



**MUNICIPAL EMPLOYEES' RETIREMENT SYSTEM OF MICHIGAN**  
ANNUAL ACTUARIAL VALUATION REPORT DECEMBER 31, 2016  
PORT HURON, CITY OF (7702)



Spring, 2017

Port Huron, 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 Port Huron, City of (7702) 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. Port Huron, 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](http://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

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### 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
<b>Funded Ratio</b>	56%	57%

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
<b>Division</b>								
10 - NonUnion	-	-	-	-	\$ 140,203	\$ 152,659	\$ 128,548	\$ 145,156
12 - UWUA - Gen Local 532	-	-	-	-	73,026	80,538	67,159	77,175
13 - Police,Lts,Sgt	226.96%	241.66%	153.42%	167.99%	61,802	65,804	56,205	61,541
14 - Police Commun.	-	-	-	-	1,358	1,367	994	1,006
15 - McMorrانPlace	-	-	-	-	4,764	5,289	3,592	4,292
16 - FireFighters	-	-	-	-	105,727	114,544	97,784	109,540
17 - Police Patrol	-	-	-	-	41,568	47,115	42,554	49,950
HA - Non-Union after 7/1/08	1.52%	1.77%	2.28%	2.67%	2,649	3,093	3,455	4,047
HB - UWUA - Local 532 after	3.06%	3.22%	3.69%	3.94%	3,871	4,078	4,019	4,295
HD - Police Patrol after 7/	9.78%	9.89%	9.88%	10.13%	4,943	5,000	3,016	3,092
<b>Municipality Total</b>					<b>\$ 439,911</b>	<b>\$ 479,487</b>	<b>\$ 407,326</b>	<b>\$ 460,094</b>

Employee contribution rates reflected in the valuations are shown below:

Valuation Date:	Employee Contribution Rate	
	12/31/2016	12/31/2015
<b>Division</b>		
10 - NonUnion	8.00%	8.00%
12 - UWUA - Gen Local 532	8.00%	8.00%
13 - Police,Lts,Sgt	11.71%	11.71%
14 - Police Commun.	0.00%	0.00%
15 - McMorrانPlace	0.00%	0.00%
16 - FireFighters	10.00%	10.00%
17 - Police Patrol	10.00%	10.00%

Valuation Date:	Employee Contribution Rate	
	12/31/2016	12/31/2015
<b>Division</b>		
HA - Non-Union after 7/1/08	0.00%	0.00%
HB - UWUA - Local 532 after	0.00%	0.00%
HD - Police Patrol after 7/	0.00%	0.00%

The employer may contribute more than the minimum required contributions, as these additional contributions will earn investment income and may result in lower future contribution requirements. **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 \$ 802,626, instead of \$ 479,487.
- To accelerate to a 100% funding ratio in 20 years, estimated monthly employer contributions for the entire employer would be \$ 508,718, instead of \$ 479,487.

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 52% (instead of 56%); and ii) your total employer contribution requirement for the fiscal year starting July 1, 2018 would be \$ 6,244,164 (instead of \$ 5,753,844).

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%
<b>12/31/2016 Valuation Results</b>				
Accrued Liability	\$ 194,478,007	\$ 174,433,543	\$ 157,547,282	\$ 143,232,687
Valuation Assets	\$ 88,397,936	\$ 88,397,936	\$ 88,397,936	\$ 88,397,936
Unfunded Accrued Liability	\$ 106,080,071	\$ 86,035,607	\$ 69,149,346	\$ 54,834,751
<b>Funded Ratio</b>	46%	51%	56%	62%
Monthly Normal Cost	\$ 174,469	\$ 120,419	\$ 79,673	\$ 48,738
Monthly Amortization Payment	\$ 525,075	\$ 464,142	\$ 399,814	\$ 342,193
<b>Total Employer Contribution<sup>1</sup></b>	\$ 699,544	\$ 584,561	\$ 479,487	\$ 390,931

<sup>1</sup> 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:

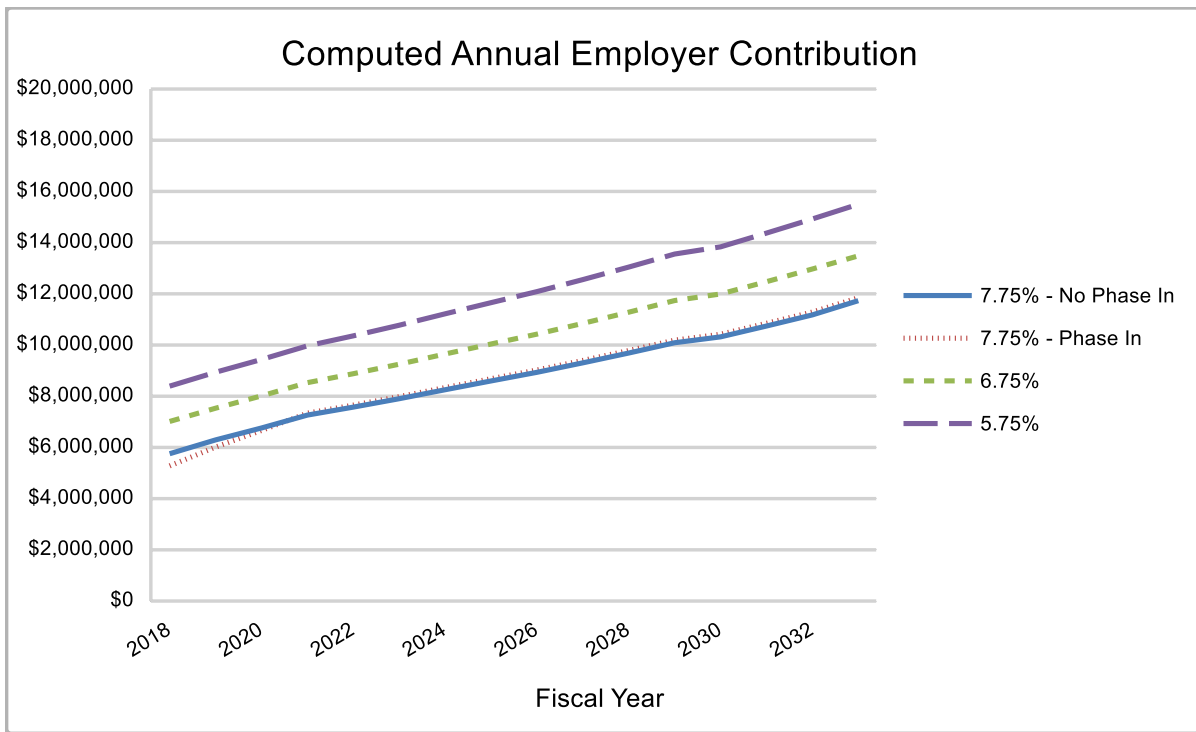
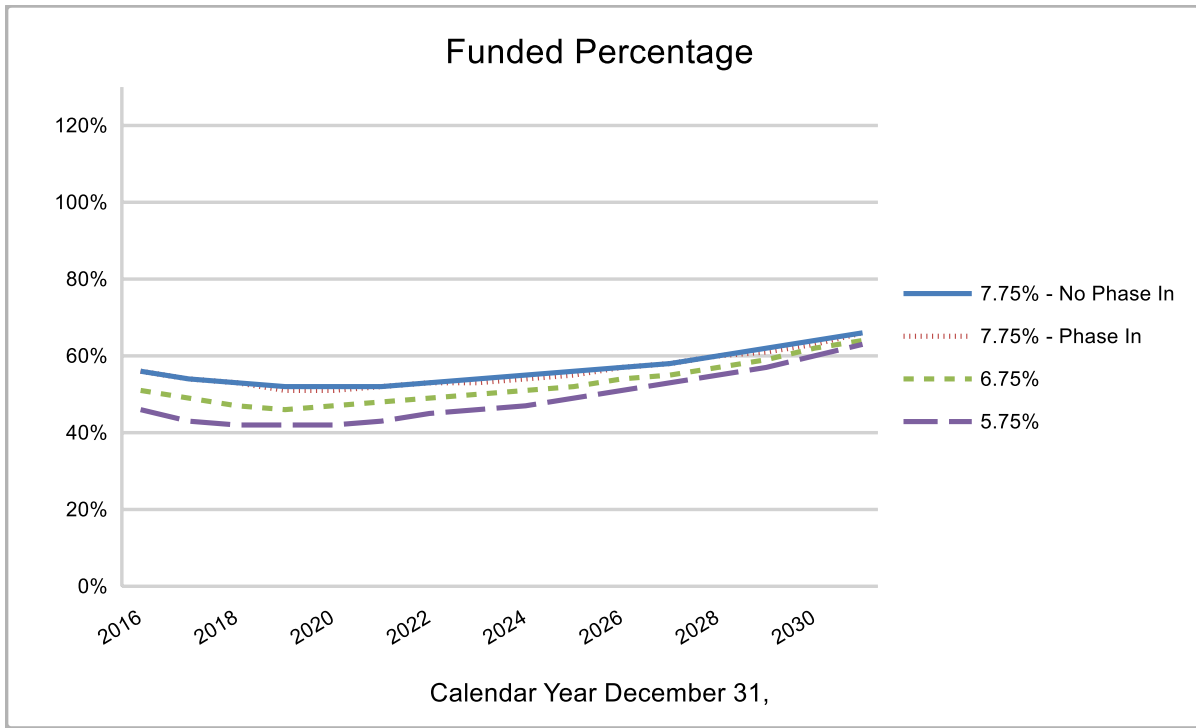
- Based on the phase-in over 5 fiscal years (beginning in 2017) of the increased contribution requirements associated with the new actuarial assumptions. This projects your minimum required contribution.
- Based on no phase-in of the increased contribution requirements.

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.

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. For a full description of this contribution requirement see the [Appendix](#) on the MERS website.

Valuation Year Ending 12/31	Fiscal Year Beginning 7/1	Actuarial Accrued Liability	Valuation Assets	Funded Percentage	Computed Annual Employer Contribution
<b>7.75% Assumed Interest Discount Rate and Future Annual Market Rate of Return</b>					
<b>WITH 5-YEAR PHASE-IN</b>					
2016	2018	\$ 157,547,282	\$ 88,397,936	56%	\$ 5,278,932
2017	2019	160,200,000	86,800,000	54%	6,010,000
2018	2020	162,800,000	85,600,000	53%	6,660,000
2019	2021	165,400,000	84,500,000	51%	7,340,000
2020	2022	167,900,000	86,200,000	51%	7,650,000
2021	2023	170,200,000	88,200,000	52%	7,980,000
<b>NO 5-YEAR PHASE-IN</b>					
2016	2018	\$ 157,547,282	\$ 88,397,936	56%	\$ 5,753,844
2017	2019	160,200,000	86,800,000	54%	6,290,000
2018	2020	162,800,000	85,800,000	53%	6,760,000
2019	2021	165,400,000	85,200,000	52%	7,260,000
2020	2022	167,900,000	87,100,000	52%	7,570,000
2021	2023	170,200,000	89,100,000	52%	7,900,000
<b>6.75% Assumed Interest Discount Rate and Future Annual Market Rate of Return</b>					
<b>NO 5-YEAR PHASE-IN</b>					
2016	2018	\$ 174,433,543	\$ 88,397,936	51%	\$ 7,014,732
2017	2019	177,200,000	85,900,000	49%	7,530,000
2018	2020	179,900,000	84,800,000	47%	8,010,000
2019	2021	182,600,000	84,600,000	46%	8,530,000
2020	2022	185,200,000	86,900,000	47%	8,880,000
2021	2023	187,500,000	89,500,000	48%	9,250,000
<b>5.75% Assumed Interest Discount Rate and Future Annual Market Rate of Return</b>					
<b>NO 5-YEAR PHASE-IN</b>					
2016	2018	\$ 194,478,007	\$ 88,397,936	46%	\$ 8,394,528
2017	2019	197,300,000	85,100,000	43%	8,940,000
2018	2020	200,200,000	83,800,000	42%	9,440,000
2019	2021	203,000,000	84,300,000	42%	9,970,000
2020	2022	205,600,000	87,200,000	42%	10,400,000
2021	2023	208,000,000	90,400,000	43%	10,800,000



Valuation Year Ending 12/31	Fiscal Year Beginning 7/1	7.75% Phase-In	7.75% No Phase-In	6.75% No Phase-In	5.75% No Phase-In
2016	2018	14	14	14	14
2017	2019	14	14	14	14
2018	2020	No	No	No	No
2019	2021	No	No	No	No
2020	2022	No	No	No	No
2021	2023	No	No	No	No

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.

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

**Table 1**

Division	Employer Contributions <sup>1</sup>			Computed Employer Contribut. With Phase-In	Blended ER Rate No Phase-In <sup>5</sup>	Blended ER Rate With Phase-In <sup>5</sup>	Employee Contribut. Rate	Employee Contribut. Conversion Factor <sup>2</sup>
	Normal Cost	Payment of the Unfunded Accrued Liability <sup>4</sup>	Computed Employer Contribut. No Phase-In					
<b>Percentage of Payroll</b>								
10 - NonUnion	-	-	-	-	40.26%	36.92%	8.00%	
12 - UWUA - Gen Local 5	-	-	-	-	29.18%	26.52%	8.00%	
13 - Police,Lts,Sgt	6.39%	235.27%	241.66%	226.96%			11.71%	0.73%
14 - Police Commun.	-	-	-	-			0.00%	
15 - McMorrانPlace	-	-	-	-			0.00%	
16 - FireFighters	-	-	-	-			10.00%	
17 - Police Patrol	-	-	-	-	16.39%	14.63%	10.00%	
HA - Non-Union after 7/	6.96%	-5.19%	1.77%	1.52%	40.26%	36.92%	0.00%	0.94%
HB - UWUA - Local 532 a	6.33%	-3.11%	3.22%	3.06%	29.18%	26.52%	0.00%	0.94%
HD - Police Patrol afte	10.06%	-0.17%	9.89%	9.78%	16.39%	14.63%	0.00%	0.96%
<b>Estimated Monthly Contribution<sup>3</sup></b>								
10 - NonUnion	\$ 13,790	\$ 138,869	\$ 152,659	\$ 140,203				
12 - UWUA - Gen Local 5	10,117	70,421	80,538	73,026				
13 - Police,Lts,Sgt	1,740	64,064	65,804	61,802				
14 - Police Commun.	0	1,367	1,367	1,358				
15 - McMorrانPlace	0	5,289	5,289	4,764				
16 - FireFighters	12,814	101,730	114,544	105,727				
17 - Police Patrol	15,966	31,149	47,115	41,568				
HA - Non-Union after 7/	12,134	(9,041)	3,093	2,649				
HB - UWUA - Local 532 a	8,028	(3,950)	4,078	3,871				
HD - Police Patrol afte	5,084	(84)	5,000	4,943				
<b>Total Municipality</b>	<b>\$ 79,673</b>	<b>\$ 399,814</b>	<b>\$ 479,487</b>	<b>\$ 439,911</b>				
<b>Estimated Annual Contribution<sup>3</sup></b>	<b>\$ 956,076</b>	<b>\$ 4,797,768</b>	<b>\$ 5,753,844</b>	<b>\$ 5,278,932</b>				

<sup>1</sup> 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

<b>10 - NonUnion: Closed to new hires, linked to Division HA</b>		
	<b>2016 Valuation</b>	<b>2015 Valuation</b>
<b>Benefit Multiplier:</b>	2.50% Multiplier (80% max)	2.50% Multiplier (80% max)
<b>Normal Retirement Age:</b>	60	60
<b>Vesting:</b>	10 years	10 years
<b>Early Retirement (Unreduced):</b>	55/25	55/25
<b>Early Retirement (Reduced):</b>	50/25	50/25
	55/15	55/15
<b>Final Average Compensation:</b>	3 years	3 years
<b>Employee Contributions:</b>	8%	8%
<b>RS50% Percentage:</b>	50%	50%
<b>Act 88:</b>	Yes (Adopted 12/13/1965)	Yes (Adopted 12/13/1965)
<b>12 - UWUA - Gen Local 532: Closed to new hires, linked to Division HB</b>		
	<b>2016 Valuation</b>	<b>2015 Valuation</b>
<b>Benefit Multiplier:</b>	2.50% Multiplier (80% max)	2.50% Multiplier (80% max)
<b>Normal Retirement Age:</b>	60	60
<b>Vesting:</b>	10 years	10 years
<b>Early Retirement (Unreduced):</b>	55/25	55/25
<b>Early Retirement (Reduced):</b>	50/25	50/25
	55/15	55/15
<b>Final Average Compensation:</b>	3 years	3 years
<b>Employee Contributions:</b>	8%	8%
<b>RS50% Percentage:</b>	50%	50%
<b>Act 88:</b>	Yes (Adopted 12/13/1965)	Yes (Adopted 12/13/1965)
<b>13 - Police,Lts,Sgt: Open Division</b>		
	<b>2016 Valuation</b>	<b>2015 Valuation</b>
<b>Benefit Multiplier:</b>	2.75% Multiplier (80% max)	2.75% Multiplier (80% max)
<b>Normal Retirement Age:</b>	60	60
<b>Vesting:</b>	10 years	10 years
<b>Early Retirement (Unreduced):</b>	50/25	50/25
<b>Early Retirement (Reduced):</b>	55/15	55/15
<b>Final Average Compensation:</b>	3 years	3 years
<b>Employee Contributions:</b>	11.71%	11.71%
<b>RS50% Percentage:</b>	50%	50%
<b>D-2:</b>	D-2 (25%)	D-2 (25%)
<b>Act 88:</b>	Yes (Adopted 12/13/1965)	Yes (Adopted 12/13/1965)

Table 2 (continued)

<b>14 - Police Commun.: Closed to new hires</b>		
	<b>2016 Valuation</b>	<b>2015 Valuation</b>
<b>Benefit Multiplier:</b>	2.25% Multiplier (80% max)	2.25% Multiplier (80% max)
<b>Normal Retirement Age:</b>	60	60
<b>Vesting:</b>	10 years	10 years
<b>Early Retirement (Unreduced):</b>	55/25	55/25
<b>Early Retirement (Reduced):</b>	50/25	50/25
	55/15	55/15
<b>Final Average Compensation:</b>	3 years	3 years
<b>Employee Contributions:</b>	0%	0%
<b>Act 88:</b>	Yes (Adopted 12/13/1965)	Yes (Adopted 12/13/1965)
<b>15 - McMorrانPlace: Closed to new hires</b>		
	<b>2016 Valuation</b>	<b>2015 Valuation</b>
<b>Benefit Multiplier:</b>	2.25% Multiplier (80% max)	2.25% Multiplier (80% max)
<b>Normal Retirement Age:</b>	60	60
<b>Vesting:</b>	10 years	10 years
<b>Early Retirement (Unreduced):</b>	55/25	55/25
<b>Early Retirement (Reduced):</b>	50/25	50/25
	55/15	55/15
<b>Final Average Compensation:</b>	3 years	3 years
<b>Employee Contributions:</b>	0%	0%
<b>Act 88:</b>	Yes (Adopted 12/13/1965)	Yes (Adopted 12/13/1965)
<b>16 - FireFighters: Closed to new hires, linked to Division HC</b>		
	<b>2016 Valuation</b>	<b>2015 Valuation</b>
<b>Benefit Multiplier:</b>	2.50% Multiplier (80% max)	2.50% Multiplier (80% max)
<b>Normal Retirement Age:</b>	60	60
<b>Vesting:</b>	10 years	10 years
<b>Early Retirement (Unreduced):</b>	50/25	50/25
<b>Early Retirement (Reduced):</b>	55/15	55/15
<b>Final Average Compensation:</b>	3 years	3 years
<b>Employee Contributions:</b>	10%	10%
<b>RS50% Percentage:</b>	50%	50%
<b>D-2:</b>	D-2 (25%)	D-2 (25%)
<b>Act 88:</b>	Yes (Adopted 12/13/1965)	Yes (Adopted 12/13/1965)

Table 2 (continued)

**17 - Police Patrol: Closed to new hires, linked to Division HD**

	2016 Valuation	2015 Valuation
<b>Benefit Multiplier:</b>	2.50% Multiplier (80% max)	2.50% Multiplier (80% max)
<b>Normal Retirement Age:</b>	60	60
<b>Vesting:</b>	10 years	10 years
<b>Early Retirement (Unreduced):</b>	50/25	50/25
<b>Early Retirement (Reduced):</b>	55/15	55/15
<b>Final Average Compensation:</b>	3 years	3 years
<b>Employee Contributions:</b>	10%	10%
<b>RS50% Percentage:</b>	50%	50%
<b>D-2:</b>	D-2 (25%)	D-2 (25%)
<b>Act 88:</b>	Yes (Adopted 12/13/1965)	Yes (Adopted 12/13/1965)

**HA - Non-Union after 7/1/08: Open Division, linked to Division 10**

	2016 Valuation	2015 Valuation
<b>Benefit Multiplier:</b>	Hybrid Plan - 1.25% Multiplier	Hybrid Plan - 1.25% Multiplier
<b>Normal Retirement Age:</b>	60	60
<b>Vesting:</b>	6 years	6 years
<b>Early Retirement (Unreduced):</b>	-	-
<b>Early Retirement (Reduced):</b>	-	-
<b>Final Average Compensation:</b>	3 years	3 years
<b>Employee Contributions:</b>	0%	0%
<b>Act 88:</b>	Yes (Adopted 12/13/1965)	Yes (Adopted 12/13/1965)

**HB - UWUA - Local 532 after 5/1/10: Open Division, linked to Division 12**

	2016 Valuation	2015 Valuation
<b>Benefit Multiplier:</b>	Hybrid Plan - 1.25% Multiplier	Hybrid Plan - 1.25% Multiplier
<b>Normal Retirement Age:</b>	60	60
<b>Vesting:</b>	6 years	6 years
<b>Early Retirement (Unreduced):</b>	-	-
<b>Early Retirement (Reduced):</b>	-	-
<b>Final Average Compensation:</b>	3 years	3 years
<b>Employee Contributions:</b>	0%	0%
<b>Act 88:</b>	Yes (Adopted 5/1/2010)	Yes (Adopted 5/1/2010)

**HD - Police Patrol after 7/1/2014: Open Division, linked to Division 17**

	2016 Valuation	2015 Valuation
<b>Benefit Multiplier:</b>	Hybrid Plan - 2.00% Multiplier	Hybrid Plan - 2.00% Multiplier
<b>Normal Retirement Age:</b>	60	60
<b>Vesting:</b>	6 years	6 years
<b>Early Retirement (Unreduced):</b>	55/25	55/25
<b>Early Retirement (Reduced):</b>	-	-
<b>Final Average Compensation:</b>	3 years	3 years
<b>Employee Contributions:</b>	0%	0%
<b>Act 88:</b>	Yes (Adopted 5/27/2008)	Yes (Adopted 5/27/2008)

## Participant Summary

**Table 3**

Division	2016 Valuation		2015 Valuation		2016 Valuation		
	Number	Annual Payroll <sup>1</sup>	Number	Annual Payroll <sup>1</sup>	Average Age	Average Benefit Service <sup>2</sup>	Average Eligibility Service <sup>2</sup>
10 - NonUnion							
Active Employees	51	\$ 2,848,314	57	\$ 3,182,161	52.3	19.3	19.3
Vested Former Employees	15	155,976	16	206,410	53.8	10.5	13.5
Retirees and Beneficiaries	137	3,912,183	132	3,748,596	71.7		
12 - UWUA - Gen Local 532							
Active Employees	40	\$ 2,106,728	45	\$ 2,360,002	50.5	18.3	18.3
Vested Former Employees	9	146,646	8	122,759	49.0	13.1	15.4
Retirees and Beneficiaries	93	2,160,112	91	2,041,675	69.0		
13 - Police,Lts,Sgt							
Active Employees	3	\$ 297,981	4	\$ 400,878	46.7	22.9	22.9
Vested Former Employees	0	0	0	0	0.0	0.0	0.0
Retirees and Beneficiaries	29	1,429,570	29	1,364,973	69.4		
14 - Police Commun.							
Active Employees	0	\$ 0	0	\$ 0	0.0	0.0	0.0
Vested Former Employees	2	2,886	2	2,886	50.6	2.4	13.5
Retirees and Beneficiaries	3	22,315	3	22,315	66.3		
15 - McMorranPlace							
Active Employees	0	\$ 0	0	\$ 0	0.0	0.0	0.0
Vested Former Employees	9	70,180	9	70,180	52.5	10.3	12.6
Retirees and Beneficiaries	10	219,339	10	219,339	74.4		
16 - FireFighters							
Active Employees	35	\$ 2,584,342	35	\$ 2,578,808	42.8	15.1	15.3
Vested Former Employees	0	0	0	0	0.0	0.0	0.0
Retirees and Beneficiaries	71	2,481,920	73	2,496,342	70.6		
17 - Police Patrol							
Active Employees	40	\$ 3,139,662	41	\$ 3,177,938	41.5	15.7	15.8
Vested Former Employees	5	47,073	3	27,082	36.5	6.0	8.3
Retirees and Beneficiaries	29	745,301	31	800,184	71.4		
HA - Non-Union after 7/1/							
Active Employees	30	\$ 1,384,703	23	\$ 1,079,024	42.6	2.9	4.8
Vested Former Employees	1	906	1	906	30.8	1.8	8.4
Retirees and Beneficiaries	0	0	0	0	0.0		
HB - UWUA - Local 532 aft							
Active Employees	24	\$ 1,066,726	20	\$ 842,274	37.5	2.5	2.5
Vested Former Employees	0	0	0	0	0.0	0.0	0.0
Retirees and Beneficiaries	0	0	0	0	0.0		

**Table 3 (continued)**

Division	2016 Valuation		2015 Valuation		2016 Valuation		
	Number	Annual Payroll <sup>1</sup>	Number	Annual Payroll <sup>1</sup>	Average Age	Average Benefit Service <sup>2</sup>	Average Eligibility Service <sup>2</sup>
HD - Police Patrol after							
Active Employees	6	\$ 339,913	4	\$ 187,261	27.1	1.4	1.4
Vested Former Employees	0	0	0	0	0.0	0.0	0.0
Retirees and Beneficiaries	0	0	0	0	0.0		
<b>Total Municipality</b>							
<b>Active Employees</b>	<b>229</b>	<b>\$ 13,768,369</b>	<b>229</b>	<b>\$ 13,808,346</b>	<b>45.1</b>	<b>13.5</b>	<b>13.8</b>
<b>Vested Former Employees</b>	<b>41</b>	<b>423,667</b>	<b>39</b>	<b>430,223</b>	<b>49.6</b>	<b>9.9</b>	<b>13.0</b>
<b>Retirees and Beneficiaries</b>	<b>372</b>	<b>10,970,740</b>	<b>369</b>	<b>10,693,424</b>	<b>70.6</b>		
<b>Total Participants</b>	<b>642</b>		<b>637</b>				

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

<sup>2</sup> 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 <sup>1</sup>	Employee <sup>2</sup>	Employer and Retiree <sup>1</sup>	Employee <sup>2</sup>
10 - NonUnion	\$ 24,458,361	\$ 1,298,644	\$ 24,414,101	\$ 1,169,619
12 - UWUA - Gen Local 532	17,311,963	900,287	16,831,952	795,732
13 - Police,Lts,Sgt	5,428,761	392,088	5,587,019	481,434
14 - Police Commun.	56,075	0	30,722	0
15 - McMorranPlace	1,498,448	0	1,513,373	0
16 - FireFighters	13,876,944	1,938,982	13,716,580	1,666,383
17 - Police Patrol	10,221,163	2,712,426	9,253,526	2,377,993
HA - Non-Union after 7/1/08	1,281,609	0	798,671	0
HB - UWUA - Local 532 after 5/1/10	626,630	0	351,401	0
HD - Police Patrol after 7/1/2014	68,315	0	21,641	0
<b>Municipality Total</b>	<b>\$ 74,828,269</b>	<b>\$ 7,242,427</b>	<b>\$ 72,518,986</b>	<b>\$ 6,491,161</b>
<b>Combined Reserves</b>	<b>\$ 82,070,696</b>		<b>\$ 79,010,147</b>	

<sup>1</sup> Reserve for Employer Contributions and Benefit Payments

<sup>2</sup> 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	\$ 2,229,338		\$ 183,302	\$ 7,878,550	\$ (6,891,358)	\$ (12,363)	\$ 0	\$ 103,052,997
2007	2,381,062		171,760	8,398,485	(7,445,590)	0	(3,659,930)	102,898,784
2008	2,216,237		209,303	3,775,027	(7,894,389)	(13,856)	(698,392)	100,492,714
2009	2,259,733		293,446	2,990,622	(8,408,984)	(499)	28,109	97,655,141
2010	2,387,055		402,624	4,133,834	(8,834,732)	0	0	95,743,922
2011	2,652,709	\$ 0	756,651	4,105,589	(9,299,977)	(812)	0	93,958,082
2012	2,679,344	0	997,424	3,581,621	(9,595,864)	0	23,107	91,643,714
2013	2,887,520	0	1,097,180	4,922,317	(9,747,601)	(51,553)	20,413	90,771,990
2014	3,266,049	0	1,153,294	4,915,721	(9,920,566)	(3,627)	(1)	90,182,860
2015	3,755,543	500,000	1,138,153	4,189,200	(10,334,726)	(30,548)	306,215	89,706,697
2016	3,850,070	500,000	1,040,220	4,152,272	(10,847,508)	(3,815)	0	88,397,936

**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 Assets <sup>1</sup>	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
10 - NonUnion				
Active Employees	\$ 12,951,529	\$ 1,271,810	9.8%	\$ 11,679,719
Vested Former Employees	1,050,019	24,134	2.3%	1,025,885
Retirees And Beneficiaries	37,559,875	26,444,433	70.4%	11,115,442
Pending Refunds	<u>2,364</u>	<u>2,364</u>	100.0%	<u>0</u>
Total	<b>\$ 51,563,787</b>	<b>\$ 27,742,741</b>	<b>53.8%</b>	<b>\$ 23,821,046</b>
12 - UWUA - Gen Local 532				
Active Employees	\$ 9,159,066	\$ 869,382	9.5%	\$ 8,289,684
Vested Former Employees	849,855	30,416	3.6%	819,439
Retirees And Beneficiaries	21,700,394	18,716,525	86.2%	2,983,869
Pending Refunds	<u>0</u>	<u>0</u>	0.0%	<u>0</u>
Total	<b>\$ 31,709,315</b>	<b>\$ 19,616,323</b>	<b>61.9%</b>	<b>\$ 12,092,992</b>
13 - Police,Lts,Sgt				
Active Employees	\$ 2,016,877	\$ 392,088	19.4%	\$ 1,624,789
Vested Former Employees	0	0	0.0%	0
Retirees And Beneficiaries	15,192,880	5,877,519	38.7%	9,315,361
Pending Refunds	<u>0</u>	<u>0</u>	0.0%	<u>0</u>
Total	<b>\$ 17,209,757</b>	<b>\$ 6,269,607</b>	<b>36.4%</b>	<b>\$ 10,940,150</b>
14 - Police Commun.				
Active Employees	\$ 0	\$ 0	0.0%	\$ 0
Vested Former Employees	18,550	0	0.0%	18,550
Retirees And Beneficiaries	142,362	60,398	42.4%	81,964
Pending Refunds	<u>0</u>	<u>0</u>	0.0%	<u>0</u>
Total	<b>\$ 160,912</b>	<b>\$ 60,398</b>	<b>37.5%</b>	<b>\$ 100,514</b>
15 - McMorrانPlace				
Active Employees	\$ 0	\$ 0	0.0%	\$ 0
Vested Former Employees	513,907	0	0.0%	513,907
Retirees And Beneficiaries	1,889,838	1,613,971	85.4%	275,867
Pending Refunds	<u>0</u>	<u>0</u>	0.0%	<u>0</u>
Total	<b>\$ 2,403,745</b>	<b>\$ 1,613,971</b>	<b>67.1%</b>	<b>\$ 789,774</b>
16 - FireFighters				
Active Employees	\$ 9,410,344	\$ 1,929,595	20.5%	\$ 7,480,749
Vested Former Employees	0	0	0.0%	0
Retirees And Beneficiaries	25,109,224	15,096,273	60.1%	10,012,951
Pending Refunds	<u>9,387</u>	<u>9,387</u>	100.0%	<u>0</u>
Total	<b>\$ 34,528,955</b>	<b>\$ 17,035,255</b>	<b>49.3%</b>	<b>\$ 17,493,700</b>

**Table 6 (continued)**

<b>Division</b>	<b>Actuarial Accrued Liability</b>	<b>Valuation Assets<sup>1</sup></b>	<b>Percent Funded</b>	<b>Unfunded (Overfunded) Accrued Liabilities</b>
<b>17 - Police Patrol</b>				
Active Employees	\$ 12,337,735	\$ 6,949,697	56.3%	\$ 5,388,038
Vested Former Employees	154,969	154,969	100.0%	0
Retirees And Beneficiaries	6,778,634	6,778,634	100.0%	0
Pending Refunds	47,404	47,404	100.0%	0
<b>Total</b>	<b>\$ 19,318,742</b>	<b>\$ 13,930,704</b>	<b>72.1%</b>	<b>\$ 5,388,038</b>
<b>HA - Non-Union after 7/1/08</b>				
Active Employees	\$ 361,606	\$ 1,379,360	381.5%	\$ (1,017,754)
Vested Former Employees	1,055	1,055	100.0%	0
Retirees And Beneficiaries	0	0	0.0%	0
Pending Refunds	0	0	0.0%	0
<b>Total</b>	<b>\$ 362,661</b>	<b>\$ 1,380,415</b>	<b>380.6%</b>	<b>\$ (1,017,754)</b>
<b>HB - UWUA - Local 532 after 5/1/10</b>				
Active Employees	\$ 227,076	\$ 674,940	297.2%	\$ (447,864)
Vested Former Employees	0	0	0.0%	0
Retirees And Beneficiaries	0	0	0.0%	0
Pending Refunds	0	0	0.0%	0
<b>Total</b>	<b>\$ 227,076</b>	<b>\$ 674,940</b>	<b>297.2%</b>	<b>\$ (447,864)</b>
<b>HD - Police Patrol after 7/1/2014</b>				
Active Employees	\$ 62,332	\$ 73,582	118.0%	\$ (11,250)
Vested Former Employees	0	0	0.0%	0
Retirees And Beneficiaries	0	0	0.0%	0
Pending Refunds	0	0	0.0%	0
<b>Total</b>	<b>\$ 62,332</b>	<b>\$ 73,582</b>	<b>118.0%</b>	<b>\$ (11,250)</b>
<b>Total Municipality</b>				
<b>Active Employees</b>	<b>\$ 46,526,565</b>	<b>\$ 13,540,454</b>	<b>29.1%</b>	<b>\$ 32,986,111</b>
<b>Vested Former Employees</b>	<b>2,588,355</b>	<b>210,574</b>	<b>8.1%</b>	<b>2,377,781</b>
<b>Retirees and Beneficiaries</b>	<b>108,373,207</b>	<b>74,587,753</b>	<b>68.8%</b>	<b>33,785,454</b>
<b>Pending Refunds</b>	<b>59,155</b>	<b>59,155</b>	<b>100.0%</b>	<b>0</b>
<b>Total Participants</b>	<b>\$ 157,547,282</b>	<b>\$ 88,397,936</b>	<b>56.1%</b>	<b>\$ 69,149,346</b>
The following results show the combined accrued liabilities and assets for each set of linked divisions. These results are already included in the table above.				
<b>Linked Divisions HA, 10</b>				
Active Employees	\$ 13,313,135	\$ 2,651,170	19.9%	\$ 10,661,965
Vested Former Employees	1,051,074	25,189	2.4%	1,025,885
Retirees and Beneficiaries	37,559,875	26,444,433	70.4%	11,115,442
Pending Refunds	2,364	2,364	100.0%	0
<b>Total</b>	<b>\$ 51,926,448</b>	<b>\$ 29,123,156</b>	<b>56.1%</b>	<b>\$ 22,803,292</b>

**Table 6** (continued)

<b>Division</b>	<b>Actuarial Accrued Liability</b>	<b>Valuation Assets<sup>1</sup></b>	<b>Percent Funded</b>	<b>Unfunded (Overfunded) Accrued Liabilities</b>
Linked Divisions HB, 12				
Active Employees	\$ 9,386,142	\$ 1,544,322	16.5%	\$ 7,841,820
Vested Former Employees	849,855	30,416	3.6%	819,439
Retirees and Beneficiaries	21,700,394	18,716,525	86.2%	2,983,869
Pending Refunds	<u>0</u>	<u>0</u>	0.0%	<u>0</u>
<b>Total</b>	<b>\$ 31,936,391</b>	<b>\$ 20,291,263</b>	<b>63.5%</b>	<b>\$ 11,645,128</b>
Linked Divisions HD, 17				
Active Employees	\$ 12,400,067	\$ 7,023,279	56.6%	\$ 5,376,788
Vested Former Employees	154,969	154,969	100.0%	0
Retirees and Beneficiaries	6,778,634	6,778,634	100.0%	0
Pending Refunds	<u>47,404</u>	<u>47,404</u>	100.0%	<u>0</u>
<b>Total</b>	<b>\$ 19,381,074</b>	<b>\$ 14,004,286</b>	<b>72.3%</b>	<b>\$ 5,376,788</b>

<sup>1</sup> 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	\$ 98,059,731	\$ 92,848,491	95%	\$ 5,211,240
2003	104,161,022	95,492,304	92%	8,668,718
2004	111,866,998	97,583,458	87%	14,283,540
2005	115,703,663	99,665,528	86%	16,038,135
2006	121,765,351	103,052,997	85%	18,712,354
2007	122,399,730	102,898,784	84%	19,500,946
2008	125,503,862	100,492,714	80%	25,011,148
2009	128,001,517	97,655,141	76%	30,346,376
2010	131,215,696	95,743,922	73%	35,471,774
2011	134,781,198	93,958,082	70%	40,823,116
2012	137,393,051	91,643,714	67%	45,749,337
2013	139,863,624	90,771,990	65%	49,091,634
2014	143,854,928	90,182,860	63%	53,672,068
2015	156,289,777	89,706,697	57%	66,583,080
2016	157,547,282	88,397,936	56%	69,149,346

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

## Division 10 - NonUnion

Table 8-10: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2006	\$ 37,962,765	\$ 33,811,173	89%	\$ 4,151,592
2007	39,850,097	35,200,245	88%	4,649,852
2008	40,702,710	34,047,238	84%	6,655,472
2009	41,552,516	33,058,275	80%	8,494,241
2010	42,927,454	32,326,541	75%	10,600,913
2011	43,964,877	31,596,448	72%	12,368,429
2012	44,786,205	30,626,071	68%	14,160,134
2013	46,130,438	30,219,332	66%	15,911,106
2014	47,124,545	29,699,144	63%	17,425,401
2015	51,492,607	29,047,295	56%	22,445,312
2016	51,563,787	27,742,741	54%	23,821,046

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 <sup>1</sup>	Employee Contribution Rate <sup>2</sup>
	Number	Annual Payroll		
2006	108	\$ 5,459,288	14.64%	0.00%
2007	100	5,144,152	15.48%	0.00%
2008	90	4,583,037	\$ 71,998	1.00%
2009	86	4,435,498	\$ 74,770	2.00%
2010	82	4,281,175	\$ 80,909	3.00%
2011	77	4,041,168	\$ 83,205	6.00%
2012	69	3,562,483	\$ 89,193	7.00%
2013	65	3,463,458	\$ 97,954	8.00%
2014	64	3,473,674	\$ 107,893	8.00%
2015	57	3,182,161	\$ 145,156	8.00%
2016	51	2,848,314	\$ 152,659	8.00%

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

<sup>2</sup> 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 50 for past benefit provision changes.

## Division 12 - UWUA - Gen Local 532

Table 8-12: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2006	\$ 24,298,965	\$ 21,592,987	89%	\$ 2,705,978
2007	25,624,733	22,377,409	87%	3,247,324
2008	26,756,067	22,231,629	83%	4,524,438
2009	26,925,646	21,728,018	81%	5,197,628
2010	27,693,148	21,430,409	77%	6,262,739
2011	28,264,340	21,374,637	76%	6,889,703
2012	28,706,241	21,106,271	74%	7,599,970
2013	28,994,919	20,839,788	72%	8,155,131
2014	29,742,312	20,528,485	69%	9,213,827
2015	31,414,458	20,014,155	64%	11,400,303
2016	31,709,315	19,616,323	62%	12,092,992

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

Table 9-12: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution <sup>1</sup>	Employee Contribution Rate <sup>2</sup>
	Number	Annual Payroll		
2006	88	\$ 3,931,490	13.61%	0.00%
2007	80	3,794,554	14.63%	0.00%
2008	72	3,459,525	18.35%	0.00%
2009	66	3,179,675	20.34%	0.00%
2010	66	3,211,928	\$ 60,393	0.00%
2011	63	3,125,610	\$ 50,995	6.00%
2012	60	2,924,492	\$ 52,332	7.00%
2013	53	2,633,819	\$ 53,538	8.00%
2014	49	2,502,621	\$ 60,240	8.00%
2015	45	2,360,002	\$ 77,175	8.00%
2016	40	2,106,728	\$ 80,538	8.00%

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

<sup>2</sup> 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 50 for past benefit provision changes.

## Division 13 - Police,Lts,Sgt

Table 8-13: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2006	\$ 13,487,234	\$ 9,858,503	73%	\$ 3,628,731
2007	13,799,320	10,116,083	73%	3,683,237
2008	14,429,897	10,298,677	71%	4,131,220
2009	14,828,681	10,145,042	68%	4,683,639
2010	15,640,806	9,831,825	63%	5,808,981
2011	16,104,357	9,123,150	57%	6,981,207
2012	16,097,978	8,372,102	52%	7,725,876
2013	16,217,723	7,878,127	49%	8,339,596
2014	16,474,536	7,418,451	45%	9,056,085
2015	17,228,924	6,890,012	40%	10,338,912
2016	17,209,757	6,269,607	36%	10,940,150

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

Table 9-13: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution <sup>1</sup>	Employee Contribution Rate <sup>2</sup>
	Number	Annual Payroll		
2006	12	\$ 944,337	25.65%	6.71%
2007	12	956,614	25.71%	6.71%
2008	13	1,044,892	29.02%	6.71%
2009	9	805,129	39.03%	6.71%
2010	6	574,091	62.80%	6.71%
2011	5	482,598	85.46%	9.71%
2012	5	484,226	100.81%	10.71%
2013	5	493,043	106.02%	11.71%
2014	4	397,007	143.09%	11.71%
2015	4	400,878	167.99%	11.71%
2016	3	297,981	241.66%	11.71%

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

<sup>2</sup> 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 50 for past benefit provision changes.

## Division 14 - Police Commun.

Table 8-14: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2006	\$ 542,618	\$ 553,538	102%	\$ (10,920)
2007	535,174	613,361	115%	(78,187)
2008	190,792	48,209	25%	142,583
2009	186,441	41,782	22%	144,659
2010	181,828	33,728	19%	148,100
2011	177,428	17,768	10%	159,660
2012	172,579	3,260	2%	169,319
2013	166,980	(9,954)	-6%	176,934
2014	162,035	(6,188)	-4%	168,223
2015	166,315	34,881	21%	131,434
2016	160,912	60,398	38%	100,514

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

Table 9-14: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution <sup>1</sup>	Employee Contribution Rate <sup>2</sup>
	Number	Annual Payroll		
2006	10	\$ 408,994	9.13%	0.00%
2007	9	348,716	6.22%	0.00%
2008	0	0	\$ 571	0.00%
2009	0	0	\$ 736	0.00%
2010	0	0	\$ 835	0.00%
2011	0	0	\$ 954	0.00%
2012	0	0	\$ 3,481	0.00%
2013	0	0	\$ 6,360	0.00%
2014	0	0	\$ 657	0.00%
2015	0	0	\$ 1,006	0.00%
2016	0	0	\$ 1,367	0.00%

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

<sup>2</sup> 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 50 for past benefit provision changes.



**Division 15 - McMorranPlace**

**Table 8-15: Actuarial Accrued Liabilities - Comparative Schedule**

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2006	\$ 2,085,428	\$ 2,124,994	102%	\$ (39,566)
2007	2,245,011	2,265,529	101%	(20,518)
2008	2,566,361	2,493,141	97%	73,220
2009	2,673,889	2,335,431	87%	338,458
2010	2,659,896	2,172,671	82%	487,225
2011	2,573,265	2,040,823	79%	532,442
2012	2,494,437	1,930,502	77%	563,935
2013	2,360,132	1,864,334	79%	495,798
2014	2,304,822	1,802,657	78%	502,165
2015	2,408,705	1,718,256	71%	690,449
2016	2,403,745	1,613,971	67%	789,774

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

**Table 9-15: Computed Employer Contributions - Comparative Schedule**

Valuation Date December 31	Active Employees		Computed Employer Contribution <sup>1</sup>	Employee Contribution Rate <sup>2</sup>
	Number	Annual Payroll		
2006	14	\$ 496,195	8.41%	0.00%
2007	10	348,848	9.18%	0.00%
2008	10	353,122	11.46%	0.00%
2009	7	224,823	18.75%	0.00%
2010	6	186,198	24.80%	0.00%
2011	7	241,680	22.62%	0.00%
2012	7	253,439	24.17%	0.00%
2013	7	253,508	22.55%	0.00%
2014	0	0	\$ 2,562	0.00%
2015	0	0	\$ 4,292	0.00%
2016	0	0	\$ 5,289	0.00%

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

<sup>2</sup> 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 50 for past benefit provision changes.

## Division 16 - FireFighters

**Table 8-16: Actuarial Accrued Liabilities - Comparative Schedule**

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2006	\$ 26,682,220	\$ 21,300,207	80%	\$ 5,382,013
2007	27,792,685	21,607,096	78%	6,185,589
2008	28,385,796	20,877,889	74%	7,507,907
2009	28,619,595	19,815,906	69%	8,803,689
2010	29,322,705	19,239,515	66%	10,083,190
2011	30,025,517	18,633,047	62%	11,392,470
2012	30,527,750	17,933,263	59%	12,594,487
2013	30,369,495	17,557,359	58%	12,812,136
2014	31,155,148	17,371,683	56%	13,783,465
2015	34,248,017	17,465,539	51%	16,782,478
2016	34,528,955	17,035,255	49%	17,493,700

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

**Table 9-16: Computed Employer Contributions - Comparative Schedule**

Valuation Date December 31	Active Employees		Computed Employer Contribution <sup>1</sup>	Employee Contribution Rate <sup>2</sup>
	Number	Annual Payroll		
2006	49	\$ 2,918,538	17.86%	2.00%
2007	44	2,693,581	20.43%	2.00%
2008	41	2,654,412	\$ 58,497	3.00%
2009	40	2,700,460	\$ 62,368	4.00%
2010	43	2,825,582	29.18%	5.00%
2011	42	2,777,835	28.81%	8.00%
2012	41	2,831,577	31.89%	9.00%
2013	41	2,757,277	32.76%	10.00%
2014	41	2,841,031	\$ 85,153	10.00%
2015	35	2,578,808	\$ 109,540	10.00%
2016	35	2,584,342	\$ 114,544	10.00%

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

<sup>2</sup> 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 50 for past benefit provision changes.

## Division 17 - Police Patrol

Table 8-17: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2006	\$ 12,141,808	\$ 10,403,365	86%	\$ 1,738,443
2007	12,552,710	10,719,061	85%	1,833,649
2008	12,461,831	10,485,872	84%	1,975,959
2009	13,181,376	10,480,952	80%	2,700,424
2010	12,766,860	10,659,062	83%	2,107,798
2011	13,616,952	11,043,765	81%	2,573,187
2012	14,528,341	11,415,159	79%	3,113,182
2013	15,474,581	11,954,038	77%	3,520,543
2014	16,657,238	12,582,098	76%	4,075,140
2015	18,918,266	13,206,217	70%	5,712,049
2016	19,318,742	13,930,704	72%	5,388,038

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

Table 9-17: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution <sup>1</sup>	Employee Contribution Rate <sup>2</sup>
	Number	Annual Payroll		
2006	38	\$ 2,345,112	12.16%	2.00%
2007	38	2,430,258	12.17%	2.00%
2008	37	2,352,577	14.84%	2.00%
2009	38	2,660,114	16.08%	2.00%
2010	42	2,921,025	11.90%	5.00%
2011	41	2,928,650	11.04%	8.00%
2012	41	3,002,156	11.82%	9.00%
2013	43	3,141,594	11.96%	10.00%
2014	43	3,180,983	\$ 36,235	10.00%
2015	41	3,177,938	\$ 49,950	10.00%
2016	40	3,139,662	\$ 47,115	10.00%

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

<sup>2</sup> 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 50 for past benefit provision changes.

## Division HA - Non-Union after 7/1/08

Table 8-HA: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2008	\$ 5,306	\$ 4,485	85%	\$ 821
2009	14,559	19,378	133%	(4,819)
2010	21,967	48,289	220%	(26,322)
2011	44,909	106,815	238%	(61,906)
2012	59,560	205,774	346%	(146,214)
2013	108,804	365,736	336%	(256,932)
2014	157,690	575,486	365%	(417,796)
2015	241,451	906,797	376%	(665,346)
2016	362,661	1,380,415	381%	(1,017,754)

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

Table 9-HA: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution <sup>1</sup>	Employee Contribution Rate <sup>2</sup>
	Number	Annual Payroll		
2008	5	\$ 171,332	5.52%	0.00%
2009	6	209,933	5.20%	0.00%
2010	5	172,913	4.47%	0.00%
2011	7	294,832	3.98%	0.00%
2012	11	437,121	2.01%	0.00%
2013	15	625,802	1.29%	0.00%
2014	19	792,244	0.12%	0.00%
2015	23	1,079,024	2.67%	0.00%
2016	30	1,384,703	1.77%	0.00%

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

<sup>2</sup> 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 50 for past benefit provision changes.

## Division HB - UWUA - Local 532 after 5/1/10

Table 8-HB: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2010	\$ 1,032	\$ 1,882	182%	\$ (850)
2011	9,553	21,629	226%	(12,076)
2012	19,960	51,312	257%	(31,352)
2013	40,552	103,230	255%	(62,678)
2014	76,671	210,331	274%	(133,660)
2015	149,817	398,974	266%	(249,157)
2016	227,076	674,940	297%	(447,864)

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

Table 9-HB: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution <sup>1</sup>	Employee Contribution Rate <sup>2</sup>
	Number	Annual Payroll		
2010	2	\$ 82,592	7.13%	0.00%
2011	3	109,392	5.49%	0.00%
2012	4	152,627	3.73%	0.00%
2013	9	324,420	3.43%	0.00%
2014	14	537,307	3.00%	0.00%
2015	20	842,274	3.94%	0.00%
2016	24	1,066,726	3.22%	0.00%

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

<sup>2</sup> 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 50 for past benefit provision changes.

**Division HD - Police Patrol after 7/1/2014**

**Table 8-HD: Actuarial Accrued Liabilities - Comparative Schedule**

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2014	\$ (69)	\$ 713	0%	\$ (782)
2015	21,217	24,571	116%	(3,354)
2016	62,332	73,582	118%	(11,250)

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

**Table 9-HD: Computed Employer Contributions - Comparative Schedule**

Valuation Date December 31	Active Employees		Computed Employer Contribution <sup>1</sup>	Employee Contribution Rate <sup>2</sup>
	Number	Annual Payroll		
2014	2	\$ 55,209	9.37%	0.00%
2015	4	187,261	10.13%	0.00%
2016	6	339,913	9.89%	0.00%

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

<sup>2</sup> 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 50 for past benefit provision changes.

## Division 10 - NonUnion

**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	\$ 22,445,312	23	\$ 23,656,619	22	\$ 1,613,268
Gain/Loss	12/31/2016	696,872	22	779,433	22	53,160
<b>Total</b>				<b>\$ 24,436,052</b>		<b>\$ 1,666,428</b>

\* 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 12 - UWUA - Gen Local 532**

**Table 10-12: 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	\$ 11,400,303	23	\$ 11,990,577	22	\$ 817,704
Gain/Loss	12/31/2016	358,547	22	401,025	22	27,348
<b>Total</b>				<b>\$ 12,391,602</b>		<b>\$ 845,052</b>

\* 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 13 - Police,Lts,Sgt

**Table 10-13: 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	\$ 10,338,912	23	\$ 10,833,133	22	\$ 738,768
Gain/Loss	12/31/2016	393,311	22	439,908	22	30,000
<b>Total</b>				<b>\$ 11,273,041</b>		<b>\$ 768,768</b>

\* 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 14 - Police Commun.

**Table 10-14: 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	\$ 131,434	12	\$ 91,989	10	\$ 15,960
Gain/Loss	12/31/2016	3,257	10	3,643	10	444
<b>Total</b>				<b>\$ 95,632</b>		<b>\$ 16,404</b>

\* 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 15 - McMorrانPlace

**Table 10-15: 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	\$ 690,449	20	\$ 710,964	18	\$ 55,464
Gain/Loss	12/31/2016	91,740	18	102,609	18	8,004
<b>Total</b>				<b>\$ 813,573</b>		<b>\$ 63,468</b>

\* 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 16 - FireFighters

**Table 10-16: 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	\$ 16,782,478	23	\$ 17,623,869	22	\$ 1,201,872
Gain/Loss	12/31/2016	247,589	22	276,922	22	18,888
<b>Total</b>				<b>\$ 17,900,791</b>		<b>\$ 1,220,760</b>

\* 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 17 - Police Patrol**

**Table 10-17: 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	\$ 5,712,049	23	\$ 6,100,050	22	\$ 415,992
Gain/Loss	12/31/2016	(553,325)	22	(618,880)	22	(42,204)
<b>Total</b>				<b>\$ 5,481,170</b>		<b>\$ 373,788</b>

\* 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 HA - Non-Union after 7/1/08

**Table 10-HA: 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	\$ (665,346)	10	\$ (577,496)	10	\$ (70,632)
Gain/Loss	12/31/2016	(380,438)	15	(425,510)	15	(37,860)
<b>Total</b>				<b>\$ (1,003,006)</b>		<b>\$ (108,492)</b>

\* 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 HB - UWUA - Local 532 after 5/1/10

### Table 10-HB: 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	\$ (249,157)	10	\$ (219,052)	10	\$ (26,796)
Gain/Loss	12/31/2016	(207,037)	15	(231,565)	15	(20,604)
<b>Total</b>				<b>\$ (450,617)</b>		<b>\$ (47,400)</b>

\* 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 HD - Police Patrol after 7/1/2014

**Table 10-HD: 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	\$ (3,354)	10	\$ (709)	10	\$ (84)
Gain/Loss	12/31/2016	(9,234)	15	(10,328)	15	(924)
<b>Total</b>				<b>\$ (11,037)</b>		<b>\$ (1,008)</b>

\* 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](http://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:	372
Inactive employees entitled to but not yet receiving benefits:	41
Active employees:	<u>229</u>
	642

Total Pension Liability as of 12/31/2015 measurement date:	\$ 152,475,815
Total Pension Liability as of 12/31/2016 measurement date:	\$ 153,748,228
Service Cost for the year ending on the 12/31/2016 measurement date:	\$ 1,772,430

Change in the Total Pension Liability due to:

- Benefit changes <sup>1</sup> :	\$ 0
- Differences between expected and actual experience <sup>2</sup> :	\$ (1,483,605)
- Changes in assumptions <sup>2</sup> :	\$ 0

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

<sup>2</sup> 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):	4
Covered employee payroll: (Needed for Required Supplementary Information)	\$ 13,768,369

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:	\$ 16,192,830	-	\$ (13,750,107)

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.

### 10 - NonUnion

12/1/2016	Service Credit Purchase Estimates - Yes
7/1/2013	Member Contribution Rate 8.00%
7/1/2012	Member Contribution Rate 7.00%
7/1/2011	Member Contribution Rate 6.00%
6/1/2011	Exclude Temporary Employees requiring less than 10 months
7/1/2010	Member Contribution Rate 3.00%
7/1/2009	Member Contribution Rate 2.00%
7/1/2008	Member Contribution Rate 1.00%
7/1/2000	Benefit B-4 (80% max)
7/1/1990	Benefit RS 50 (50% Post-Ret. Spouse Benefits)
7/1/1987	Benefit FAC-3 (3 Year Final Average Compensation)
7/1/1987	Benefit B-3 (80% max)
7/1/1987	Benefit F55 (With 25 Years of Service)
1/1/1983	Flexible E 2% COLA Adopted (01/01/1983)
3/28/1977	Blanket Resolution (Military Service)
7/1/1976	Member Contribution Rate 0.00%
7/1/1975	Benefit C-2/Base C-1 (Old)
7/1/1968	Benefit C-1 (Old)
1/1/1967	Benefit FAC-5 (5 Year Final Average Compensation)
1/1/1967	10 Year Vesting
1/1/1967	Benefit C (Old)
1/1/1967	Member Contribution Rate 3.00% Under \$4,200.00 - Then 5.00%
12/13/1965	Covered by Act 88
	Fiscal Month - July

### 12 - UWUA - Gen Local 532

12/1/2016	Service Credit Purchase Estimates - Yes
7/1/2013	Member Contribution Rate 8.00%
7/1/2012	Member Contribution Rate 7.00%
7/1/2011	Member Contribution Rate 6.00%
6/1/2011	Exclude Temporary Employees requiring less than 10 months
1/1/2011	Member Contribution Rate 3.00%
7/1/2000	Benefit B-4 (80% max)
9/1/1992	Benefit RS 50 (50% Post-Ret. Spouse Benefits)
1/1/1989	Benefit FAC-3 (3 Year Final Average Compensation)
1/1/1989	10 Year Vesting
1/1/1989	Benefit B-3 (80% max)
1/1/1989	Benefit F55 (With 25 Years of Service)
1/1/1983	Flexible E 2% COLA Adopted (01/01/1983)
7/1/1980	Member Contribution Rate 0.00%

**12 - UWUA - Gen Local 532**

12/13/1965 Covered by Act 88  
Fiscal Month - July

**13 - Police,Lts,Sgt**

12/1/2016 Service Credit Purchase Estimates - Yes  
7/1/2013 Member Contribution Rate 11.71%  
7/1/2012 Member Contribution Rate 10.71%  
7/1/2011 Member Contribution Rate 9.71%  
6/1/2011 Exclude Temporary Employees requiring less than 10 months  
7/1/2006 Member Contribution Rate 6.71%  
7/1/2005 Member Contribution Rate 7.21%  
7/1/2004 Member Contribution Rate 7.71%  
7/1/2003 Member Contribution Rate 8.21%  
7/1/2002 Benefit D2 Plan  
7/1/1999 2.75% Multiplier (80% max)  
7/1/1999 Member Contribution Rate 8.71%  
1/1/1999 Benefit F50 (With 25 Years of Service)  
7/1/1993 Blanket Resolution (Military Service)  
7/1/1993 Benefit B-4 (80% max)  
7/1/1989 Benefit FAC-3 (3 Year Final Average Compensation)  
7/1/1989 Benefit RS 50 (50% Post-Ret. Spouse Benefits)  
7/1/1989 10 Year Vesting  
7/1/1989 Benefit B-3 (80% max)  
7/1/1989 Benefit F55 (With 25 Years of Service)  
7/1/1989 Member Contribution Rate 4.00%  
1/1/1983 Flexible E 2% COLA Adopted (01/01/1983)  
12/13/1965 Covered by Act 88  
Fiscal Month - July

**14 - Police Commun.**

12/1/2016 Service Credit Purchase Estimates - Yes  
6/1/2011 Exclude Temporary Employees requiring less than 10 months  
1/1/1990 Benefit FAC-3 (3 Year Final Average Compensation)  
1/1/1990 10 Year Vesting  
1/1/1990 Benefit B-3 (80% max)  
1/1/1990 Benefit F55 (With 25 Years of Service)  
1/1/1990 Member Contribution Rate 0.00%  
1/1/1983 Flexible E 2% COLA Adopted (01/01/1983)  
12/13/1965 Covered by Act 88  
Fiscal Month - July

**15 - McMorrانPlace**

12/1/2016 Service Credit Purchase Estimates - Yes  
6/1/2011 Exclude Temporary Employees requiring less than 10 months  
9/1/1991 10 Year Vesting

**15 - McMorranPlace**

9/1/1991	Benefit B-3 (80% max)
9/1/1991	Benefit FAC-3 (3 Year Final Average Compensation)
7/1/1987	Member Contribution Rate 0.00%
7/1/1973	Benefit F55 (With 25 Years of Service)
12/13/1965	Covered by Act 88
	Fiscal Month - July

**16 - FireFighters**

12/1/2016	Service Credit Purchase Estimates - Yes
7/1/2013	Member Contribution Rate 10.00%
7/1/2012	Member Contribution Rate 9.00%
7/1/2011	Member Contribution Rate 8.00%
6/1/2011	Exclude Temporary Employees requiring less than 10 months
7/1/2010	Member Contribution Rate 5.00%
7/1/2009	Member Contribution Rate 4.00%
7/1/2008	Member Contribution Rate 3.00%
7/1/2006	Member Contribution Rate 2.00%
7/1/2005	Member Contribution Rate 2.50%
7/1/2004	Member Contribution Rate 3.00%
7/1/2003	Member Contribution Rate 3.50%
7/1/2002	Benefit D2 Plan
7/1/1996	Blanket Resolution (Military Service)
7/1/1996	Benefit B-4 (80% max)
7/1/1992	Benefit FAC-3 (3 Year Final Average Compensation)
7/1/1992	Benefit RS 50 (50% Post-Ret. Spouse Benefits)
7/1/1992	10 Year Vesting
7/1/1992	Benefit B-3 (80% max)
7/1/1992	Benefit F50 (With 25 Years of Service)
7/1/1992	Member Contribution Rate 4.00%
12/13/1965	Covered by Act 88
	Fiscal Month - July

**17 - Police Patrol**

12/1/2016	Service Credit Purchase Estimates - Yes
7/1/2013	Member Contribution Rate 10.00%
7/1/2012	Member Contribution Rate 9.00%
7/1/2011	Member Contribution Rate 8.00%
6/1/2011	Exclude Temporary Employees requiring less than 10 months
7/1/2010	Member Contribution Rate 5.00%
7/1/2006	Member Contribution Rate 2.00%
7/1/2005	Member Contribution Rate 2.50%
7/1/2004	Member Contribution Rate 3.00%
7/1/2003	Member Contribution Rate 3.50%
7/1/2002	Benefit D2 Plan
1/1/1995	Member Contribution Rate 4.00%

**17 - Police Patrol**

1/1/1994	Benefit B-4 (80% max)
2/1/1993	Benefit FAC-3 (3 Year Final Average Compensation)
2/1/1993	Benefit RS 50 (50% Post-Ret. Spouse Benefits)
2/1/1993	10 Year Vesting
2/1/1993	Benefit B-3 (80% max)
2/1/1993	Benefit F50 (With 25 Years of Service)
2/1/1993	Member Contribution Rate 4.80%
12/13/1965	Covered by Act 88
	Fiscal Month - July

**HA - Non-Union after 7/1/08**

10/1/2015	Hybrid Elapsed Time
6/1/2011	Exclude Temporary Employees requiring less than 10 months
7/1/2008	60
7/1/2008	Day of work defined as 7.5 Hours a Day for All employees.
7/1/2008	Benefit FAC-3 (3 Year Final Average Compensation)
7/1/2008	Loans
7/1/2008	Pickup
7/1/2008	Rollovers
7/1/2008	6 Year Vesting
7/1/2008	1.25% Multiplier
12/13/1965	Covered by ACT 88
	Fiscal Month - July

**HB - UWUA - Local 532 after 5/1/10**

10/1/2015	Hybrid Elapsed Time
6/1/2011	Exclude Temporary Employees requiring less than 10 months
5/1/2010	1.25% Multiplier
5/1/2010	Covered by ACT 88
5/1/2010	60
5/1/2010	Day of work defined as 8 Hours a Day for Group employees.
5/1/2010	Benefit FAC-3 (3 Year Final Average Compensation)
5/1/2010	Loans
5/1/2010	Pickup
5/1/2010	Rollovers
5/1/2010	6 Year Vesting
	Fiscal Month - July

**HD - Police Patrol after 7/1/2014**

10/1/2015	Hybrid Elapsed Time
7/1/2014	Day of work defined as 8 Hours a Day for All employees.
7/1/2014	Benefit FAC-3 (3 Year Final Average Compensation)
7/1/2014	Loans
7/1/2014	Pickup
7/1/2014	Exclude Temporary Employees requiring less than 10 months

**HD - Police Patrol after 7/1/2014**

7/1/2014	Rollovers
7/1/2014	6 Year Vesting
7/1/2014	2.0% Multiplier
7/1/2014	Benefit F55 (With 25 Years of Service)
5/27/2008	Covered by ACT 88
	Fiscal Month - July

## Plan Provisions, Actuarial Assumptions, and Actuarial Funding Method

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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	4.00%

### Withdrawal Rate Scaling Factor

Division	Withdrawal Rate Scaling Factor
All Divisions	68%

### Miscellaneous and Technical Assumptions

Loads – None.

### Amortization Policy for Closed Divisions

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