smoothing

The actuarial value of assets, used to determine both your funded ratio and your required employer contribution, is based on a smoothed value of assets (10-year smoothing prior to 2016; 5-year smoothing beginning in 2016). A smoothing method reduces the volatility of the valuation results, which affects your required employer contribution and funded ratio. The smoothed actuarial rate of return for 2016 was 5.14%.

As of December 31, 2016 the actuarial value of assets is 108% of market value. This means that meeting the actuarial assumption in the next few years will require average annual market returns that exceed the 7.75% investment return assumption.

If the December 31, 2016 valuation results were based on market value on that date instead of smoothed funding value: i) the funded percent of your entire municipality would be 62% (instead of 67%); and ii) your total employer contribution requirement for the fiscal year starting July 1, 2018 would be \$ 357,864 (instead of \$ 315,084).

The asset smoothing method is a powerful tool for reducing the volatility of your required employer contributions. **However, if the current 8% difference between the smoothed value and the market value of assets is not made up, the result would be gradual increases in your employer contribution requirement over the next few years (to around the levels described above).**

Risk Characteristics of Defined Benefit Plans

It is important to understand that Defined Benefit retirement plans, the plan sponsor, and the plan participants are exposed to certain risks. While risks cannot be eliminated entirely, they can be managed through various strategies. Below are a few examples of risk (this is not an all-inclusive list):

- Economic - investment return, wage inflation, etc.
- Demographic - longevity, disability, retirement, etc.
- Plan Sponsor and Employees - contribution volatility, attract/retain employees, etc.

The MERS Retirement Board adopts certain assumptions and methods to manage the economic and demographic risks, and the contribution volatility risks. For example, the investment risk is the largest economic risk and is managed by having a balanced portfolio and a clearly defined investment strategy. Demographic risks are managed by preparing special studies called experience studies on a regular basis to determine if the assumptions used are reasonable compared to the experience. Risk may be managed through a plan design that provides benefits that are sustainable in the long run. An Experience Study is completed every five years to review the assumptions and methods. The next Experience Study will be completed in 2020.

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.

The analysis in this section is intended to review the potential volatility of the actuarial valuation results. 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.

Many assumptions are important in determining the required employer contributions. In the table below, we show the impact of varying one actuarial assumption: the future annual rate of investment return. Lower investment returns would result in higher required employer contributions, and vice-versa.

The relative impact of each investment return scenario 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, 2016 valuation, and are for the municipality in total, not by division. These results do not reflect a 5-year phase in of the impact of the new actuarial assumptions.

	Assumed Future Annual Smoothed Rate of Investment Return			
	Lower Future Annual Returns		Valuation Assumption	Higher Returns
	5.75%	6.75%	7.75%	8.75%
12/31/2016 Valuation Results				
Accrued Liability	\$ 12,859,516	\$ 11,495,990	\$ 10,375,683	\$ 9,449,742
Valuation Assets	\$ 6,940,505	\$ 6,940,505	\$ 6,940,505	\$ 6,940,505
Unfunded Accrued Liability	\$ 5,919,011	\$ 4,555,485	\$ 3,435,178	\$ 2,509,237
Funded Ratio	54%	60%	67%	74%
Monthly Normal Cost	\$ 7,704	\$ 5,723	\$ 4,218	\$ 3,070
Monthly Amortization Payment	\$ 33,272	\$ 27,643	\$ 22,039	\$ 17,093
Total Employer Contribution¹	\$ 40,976	\$ 33,366	\$ 26,257	\$ 20,163

¹ If assets exceed accrued liabilities for a division, the division's amortization payment is negative and is used to reduce the division's employer contribution requirement. If the overfunding credit is larger than the normal cost, the division's full credit is included in the municipality's amortization payment above but the division's total contribution requirement is zero. This can cause the displayed normal cost and amortization payment to not add up to the displayed total employer contribution.

Projection Scenarios

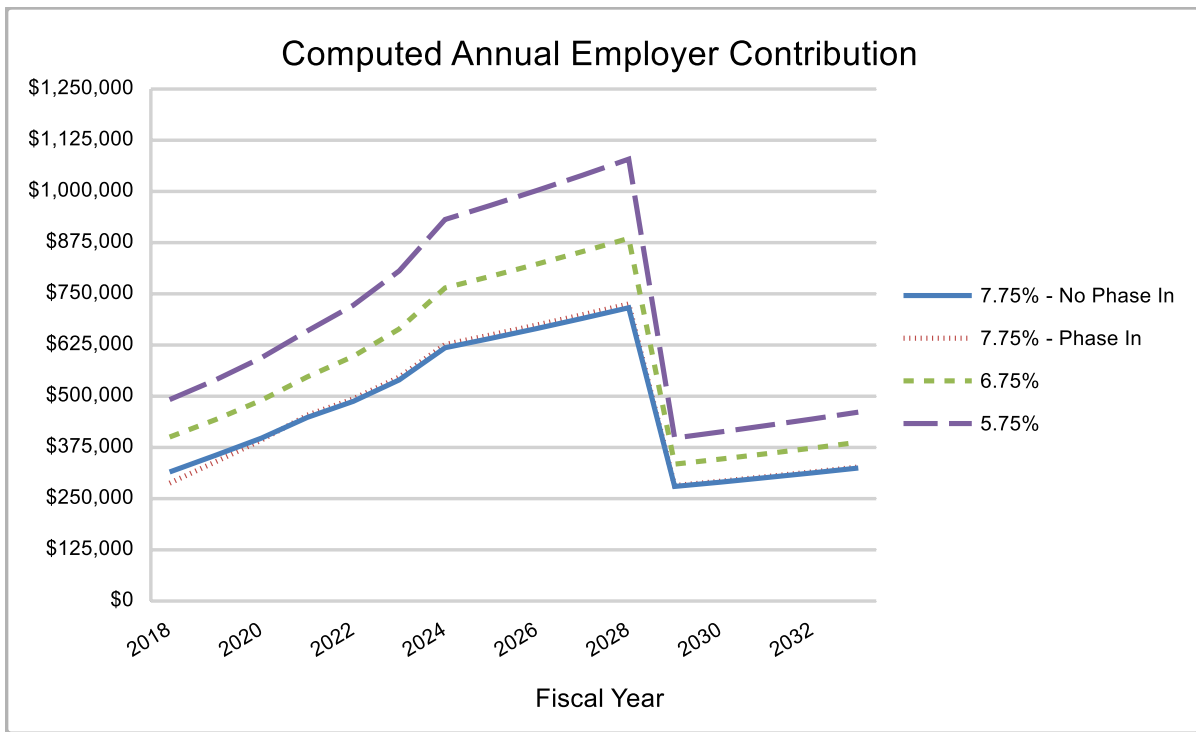
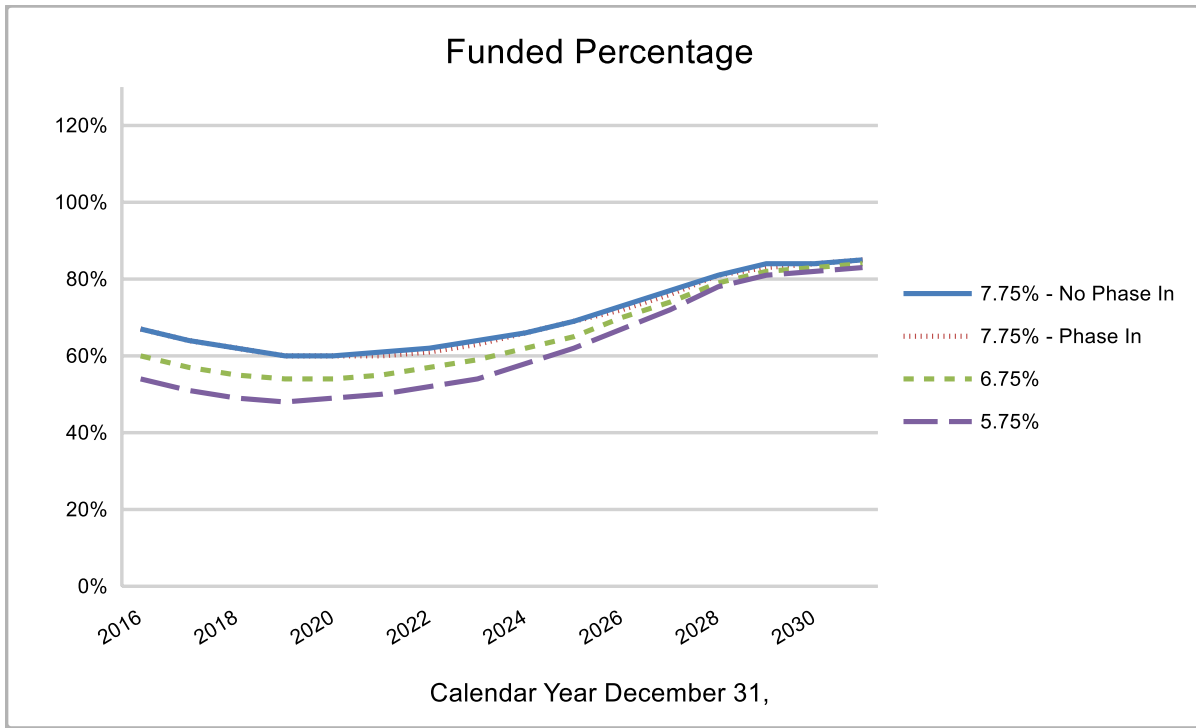
The next two pages show projections of the plan's funded ratio and computed employer contributions under the actuarial assumptions used in the valuation and alternate assumed long-term investment return scenarios. All four projections take into account the past investment losses that will continue to affect the smoothed rate of return in the short term. Under the 7.75% scenarios, two sets of projections are shown:

- Based on the phase-in over 5 fiscal years (beginning in 2017) of the increased contribution requirements associated with the new actuarial assumptions. This projects your minimum required contribution.
- Based on no phase-in of the increased contribution requirements.

The 7.75% scenarios provide an estimate of computed employer contributions based on current actuarial assumptions, and a projected 7.75% 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 6.75% and 5.75% projections provide an indication of the potential required employer contribution if MERS were to realize investment returns of 6.75% and 5.75% over the long-term.

The projections are shown both in tabular and graphical form in total for the employer. The tables show projections for six years. The graphs show projections for fifteen years.

Valuation Year Ending 12/31	Fiscal Year Beginning 7/1	Actuarial Accrued Liability	Valuation Assets	Funded Percentage	Computed Annual Employer Contribution
7.75% Assumed Interest Discount Rate and Future Annual Market Rate of Return					
WITH 5-YEAR PHASE-IN					
2016	2018	\$ 10,375,683	\$ 6,940,505	67%	\$ 287,760
2017	2019	10,400,000	6,620,000	64%	340,000
2018	2020	10,400,000	6,390,000	62%	393,000
2019	2021	10,400,000	6,210,000	60%	454,000
2020	2022	10,500,000	6,240,000	60%	494,000
2021	2023	10,500,000	6,310,000	60%	547,000
NO 5-YEAR PHASE-IN					
2016	2018	\$ 10,375,683	\$ 6,940,505	67%	\$ 315,084
2017	2019	10,400,000	6,620,000	64%	356,000
2018	2020	10,400,000	6,410,000	62%	398,000
2019	2021	10,400,000	6,240,000	60%	448,000
2020	2022	10,500,000	6,290,000	60%	488,000
2021	2023	10,500,000	6,370,000	61%	540,000
6.75% Assumed Interest Discount Rate and Future Annual Market Rate of Return					
NO 5-YEAR PHASE-IN					
2016	2018	\$ 11,495,990	\$ 6,940,505	60%	\$ 400,392
2017	2019	11,500,000	6,550,000	57%	443,000
2018	2020	11,500,000	6,320,000	55%	490,000
2019	2021	11,500,000	6,190,000	54%	547,000
2020	2022	11,600,000	6,260,000	54%	597,000
2021	2023	11,600,000	6,380,000	55%	664,000
5.75% Assumed Interest Discount Rate and Future Annual Market Rate of Return					
NO 5-YEAR PHASE-IN					
2016	2018	\$ 12,859,516	\$ 6,940,505	54%	\$ 491,712
2017	2019	12,800,000	6,490,000	51%	540,000
2018	2020	12,800,000	6,240,000	49%	594,000
2019	2021	12,900,000	6,140,000	48%	659,000
2020	2022	12,900,000	6,250,000	49%	722,000
2021	2023	12,900,000	6,420,000	50%	806,000



Employer Contribution Details For the Fiscal Year Beginning July 1, 2018

Table 1

Division	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. Rate	Employee Contribut. Conversion Factor ²
	Normal Cost	Payment of the Unfunded Accrued Liability ⁴	Computed Employer Contribut. No Phase-In					
Percentage of Payroll								
01 - AFSCME	7.72%	8.04%	15.76%	14.90%			2.00%	0.87%
02 - PubSafety	-	-	-	-			7.00%	
10 - Non Union	5.99%	22.68%	28.67%	26.85%			2.00%	0.86%
Estimated Monthly Contribution³								
01 - AFSCME	\$ 2,094	\$ 2,180	\$ 4,274	\$ 4,040				
02 - PubSafety	0	11,820	11,820	10,422				
10 - Non Union	2,124	8,039	10,163	9,518				
Total Municipality	\$ 4,218	\$ 22,039	\$ 26,257	\$ 23,980				
Estimated Annual Contribution³	\$ 50,616	\$ 264,468	\$ 315,084	\$ 287,760				

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 (ie 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 If projected assets exceed projected liabilities as of the beginning of the July 1, 2018 fiscal year, the negative unfunded accrued liability is treated as overfunding credit and is used to reduce the contribution. This amortization is used to reduce the employer contribution rate. 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 with 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 800-767-2308.

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

Benefit Provisions

Table 2

01 - AFSCME: Open Division

	2016 Valuation	2015 Valuation
Benefit Multiplier:	2.25% Multiplier (80% max)	2.25% Multiplier (80% max)
Normal Retirement Age:	60	60
Vesting:	10 years	10 years
Early Retirement (Unreduced):	55/25	55/25
Early Retirement (Reduced):	50/25	50/25
	55/15	55/15
Final Average Compensation:	5 years	5 years
Employee Contributions:	2%	2%
Act 88:	Yes (Adopted 12/21/1970)	Yes (Adopted 12/21/1970)

02 - PubSafety: Closed to new hires

	2016 Valuation	2015 Valuation
Benefit Multiplier:	3.00% Multiplier (80% max)	3.00% Multiplier (80% max)
Normal Retirement Age:	60	60
Vesting:	10 years	10 years
Early Retirement (Unreduced):	25 and Out	25 and Out
Early Retirement (Reduced):	55/15	55/15
Final Average Compensation:	5 years	5 years
Employee Contributions:	7%	7%
Act 88:	Yes (Adopted 12/21/1970)	Yes (Adopted 12/21/1970)

10 - Non Union: Open Division

	2016 Valuation	2015 Valuation
Benefit Multiplier:	2.00% Multiplier (no max)	2.00% Multiplier (no max)
Normal Retirement Age:	60	60
Vesting:	10 years	10 years
Early Retirement (Unreduced):	-	-
Early Retirement (Reduced):	50/25	50/25
	55/15	55/15
Final Average Compensation:	5 years	5 years
Employee Contributions:	2%	2%
Act 88:	Yes (Adopted 12/21/1970)	Yes (Adopted 12/21/1970)

Participant Summary

Table 3

Division	2016 Valuation		2015 Valuation		2016 Valuation		
	Number	Annual Payroll ¹	Number	Annual Payroll ¹	Average Age	Average Benefit Service ²	Average Eligibility Service ²
01 - AFSCME							
Active Employees	6	\$ 296,816	6	\$ 270,750	38.2	7.4	7.4
Vested Former Employees	1	4,874	1	4,874	53.9	11.2	11.2
Retirees and Beneficiaries	6	61,886	6	61,886	71.0		
02 - PubSafety							
Active Employees	0	\$ 0	0	\$ 0	0.0	0.0	0.0
Vested Former Employees	12	263,652	12	263,652	42.8	9.7	15.4
Retirees and Beneficiaries	20	519,094	21	523,932	68.2		
10 - Non Union							
Active Employees	9	\$ 387,964	9	\$ 370,958	42.0	8.8	8.8
Vested Former Employees	5	37,609	5	37,609	47.0	9.6	13.8
Retirees and Beneficiaries	14	234,612	14	234,612	69.9		
Total Municipality							
Active Employees	15	\$ 684,780	15	\$ 641,708	40.5	8.2	8.2
Vested Former Employees	18	306,135	18	306,135	44.6	9.8	14.7
Retirees and Beneficiaries	40	815,592	41	820,430	69.2		
Total Participants	73		74				

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

² Description can be found under Miscellaneous and Technical Assumptions in the [Appendix](#).

Reported Assets (Market Value)

Table 4

Division	2016 Valuation		2015 Valuation	
	Employer and Retiree ¹	Employee ²	Employer and Retiree ¹	Employee ²
01 - AFSCME	\$ 602,931	\$ 23,047	\$ 552,587	\$ 16,967
02 - PubSafety	3,806,384	549,884	3,803,582	545,249
10 - Non Union	1,432,584	28,896	1,425,627	20,958
Municipality Total	\$ 5,841,899	\$ 601,827	\$ 5,781,796	\$ 583,174
Combined Reserves	\$ 6,443,726		\$ 6,364,970	

¹ Reserve for Employer Contributions and Benefit Payments

² Reserve for Employee Contributions

The December 31, 2016 valuation assets are equal to 1.077095 times the reported market value of assets (compared to 1.135382 as of December 31, 2015). The derivation of valuation assets is described, and detailed calculations of valuation assets are shown, in the [Appendix](#).

Flow of Valuation Assets

Table 5

Year Ended 12/31	Employer Contributions		Employee Contributions	Investment Income	Benefit Payments	Employee Contribution Refunds	Net Transfers	Valuation Asset Balance
	Required	Additional						
2006	\$ 161,826		\$ 79,706	\$ 562,328	\$ (493,390)	\$ 0	\$ 0	\$ 7,390,738
2007	162,665		74,892	598,968	(523,365)	0	0	7,703,898
2008	153,761		71,613	299,494	(554,808)	(86,993)	0	7,586,965
2009	155,708		65,072	255,025	(568,111)	(17,806)	0	7,476,853
2010	180,881		62,692	343,815	(597,569)	(1,761)	0	7,464,911
2011	187,977	\$ 0	68,746	349,607	(572,273)	0	0	7,498,968
2012	184,498	0	70,290	305,956	(608,275)	(9,211)	0	7,442,226
2013	184,945	0	56,928	410,517	(643,978)	0	0	7,450,638
2014	235,338	0	18,297	405,033	(685,523)	0	0	7,423,783
2015	221,144	0	17,831	326,655	(760,061)	(2,680)	0	7,226,672
2016	203,545	0	13,695	314,604	(818,011)	0	0	6,940,505

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.

In the actuarial valuation additional employer contributions are combined with required contributions and used to reduce computed future required employer contributions.

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

**Actuarial Accrued Liabilities and Valuation Assets
As of December 31, 2016**

Table 6

Division	Actuarial Accrued Liability	Valuation Assets¹	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
01 - AFSCME				
Active Employees	\$ 424,375	\$ 46,851	11.0%	\$ 377,524
Vested Former Employees	32,563	32,563	100.0%	0
Retirees And Beneficiaries	592,015	592,015	100.0%	0
Pending Refunds	<u>2,809</u>	<u>2,809</u>	100.0%	<u>0</u>
Total	\$ 1,051,762	\$ 674,238	64.1%	\$ 377,524
02 - PubSafety				
Active Employees	\$ 0	\$ 0	0.0%	\$ 0
Vested Former Employees	1,108,529	522,453	47.1%	586,076
Retirees And Beneficiaries	5,257,537	4,142,230	78.8%	1,115,307
Pending Refunds	<u>27,431</u>	<u>27,431</u>	100.0%	<u>0</u>
Total	\$ 6,393,497	\$ 4,692,114	73.4%	\$ 1,701,383
10 - Non Union				
Active Employees	\$ 549,952	\$ 28,896	5.3%	\$ 521,056
Vested Former Employees	169,673	0	0.0%	169,673
Retirees And Beneficiaries	2,210,799	1,545,257	69.9%	665,542
Pending Refunds	<u>0</u>	<u>0</u>	0.0%	<u>0</u>
Total	\$ 2,930,424	\$ 1,574,153	53.7%	\$ 1,356,271
Total Municipality				
Active Employees	\$ 974,327	\$ 75,747	7.8%	\$ 898,580
Vested Former Employees	1,310,765	555,016	42.3%	755,749
Retirees and Beneficiaries	8,060,351	6,279,502	77.9%	1,780,849
Pending Refunds	<u>30,240</u>	<u>30,240</u>	100.0%	<u>0</u>
Total Participants	\$ 10,375,683	\$ 6,940,505	66.9%	\$ 3,435,178

¹ Includes both employer and employee assets.

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

See Section 46 of the Plan Document for MERS Fiscal Responsibility policy, on the MERS website at:
<https://employerportal.mersofmich.com/SharePointFormsService/Default.aspx?Publication=MERSPlanDocument.pdf>.

Actuarial Accrued Liabilities - Comparative Schedule

Table 7

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2002	\$ 2,098,078	\$ 2,007,703	96%	\$ 90,375
2003	7,222,416	6,611,003	92%	611,413
2004	7,584,567	6,845,357	90%	739,210
2005	7,947,925	7,080,268	89%	867,657
2006	8,346,103	7,390,738	89%	955,365
2007	8,771,605	7,703,898	88%	1,067,707
2008	8,793,691	7,586,965	86%	1,206,726
2009	8,826,445	7,476,853	85%	1,349,592
2010	8,981,040	7,464,911	83%	1,516,129
2011	9,311,277	7,498,968	81%	1,812,309
2012	9,921,344	7,442,226	75%	2,479,118
2013	9,396,726	7,450,638	79%	1,946,088
2014	9,557,827	7,423,783	78%	2,134,044
2015	10,312,956	7,226,672	70%	3,086,284
2016	10,375,683	6,940,505	67%	3,435,178

Notes: Actuarial assumptions were revised for the 2004, 2008, 2009, 2010, 2011, 2012 and 2015 actuarial valuations.

Division 01 - AFSCME

Table 8-01: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2006	\$ 774,719	\$ 631,977	82%	\$ 142,742
2007	825,463	646,569	78%	178,894
2008	791,996	643,210	81%	148,786
2009	790,605	635,541	80%	155,064
2010	840,072	630,614	75%	209,458
2011	871,504	626,654	72%	244,850
2012	828,708	623,941	75%	204,767
2013	879,946	633,209	72%	246,737
2014	932,888	635,114	68%	297,774
2015	990,387	646,661	65%	343,726
2016	1,051,762	674,238	64%	377,524

Notes: Actuarial assumptions were revised for the 2008, 2009, 2010, 2011, 2012 and 2015 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		
2006	5	\$ 178,060	12.82%	0.00%
2007	5	186,417	13.77%	0.00%
2008	5	200,526	12.11%	0.00%
2009	5	194,497	12.52%	0.00%
2010	5	197,787	15.35%	0.00%
2011	5	211,465	14.15%	2.00%
2012	5	206,347	13.68%	2.00%
2013	5	177,337	16.44%	2.00%
2014	5	200,499	16.68%	2.00%
2015	6	270,750	15.47%	2.00%
2016	6	296,816	15.76%	2.00%

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

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

Note: The contributions shown in Table 9 for the 12/31/2015 through 12/31/2019 valuations do **not** reflect the phase-in of the increased contribution requirements associated with the new actuarial assumptions. The full contribution without phase-in is shown in Table 9 above. The contribution requirements including the 5-year phase-in are shown on page 7.

See the Benefit Provision History on page 29 for past benefit provision changes.

Division 02 - PubSafety

Table 8-02: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2006	\$ 5,890,138	\$ 5,161,594	88%	\$ 728,544
2007	5,990,839	5,380,376	90%	610,463
2008	5,957,157	5,295,400	89%	661,757
2009	5,960,420	5,221,677	88%	738,743
2010	5,965,898	5,203,026	87%	762,872
2011	6,178,270	5,227,788	85%	950,482
2012	6,704,352	5,157,594	77%	1,546,758
2013	6,035,753	5,118,326	85%	917,427
2014	6,032,003	5,077,215	84%	954,788
2015	6,422,724	4,937,584	77%	1,485,140
2016	6,393,497	4,692,114	73%	1,701,383

Notes: Actuarial assumptions were revised for the 2008, 2009, 2010, 2011, 2012 and 2015 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		
2006	17	\$ 1,149,448	9.44%	7.00%
2007	16	1,050,436	9.03%	7.00%
2008	14	943,168	11.02%	7.00%
2009	13	875,539	11.20%	7.00%
2010	13	895,593	11.50%	7.00%
2011	13	900,562	12.83%	7.00%
2012	12	808,898	19.07%	7.00%
2013	1	74,200	\$ 4,428	7.00%
2014	1	74,200	\$ 5,413	7.00%
2015	0	0	\$ 9,805	7.00%
2016	0	0	\$ 11,820	7.00%

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 12/31/2019 valuations do **not** reflect the phase-in of the increased contribution requirements associated with the new actuarial assumptions. The full contribution without phase-in is shown in Table 9 above. The contribution requirements including the 5-year phase-in are shown on page 7.

See the Benefit Provision History on page 29 for past benefit provision changes.

Division 10 - Non Union

Table 8-10: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2006	\$ 432,522	\$ 488,657	113%	\$ (56,135)
2007	542,130	566,584	105%	(24,454)
2008	577,936	569,300	99%	8,636
2009	590,663	574,773	97%	15,890
2010	634,609	593,336	93%	41,273
2011	644,082	608,976	95%	35,106
2012	686,070	624,892	91%	61,178
2013	841,525	727,721	87%	113,804
2014	910,449	733,293	81%	177,156
2015	2,899,845	1,642,427	57%	1,257,418
2016	2,930,424	1,574,153	54%	1,356,271

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

Table 9-10: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution ¹	Employee Contribution Rate ²
	Number	Annual Payroll		
2006	7	\$ 192,004	4.74%	0.00%
2007	7	210,857	6.56%	0.00%
2008	7	218,142	8.42%	0.00%
2009	7	227,846	8.35%	0.00%
2010	7	243,041	9.01%	0.00%
2011	5	179,322	7.44%	2.00%
2012	6	218,150	7.98%	2.00%
2013	7	281,528	8.79%	2.00%
2014	8	313,997	9.63%	2.00%
2015	9	370,958	28.60%	2.00%
2016	9	387,964	28.67%	2.00%

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

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

Note: The contributions shown in Table 9 for the 12/31/2015 through 12/31/2019 valuations do **not** reflect the phase-in of the increased contribution requirements associated with the new actuarial assumptions. The full contribution without phase-in is shown in Table 9 above. The contribution requirements including the 5-year phase-in are shown on page 7.

See the Benefit Provision History on page 29 for past benefit provision changes.

Division 01 - AFSCME

Table 10-01: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance	Original Amortization Period**	Amounts for Fiscal Year Beginning 7/1/2018		
				Outstanding UAL Balance*	Amortization Period**	Amortization Payment
Initial	12/31/2015	\$ 343,726	23	\$ 347,846	22	\$ 23,724
Gain/Loss	12/31/2016	32,008	22	35,800	22	2,436
Total				\$ 383,646		\$ 26,160

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

** Please see the [Appendix](#) on the MERS website for a description of the amortization policy.

The unfunded accrued liability as of December 31, 2016 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2016 valuation to take into account the expected future contributions that are based on past valuations. The projected unfunded accrued liability is amortized over the appropriate period.

Division 02 - PubSafety

Table 10-02: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance	Original Amortization Period**	Amounts for Fiscal Year Beginning 7/1/2018		
				Outstanding UAL Balance*	Amortization Period**	Amortization Payment
Initial	12/31/2015	\$ 1,485,140	19	\$ 1,564,763	17	\$ 127,092
Gain/Loss	12/31/2016	162,384	17	181,622	17	14,748
Total				\$ 1,746,385		\$ 141,840

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

** Please see the [Appendix](#) on the MERS website for a description of the amortization policy.

The unfunded accrued liability as of December 31, 2016 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2016 valuation to take into account the expected future contributions that are based on past valuations. The projected unfunded accrued liability is amortized over the appropriate period.

Division 10 - Non Union

Table 10-10: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance	Original Amortization Period**	Amounts for Fiscal Year Beginning 7/1/2018		
				Outstanding UAL Balance*	Amortization Period**	Amortization Payment
Initial	12/31/2015	\$ 1,257,418	23	\$ 1,398,705	22	\$ 95,388
Gain/Loss	12/31/2016	14,095	22	15,765	22	1,080
Total				\$ 1,414,470		\$ 96,468

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

** Please see the [Appendix](#) on the MERS website for a description of the amortization policy.

The unfunded accrued liability as of December 31, 2016 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2016 valuation to take into account the expected future contributions that are based on past valuations. The projected unfunded accrued liability is amortized over the appropriate period.

GASB 68 Information

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

Actuarial Valuation Date:	12/31/2016
Measurement Date of Total Pension Liability (TPL):	12/31/2016

At 12/31/2016, the following employees were covered by the benefit terms:

Inactive employees or beneficiaries currently receiving benefits:	40
Inactive employees entitled to but not yet receiving benefits:	18
Active employees:	<u>15</u>
	73

Total Pension Liability as of 12/31/2015 measurement date:	\$	10,067,852
Total Pension Liability as of 12/31/2016 measurement date:	\$	10,127,290
Service Cost for the year ending on the 12/31/2016 measurement date:	\$	56,521

Change in the Total Pension Liability due to:

- Benefit changes ¹ :	\$	0
- Differences between expected and actual experience ² :	\$	45,959
- Changes in assumptions ² :	\$	0

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.

Average expected remaining service lives of all employees (active and inactive):	2
Covered employee payroll: (Needed for Required Supplementary Information)	\$ 684,780

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

	1% Decrease (7.00%)	Current Discount Rate (8.00%)	1% Increase (9.00%)
Change in Net Pension Liability as of 12/31/2016:	\$ 1,068,688	-	\$ (885,320)

Note: The current discount rate shown for GASB 68 purposes is higher than the MERS assumed rate of return. This is because for GASB 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 - AFSCME

12/1/2016	Service Credit Purchase Estimates - Yes
7/1/2011	Member Contribution Rate 2.00%
1/1/2010	Benefit B-3 (80% max)
8/1/2009	Temporary 20 Years & Out (08/01/2009 - 09/30/2009)
1/1/2000	Benefit B-2
1/1/2000	Flexible E \$10.00 Monthly COLA Adopted (01/01/2000)
1/1/1997	Flexible E 2% COLA Adopted (01/01/1997)
1/1/1994	Flexible E 2% COLA Adopted (01/01/1994)
1/1/1992	Flexible E 2% COLA Adopted (01/01/1992)
1/1/1991	Flexible E 2% COLA Adopted (01/01/1991)
1/1/1990	Benefit F55 (With 25 Years of Service)
1/1/1990	Flexible E 2% COLA Adopted (01/01/1990)
1/1/1989	Flexible E 2% COLA Adopted (01/01/1989)
1/1/1988	Flexible E 2% COLA Adopted (01/01/1988)
7/1/1980	Member Contribution Rate 0.00%
7/1/1979	Benefit B-1
7/1/1979	Member Contribution Rate 5.00%
3/1/1976	Exclude Temporary Employees
12/21/1970	Covered by Act 88
3/1/1963	Fiscal Month - July
3/1/1963	Benefit FAC-5 (5 Year Final Average Compensation)
3/1/1963	10 Year Vesting
3/1/1963	Benefit C (Old)
3/1/1963	Member Contribution Rate 3.00% Under \$4,200.00 - Then 5.00%

02 - PubSafety

1/1/2017	Option B Yes
12/1/2016	Service Credit Purchase Estimates - Yes
7/1/2009	Temporary 20 Years & Out (07/01/2009 - 08/31/2009)
7/1/2004	Member Contribution Rate 7.00%
7/1/2003	Day of work defined as 120 Hours a Month for All employees.
7/1/2003	25 Years & Out
7/1/2003	Benefit FAC-5 (5 Year Final Average Compensation)
7/1/2003	10 Year Vesting
7/1/2003	3.0% Multiplier (80% max)
7/1/2003	Member Contribution Rate 8.00%
12/21/1970	Covered by Act 88
3/1/1963	Fiscal Month - July

10 - Non Union

12/1/2016	Service Credit Purchase Estimates - Yes
7/1/2011	Member Contribution Rate 2.00%
1/1/1997	Flexible E 2% COLA Adopted (01/01/1997)
1/1/1994	Flexible E 2% COLA Adopted (01/01/1994)
1/1/1992	Flexible E 2% COLA Adopted (01/01/1992)
1/1/1991	Flexible E 2% COLA Adopted (01/01/1991)
1/1/1990	Flexible E 2% COLA Adopted (01/01/1990)
1/1/1989	Flexible E 2% COLA Adopted (01/01/1989)
7/1/1988	Benefit B-2
1/1/1988	Flexible E 2% COLA Adopted (01/01/1988)
7/1/1980	Member Contribution Rate 0.00%
7/1/1979	Benefit FAC-5 (5 Year Final Average Compensation)
7/1/1979	10 Year Vesting
7/1/1979	Benefit B-1
7/1/1979	Member Contribution Rate 5.00%
3/1/1976	Exclude Temporary Employees
12/21/1970	Covered by Act 88
3/1/1963	Fiscal Month - July

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	2.00%

Withdrawal Rate Scaling Factor

Division	Withdrawal Rate Scaling Factor
All Divisions	100%

Miscellaneous and Technical Assumptions

Loads – None.

Amortization Policy for Closed Divisions

Closed Division	Amortization Option
All Closed Divisions	Accelerated to 5-Year Amortization