



MUNICIPAL EMPLOYEES' RETIREMENT SYSTEM OF MICHIGAN
ANNUAL ACTUARIAL VALUATION REPORT DECEMBER 31, 2017
PITTSFIELD CHTR TWP (8110)



Spring, 2018

Pittsfield Chtr Twp

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

This report presents the results of the Annual Actuarial Valuation, prepared as of December 31, 2017. The report includes the determination of liabilities and contribution rates resulting from the participation of Pittsfield Chtr Twp (8110) in the Municipal Employees' Retirement System of Michigan ("MERS"). MERS is an independent, professional retirement services company that was created to administer retirement plans for Michigan municipalities on a not-for-profit basis. This report contains the minimum actuarially determined contribution requirement, in alignment with the MERS Plan Documents, funding policy and Michigan Constitution. Pittsfield Chtr Twp 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, 2017 annual actuarial valuation is to:

- Measure funding progress
- Establish contribution requirements for the fiscal year beginning January 1, 2019
- 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, 2017 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-2017AnnualActuarialValuation-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

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:

	12/31/2017 *	12/31/2016
Funded Ratio	73%	71%

* Reflects assets from Surplus divisions, if any.

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 third 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 2018 your municipality is making employer contributions based on rates without the phase-in applied, contact MERS to ensure the No Phase-in rate is used again for 2019 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: 12/31/2017	12/31/2017	12/31/2016	12/31/2016	12/31/2017	12/31/2017	12/31/2016	12/31/2016
Fiscal Year Beginning:	January 1, 2019	January 1, 2019	January 1, 2018	January 1, 2018	January 1, 2019	January 1, 2019	January 1, 2018	January 1, 2018
Division								
01 - TPOAM	-	-	-	-	\$ 4,761	\$ 5,039	\$ 5,290	\$ 5,707
02 - Pol Ptrl	-	-	-	-	19,596	20,864	20,022	21,924
05 - Fire Fght	-	-	-	-	14,476	15,124	12,949	13,921
10 - Elctd Ofc	-	-	-	-	4,286	4,570	3,997	4,423
11 - Dspchr	-	-	-	-	0	0	601	784
14 - Adm/NonUnion	-	-	-	-	12,417	13,467	11,312	12,887
15 - Utilities Dr	-	-	-	-	731	761	615	660
20 - Pol Cmnd	-	-	-	-	41,715	43,623	39,012	41,874
HA - POLC/cler/Dispatch aft	-	-	5.93%	5.96%	387	389	540	543
HB - IAFF ee's hired on/aft	6.65%	6.72%	6.32%	6.45%	998	1,008	718	733
HD - POAM on/aft 1/1/2015	6.28%	6.36%	6.07%	6.24%	2,314	2,344	1,647	1,692
HE - Non-union on/aft 1/1	7.42%	7.50%	8.00%	8.16%	6,092	6,154	4,780	4,873
HF - TPOAM on/aft 3/30/15	7.10%	7.15%	7.32%	7.44%	2,945	2,967	1,983	2,016
HG - Elctd Ofc on/aft 1/1/1	8.15%	8.15%			1,213	1,213		
Municipality Total					\$ 111,931	\$ 117,523	\$ 103,466	\$ 112,037

Employee contribution rates reflected in the valuations are shown below:

Valuation Date:	Employee Contribution Rate	
	12/31/2017	12/31/2016
Division		
01 - TPOAM	2.00%	2.00%
02 - Pol Ptrl	6.17%	6.17%
05 - Fire Fght	5.00%	5.00%

Valuation Date:	Employee Contribution Rate	
	12/31/2017	12/31/2016
Division		
10 - Elctd Ofc	6.93%	6.93%
11 - Dspchr	5.00%	5.00%
14 - Adm/NonUnion	5.00%	5.00%
15 - Utilities Dr	6.00%	6.00%
20 - Pol Cmnd	9.06%	9.06%
HA - POLC/cler/Dispatch aft	0.00%	0.00%
HB - IAFF ee's hired on/aft	0.00%	0.00%
HD - POAM on/after 1/1/2015	0.00%	0.00%
HE - Non-union on/after 1/1	0.00%	0.00%
HF - TPOAM on/aft 3/30/15	0.00%	0.00%
HG - Elctd Ofc on/aft 1/1/1	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. Employers making contributions in excess of the minimum requirements may elect to apply the excess contribution immediately to a particular division, or segregate the excess into one or more of what MERS calls "Surplus" divisions. An election in the first case would immediately reduce any unfunded accrued liability and lower the amortization payments throughout the remaining amortization period. An election to set up Surplus divisions would not immediately lower future contributions, however the assets from the Surplus divisions could be transferred to an unfunded division in the future to reduce the unfunded liability in future years, or to be used to pay all or a portion of the minimum required contribution in a future year. For purposes of this report, the assets in any Surplus division have been included in the municipality's total assets, unfunded accrued liability and funded status, however, these assets are not used in calculating the minimum required contribution.

MERS strongly encourages employers to contribute more than the minimum contribution shown above.

Assuming that experience of the plan meets actuarial assumptions:

- To accelerate to a 100% funding ratio in 10 years, estimated monthly employer contributions for the fiscal year beginning in 2019 for the entire employer would be \$161,127, instead of \$117,523.

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 Investment Return Assumption and Asset Smoothing

A defined benefit plan is funded by employer contributions, participant contributions, and investment earnings. Investment earnings have historically provided **more than half** of the funding. The larger the share of benefits being provided from investment returns, the smaller the required contributions, and vice versa. Determining the contributions required to prefund the promised retirement benefits requires an assumption of what investment earnings are expected to add to the fund over a long period of time. This is called the **Investment Return Assumption**.

The MERS Investment Return Assumption is **7.75%** per year. This, along with all of our other actuarial assumptions, is reviewed every five years in an Experience Study that compares the assumptions used against actual experience and recommends adjustments if necessary. If your municipality would like to explore contributions at lower investment return assumptions, please review the budget projection scenarios later in this report.

To avoid dramatic spikes and dips in annual contribution requirements due to short term fluctuations in asset markets, MERS applies a technique called **asset smoothing**. This spreads out each year's investment gains or losses over the prior year and the following four years. This smoothing method is used to determine your actuarial value of assets (valuation assets), which is then used to determine

both your funded ratio and your required contributions. The (smoothed) **actuarial rate of return for 2017 was 6.08%, while the actual market rate of return was 13.07%**. To see historical details of the market rate of return, compared to the smoothed actuarial rate of return, refer to this report's [Appendix](#), or visit our [Defined Benefit resource page](#) on the MERS website.

As of December 31, 2017 the actuarial value of assets is 101% of market value due to asset smoothing. 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, or contribution requirements will continue to increase.

If the December 31, 2017 valuation results were based on market value instead of the actuarial value:

- The funded percent of your entire municipality would be 73% (instead of 73%); and
- Your total employer contribution requirement for the fiscal year starting January 1, 2019 would be \$1,433,412 (instead of \$1,410,276).

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. An Experience Study is completed every five years to review the assumptions and methods. The next Experience Study will be completed in 2020.

Risk can also be managed through a plan design that provides benefits that are sustainable in the long run.

The Actuarial Standards Board has issued Actuarial Standards of Practice (ASOP) No. 51. This standard will be effective for any actuarial work with a measurement date on or after November 1, 2018. This means, the December 31, 2018 and later annual actuarial valuation reports for MERS will have to comply with this standard. This standard will require the actuary to identify risks that, in the actuary's professional judgment may significantly impact the plan's future financial condition. The actuary will have to assess the potential effects of the identified risks on the plan's future financial condition. The assessment may or may not be based on numerical calculations. However, the assessment should reflect the specifics of the plan (i.e. funded status, plan demographics, funding policy, etc.). If the actuary concludes that numerical calculations are necessary to assess the risk, the actuary can use various methods to quantify the risk such as scenario tests, sensitivity tests, stress tests, etc.

Some of these risk assessment measures have already been incorporated in the MERS annual valuation reports. For example, the projections of funded percentage and employer contributions shown on the following pages could be used to gauge the risk associated with long term investment rates of return different than the assumed 7.75% annual rate. A history of the municipality's funded percentage as shown in Table 7, could indicate the trend in funded status over time.

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 the Investment Return Assumption. 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, 2017 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 Investment Return Assumption			
	Lower Future Annual Returns		Valuation Assumption	Higher Returns
	5.75%	6.75%	7.75%	8.75%
12/31/2017 Valuation Results				
Accrued Liability	\$ 50,762,398	\$ 43,921,755	\$ 38,319,574	\$ 33,719,817
Valuation Assets ¹	\$ 28,121,954	\$ 28,121,954	\$ 28,121,954	\$ 28,121,954
Unfunded Accrued Liability	\$ 22,640,444	\$ 15,799,801	\$ 10,197,620	\$ 5,597,863
Funded Ratio	55%	64%	73%	83%
Monthly Normal Cost	\$ 110,212	\$ 79,533	\$ 56,499	\$ 39,190
Monthly Amortization Payment	\$ 111,987	\$ 84,671	\$ 59,282	\$ 33,796
Total Employer Contribution²	\$ 222,199	\$ 164,204	\$ 117,523	\$ 76,238

¹ The Valuation Assets include assets from Surplus divisions, if any.

² 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 assumption scenarios. All four projections take into account the past investment losses that will continue to affect the actuarial rate of return in the short term. Under the 7.75% scenarios in the table on the next page, 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.

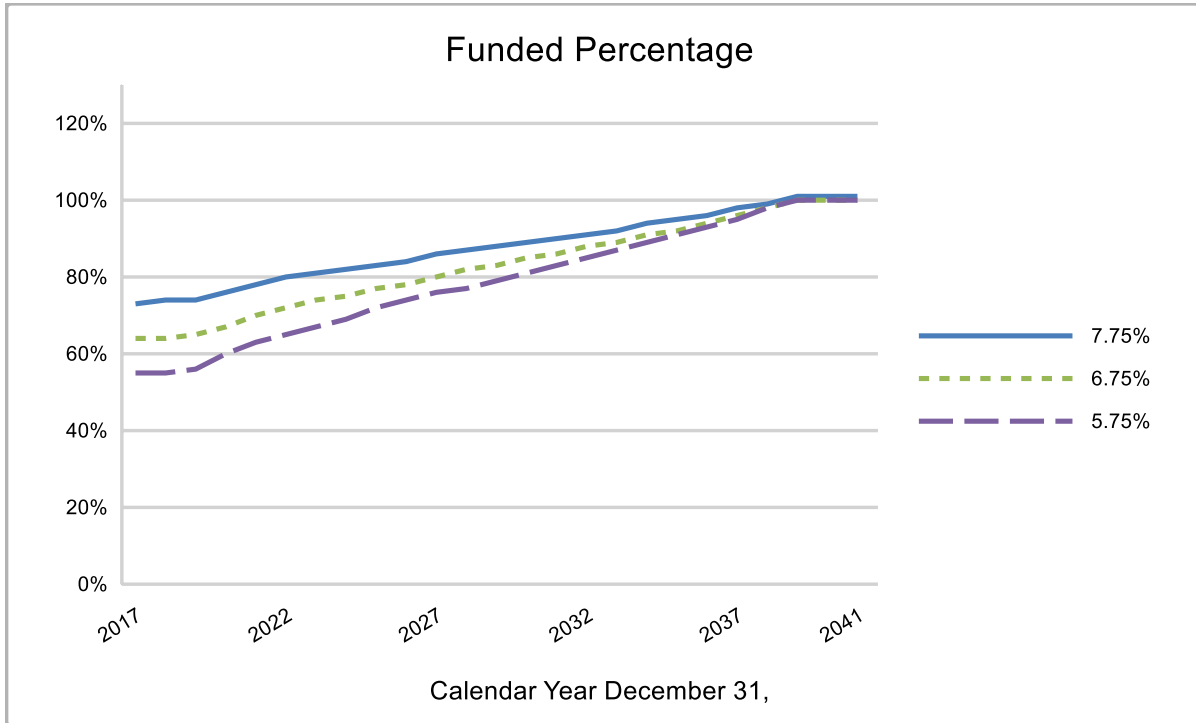
The 7.75% scenarios provide an estimate of computed employer contributions based on current actuarial assumptions, and a projected 7.75% market return. The other two scenarios may be useful if the municipality chooses to budget more conservatively, and make contributions in addition to the minimum requirements. The 6.75% and 5.75% projections provide an indication of the potential required employer contribution if MERS were to realize annual 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 twenty five years.

Valuation Year Ending 12/31	Fiscal Year Beginning 1/1	Actuarial Accrued Liability	Valuation Assets ²	Funded Percentage	Computed Annual Employer Contribution
7.75%¹					
WITH 5-YEAR PHASE-IN					
2017	2019	\$ 38,319,574	\$ 28,121,954	73%	\$ 1,343,172
2018	2020	40,700,000	30,000,000	74%	1,460,000
2019	2021	43,400,000	32,000,000	74%	1,600,000
2020	2022	46,200,000	35,100,000	76%	1,620,000
2021	2023	49,100,000	38,300,000	78%	1,640,000
2022	2024	52,000,000	41,300,000	79%	1,690,000
NO 5-YEAR PHASE-IN					
2017	2019	\$ 38,319,574	\$ 28,121,954	73%	\$ 1,410,276
2018	2020	40,700,000	30,000,000	74%	1,490,000
2019	2021	43,400,000	32,000,000	74%	1,590,000
2020	2022	46,200,000	35,200,000	76%	1,610,000
2021	2023	49,100,000	38,400,000	78%	1,630,000
2022	2024	52,000,000	41,400,000	80%	1,680,000
6.75%¹					
NO 5-YEAR PHASE-IN					
2017	2019	\$ 43,921,755	\$ 28,121,954	64%	\$ 1,970,448
2018	2020	46,600,000	29,700,000	64%	2,110,000
2019	2021	49,600,000	32,000,000	65%	2,230,000
2020	2022	52,700,000	35,400,000	67%	2,270,000
2021	2023	55,800,000	39,000,000	70%	2,300,000
2022	2024	59,000,000	42,300,000	72%	2,370,000
5.75%¹					
NO 5-YEAR PHASE-IN					
2017	2019	\$ 50,762,398	\$ 28,121,954	55%	\$ 2,666,388
2018	2020	53,800,000	29,500,000	55%	2,860,000
2019	2021	57,100,000	32,100,000	56%	2,990,000
2020	2022	60,500,000	36,000,000	60%	3,050,000
2021	2023	63,900,000	40,000,000	63%	3,100,000
2022	2024	67,400,000	43,800,000	65%	3,190,000

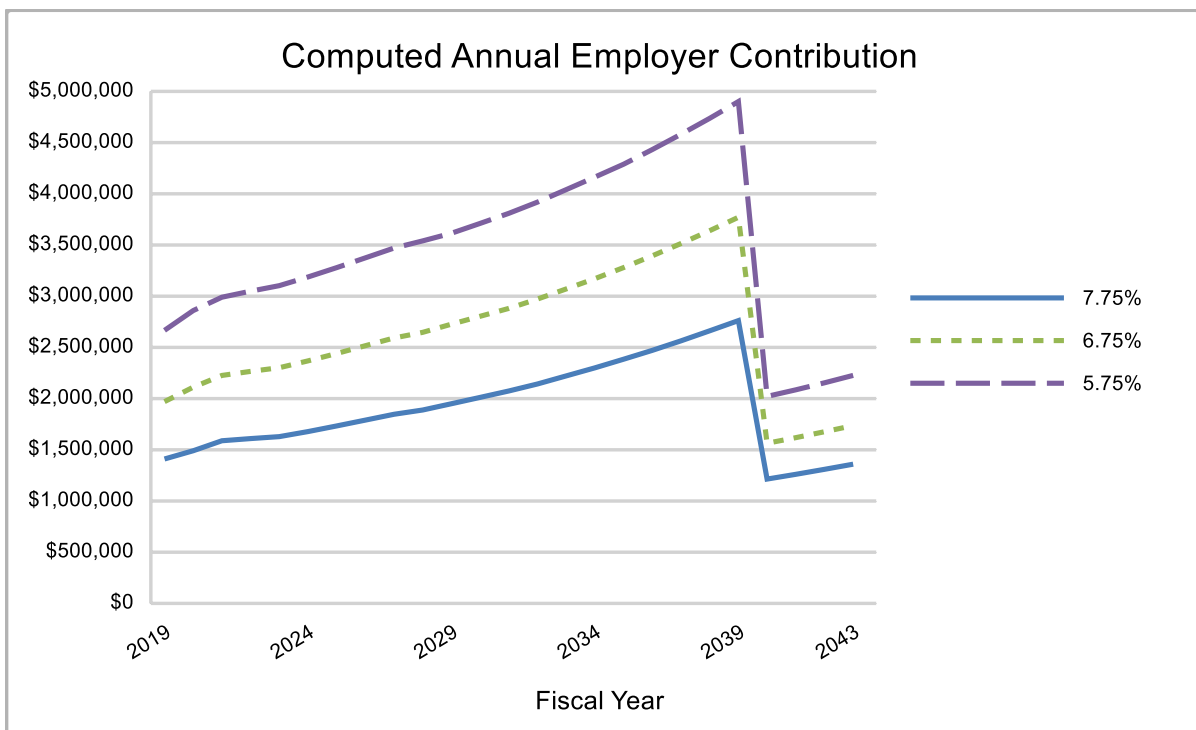
¹ Represents both the interest rate for discounting liabilities and the future investment return assumption on the Market Value of assets.

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



Notes:

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



Notes:

All projected contributions are shown with no phase-in.

Employer Contribution Details For the Fiscal Year Beginning January 1, 2019

Table 1

Division	Total Normal Cost	Employee Contribut. Rate	Employer Contributions ¹			Computed Employer Contribut. With Phase-In	Blended ER Rate No Phase-In ⁵	Blended ER Rate With Phase-In ⁵	Employee Contribut. Conversion Factor ²
			Employer Normal Cost	Payment of the Unfunded Accrued Liability ⁴	Computed Employer Contribut. No Phase-In				
Percentage of Payroll									
01 - TPOAM	9.53%	2.00%	-	-	-	-	8.44%	8.12%	
02 - Pol Ptrl	14.47%	6.17%	-	-	-	-	13.18%	12.44%	
05 - Fire Fght	11.47%	5.00%	-	-	-	-	9.53%	9.14%	
10 - Elctd Ofc	14.28%	6.93%	-	-	-	-	26.31%	25.02%	
11 - Dsptrchr	9.96%	5.00%	-	-	-	-	-	-	
14 - Adm/NonUnion	11.85%	5.00%	-	-	-	-	9.51%	8.97%	
15 - Utilities Dr	0.00%	6.00%	-	-	-	-	-	-	
20 - Pol Cmnd	17.77%	9.06%	-	-	-	-	-	-	
HA - POLC/cler/Dispatch	7.79%	0.00%	-	-	-	-	-	-	
HB - IAFF ee's hired on	6.48%	0.00%	6.48%	0.24%	6.72%	6.65%	9.53%	9.14%	0.89%
HD - POAM on/after 1/1/	6.51%	0.00%	6.51%	-0.15%	6.36%	6.28%	13.18%	12.44%	0.96%
HE - Non-union on/after	7.78%	0.00%	7.78%	-0.28%	7.50%	7.42%	9.51%	8.97%	0.93%
HF - TPOAM on/aft 3/30/	7.19%	0.00%	7.19%	-0.04%	7.15%	7.10%	8.44%	8.12%	0.90%
HG - Elctd Ofc on/aft 1	8.96%	0.00%	8.96%	-0.81%	8.15%	8.15%	26.31%	25.02%	0.87%
Estimated Monthly Contribution³									
01 - TPOAM			\$ 4,016	\$ 1,023	\$ 5,039	\$ 4,761			
02 - Pol Ptrl			11,560	9,304	20,864	19,596			
05 - Fire Fght			9,985	5,139	15,124	14,476			
10 - Elctd Ofc			522	4,048	4,570	4,286			
11 - Dsptrchr			675	(2,417)	0	0			
14 - Adm/NonUnion			8,509	4,958	13,467	12,417			
15 - Utilities Dr			0	761	761	731			
20 - Pol Cmnd			6,664	36,959	43,623	41,715			
HA - POLC/cler/Dispatch			501	(112)	389	387			

Table 1 (continued)

Division	Total Normal Cost	Employee Contribut. Rate	Employer Contributions ¹			Computed Employer Contribut. With Phase-In	Blended ER Rate No Phase-In ⁵	Blended ER Rate With Phase-In ⁵	Employee Contribut. Conversion Factor ²
			Employer Normal Cost	Payment of the Unfunded Accrued Liability ⁴	Computed Employer Contribut. No Phase-In				
HB - IAFF ee's hired on			972	36	1,008	998			
HD - POAM on/after 1/1/			2,398	(54)	2,344	2,314			
HE - Non-union on/after			6,381	(227)	6,154	6,092			
HF - TPOAM on/aft 3/30/			2,983	(16)	2,967	2,945			
HG - Elctd Ofc on/aft 1			1,333	(120)	1,213	1,213			
Total Municipality			\$ 56,499	\$ 59,282	\$ 117,523	\$ 111,931			
Estimated Annual Contribution³			\$ 677,988	\$ 711,384	\$ 1,410,276	\$ 1,343,172			

¹ The above employer contribution requirements are in addition to the employee contributions, if any.

² If employee contributions are increased/decreased by 1.00% of pay, the employer contribution requirement will decrease/increase by the Employee Contribution Conversion Factor. The conversion factor is usually under 1%, because employee contributions may be refunded at termination of employment, and not used to fund retirement pensions. Employer contributions will all be used to fund pensions.

³ For divisions that are open to new hires, estimated contributions are based on projected fiscal year payroll. Actual contributions will be based on actual reported monthly pays, and will be different from the above amounts. For divisions that will have no new hires (i.e. closed divisions), invoices will be based on the above dollar amounts which are based on projected fiscal year payroll. See description of Open Divisions and Closed Divisions in the [Appendix](#).

⁴ If projected assets exceed projected liabilities as of the beginning of the January 1, 2019 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-MERS (6377).

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

Benefit Provisions

Table 2

01 - TPOAM: Closed to new hires, linked to Division HF

	2017 Valuation	2016 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 55/15	50/25 55/15
Final Average Compensation:	3 years	3 years
Employee Contributions:	2%	2%
Act 88:	Yes (Adopted 11/10/2003)	Yes (Adopted 11/10/2003)

02 - Pol Ptrl: Closed to new hires, linked to Division HD

	2017 Valuation	2016 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):	50/25	50/25
Early Retirement (Reduced):	55/15	55/15
Final Average Compensation:	3 years	3 years
COLA for Future Retirees:	2.50% (Non-Compound)	2.50% (Non-Compound)
Employee Contributions:	6.17%	6.17%
Act 88:	Yes (Adopted 11/10/2003)	Yes (Adopted 11/10/2003)

05 - Fire Fght: Closed to new hires, linked to Division HB

	2017 Valuation	2016 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):	55/15	55/15
Early Retirement (Reduced):	50/25	50/25
Final Average Compensation:	3 years	3 years
Employee Contributions:	5%	5%
Act 88:	Yes (Adopted 11/10/2003)	Yes (Adopted 11/10/2003)

Table 2 (continued)

10 - Elctd Ofc: Closed to new hires, linked to Division HG		
	2017 Valuation	2016 Valuation
Benefit Multiplier:	2.25% Multiplier (80% max)	2.25% Multiplier (80% max)
Normal Retirement Age:	60	60
Vesting:	8 years	8 years
Early Retirement (Unreduced):	-	-
Early Retirement (Reduced):	50/25 55/15	50/25 55/15
Final Average Compensation:	3 years	3 years
COLA for Future Retirees:	2.50% (Non-Compound)	2.50% (Non-Compound)
Employee Contributions:	6.93%	6.93%
Act 88:	Yes (Adopted 11/10/2003)	Yes (Adopted 11/10/2003)
11 - Dsptrchr: Closed to new hires		
	2017 Valuation	2016 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):	-	-
Early Retirement (Reduced):	50/25 55/15	50/25 55/15
Final Average Compensation:	3 years	3 years
Employee Contributions:	5%	5%
Act 88:	Yes (Adopted 11/10/2003)	Yes (Adopted 11/10/2003)
14 - Adm/NonUnion: Closed to new hires, linked to Division HE		
	2017 Valuation	2016 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):	-	-
Early Retirement (Reduced):	50/25 55/15	50/25 55/15
Final Average Compensation:	3 years	3 years
Employee Contributions:	5%	5%
Act 88:	Yes (Adopted 11/10/2003)	Yes (Adopted 11/10/2003)

Table 2 (continued)

15 - Utilities Dr: Closed to new hires

	2017 Valuation	2016 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:	3 years	3 years
Employee Contributions:	6%	6%
Act 88:	Yes (Adopted 10/1/2007)	Yes (Adopted 10/1/2007)

20 - Pol Cmnd: Closed to new hires, linked to Division HC

	2017 Valuation	2016 Valuation
Benefit Multiplier:	2.50% Multiplier (80% max)	2.50% Multiplier (80% max)
Normal Retirement Age:	60	60
Vesting:	10 years	10 years
Early Retirement (Unreduced):	50/25	50/25
Early Retirement (Reduced):	55/15	55/15
Final Average Compensation:	3 years	3 years
COLA for Future Retirees:	2.50% (Non-Compound)	2.50% (Non-Compound)
Employee Contributions:	9.06%	9.06%
Act 88:	Yes (Adopted 11/10/2003)	Yes (Adopted 11/10/2003)

HA - POLC/cler/Dispatch aft 7/1/14: Closed to new hires

	2017 Valuation	2016 Valuation
Benefit Multiplier:	Hybrid Plan - 1.50% Multiplier	Hybrid Plan - 1.50% Multiplier
Normal Retirement Age:	60	60
Vesting:	6 years	6 years
Early Retirement (Unreduced):	-	-
Early Retirement (Reduced):	-	-
Final Average Compensation:	3 years	3 years
Employee Contributions:	0%	0%
Act 88:	Yes (Adopted 11/10/2003)	Yes (Adopted 11/10/2003)

HB - IAFF ee's hired on/aft 1/1/14: Open Division, linked to Division 05

	2017 Valuation	2016 Valuation
Benefit Multiplier:	Hybrid Plan - 1.50% Multiplier	Hybrid Plan - 1.50% Multiplier
Normal Retirement Age:	60	60
Vesting:	6 years	6 years
Early Retirement (Unreduced):	55/25	55/25
Early Retirement (Reduced):	-	-
Final Average Compensation:	3 years	3 years
Employee Contributions:	0%	0%
Act 88:	Yes (Adopted 11/10/2003)	Yes (Adopted 11/10/2003)

Table 2 (continued)

HD - POAM on/after 1/1/2015: Open Division, linked to Division 02

	2017 Valuation	2016 Valuation
Benefit Multiplier:	Hybrid Plan - 1.50% Multiplier	Hybrid Plan - 1.50% Multiplier
Normal Retirement Age:	60	60
Vesting:	6 years	6 years
Early Retirement (Unreduced):	55/25	55/25
Early Retirement (Reduced):	-	-
Final Average Compensation:	3 years	3 years
Employee Contributions:	0%	0%
Act 88:	No	No

HE - Non-union on/after 1/1/2015: Open Division, linked to Division 14

	2017 Valuation	2016 Valuation
Benefit Multiplier:	Hybrid Plan - 1.50% Multiplier	Hybrid Plan - 1.50% Multiplier
Normal Retirement Age:	60	60
Vesting:	6 years	6 years
Early Retirement (Unreduced):	-	-
Early Retirement (Reduced):	-	-
Final Average Compensation:	3 years	3 years
Employee Contributions:	0%	0%
Act 88:	No	No

HF - TPOAM on/aft 3/30/15: Open Division, linked to Division 01

	2017 Valuation	2016 Valuation
Benefit Multiplier:	Hybrid Plan - 1.50% Multiplier	Hybrid Plan - 1.50% Multiplier
Normal Retirement Age:	60	60
Vesting:	6 years	6 years
Early Retirement (Unreduced):	-	-
Early Retirement (Reduced):	-	-
Final Average Compensation:	3 years	3 years
Employee Contributions:	0%	0%
Act 88:	No	No

HG - Elctd Ofc on/aft 1/1/15: Open Division, linked to Division 10

	2017 Valuation	2016 Valuation
Benefit Multiplier:	Hybrid Plan - 1.50% Multiplier	Hybrid Plan - 1.50% Multiplier
Normal Retirement Age:	60	60
Vesting:	6 years	6 years
Early Retirement (Unreduced):	-	-
Early Retirement (Reduced):	-	-
Final Average Compensation:	3 years	3 years
Employee Contributions:	0%	0%
Act 88:	No	No

Participant Summary

Table 3

Division	2017 Valuation		2016 Valuation		2017 Valuation		
	Number	Annual Payroll ¹	Number	Annual Payroll ¹	Average Age	Average Benefit Service ²	Average Eligibility Service ²
01 - TPOAM							
Active Employees	13	\$ 645,141	16	\$ 741,752	47.3	9.2	10.3
Vested Former Employees	9	60,463	7	42,251	42.4	8.0	13.5
Retirees and Beneficiaries	9	64,609	9	64,609	68.6		
02 - Pol Ptrl							
Active Employees	22	\$ 1,648,289	23	\$ 1,689,595	41.7	16.7	16.7
Vested Former Employees	3	20,014	3	20,014	38.3	4.4	9.5
Retirees and Beneficiaries	5	102,386	5	100,519	59.3		
05 - Fire Fght							
Active Employees	24	\$ 1,781,459	25	\$ 1,772,309	40.5	13.2	13.8
Vested Former Employees	1	27,754	2	68,138	51.1	14.0	14.0
Retirees and Beneficiaries	5	123,060	3	57,566	58.3		
10 - Elctd Ofc							
Active Employees	2	\$ 164,902	2	\$ 164,298	61.2	9.1	9.8
Vested Former Employees	1	14,444	1	14,444	57.1	8.0	8.0
Retirees and Beneficiaries	5	85,618	5	84,392	78.9		
11 - Dsptrchr							
Active Employees	3	\$ 158,953	7	\$ 355,374	41.6	9.8	9.8
Vested Former Employees	8	125,050	4	32,910	43.4	13.3	16.5
Retirees and Beneficiaries	0	0	0	0	0.0		
14 - Adm/NonUnion							
Active Employees	23	\$ 1,619,640	26	\$ 1,723,713	51.4	12.6	15.4
Vested Former Employees	7	80,921	8	124,200	45.6	8.5	12.9
Retirees and Beneficiaries	17	349,349	13	219,357	65.9		
15 - Utilities Dr							
Active Employees	0	\$ 0	0	\$ 0	0.0	0.0	0.0
Vested Former Employees	0	0	0	0	0.0	0.0	0.0
Retirees and Beneficiaries	1	19,167	1	19,167	60.7		
20 - Pol Cmnd							
Active Employees	10	\$ 930,835	11	\$ 989,066	43.7	19.0	21.4
Vested Former Employees	0	0	1	23,169	0.0	0.0	0.0
Retirees and Beneficiaries	14	546,908	11	468,395	58.6		
HA - POLC/cler/Dispatch a							
Active Employees	2	\$ 90,378	2	\$ 87,059	40.9	1.1	1.1
Vested Former Employees	1	1,691	0	0	30.0	2.4	2.5
Retirees and Beneficiaries	0	0	0	0	0.0		

Table 3 (continued)

Division	2017 Valuation		2016 Valuation		2017 Valuation		
	Number	Annual Payroll ¹	Number	Annual Payroll ¹	Average Age	Average Benefit Service ²	Average Eligibility Service ²
HB - IAFF ee's hired on/a							
Active Employees	2	\$ 106,206	1	\$ 51,875	37.7	1.6	1.7
Vested Former Employees	0	0	0	0	0.0	0.0	0.0
Retirees and Beneficiaries	0	0	0	0	0.0		
HD - POAM on/after 1/1/20							
Active Employees	6	\$ 315,041	5	\$ 216,567	26.2	1.7	2.2
Vested Former Employees	0	0	0	0	0.0	0.0	0.0
Retirees and Beneficiaries	0	0	0	0	0.0		
HE - Non-union on/after 1							
Active Employees	14	\$ 679,581	9	\$ 391,660	41.4	1.2	4.8
Vested Former Employees	0	0	0	0	0.0	0.0	0.0
Retirees and Beneficiaries	0	0	0	0	0.0		
HF - TPOAM on/aft 3/30/15							
Active Employees	11	\$ 411,892	7	\$ 241,720	38.8	1.2	1.3
Vested Former Employees	0	0	0	0	0.0	0.0	0.0
Retirees and Beneficiaries	0	0	0	0	0.0		
HG - Elctd Ofc on/aft 1/1							
Active Employees	1	\$ 80,142		\$	48.0	1.3	1.3
Vested Former Employees	0	0			0.0	0.0	0.0
Retirees and Beneficiaries	0	0			0.0		
Total Municipality							
Active Employees	133	\$ 8,632,459	134	\$ 8,424,988	43.2	10.4	11.7
Vested Former Employees	30	330,337	26	325,126	43.4	9.2	13.2
Retirees and Beneficiaries	56	1,291,097	47	1,014,005	64.3		
Total Participants	219		207				

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	2017 Valuation		2016 Valuation	
	Employer and Retiree ¹	Employee ²	Employer and Retiree ¹	Employee ²
01 - TPOAM	\$ 1,340,229	\$ 316,564	\$ 1,147,483	\$ 301,754
02 - Pol Ptrl	4,800,074	1,776,395	3,937,709	1,347,106
05 - Fire Fght	3,841,717	1,148,056	3,091,312	1,129,686
10 - Elctd Ofc	337,239	166,191	296,322	153,905
11 - Dsptchr	616,792	341,967	496,479	320,572
14 - Adm/NonUnion	5,459,576	1,260,094	4,489,480	1,447,505
15 - Utilities Dr	143,518	0	138,991	0
20 - Pol Cmnd	4,919,514	1,094,202	3,997,896	1,034,676
HA - POLC/cler/Dispatch aft 7/1/14	16,447	0	5,781	0
HB - IAFF ee's hired on/aft 1/1/14	12,254	0	5,500	0
HD - POAM on/after 1/1/2015	53,425	0	27,711	0
HE - Non-union on/after 1/1/2015	101,841	0	37,007	0
HF - TPOAM on/aft 3/30/15	38,125	0	11,610	0
HG - Elctd Ofc on/aft 1/1/15	22,929	0		
Municipality Total	\$ 21,703,680	\$ 6,103,469	\$ 17,683,281	\$ 5,735,204
Combined Assets	\$27,807,149		\$23,418,485	

¹ Reserve for Employer Contributions and Benefit Payments

² Reserve for Employee Contributions

The December 31, 2017 valuation assets (actuarial value of assets) are equal to 1.011321 times the reported market value of assets (compared to 1.077095 as of December 31, 2016). 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 (Valuation Assets)	Benefit Payments	Employee Contribution Refunds	Net Transfers	Valuation Asset Balance
	Required	Additional						
2007	\$ 472,566		\$ 359,907	\$ 733,266	\$ (206,619)	\$ (96,078)	\$ (1)	\$ 10,278,963
2008	510,445		367,989	580,155	(199,071)	(88,761)	65,728	11,515,448
2009	503,828		365,468	803,796	(310,482)	(84,863)	34,825	12,828,020
2010	742,471		432,920	1,032,060	(448,528)	(69,956)	312,836	14,829,823
2011	784,130	\$ 0	413,860	972,208	(482,536)	(39,475)	5,514	16,483,524
2012	751,402	0	415,425	929,886	(580,364)	(51,588)	26,952	17,975,237
2013	815,893	0	444,508	1,210,749	(715,656)	(15,986)	0	19,714,745
2014	808,039	0	427,000	1,197,131	(817,351)	(66,658)	0	21,262,906
2015	992,973	0	433,629	1,178,970	(911,658)	(2,733)	26,929	22,981,016
2016	1,026,766	200,000	433,666	1,382,167	(982,566)	(33,253)	216,138	25,223,934
2017	1,246,097	155,036	415,787	1,654,468	(1,094,800)	(39,880)	561,312	28,121,954

Notes:

Transfers in and out are usually related to the transfer of participants between municipalities, and to employer and employee payments for service credit purchases (if any) that the governing body has approved.

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

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

The Valuation Assets include assets from Surplus divisions, if any.

Actuarial Accrued Liabilities and Valuation Assets As of December 31, 2017

Table 6

Division	Actuarial Accrued Liability	Valuation Assets ¹	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
01 - TPOAM				
Active Employees	\$ 923,638	\$ 746,727	80.8%	\$ 176,911
Vested Former Employees	275,417	275,417	100.0%	0
Retirees And Beneficiaries	622,147	622,147	100.0%	0
Pending Refunds	<u>31,259</u>	<u>31,259</u>	100.0%	<u>0</u>
Total	\$ 1,852,461	\$ 1,675,550	90.4%	\$ 176,911
02 - Pol Ptrl				
Active Employees	\$ 6,762,331	\$ 5,172,932	76.5%	\$ 1,589,399
Vested Former Employees	52,270	52,270	100.0%	0
Retirees And Beneficiaries	1,404,314	1,404,314	100.0%	0
Pending Refunds	<u>21,405</u>	<u>21,405</u>	100.0%	<u>0</u>
Total	\$ 8,240,320	\$ 6,650,921	80.7%	\$ 1,589,399
05 - Fire Fght				
Active Employees	\$ 4,361,163	\$ 3,500,179	80.3%	\$ 860,984
Vested Former Employees	150,039	150,039	100.0%	0
Retirees And Beneficiaries	1,393,837	1,393,837	100.0%	0
Pending Refunds	<u>2,207</u>	<u>2,207</u>	100.0%	<u>0</u>
Total	\$ 5,907,246	\$ 5,046,262	85.4%	\$ 860,984
10 - Elctd Ofc				
Active Employees	\$ 310,662	\$ 103,688	33.4%	\$ 206,974
Vested Former Employees	150,181	40,754	27.1%	109,427
Retirees And Beneficiaries	713,011	342,938	48.1%	370,073
Pending Refunds	<u>21,749</u>	<u>21,749</u>	100.0%	<u>0</u>
Total	\$ 1,195,603	\$ 509,129	42.6%	\$ 686,474
11 - Dsptrchr				
Active Employees	\$ 213,759	\$ 455,170	212.9%	\$ (241,411)
Vested Former Employees	495,018	495,018	100.0%	0
Retirees And Beneficiaries	0	0	0.0%	0
Pending Refunds	<u>19,425</u>	<u>19,425</u>	100.0%	<u>0</u>
Total	\$ 728,202	\$ 969,613	133.2%	\$ (241,411)
14 - Adm/NonUnion				
Active Employees	\$ 3,563,973	\$ 2,730,264	76.6%	\$ 833,709
Vested Former Employees	387,344	387,344	100.0%	0
Retirees And Beneficiaries	3,558,233	3,558,233	100.0%	0
Pending Refunds	<u>119,902</u>	<u>119,902</u>	100.0%	<u>0</u>
Total	\$ 7,629,452	\$ 6,795,743	89.1%	\$ 833,709

Table 6 (continued)

Division	Actuarial Accrued Liability	Valuation Assets ¹	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
15 - Utilities Dr				
Active Employees	\$ 0	\$ 0	0.0%	\$ 0
Vested Former Employees	0	0	0.0%	0
Retirees And Beneficiaries	233,070	145,143	62.3%	87,927
Pending Refunds	0	0	0.0%	0
Total	\$ 233,070	\$ 145,143	62.3%	\$ 87,927
20 - Pol Cmnd				
Active Employees	\$ 4,948,922	\$ 1,093,116	22.1%	\$ 3,855,806
Vested Former Employees	0	0	0.0%	0
Retirees And Beneficiaries	7,393,284	4,988,681	67.5%	2,404,603
Pending Refunds	0	0	0.0%	0
Total	\$ 12,342,206	\$ 6,081,797	49.3%	\$ 6,260,409
HA - POLC/cler/Dispatch aft 7/1/14				
Active Employees	\$ 3,961	\$ 14,781	373.2%	\$ (10,820)
Vested Former Employees	1,852	1,852	100.0%	0
Retirees And Beneficiaries	0	0	0.0%	0
Pending Refunds	0	0	0.0%	0
Total	\$ 5,813	\$ 16,633	286.1%	\$ (10,820)
HB - IAFF ee's hired on/aft 1/1/14				
Active Employees	\$ 18,157	\$ 12,393	68.3%	\$ 5,764
Vested Former Employees	0	0	0.0%	0
Retirees And Beneficiaries	0	0	0.0%	0
Pending Refunds	0	0	0.0%	0
Total	\$ 18,157	\$ 12,393	68.3%	\$ 5,764
HD - POAM on/after 1/1/2015				
Active Employees	\$ 47,316	\$ 54,030	114.2%	\$ (6,714)
Vested Former Employees	0	0	0.0%	0
Retirees And Beneficiaries	0	0	0.0%	0
Pending Refunds	0	0	0.0%	0
Total	\$ 47,316	\$ 54,030	114.2%	\$ (6,714)
HE - Non-union on/after 1/1/2015				
Active Employees	\$ 74,362	\$ 102,994	138.5%	\$ (28,632)
Vested Former Employees	0	0	0.0%	0
Retirees And Beneficiaries	0	0	0.0%	0
Pending Refunds	0	0	0.0%	0
Total	\$ 74,362	\$ 102,994	138.5%	\$ (28,632)
HF - TPOAM on/aft 3/30/15				
Active Employees	\$ 37,202	\$ 38,557	103.6%	\$ (1,355)
Vested Former Employees	0	0	0.0%	0
Retirees And Beneficiaries	0	0	0.0%	0
Pending Refunds	0	0	0.0%	0
Total	\$ 37,202	\$ 38,557	103.6%	\$ (1,355)

Table 6 (continued)

Division	Actuarial Accrued Liability	Valuation Assets ¹	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
HG - Elctd Ofc on/aft 1/1/15				
Active Employees	\$ 8,164	\$ 23,189	284.0%	\$ (15,025)
Vested Former Employees	0	0	0.0%	0
Retirees And Beneficiaries	0	0	0.0%	0
Pending Refunds	<u>0</u>	<u>0</u>	0.0%	<u>0</u>
Total	\$ 8,164	\$ 23,189	284.0%	\$ (15,025)
Total Municipality				
Active Employees	\$ 21,273,610	\$ 14,048,020	66.0%	\$ 7,225,590
Vested Former Employees	1,512,121	1,402,694	92.8%	109,427
Retirees and Beneficiaries	15,317,896	12,455,293	81.3%	2,862,603
Pending Refunds	<u>215,947</u>	<u>215,947</u>	<u>100.0%</u>	<u>0</u>
Total	\$ 38,319,574	\$ 28,121,954	73.4%	\$ 10,197,620
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.				
Linked Divisions HF, 01				
Active Employees	\$ 960,840	\$ 785,284	81.7%	\$ 175,556
Vested Former Employees	275,417	275,417	100.0%	0
Retirees and Beneficiaries	622,147	622,147	100.0%	0
Pending Refunds	<u>31,259</u>	<u>31,259</u>	100.0%	<u>0</u>
Total	\$ 1,889,663	\$ 1,714,107	90.7%	\$ 175,556
Linked Divisions HD, 02				
Active Employees	\$ 6,809,647	\$ 5,226,962	76.8%	\$ 1,582,685
Vested Former Employees	52,270	52,270	100.0%	0
Retirees and Beneficiaries	1,404,314	1,404,314	100.0%	0
Pending Refunds	<u>21,405</u>	<u>21,405</u>	100.0%	<u>0</u>
Total	\$ 8,287,636	\$ 6,704,951	80.9%	\$ 1,582,685
Linked Divisions HB, 05				
Active Employees	\$ 4,379,320	\$ 3,512,572	80.2%	\$ 866,748
Vested Former Employees	150,039	150,039	100.0%	0
Retirees and Beneficiaries	1,393,837	1,393,837	100.0%	0
Pending Refunds	<u>2,207</u>	<u>2,207</u>	100.0%	<u>0</u>
Total	\$ 5,925,403	\$ 5,058,655	85.4%	\$ 866,748
Linked Divisions HG, 10				
Active Employees	\$ 318,826	\$ 126,877	39.8%	\$ 191,949
Vested Former Employees	150,181	40,754	27.1%	109,427
Retirees and Beneficiaries	713,011	342,938	48.1%	370,073
Pending Refunds	<u>21,749</u>	<u>21,749</u>	100.0%	<u>0</u>
Total	\$ 1,203,767	\$ 532,318	44.2%	\$ 671,449

Table 6 (continued)

Division	Actuarial Accrued Liability	Valuation Assets¹	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
Linked Divisions HE, 14				
Active Employees	\$ 3,638,335	\$ 2,833,258	77.9%	\$ 805,077
Vested Former Employees	387,344	387,344	100.0%	0
Retirees and Beneficiaries	3,558,233	3,558,233	100.0%	0
Pending Refunds	<u>119,902</u>	<u>119,902</u>	100.0%	<u>0</u>
Total	\$ 7,703,814	\$ 6,898,737	89.5%	\$ 805,077

¹ Includes both employer and employee assets.

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

Actuarial Accrued Liabilities - Comparative Schedule

Table 7

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2003	\$ 8,233,918	\$ 5,826,387	71%	\$ 2,407,531
2004	9,711,666	6,750,466	70%	2,961,200
2005	10,943,440	7,755,416	71%	3,188,024
2006	12,681,900	9,015,922	71%	3,665,978
2007	14,059,796	10,278,963	73%	3,780,833
2008	15,441,447	11,515,448	75%	3,925,999
2009	16,665,216	12,828,020	77%	3,837,196
2010	18,841,079	14,829,823	79%	4,011,256
2011	21,644,476	16,483,524	76%	5,160,952
2012	23,384,220	17,975,237	77%	5,408,983
2013	26,862,373	19,714,745	73%	7,147,628
2014	28,683,079	21,262,906	74%	7,420,173
2015	32,970,609	22,981,016	70%	9,989,593
2016	35,375,796	25,223,934	71%	10,151,862
2017	38,319,574	28,121,954	73%	10,197,620

Notes: Actuarial assumptions were revised for the 2004, 2008, 2009, 2010, 2011, 2012 and 2015 actuarial valuations.
The Valuation Assets include assets from Surplus divisions, if any.

Division 01 - TPOAM

Table 8-01: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2007	\$ 834,644	\$ 805,964	97%	\$ 28,680
2008	904,962	874,672	97%	30,290
2009	959,704	967,623	101%	(7,919)
2010	1,000,313	1,082,521	108%	(82,208)
2011	1,072,912	1,139,443	106%	(66,531)
2012	1,061,861	1,165,917	110%	(104,056)
2013	1,192,711	1,244,550	104%	(51,839)
2014	1,307,912	1,335,534	102%	(27,622)
2015	1,594,249	1,418,774	89%	175,475
2016	1,783,908	1,560,966	88%	222,942
2017	1,852,461	1,675,550	90%	176,911

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		
2007	22	\$ 646,217	4.29%	5.00%
2008	20	635,140	4.59%	5.00%
2009	21	697,600	4.23%	5.00%
2010	18	633,150	2.86%	5.00%
2011	17	602,922	4.51%	4.00%
2012	15	528,807	4.17%	3.00%
2013	20	731,576	5.40%	3.00%
2014	20	729,745	6.72%	2.00%
2015	20	822,799	\$ 5,946	2.00%
2016	16	741,752	\$ 5,707	2.00%
2017	13	645,141	\$ 5,039	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 6.

See the Benefit Provision History on page 60 for past benefit provision changes.

Division 02 - Pol Ptrl

Table 8-02: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2007	\$ 2,420,555	\$ 1,831,922	76%	\$ 588,633
2008	2,854,451	2,127,108	75%	727,343
2009	3,131,111	2,459,798	79%	671,313
2010	3,564,633	3,303,703	93%	260,930
2011	4,885,018	3,652,191	75%	1,232,827
2012	5,203,705	3,893,073	75%	1,310,632
2013	6,076,136	4,444,933	73%	1,631,203
2014	6,051,815	4,665,236	77%	1,386,579
2015	6,849,961	5,069,260	74%	1,780,701
2016	7,436,278	5,692,248	77%	1,744,030
2017	8,240,320	6,650,921	81%	1,589,399

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		
2007	28	\$ 1,635,804	6.29%	5.00%
2008	30	1,769,768	7.64%	5.00%
2009	31	1,827,777	7.28%	6.17%
2010	30	1,872,798	5.85%	6.17%
2011	30	1,860,017	11.47%	6.17%
2012	31	1,908,525	11.59%	6.17%
2013	29	1,997,648	12.58%	6.17%
2014	25	1,686,802	\$ 17,642	6.17%
2015	24	1,680,414	\$ 21,983	6.17%
2016	23	1,689,595	\$ 21,924	6.17%
2017	22	1,648,289	\$ 20,864	6.17%

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 6.

See the Benefit Provision History on page 60 for past benefit provision changes.

Division 05 - Fire Fght

Table 8-05: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2007	\$ 1,713,134	\$ 1,419,202	83%	\$ 293,932
2008	1,867,228	1,577,772	84%	289,456
2009	2,149,803	1,849,791	86%	300,012
2010	2,522,564	2,164,526	86%	358,038
2011	2,949,361	2,489,043	84%	460,318
2012	3,288,692	2,821,512	86%	467,180
2013	3,787,941	3,230,511	85%	557,430
2014	4,136,363	3,608,244	87%	528,119
2015	4,794,809	3,994,893	83%	799,916
2016	5,256,937	4,546,416	87%	710,521
2017	5,907,246	5,046,262	85%	860,984

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

Table 9-05: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution ¹	Employee Contribution Rate ²
	Number	Annual Payroll		
2007	20	\$ 1,032,601	6.31%	5.00%
2008	21	1,097,550	7.04%	5.00%
2009	21	1,270,865	7.32%	5.00%
2010	23	1,517,003	7.42%	5.00%
2011	23	1,579,022	7.84%	5.00%
2012	23	1,614,967	7.96%	5.00%
2013	26	1,792,762	8.16%	5.00%
2014	25	1,734,496	\$ 11,804	5.00%
2015	25	1,767,537	\$ 14,521	5.00%
2016	25	1,772,309	\$ 13,921	5.00%
2017	24	1,781,459	\$ 15,124	5.00%

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

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

Note: The contributions shown in Table 9 for the 12/31/2015 through 12/31/2019 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 6.

See the Benefit Provision History on page 60 for past benefit provision changes.

Division 10 - Elctd Ofc

Table 8-10: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2007	\$ 745,206	\$ 356,731	48%	\$ 388,475
2008	714,664	376,269	53%	338,395
2009	755,823	382,227	51%	373,596
2010	791,255	387,897	49%	403,358
2011	825,575	394,931	48%	430,644
2012	867,718	401,319	46%	466,399
2013	924,647	419,643	45%	505,004
2014	970,282	439,268	45%	531,014
2015	1,086,334	457,917	42%	628,417
2016	1,163,655	484,937	42%	678,718
2017	1,195,603	509,129	43%	686,474

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		
2007	3	\$ 225,804	16.10%	6.93%
2008	3	211,712	15.00%	6.93%
2009	3	234,513	15.83%	6.93%
2010	3	234,513	16.45%	6.93%
2011	3	234,513	18.10%	6.93%
2012	3	234,513	19.87%	6.93%
2013	3	243,533	20.46%	6.93%
2014	3	235,013	21.80%	6.93%
2015	3	235,634	26.71%	6.93%
2016	2	164,298	\$ 4,423	6.93%
2017	2	164,902	\$ 4,570	6.93%

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 6.

See the Benefit Provision History on page 60 for past benefit provision changes.

Division 11 - Dsptchr

Table 8-11: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2007	\$ 256,874	\$ 293,504	114%	\$ (36,630)
2008	318,643	332,202	104%	(13,559)
2009	341,413	383,701	112%	(42,288)
2010	400,978	452,270	113%	(51,292)
2011	480,487	541,624	113%	(61,137)
2012	527,855	611,780	116%	(83,925)
2013	591,020	684,209	116%	(93,189)
2014	637,549	735,554	115%	(98,005)
2015	781,066	801,787	103%	(20,721)
2016	808,497	880,042	109%	(71,545)
2017	728,202	969,613	133%	(241,411)

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

Table 9-11: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution ¹	Employee Contribution Rate ²
	Number	Annual Payroll		
2007	9	\$ 346,806	1.31%	5.00%
2008	9	369,217	2.82%	5.00%
2009	9	390,756	1.87%	5.00%
2010	8	355,745	2.50%	5.00%
2011	9	395,048	2.54%	5.00%
2012	9	398,795	1.73%	5.00%
2013	8	381,680	1.52%	5.00%
2014	7	346,807	\$ 281	5.00%
2015	7	378,771	\$ 1,353	5.00%
2016	7	355,374	\$ 784	5.00%
2017	3	158,953	\$ 0	5.00%

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

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

Note: The contributions shown in Table 9 for the 12/31/2015 through 12/31/2019 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 6.

See the Benefit Provision History on page 60 for past benefit provision changes.

Division 14 - Adm/NonUnion

Table 8-14: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2007	\$ 3,366,297	\$ 2,844,249	84%	\$ 522,048
2008	3,463,118	3,188,758	92%	274,360
2009	3,794,301	3,593,171	95%	201,130
2010	4,010,400	4,094,239	102%	(83,839)
2011	4,240,151	4,384,685	103%	(144,534)
2012	4,778,491	4,815,785	101%	(37,294)
2013	5,298,463	5,273,961	100%	24,502
2014	5,796,065	5,539,436	96%	256,629
2015	6,645,837	5,930,022	89%	715,815
2016	7,123,332	6,394,697	90%	728,635
2017	7,629,452	6,795,743	89%	833,709

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 ¹	Employee Contribution Rate ²
	Number	Annual Payroll		
2007	33	\$ 1,650,460	6.12%	6.00%
2008	29	1,515,248	6.62%	5.00%
2009	33	1,800,059	6.11%	5.00%
2010	34	1,981,088	5.45%	5.00%
2011	33	1,942,390	5.35%	5.00%
2012	34	1,908,244	5.52%	5.00%
2013	34	2,026,959	6.46%	5.00%
2014	35	2,111,436	\$ 11,872	5.00%
2015	32	2,025,795	\$ 15,246	5.00%
2016	26	1,723,713	\$ 12,887	5.00%
2017	23	1,619,640	\$ 13,467	5.00%

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

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

Note: The contributions shown in Table 9 for the 12/31/2015 through 12/31/2019 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 6.

See the Benefit Provision History on page 60 for past benefit provision changes.

Division 15 - Utilities Dr

Table 8-15: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2007	\$ 62,405	\$ 43,137	69%	\$ 19,268
2008	172,413	133,983	78%	38,430
2009	183,689	160,991	88%	22,698
2010	148,318	186,488	126%	(38,170)
2011	233,539	192,594	83%	40,945
2012	232,326	179,491	77%	52,835
2013	231,296	171,997	74%	59,299
2014	229,922	165,260	72%	64,662
2015	236,208	157,220	67%	78,988
2016	234,687	149,707	64%	84,980
2017	233,070	145,143	62%	87,927

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 ¹	Employee Contribution Rate ²
	Number	Annual Payroll		
2007	1	\$ 82,054	10.46%	6.00%
2008	1	85,036	11.17%	6.00%
2009	1	88,664	10.94%	6.00%
2010	0	0	\$ 0	0.00%
2011	0	0	\$ 227	0.00%
2012	0	0	\$ 295	0.00%
2013	0	0	\$ 351	0.00%
2014	0	0	\$ 411	0.00%
2015	0	0	\$ 566	0.00%
2016	0	0	\$ 660	6.00%
2017	0	0	\$ 761	6.00%

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 6.

See the Benefit Provision History on page 60 for past benefit provision changes.

Division 20 - Pol Cmnd

Table 8-20: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2007	\$ 4,533,239	\$ 2,712,327	60%	\$ 1,820,912
2008	5,022,008	2,939,447	59%	2,082,561
2009	5,349,372	3,030,718	57%	2,318,654
2010	6,402,618	3,158,179	49%	3,244,439
2011	6,957,433	3,689,013	53%	3,268,420
2012	7,423,572	4,086,360	55%	3,337,212
2013	8,760,159	4,244,941	49%	4,515,218
2014	9,553,198	4,773,789	50%	4,779,409
2015	10,956,409	5,117,852	47%	5,838,557
2016	11,507,522	5,420,558	47%	6,086,964
2017	12,342,206	6,081,797	49%	6,260,409

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

Table 9-20: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution ¹	Employee Contribution Rate ²
	Number	Annual Payroll		
2007	9	\$ 679,208	18.33%	9.06%
2008	8	590,492	24.39%	9.06%
2009	5	391,489	38.28%	9.06%
2010	7	559,006	37.18%	9.06%
2011	8	646,496	33.90%	9.06%
2012	9	714,115	34.63%	9.06%
2013	8	690,649	47.79%	9.06%
2014	10	830,122	\$ 30,807	9.06%
2015	11	958,619	\$ 40,054	9.06%
2016	11	989,066	\$ 41,874	9.06%
2017	10	930,835	\$ 43,623	9.06%

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 6.

See the Benefit Provision History on page 60 for past benefit provision changes.

Division HA - POLC/cler/Dispatch aft 7/1/14

Table 8-HA: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2014	\$ (27)	\$ 585	0%	\$ (612)
2015	0	2,367	0%	(2,367)
2016	2,639	6,227	236%	(3,588)
2017	5,813	16,633	286%	(10,820)

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 ¹	Employee Contribution Rate ²
	Number	Annual Payroll		
2014	1	\$ 33,995	5.99%	0.00%
2015	1	35,002	5.16%	0.00%
2016	2	87,059	5.96%	0.00%
2017	2	90,378	\$ 389	0.00%

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

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

Note: The contributions shown in Table 9 for the 12/31/2015 through 12/31/2019 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 6.

See the Benefit Provision History on page 60 for past benefit provision changes.

Division HB - IAFF ee's hired on/aft 1/1/14

Table 8-HB: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2015	3,331	1,977	59%	1,354
2016	8,263	5,924	72%	2,339
2017	18,157	12,393	68%	5,764

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 ¹	Employee Contribution Rate ²
	Number	Annual Payroll		
2015	1	45,728	6.41%	0.00%
2016	1	51,875	6.45%	0.00%
2017	2	106,206	6.72%	0.00%

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

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

Note: The contributions shown in Table 9 for the 12/31/2015 through 12/31/2019 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 6.

See the Benefit Provision History on page 60 for past benefit provision changes.

Division HD - POAM on/after 1/1/2015

Table 8-HD: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2015	11,692	13,467	115%	(1,775)
2016	18,222	29,847	164%	(11,625)
2017	47,316	54,030	114%	(6,714)

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 ¹	Employee Contribution Rate ²
	Number	Annual Payroll		
2015	5	240,367	6.79%	0.00%
2016	5	216,567	6.24%	0.00%
2017	6	315,041	6.36%	0.00%

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

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

Note: The contributions shown in Table 9 for the 12/31/2015 through 12/31/2019 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 6.

See the Benefit Provision History on page 60 for past benefit provision changes.

Division HE - Non-union on/after 1/1/2015

Table 8-HE: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2015	10,713	12,882	120%	(2,169)
2016	19,752	39,860	202%	(20,108)
2017	74,362	102,994	139%	(28,632)

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

Table 9-HE: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution ¹	Employee Contribution Rate ²
	Number	Annual Payroll		
2015	5	218,662	7.28%	0.00%
2016	9	391,660	8.16%	0.00%
2017	14	679,581	7.50%	0.00%

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

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

Note: The contributions shown in Table 9 for the 12/31/2015 through 12/31/2019 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 6.

See the Benefit Provision History on page 60 for past benefit provision changes.

Division HF - TPOAM on/aft 3/30/15

Table 8-HF: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2015	\$ 0	\$ 2,598	0%	\$ (2,598)
2016	12,104	12,505	103%	(401)
2017	37,202	38,557	104%	(1,355)

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

Table 9-HF: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution ¹	Employee Contribution Rate ²
	Number	Annual Payroll		
2015	2	\$ 66,861	9.14%	0.00%
2016	7	241,720	7.44%	0.00%
2017	11	411,892	7.15%	0.00%

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

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

Note: The contributions shown in Table 9 for the 12/31/2015 through 12/31/2019 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 6.

See the Benefit Provision History on page 60 for past benefit provision changes.

Division HG - Elctd Ofc on/aft 1/1/15

Table 8-HG: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2017	8,164	23,189	284%	(15,025)

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

Table 9-HG: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution ¹	Employee Contribution Rate ²
	Number	Annual Payroll		
2017	1	80,142	8.15%	0.00%

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

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

Note: The contributions shown in Table 9 for the 12/31/2015 through 12/31/2019 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 6.

See the Benefit Provision History on page 60 for past benefit provision changes.

Division 01 - TPOAM

Table 10-01: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance ¹	Original Amortization Period ²	Amounts for Fiscal Year Beginning 1/1/2019		
				Outstanding UAL Balance ³	Remaining Amortization Period ²	Annual Amortization Payment
Initial	12/31/2015	\$ 175,475	23	\$ 203,362	21	\$ 14,292
(Gain)/Loss	12/31/2016	22,656	22	24,572	21	1,728
(Gain)/Loss	12/31/2017	(49,510)	21	(53,347)	21	(3,744)
Total				\$ 174,587		\$ 12,276

¹ For each type of UAL (layer), this is the original balance as of the date the layer was established.

² According to the MERS amortization policy, each type of UAL (layer) is amortized over a specific period (see [Appendix](#) on MERS website).

³ This is the remaining balance as of the valuation date, projected to the beginning of the fiscal year shown above.

The unfunded accrued liability (UAL) as of December 31, 2017 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2017 valuation to take into account the expected future contributions that are based on past valuations. Each type of UAL (layer) is amortized over the appropriate period. Please see the [Appendix](#) on the MERS website for a detailed description of the amortization policy.

Division 02 - Pol Ptrl

Table 10-02: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance ¹	Original Amortization Period ²	Amounts for Fiscal Year Beginning 1/1/2019		
				Outstanding UAL Balance ³	Remaining Amortization Period ²	Annual Amortization Payment
Initial	12/31/2015	\$ 1,780,701	23	\$ 1,874,910	21	\$ 131,772
(Gain)/Loss	12/31/2016	(102,473)	22	(111,148)	21	(7,812)
(Gain)/Loss	12/31/2017	(162,626)	21	(175,229)	21	(12,312)
Total				\$ 1,588,533		\$ 111,648

¹ For each type of UAL (layer), this is the original balance as of the date the layer was established.

² According to the MERS amortization policy, each type of UAL (layer) is amortized over a specific period (see [Appendix](#) on MERS website).

³ This is the remaining balance as of the valuation date, projected to the beginning of the fiscal year shown above.

The unfunded accrued liability (UAL) as of December 31, 2017 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2017 valuation to take into account the expected future contributions that are based on past valuations. Each type of UAL (layer) is amortized over the appropriate period. Please see the [Appendix](#) on the MERS website for a detailed description of the amortization policy.

Division 05 - Fire Fght

Table 10-05: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance ¹	Original Amortization Period ²	Amounts for Fiscal Year Beginning 1/1/2019		
				Outstanding UAL Balance ³	Remaining Amortization Period ²	Annual Amortization Payment
Initial	12/31/2015	\$ 799,916	23	\$ 850,840	21	\$ 59,796
(Gain)/Loss	12/31/2016	(127,431)	22	(138,230)	21	(9,720)
(Gain)/Loss	12/31/2017	153,111	21	164,977	21	11,592
Total				\$ 877,587		\$ 61,668

¹ For each type of UAL (layer), this is the original balance as of the date the layer was established.

² According to the MERS amortization policy, each type of UAL (layer) is amortized over a specific period (see [Appendix](#) on MERS website).

³ This is the remaining balance as of the valuation date, projected to the beginning of the fiscal year shown above.

The unfunded accrued liability (UAL) as of December 31, 2017 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2017 valuation to take into account the expected future contributions that are based on past valuations. Each type of UAL (layer) is amortized over the appropriate period. Please see the [Appendix](#) on the MERS website for a detailed description of the amortization policy.

Division 10 - Elctd Ofc

Table 10-10: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance ¹	Original Amortization Period ²	Amounts for Fiscal Year Beginning 1/1/2019		
				Outstanding UAL Balance ³	Remaining Amortization Period ²	Annual Amortization Payment
Initial	12/31/2015	\$ 628,417	23	\$ 656,652	21	\$ 46,152
(Gain)/Loss	12/31/2016	32,200	22	34,929	21	2,460
(Gain)/Loss	12/31/2017	(507)	21	(546)	21	(36)
Total				\$ 691,035		\$ 48,576

¹ For each type of UAL (layer), this is the original balance as of the date the layer was established.

² According to the MERS amortization policy, each type of UAL (layer) is amortized over a specific period (see [Appendix](#) on MERS website).

³ This is the remaining balance as of the valuation date, projected to the beginning of the fiscal year shown above.

The unfunded accrued liability (UAL) as of December 31, 2017 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2017 valuation to take into account the expected future contributions that are based on past valuations. Each type of UAL (layer) is amortized over the appropriate period. Please see the [Appendix](#) on the MERS website for a detailed description of the amortization policy.

Division 11 - Dsptchr

Table 10-11: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance ¹	Original Amortization Period ²	Amounts for Fiscal Year Beginning 1/1/2019		
				Outstanding UAL Balance ³	Remaining Amortization Period ²	Annual Amortization Payment
Initial	12/31/2015	\$ (20,721)	10	\$ (7,224)	10	\$ (888)
(Gain)/Loss	12/31/2016	(63,538)	15	(67,439)	14	(6,324)
(Gain)/Loss	12/31/2017	(165,343)	10	(178,157)	10	(21,792)
Total				\$ (252,820)		\$ (29,004)

¹ For each type of UAL (layer), this is the original balance as of the date the layer was established.

² According to the MERS amortization policy, each type of UAL (layer) is amortized over a specific period (see [Appendix](#) on MERS website).

³ This is the remaining balance as of the valuation date, projected to the beginning of the fiscal year shown above.

The unfunded accrued liability (UAL) as of December 31, 2017 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2017 valuation to take into account the expected future contributions that are based on past valuations. Each type of UAL (layer) is amortized over the appropriate period. Please see the [Appendix](#) on the MERS website for a detailed description of the amortization policy.

Division 14 - Adm/NonUnion

Table 10-14: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance ¹	Original Amortization Period ²	Amounts for Fiscal Year Beginning 1/1/2019		
				Outstanding UAL Balance ³	Remaining Amortization Period ²	Annual Amortization Payment
Initial	12/31/2015	\$ 715,815	23	\$ 781,627	21	\$ 54,936
(Gain)/Loss	12/31/2016	(41,144)	22	(44,629)	21	(3,132)
(Gain)/Loss	12/31/2017	101,618	21	109,493	21	7,692
Total				\$ 846,491		\$ 59,496

¹ For each type of UAL (layer), this is the original balance as of the date the layer was established.

² According to the MERS amortization policy, each type of UAL (layer) is amortized over a specific period (see [Appendix](#) on MERS website).

³ This is the remaining balance as of the valuation date, projected to the beginning of the fiscal year shown above.

The unfunded accrued liability (UAL) as of December 31, 2017 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2017 valuation to take into account the expected future contributions that are based on past valuations. Each type of UAL (layer) is amortized over the appropriate period. Please see the [Appendix](#) on the MERS website for a detailed description of the amortization policy.

Division 15 - Utilities Dr

Table 10-15: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance ¹	Original Amortization Period ²	Amounts for Fiscal Year Beginning 1/1/2019		
				Outstanding UAL Balance ³	Remaining Amortization Period ²	Annual Amortization Payment
Initial	12/31/2015	\$ 78,988	16	\$ 77,566	12	\$ 8,196
(Gain)/Loss	12/31/2016	4,991	14	5,272	12	552
(Gain)/Loss	12/31/2017	3,415	12	3,680	12	384
Total				\$ 86,518		\$ 9,132

¹ For each type of UAL (layer), this is the original balance as of the date the layer was established.

² According to the MERS amortization policy, each type of UAL (layer) is amortized over a specific period (see [Appendix](#) on MERS website).

³ This is the remaining balance as of the valuation date, projected to the beginning of the fiscal year shown above.

The unfunded accrued liability (UAL) as of December 31, 2017 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2017 valuation to take into account the expected future contributions that are based on past valuations. Each type of UAL (layer) is amortized over the appropriate period. Please see the [Appendix](#) on the MERS website for a detailed description of the amortization policy.

Division 20 - Pol Cmnd

Table 10-20: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance ¹	Original Amortization Period ²	Amounts for Fiscal Year Beginning 1/1/2019		
				Outstanding UAL Balance ³	Remaining Amortization Period ²	Annual Amortization Payment
Initial	12/31/2015	\$ 5,838,557	23	\$ 6,086,738	21	\$ 427,788
(Gain)/Loss	12/31/2016	92,446	22	100,279	21	7,044
(Gain)/Loss	12/31/2017	114,535	21	123,411	21	8,676
Total				\$ 6,310,428		\$ 443,508

¹ For each type of UAL (layer), this is the original balance as of the date the layer was established.

² According to the MERS amortization policy, each type of UAL (layer) is amortized over a specific period (see [Appendix](#) on MERS website).

³ This is the remaining balance as of the valuation date, projected to the beginning of the fiscal year shown above.

The unfunded accrued liability (UAL) as of December 31, 2017 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2017 valuation to take into account the expected future contributions that are based on past valuations. Each type of UAL (layer) is amortized over the appropriate period. Please see the [Appendix](#) on the MERS website for a detailed description of the amortization policy.

Division HA - POLC/cler/Dispatch aft 7/1/14

Table 10-HA: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance ¹	Original Amortization Period ²	Amounts for Fiscal Year Beginning 1/1/2019		
				Outstanding UAL Balance ³	Remaining Amortization Period ²	Annual Amortization Payment
Initial	12/31/2015	\$ (2,367)	10	\$ (2,390)	10	\$ (288)
(Gain)/Loss	12/31/2016	(938)	15	(990)	14	(96)
(Gain)/Loss	12/31/2017	(7,290)	10	(7,855)	10	(960)
Total				\$ (11,235)		\$ (1,344)

¹ For each type of UAL (layer), this is the original balance as of the date the layer was established.

² According to the MERS amortization policy, each type of UAL (layer) is amortized over a specific period (see [Appendix](#) on MERS website).

³ This is the remaining balance as of the valuation date, projected to the beginning of the fiscal year shown above.

The unfunded accrued liability (UAL) as of December 31, 2017 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2017 valuation to take into account the expected future contributions that are based on past valuations. Each type of UAL (layer) is amortized over the appropriate period. Please see the [Appendix](#) on the MERS website for a detailed description of the amortization policy.

Division HB - IAFF ee's hired on/aft 1/1/14

Table 10-HB: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance ¹	Original Amortization Period ²	Amounts for Fiscal Year Beginning 1/1/2019		
				Outstanding UAL Balance ³	Remaining Amortization Period ²	Annual Amortization Payment
Initial	12/31/2015	\$ 1,354	23	\$ 1,486	21	\$ 108
(Gain)/Loss	12/31/2016	881	22	960	21	72
(Gain)/Loss	12/31/2017	3,343	21	3,602	21	252
Total				\$ 6,048		\$ 432

¹ For each type of UAL (layer), this is the original balance as of the date the layer was established.

² According to the MERS amortization policy, each type of UAL (layer) is amortized over a specific period (see [Appendix](#) on MERS website).

³ This is the remaining balance as of the valuation date, projected to the beginning of the fiscal year shown above.

The unfunded accrued liability (UAL) as of December 31, 2017 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2017 valuation to take into account the expected future contributions that are based on past valuations. Each type of UAL (layer) is amortized over the appropriate period. Please see the [Appendix](#) on the MERS website for a detailed description of the amortization policy.

Division HD - POAM on/after 1/1/2015

Table 10-HD: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance ¹	Original Amortization Period ²	Amounts for Fiscal Year Beginning 1/1/2019		
				Outstanding UAL Balance ³	Remaining Amortization Period ²	Annual Amortization Payment
Initial	12/31/2015	\$ (1,775)	10	\$ (1,715)	10	\$ (216)
(Gain)/Loss	12/31/2016	(9,711)	15	(10,303)	14	(960)
(Gain)/Loss	12/31/2017	5,550	15	5,980	15	528
Total				\$ (6,038)		\$ (648)

¹ For each type of UAL (layer), this is the original balance as of the date the layer was established.

² According to the MERS amortization policy, each type of UAL (layer) is amortized over a specific period (see [Appendix](#) on MERS website).

³ This is the remaining balance as of the valuation date, projected to the beginning of the fiscal year shown above.

The unfunded accrued liability (UAL) as of December 31, 2017 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2017 valuation to take into account the expected future contributions that are based on past valuations. Each type of UAL (layer) is amortized over the appropriate period. Please see the [Appendix](#) on the MERS website for a detailed description of the amortization policy.

Division HE - Non-union on/after 1/1/2015

Table 10-HE: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance ¹	Original Amortization Period ²	Amounts for Fiscal Year Beginning 1/1/2019		
				Outstanding UAL Balance ³	Remaining Amortization Period ²	Annual Amortization Payment
Initial	12/31/2015	\$ (2,169)	10	\$ (2,118)	10	\$ (264)
(Gain)/Loss	12/31/2016	(17,771)	15	(18,863)	14	(1,764)
(Gain)/Loss	12/31/2017	(7,252)	15	(7,814)	15	(696)
Total				\$ (28,795)		\$ (2,724)

¹ For each type of UAL (layer), this is the original balance as of the date the layer was established.

² According to the MERS amortization policy, each type of UAL (layer) is amortized over a specific period (see [Appendix](#) on MERS website).

³ This is the remaining balance as of the valuation date, projected to the beginning of the fiscal year shown above.

The unfunded accrued liability (UAL) as of December 31, 2017 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2017 valuation to take into account the expected future contributions that are based on past valuations. Each type of UAL (layer) is amortized over the appropriate period. Please see the [Appendix](#) on the MERS website for a detailed description of the amortization policy.

Division HF - TPOAM on/aft 3/30/15

Table 10-HF: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance ¹	Original Amortization Period ²	Amounts for Fiscal Year Beginning 1/1/2019		
				Outstanding UAL Balance ³	Remaining Amortization Period ²	Annual Amortization Payment
Initial	12/31/2015	\$ (2,598)	10	\$ (2,122)	10	\$ (264)
(Gain)/Loss	12/31/2016	1,951	15	2,066	14	192
(Gain)/Loss	12/31/2017	(1,222)	15	(1,317)	15	(120)
Total				\$ (1,373)		\$ (192)

¹ For each type of UAL (layer), this is the original balance as of the date the layer was established.

² According to the MERS amortization policy, each type of UAL (layer) is amortized over a specific period (see [Appendix](#) on MERS website).

³ This is the remaining balance as of the valuation date, projected to the beginning of the fiscal year shown above.

The unfunded accrued liability (UAL) as of December 31, 2017 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2017 valuation to take into account the expected future contributions that are based on past valuations. Each type of UAL (layer) is amortized over the appropriate period. Please see the [Appendix](#) on the MERS website for a detailed description of the amortization policy.

Division HG - Elctd Ofc on/aft 1/1/15

Table 10-HG: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance ¹	Original Amortization Period ²	Amounts for Fiscal Year Beginning 1/1/2019		
				Outstanding UAL Balance ³	Remaining Amortization Period ²	Annual Amortization Payment
(Gain)/Loss	12/31/2017	\$ (15,025)	15	\$ (16,189)	15	\$ (1,440)
Total				\$ (16,189)		\$ (1,440)

¹ For each type of UAL (layer), this is the original balance as of the date the layer was established.

² According to the MERS amortization policy, each type of UAL (layer) is amortized over a specific period (see [Appendix](#) on MERS website).

³ This is the remaining balance as of the valuation date, projected to the beginning of the fiscal year shown above.

The unfunded accrued liability (UAL) as of December 31, 2017 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2017 valuation to take into account the expected future contributions that are based on past valuations. Each type of UAL (layer) is amortized over the appropriate period. Please see the [Appendix](#) on the MERS website for a detailed description of the amortization policy.

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:	12/31/2017
Measurement Date of Total Pension Liability (TPL):	12/31/2017

At 12/31/2017, the following employees were covered by the benefit terms:

Inactive employees or beneficiaries currently receiving benefits:	56
Inactive employees entitled to but not yet receiving benefits:	30
Active employees:	<u>133</u>
	219

Covered employee payroll: (Needed for Required Supplementary Information)	\$	8,632,459
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Average expected remaining service lives of all employees (active and inactive):		7
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Total Pension Liability as of 12/31/2016 measurement date:	\$	34,208,564
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Total Pension Liability as of 12/31/2017 measurement date:	\$	37,083,145
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Service Cost for the year ending on the 12/31/2017 measurement date:	\$	961,138
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Change in the Total Pension Liability due to:

- Benefit changes ¹ :	\$	0
- Differences between expected and actual experience ² :	\$	318,380
- 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.

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 12/31/2017:	\$ 5,331,558	-	\$ (4,378,830)

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.

GASB 68 Information

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

The following information has been prepared to provide some of the information necessary to complete GASB Statement No. 68 disclosures. 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:	12/31/2017
Measurement Date of Total Pension Liability (TPL):	12/31/2018

At 12/31/2017, the following employees were covered by the benefit terms:

Inactive employees or beneficiaries currently receiving benefits:	56
Inactive employees entitled to but not yet receiving benefits:	30
Active employees:	<u>133</u>
	219

Covered employee payroll: (Needed for Required Supplementary Information)	\$ 8,632,459
Average expected remaining service lives of all employees (active and inactive):	7

Total Pension Liability as of 12/31/2017 measurement date:	\$ 36,752,095
Total Pension Liability as of 12/31/2018 measurement date:	\$ 39,639,240
Service Cost for the year ending on the 12/31/2018 measurement date:	\$ 979,549
Change in the Total Pension Liability due to:	
- Benefit changes ¹ :	\$ 0
- Differences between expected and actual experience ² :	\$ 357,535
- 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.

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 12/31/2018:	\$ 5,596,247	-	\$ (4,602,015)

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 - TPOAM

12/1/2016	Service Credit Purchase Estimates - Yes
1/1/2014	Member Contribution Rate 2.00%
1/1/2012	Member Contribution Rate 3.00%
1/1/2011	Member Contribution Rate 4.00%
1/1/2004	Benefit B-2
11/10/2003	Covered by Act 88
7/11/1995	Blanket Resolution (All Service)
8/1/1991	Benefit FAC-3 (3 Year Final Average Compensation)
8/1/1991	10 Year Vesting
8/1/1991	Benefit C-2/Base B-1
8/1/1991	Member Contribution Rate 5.00%
8/1/1991	Fiscal Month - January
	Defined Benefit Normal Retirement Age - 60
	Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years

02 - Pol Ptrl

12/1/2016	Service Credit Purchase Estimates - Yes
1/1/2010	E2 2.5% COLA for future retirees (12/01/2009)
12/1/2009	Benefit F50 (With 25 Years of Service)
12/1/2009	Member Contribution Rate 6.17%
12/1/2006	Benefit B-3 (80% max)
8/1/2006	Temporary Benefit B-3 (80% max) (08/01/2006 - 09/30/2006)
8/1/2006	E2 2.5% Window COLA for future retirees (08/01/2006) to (09/30/2006)
11/10/2003	Covered by Act 88
1/1/2001	Benefit B-2
7/11/1995	Blanket Resolution (All Service)
8/1/1992	Benefit FAC-3 (3 Year Final Average Compensation)
8/1/1992	10 Year Vesting
8/1/1992	Benefit C-2/Base B-1
8/1/1992	Benefit F55 (With 15 Years of Service)
8/1/1992	Member Contribution Rate 5.00%
8/1/1991	Fiscal Month - January
	Defined Benefit Normal Retirement Age - 60
	Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years

05 - Fire Fight

12/1/2016	Service Credit Purchase Estimates - Yes
1/1/2007	Benefit B-3 (80% max)
11/10/2003	Covered by Act 88
3/1/2003	Benefit B-2

05 - Fire Fight

7/11/1995 Blanket Resolution (All Service)
 8/1/1992 Day of work defined as 96 Hours a Month for All employees.
 8/1/1992 Benefit FAC-3 (3 Year Final Average Compensation)
 8/1/1992 10 Year Vesting
 8/1/1992 Benefit C-2/Base B-1
 8/1/1992 Benefit F55 (With 15 Years of Service)
 8/1/1992 Member Contribution Rate 5.00%
 8/1/1991 Fiscal Month - January
 Defined Benefit Normal Retirement Age - 60
 Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years

10 - Elctd Ofc

12/1/2016 Service Credit Purchase Estimates - Yes
 1/1/2005 E2 2.5% COLA for future retirees (11/01/2004)
 11/10/2003 Covered by Act 88
 5/1/1996 Benefit B-3 (80% max)
 5/1/1996 Member Contribution Rate 6.93%
 4/30/1996 Member Contribution Rate 0.00%
 4/1/1996 2.0% multiplier (80% max)
 7/11/1995 Blanket Resolution (All Service)
 8/1/1991 Benefit FAC-3 (3 Year Final Average Compensation)
 8/1/1991 8 Year Vesting
 8/1/1991 Benefit B-2
 8/1/1991 Member Contribution Rate 5.00%
 8/1/1991 Fiscal Month - January
 Defined Benefit Normal Retirement Age - 60
 Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years

11 - Dsptchr

12/1/2016 Service Credit Purchase Estimates - Yes
 12/1/2009 Benefit B-3 (80% max)
 11/10/2003 Covered by Act 88
 1/1/2003 Benefit B-2
 7/11/1995 Blanket Resolution (All Service)
 10/1/1992 Benefit FAC-3 (3 Year Final Average Compensation)
 10/1/1992 10 Year Vesting
 10/1/1992 Benefit C-2/Base B-1
 10/1/1992 Member Contribution Rate 5.00%
 8/1/1991 Fiscal Month - January
 Defined Benefit Normal Retirement Age - 60
 Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years

14 - Adm/NonUnion

12/1/2016 Service Credit Purchase Estimates - Yes
 8/1/2008 Member Contribution Rate 5.00%

14 - Adm/NonUnion

8/1/2005 Temporary 25 Years & Out (08/01/2005 - 11/03/2005)
 1/1/2005 Benefit B-3 (80% max)
 1/1/2005 Member Contribution Rate 6.00%
 11/10/2003 Covered by Act 88
 1/1/2000 Benefit FAC-3 (3 Year Final Average Compensation)
 1/1/2000 10 Year Vesting
 1/1/2000 Benefit B-2
 1/1/2000 Member Contribution Rate 5.00%
 7/11/1995 Blanket Resolution (All Service)
 8/1/1991 Fiscal Month - January
 Defined Benefit Normal Retirement Age - 60
 Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years

15 - Utilities Dr

12/1/2016 Service Credit Purchase Estimates - Yes
 10/1/2007 Blanket Resolution (All Service)
 10/1/2007 Covered by Act 88
 10/1/2007 Benefit FAC-3 (3 Year Final Average Compensation)
 10/1/2007 10 Year Vesting
 10/1/2007 Benefit B-3 (80% max)
 10/1/2007 Benefit F55 (With 25 Years of Service)
 10/1/2007 Member Contribution Rate 6.00%
 8/1/1991 Fiscal Month - January
 Defined Benefit Normal Retirement Age - 60
 Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years

20 - Pol Cmnd

12/1/2016 Service Credit Purchase Estimates - Yes
 10/1/2009 Temporary 20 Years & Out (10/01/2009 - 01/31/2010)
 2/1/2007 Member Contribution Rate 9.06%
 7/1/2005 Member Contribution Rate 10.06%
 11/10/2003 Covered by Act 88
 1/1/2001 E2 2.5% COLA for future retirees (01/01/2001)
 1/1/1999 Benefit B-4 (80% max)
 1/1/1999 Benefit F50 (With 25 Years of Service)
 1/1/1999 Member Contribution Rate 11.06%
 7/11/1995 Blanket Resolution (All Service)
 6/1/1992 Benefit FAC-3 (3 Year Final Average Compensation)
 6/1/1992 10 Year Vesting
 6/1/1992 Benefit C-2/Base B-1
 6/1/1992 Benefit F55 (With 15 Years of Service)
 6/1/1992 Member Contribution Rate 5.00%
 8/1/1991 Fiscal Month - January
 Defined Benefit Normal Retirement Age - 60
 Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years

HA - POLC/cler/Dispatch aft 7/1/14

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	6 Year Vesting
7/1/2014	1.5% Multiplier
11/10/2003	Covered by ACT 88
8/1/1991	Fiscal Month - January
	Defined Benefit Normal Retirement Age - 60
	No Early Reduced Conditions

HB - IAFF ee's hired on/aft 1/1/14

1/1/2014	Day of work defined as 96 Hours a Month for All employees.
1/1/2014	Benefit FAC-3 (3 Year Final Average Compensation)
1/1/2014	6 Year Vesting
1/1/2014	1.5% Multiplier
1/1/2014	Benefit F55 (With 25 Years of Service)
11/10/2003	Covered by ACT 88
8/1/1991	Fiscal Month - January
	Defined Benefit Normal Retirement Age - 60
	No Early Reduced Conditions

HD - POAM on/after 1/1/2015

1/1/2015	Day of work defined as 8 Hours a Day for All employees.
1/1/2015	Benefit FAC-3 (3 Year Final Average Compensation)
1/1/2015	6 Year Vesting
1/1/2015	1.5% Multiplier
1/1/2015	Benefit F55 (With 25 Years of Service)
8/1/1991	Fiscal Month - January
	Defined Benefit Normal Retirement Age - 60
	No Early Reduced Conditions

HE - Non-union on/after 1/1/2015

1/1/2015	Day of work defined as 8 Hours a Day for All employees.
1/1/2015	Benefit FAC-3 (3 Year Final Average Compensation)
1/1/2015	6 Year Vesting
1/1/2015	1.5% Multiplier
8/1/1991	Fiscal Month - January
	Defined Benefit Normal Retirement Age - 60
	No Early Reduced Conditions

HF - TPOAM on/aft 3/30/15

4/1/2015	Day of work defined as 8 Hours a Day for All employees.
4/1/2015	Benefit FAC-3 (3 Year Final Average Compensation)
4/1/2015	6 Year Vesting
4/1/2015	1.5% Multiplier

HF - TPOAM on/aft 3/30/15

8/1/1991 Fiscal Month - January
Defined Benefit Normal Retirement Age - 60
No Early Reduced Conditions

HG - Elctd Ofc on/aft 1/1/15

1/1/2015 Day of work defined as 8 Hours a Day for All employees.
1/1/2015 Benefit FAC-3 (3 Year Final Average Compensation)
1/1/2015 Non Standard Compensation Definition
1/1/2015 6 Year Vesting
1/1/2015 1.5% Multiplier
8/1/1991 Fiscal Month - January
Defined Benefit Normal Retirement Age - 60
No Early Reduced Conditions

Plan Provisions, Actuarial Assumptions, and Actuarial Funding Method

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

Increase in Final Average Compensation

Division	FAC Increase Assumption
All Divisions	1.00%

Withdrawal Rate Scaling Factor

Division	Withdrawal Rate Scaling Factor
All Divisions	94%

Miscellaneous and Technical Assumptions

Loads – None.

Amortization Policy for Closed Divisions

Closed Division	Amortization Option
11 - Dspchr	Non-Accelerated Amortization
15 - Utilities Dr	Accelerated to 5-Year Amortization
HA - POLC/cler/Dispatch aft	Non-Accelerated Amortization

Please see the [Appendix](#) on the MERS website for a detailed description of the amortization options available for closed divisions within an open municipality.