



Employees' Retirement System of the County of Milwaukee

**REVISED - Actuarial
Valuation and Review as of
January 1, 2019**

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June 10, 2019

Board of Trustees
Employees' Retirement System of the County of Milwaukee
901 North 9th Street
Milwaukee, Wisconsin 53233

Dear Board Members:

We are pleased to submit this revised Actuarial Valuation and Review as of January 1, 2019, of the Employees' Retirement System of the County of Milwaukee. This report summarizes the actuarial data used in the valuation, analyzes the preceding year's experience, and, as required by the Retirement Code, is the basis for the Actual Funding Contribution for fiscal year 2019 and the Budget Contribution for fiscal year 2020.

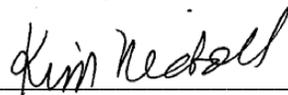
This report was prepared in accordance with generally accepted actuarial principles and practices at the request of the Board to assist in administering the Retirement System. The census information and financial information on which our calculations were based was prepared by the Retirement Plan Services (RPS) office. That assistance is gratefully acknowledged.

The actuarial calculations were directed under the supervision of Kim Nicholl, Matthew Strom, and Geoff Bridges. We are members of the American Academy of Actuaries and we meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. To the best of our knowledge, the information supplied in this actuarial valuation is complete and accurate. Further, in our opinion, the assumptions as approved by the Board are reasonably related to the experience of and the expectations for the System.

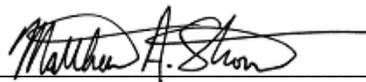
We look forward to reviewing this report and to answering any questions at an upcoming Board meeting.

Sincerely,

Segal Consulting, a Member of The Segal Group, Inc.

By: 

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Senior Vice President and Actuary



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Section 1: Actuarial Valuation Summary

Purpose and Basis

This revised report was prepared by Segal Consulting to present a valuation of the Plan as of January 1, 2019. The valuation was performed to determine whether the assets and contributions are sufficient to provide the prescribed benefits. The measurements shown in this actuarial valuation may not be applicable for other purposes. In particular, the measures herein are not necessarily appropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the Plan's benefit obligations. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements; and changes in plan provisions or applicable law.

Certain disclosure information required by GASB Statements Nos. 67 and 68 as of December 31, 2018, for the System and the County is provided in Section 4.

The contribution requirements presented in this report are based on:

- The benefit provisions of the Pension Plan, as outlined in Chapter 201.24 of the County Code and administered by the Board;
- The characteristics of covered active members, inactive members, and retired members and beneficiaries as of January 1, 2019, provided by RPS;
- The unaudited assets of the Plan as of December 31, 2018, provided by RPS;
- Economic assumptions regarding future salary increases and investment earnings;
- Other actuarial assumptions, regarding employee terminations, retirement, death, etc.; and
- The System's funding policy.

Valuation Highlights

1. Segal strongly recommends an actuarial funding method that targets 100% funding of the actuarial accrued liability. Generally, this implies payments that are ultimately at least enough to cover normal cost, interest on the unfunded actuarial accrued liability and the principal balance. The System's funding policy meets this standard.
2. Actual employer contributions made during the fiscal year ending December 31, 2018, were \$61,177,816. When combined with the employee contributions of \$12,651,528 and interest to the end of the year, the total contributions exceeded the actuarially determined contribution (referred to as the Actual Funding Contribution) for 2018 by \$4,687,868.
3. The results of this January 1, 2019, actuarial valuation are used to determine the Actual Funding Contribution for the fiscal year ending December 31, 2019, and the Budget Contribution for the fiscal year ending December 31, 2020. The Actual Funding Contribution for the year ending December 31, 2019 is \$69,999,642, a decrease of \$1,422,939 from the Actual Funding Contribution for the year ending December 31, 2018. The amortization bases of the unfunded actuarial accrued liability are shown in *Section 2, Exhibit F* of this report.
4. The 2020 Budget Contribution, expected to be contributed in 2020, is \$76,901,000.
5. The funded ratio (the ratio of the actuarial value of assets to actuarial accrued liability) is 75.5%, compared to the prior year's funded ratio of 75.4%. This ratio is one measure of funding status, and its history is a measure of funding progress. Using the market value of assets, the funded ratio is 70.6%, compared to 77.4% as of the prior valuation date. These measurements are not necessarily appropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the System's benefit obligation or the need for or the amount of future contributions.
6. The rate of return on the market value of assets was -2.22% for the January 1, 2018 to December 31, 2018 plan year. The return on the actuarial value of assets was 7.31% for the same period due to the recognition of prior years' investment gains and losses. This resulted in an actuarial loss when measured against the assumed rate of return of 7.75% (applicable for the year ending December 31, 2018). Given the low fixed income interest rate environment, the System's target asset allocation, and expectations of future investment returns for various classes, the Board lowered the investment return assumption to 7.75% effective for the January 1, 2018 actuarial valuation. This is the first step in phasing in a reduction from 8.00% to 7.50% that is scheduled to be completed January 1, 2020. We advise the Board to continue to monitor actual and anticipated investment returns relative to the assumed long-term rate of return on investments.
7. The actuarial value of assets is 107.01% of the market value of assets. The investment experience in the past several years has only been partially recognized in the actuarial value of assets. As the deferred net loss is recognized in future years, the cost of the Plan is likely to increase unless the net loss is offset by future experience. The recognition of the deferred market loss of \$113,415,987 will also have an impact on the future funded ratio. If the net deferred loss were recognized immediately in the actuarial value of assets, the Actual Funding Contribution would increase by \$9,977,043 to \$79,976,685.
8. The unfunded actuarial accrued liability is \$561,337,053, which is a decrease of \$6,704,126 since the prior valuation.

9. The actuarial loss from investment experience is \$7,306,684.
10. The net experience gain from sources other than investment experience was approximately 0.03% of the actuarial accrued liability. Additional detail regarding this loss is shown in *Section 2, Exhibit C*.
11. There were no changes in actuarial assumptions. The investment return assumption is 7.75% and is scheduled to be lowered to 7.50% effective with the January 1, 2020 actuarial valuation.
12. This report constitutes an actuarial valuation for the purpose of determining the actuarially determined contribution under the Plan's funding policy and measuring the progress of that funding policy. The Net Pension Liability (NPL) and Pension Expense under Governmental Accounting Standards Board (GASB) Statements No. 67 and No. 68, for inclusion in the plan and employer's financial statements as of December 31, 2018, and December 31, 2019, is shown in Section 4 of this report. The Actual Funding Contribution in this valuation is expected to be used as the actuarially determined contribution (ADC) for GASB financial reporting.
13. This actuarial report as of January 1, 2019, is based on financial and demographic data as of that date. Changes subsequent to that date are not reflected and will affect future actuarial costs of the Plan.
14. The costs and additional liability associated with Milwaukee District Council 48 v. Milwaukee County are not included in this valuation.
15. This report has been revised from the report presented at the May 22, 2019 Board meeting. The decision made by the County to not have the Plan reimburse the County for certain administrative expenses resulted in an adjustment to the assets and the elimination of the reimbursable administrative expenses component of the 2019 Actual Funding Contribution and the 2020 Budgeted Contribution.

Summary of Key Valuation Results

		2019	2018
Actuarially determined contributions:	• Actual Funding Contribution for fiscal 2018 (and 2017)	\$69,999,642	\$71,422,581
	• Amount actually contributed for fiscal 2018 (and 2017)	TBD	72,194,000
	• Budget Contribution for fiscal 2019 (and 2018)	76,901,000	70,533,656
Actuarial accrued liability for plan year beginning January 1:	• Retired participants and beneficiaries	\$1,824,456,176	\$1,806,909,181
	• Inactive vested participants	85,861,589	89,918,807
	• Active participants	382,745,589	411,020,762
	• Total	2,293,063,354	2,307,848,750
	• Employer normal cost for plan year beginning January 1 (as of January 1)	15,800,135	15,874,798
Assets for plan year beginning January 1:	• Market value of assets (MVA)	\$1,618,310,314	\$1,786,408,565
	• Actuarial value of assets (AVA)	1,731,726,301	1,739,807,571
	• Actuarial value of assets as a percentage of market value of assets	107.01%	97.39%
Funded status for plan year beginning January 1:	• Unfunded actuarial accrued liability based on MVA	\$674,753,040	\$521,440,185
	• Funded percentage on MVA basis	70.57%	77.41%
	• Unfunded actuarial accrued liability based on AVA	\$561,337,053	\$568,041,179
	• Funded percentage on AVA basis	75.52%	75.39%
	• Remaining amortization period (average)	18	19
Key assumptions:	• Interest rate for determining liability as of January 1	7.75%	7.75%
	• Inflation rate	2.50%	2.50%
	• Interest rate for Budget Contribution for fiscal 2020 (and 2019)	7.50%	7.75%
Demographic data for plan year beginning January 1:	• Number of retired members and beneficiaries	8,042	8,037
	• Number of vested former members	1,313	1,371
	• Number of active members	3,425	3,502
	• Total payroll	\$191,043,797	\$189,451,404
	• Average pay	55,779	54,098

Note: All valuation results shown throughout this report for January 1, 2017 and prior years were calculated by the prior actuary.

Important Information About Actuarial Valuations

An actuarial valuation is a budgeting tool with respect to the financing of future projected obligations of a pension plan. It is an estimated forecast – the actual long-term cost of the Plan will be determined by the actual benefits and expenses paid and the actual investment experience of the Plan.

In order to prepare a valuation, Segal Consulting (“Segal”) relies on a number of input items. These include:

Plan of benefits	Plan provisions define the rules that will be used to determine benefit payments, and those rules, or the interpretation of them, may change over time. Even where they appear precise, outside factors may change how they operate. It is important to keep Segal informed with respect to plan provisions and administrative procedures, and to review the plan summary included in our report to confirm that Segal has correctly interpreted the plan of benefits.
Membership data	An actuarial valuation for a plan is based on data provided to the actuary by the System. Segal does not audit such data for completeness or accuracy, other than reviewing it for obvious inconsistencies compared to prior data and other information that appears unreasonable. It is important for Segal to receive the best possible data and to be informed about any known incomplete or inaccurate data.
Assets	The valuation is based on the market value of assets as of the valuation date, as provided by the System. The System uses an “actuarial value of assets” that differs from market value to gradually reflect year-to-year changes in the market value of assets in determining the contribution requirements.
Actuarial assumptions	In preparing an actuarial valuation, Segal projects the benefits to be paid to existing plan participants for the rest of their lives and the lives of their beneficiaries. This projection requires actuarial assumptions as to the probability of death, disability, withdrawal, and retirement of each participant for each year. In addition, the benefits projected to be paid for each of those events in each future year reflect actuarial assumptions as to salary increases and cost-of-living adjustments. The projected benefits are then discounted to a present value, based on the assumed rate of return that is expected to be achieved on the plan’s assets. There is a reasonable range for each assumption used in the projection and the results may vary materially based on which assumptions are selected. It is important for any user of an actuarial valuation to understand this concept. Actuarial assumptions are periodically reviewed to ensure that future valuations reflect emerging plan experience. While future changes in actuarial assumptions may have a significant impact on the reported results, that does not mean that the previous assumptions were unreasonable.

The user of Segal's actuarial valuation (or other actuarial calculations) should keep the following in mind:

- The actuarial valuation is prepared at the request of the System and Board of Trustees. Segal is not responsible for the use or misuse of its report, particularly by any other party.
- An actuarial valuation is a measurement of the plan's assets and liabilities at a specific date. Accordingly, except where otherwise noted, Segal did not perform an analysis of the potential range of future financial measures. The actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.
- Actuarial results in this report are not rounded, but that does not imply precision.
- If the System is aware of any event or trend that was not considered in this valuation that may materially change the results of the valuation, Segal should be advised, so that we can evaluate it.
- Segal does not provide investment, legal, accounting, or tax advice. Segal's valuation is based on our understanding of applicable guidance in these areas and of the plan's provisions, but they may be subject to alternative interpretations. The System should look to its other advisors for expertise in these areas.

As Segal Consulting has no discretionary authority with respect to the management or assets of the Plan, it is not a fiduciary in its capacity as actuaries and consultants with respect to the Plan.

Section 2: Actuarial Valuation Results

A. Membership Data

The Actuarial Valuation and Review considers the number and demographic characteristics of covered participants, including active members, inactive members, retired members and beneficiaries. This section presents a summary of significant statistical data on these participant groups.

As shown below, the ratio of non-active members to active members has been increasing. This increases the risks associated with the plan as the liabilities and costs are larger relative to the payroll of the active members in the plan.

More detailed information for this valuation year and the preceding valuation can be found in *Section 3, Exhibits A and B*.

MEMBER POPULATION: 2010 – 2019

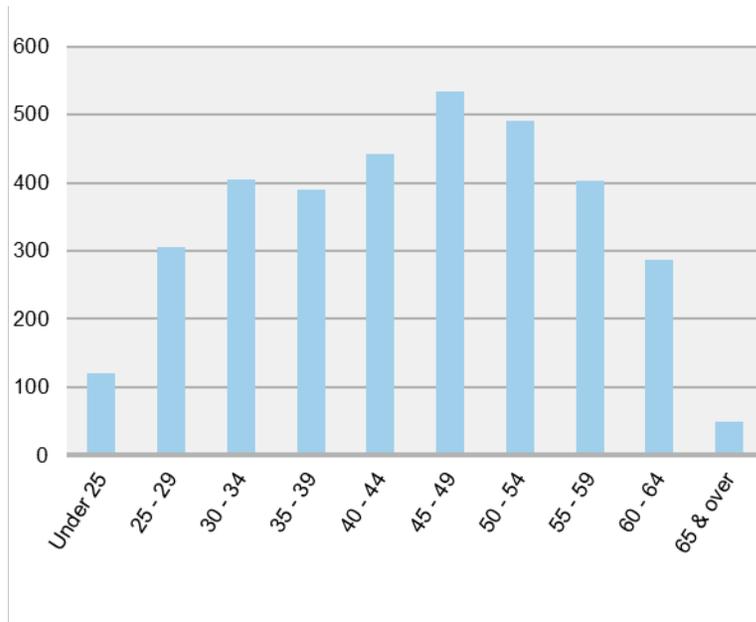
As of January 1	Active Members	Vested Terminated Members	Retired Members and Beneficiaries	Total Non-Actives	Ratio of Non-Actives to Actives
2010	4,808	1,659	7,292	8,951	1.86
2011	4,448	1,493	7,441	8,934	2.01
2012	3,972	1,341	7,747	9,088	2.29
2013	3,934	1,196	7,867	9,063	2.30
2014	3,911	1,411	7,940	9,351	2.39
2015	3,680	1,370	7,979	9,349	2.54
2016	3,619	1,387	7,991	9,378	2.59
2017	3,488	1,394	8,063	9,457	2.71
2018	3,502	1,371	8,037	9,408	2.69
2019	3,425	1,313	8,042	9,355	2.73

Active Members

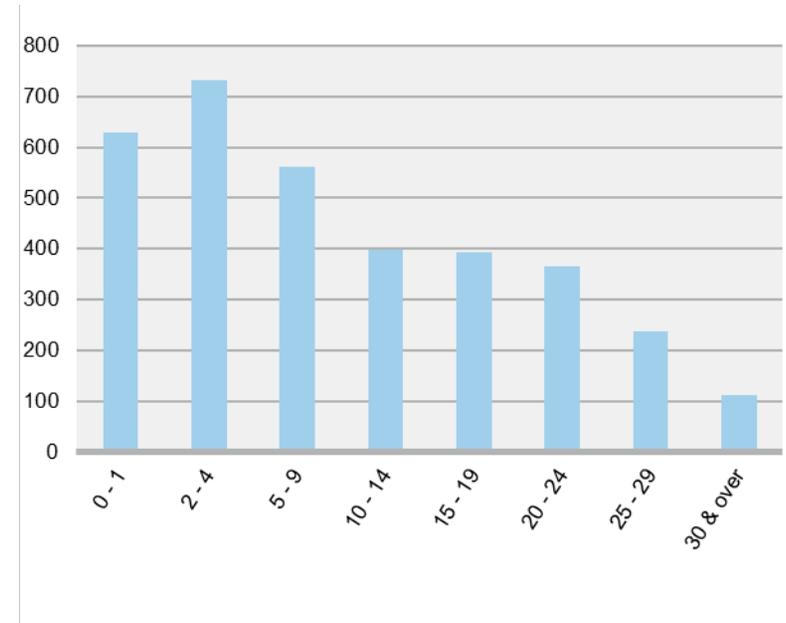
Plan costs are affected by the age, years of creditable service and payroll of active members. In this year’s valuation, there were 3,425 active members with an average age of 44.8, average years of creditable service of 10.0 years and average pay of \$55,779. The 3,502 active members in the prior valuation had an average age of 45.0, average service of 10.3 years and average pay of \$54,098.

Distribution of Active Members as of January 1, 2019

ACTIVES BY AGE



ACTIVES BY YEARS OF CREDITABLE SERVICE



Inactive Members

In this year's valuation, there were 1,313 inactive members with a vested right to a deferred or immediate benefit. Average monthly annuities for these members are \$693.

For comparison, in the previous valuation, there were 1,371 inactive members with a vested right to a deferred or immediate benefit. Average monthly annuities for these members are \$691.

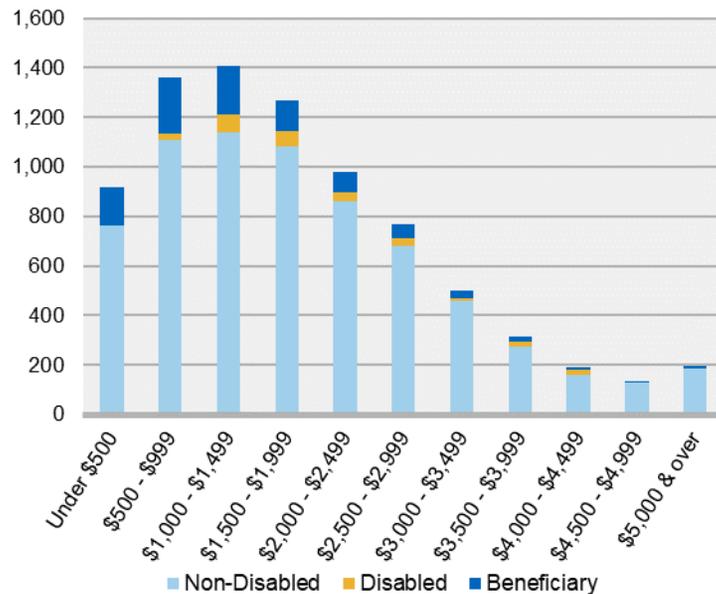
Retired Members and Beneficiaries

As of January 1, 2019, 7,122 retired members (including disability retirees) and 920 beneficiaries were receiving total monthly benefits of \$15,013,808. For comparison, in the previous valuation, there were 7,128 retired members and 909 beneficiaries receiving monthly benefits of \$14,761,749.

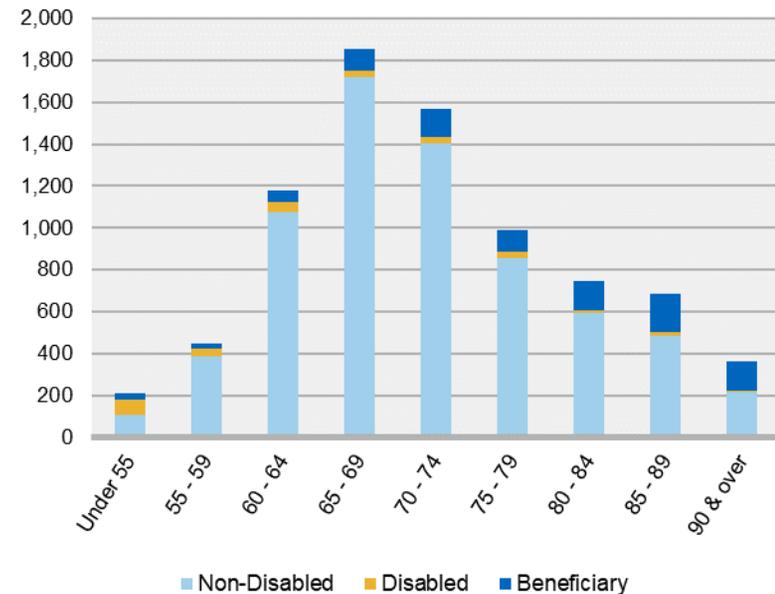
As of January 1, 2019, the average monthly benefit for retired members is \$1,920, compared to \$1,893 in the previous valuation. The average age for retired members is 71.5 in the current valuation, compared with 71.3 in the prior valuation.

Distribution of Pensioners as of January 1, 2019

PENSIONERS BY TYPE AND MONTHLY AMOUNT



PENSIONERS BY TYPE AND BY AGE



Historical Plan Population

The chart below demonstrates the progression of the active population over the last ten years. The chart also shows the growth among the retired population over the same time period.

MEMBERSHIP DATA STATISTICS: 2010 – 2019

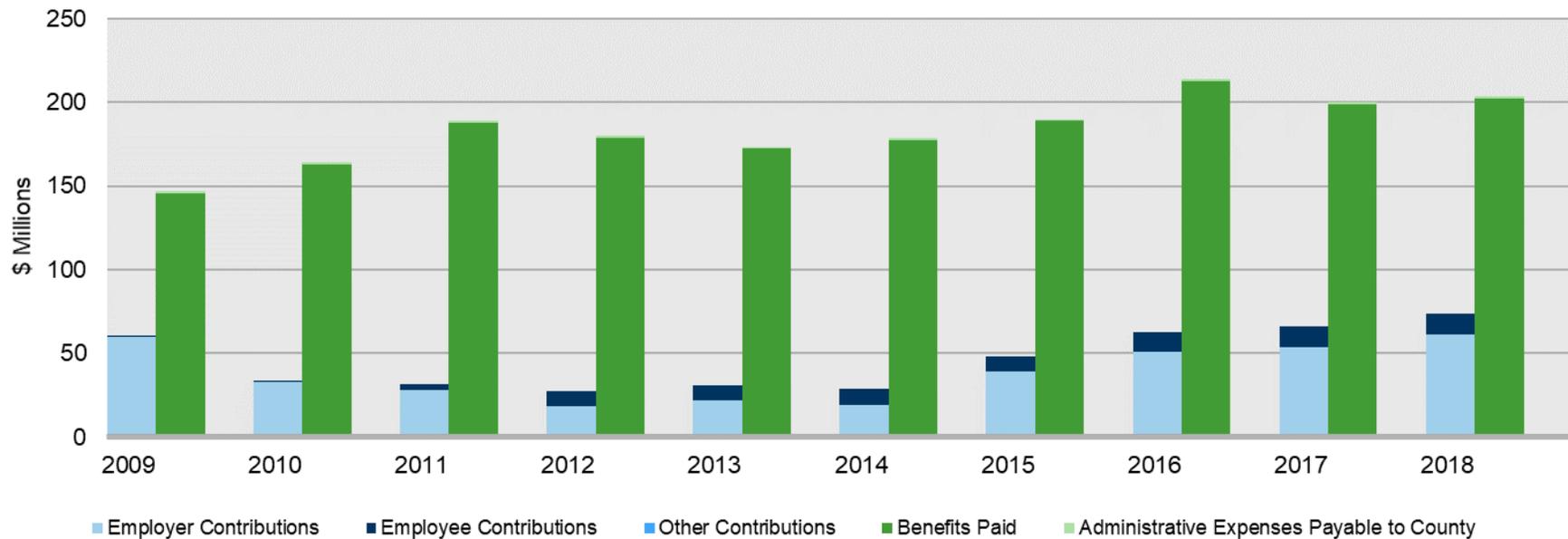
As of January 1	Active Members			Retired Members		
	Count	Average Age	Average Service	Count	Average Age	Average Monthly Amount
2010	4,808	46.4	12.4	6,499	70.8	\$1,633
2011	4,448	46.4	12.5	6,644	70.7	1,662
2012	3,972	45.6	11.6	6,833	70.1	1,673
2013	3,934	45.8	11.7	6,999	70.5	1,733
2014	3,911	46.0	11.6	7,099	70.6	1,756
2015	3,680	46.0	11.7	7,092	70.8	1,782
2016	3,619	45.7	11.4	7,077	71.0	1,829
2017	3,488	45.2	10.3	7,147	71.1	1,868
2018	3,502	45.0	10.3	7,128	71.3	1,893
2019	3,425	44.8	10.0	7,122	71.5	1,920

B. Financial Information

Retirement plan funding anticipates that, over the long term, both contributions and investment earnings (less investment fees and administrative expenses) will be needed to cover benefit payments. Retirement plan assets change as a result of the net impact of these income and expense components. The System's negative cash flow (approximately \$131 million in 2018) also affects expected investment returns.

Additional financial information, including a summary of these transactions for the valuation year, is presented in *Section 3, Exhibits C, D and E*.

COMPARISON OF CONTRIBUTIONS TO BENEFITS AND EXPENSES PAID FOR YEARS ENDED DECEMBER 31, 2009 – 2018



It is desirable to have level and predictable plan costs from one year to the next. For this reason, the Board has adopted an asset smoothing method that gradually adjusts to market value. Under this valuation method, the full value of market fluctuation is not recognized in a single year and, as a result, the asset value and the plan costs are more stable. The amount of the adjustment to recognize market value is treated as income, which may be positive or negative. Realized and unrealized gains and losses are treated equally and, therefore, the sale of assets has no immediate effect on the actuarial value.

DETERMINATION OF ACTUARIAL VALUE OF ASSETS FOR YEAR ENDED DECEMBER 31, 2018

1		Market value of assets, December 31, 2018			\$1,618,310,314
2		Calculation of unrecognized return	Original	Percent	Unrecognized
			Amount **	Deferred	Amount***
(a)		Year ended December 31, 2018*	-\$170,935,242	90%	-\$153,841,718
(b)		Year ended December 31, 2017	121,516,124	80	97,212,896
(c)		Year ended December 31, 2016	-23,448,242	70	-16,413,768
(d)		Year ended December 31, 2015	-103,841,093	60	-62,304,654
(e)		Year ended December 31, 2014	-50,790,631	50	-25,395,315
(f)		Year ended December 31, 2013	118,316,429	40	47,326,572
(g)		Year ended December 31, 2012	--	30	--
(h)		Year ended December 31, 2011	--	20	--
(i)		Year ended December 31, 2010	--	10	--
(j)		Year ended December 31, 2009	--	0	--
(k)		Total unrecognized return			-113,415,987
3		Actuarial value of assets as of December 31, 2018: (1) - (2k)			<u>\$1,731,726,301</u>
4		Actuarial value as a percentage of market value: (3) ÷ (1)			107.0%

* Derivation of gain/(loss) for the year ending December 31, 2018 is shown on page 19

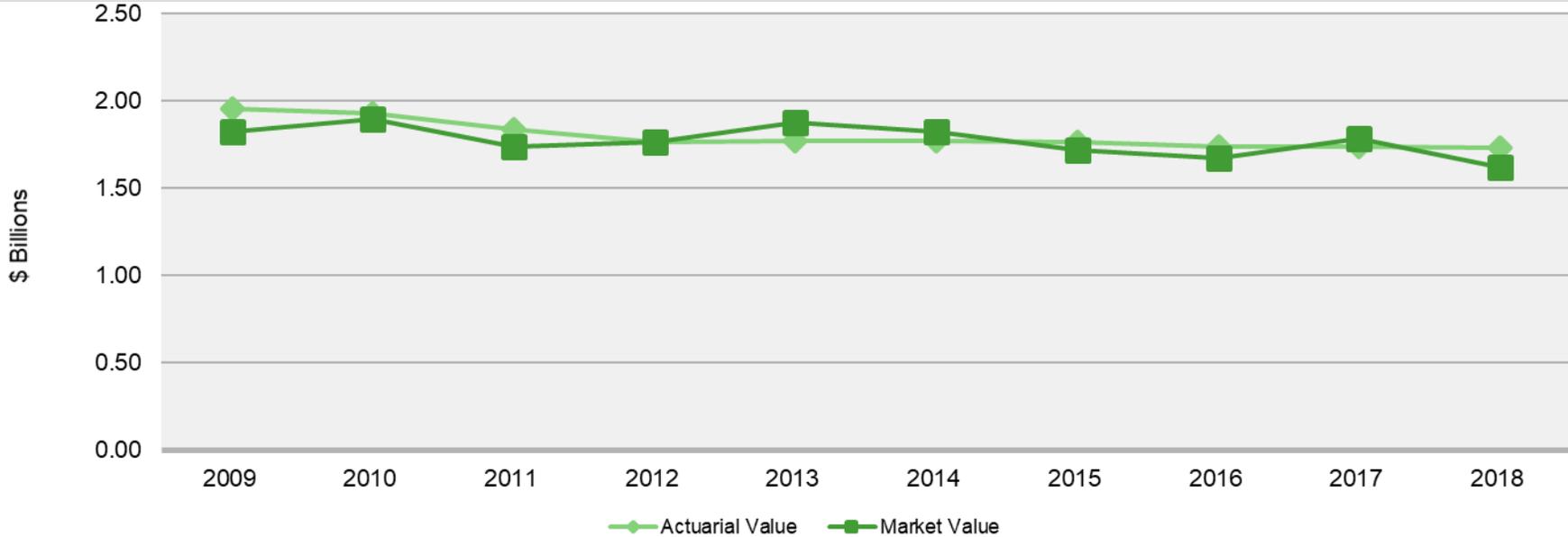
**Total return minus expected return on a market value basis

***Recognition at 10% per year over ten years

Assets were re-established at market value on January 1, 2013.

Both the actuarial value and market value of assets are representations of the Plan’s financial status. As investment gains and losses are gradually taken into account, the actuarial value of assets tracks the market value of assets. The actuarial asset value is significant because the Plan’s liabilities are compared to these assets to determine what portion, if any, remains unfunded. Amortization of the unfunded actuarial accrued liability is an important element in determining the contribution requirement.

ACTUARIAL VALUE OF ASSETS VS. MARKET VALUE OF ASSETS AS OF DECEMBER 31, 2009 – 2018



C. Actuarial Experience

To calculate the actuarially determined contribution, assumptions are made about future events that affect the amount and timing of benefits to be paid and assets to be accumulated. Each year actual experience is measured against the assumptions. If overall experience is more favorable than anticipated (an actuarial gain), the contribution requirement will decrease from the previous year. On the other hand, the contribution requirement will increase if overall actuarial experience is less favorable than expected (an actuarial loss).

Taking account of experience gains or losses in one year without making a change in assumptions reflects the belief that the single year's experience was a short-term development and that, over the long term, experience will return to the original assumptions. For contribution requirements to remain stable, assumptions should approximate experience.

If assumptions are changed, the contribution requirement is adjusted to take into account a change in experience anticipated for all future years.

The net experience loss is \$6,600,732, which includes \$7,306,684 from investment losses and \$705,952 in gains from all other sources. The net experience variation from individual sources other than investments was 0.03% of the actuarial accrued liability. A discussion of the major components of the actuarial experience is on the following pages.

ACTUARIAL EXPERIENCE FOR YEAR ENDED DECEMBER 31, 2018

1	Net gain/(loss) from investments*	(\$7,306,684)
2	Net gain/(loss) from other experience	705,952
3	Net experience gain/(loss): 1 + 2	(\$6,600,732)

* Details on next page.

Investment Experience

A major component of projected asset growth is the assumed rate of return. The assumed return should represent the expected long-term rate of return, based on the System's investment policy. The rate of return on the market value of assets was -2.22% for the year ended December 31, 2018.

For valuation purposes, the assumed rate of return on the actuarial value of assets is 7.75%. The actual rate of return on an actuarial basis for the 2018 plan year was 7.31%. Since the actual return for the year was less than the assumed return, the Plan experienced an actuarial loss during the year ended December 31, 2018 with regard to its investments.

INVESTMENT EXPERIENCE

	Year Ended December 31, 2018		Year Ended December 31, 2017	
	Market Value	Actuarial Value	Market Value	Actuarial Value
1 Investment income	-\$38,060,799	\$121,956,182	\$249,003,287	\$133,662,416
2 Average value of assets	1,714,508,944	1,667,907,950	1,593,589,532	1,662,329,409
3 Rate of return: 1 ÷ 2	-2.22%	7.31%	15.63%	8.04%
4 Assumed rate of return	7.75%	7.75%	8.00%	8.00%
5 Expected investment income: 2 × 4	\$132,874,443	\$129,262,866	\$127,487,163	\$132,986,353
6 Actuarial gain/(loss): 1 - 5	<u>-\$170,935,242</u>	<u>-\$7,306,684</u>	<u>\$121,516,124</u>	<u>\$676,063</u>

Because actuarial planning is long term, it is useful to see how the assumed investment rate of return has followed actual experience over time. The table below shows the rate of return on an actuarial basis compared to the market value investment return for the last 15 years, including averages over select time periods.

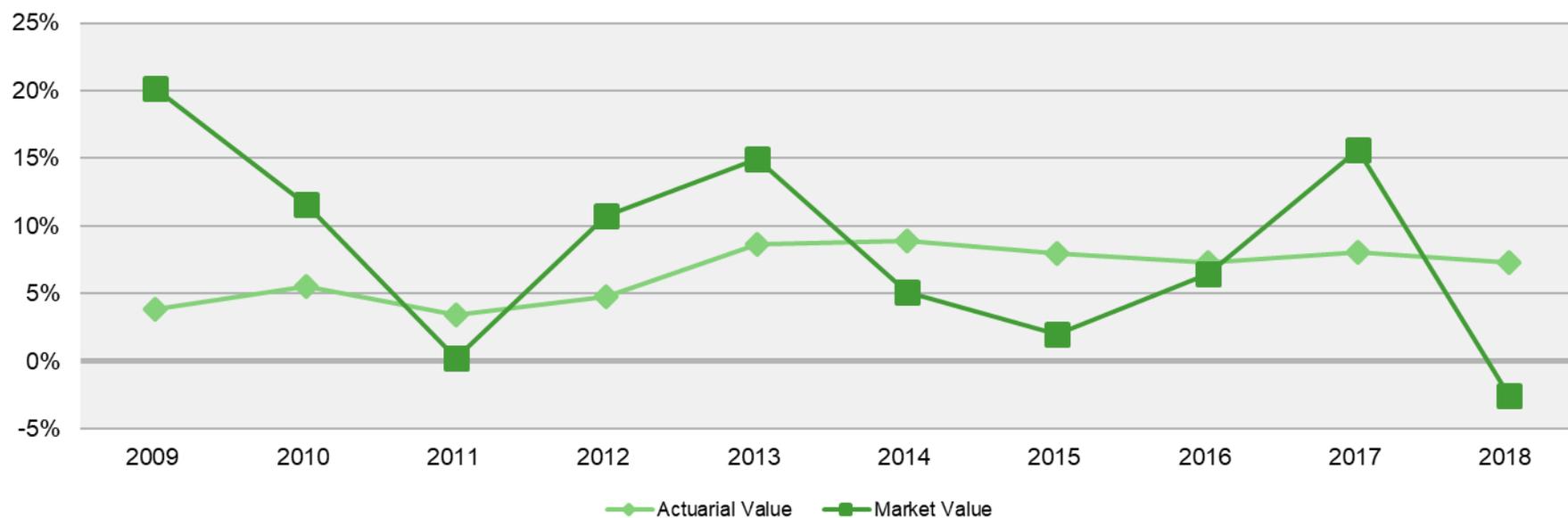
INVESTMENT RETURN – ACTUARIAL VALUE VS. MARKET VALUE: 2004 - 2018

Year Ended Dec. 31	Actuarial Value Investment Return		Market Value Investment Return		Year Ended Dec. 31	Actuarial Value Investment Return		Market Value Investment Return	
	Amount	Percent	Amount	Percent		Amount	Percent	Amount	Percent
					2009	\$74,459,006	3.87%	\$313,462,671	20.19%
					2010	104,127,935	5.51	203,770,758	11.60
					2011	64,214,736	3.47	4,039,718	0.22
					2012	84,397,065	4.79	178,833,104	10.74
					2013	146,900,302	8.66	253,385,088	14.93
2004	\$106,051,092	7.67%	\$184,521,294	12.91%	2014	150,527,504	8.87	92,284,293	5.15
2005	142,925,632	10.45	123,206,736	8.25	2015	135,399,964	7.95	35,190,400	2.01
2006	174,981,665	12.48	202,170,056	13.41	2016	124,121,244	7.34	106,649,356	6.50
2007	193,083,715	13.05	98,642,968	6.12	2017	133,662,416	8.04	249,003,287	15.63
2008	53,668,265	3.03	-357,462,777	-22.44	2018	121,956,182	7.31	-38,060,799	-2.22
							Most recent five-year average return	7.90%	5.25%
							Most recent ten-year average return	6.56%	8.25%
							Most recent fifteen-year average return	7.46%	6.36%

Note: Each year's yield is weighted by the average asset value in that year.

Subsection B described the actuarial asset smoothing method that gradually recognizes fluctuations in the market value rate of return. The goal of this is to stabilize the actuarial rate of return and to produce more level pension plan costs.

MARKET AND ACTUARIAL RATES OF RETURN FOR YEARS ENDED DECEMBER 31, 2009 - 2018



Other Experience

There are other differences between the expected and the actual experience that appear when the new valuation is compared with the projections from the previous valuation. These include:

- the extent of turnover among participants,
- retirement experience (earlier or later than projected),
- mortality (more or fewer deaths than projected),
- the number of disability retirements (more or fewer than projected), and
- salary increases (greater or smaller than projected).

The net gain from this other experience for the year ended December 31, 2018, amounted to \$705,952, which is 0.03% of the actuarial accrued liability.

EXPERIENCE GAIN/(LOSS) DUE TO DEMOGRAPHICS FOR YEAR ENDED DECEMBER 31, 2018

Net turnover	-\$580,834
Retirement (fewer retirements than expected)	11,245,429
Mortality (fewer deaths than expected)	-282,283
Disability retirements	-1,712,184
Salary increase for continuing actives	-1,150,397
Miscellaneous	<u>-6,813,779</u>
Total	\$705,952

D. Changes in the Actuarial Accrued Liability

The actuarial accrued liability as of January 1, 2019, is \$2,293,063,354, a decrease of \$14,785,396, or 0.6%, from the actuarial accrued liability as of the prior valuation date. The liability is expected to grow each year with normal cost and interest, and to decline due to benefit payments made. Additional fluctuations can occur due to actual experience that differs from expected (as discussed in the previous subsection).

Actuarial Assumptions

- There were no changes in actuarial assumptions since the prior valuation.
- Details on actuarial assumptions and methods are in *Section 5, Exhibit I*.

Plan Provisions

- There were no changes in plan provisions since the prior valuation.
- A summary of plan provisions is in *Section 5, Exhibit II*.

E. Development of Unfunded Actuarial Accrued Liability

DEVELOPMENT OF UNFUNDED ACTUARIAL ACCRUED LIABILITY FOR YEAR ENDED DECEMBER 31, 2018

1	Unfunded actuarial accrued liability at beginning of year	\$568,041,179
2	Normal cost at beginning of year (includes expense reimbursement payable to County)	17,431,461
3	Total contributions	-73,829,344
4	Interest	
	• For whole year on 1 + 2	\$45,374,130
	• For partial year on 3 (See Exhibit J)	<u>-2,281,105</u>
	Total interest	<u>43,093,025</u>
5	Expected unfunded actuarial accrued liability	\$554,736,321
6	Changes due to:	
	• Experience (gain)/loss	6,600,732
	• Assumptions	0
	• Funding method	0
	• Plan provisions	<u>0</u>
	Total changes	<u>\$6,600,732</u>
7	Unfunded actuarial accrued liability at end of year	<u>\$561,337,053</u>

F. Amortization Schedule for Funding

The actuarially determined contribution is equal to the employer normal cost payment and a payment on the unfunded actuarial accrued liability (UAAL). Payments towards the UAAL are determined by amortizing sources of UAAL over various time periods, with amounts determined as a level percentage of payroll. The UAAL payment was reestablished on January 1, 2014 and amortized over 21 years. Future unanticipated increases in UAAL are amortized over closed 20-year periods. UAAL arising from contribution variances are amortized over closed 5-year periods. Amortization payments are assumed to increase by the payroll growth assumption of 1.75%, which reflects the payroll increase assumption of 3.5%, limited to reflect the anticipated increases in the County's tax base.

ACTUAL FUNDING CONTRIBUTION AMORTIZATION SCHEDULE FOR 2019

Type	Date Established	Initial Period	Initial Amount	Annual Payment*	Years Remaining	Outstanding Balance
Reestablished UAAL	01/01/2015	21	\$448,982,279	\$38,380,268	17	\$429,010,828
Increase to UAAL	01/01/2016	20	49,830,707	4,291,995	17	47,975,490
Actuarial loss	01/01/2017	20	26,129,846	2,210,222	18	25,540,146
Contribution variance	01/01/2017	5	2,068,560	478,148	3	1,333,744
MyChoice contribution	01/01/2017	20	-2,918,641	-246,877	18	-2,852,773
Actuarial gain	01/01/2018	20	-3,290,263	-273,322	19	-3,255,818
Contribution variance	01/01/2018	5	-1,917,965	-442,883	4	-1,589,402
Change in assumptions	01/01/2018	20	63,931,243	5,310,774	19	63,261,974
Actuarial loss	01/01/2019	20	6,600,732	538,893	20	6,600,732
Contribution variance	01/01/2019	5	-4,687,868	-1,082,488	5	-4,687,868
Total				\$49,164,730		\$561,337,053

* Level percentage, except contribution variances

Amortization Schedule for Funding (continued)

Payments for the subsequent year Budget Contribution are determined by rolling forward the outstanding balance and payment amounts for existing amortization bases, and estimating the amounts of any new sources of UAAL.

BUDGET CONTRIBUTION AMORTIZATION SCHEDULE FOR 2020

Type	Date Established	Initial Period	Initial Amount	Annual Payment*	Years Remaining	Outstanding Balance
Reestablished UAAL	01/01/2015	21	\$448,982,279	\$38,482,539	16	\$420,904,429
Increase to UAAL	01/01/2016	20	49,830,707	4,303,431	16	47,068,965
Loss	01/01/2017	20	26,129,846	2,214,311	17	25,137,992
Contribution variance	01/01/2017	5	2,068,560	477,613	2	921,905
MyChoice contribution	01/01/2017	20	-2,918,641	-247,333	17	-2,807,854
Actuarial gain	01/01/2018	20	-3,290,263	-273,611	18	-3,213,639
Contribution variance	01/01/2018	5	-1,917,965	-441,905	3	-1,235,374
Change in assumptions	01/01/2018	20	63,931,243	5,316,382	18	62,442,418
Actuarial loss	01/01/2019	20	6,600,732	539,045	19	6,531,632
Contribution variance	01/01/2019	5	-4,687,868	-1,078,953	4	-3,884,797
Change in assumptions	01/01/2020	20	51,764,720	4,151,498	20	51,764,720
Actuarial loss	01/01/2020	20	10,918,270	875,638	20	10,918,270
Contribution variance	01/01/2020	5	-114,540	-26,335	5	-114,540
Total				\$54,292,320		\$614,434,127

* Level percentage, except contribution variances

For the 2019 Budget Contribution, a base for unexpected change in the unfunded actuarial accrued liability is added and amortized over 20 years. This loss is based on the amount of the deferred investment loss that will be recognized in the actuarial value of assets in the January 1, 2020 valuation. A base for a contribution variance for 2020 is added and amortized over 5 years. This variance is based on the difference between the County's anticipated contribution and the Actual Funding Contribution for 2019. A base for a change in assumptions has been added to reflect the anticipated change in investment return assumption from 7.75% to 7.50% effective January 1, 2020.

G. Gross Contribution Requirements

The actuarially determined contribution is equal to the employer normal cost payment and a payment on the unfunded actuarial accrued liability (as shown in *Section 2, Exhibit F*). The contribution requirements shown in this report are gross contribution amounts. It is our understanding that County staff will net out the amount of employee contributions that are collected to arrive at a net County contribution.

GROSS CONTRIBUTION REQUIREMENTS

		Year Beginning January 1		
		2020	2019	
		Budget	Actual	Budget
1	Total normal cost, adjusted to end of year	\$18,537,000	\$17,024,645	\$17,704,000
2	Net annual amortizations, adjusted to end of year	58,364,000	52,974,997	52,826,000
3	Expenses	<u>0</u>	<u>0</u>	<u>3,656</u>
4	Total contribution: 1 + 2 + 3, not less than zero	76,901,000	69,999,642	70,533,656

The Actual Funding Contribution and 2020 Budget Contribution are based on participant data as of January 1, 2019.

For the 2020 Budget Contribution, the Normal Cost for 2020 is assumed to be 3.5% higher than the 2019 Normal Cost adjusted for the anticipated 7.50% investment return assumption.

The amounts shown above are gross contribution amounts. It is our understanding that the County staff will net out the amount of employee contributions that are collected to arrive at net employer contributions.

H. State Mandated Member Contributions

The following table develops the member contribution rates for 2020. Public Safety and General employees contribute 50% of the allocated cost of the 2019 actuarially determined contribution.

MEMBER CONTRIBUTION RATES

	Non-Contributors	Public Safety	General	All Members	
Valuation Results as of January 1, 2019					
1	Present value of future benefits				
	a) Active members *	\$0	\$88,892,466	\$385,326,065	\$474,218,531
	b) Participants with deferred benefits	85,861,589	0	0	85,861,589
	c) Retirees and beneficiaries	1,824,456,176	0	0	1,824,456,176
	d) Total	1,910,317,765	88,892,466	385,326,065	2,384,536,296
2	Present value of future normal cost	0	15,823,812	75,649,130	91,472,942
3	Actuarial accrued liability: 1 - 2	1,910,317,765	73,068,654	309,676,935	2,293,063,354
4	Actuarial value of assets	1,442,676,022	55,181,602	233,868,677	1,731,726,301
5	Funded percentage: 4 ÷ 3	75.5%	75.5%	75.5%	75.5%
6	Unfunded actuarial accrued liability: 3 - 4	467,641,743	17,887,052	75,808,258	561,337,053
7	Total normal cost for the plan year	0	2,376,535	13,423,600	15,800,135
Projected Member Contribution for 2020					
1	Annual contribution for 2019				
	a) Normal cost with interest	\$0	\$2,560,716	\$14,463,929	\$17,024,645
	b) Net annual amortization payments **	44,132,700	1,688,053	7,154,244	52,974,997
	c) Expenses	0	0	0	0
	d) Total contribution: a + b + c, not less than zero	44,132,700	4,248,769	21,618,173	69,999,642
2	Member contribution (50% of 1d for Contributors)	0	2,124,385	10,809,087	12,933,472
3	Expected salaries in 2019	0	22,924,374	168,119,423	191,043,797
4	Member contribution rate: 2 ÷ 3 ÷ 1.0775 ^{1/2}	N/A	8.9%	6.2%	N/A

* The actives in the Public Safety group include 341 members comprised of Represented Firefighters and Sheriffs and Non-Represented Firefighters and Sheriffs.

** The net annual amortization payments for the contributors are prorated based on the contributors' actuarial accrued liability compared to total actuarial accrued liability of the retirement system.

I. Reconciliation of Budget Contribution Requirement

The chart below details the changes in the Budget Contribution requirement from the prior valuation to the current year's valuation.

RECONCILIATION OF BUDGET CONTRIBUTION REQUIREMENT FROM 2019 TO 2020

		Amount
1	2019 Budget Contribution	\$70,534,000
2	Increase/(decrease) during 2018 due to:	
	a) Unanticipated liability loss/(gain)	-\$1,382,000
	b) Asset experience different than expected	1,503,000
	c) 2018 reimbursable expense change	-423,000
	d) 2018 contribution variance other than assumed	-232,000
	e) Change due to assumption/method/plan changes	0
	f) Total	<u>-534,000</u>
3	2019 Actual Contribution (rounded): 1 + 2	\$70,000,000
4	Expected increase/(decrease) during 2019 due to:	
	a) Normal cost and existing amortization bases	\$1,545,000
	b) Phase-in of deferred investment (gains) losses	960,000
	c) Increase in reimbursable expenses	0
	d) Expected contribution variance for 2019	-28,000
	e) Full recognition of bases	0
	f) Change due to assumption/method/plan changes	4,424,000
	g) Total	<u>6,901,000</u>
5	2020 Budget Contribution: 3 + 4	\$76,901,000

J. Contribution for Prior Year and Variance from the Funding Calculation Contribution

Differences between the Actual Funding Contribution and the County's actual contributions with interest are amortized over five year periods using a level dollar basis. The following exhibit shows the calculation of the contribution variance for the 2018 plan year.

CALCULATION OF CONTRIBUTION VARIANCE

Item		Amount			
1	Total Actual Funding Contribution, end-of-year basis, for 2018 plan year (from January 1, 2018 actuarial valuation report)				\$71,422,581
2	Total employer contributions made:				
	Contribution Made	Fraction of a Year Invested	Contribution Amount	Interest to Year End*	End of Year Amount
	Bi-weekly	50.0%	\$0	\$0	\$0
	01/31/2018	91.8%	32,257	2,287	34,544
	02/28/2018	84.1%	115,091	7,457	122,548
	03/31/2018	75.6%	149,854	8,701	158,555
	04/30/2018	67.4%	172,805	8,916	181,721
	05/31/2018	58.9%	119,367	5,365	124,732
	06/15/2018	54.8%	26,830,000	1,120,113	27,950,113
	06/30/2018	50.7%	151,376	5,837	157,213
	07/31/2018	42.2%	155,535	4,976	160,511
	08/31/2018	33.7%	126,275	3,217	129,492
	09/14/2018	29.9%	26,830,000	604,778	27,434,778
	09/30/2018	25.5%	128,830	2,474	131,304
	10/31/2018	17.0%	129,865	1,657	131,522
	11/30/2018	8.8%	181,205	1,190	182,395
	12/14/2018	4.9%	6,247,000	23,038	6,270,038
	01/01/2019	0.0%	-191,644**	0	-191,644
	Total		\$61,177,816	\$1,800,006	\$62,977,822
3	Total member contributions made:				
	Contribution Made	Fraction of a Year Invested	Contribution Amount	Interest to Year End*	End of Year Amount
	Bi-weekly	50.0%	\$12,651,528	\$481,099	\$13,132,627
4	Variance from funding calculation amount: 2 + 3 - 1				\$4,687,868

* Interest to December 31, 2018 at 7.75% per annum.

** Contribution refund to the County due to the member contributions exceeding estimates.

K. History of Employer Contributions

A history of the most recent years of contributions is shown below. Amounts contributed do not reflect interest.

HISTORY OF EMPLOYER CONTRIBUTIONS: 2008 – 2019

Fiscal Year Ended Dec. 31	Normal Cost with Interest	Net Amortization Payments	Expenses	Actuarially Determined Contribution	Amount Contributed	Percent Contributed
2008	\$21,012,737	\$32,050,873	N/A	\$53,063,610	\$34,981,095	65.92%
2009	21,395,539	8,959,996	N/A	30,355,535	60,123,920	198.07%
2010	20,736,844	6,813,146	N/A	27,549,990	32,969,145	119.67%
2011	19,480,089	7,327,948	N/A	26,808,037	31,589,401	117.84%
2012	14,488,711	10,386,482	N/A	24,875,193	27,451,148	110.36%
2013	16,105,425	12,164,620	N/A	28,270,045	30,952,781	109.49%
2014	15,235,436	14,329,489	N/A	29,564,925	29,057,000	98.28%
2015	16,999,506	39,300,143	1,554,175	57,853,824	48,405,459	83.67%
2016	17,381,870	44,459,669	1,225,857	63,067,396	63,769,182	101.11%
2017	16,405,955	47,838,754	1,554,742	65,799,451	65,991,000	100.29%
2018	17,105,095	52,640,182	1,677,304	71,422,581	72,194,000	101.08%
2019	17,024,645	52,974,997	0	69,999,642	TBD	TBD

L. Actuarial Balance Sheet

An overview of the Plan’s funding is provided by an Actuarial Balance Sheet, which compares the total liabilities (current and future) to the total assets (current and future). The liabilities are calculated by determining the amount and timing of all future payments that will be made by the Plan for current participants. These payments are discounted at the valuation interest rate to the date of the valuation, thereby determining the present value of all benefits, referred to as the “liability” of the Plan.

Second, this liability is compared to the assets. The “assets” for this purpose include the net amount of assets already accumulated by the Plan, the present value of future member contributions, the present value of future employer normal cost contributions, and the present value of future employer amortization payments for the unfunded actuarial accrued liability.

ACTUARIAL BALANCE SHEET

	Valuation as of	
	January 1, 2019	January 1, 2018
Liabilities		
• Present value of benefits for retired participants and beneficiaries	\$1,824,456,176	\$1,806,909,181
• Present value of benefits for inactive former participants	85,861,589	89,918,807
• Present value of benefits for active participants	<u>474,218,531</u>	<u>500,273,723</u>
Total liabilities	\$2,384,536,296	\$2,397,101,711
Assets		
• Total valuation value of assets	\$1,731,726,301	\$1,739,807,571
• Present value of future employer and employee contributions for:		
» Entry age normal cost	91,472,942	89,252,961
» Unfunded actuarial accrued liability	<u>561,337,053</u>	<u>568,041,179</u>
Total of current and future assets	<u>\$2,384,536,296</u>	<u>\$2,397,101,711</u>

M. Risk

The actuarial valuation results depend on a single set of assumptions; however, there is a risk that emerging results may differ significantly as actual experience proves to be different than projected from the current assumptions.

We have not been engaged to perform a detailed analysis of the potential range of the impact of risks relative to Milwaukee County's future financial condition, but have included a brief discussion of some of the risks that may affect the Plan. A more detailed assessment of the risks could provide a better understanding of the risks inherent in the Plan. This assessment may include scenario testing, sensitivity testing, stress testing, and stochastic modeling. Milwaukee County might consider including stochastic modeling in order to provide a more detailed risk assessment.

A detailed risk assessment could be important for Milwaukee County because:

- The negative cash flow position of the Plan could be exacerbated by relatively small deviations from assumed future experience.
- Retired and inactive participants account for more than half of the Plan's liabilities, limiting options for reducing plan liabilities in the event of adverse experience.
- Projected employer contribution amounts may increase to an unsustainable percentage of County budget under adverse stress testing conditions.
- The risks identified below show significant potential for variability.

The following risks could significantly affect the Plans' future condition:

Investment Risk (the risk that returns will be different than expected)

The assets total approximately \$1.62 billion. If the actual market value return for the Plan Year were 1% different from the assumed (either higher or lower), the projected unfunded actuarial liability would change by about \$16.2 million.

If the prior year's investment performance resulted in a market value of assets that is 10% different from the current value, it would result in a change of \$162 million in the asset value. A 10% increase in assets would cause the unfunded liability (market value basis) to decrease from \$675 million to \$513 million. Likewise, a 10% decrease in the asset value, would cause the unfunded liability to increase from \$675 million to \$837 million.

The market value rate of return over the last ten years has ranged from a low of -22.4% to a high of 20.2%.

Longevity Risk (the risk that mortality experience will be different than expected)

The actuarial valuation includes an expectation of future improvement in life expectancy. Emerging plan experience that does not match these expectations will result in either an increase or decrease in the actuarially determined contribution.

A 10% reduction in the assumed mortality rates results in an increase in the liabilities of roughly 3% for most plans. For Milwaukee County, a 3% liability increase would result in an increase in the unfunded accrued liability of \$69 million. The unfunded accrued liability (market value of assets basis) would increase from \$675 million to \$744 million.

Demographic Risk (the risk that participant experience will be different than assumed)

Examples of this risk include:

- Actual retirements occurring earlier or later than assumed. The value of retirement plan benefits is sensitive to the rate of benefit accruals and any legacy early retirement subsidies that apply.
- More or less active participant turnover than assumed.
- Salary increases more or less than assumed.

Maturity Measures

The risk associated with a pension plan increases as it becomes more mature, meaning that the actives represent a smaller portion of the liabilities of the plan. When this happens, there is a greater risk that fluctuations in the experience of the non-active participants or of the assets of the plan can result in large swings in the contribution requirements.

- Currently the Plan has a non-active to active participant ratio of 2.7. For the prior year, benefits paid were \$128 million more than contributions received. As the Plan continues to mature, more cash will be needed from the investment portfolio to meet benefit payments.
- As of December 31, 2018, the retired life actuarial accrued liability represents 80% of the total actuarial accrued liability. In addition, the actuarial accrued liability for inactive vested participants represents 4% of the total. The higher the non-active actuarial accrued liability is as a percent of the total liability, the greater the risk of volatility in results.

Section 3: Supplemental Information

EXHIBIT A – TABLE OF PLAN COVERAGE

Category	As of January 1		Change From Prior Year
	2019	2018	
Active members in valuation:			
• Number	3,425	3,502	-2.2%
• Average age	44.8	45.0	-0.2
• Average years of creditable service	10.0	10.3	-0.3
• Total payroll	\$191,043,797	\$189,451,404	+0.8%
• Average pay	55,779	54,098	+3.1%
• Total active vested members	1,999	2,018	-0.9%
Inactive members:			
• Number of terminated vested	1,313	1,371	-4.2%
• Average age	51.2	50.8	+0.4
Retired members:			
• Number in pay status	6,847	6,859	-0.2%
• Average age	71.8	71.5	+0.3
• Average monthly benefit	\$1,914	\$1,887	+1.4%
Disability retirees:			
• Number in pay status	275	269	+2.2%
• Average age	64.5	64.4	+0.1
• Average monthly benefit	\$2,075	\$2,044	+1.5%
Beneficiaries:			
• Number in pay status	920	909	+1.2%
• Average age	78.8	78.8	0.0
• Average monthly benefit	\$1,453	\$1,398	+3.9%

EXHIBIT B – RECONCILIATION OF MEMBERSHIP DATA

	Active Members	Vested Terminated Members	Disability Retirees	Retired Members	Beneficiaries	Total
Number as of January 1, 2018	3,502	1,371	269	6,859	909	12,910
• New participants	483	N/A	N/A	N/A	N/A	483
• Terminations – with vested rights	-44	44	0	0	0	0
• Terminations – without vested rights	-126	N/A	N/A	N/A	N/A	-126
• Retirements	-138	-75	N/A	213	N/A	0
• New disabilities	-4	-8	12	N/A	N/A	0
• Return to work / Rehire	5	-5	0	0	N/A	0
• Died with beneficiary	0	-1	-1	-76	78	0
• Died without beneficiary	-3	-6	-7	-159	-64	-239
• Lump sum cash-outs	-250	-7	0	0	0	-257
• Certain period expired	N/A	N/A	0	0	-3	-3
• Data adjustments	0	0	2	10	0	12
• Number as of January 1, 2019	3,425	1,313	275	6,847	920	12,780

EXHIBIT C – SUMMARY STATEMENT OF INCOME AND EXPENSES ON A MARKET VALUE BASIS

	Year Ended December 31, 2018	Year Ended December 31, 2017
Net assets at market value at the beginning of the year	\$1,786,408,565	\$1,671,682,331
Contribution income:		
• Employer contributions	\$61,177,816	\$53,660,695
• Member contributions	12,651,528	12,330,305
• Less administrative expenses payable to the County	<u>-1,703,344</u>	<u>-1,677,304</u>
<i>Net contribution income</i>	\$72,126,000	\$64,313,696
Net other income	\$0	\$0
Investment income:		
• Net appreciation in fair value	-\$55,248,062	\$239,131,482
• Interest and dividends	12,286,402	9,768,581
• Securities lending income	450,227	392,261
• Other income	11,008,894	7,036,199
• Less securities lending rebates and fees, net	-361,136	-314,119
• Less administrative expenses payable by System	-3,191,345	-3,824,891
• Less investment expenses	<u>-3,005,779</u>	<u>-3,186,226</u>
<i>Net investment income</i>	<u>-\$38,060,799</u>	<u>\$249,003,287</u>
Total income available for benefits	\$34,065,201	\$313,316,983
Less benefit payments:		
• Benefits paid to retirees and beneficiaries	-\$200,240,292	-\$196,852,807
• Refunds of contributions	<u>-1,923,160</u>	<u>-1,737,942</u>
<i>Net benefit payments</i>	-\$202,163,452	-\$198,590,749
Change in reserve for future benefits	-\$168,098,251	\$114,726,234
Net assets at market value at the end of the year	\$1,618,310,314	\$1,786,408,565

EXHIBIT D – SUMMARY STATEMENT OF PLAN ASSETS

	December 31, 2018	December 31, 2017
Cash equivalents	\$48,264,389	\$65,949,193
Total accounts receivable	5,054,888	3,761,778
Other assets	34,528,083	26,214,777
Investments:		
• Fixed Income	\$310,334,969	\$253,867,013
• Domestic and international equities	603,629,144	801,071,876
• Private equity	183,484,911	156,344,279
• Diversifying strategies	291,874,856	333,517,005
• Real estate and REITs	<u>183,424,903</u>	<u>177,650,646</u>
Total investments at market value	\$1,572,748,783	\$1,722,450,819
Total assets	\$1,660,596,143	\$1,818,376,567
Total liabilities	-42,285,829	-31,968,002
Net assets at market value	\$1,618,310,314	\$1,786,408,565
Net assets at actuarial value	\$1,731,726,301	\$1,739,807,571

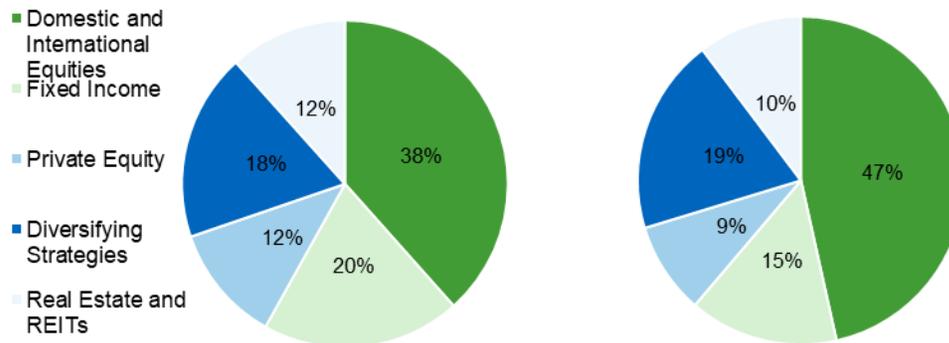


EXHIBIT E – DEVELOPMENT OF THE FUND THROUGH DECEMBER 31, 2018

Year Ended Dec. 31	Employer Contributions	Member Contributions	Net Other Income*	Net Investment Return**	Admin. Expenses	Benefit Payments***	Market Value of Assets at Year-End	Actuarial Value of Assets at Year-End	Actuarial Value as a Percent of Market Value
2007							\$1,665,511,165	\$1,627,287,632	97.70%
2008	\$34,840,886	\$140,209	\$397,797,000	-\$357,462,777	-\$1,031,291	-\$144,184,222	1,595,610,970	1,968,518,479	123.37%
2009	59,992,154	131,766	0	313,462,671	-1,312,156	-145,345,520	1,822,539,885	1,956,443,729	107.35%
2010	32,893,562	75,584	0	203,770,758	-1,310,356	-162,802,590	1,895,166,843	1,929,427,864	101.81%
2011	28,275,594	3,313,807	0	4,039,718	-1,158,921	-187,530,154	1,742,106,887	1,836,542,926	105.42%
2012	18,410,496	9,040,652	0	178,833,104	-1,187,236	-178,769,275	1,768,434,628	1,768,434,628	100.00%
2013	21,998,256	8,954,525	0	253,385,088	-1,289,344	-172,248,723	1,879,234,430	1,772,749,644	94.33%
2014	19,005,395	10,051,605	0	92,984,293	-1,329,904	-177,366,124	1,822,579,695	1,773,638,120	97.31%
2015	39,080,593	9,324,866	0	35,190,400	-1,204,226	-188,819,565	1,716,151,763	1,767,419,752	102.99%
2016	50,625,672	12,143,510	0	106,649,356	-1,225,857	-212,662,113	1,671,682,331	1,740,422,208	104.11%
2017	53,660,695	12,330,305	0	249,003,287	-1,677,304	-198,590,749	1,786,408,565	1,739,807,571	97.39%
2018	61,177,816	12,651,528	0	-38,060,799	-1,703,344	-202,163,452	1,618,310,314	1,731,726,301	107.01%

* Proceeds from Pension Obligation Bonds

** On a market basis, net of investment fees

*** Includes withdrawal of membership accounts

EXHIBIT F – DEFINITION OF PENSION TERMS

The following list defines certain technical terms for the convenience of the reader:

Actuarial Accrued Liability for Actives:	The equivalent of the accumulated normal costs allocated to the years before the valuation date.
Actuarial Accrued Liability for Pensioners:	The single-sum value of lifetime benefits to existing pensioners. This sum takes into account life expectancies appropriate to the ages of the pensioners and the interest that the sum is expected to earn before it is entirely paid out in benefits.
Actuarial Cost Method:	A procedure allocating the Actuarial Present Value of Future Benefits to various time periods; a method used to determine the Normal Cost and the Actuarial Accrued Liability that are used to determine the actuarially determined contribution.
Actuarial Gain or Loss:	A measure of the difference between actual experience and expected based upon a set of Actuarial Assumptions, during the period between two Actuarial Valuation dates. Through the actuarial assumptions, rates of decrements, rates of salary increases, and rates of fund earnings have been forecasted. To the extent that actual experience differs from that assumed, Actuarial Accrued Liabilities emerge that may be the same as forecasted, or may be larger or smaller than projected. Actuarial gains are due to favorable experience, e.g., assets earn more than projected, salary increases are less than assumed, members retire later than assumed, etc. Favorable experience means actual results produce actuarial liabilities not as large as projected by the actuarial assumptions. On the other hand, actuarial losses are the result of unfavorable experience, i.e., actual results yield actuarial liabilities that are larger than projected. Actuarial gains will shorten the time required for funding the actuarial balance sheet deficiency while actuarial losses will lengthen the funding period.
Actuarially Equivalent:	Of equal actuarial present value, determined as of a given date and based on a given set of Actuarial Assumptions.
Actuarial Present Value (APV):	<p>The value of an amount or series of amounts payable or receivable at various times, determined as of a given date by the application of a particular set of Actuarial Assumptions. Each such amount or series of amounts is:</p> <p>Adjusted for the probable financial effect of certain intervening events (such as changes in compensation levels, marital status, etc.)</p> <p>Multiplied by the probability of the occurrence of an event (such as survival, death, disability, withdrawal, etc.) on which the payment is conditioned, and</p> <p>Discounted according to an assumed rate (or rates) of return to reflect the time value of money.</p>

Actuarial Present Value of Future Plan Benefits:	The Actuarial Present Value of benefit amounts expected to be paid at various future times under a particular set of Actuarial Assumptions, taking into account such items as the effect of advancement in age, anticipated future compensation, and future service credits. The Actuarial Present Value of Future Plan Benefits includes the liabilities for active members, retired members, beneficiaries receiving benefits, and inactive members entitled to either a refund or a future retirement benefit. Expressed another way, it is the value that would have to be invested on the valuation date so that the amount invested plus investment earnings would provide sufficient assets to pay all projected benefits and expenses when due.
Actuarial Valuation:	The determination, as of a valuation date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets, and related Actuarial Present Values for a plan. An Actuarial Valuation for a governmental retirement system typically also includes calculations of items needed for compliance with GASB, such as the Actuarially Determined Contribution (ADC) and the Net Pension Liability (NPL).
Actuarial Value of Assets (AVA):	The value of the Fund's assets as of a given date, used by the actuary for valuation purposes. This may be the market or fair value of plan assets, but commonly plans use a smoothed value in order to reduce the year-to-year volatility of calculated results, such as the funded ratio and the ADC.
Actuarially Determined:	Values that have been determined utilizing the principles of actuarial science. An actuarially determined value is derived by application of the appropriate actuarial assumptions to specified values determined by provisions of the law.
Actuarially Determined Contribution (ADC):	The employer's periodic required contributions, expressed as a dollar amount or a percentage of covered plan compensation, determined under the Plan's funding policy. The ADC consists of the Employer Normal Cost and the Amortization Payment.
Amortization Method:	A method for determining the Amortization Payment. The most common methods used are level dollar and level percentage of payroll. Under the Level Dollar method, the Amortization Payment is one of a stream of payments, all equal, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the Amortization Payment is one of a stream of increasing payments, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the stream of payments increases at the assumed rate at which total covered payroll of all active members will increase.
Amortization Payment:	The portion of the pension plan contribution, or ADC, that is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability.
Assumptions or Actuarial Assumptions:	The estimates upon which the cost of the Fund is calculated, including: <u>Investment return</u> - the rate of investment yield that the Fund will earn over the long-term future;

	<p><u>Mortality rates</u> - the death rates of employees and pensioners; life expectancy is based on these rates;</p> <p><u>Retirement rates</u> - the rate or probability of retirement at a given age;</p> <p><u>Withdrawal rates</u> - the rates at which employees of various ages are expected to leave employment for reasons other than death, disability, or retirement;</p> <p><u>Salary increase rates</u> - the rates of salary increase due to inflation and productivity growth.</p>
Closed Amortization Period:	A specific number of years that is counted down by one each year, and therefore declines to zero with the passage of time. For example, if the amortization period is initially set at 30 years, it is 29 years at the end of one year, 28 years at the end of two years, etc. See Open Amortization Period.
Decrements:	Those causes/events due to which a member's status (active-inactive-retiree-beneficiary) changes, that is: death, retirement, disability, or withdrawal.
Defined Benefit Plan:	A retirement plan in which benefits are defined by a formula applied to the member's compensation and/or years of service.
Defined Contribution Plan:	A retirement plan, such as a 401(k) plan, a 403(b) plan, or a 457 plan, in which the contributions to the plan are assigned to an account for each member, the plan's earnings are allocated to each account, and each member's benefits are a direct function of the account balance.
Employer Normal Cost:	The portion of the Normal Cost to be paid by the employer. This is equal to the Normal Cost less expected member contributions.
Experience Study:	A periodic review and analysis of the actual experience of the Fund that may lead to a revision of one or more Actuarial Assumptions. Actual rates of decrement and salary increases are compared to the actuarially assumed values and modified as deemed appropriate by the Actuary.
Funded Ratio:	The ratio of the Actuarial Value of Assets (AVA) to the Actuarial Accrued Liability (AAL). Plans sometimes calculate a market funded ratio, using the market value of assets (MVA), rather than the AVA.
GASB 67 and GASB 68:	Governmental Accounting Standards Board (GASB) Statements No. 67 and No. 68. These are the governmental accounting standards that set the accounting rules for public retirement systems and the employers that sponsor or contribute to them. Statement No. 68 sets the accounting rules for the employers that sponsor or contribute to public retirement systems, while Statement No. 67 sets the rules for the systems themselves.
Investment Return:	The rate of earnings of the Fund from its investments, including interest, dividends and capital gain and loss adjustments, computed as a percentage of the average value of the

	fund. For actuarial purposes, the investment return often reflects a smoothing of the capital gains and losses to avoid significant swings in the value of assets from one year to the next.
Net Pension Liability (NPL):	The Net Pension Liability is equal to the Total Pension Liability minus the Plan Fiduciary Net Position.
Normal Cost:	That portion of the Actuarial Present Value of pension plan benefits and expenses allocated to a valuation year by the Actuarial Cost Method. Any payment with respect to an Unfunded Actuarial Accrued Liability is not part of Normal Cost (see Amortization Payment). For pension plan benefits that are provided in part by employee contributions, Normal Cost refers to the total of employee contributions and employer Normal Cost unless otherwise specifically stated.
Open Amortization Period:	An open amortization period is one that is used to determine the Amortization Payment, but which does not change over time. If the initial period is set as 30 years, the same 30-year period is used in determining the Amortization Period each year. In theory, if an Open Amortization Period with level percentage of payroll is used to amortize the Unfunded Actuarial Accrued Liability, the UAAL will never decrease, but will become smaller each year, in relation to covered payroll, if the Actuarial Assumptions are realized.
Plan Fiduciary Net Position:	Market value of assets.
Total Pension Liability (TPL):	The actuarial accrued liability under the entry age normal cost method and based on the blended discount rate as described in GASB 67 and 68.
Unfunded Actuarial Accrued Liability (UAAL):	The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. This value may be negative, in which case it may be expressed as a negative Unfunded Actuarial Accrued Liability, also called the Funding Surplus.
Valuation Date or Actuarial Valuation Date:	The date as of which the value of assets is determined and as of which the Actuarial Present Value of Future Plan Benefits is determined. The expected benefits to be paid in the future are discounted to this date.

Section 4: GASB 67 and 68 Information

Exhibit 1 – Net Pension Liability

The components of the net pension liability at were as follows:

	January 1, 2019	January 1, 2018
Total pension liability	\$2,293,063,354	\$2,307,848,750
Plan fiduciary net position	<u>(1,618,310,314)</u>	<u>(1,786,408,565)</u>
Net pension liability	\$674,753,040	\$521,440,185
Plan fiduciary net position as a percentage of the total pension liability	70.6%	77.4%

The net pension liability was measured as of December 31, 2018, and is determined based on the total pension liability from the January 1, 2019, actuarial valuation.

Plan provisions. The plan provisions used in the measurement of the net pension liability are the same as those used in the actuarial valuation as of January 1, 2019.

Actuarial assumptions. The total pension liability was determined by an actuarial valuation as of January 1, 2019, using the following actuarial assumptions, applied to all periods included in the measurement:

Inflation	2.50%
Salary increases	3.50% to 6.21%, varying by age, including inflation and productivity
Investment rate of return	7.75%, net of pension plan administrative and investment expenses
Cost-of-living adjustments	2.00%

Mortality

<i>Pre-retirement:</i>	Males – RP-2006 Employee male, projected with generational projection using scale MP-2016. Females – RP-2006 Employee female, projected with generational projection using scale MP-2016.
<i>Healthy Retiree:</i>	Males – 102% of RP-2006 Healthy Annuitant male, projected with generational projection using scale MP-2016. Females – 107% of RP-2006 Healthy Annuitant female, projected with generational projection using scale MP-2016.
<i>Disabled Retiree:</i>	Males – 97% of RP-2006 Disabled male, projected with generational projection using scale MP-2016. Females – 95% of RP-2006 Disabled female, projected with generational projection using scale MP-2016.

The actuarial assumptions used were based on the results of an experience study dated October 12, 2017. They are the same as the assumptions used in the January 1, 2019 funding actuarial valuation.

The long-term expected rate of return on pension plan investments is 7.75%. The long-term expected rate of return was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation.

Discount rate: The discount rate used to measure the total pension liability was 7.75% as of December 31, 2018. The projection of cash flows used to determine the discount rate assumed plan member and employer contributions will be made at rates equal to those based on this January 1, 2019, Actuarial Valuation Report. For this purpose, only employer contributions that are intended to fund benefits of current plan members and their beneficiaries are included. Projected employer contributions that are intended to fund the service costs of future plan members and their beneficiaries, as well as projected contributions from future plan members, are not included. Based on those assumptions, the pension plan’s fiduciary net position was projected to be available to make all projected future benefit payments of current plan members as of December 31, 2018. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability as of December 31, 2018.

Sensitivity of the net pension liability to changes in the discount rate: The following presents the net pension liability, calculated using the discount rate of 7.75%, as well as what the net pension liability would be if it were calculated using a discount rate that is one-percentage-point lower (6.75%) or one-percentage-point higher (8.75%) than the current rate:

	1% Decrease (6.75%)	Current Discount Rate (7.75%)	1% Increase (8.75%)
Net pension liability as of December 31, 2018	\$897,269,336	\$674,753,040	\$486,917,713

Exhibit 2 – Schedules of Changes in Net Pension Liability

	Year Ending December 31, 2018	Year Ending December 31, 2017
Total pension liability		
Service cost	\$15,874,798	\$15,190,699
Interest	172,254,741	173,929,104
Change of benefit terms	0	0
Differences between expected and actual experience	(751,483)	(2,919,790)
Changes of assumptions	0	63,931,243
Benefit payments, including refunds of employee contributions	(202,163,452)	(198,590,749)
Net change in total pension liability	(\$14,785,396)	\$51,540,507
Total pension liability – beginning	<u>2,307,848,750</u>	<u>2,256,308,243</u>
Total pension liability – ending (a)	<u>\$2,293,063,354</u>	<u>\$2,307,848,750</u>
Plan fiduciary net position		
Contributions – employer	\$61,177,816	\$53,660,695
Contributions – employee	12,651,528	12,330,305
Net investment income	(34,842,454)	252,828,178
Benefit payments, including refunds of employee contributions	(202,163,452)	(198,590,749)
Administrative expense	(4,921,689)	(5,502,195)
Other	0	0
Net change in plan fiduciary net position	(168,098,251)	114,726,234
Plan fiduciary net position – beginning	<u>1,786,408,565</u>	<u>1,671,682,331</u>
Plan fiduciary net position – ending (b)	<u>\$1,618,310,314</u>	<u>\$1,786,408,565</u>
Net pension liability – ending (a) – (b)	<u>\$674,753,040</u>	<u>\$521,440,185</u>
Plan fiduciary net position as a percentage of the total pension liability	70.6%	77.4%
Covered employee payroll	\$189,451,404	\$186,213,740
Net pension liability as percentage of covered employee payroll	356.2%	280.0%

Exhibit 3 – Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pensions

As shown in Exhibit 2, during the plan year that ended December 31, 2018, the changes in net pension liability due to differences between expected and actual demographic experience is a decrease of \$751,483. The average expected remaining service lives of all members is 2.2 years, determined as of January 1, 2018 (the beginning of the measurement period ending December 31, 2018). Therefore, of the \$751,483 demographic gain, \$341,583 is recognized in pension expense in the current year and \$409,900 is reflected as a deferred inflow of resources related to pensions.

Based on the assumed investment return of 7.75% for the year ending December 31, 2018, the expected net investment income for the year was \$132,874,443. As shown in Exhibit 2, the actual net investment income for the year was -\$34,842,454. The difference between actual and expected investment experience is an increase in net pension liability of \$167,716,897, which is recognized over a 5-year period. Of this amount, \$33,543,381 is reflected in the current year and \$134,173,516 is reflected as a deferred outflow of resources related to pensions.

	Year Established	Original Balance	Original Amortization Period	Amortization Amount During 2018	Outstanding Balance at December 31, 2018
Outflows					
Investments	2014	47,053,580	5.0 years	9,410,716	0
Investments	2015	99,580,196	5.0 years	19,916,040	19,916,036
Demographics	2016	16,052,053	2.6 years	3,704,319	0
Investments	2016	19,761,598	5.0 years	3,952,320	7,904,638
Assumptions	2017	63,931,243	2.6 years	24,588,940	14,753,363
Investments	2018	167,716,897	5.0 years	33,543,381	134,173,516
Total outflows				\$95,115,716	\$176,747,553
Inflows					
Demographics	2017	2,919,790	2.6 years	1,122,996	673,798
Investments	2017	125,341,015	5.0 years	25,068,203	75,204,609
Demographics	2018	751,483	2.2 years	341,583	409,900
Total inflows				\$26,532,782	\$76,288,307

Exhibit 3 – Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pensions (continued)

	December 31, 2018	December 31, 2017
Deferred Outflows of Resources (Outstanding Balances)		
Difference between expected and actual experience in the Total Pension Liability	\$0	\$3,704,319
Changes of assumptions	14,753,363	39,342,303
Net difference between projected and actual earnings on pension plan investments	86,789,581	0
Total Deferred Outflows of Resources	\$101,542,944	\$43,046,622
Deferred Inflows of Resources (Outstanding Balances)		
Difference between expected and actual experience in the Total Pension Liability	\$1,083,698	\$1,796,794
Changes of assumptions	0	0
Net difference between projected and actual earnings on pension plan investments	0	39,173,062
Total Deferred Inflows of Resources	\$1,083,698	\$40,969,856
Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:		
Year Ended December 31:		
2018	N/A	\$35,381,136
2019	\$46,081,514	12,879,718
2020	12,359,177	(21,115,885)
2021	8,475,176	(25,068,203)
2022	33,543,379	0
2023	0	0
Thereafter	0	0

Exhibit 4 – Pension Expense

Exhibit 4 below shows the individual components of collective pension expense, which totaled \$116,108,191 for the fiscal year that ended December 31, 2018.

Annual pension expense for the year can also be viewed as the change in net pension liability, plus employer contributions for the year, less the change in outstanding balances of deferred outflows and deferred inflows of resources from the end of the prior fiscal year to end of the current fiscal year. The change in net pension liability during the year was \$153,312,855 and employer contributions were \$61,177,816. The net value of deferred outflows and deferred inflows of resources as of the end of the current fiscal year is \$100,459,246 compared to the net value as of the end of the prior fiscal of \$2,076,766 for a change of \$98,382,480. Therefore, the pension expense for the fiscal year that ended December 31, 2018, is \$153,312,855 + \$61,177,816 – \$98,382,480, or \$116,108,191.

	Fiscal Year Ending December 31, 2018	Fiscal Year Ending December 31, 2017
Components of pension expense		
• Service Cost	15,874,798	15,190,699
• Interest on the total pension liability	172,254,741	173,929,104
• Projected earnings on plan investments	(132,874,443)	(127,487,163)
• Contributions - member	(12,651,528)	(12,330,305)
• Administrative expense	4,921,689	5,502,195
• Current year recognition of:		
Changes of assumptions	24,588,940	24,588,940
Difference between expected and actual experience	2,239,740	15,848,679
Difference between projected and actual earnings on pension plan investments	41,754,254	8,210,873
Change of benefit terms	0	0
Total pension expense	\$116,108,191	\$103,453,022

Section 5: Actuarial Valuation Basis

EXHIBIT I – ACTUARIAL ASSUMPTIONS AND ACTUARIAL COST METHOD

Rationale for Assumptions	<p>The information and analysis used in selecting each assumption that has a significant effect on this actuarial valuation is shown in the Actuarial Experience Study as of December 31, 2016 prepared by Conduent. Assumptions that were changed from the prior valuation include retirement rates, termination rates, disability rates, mortality rates, salary increase rates and the net investment return assumption. Current data is reviewed in conjunction with each annual valuation. Based on professional judgment, no assumption changes are warranted at this time, beyond the assumption changes recommended by Conduent in the most recent Actuarial Experience Study.</p>																																											
Net Investment Return:	<p>7.75%.</p> <p>The net investment return assumption is a long-term estimate derived from historical data, current and recent market expectations, and professional judgment. As part of the analysis, a building block approach was used that reflects inflation expectations and anticipated risk premiums for each of the portfolio's asset classes, as well as the Plan's target asset allocation. The net investment return reduction phase-in to 7.50% is scheduled to be complete on January 1, 2020.</p>																																											
Salary Increases:	<table border="1"> <thead> <tr> <th data-bbox="722 881 779 911">Age</th> <th data-bbox="898 881 1052 951">General Employees</th> <th data-bbox="1150 881 1262 951">Elected Officials</th> <th data-bbox="1381 881 1493 951">Deputy Sheriffs</th> </tr> </thead> <tbody> <tr> <td data-bbox="722 963 758 992">20</td> <td data-bbox="940 963 1031 992">10.5%</td> <td data-bbox="1192 963 1241 992">3.5%</td> <td data-bbox="1402 963 1472 992">11.5%</td> </tr> <tr> <td data-bbox="722 1011 758 1040">25</td> <td data-bbox="961 1011 1010 1040">6.0</td> <td data-bbox="1192 1011 1241 1040">3.5</td> <td data-bbox="1402 1011 1451 1040">10.0</td> </tr> <tr> <td data-bbox="722 1060 758 1089">30</td> <td data-bbox="961 1060 1010 1089">5.0</td> <td data-bbox="1192 1060 1241 1089">3.5</td> <td data-bbox="1423 1060 1451 1089">7.1</td> </tr> <tr> <td data-bbox="722 1109 758 1138">35</td> <td data-bbox="961 1109 1010 1138">4.2</td> <td data-bbox="1192 1109 1241 1138">3.5</td> <td data-bbox="1423 1109 1451 1138">5.6</td> </tr> <tr> <td data-bbox="722 1157 758 1187">40</td> <td data-bbox="961 1157 1010 1187">4.0</td> <td data-bbox="1192 1157 1241 1187">3.5</td> <td data-bbox="1423 1157 1451 1187">3.2</td> </tr> <tr> <td data-bbox="722 1206 758 1235">45</td> <td data-bbox="961 1206 1010 1235">3.0</td> <td data-bbox="1192 1206 1241 1235">3.5</td> <td data-bbox="1423 1206 1451 1235">3.0</td> </tr> <tr> <td data-bbox="722 1255 758 1284">50</td> <td data-bbox="961 1255 1010 1284">3.0</td> <td data-bbox="1192 1255 1241 1284">3.5</td> <td data-bbox="1423 1255 1451 1284">3.0</td> </tr> <tr> <td data-bbox="722 1304 758 1333">55</td> <td data-bbox="961 1304 1010 1333">3.0</td> <td data-bbox="1192 1304 1241 1333">3.0</td> <td data-bbox="1423 1304 1451 1333">3.0</td> </tr> <tr> <td data-bbox="722 1352 758 1382">60</td> <td data-bbox="961 1352 1010 1382">3.0</td> <td data-bbox="1192 1352 1241 1382">3.0</td> <td data-bbox="1423 1352 1451 1382">3.0</td> </tr> </tbody> </table>	Age	General Employees	Elected Officials	Deputy Sheriffs	20	10.5%	3.5%	11.5%	25	6.0	3.5	10.0	30	5.0	3.5	7.1	35	4.2	3.5	5.6	40	4.0	3.5	3.2	45	3.0	3.5	3.0	50	3.0	3.5	3.0	55	3.0	3.0	3.0	60	3.0	3.0	3.0	General Employees	Elected Officials	Deputy Sheriffs
Age	General Employees	Elected Officials	Deputy Sheriffs																																									
20	10.5%	3.5%	11.5%																																									
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50	3.0	3.5	3.0																																									
55	3.0	3.0	3.0																																									
60	3.0	3.0	3.0																																									

	Salary increases include an assumed inflation rate of 2.50%.
Payroll Growth:	3.50%. For purposes of amortizing the unfunded actuarial accrued liability on a level percentage basis, the System uses 1.75%. This rate reflects the anticipated growth rate of the County's revenues.
Cost-of-Living Adjustments:	2.00% of original benefit per year to retired employees. Surviving beneficiary receives proportionate amount based on survivorship percentage. These increases are set in the plan provisions.
Mortality Rates:	<p><i>Healthy Annuitants and Beneficiaries:</i> For males, 102% of RP-2006 Healthy Annuitant male, projected with generational projection using scale MP-2016. For females, 107% of RP-2006 Healthy Annuitant female, projected with generational projection using scale MP-2016.</p> <p><i>Disabled Annuitants:</i> For males, 97% of RP-2006 Disabled male, projected with generational projection using scale MP-2016. For females, 95% of RP-2006 Disabled female, projected with generational projection using scale MP-2016.</p> <p><i>Death in Active Service:</i> For males, RP-2006 Employee male, projected with generational projection using scale MP-2016. For females, RP-2006 Employee female, projected with generational projection using scale MP-2016.</p> <p>The tables reasonably reflect the mortality experience of the Plan as of the measurement date.</p> <p>The generational projection of the mortality tables past the measurement date reflects future mortality improvement between the measurement date and those years.</p>

Termination Rates before Retirement:

Age	Rate (%)			
	Withdrawal – Ultimate			Disability
	General Employees	Elected Officials	Deputy Sheriffs	
20	25.0	4.0	18.6	0.00
25	25.0	4.0	18.6	0.04
30	10.1	4.0	8.6	0.05
35	7.2	4.0	5.7	0.07
40	6.0	4.0	3.0	0.17
45	5.7	4.0	3.0	0.21
50	5.7	4.0	2.0	0.21
55	3.0	4.0	1.0	0.21
60	0.0	0.0	0.0	0.21
65	0.0	0.0	0.0	0.21

Termination Rates before Retirement, continued:

Select rates for General Employees and Elected Officials are shown in the following table.

Age	Select Period Termination Rates (%)					
	General Employees Year 1	General Employees Year 2	General Employees Year 3	General Employees Year 4	General Employees Year 5	Elected Officials Under 5 Years
20	36.0	25.0	25.0	15.0	12.5	0.0
25	31.2	23.4	20.4	15.0	11.9	0.0
30	27.1	22.4	16.8	13.2	9.1	0.0
35	24.7	21.4	14.8	11.4	7.2	0.0
40	22.3	19.2	14.0	10.4	6.7	0.0
45	21.5	16.8	14.0	10.0	5.9	0.0
50	21.5	14.8	14.0	10.0	7.6	0.0
55	21.5	14.0	14.0	10.0	9.0	0.0
60	0.0	0.0	0.0	0.0	0.0	0.0

The withdrawal rates and disability rates were based on historical and current demographic data, adjusted to reflect estimated future experience and professional judgment. As part of the analysis, a comparison was made between the actual withdrawals and disability retirements by age based on the prior assumptions over the most recent experience study period.

Retirement Rates:

Age	General Employees Eligible for Backdrop	General Employees Not Eligible for Backdrop	Elected Officials	Deputy Sheriffs
45-49	10.0	0.0	0.0	15.0
50	15.0	10.0	0.0	15.0
51-54	15.0	10.0	0.0	30.0
55	15.0	10.0	14.9	30.0
56	15.0	10.0	14.9	30.0
57	15.0	10.0	17.3	30.0
58	15.0	10.0	15.3	30.0
59	15.0	10.0	18.6	30.0
60	15.0	10.0	14.6	50.0
61	25.0	10.0	16.9	50.0
62	25.0	25.0	21.3	50.0
63	25.0	25.0	20.0	50.0
64	25.0	25.0	18.2	50.0
65	40.0	33.3	22.8	100.0
66	40.0	33.3	16.9	100.0
67	40.0	33.3	19.3	100.0
68	40.0	33.3	25.7	100.0
69	40.0	33.3	27.0	100.0
70	100.0	100.0	100.0	100.0

The retirement rates were based on historical and current demographic data, adjusted to reflect estimated future experience and professional judgment. As part of the analysis, a comparison was made between the actual retirements by age and the projected retirements based on the prior assumptions over the most recent experience study period.

Retirement Rates for Inactive Vested Participants:	100% of inactive vested participants are assumed to retire at the participants' Normal Retirement Age. The retirement rates for inactive vested participants are based on historical and current demographic data, adjusted to reflect estimated future experience and professional judgment.
Backdrop Utilization:	75% of retirees are assumed to elect the Backdrop. Of the employees electing the Backdrop, 75% are assumed to take the maximum possible Backdrop, based on eligibility for an unreduced benefit. 25% are assumed to take half of the maximum period. If those assumptions produce a Backdrop date after April 1, 2013, the participant is assumed to take the Backdrop using an effective date of April 1, 2013.
Unknown Data for Participants:	Same as those exhibited by participants with similar known characteristics. If not specified, participants are assumed to be male.
Percent Married:	80%, with beneficiaries the same age as the participant.
Percent Married with at Least One Dependent Child:	21.6% for General Employees, 43.2% for Deputy Sheriffs and Elected Officials. For participants who die prior to age 60, it is assumed the dependent child will remain a dependent until the member would have turned age 60.
Disability Type:	For represented employees, disabilities are assumed to be 50% Ordinary and 50% Accidental. For non-represented employees, disabilities are assumed to be Ordinary (100%).
Benefit Election:	All participants are assumed to elect the Straight Life Annuity form of payment.
Death Benefits:	All death benefits are assumed to be ordinary.
Actuarial Value of Assets:	Market value of assets less unrecognized returns. Unrecognized return is equal to the difference between the actual market return and the expected return on the market value, and is recognized over a ten-year period. The Actuarial Value of Assets was set equal to the Market Value of Assets at January 1, 2013.
Actuarial Cost Method:	Entry Age Actuarial Cost Method. Entry Age is the age at date of employment or, if date is unknown, current age minus years of service. Normal Cost and Actuarial Accrued Liability are calculated on an individual basis. The outstanding balance of the Unfunded Actuarial Accrued Liability as of January 1, 2015 is being amortized over a fixed 21 year period. Changes to the Unfunded Actuarial Accrued Liability arising from plan changes, assumption changes, and experience gains and losses are amortized as a level percentage of payroll over a 20-year period. For this purpose, the payroll growth assumption is limited to 1.75%. The variance between the actual contribution and the contribution requirement for a year is amortized over a five year period on a level dollar basis.

EXHIBIT II – SUMMARY OF PLAN PROVISIONS

This exhibit summarizes the major provisions of the Plan included in the valuation. It is not intended to be, nor should it be interpreted as, a complete statement of all plan provisions.

Plan Year:	January 1 through December 31
Plan Status:	Ongoing
Membership:	Any person regularly employed by the County at an annual wage or salary, including any person employed by the State of Wisconsin, but receiving a portion of compensation from the County.
Vesting Service:	<p>Service during a period of employment with the County or in any department of in any town, village, city or metropolitan sewerage commission in the County, which department has by consolidation or merger been absorbed by the County. Creditable service shall consist of prior service, military service, and membership service, as well as service credited for military service in Vietnam. Additional credit for periods of military service will be earned as follows:</p> <ul style="list-style-type: none"> • Less than 5 years of service with the County: no military service granted. • Between 5 and 10 years of service with the County up to 1 year of military service granted. • Between 10 and 15 years of service with the County: up to 2 years of military service granted. • Between 15 and 20 years of service with the County: up to 3 years of military service granted. • 20 or more years of service with the County: up to 4 years of military service granted.
Benefit Service:	Same as vesting service except that service prior to becoming a participant does not count.
Compensation:	<p>Compensation is the full rate of compensation payable to the member if working the full normal working time for the member's position. Compensation includes authorized overtime payments and the compensation rate assumed to have been received while the member is on an authorized leave of absence. In cases where compensation includes maintenance, the Pension Board shall fix the value of that part of compensation not payable in money.</p> <p>Compensation shall not exceed \$280,000 in 2019, as indexed for the cost of living.</p>

Final Average Salary (FAS):	<p>Final average salary means the average annual salary for the highest three consecutive years of service.</p> <p>Exceptions:</p> <ul style="list-style-type: none"> • For Deputy Sheriffs hired on or after January 1, 1982, excluding DA investigators and non-represented Deputy Sheriffs, the final average salary means the average annual salary for the highest five years of service. • For DA investigators and non-Deputy Sheriffs hired before July 1, 1995 and all Deputy Sheriffs hired before January 1, 1982, the final average salary is increased by 7.5% for each year worked after January 1, 2001 to a maximum of 25%.
Voluntary Employee Contribution:	<ul style="list-style-type: none"> • Up to 10% of earnings, provided that the employee was contributing on January 1, 1971. The benefit payable to a member at termination of employment includes any voluntary contribution balance, in addition to the amounts described below.
Mandatory Employee Contribution:	<ul style="list-style-type: none"> • Public Safety and General employees contribute 50% of the allocated cost of the actuarially determined contribution.
Rule of 75:	<ul style="list-style-type: none"> • For eligible employees, unreduced retirement if age plus credited service exceeds 75.
Normal Retirement Eligibility:	<ul style="list-style-type: none"> • Elected Officials <ul style="list-style-type: none"> ○ Age 60, or age 55 with 30 years of service ○ If hired before January 1, 2006, Rule of 75 is available • Firefighters, Federated Nurses, and Machinists <ul style="list-style-type: none"> ○ Age 60 with 5 years of service, or age 55 with 30 years of service ○ Rule of 75 for Firefighters hired before December 1, 1996, Nurses hired before January 1, 1997, and Machinists hired before January 1, 1994 ○ For Federated Nurses and Machinists hired after January 1, 2012, age 64 or age 55 with 30 years of service • Attorneys, Building Trades, non-represented employees, DC48, and TEAMCO <ul style="list-style-type: none"> ○ Age 60, or age 55 with 30 years of service ○ Age 64 or age 55 with 30 years of service (for all hired after January 1, 2010 except DC48) ○ Age 64 or age 55 with 30 years of service (for DC48 hired after August 1, 2011) ○ Age 64 (non-represented employees) ○ Rule of 75 for Attorneys, Building Trades, and non-represented employees hired before January 1, 2006 ○ Rule of 75 for DC48 and TEAMCO hired before January 1, 1994

Normal Retirement Eligibility, continued:	<ul style="list-style-type: none"> • Deputy Sheriffs <ul style="list-style-type: none"> ○ Age 57, or age 55 with 15 years of service • Rule of 75 for non-represented Deputy Sheriffs, DA investigators, and Deputy Sheriffs hired before January 1, 1994.
Normal Retirement Amount:	<ul style="list-style-type: none"> • Elected Officials <ul style="list-style-type: none"> ○ Hired before March 15, 2002: 2.5% of FAS per year of service prior to October 14, 2010 and 1.6% of FAS per years of service thereafter, not greater than 80%. ○ Hired on or after March 15, 2002: 2.0% of FAS per year of service prior to October 14, 2010 and 1.6% of FAS per years of service thereafter, not greater than 80% • General Employees <ul style="list-style-type: none"> ○ 2.0% of FAS per year of service, not greater than 80% ○ The rate is reduced to 1.6% of FAS per years of service as follows: <ul style="list-style-type: none"> ▪ For non-represented employees, effective January 1, 2010 ▪ For Attorneys and TEAMCO, effective May 1, 2010 ▪ For Machinists, effective June 1, 2010 ▪ For DC48, effective August 1, 2011 ▪ For Building Trades and Federated Nurses, effective January 1, 2012 • Deputy Sheriffs <ul style="list-style-type: none"> ○ For Deputy Sheriffs hired before July 1, 1995, DA investigators and non-represented Deputy Sheriffs, 2.5% of FAS per year of service, not greater than 80% ○ For Deputy Sheriffs hired on or after July 1, 1995, 2.0% of FAS per years of service, not greater than 80% • For all members, 1.6% of FAS per year of service after 80% of FAS has been reached
Early Retirement:	<ul style="list-style-type: none"> • Age Requirement: 55 • Service Requirement: 15 years • Amount: Benefits reduced by 5/12 of 1% for each month by which payment of benefits precedes Normal Retirement Age • Early Retirement is not applicable for Deputy Sheriffs, DA investigators and non-represented Deputy Sheriffs (they are eligible for unreduced retirement at age 55 with 15 years of service)
Ordinary Disability:	<ul style="list-style-type: none"> • Service Requirement: 15 years • Amount: benefits calculated as for normal retirement. Minimum benefit is 25% of FAS.

Accidental Disability	<ul style="list-style-type: none"> • All employees are eligible • If the employee has attained normal retirement age, normal retirement benefits apply • If the employee has not attained normal retirement age, the benefit is computed as the normal retirement benefits but not less than 60% of FAS • Employees whose benefit is not less than 75% of FAS <ul style="list-style-type: none"> ○ Elected Officials and non-represented employees hired before February 19, 1987 ○ Attorneys hired on or after January 1, 1987 ○ Building Trades hired before October 30, 1987 ○ Federated Nurses hired before January 1, 1987 ○ Machinists hired before May 18, 1988 ○ DC48 hired before July 24, 1987 ○ TEAMCO hired before January 12, 1988 ○ Deputy Sheriffs ○ DA investigators and non-represented Deputy Sheriffs hired before February 19, 1987 • Benefits received prior to age 62 are recalculated after age 62 to include service from the date of disability to age 62
Ordinary Death Benefit:	<ul style="list-style-type: none"> • Only applicable to Deputy Sheriffs not eligible for normal retirement • Only applicable if the cause of death was not an accident in active duty • Employee has completed 1 year of service • Surviving spouse or child shall be entitled to survivor benefits (see section on survivor benefits)
Accidental Death Benefit:	<ul style="list-style-type: none"> • Only applicable to Deputy Sheriffs when death occurs due to an accident in active duty • Benefit of 50% of FAS shall be paid <ul style="list-style-type: none"> ○ To surviving spouse for life or until remarriage ○ If surviving spouse benefit is not payable, to children under age 18 ○ If surviving spouse and child benefits are not payable, to dependent parent for life ○ Benefit shall not be less than ordinary death benefit amount
Lump Sum Death Benefit:	<ul style="list-style-type: none"> • If no other death benefit is payable, a lump sum of one half of FAS, not greater than \$2,000. • Member must have 1 year of service

Survivor Benefits:	<ul style="list-style-type: none"> • Member dies prior to age 60 after completing 1 year of service • Surviving spouse has at least one child and was married to the member at least 1 year prior to death • Monthly benefit of 40% of final salary prior to age 60 • Reduced by monthly survivor benefits paid by Social Security • At age 60, 50% of benefit based on actual FAS and service projected to age 60 • Additional benefit of 10% of final salary less social security benefits shall be paid to each eligible unmarried child under age 18. Age limit is 22 if unmarried child is a student.
Refund of Contributions:	<ul style="list-style-type: none"> • Available at termination of employment
Vesting:	<ul style="list-style-type: none"> • Service Requirement: 5 years of service • Accrued benefit is at least \$10 per month • Amount: as per Normal Retirement Benefit • If member withdraws employee contributions, vested benefit does not apply
Optional Forms of Benefits:	<ul style="list-style-type: none"> • Options that pay a reduced benefit on an actuarially equivalent basis <ul style="list-style-type: none"> ○ Option 1 – If member dies before benefits paid exceed the member’s accumulated contributions at retirement, the balance is paid as a lump sum. ○ Option 2 – 50% Joint and Survivor Annuity. ○ Option 3 – 100% Joint and Survivor Annuity.
Cost of Living Adjustment (COLA):	2% of original benefit amount per year to retired employees. Surviving spouses get a proportionate increase based on survivorship percentage.

Backdrop:

- Members that are not eligible
 - Elected Officials, non-represented employees and Deputy Sheriffs hired on or after March 15, 2002
 - Machinists and TEAMCO hired on or after November 4, 2005
 - Attorneys hired on or after January 1, 2006
 - Federated Nurses hired on or after December 15, 2005
 - Firefighters hired on or after June 19, 2007
 - DC48 hired on or after February 1, 2007
- Retiring members who satisfy eligibility criteria may elect to use a past retirement date
- Member must have been eligible to retire at Backdrop date
- Backdrop date must be at least 1 year prior to the date the member terminated employment
- Backdrop monthly benefit calculated using service and salary as of Backdrop date
- Member receives cash payment of payments from Backdrop date to retirement date, including interest
- On and after April 1, 2013, if the Backdrop date is after April 1, 2013 the Backdrop benefit will not reflect any service or salary for the period from April 1, 2013 to the Backdrop date. This provision does not apply to Elected Officials, Building Trades, Machinists, Federated Nurses and Firefighters.

Section 6: Additional Summary Tables of Member Data

TABLE 1 – SUMMARY OF MEMBERSHIP DATA AS OF JANUARY 1, 2019

Active Participants

	General Employees	Deputy Sheriffs	Elected Officials	Total
Number of Participants	3,134	286	5	3,425
Average Annual Salaries*	\$54,909	\$64,285	\$114,402	\$55,779
Average Age	45.1	40.9	60.9	44.8
Average Credited Service	9.7	13.9	16.1	10.0

* The salaries shown in the table above represent a rate of pay increased by the salary assumption

Inactive Participants

	Number	Annual Annuities	Average Annuities	Average Age
Participants with Deferred Benefits	1,313	\$10,921,519	\$8,318	51.2
Retired Participants	6,847	157,274,056	22,970	71.8
Beneficiaries	920	16,043,595	17,439	78.4
Disability Retirees	275	6,848,044	24,902	64.5
Total	9,355	\$191,087,214	\$20,426	69.3

TABLE 2 – MEMBERSHIP STATISTICS (UNAUDITED)

Active Participants

Members as of January 1, 2018	3,502
Changes during the year:	
New enrollments	488
Vested terminations	(44)
Nonvested terminations	(126)
Retirements	(142)
Deaths in active service	(3)
Withdrawals	(250)
Data Adjustment	-
Members as of December 31, 2018	3,425

Retirements and Survivors

	Maximum Pension	Refund	100%	75%	50%	25%	5%	10-Yr	Survivors and Beneficiaries	Total
January 1, 2018	3,321	250	1,487	278	953	520	47	272	909	8,037
Changes during the year:										
Adjustments (actuary)	(7)	7	(2)	-	(2)	-	-	1	-	(3)
Retirements	100	1	54	18	33	15		16	78	315
Benefits Expired	-	-	-	-	-	-	-	-	(3)	(3)
Pensioner Deaths	(100)	(28)	(51)	(6)	(42)	(4)	(5)	(4)	(64)	(304)
December 31, 2018	3,314	230	1,488	290	942	531	42	285	920	8,042

**TABLE 3A – PARTICIPANTS IN ACTIVE SERVICE AS OF DECEMBER 31, 2018
BY AGE, YEARS OF CREDITABLE SERVICE, AND AVERAGE PAYROLL**

All Employee Groups

(Compensation in cells with fewer than 20 records has been suppressed)

Age	Total	Years of Creditable Service								
		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & over
Under 25	120	120	--	--	--	--	--	--	--	--
	\$42,788	\$42,788	--	--	--	--	--	--	--	--
25 - 29	305	286	19	--	--	--	--	--	--	--
	\$43,952	\$43,581	--	--	--	--	--	--	--	--
30 - 34	404	297	84	23	--	--	--	--	--	--
	\$48,587	\$47,315	\$51,922	\$52,824	--	--	--	--	--	--
35 - 39	389	224	90	55	20	--	--	--	--	--
	\$54,164	\$52,349	\$56,935	\$54,558	\$60,940	--	--	--	--	--
40 - 44	443	161	98	71	93	20	--	--	--	--
	\$57,902	\$51,113	\$69,111	\$55,493	\$57,628	\$67,446	--	--	--	--
45 - 49	533	147	73	74	102	105	31	1	--	--
	\$61,316	\$58,236	\$55,090	\$63,807	\$59,329	\$68,456	\$67,576	--	--	--
50 - 54	492	116	60	43	91	97	68	15	2	--
	\$58,519	\$55,780	\$55,839	\$57,025	\$55,570	\$62,012	\$63,497	--	--	--
55 - 59	402	83	50	45	73	57	64	26	4	--
	\$59,080	\$58,504	\$59,922	\$53,835	\$54,636	\$59,412	\$62,050	\$73,098	--	--
60 - 64	265	53	42	31	44	38	33	17	7	--
	\$61,264	\$57,828	\$60,292	\$59,282	\$57,429	\$63,928	\$66,558	--	--	--
65 & over	72	13	3	22	12	6	7	7	1	1
	\$65,233	--	--	\$64,296	--	--	--	--	--	--
Total	3,425	1,500	519	364	435	323	203	66	14	1
	\$55,779	\$50,167	\$58,275	\$57,704	\$57,302	\$64,201	\$64,512	\$73,647	--	--

**TABLE 3B – PARTICIPANTS IN ACTIVE SERVICE AS OF DECEMBER 31, 2018
BY AGE, YEARS OF CREDITABLE SERVICE, AND AVERAGE PAYROLL**

General Employees

(Compensation in cells with fewer than 20 records has been suppressed)

Age	Total	Years of Creditable Service									
		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & over	
Under 25	95	95	--	--	--	--	--	--	--	--	--
	\$41,274	\$41,274	--	--	--	--	--	--	--	--	--
25 - 29	261	245	16	--	--	--	--	--	--	--	--
	\$42,877	\$42,567	--	--	--	--	--	--	--	--	--
30 - 34	375	279	75	21	--	--	--	--	--	--	--
	\$48,117	\$46,873	\$51,515	\$52,501	--	--	--	--	--	--	--
35 - 39	368	211	87	53	17	--	--	--	--	--	--
	\$53,957	\$52,244	\$56,929	\$54,438	--	--	--	--	--	--	--
40 - 44	417	158	98	69	79	13	--	--	--	--	--
	\$57,054	\$51,085	\$69,111	\$55,212	\$54,594	--	--	--	--	--	--
45 - 49	450	144	73	74	80	58	20	1	--	--	--
	\$59,311	\$58,447	\$55,090	\$63,807	\$55,552	\$64,771	\$64,323	--	--	--	--
50 - 54	448	116	59	43	83	74	57	14	2	--	--
	\$56,826	\$55,780	\$54,521	\$57,025	\$53,843	\$58,017	\$61,429	--	--	--	--
55 - 59	387	83	49	45	72	49	59	26	4	--	--
	\$58,461	\$58,504	\$59,300	\$53,835	\$54,374	\$57,102	\$60,981	\$73,098	--	--	--
60 - 64	262	53	42	31	44	37	31	17	7	--	--
	\$60,702	\$57,828	\$60,292	\$59,282	\$57,429	\$62,176	\$64,329	--	--	--	--
65 & over	71	13	3	22	11	6	7	7	1	1	1
	\$64,878	--	--	\$64,296	--	--	--	--	--	--	--
Total	3,134	1,397	502	358	386	237	174	65	14	1	1
	\$54,909	\$50,123	\$58,112	\$57,670	\$55,173	\$60,516	\$62,619	\$73,649	--	--	--

**TABLE 3C – PARTICIPANTS IN ACTIVE SERVICE AS OF DECEMBER 31, 2018
BY AGE, YEARS OF CREDITABLE SERVICE, AND AVERAGE PAYROLL**

Deputy Sheriffs

(Compensation in cells with fewer than 20 records has been suppressed)

Age	Total	Years of Creditable Service								
		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & over
Under 25	25	25	--	--	--	--	--	--	--	--
	\$48,540	\$48,540	--	--	--	--	--	--	--	--
25 - 29	44	41	3	--	--	--	--	--	--	--
	\$50,332	\$49,643	--	--	--	--	--	--	--	--
30 - 34	29	18	9	2	--	--	--	--	--	--
	\$54,665	--	--	--	--	--	--	--	--	--
35 - 39	21	13	3	2	3	--	--	--	--	--
	\$57,790	--	--	--	--	--	--	--	--	--
40 - 44	26	3	--	2	14	7	--	--	--	--
	\$71,495	--	--	--	--	--	--	--	--	--
45 - 49	83	3	--	--	22	47	11	--	--	--
	\$72,184	--	--	--	\$73,065	\$73,004	--	--	--	--
50 - 54	43	--	--	--	8	23	11	1	--	--
	\$74,410	--	--	--	--	\$74,868	--	--	--	--
55 - 59	14	--	--	--	1	8	5	--	--	--
	--	--	--	--	--	--	--	--	--	--
60 - 64	1	--	--	--	--	--	1	--	--	--
	--	--	--	--	--	--	--	--	--	--
65 & over	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
Total	286	103	15	6	48	85	28	1	--	--
	\$64,285	\$50,764	--	--	\$73,736	\$73,716	\$73,983	--	--	--

**TABLE 3D – PARTICIPANTS IN ACTIVE SERVICE AS OF DECEMBER 31, 2018
BY AGE, YEARS OF CREDITABLE SERVICE, AND AVERAGE PAYROLL**

Elected Officials

(Compensation in cells with fewer than 20 records has been suppressed)

Age	Total	Years of Creditable Service									
		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & over	
Under 25	--	--	--	--	--	--	--	--	--	--	--
25 - 29	--	--	--	--	--	--	--	--	--	--	--
30 - 34	--	--	--	--	--	--	--	--	--	--	--
35 - 39	--	--	--	--	--	--	--	--	--	--	--
40 - 44	--	--	--	--	--	--	--	--	--	--	--
45 - 49	--	--	--	--	--	--	--	--	--	--	--
50 - 54	1	--	1	--	--	--	--	--	--	--	--
55 - 59	1	--	1	--	--	--	--	--	--	--	--
60 - 64	2	--	--	--	--	1	1	--	--	--	--
65 & over	1	--	--	--	1	--	--	--	--	--	--
Total	5	--	2	--	1	1	1	--	--	--	--

TABLE 4 – ACTIVE AND DEFERRED VESTED MEMBERS OBTAINING RETIREMENT ELIGIBILITY OVER NEXT FIVE CALENDAR YEARS

Actives Reaching Retirement Eligibility

Year	General Employees	Elected Officials	Deputy Sheriffs	Total
Eligible at Valuation Date	625	4	34	663
2019	67	-	3	70
2020	81	-	4	85
2021	96	-	3	99
2022	78	-	11	89
2023	76	-	12	88
Total Over Next 5 Years	398	-	33	431
Grand Total Eligible	1,023	4	67	1,094

Deferred Vested Members Reaching Retirement Age

Year	Total
2019	75
2020	57
2021	82
2022	59
2023	59
Total Over Next 5 Years	332

TABLE 5 – RETIREE AND BENEFICIARY MEMBERSHIP DATA AS OF JANUARY 1, 2019

Number and Average Annual Benefits

Age Last Birthday	Number	Annual Benefit	Average Annual Benefit
Retired Participants			
Under 60	494	\$14,342,303	\$29,033
60 – 64	1,077	25,015,380	23,227
65 – 69	1,717	38,587,075	22,474
70 – 74	1,406	33,998,566	24,181
75 – 79	992	22,618,519	22,801
80 & over	1,161	22,712,213	19,563
Total	6,847	\$157,274,056	\$22,970
Beneficiaries			
Under 60	55	\$818,950	\$14,890
60 – 64	60	1,166,187	19,436
65 – 69	100	1,918,608	19,186
70 – 74	134	2,832,778	21,140
75 – 79	130	2,291,904	17,630
80 & over	441	7,015,169	15,907
Total	920	\$16,043,595	\$17,439
Disabled Participants			
Under 60	108	\$3,257,606	\$30,163
60 – 64	44	978,432	22,237
65 – 69	36	973,038	27,029
70 – 74	26	474,657	18,256
75 – 79	27	566,770	20,991
80 & over	34	597,542	17,575
Total	275	\$6,848,044	\$24,902
Grand Total	8,042	\$180,165,695	\$22,403

TABLE 6 – FIVE-YEAR HISTORY OF MEMBERSHIP DATA

Active Participants

Valuation as of January 1	Number of Active Participants	Percentage Change in Membership	Total Annual Payroll	Percentage Change in Payroll
2019	3,425	-2.20%	\$191,043,797	0.92%
2018	3,502	0.40%	189,298,469	1.66%
2017	3,488	-3.62%	186,213,740	-4.44%
2016	3,619	-1.66%	194,871,557	-1.70%
2015	3,680	-5.91%	198,235,780	5.11%

Retired, Disabled, and Beneficiary Participants

Valuation as of January 1	Number on roll	Additions	Deletions	Percentage Change in Membership	Annual Annuities	Percentage Change in Annuities
2019	8,042	307	302	0.06%	\$180,165,695	1.71%
2018	8,037	333	294	-0.32%	177,140,993	1.24%
2017	8,063	363	291	0.90%	174,967,121	3.36%
2016	7,991	362	350	0.15%	169,278,563	2.56%
2015	7,979	365	329	0.49%	165,058,644	1.70%

TABLE 7A – DETAILED TABULATIONS OF THE DATA

The Number and Annual Salaries of Members in Active Service Distributed by Age as of January 1, 2019 All Employees

(Compensation in cells with fewer than 20 records has been suppressed)

Age	Men		Women		Total	
	Number	Compensation	Number	Compensation	Number	Compensation
20	7	--	1	--	8	--
21	4	--	3	--	7	--
22	15	--	13	--	28	\$1,190,478
23	19	--	16	--	35	1,453,952
24	24	\$1,179,693	18	--	42	1,994,355
25	28	1,302,103	31	\$1,319,773	59	2,621,877
26	24	1,095,912	19	--	43	1,801,430
27	38	1,726,846	30	1,239,867	68	2,966,712
28	34	1,420,135	31	1,379,217	65	2,799,352
29	35	1,819,842	35	1,396,286	70	3,216,128
30	29	1,398,031	36	1,689,492	65	3,087,523
31	36	1,741,274	45	1,900,247	81	3,641,520
32	54	2,784,158	50	2,185,321	104	4,969,479
33	40	2,101,888	42	1,894,717	82	3,996,605
34	25	1,347,960	47	2,585,936	72	3,933,896
35	37	2,017,262	43	2,150,905	80	4,168,166
36	28	1,668,039	35	1,554,284	63	3,222,324
37	25	1,454,956	49	2,392,050	74	3,847,006
38	40	2,677,425	44	2,068,864	84	4,746,289
39	35	1,969,702	53	3,116,327	88	5,086,029
40	42	2,428,949	52	2,833,333	94	5,262,282
41	35	2,017,230	42	2,157,461	77	4,174,691
42	53	3,561,681	43	2,258,771	96	5,820,452
43	52	3,532,988	51	2,850,649	103	6,383,637
44	31	1,936,080	42	2,073,271	73	4,009,351
45	38	2,446,828	42	2,459,438	80	4,906,267
46	54	3,259,705	59	3,326,463	113	6,586,168
47	60	3,977,241	52	2,988,049	112	6,965,290

Age	Men		Women		Total	
	Number	Compensation	Number	Compensation	Number	Compensation
48	59	3,787,493	57	3,457,447	116	7,244,940
49	52	3,325,416	61	3,726,580	113	7,051,996
50	38	2,600,427	53	2,868,022	91	5,468,449
51	44	3,069,292	61	2,947,266	105	6,016,558
52	42	2,864,535	66	3,545,853	108	6,410,388
53	53	3,253,016	52	2,957,727	105	6,210,743
54	32	2,120,842	50	2,491,041	82	4,611,883
55	46	2,802,920	32	1,832,686	78	4,635,605
56	27	1,718,433	39	2,112,597	66	3,831,030
57	47	3,036,684	46	2,303,036	93	5,339,720
58	34	2,161,170	53	3,409,576	87	5,570,747
59	38	2,259,382	40	2,113,686	78	4,373,067
60	37	2,220,819	40	2,283,940	77	4,504,759
61	23	1,680,263	29	1,530,300	52	3,210,562
62	31	2,239,213	30	1,455,660	61	3,694,873
63	21	1,477,782	16	--	37	2,326,796
64	20	1,384,812	18	--	38	2,497,938
65	8	--	14	--	22	1,248,444
66	7	--	4	--	11	--
67	7	--	6	--	13	--
68	4	--	4	--	8	--
69	4	--	3	--	7	--
70	1	--	2	--	3	--
71	2	--	1	--	3	--
72	--	--	--	--	--	--
73	1	--	--	--	1	--
74	--	--	--	--	--	--
75	--	--	2	--	2	--
76	1	--	1	--	2	--
Total	1,621	\$97,053,009	1,804	\$93,990,788	3,425	\$191,043,797

TABLE 7B – DETAILED TABULATIONS OF THE DATA

The Number and Annual Salaries of Members in Active Service Distributed by Years of Service as of January 1, 2019

All Employees

(Compensation in cells with fewer than 20 records has been suppressed)

Service	Men		Women		Total	
	Number	Compensation	Number	Compensation	Number	Compensation
0	95	\$3,933,709	148	\$5,774,656	243	\$9,708,365
1	183	9,687,742	203	9,903,519	386	19,591,261
2	128	6,627,400	164	8,161,747	292	14,789,147
3	105	5,921,032	147	7,062,081	252	12,983,112
4	66	3,863,441	122	5,858,764	188	9,722,205
5	62	4,200,458	85	4,455,419	147	8,655,877
6	73	4,400,110	66	3,180,092	139	7,580,202
7	68	3,880,266	62	3,316,522	130	7,196,788
8	46	2,898,999	45	2,522,834	91	5,421,834
9	31	1,705,753	23	1,217,944	54	2,923,697
10	47	3,127,135	44	2,473,758	91	5,600,893
11	48	2,798,375	45	2,398,655	93	5,197,030
12	26	1,605,312	31	2,063,545	57	3,668,857
13	39	2,094,677	48	2,670,821	87	4,765,498
14	31	1,844,954	38	2,141,855	69	3,986,809
15	18	--	28	1,555,327	46	2,729,887
16	33	2,167,725	28	1,426,443	61	3,594,167
17	43	2,757,609	31	1,555,612	74	4,313,221
18	58	3,426,833	57	2,827,746	115	6,254,579
19	44	2,709,907	52	2,879,676	96	5,589,583
20	51	3,273,838	47	2,710,061	98	5,983,899
21	47	2,934,918	32	1,944,441	79	4,879,360
22	42	2,891,563	28	1,753,361	70	4,644,924
23	26	1,872,913	23	1,322,032	49	3,194,946
24	47	3,318,157	22	1,347,454	69	4,665,611
25	29	1,975,371	34	1,938,029	63	3,913,399

Service	Men		Women		Total	
	Number	Compensation	Number	Compensation	Number	Compensation
26	22	1,609,335	27	1,718,972	49	3,328,307
27	27	1,993,013	20	1,277,325	47	3,270,339
28	18	--	16	--	34	2,185,378
29	22	1,571,191	23	1,468,210	45	3,039,401
30	14	--	26	1,600,951	40	2,576,536
31	8	--	13	--	21	1,410,616
32	5	--	5	--	10	--
33	6	--	6	--	12	--
34	3	--	3	--	6	--
35	2	--	5	--	7	--
36	1	--	--	--	1	--
37	2	--	1	--	3	--
38	1	--	3	--	4	--
39	2	--	2	--	4	--
40	1	--	--	--	1	--
41	1	--	--	--	1	--
42	--	--	1	--	1	--
Total	1,621	\$97,053,009	1,804	\$93,990,788	3,425	\$191,043,797

TABLE 7C – DETAILED TABULATIONS OF THE DATA

The Number and Annual Salaries of Members in Active Service Distributed by Age as of January 1, 2019

General Employees

(Compensation in cells with fewer than 20 records has been suppressed)

Age	Men		Women		Total	
	Number	Compensation	Number	Compensation	Number	Compensation
20	7	--	1	--	8	--
21	2	--	3	--	5	--
22	9	--	11	--	20	\$804,218
23	15	--	16	--	31	1,266,919
24	15	--	16	--	31	1,408,644
25	20	\$891,507	28	\$1,179,563	48	2,071,070
26	17	--	19	--	36	1,435,244
27	30	1,333,542	29	1,185,583	59	2,519,125
28	25	1,003,843	31	1,379,217	56	2,383,059
29	27	1,386,094	35	1,396,286	62	2,782,381
30	23	1,073,633	36	1,689,492	59	2,763,125
31	33	1,579,717	43	1,786,539	76	3,366,255
32	46	2,347,563	47	2,026,969	93	4,374,532
33	37	1,930,330	41	1,854,927	78	3,785,257
34	22	1,168,623	47	2,585,936	69	3,754,560
35	34	1,859,480	43	2,150,905	77	4,010,385
36	25	1,501,931	34	1,496,513	59	2,998,445
37	21	1,216,426	46	2,217,695	67	3,434,122
38	37	2,471,253	44	2,068,864	81	4,540,117
39	31	1,756,826	53	3,116,327	84	4,873,152
40	39	2,229,374	51	2,759,626	90	4,989,000
41	33	1,885,953	42	2,157,461	75	4,043,414
42	46	3,055,694	42	2,185,356	88	5,241,049
43	45	3,035,293	49	2,703,682	94	5,738,975
44	29	1,779,331	41	1,999,787	70	3,779,118
45	33	2,079,401	41	2,385,955	74	4,465,356
46	39	2,164,457	56	3,104,651	95	5,269,108
47	44	2,839,855	49	2,785,004	93	5,624,859

Age	Men		Women		Total	
	Number	Compensation	Number	Compensation	Number	Compensation
48	47	2,949,759	52	3,096,821	99	6,046,580
49	31	1,785,490	58	3,498,518	89	5,284,008
50	28	1,846,719	48	2,500,010	76	4,346,729
51	32	2,114,575	60	2,873,783	92	4,988,358
52	38	2,563,584	65	3,472,349	103	6,035,933
53	48	2,885,599	50	2,810,760	98	5,696,359
54	29	1,899,805	50	2,491,041	79	4,390,846
55	43	2,582,469	32	1,832,686	75	4,415,154
56	25	1,571,466	38	2,031,789	63	3,603,255
57	43	2,745,555	46	2,303,036	89	5,048,590
58	32	1,997,249	53	3,409,576	85	5,406,826
59	35	2,036,878	40	2,113,686	75	4,150,563
60	36	2,147,336	40	2,283,940	76	4,431,276
61	22	1,551,513	29	1,530,300	51	3,081,812
62	30	2,110,463	30	1,455,660	60	3,566,123
63	21	1,477,782	16	--	37	2,326,796
64	20	1,384,812	18	--	38	2,497,938
65	8	--	14	--	22	1,248,444
66	7	--	4	--	11	--
67	7	--	6	--	13	--
68	4	--	4	--	8	--
69	3	--	3	--	6	--
70	1	--	2	--	3	--
71	2	--	1	--	3	--
72	--	--	--	--	--	--
73	1	--	--	--	1	--
74	--	--	--	--	--	--
75	--	--	2	--	2	--
76	1	--	1	--	2	--
Total	1,378	\$81,204,199	1,756	\$90,881,983	3,134	\$172,086,182

TABLE 7D – DETAILED TABULATIONS OF THE DATA

The Number and Annual Salaries of Members in Active Service Distributed by Years of Service as of January 1, 2019

General Employees

(Compensation in cells with fewer than 20 records has been suppressed)

Service	Men		Women		Total	
	Number	Compensation	Number	Compensation	Number	Compensation
0	86	\$3,691,326	145	\$5,680,385	231	\$9,371,711
1	152	8,095,515	198	9,650,718	350	17,746,234
2	113	5,839,329	162	8,048,357	275	13,887,686
3	86	4,854,380	142	6,770,697	228	11,625,076
4	62	3,638,728	120	5,760,006	182	9,398,734
5	54	3,734,346	85	4,455,419	139	8,189,765
6	68	4,120,637	65	3,120,956	133	7,241,593
7	66	3,769,123	62	3,316,522	128	7,085,644
8	45	2,765,366	44	2,465,063	89	5,230,429
9	27	1,483,709	23	1,217,944	50	2,701,653
10	45	3,008,925	44	2,473,758	89	5,482,683
11	46	2,667,974	45	2,398,655	91	5,066,629
12	25	1,546,674	31	2,063,545	56	3,610,219
13	38	2,042,355	48	2,670,821	86	4,713,176
14	30	1,770,033	38	2,141,855	68	3,911,889
15	17	--	28	1,555,327	45	2,652,289
16	31	2,020,758	28	1,426,443	59	3,447,201
17	39	2,516,759	31	1,555,612	70	4,072,372
18	51	2,909,818	55	2,680,157	106	5,589,975
19	35	2,046,325	47	2,512,035	82	4,558,360
20	34	2,002,796	43	2,415,457	77	4,418,253
21	34	2,040,725	30	1,797,475	64	3,838,200
22	20	1,238,116	24	1,459,813	44	2,697,929
23	19	--	20	1,101,583	39	2,404,845
24	27	1,823,357	22	1,347,454	49	3,170,811
25	17	--	31	1,716,758	48	2,792,470
26	10	--	25	1,563,712	35	2,274,292
27	22	1,570,279	17	--	39	2,627,123

Service	Men		Women		Total	
	Number	Compensation	Number	Compensation	Number	Compensation
28	17	--	16	--	33	2,111,266
29	19	--	23	1,468,210	42	2,801,996
30	11	--	25	1,527,468	36	2,276,994
31	8	--	13	--	21	1,410,616
32	5	--	5	--	10	--
33	6	--	6	--	12	--
34	3	--	3	--	6	--
35	2	--	5	--	7	--
36	1	--	--	--	1	--
37	2	--	1	--	3	--
38	1	--	3	--	4	--
39	2	--	2	--	4	--
40	1	--	--	--	1	--
41	1	--	--	--	1	--
42	--	--	1	--	1	--
Total	1,378	\$81,204,199	1,756	\$90,881,983	3,134	\$172,086,182

TABLE 7E – DETAILED TABULATIONS OF THE DATA

The Number and Annual Salaries of Members in Active Service Distributed by Age as of January 1, 2019 Deputy Sheriffs

(Compensation in cells with fewer than 20 records has been suppressed)

Age	Men		Women		Total	
	Number	Compensation	Number	Compensation	Number	Compensation
21	2	--	--	--	2	--
22	6	--	2	--	8	--
23	4	--	--	--	4	--
24	9	--	2	--	11	--
25	8	--	3	--	11	--
26	7	--	--	--	7	--
27	8	--	1	--	9	--
28	9	--	--	--	9	--
29	8	--	--	--	8	--
30	6	--	--	--	6	--
31	3	--	2	--	5	--
32	8	--	3	--	11	--
33	3	--	1	--	4	--
34	3	--	--	--	3	--
35	3	--	--	--	3	--
36	3	--	1	--	4	--
37	4	--	3	--	7	--
38	3	--	--	--	3	--
39	4	--	--	--	4	--
40	3	--	1	--	4	--
41	2	--	--	--	2	--
42	7	--	1	--	8	--
43	7	--	2	--	9	--
44	2	--	1	--	3	--
45	5	--	1	--	6	--
46	15	--	3	--	18	--
47	16	--	3	--	19	--
48	12	--	5	--	17	--

Age	Men		Women		Total	
	Number	Compensation	Number	Compensation	Number	Compensation
49	21	\$ 1,539,926	3	--	24	\$ 1,767,988
50	10	--	5	--	15	--
51	11	--	1	--	12	--
52	4	--	1	--	5	--
53	5	--	2	--	7	--
54	3	--	--	--	3	--
55	3	--	--	--	3	--
56	2	--	1	--	3	--
57	4	--	--	--	4	--
58	1	--	--	--	1	--
59	3	--	--	--	3	--
60	1	--	--	--	1	--
Total	238	\$15,276,801	48	\$3,108,805	286	\$18,385,606

TABLE 7F – DETAILED TABULATIONS OF THE DATA

The Number and Annual Salaries of Members in Active Service Distributed by Years of Service as of January 1, 2019 Deputy Sheriffs

(Compensation in cells with fewer than 20 records has been suppressed)

Service	Men		Women		Total	
	Number	Compensation	Number	Compensation	Number	Compensation
0	9	--	3	--	12	--
1	31	\$1,592,226	5	--	36	\$1,845,027
2	15	--	2	--	17	--
3	19	--	5	--	24	1,358,036
4	4	--	2	--	6	--
5	8	--	--	--	8	--
6	5	--	1	--	6	--
7	2	--	--	--	2	--
8	--	--	1	--	1	--
9	4	--	--	--	4	--
10	2	--	--	--	2	--
11	2	--	--	--	2	--
12	1	--	--	--	1	--
13	1	--	--	--	1	--
14	1	--	--	--	1	--
15	1	--	--	--	1	--
16	2	--	--	--	2	--
17	4	--	--	--	4	--
18	7	--	2	--	9	--
19	9	--	5	--	14	--
20	17	--	4	--	21	1,565,647
21	13	--	2	--	15	--
22	22	1,653,446	4	--	26	1,946,995
23	6	--	3	--	9	--
24	20	1,494,800	--	--	20	1,494,800
25	12	--	3	--	15	--
26	11	--	2	--	13	--
27	4	--	3	--	7	--

Service	Men		Women		Total	
	Number	Compensation	Number	Compensation	Number	Compensation
28	1	--	--	--	1	--
29	2	--	--	--	2	--
30	3	--	1	--	4	--
Total	238	\$15,276,801	48	\$3,108,805	286	\$18,385,606

TABLE 7G – DETAILED TABULATIONS OF THE DATA

The Number and Annual Salaries of Members in Active Service Distributed by Age as of January 1, 2019 Elected Officials

(Compensation in cells with fewer than 20 records has been suppressed)

Age	Men		Women		Total	
	Number	Compensation	Number	Compensation	Number	Compensation
51	1	--	--	--	1	--
52	--	--	--	--	--	--
53	--	--	--	--	--	--
54	--	--	--	--	--	--
55	--	--	--	--	--	--
56	--	--	--	--	--	--
57	--	--	--	--	--	--
58	1	--	--	--	1	--
59	--	--	--	--	--	--
60	--	--	--	--	--	--
61	2	--	--	--	2	--
62	--	--	--	--	--	--
63	--	--	--	--	--	--
64	--	--	--	--	--	--
65	--	--	--	--	--	--
66	--	--	--	--	--	--
67	--	--	--	--	--	--
68	--	--	--	--	--	--
69	1	--	--	--	1	--
Total	5	--	--	--	5	--

TABLE 7H – DETAILED TABULATIONS OF THE DATA

The Number and Annual Salaries of Members in Active Service Distributed by Years of Service as of January 1, 2019 Elected Officials

(Compensation in cells with fewer than 20 records has been suppressed)

Service	Men		Women		Total	
	Number	Compensation	Number	Compensation	Number	Compensation
6	--	--	--	--	--	--
7	--	--	--	--	--	--
8	1	--	--	--	1	--
9	--	--	--	--	--	--
10	--	--	--	--	--	--
11	--	--	--	--	--	--
12	--	--	--	--	--	--
13	--	--	--	--	--	--
14	--	--	--	--	--	--
15	--	--	--	--	--	--
16	--	--	--	--	--	--
17	--	--	--	--	--	--
18	--	--	--	--	--	--
19	--	--	--	--	--	--
20	--	--	--	--	--	--
21	--	--	--	--	--	--
22	--	--	--	--	--	--
23	1	--	--	--	1	--
24	--	--	--	--	--	--
25	--	--	--	--	--	--
26	1	--	--	--	1	--
27	1	--	--	--	1	--
28	--	--	--	--	--	--
29	1	--	--	--	1	--
Total	5	--	--	--	5	--

TABLE 7I – DETAILED TABULATIONS OF THE DATA

The Number and Annual Benefits Payable to Members Receiving Benefits Distributed by Age as of January 1, 2019
All Members

Age	Men		Women		Total	
	Number	Annuities	Number	Annuities	Number	Annuities
18	--	--	2	\$ 11,805	2	\$ 11,805
19	--	--	--	--	--	--
20	--	--	--	--	--	--
21	--	--	--	--	--	--
22	--	--	--	--	--	--
23	--	--	--	--	--	--
24	--	--	--	--	--	--
25	--	--	1	20,079	1	20,079
26	--	--	--	--	--	--
27	--	--	--	--	--	--
28	--	--	--	--	--	--
29	--	--	2	30,168	2	30,168
30	2	\$15,102	--	--	2	15,102
31	--	--	--	--	--	--
32	--	--	--	--	--	--
33	--	--	--	--	--	--
34	--	--	--	--	--	--
35	2	27,529	--	--	2	27,529
36	1	16,629	--	--	1	16,629
37	--	--	--	--	--	--
38	1	21,591	1	4,471	2	26,062
39	1	44,064	--	--	1	44,064
40	1	2,495	1	16,922	2	19,416
41	1	36,679	1	6,528	2	43,207
42	2	47,959	--	--	2	47,959
43	2	55,662	2	67,280	4	122,942
44	3	70,772	1	48,734	4	119,505
45	2	51,907	1	28,167	3	80,073
46	1	46,637	--	--	1	46,637
47	4	141,891	6	157,679	10	299,569

Age	Men		Women		Total	
	Number	Annuities	Number	Annuities	Number	Annuities
48	4	150,205	2	47,980	6	198,185
49	12	394,370	1	44,748	13	439,118
50	4	142,154	6	143,651	10	285,805
51	12	455,902	11	267,298	23	723,199
52	12	493,428	17	492,747	29	986,175
53	13	489,340	26	710,033	39	1,199,373
54	17	703,581	33	917,724	50	1,621,306
55	25	802,133	57	1,502,125	82	2,304,258
56	34	941,818	30	841,101	64	1,782,918
57	32	851,643	54	1,342,460	86	2,194,103
58	26	792,045	74	1,803,747	100	2,595,792
59	44	1,299,776	70	1,818,102	114	3,117,878
60	62	1,836,695	103	2,196,220	165	4,032,915
61	69	1,734,493	160	3,590,453	229	5,324,946
62	106	2,620,658	137	2,815,128	243	5,435,786
63	105	2,836,576	158	3,086,014	263	5,922,589
64	116	3,048,490	165	3,395,273	281	6,443,762
65	143	3,559,833	191	3,632,199	334	7,192,032
66	146	4,396,048	210	3,837,308	356	8,233,356
67	146	3,873,681	220	4,614,673	366	8,488,354
68	185	5,022,245	200	3,514,885	385	8,537,130
69	174	4,716,574	238	4,311,275	412	9,027,849
70	160	4,856,554	195	3,765,684	355	8,622,238
71	175	4,644,351	229	4,730,061	404	9,374,412
72	138	4,061,465	193	4,427,652	331	8,489,117
73	109	2,835,638	136	2,729,385	245	5,565,023
74	96	2,490,203	136	2,809,331	232	5,299,534
75	96	2,586,748	139	2,622,155	235	5,208,903
76	95	2,790,793	133	2,504,745	228	5,295,538
77	64	1,667,809	108	1,984,428	172	3,652,237
78	79	2,242,637	91	1,682,559	170	3,925,196
79	72	1,836,482	111	2,128,570	183	3,965,052
80	53	1,319,776	108	2,110,491	161	3,430,268
81	62	1,531,992	107	1,736,601	169	3,268,593
82	62	1,624,023	94	1,719,282	156	3,343,306

Section 6: Additional Summary Tables of Member Data as of January 1, 2019 for the Employees' Retirement System of the County of Milwaukee

Age	Men		Women		Total	
	Number	Annuities	Number	Annuities	Number	Annuities
83	43	1,210,087	100	1,881,511	143	3,091,598
84	39	1,159,831	78	1,392,723	117	2,552,554
85	39	1,069,074	75	1,269,022	114	2,338,097
86	50	1,177,727	86	1,493,602	136	2,671,329
87	42	1,077,891	75	1,373,142	117	2,451,032
88	26	692,355	101	1,577,523	127	2,269,878
89	29	566,845	75	1,125,618	104	1,692,463
90	19	449,631	71	996,102	90	1,445,733
91	22	483,814	66	987,351	88	1,471,165
92	10	196,580	54	676,537	64	873,118
93	13	271,368	38	570,942	51	842,310
94	13	225,098	34	469,920	47	695,018
95	6	78,608	28	379,621	34	458,229
96	2	35,142	19	172,140	21	207,282
97	7	102,816	20	188,281	27	291,096
98	1	8,249	11	139,760	12	148,009
99	2	32,920	8	82,155	10	115,076
100	--	--	4	35,508	4	35,508
101	--	--	2	4,279	2	4,279
102	--	--	1	7,997	1	7,997
103	--	--	--	--	--	--
104	--	--	1	6,930	1	6,930
Total	3,134	\$85,067,110	4,908	\$95,098,584	8,042	\$180,165,695

TABLE 7J – DETAILED TABULATIONS OF THE DATA

**The Number and Annual Benefits Payable to Members Receiving Benefits Distributed by Age as of January 1, 2019
Retired Members**

Age	Men		Women		Total	
	Number	Annuities	Number	Annuities	Number	Annuities
49	2	\$83,294	1	\$44,748	3	\$128,042
50	2	86,478	4	112,141	6	198,619
51	8	308,146	8	218,629	16	526,775
52	11	478,809	11	332,262	22	811,071
53	11	425,044	19	516,088	30	941,132
54	12	521,369	20	563,066	32	1,084,435
55	19	686,166	46	1,228,545	65	1,914,711
56	31	835,584	27	767,668	58	1,603,252
57	30	814,995	44	1,182,654	74	1,997,650
58	26	792,045	62	1,585,936	88	2,377,982
59	39	1,136,576	61	1,622,058	100	2,758,634
60	57	1,733,103	96	2,063,778	153	3,796,881
61	63	1,611,981	142	3,210,515	205	4,822,495
62	98	2,433,079	129	2,674,647	227	5,107,726
63	99	2,724,654	133	2,559,276	232	5,283,930
64	109	2,941,114	151	3,063,234	260	6,004,348
65	132	3,292,182	177	3,359,483	309	6,651,664
66	138	4,146,487	195	3,529,185	333	7,675,672
67	139	3,814,950	195	4,047,448	334	7,862,398
68	179	4,891,192	179	2,962,776	358	7,853,969
69	167	4,589,924	216	3,953,447	383	8,543,371
70	151	4,674,329	170	3,277,067	321	7,951,396
71	168	4,520,303	199	3,984,178	367	8,504,481
72	132	3,936,548	169	3,926,157	301	7,862,704
73	100	2,726,310	116	2,260,482	216	4,986,792
74	88	2,367,105	113	2,326,088	201	4,693,193
75	85	2,443,333	116	2,245,778	201	4,689,111
76	89	2,688,385	110	2,076,554	199	4,764,939
77	62	1,617,675	89	1,606,387	151	3,224,062
78	73	2,143,400	70	1,285,629	143	3,429,029

Age	Men		Women		Total	
	Number	Annuities	Number	Annuities	Number	Annuities
79	68	1,803,513	96	1,869,275	164	3,672,788
80	50	1,300,997	84	1,537,594	134	2,838,591
81	53	1,400,137	78	1,267,114	131	2,667,251
82	54	1,522,981	65	1,144,076	119	2,667,057
83	42	1,197,786	75	1,411,545	117	2,609,331
84	38	1,151,027	53	930,488	91	2,081,514
85	34	1,010,304	51	902,153	85	1,912,458
86	47	1,170,632	48	706,741	95	1,877,373
87	38	1,032,447	46	812,566	84	1,845,013
88	23	659,058	66	1,034,297	89	1,693,355
89	25	545,179	43	624,135	68	1,169,314
90	19	449,631	43	589,804	62	1,039,434
91	18	430,697	34	468,173	52	898,870
92	9	193,198	26	305,945	35	499,143
93	11	249,449	21	321,129	32	570,578
94	9	196,124	19	215,224	28	411,347
95	5	74,929	19	181,023	24	255,952
96	2	35,142	10	85,465	12	120,607
97	6	93,421	15	116,620	21	210,040
98	1	8,249	6	74,319	7	82,568
99	1	30,138	4	48,956	5	79,094
100	--	--	1	5,541	1	5,541
101	--	--	1	1,447	1	1,447
102	--	--	1	7,997	1	7,997
103	--	--	--	--	--	--
104	--	--	1	6,930	1	6,930
Total	2,873	\$80,019,595	3,974	\$77,254,460	6,847	\$157,274,056

TABLE 7K – DETAILED TABULATIONS OF THE DATA

**The Number and Annual Benefits Payable to Members Receiving Benefits Distributed by Age as of January 1, 2019
Disabled Members**

Age	Men		Women		Total	
	Number	Annuities	Number	Annuities	Number	Annuities
38	1	\$21,591	--	--	1	\$21,591
39	1	44,064	--	--	1	44,064
40	--	--	--	--	--	--
41	1	36,679	--	--	1	36,679
42	2	47,959	--	--	2	47,959
43	2	55,662	1	\$47,854	3	103,517
44	1	45,838	1	48,734	2	94,571
45	2	51,907	--	--	2	51,907
46	1	46,637	--	--	1	46,637
47	4	141,891	3	113,920	7	255,811
48	4	150,205	2	47,980	6	198,185
49	9	295,644	--	--	9	295,644
50	1	48,963	2	31,510	3	80,473
51	4	147,756	2	42,892	6	190,648
52	1	14,619	5	156,362	6	170,981
53	2	64,296	5	168,000	7	232,296
54	5	182,212	8	271,073	13	453,286
55	5	108,913	8	168,382	13	277,295
56	2	97,380	3	73,432	5	170,812
57	2	36,648	4	56,493	6	93,141
58	--	--	5	120,813	5	120,813
59	4	144,553	5	126,744	9	271,297
60	5	103,592	1	23,137	6	126,729
61	6	122,512	10	255,553	16	378,066
62	6	146,380	4	67,782	10	214,162
63	3	62,538	3	77,674	6	140,212
64	4	86,064	2	33,199	6	119,263
65	7	241,985	1	34,128	8	276,113
66	6	206,074	1	14,017	7	220,092
67	3	36,380	6	172,518	9	208,899

Age	Men		Women		Total	
	Number	Annuities	Number	Annuities	Number	Annuities
68	2	55,411	3	60,894	5	116,305
69	3	92,564	4	59,066	7	151,630
70	3	77,435	2	30,699	5	108,134
71	1	34,442	3	53,512	4	87,954
72	2	64,593	1	10,182	3	74,775
73	5	54,196	--	--	5	54,196
74	4	79,962	5	69,636	9	149,597
75	2	56,931	3	58,658	5	115,588
76	2	49,198	6	101,260	8	150,459
77	2	50,134	4	93,263	6	143,397
78	3	61,064	2	40,887	5	101,951
79	1	18,540	1	21,554	2	40,094
80	--	--	1	15,282	1	15,282
81	2	38,132	2	40,672	4	78,804
82	2	52,432	2	25,372	4	77,804
83	--	--	1	23,649	1	23,649
84	1	8,804	3	41,355	4	50,159
85	2	38,942	2	37,611	4	76,552
86	--	--	4	82,135	4	82,135
87	--	--	3	38,251	3	38,251
89	--	--	2	48,435	2	48,435
90	--	--	3	40,358	3	40,358
91	--	--	2	37,222	2	37,222
92	--	--	1	13,922	1	13,922
93	--	--	1	13,935	1	13,935
94	--	--	--	--	--	--
95	--	--	1	16,315	1	16,315
Total	131	\$3,621,722	144	\$3,226,323	275	\$6,848,044

TABLE 7L – DETAILED TABULATIONS OF THE DATA

The Number and Annual Benefits Payable to Members Receiving Benefits Distributed by Age as of January 1, 2019
Beneficiaries

Age	Men		Women		Total	
	Number	Annuities	Number	Annuities	Number	Annuities
18	--	--	2	\$11,805	2	\$11,805
19	--	--	--	--	--	--
20	--	--	--	--	--	--
21	--	--	--	--	--	--
22	--	--	--	--	--	--
23	--	--	--	--	--	--
24	--	--	--	--	--	--
25	--	--	1	20,079	1	20,079
26	--	--	--	--	--	--
27	--	--	2	30,168	2	30,168
28	--	--	--	--	--	--
29	--	--	--	--	--	--
30	2	\$15,102	--	--	2	15,102
31	--	--	--	--	--	--
32	--	--	--	--	--	--
33	--	--	--	--	--	--
34	--	--	--	--	--	--
35	2	27,529	--	--	2	27,529
36	1	16,629	--	--	1	16,629
37	--	--	--	--	--	--
38	--	--	1	4,471	1	4,471
39	--	--	--	--	--	--
40	1	2,495	1	16,922	2	19,416
41	--	--	1	6,528	1	6,528
42	--	--	--	--	--	--
43	--	--	1	19,426	1	19,426
44	2	24,934	--	--	2	24,934
45	--	--	1	28,167	1	28,167
46	--	--	--	--	--	--
47	--	--	3	43,758	3	43,758

Age	Men		Women		Total	
	Number	Annuities	Number	Annuities	Number	Annuities
48	--	--	--	--	--	--
49	1	15,432	--	--	1	15,432
50	1	6,713	--	--	1	6,713
51	--	--	1	5,777	1	5,777
52	--	--	1	4,123	1	4,123
53	--	--	2	25,946	2	25,946
54	--	--	5	83,585	5	83,585
55	1	7,054	3	105,198	4	112,252
56	1	8,853	--	--	1	8,853
57	--	--	6	103,313	6	103,313
58	--	--	7	96,998	7	96,998
59	1	18,647	4	69,301	5	87,948
60	--	--	6	109,305	6	109,305
61	--	--	8	124,385	8	124,385
62	2	41,199	4	72,699	6	113,898
63	3	49,383	22	449,064	25	498,447
64	3	21,312	12	298,839	15	320,151
65	4	25,667	13	238,588	17	264,254
66	2	43,486	14	294,106	16	337,592
67	4	22,351	19	394,707	23	417,057
68	4	75,642	18	491,215	22	566,857
69	4	34,086	18	298,762	22	332,848
70	6	104,790	23	457,918	29	562,709
71	6	89,607	27	692,371	33	781,977
72	4	60,324	23	491,313	27	551,637
73	4	55,132	20	468,903	24	524,035
74	4	43,137	18	413,607	22	456,744
75	9	86,484	20	317,720	29	404,204
76	4	53,210	17	326,931	21	380,141
77	--	--	15	284,778	15	284,778
78	3	38,173	19	356,043	22	394,216
79	3	14,429	14	237,742	17	252,171
80	3	18,779	23	557,616	26	576,395
81	7	93,724	27	428,815	34	522,539
82	6	48,610	27	549,834	33	598,444

Section 6: Additional Summary Tables of Member Data as of January 1, 2019 for the Employees' Retirement System of the County of Milwaukee

Age	Men		Women		Total	
	Number	Annuities	Number	Annuities	Number	Annuities
83	1	12,301	24	446,317	25	458,619
84	--	--	22	420,880	22	420,880
85	3	19,828	22	329,258	25	349,087
86	3	7,095	34	704,726	37	711,821
87	4	45,444	26	522,324	30	567,768
88	3	33,297	33	494,790	36	528,088
89	4	21,666	29	461,125	33	482,790
90	--	--	26	369,076	26	369,076
91	4	53,117	31	505,256	35	558,373
92	1	3,382	27	356,658	28	360,040
93	2	21,919	17	249,813	19	271,732
94	4	28,975	15	254,696	19	283,671
95	1	3,679	8	182,283	9	185,962
96	--	--	9	86,675	9	86,675
97	1	9,395	5	71,661	6	81,056
98	--	--	5	65,441	5	65,441
99	1	2,782	4	33,200	5	35,982
100	--	--	3	29,967	3	29,967
101	--	--	1	2,832	1	2,832
Total	130	\$1,425,793	790	\$14,617,802	920	\$16,043,595

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