



Employees' Retirement System of the County of Milwaukee

Actuarial Valuation and Review as of January 1, 2018

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May 24, 2018

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 Actuarial Valuation and Review as of January 1, 2018, 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 2018 and the Budget Contribution for fiscal year 2019.

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.

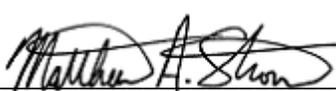
We look forward to reviewing this report and to answering any questions at an upcoming Board meeting.

Sincerely,

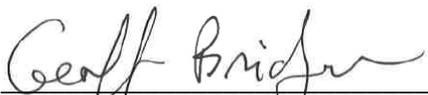
Segal Consulting, a Member of The Segal Group, Inc.

By: 

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Section 1: Actuarial Valuation Summary

Purpose and Basis

This report was prepared by Segal Consulting to present a valuation of the Plan as of January 1, 2018. 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, 2017, 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, 2018, provided by RPS;
- The unaudited assets of the Plan as of December 31, 2017, 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, 2017, were \$53,660,695. When combined with the employee contributions of \$12,330,305 and interest to the end of the year, the total contributions exceeded the actuarially determined contribution (referred to as the Actual Funding Contribution) for 2017 by \$1,917,965.
3. The results of this January 1, 2018, actuarial valuation are used to determine the Actual Funding Contribution for the fiscal year ending December 31, 2018, and the Budget Contribution for the fiscal year ending December 31, 2019. The Actual Funding Contribution for the year ending December 31, 2018 is \$71,422,581, an increase of \$5,623,130 from the Actual Funding Contribution for the year ending December 31, 2017. The amortization bases of the unfunded actuarial accrued liability are shown in *Section 2, Exhibit F* of this report.
4. The 2019 Budget Contribution, expected to be contributed in 2019, is \$72,237,000.
5. The funded ratio (the ratio of the actuarial value of assets to actuarial accrued liability) is 75.4%, compared to the prior year's funded ratio of 77.1%. Before reflecting any assumption or plan changes, this year's funded ratio is 77.5%. 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 77.4%, compared to 74.1% 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 15.63% for the January 1, 2017 to December 31, 2017 plan year. The return on the actuarial value of assets was 8.04% for the same period due to the recognition of prior year's investment gains and losses. This resulted in an actuarial gain when measured against the assumed rate of return of 8.00% (applicable for the year ending December 31, 2017). 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 this 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 97.4% 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 gain is recognized in future years, the cost of the Plan is likely to decrease unless the net gain is offset by future experience. The recognition of the deferred market gain of \$46,600,994 will also have an impact on the future funded ratio. If the net deferred gain were recognized immediately in the actuarial value of assets, the actuarially determined contribution would decrease by \$4,099,423 to \$67,323,158.
8. The unfunded actuarial accrued liability is \$568,041,179, which is an increase of \$52,155,144 since the prior valuation.

9. The actuarial gain from investment experience is \$676,063.
10. The net experience loss from sources other than investment experience was approximately 0.12% of the actuarial accrued liability prior to reflection of assumption changes. Additional detail regarding this loss is shown in *Section 2, Exhibit C*.
11. The following changes in actuarial assumptions were approved by the Board:
 - The investment return assumption was lowered from 8.00% to 7.75%. This is part of a phase-in to 7.50% that is scheduled to be completed January 1, 2020.
 - The inflation assumption was lowered from 3.00% to 2.50%.
 - The salary increase assumptions for General Employees, Deputy Sheriffs, and Elected Officials were modified, generally with an increase to rates at certain age ranges.
 - The mortality assumption for healthy participants was updated as follows:
 - Post-commencement – the RP-2014 Healthy Annuitant tables (102% of male rates and 107% of female rates), with generational projection using Scale MP-2016;
 - Pre-commencement – the RP-2014 Employee tables with generational projection using Scale MP-2016.
 - The mortality assumption for disability retirees was updated to the RP-2014 Disabled Mortality Table (97% of male rates and 95% of female rates) with generational projection using Scale MP-2016.
 - Other active decrement tables (retirement, termination, disability) were modified to more closely match recent experience.

As a result of these assumption changes, the total normal cost at beginning of year decreased by \$1,430,959 and the actuarial accrued liability increased by \$63,931,243. The total impact was an increase in the Actual Funding Contribution of \$3,677,576.
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, 2017, and December 31, 2018, 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, 2018, 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.

Summary of Key Valuation Results

		2018	2017*
Actuarially determined contributions:	• Actual Funding Contribution for fiscal 2018 (and 2017)	\$71,422,581	\$65,799,451
	• Amount actually contributed for fiscal 2018 (and 2017)	TBD	65,991,000
	• Budget Contribution for fiscal 2019 (and 2018)	72,237,000	72,194,000
Actuarial accrued liability for plan year beginning January 1:	• Retired participants and beneficiaries	\$1,806,909,181	\$1,744,454,752
	• Inactive vested participants	89,918,807	79,583,004
	• Active participants	411,020,762	432,270,487
	• Total	2,307,848,750	2,256,308,243
	• Employer normal cost for plan year beginning January 1 (as of January 1)	15,874,798	15,190,699
Assets for plan year beginning January 1:	• Market value of assets (MVA)	\$1,786,408,565	\$1,671,682,331
	• Actuarial value of assets (AVA)	1,739,807,571	1,740,422,208
	• Actuarial value of assets as a percentage of market value of assets	97.39%	104.11%
Funded status for plan year beginning January 1:	• Unfunded actuarial accrued liability based on MVA	\$521,440,185	\$584,625,912
	• Funded percentage on MVA basis	77.41%	74.09%
	• Unfunded actuarial accrued liability based on AVA	\$568,041,179	\$515,886,035
	• Funded percentage on AVA basis	75.39%	77.14%
	• Remaining amortization period (average)	19	21
Key assumptions:	• Interest rate for determining liability as of January 1	7.75%	8.00%
	• Inflation rate	3.00%	3.00%
	• Interest rate for Budget Contribution for fiscal 2019 (and 2018)	7.75%	7.75%
Demographic data for plan year beginning January 1:	• Number of retired members and beneficiaries	8,037	8,063
	• Number of vested former members	1,371	1,394
	• Number of active members	3,502	3,488
	• Total payroll	\$189,451,404	\$186,213,740
	• Average pay	54,098	53,387

* All valuation results shown throughout this report for January 1, 2017 and prior years and all figures in this column 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: 2009 – 2018

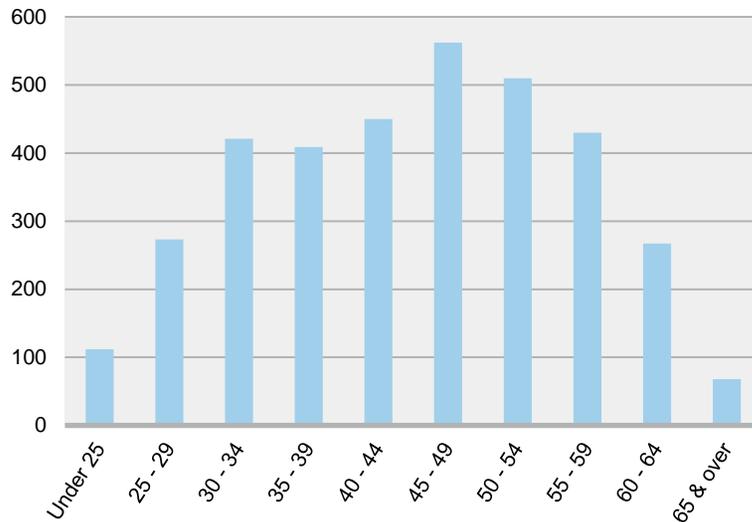
As of January 1	Active Members	Vested Terminated Members	Retired Members and Beneficiaries	Total Non-Actives	Ratio of Non-Actives to Actives
2009	4,837	1,397	7,308	8,705	1.80
2010	4,808	1,659	7,292	8,951	1.86
2011	4,448	1,493	7,441	8,934	2.01
2012	3,972	1,341	7,747	9,088	2.29
2013	3,934	1,196	7,867	9,063	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

Active Members

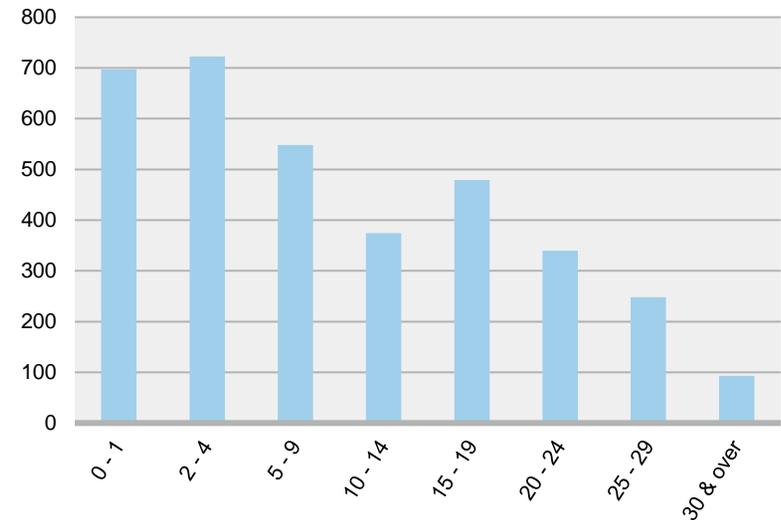
Plan costs are affected by the age, years of creditable service and payroll of active members. In this year's valuation, there were 3,502 active members with an average age of 45.0, average years of creditable service of 10.3 years and average pay of \$54,098. The 3,488 active members in the prior valuation had an average age of 45.2, average service of 10.3 years and average pay of \$53,387.

Distribution of Active Members as of January 1, 2018

ACTIVES BY AGE



ACTIVES BY YEARS OF CREDITABLE SERVICE



Inactive Members

In this year's valuation, there were 1,371 members with a vested right to a deferred or immediate benefit. Average monthly annuities for these members are \$691.

For comparison, in the previous valuation, there were 1,394 members with a vested right to a deferred or immediate benefit. Average monthly annuities for these members were \$679.

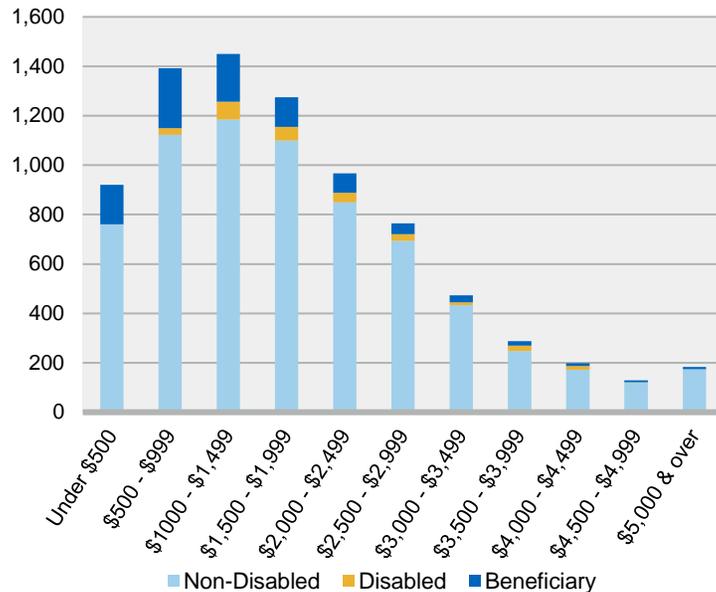
Retired Members and Beneficiaries

As of January 1, 2018, 7,128 retired members (including disability retirees) and 909 beneficiaries were receiving total monthly benefits of \$14,761,749. For comparison, in the previous valuation, there were 7,147 retired members and 916 beneficiaries receiving monthly benefits of \$14,580,594.

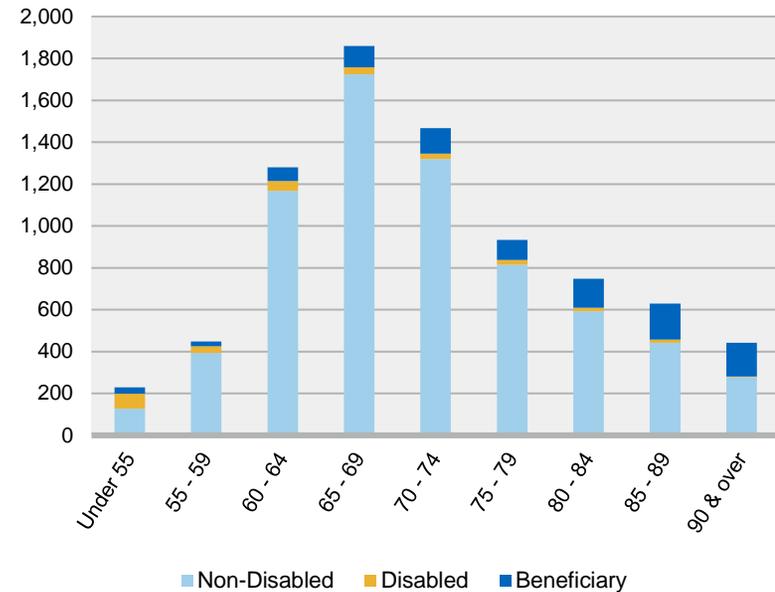
As of January 1, 2018, the average monthly benefit for retired members is \$1,893, compared to \$1,868 in the previous valuation. The average age for retired members is 71.3 in the current valuation, compared with 71.1 in the prior valuation.

Distribution of Pensioners as of January 1, 2018

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: 2009 – 2018

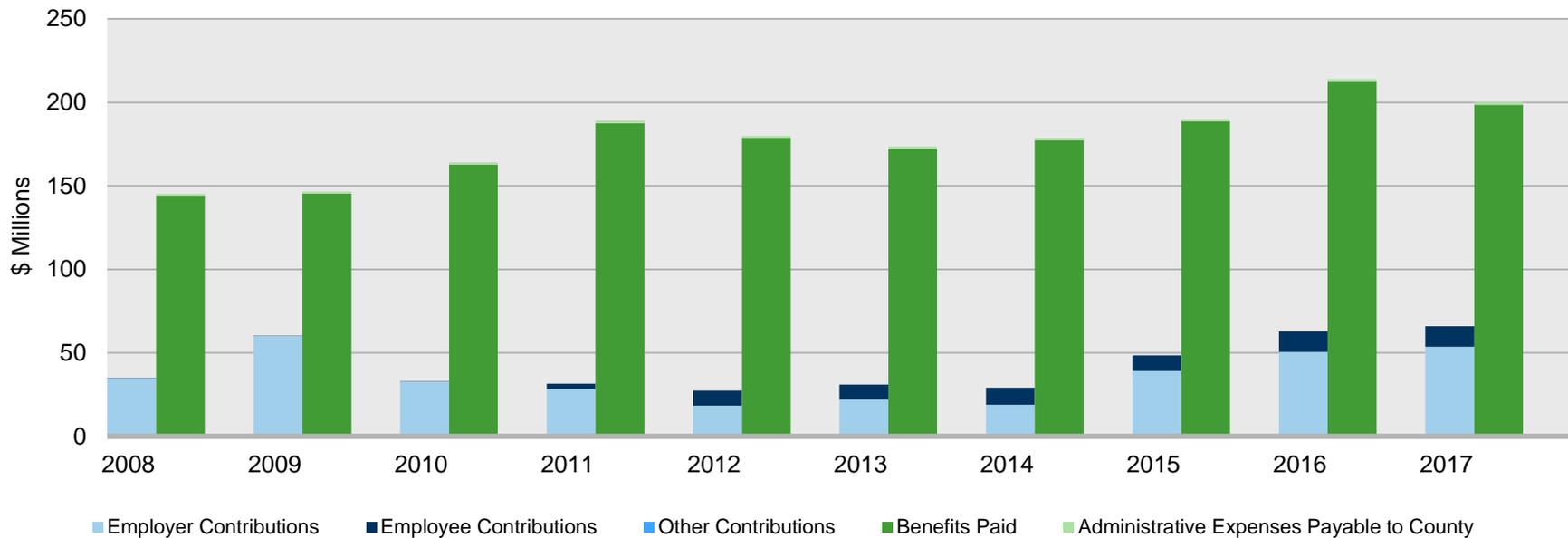
As of January 1	Active Members			Retired Members		
	Count	Average Age	Average Service	Count	Average Age	Average Monthly Amount
2009	4,837	46.2	12.3	6,391	70.5	\$1,612
2010	4,808	46.4	12.4	6,499	70.8	1,633
2011	4,448	46.4	12.5	6,644	70.7	1,662
2012	3,972	45.6	11.6	6,833	70.1	1,673
2013	3,934	45.8	11.7	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

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 negative cash flow (approximately \$138 million in 2017) 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, 2008 – 2017



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 valuation 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, 2017

1		Market value of assets, December 31, 2017			\$1,786,408,565
2		Calculation of unrecognized return	Original	Percent	Unrecognized
			Amount **	Deferred	Amount***
(a)		Year ended December 31, 2017*	\$121,516,124	90%	\$109,364,512
(b)		Year ended December 31, 2016	-23,448,242	80	-18,758,592
(c)		Year ended December 31, 2015	-103,841,093	70	-72,688,763
(d)		Year ended December 31, 2014	-50,790,631	60	-30,474,378
(e)		Year ended December 31, 2013	118,316,429	50	59,158,215
(f)		Year ended December 31, 2012	--	40	--
(g)		Year ended December 31, 2011	--	30	--
(h)		Year ended December 31, 2010	--	20	--
(i)		Year ended December 31, 2009	--	10	--
(j)		Year ended December 31, 2008	--	0	--
(k)		Total unrecognized return			46,600,994
3		Actuarial value of assets as of December 31, 2017: (1) - (2k)			<u>\$1,739,807,571</u>
4		Actuarial value as a percentage of market value: (3) ÷ (1)			97.4%

* Derivation of gain/(loss) for the year ending December 31, 2017 is shown on page 20

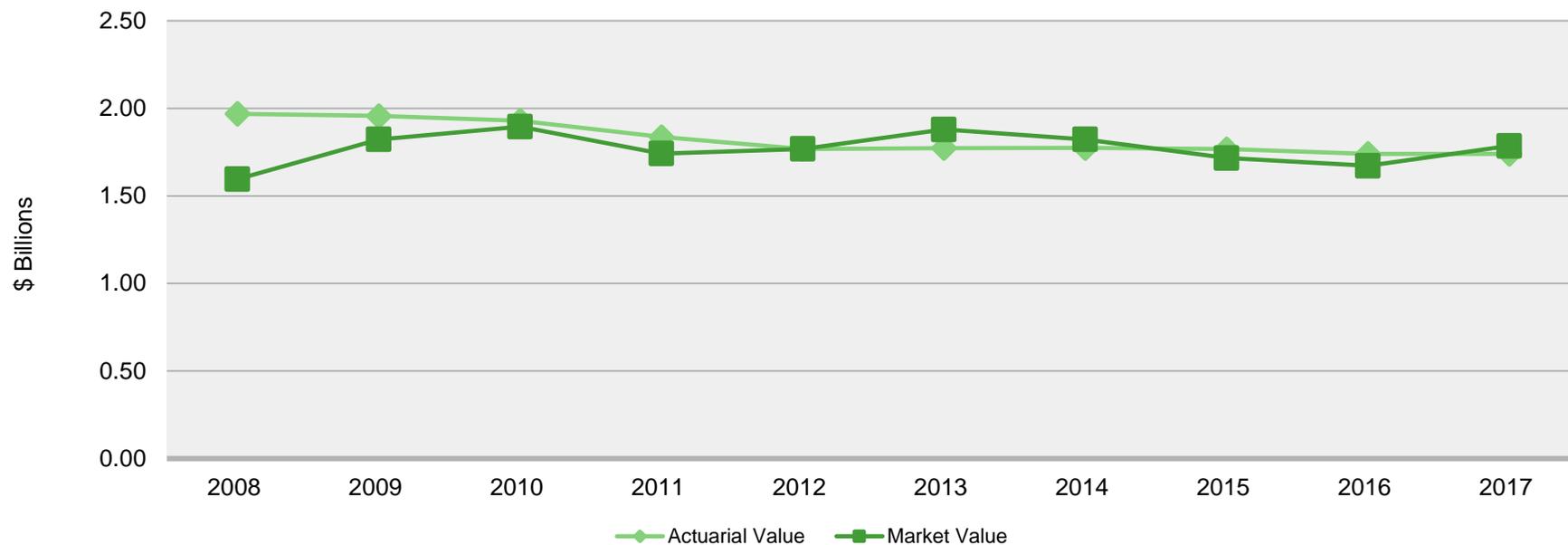
**Total return minus expected return on a market value basis

***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, 2008 – 2017



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 \$3,290,263 which includes \$676,063 from investment gains and \$2,614,200 in gains from all other sources. The net experience variation from individual sources other than investments was 0.12% of the actuarial accrued liability prior to reflection of the assumption changes. A discussion of the major components of the actuarial experience is on the following pages.

ACTUARIAL EXPERIENCE FOR YEAR ENDED DECEMBER 31, 2017

1	Net gain/(loss) from investments*	\$676,063
2	Net gain/(loss) from other experience	2,614,200
3	Net experience gain/(loss): 1 + 2	\$3,290,263

* 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 15.63% for the year ended December 31, 2017.

For valuation purposes, the assumed rate of return on the actuarial value of assets is 8.00% (changed to 7.75%, effective January 1, 2018). The actual rate of return on an actuarial basis for the 2017 plan year was 8.04%. Since the actual return for the year was more than the assumed return, the Plan experienced an actuarial gain during the year ended December 31, 2017 with regard to its investments.

INVESTMENT EXPERIENCE

	Year Ended December 31, 2017		Year Ended December 31, 2016*	
	Market Value	Actuarial Value	Market Value	Actuarial Value
1 Investment income	\$249,003,287	\$133,662,416	\$106,649,356	\$124,121,244
2 Average value of assets	1,593,589,532	1,662,329,409	1,626,219,975	1,688,952,088
3 Rate of return: 1 ÷ 2	15.63%	8.04%	6.56%	7.35%
4 Assumed rate of return	8.00%	8.00%	8.00%	8.00%
5 Expected investment income: 2 × 4	\$127,487,163	\$132,986,353	\$130,097,598	\$135,116,167
6 Actuarial gain/(loss): 1 - 5	<u>\$121,516,124</u>	<u>\$676,063</u>	<u>-\$23,448,242</u>	<u>-\$10,994,923</u>

* Estimated based on numbers in prior actuary's January 1, 2017 report.

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 14 years, including averages over select time periods.

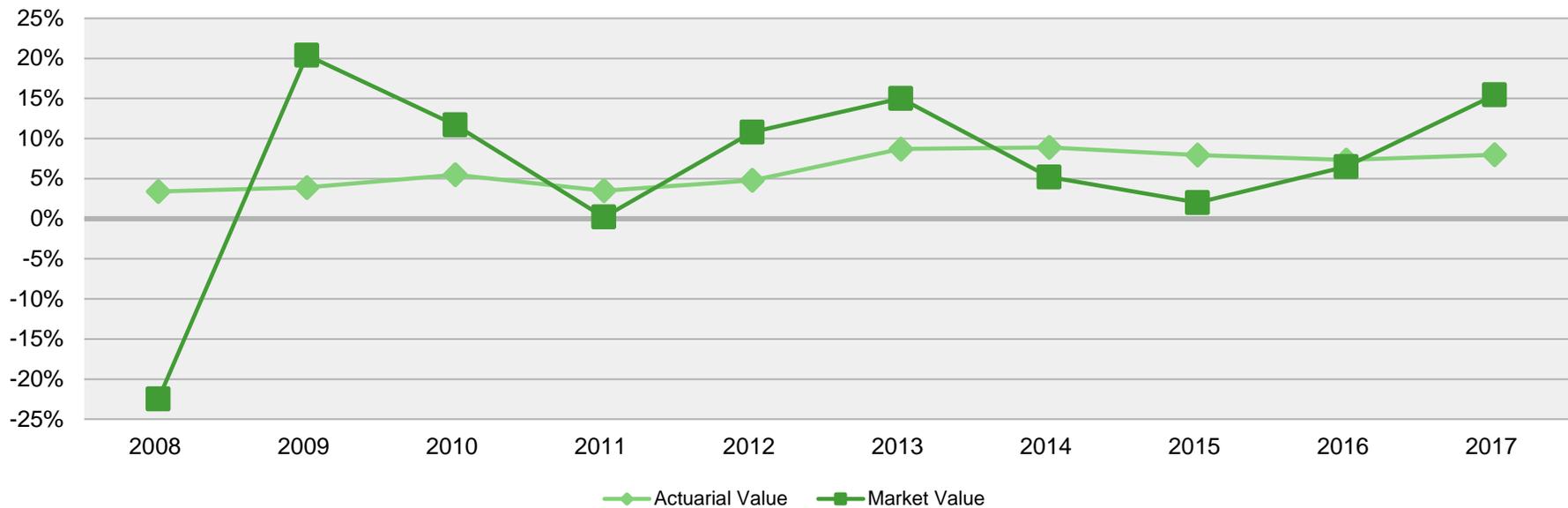
INVESTMENT RETURN – ACTUARIAL VALUE VS. MARKET VALUE: 2004 - 2017

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
					2008	\$53,668,265	3.03%	-\$357,462,777	-22.44%
					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
							Most recent five-year average return	8.17%	8.71%
							Most recent ten-year average return	6.13%	5.77%

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

Subsection B described the actuarial asset valuation 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, 2008 - 2017



Administrative Expenses

Administrative expenses payable by the System to the County for the year ended December 31, 2017, totaled \$1,677,304 compared to the assumption of \$1,554,742. This resulted in a loss of \$122,562 for the year.

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 loss from this other experience for the year ended December 31, 2017, amounted to \$2,736,762, which is 0.12% of the actuarial accrued liability prior to reflection of the assumption changes.

EXPERIENCE GAIN/(LOSS) DUE TO DEMOGRAPHICS FOR YEAR ENDED DECEMBER 31, 2017

Net turnover	\$2,626,106
Retirement (fewer retirements than expected)	6,585,338
Mortality (fewer deaths than expected)	-8,621,296
Disability retirements	-748,523
Salary increase for continuing actives	2,249,226
Miscellaneous/methodology differences	645,911
Total	\$2,736,762

D. Changes in the Actuarial Accrued Liability

The actuarial accrued liability as of January 1, 2018, is \$2,307,848,750, an increase of \$51,540,507, or 2.3%, 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

- The assumption changes reflected in this report are:
 - The investment return assumption was lowered from 8.00% to 7.75%. This is part of a phase-in to 7.50% that is scheduled to be completed January 1, 2020.
 - The inflation assumption was lowered from 3.00% to 2.50%.
 - The salary increase assumptions for General Employees, Deputy Sheriffs, and Elected Officials were modified, generally with an increase to rates at certain age ranges.
 - The mortality assumption for healthy participants was updated as follows:
 - Post-commencement – the RP-2014 Healthy Annuitant tables (102% of male rates and 107% of female rates), with generational projection using Scale MP-2016;
 - Pre-commencement – the RP-2014 Employee tables with generational projection using Scale MP-2016.
 - The mortality assumption for disability retirees was updated to the RP-2014 Disabled Mortality Table (97% of male rates and 95% of female rates) with generational projection using Scale MP-2016.
 - Other active decrement tables (retirement, termination, disability) were modified to more closely match recent experience.
- These changes increased the actuarial accrued liability by 2.9% and decreased the total normal cost by 8.3%.
- 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, 2017

1	Unfunded actuarial accrued liability at beginning of year	\$515,886,035
2	Normal cost at beginning of year (includes expense reimbursement payable to County)	16,630,275
3	Total contributions	-65,991,000
4	Interest	
	• For whole year on 1 + 2	\$42,601,305
	• For partial year on 3 (See Exhibit J)	<u>-1,726,416</u>
	Total interest	<u>40,874,889</u>
5	Expected unfunded actuarial accrued liability	\$507,400,199
6	Changes due to:	
	• Experience (gain)/loss	-3,290,263
	• Assumptions	63,931,243
	• Funding method	0
	• Plan provisions	<u>0</u>
	Total changes	<u>\$60,640,980</u>
7	Unfunded actuarial accrued liability at end of year	<u>\$568,041,179</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 2018

Type	Date Established	Initial Period	Initial Amount	Annual Payment*	Years Remaining	Outstanding Balance
Reestablished UAAL	01/01/2015	21	\$448,982,279	\$37,720,165	18	435,874,065
Increase to UAAL	01/01/2016	20	49,830,707	4,218,176	18	48,742,993
Actuarial loss	01/01/2017	20	26,129,846	2,172,208	19	25,875,360
Contribution variance	01/01/2017	5	2,068,560	478,148	4	1,715,961
MyChoice contribution	01/01/2017	20	-2,918,641	-242,630	19	-2,890,215
Actuarial gain	01/01/2018	20	-3,290,263	-268,622	20	-3,290,263
Contribution variance	01/01/2018	5	-1,917,965	-442,882	5	-1,917,965
Change in assumptions	01/01/2018	20	63,931,243	5,219,434	20	63,931,243
Total				\$48,853,997		\$568,041,179

* 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 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
Loss	01/01/2017	20	26,129,846	2,210,222	18	25,540,145
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	-442,882	4	-1,589,401
Change in assumptions	01/01/2018	20	63,931,243	5,310,774	19	63,261,974
Actuarial gain	01/01/2019	20	-6,175,259	-504,157	20	-6,175,259
Contribution variance	01/01/2019	5	<u>-771,419</u>	<u>-178,130</u>	5	<u>-771,419</u>
Total				\$49,026,039		\$552,477,511

* Level percentage, except contribution variances

For the 2018 Budget Contribution, a base for unexpected change in the unfunded actuarial accrued liability is added and amortized over 20 years. This gain is based on the amount of the deferred investment gain that will be recognized in the actuarial value of assets in the January 1, 2019 valuation. A base for a contribution variance for 2019 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 2018.

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		
		2019	2018	
		Budget	Actual	Budget
1	Total normal cost, adjusted to end of year	\$17,704,000	\$17,105,095	\$17,377,000
2	Net annual amortizations, adjusted to end of year	52,826,000	52,640,182	53,237,000
3	Expenses	<u>1,707,000</u>	<u>1,677,304</u>	<u>1,580,000</u>
4	Total contribution: 1 + 2 + 3, not less than zero	72,237,000	71,422,581	72,194,000

The Actual Funding Contribution and 2019 Budget Contribution are based on participant data as of January 1, 2018.

For the 2019 Budget Contribution, the Normal Cost for 2019 is assumed to be 3.5% higher than the 2018 Normal Cost. The 2019 reimbursable expenses are assumed to be 1.75% higher than the estimated reimbursable expenses for 2018.

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 2019. Public Safety and General employees contribute 50% of the allocated cost of the 2018 actuarially determined contribution.

MEMBER CONTRIBUTION RATES

	Non-Contributors	Public Safety	General	All Members	
Valuation Results as of January 1, 2018					
1	Present value of future benefits				
	a) Active members *	0	88,216,443	412,057,280	500,273,723
	b) Participants with deferred benefits	89,918,807	0	0	89,918,807
	c) Retirees and beneficiaries	1,806,909,181	0	0	1,806,909,181
	d) Total	1,896,827,988	88,216,443	412,057,280	2,397,101,711
2	Present value of future normal cost	0	12,826,956	76,426,005	89,252,961
3	Actuarial accrued liability: 1 - 2	1,896,827,988	75,389,487	335,631,275	2,307,848,750
4	Actuarial value of assets	1,429,953,195	56,833,534	253,020,842	1,739,807,571
5	Funded percentage: 4 ÷ 3	75.4%	75.4%	75.4%	75.4%
6	Unfunded actuarial accrued liability: 3 - 4	466,874,793	18,555,953	82,610,433	568,041,179
7	Total normal cost for the plan year	0	2,066,333	13,808,465	15,874,798
Projected Member Contribution for 2019					
1	Annual contribution for 2018				
	a) Normal cost with interest	0	2,226,474	14,878,621	17,105,095
	b) Net annual amortization payments **	43,265,127	1,719,574	7,655,481	52,640,182
	c) Expenses **	1,378,581	54,792	243,931	1,677,304
	d) Total contribution: a + b + c, not less than zero	44,643,708	4,000,840	22,778,033	71,422,581
2	Member contribution (50% of 1d for Contributors)	N/A	2,000,420	11,389,017	N/A
3	Expected salaries in 2018	0	20,350,629	169,100,775	189,451,404
4	Member contribution rate: 2 ÷ 3 ÷ 1.0775 ^{1/2}	N/A	9.5%	6.5%	N/A

* The actives in the Public Safety group include 309 members comprised of Represented Firefighters and Sheriffs and Non-Represented Firefighters and Sheriffs.

** The net annual amortization payments and expenses 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 2018 TO 2019

		Amount
1	2018 Budget Contribution	\$72,194,000
2	Increase/(decrease) during 2017 due to:	
	a) Unanticipated liability loss/(gain)	-\$505,000
	b) Asset experience different than expected	-1,069,000
	c) 2017 reimbursable expense other than assumed	107,000
	d) 2017 contribution variance other than assumed	-399,000
	e) Change due to assumption/method/plan changes	1,095,000
	f) Total	<u>-771,000</u>
3	2018 Actual Contribution: 1 + 2	\$71,423,000
4	Expected increase/(decrease) during 2018 due to:	
	a) Normal cost and existing amortization bases	\$1,519,000
	b) Phase-in of deferred investment (gains) losses	-543,000
	c) Increase in reimbursable expenses	30,000
	d) Expected contribution variance for 2018	-192,000
	e) Full recognition of bases	0
	f) Change due to assumption/method/plan changes	0
	g) Total	<u>814,000</u>
5	2019 Budget Contribution: 3 + 4	\$72,237,000

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 2017 plan year.

CALCULATION OF CONTRIBUTION VARIANCE

Item		Amount																																			
1	Total Actual Funding Contribution, end-of-year basis, for 2017 plan year (from January 1, 2017 actuarial valuation report)	\$65,799,451																																			
2	Total employer contributions made:																																				
	<table border="1"> <thead> <tr> <th>Contribution Made</th> <th>Fraction of a Year Invested</th> <th>Contribution Amount</th> <th>Interest to Year End*</th> <th>End of Year Amount</th> </tr> </thead> <tbody> <tr> <td>Bi-weekly</td> <td>50.0%</td> <td>\$0</td> <td>\$0</td> <td>\$0</td> </tr> <tr> <td>06/15/2017</td> <td>54.8%</td> <td>17,830,000</td> <td>767,978</td> <td>18,597,978</td> </tr> <tr> <td>09/15/2017</td> <td>29.6%</td> <td>17,830,000</td> <td>410,684</td> <td>18,240,684</td> </tr> <tr> <td>12/15/2017</td> <td>4.7%</td> <td>17,831,000</td> <td>64,030</td> <td>17,895,030</td> </tr> <tr> <td>04/13/2018</td> <td>0.0%</td> <td><u>169,695</u></td> <td><u>0</u></td> <td><u>169,695</u></td> </tr> <tr> <td>Total</td> <td></td> <td>\$53,660,695</td> <td>\$1,242,692</td> <td>\$54,903,387</td> </tr> </tbody> </table>	Contribution Made	Fraction of a Year Invested	Contribution Amount	Interest to Year End*	End of Year Amount	Bi-weekly	50.0%	\$0	\$0	\$0	06/15/2017	54.8%	17,830,000	767,978	18,597,978	09/15/2017	29.6%	17,830,000	410,684	18,240,684	12/15/2017	4.7%	17,831,000	64,030	17,895,030	04/13/2018	0.0%	<u>169,695</u>	<u>0</u>	<u>169,695</u>	Total		\$53,660,695	\$1,242,692	\$54,903,387	
Contribution Made	Fraction of a Year Invested	Contribution Amount	Interest to Year End*	End of Year Amount																																	
Bi-weekly	50.0%	\$0	\$0	\$0																																	
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04/13/2018	0.0%	<u>169,695</u>	<u>0</u>	<u>169,695</u>																																	
Total		\$53,660,695	\$1,242,692	\$54,903,387																																	
3	Total member contributions made:																																				
	<table border="1"> <thead> <tr> <th>Contribution Made</th> <th>Fraction of a Year Invested</th> <th>Contribution Amount</th> <th>Interest to Year End*</th> <th>End of Year Amount</th> </tr> </thead> <tbody> <tr> <td>Bi-weekly</td> <td>50.0%</td> <td>\$12,330,305</td> <td>\$483,724</td> <td>\$12,814,029</td> </tr> </tbody> </table>	Contribution Made	Fraction of a Year Invested	Contribution Amount	Interest to Year End*	End of Year Amount	Bi-weekly	50.0%	\$12,330,305	\$483,724	\$12,814,029																										
Contribution Made	Fraction of a Year Invested	Contribution Amount	Interest to Year End*	End of Year Amount																																	
Bi-weekly	50.0%	\$12,330,305	\$483,724	\$12,814,029																																	
4	Variance from funding calculation amount: $2 + 3 - 1$	\$1,917,965																																			

* Interest to December 31, 2017 at 8.00% per annum.

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 – 2018

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	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, 2018	January 1, 2017
Liabilities		
• Present value of benefits for retired participants and beneficiaries	\$1,806,909,181	\$1,744,454,752
• Present value of benefits for inactive former participants	89,918,807	79,583,004
• Present value of benefits for active participants	<u>500,273,723</u>	<u>532,308,013</u>
Total liabilities	\$2,397,101,711	\$2,356,345,769
Assets		
• Total valuation value of assets	\$1,739,807,571	\$1,740,422,208
• Present value of future employer and employee contributions for:		
» Entry age cost	89,252,961	100,037,526
» Unfunded actuarial accrued liability	<u>568,041,179</u>	<u>515,886,035</u>
Total of current and future assets	<u>\$2,397,101,711</u>	<u>\$2,356,345,769</u>

Section 3: Supplemental Information

EXHIBIT A – TABLE OF PLAN COVERAGE

Category	As of January 1		Change From Prior Year
	2018	2017	
Active members in valuation:			
• Number	3,502	3,488	0.4%
• Average age	45.0	45.2	-0.2
• Average years of creditable service	10.3	10.3	0.0
• Total payroll	\$189,451,404	\$186,213,740	1.7%
• Average pay	54,098	53,387	1.3%
• Total active vested members	2,018	2,116	-4.6%
Inactive members:			
• Number of terminated vested	1,371	1,394	-1.6%
• Average age	50.8	51.1	-0.3
Retired members:			
• Number in pay status	6,859	6,877	-0.3%
• Average age	71.5	71.4	0.1
• Average monthly benefit	\$1,887	\$1,863	1.3%
Disability retirees:			
• Number in pay status	269	270	-0.4%
• Average age	64.4	64.2	0.2
• Average monthly benefit	\$2,044	\$1,982	3.1%
Beneficiaries:			
• Number in pay status	909	916	-0.8%
• Average age	78.8	78.3	0.5
• Average monthly benefit	\$1,398	\$1,347	3.8%

EXHIBIT B – RECONCILIATION OF MEMBERSHIP DATA

	Active Members	Vested Terminated Members	Disability Retirees	Retired Members	Beneficiaries	Total
Number as of January 1, 2017	3,488	1,394	270	6,877	916	12,945
• New participants	487	N/A	N/A	N/A	N/A	487
• Terminations – with vested rights	-78	78	0	0	0	0
• Terminations – without vested rights	-197	N/A	N/A	N/A	N/A	-197
• Retirements	-153	-80	N/A	233	N/A	0
• New disabilities	-4	-3	7	N/A	N/A	0
• Return to work / Rehire	7	-6	0	-1	N/A	0
• Died with beneficiary	-3	0	0	-65	68	0
• Died without beneficiary	-1	0	-8	-194	-63	-266
• Lump sum cash-outs	-44	-43	0	-6	-15	-108
• Certain period expired	N/A	N/A	0	0	-1	-1
• Data adjustments	0	31	0	15	4	50
• Number as of January 1, 2018	3,502	1,371	269	6,859	909	12,910

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

	Year Ended December 31, 2017	Year Ended December 31, 2016
Net assets at market value at the beginning of the year	\$1,671,682,331	\$1,716,151,763
Contribution income:		
• Employer contributions	\$53,660,695	\$50,625,672
• Member contributions	12,330,305	12,143,510
• Less administrative expenses payable to the County	<u>-1,677,304</u>	<u>-1,225,857</u>
<i>Net contribution income</i>	\$64,313,696	\$61,543,325
Net other income	\$0	\$0
Investment income:		
• Net appreciation in fair value	\$239,131,482	\$88,313,917
• Interest and dividends	9,768,581	11,755,419
• Securities lending income	392,261	269,690
• Other income	7,036,199	12,725,409
• Less securities lending rebates and fees, net	-314,119	-147,027
• Less administrative expenses payable by System	-3,824,891	-3,686,644
• Less investment expenses	<u>-3,186,226</u>	<u>-2,581,408</u>
<i>Net investment income</i>	<u>\$249,003,287</u>	<u>\$106,649,356</u>
Total income available for benefits	\$313,316,983	\$168,192,681
Less benefit payments:		
• Benefits paid to retirees and beneficiaries	-\$196,852,807	-\$211,163,822
• Refunds of contributions	<u>-1,737,942</u>	<u>-1,498,291</u>
<i>Net benefit payments</i>	-\$198,590,749	-\$212,662,113
Change in reserve for future benefits	\$114,726,234	-\$44,469,432
Net assets at market value at the end of the year	\$1,786,408,565	\$1,671,682,331

EXHIBIT D – SUMMARY STATEMENT OF PLAN ASSETS

	December 31, 2017	December 31, 2016
Cash equivalents	\$65,949,193	\$58,342,501
Total accounts receivable	3,761,778	8,081,757
Other assets	26,214,777	36,738,983
Investments:		
• Fixed Income	\$253,867,013	\$267,441,880
• Domestic and international equities	801,071,876	751,273,943
• Private equity	156,344,279	122,055,655
• Diversifying strategies	333,517,005	297,650,019
• Real estate and REITs	<u>177,650,646</u>	<u>171,919,953</u>
Total investments at market value	\$1,722,450,819	\$1,610,341,450
Total assets	\$1,818,376,567	\$1,713,504,691
Total liabilities	-31,968,002	-41,822,360
Net assets at market value	\$1,786,408,565	\$1,671,682,331
Net assets at actuarial value	\$1,739,807,571	\$1,740,422,208

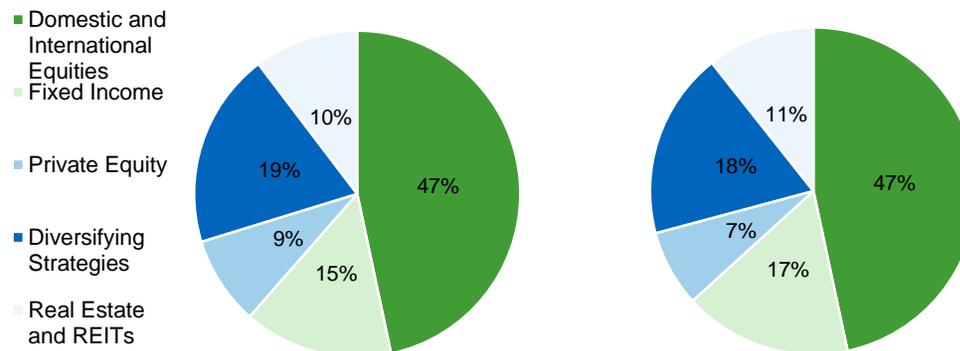


EXHIBIT E – DEVELOPMENT OF THE FUND THROUGH DECEMBER 31, 2017

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%

* 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, 2018	January 1, 2017
Total pension liability	\$2,307,848,750	\$2,256,308,243
Plan fiduciary net position	<u>(1,786,408,565)</u>	<u>(1,671,682,331)</u>
Net pension liability	\$521,440,185	\$584,625,912
Plan fiduciary net position as a percentage of the total pension liability	77.4%	74.1%

The net pension liability was measured as of December 30, 2017, and is determined based on the total pension liability from the January 1, 2018, 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, 2018.

Actuarial assumptions. The total pension liability was determined by an actuarial valuation as of January 1, 2018, using the following actuarial assumptions, applied to all periods included in the measurement:

Inflation	3.00%
Salary increases	3.50% to 6.21%, varying by age, including inflation and productivity
Investment rate of return	8.00% as of January 1, 2017, 7.75% as of January 1, 2018, net of pension plan investment expenses
Cost-of-living adjustments	2.00%

Mortality

<i>Pre-retirement:</i>	<p>Males – RP-2014 Employee male, projected back to 2006 using scale MP-2014 and then projected forward with generational projection using scale MP-2016.</p> <p>Females – RP-2014 Employee female, projected back to 2006 using scale MP-2014 and then projected forward with generational projection using scale MP-2016.</p>
<i>Healthy Retiree:</i>	<p>Males – 102% of RP-2014 Healthy Annuitant male, projected back to 2006 using scale MP-2014 and then projected forward with generational projection using scale MP-2016.</p> <p>Females – 107% of RP-2014 Healthy Annuitant female, projected back to 2006 using scale MP-2014 and then projected forward with generational projection using scale MP-2016.</p>
<i>Disabled Retiree:</i>	<p>Males – 97% of RP-2014 Disabled male, projected back to 2006 using scale MP-2014 and then projected forward with generational projection using scale MP-2016.</p> <p>Females – 95% of RP-2014 Disabled female, projected back to 2006 using scale MP-2014 and then projected forward with generational projection using scale MP-2016.</p>

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, 2018 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, 2017. 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, 2018, 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 30, 2017. 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, 2017.

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 (7.75%)	1% Increase (8.75%)
Net pension liability as of December 31, 2017	\$ 747,699,917	\$ 521,440,185	\$ 330,647,176

Exhibit 2 – Schedules of Changes in Net Pension Liability

	Year Ending December 31, 2017	Year Ending December 31, 2016
Total pension liability		
Service cost	\$15,190,699	\$16,094,324
Interest	173,929,104	173,972,802
Change of benefit terms	0	0
Differences between expected and actual experience	(2,919,790)	16,052,053
Changes of assumptions	63,931,243	0
Benefit payments, including refunds of employee contributions	<u>(198,590,749)</u>	<u>(212,662,113)</u>
Net change in total pension liability	\$51,540,507	\$(6,542,934)
Total pension liability – beginning	<u>2,256,308,243</u>	<u>2,262,851,177</u>
Total pension liability – ending (a)	<u>\$2,307,848,750</u>	<u>\$2,256,308,243</u>
Plan fiduciary net position		
Contributions – employer	\$53,660,695	\$50,625,672
Contributions – employee	12,330,305	12,143,510
Net investment income	252,828,178	110,336,000
Benefit payments, including refunds of employee contributions	(198,590,749)	(212,662,113)
Administrative expense	(5,502,195)	(4,912,501)
Other	<u>0</u>	<u>0</u>
Net change in plan fiduciary net position	114,726,234	(44,469,432)
Plan fiduciary net position – beginning	<u>1,671,682,331</u>	<u>1,716,151,763</u>
Plan fiduciary net position – ending (b)	<u>\$1,786,408,565</u>	<u>\$1,671,682,331</u>
Net pension liability – ending (a) – (b)	<u>\$521,440,185</u>	<u>\$584,625,912</u>
Plan fiduciary net position as a percentage of the total pension liability	77.4%	74.1%
Covered employee payroll	\$186,213,740	\$194,871,557
Net pension liability as percentage of covered employee payroll	280.0 %	300.0%

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, 2017, the changes in net pension liability due to differences between expected and actual demographic experience is an increase of \$2,919,790. The average expected remaining service lives of all members is 2.6 years, determined as of January 1, 2017 (the beginning of the measurement period ending December 31, 2017). Therefore, of the \$2,919,790 demographic gain, \$1,122,996 is recognized in pension expense in the current year and \$1,796,794 is reflected as a deferred inflow of resources related to pensions. Of the \$63,931,243 assumption changes loss, \$24,588,940 is recognized in pension expense in the current year and \$39,342,303 is reflected as a deferred outflow of resources related to pensions.

Based on the assumed investment return of 8.00% for the year ending December 31, 2017, the expected net investment income for the year was \$127,487,163. As shown in Exhibit 4, the actual net investment income for the year was \$252,828,178. The difference between actual and expected investment experience is a decrease in net pension liability of \$125,341,015, which is recognized over a 5-year period. Of this amount, \$25,068,203 is reflected in the current year and \$100,272,812 is reflected as a deferred inflow of resources related to pensions.

	Year Established	Original Balance	Original Amortization Period	Amortization Amount During 2017	Outstanding Balance at December 31, 2017
Inflows					
Demographics	2017	2,919,790	2.6 years	1,122,996	1,796,794
Investments	2017	125,341,015	5.0 years	25,068,203	100,272,812
Total inflows				\$26,191,199	\$102,069,606
Outflows					
Investments	2014	47,053,580	5.0 years	9,410,716	9,410,716
Demographics	2015	41,648,688	2.7 years	10,797,808	0
Investments	2015	99,580,196	5.0 years	19,916,040	39,832,076
Demographics	2016	16,052,053	2.6 years	6,173,867	3,704,319
Investments	2016	19,761,598	5.0 years	3,952,320	11,856,958
Assumptions	2017	63,931,243	2.6 years	24,588,940	39,342,303
Total outflows				\$74,839,691	\$104,146,372

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

	December 31, 2017	December 31, 2016
Deferred Outflows of Resources (Outstanding Balances)		
Difference between expected and actual experience in the Total Pension Liability	3,704,319	20,675,994
Changes of assumptions	39,342,303	0
Net difference between projected and actual earnings on pension plan investments	0	94,378,826
Total Deferred Outflows of Resources	\$43,046,622	\$115,054,820
Deferred Inflows of Resources (Outstanding Balances)		
Difference between expected and actual experience in the Total Pension Liability	1,796,794	0
Changes of assumptions	0	0
Net difference between projected and actual earnings on pension plan investments	39,173,062	0
Total Deferred Inflows of Resources	\$40,969,856	\$0
Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:		
Year Ended December 31:		
2017	N/A	50,250,751
2018	35,381,136	36,983,395
2019	12,879,718	23,868,356
2020	(21,115,885)	3,952,318
2021	(25,068,203)	0
2022	0	0
Thereafter	0	0

Exhibit 4 – Pension Expense

Exhibit 4 below shows the individual components of collective pension expense, which totaled \$103,453,022 for the fiscal year that ended December 31, 2017.

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 (\$62,185,727) and employer contributions were \$53,660,695. The net value of deferred outflows and deferred inflows of resources as of the end of the current fiscal year is \$2,076,766 compared to the net value as of the end of the prior fiscal of \$115,054,820 for a change of (\$112,978,054) Therefore, the pension expense for the fiscal year that ended December 31, 2017, is $(\$62,185,727) + \$53,660,695 - (\$112,978,054)$, or \$103,453,022.

	Fiscal Year Ending December 31, 2017	Fiscal Year Ending December 31, 2016
Components of pension expense		
• Service Cost	15,190,699	16,094,324
• Interest on the total pension liability	173,929,104	173,972,802
• Projected earnings on plan investments	(127,487,163)	(130,097,598)
• Contributions - member	(12,330,305)	(12,143,510)
• Administrative expense	5,502,195	4,912,501
• Current year recognition of:		
Changes of assumptions	24,588,940	0
Difference between expected and actual experience	15,848,679	17,599,810
Difference between projected and actual earnings on pension plan investments	8,210,873	33,279,076
Change of benefit terms	0	0
Total pension expense	\$103,453,022	\$103,617,405

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 reduction of the assumption from 8.00% to 7.75% is part of a phase-in to 7.50% that 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="1423 963 1493 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="1423 1011 1472 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	<table border="1"> <thead> <tr> <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="940 963 1031 992">10.5%</td> <td data-bbox="1192 963 1241 992">3.5%</td> <td data-bbox="1423 963 1493 992">11.5%</td> </tr> <tr> <td data-bbox="961 1011 1010 1040">6.0</td> <td data-bbox="1192 1011 1241 1040">3.5</td> <td data-bbox="1423 1011 1472 1040">10.0</td> </tr> <tr> <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="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="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="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="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="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="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>	General Employees	Elected Officials	Deputy Sheriffs	10.5%	3.5%	11.5%	6.0	3.5	10.0	5.0	3.5	7.1	4.2	3.5	5.6	4.0	3.5	3.2	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.0	3.0	3.0	3.0	3.0
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	Salary increases include an assumed inflation rate of 3.00%.
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-2014 Healthy Annuitant male, projected back to 2006 using scale MP-2014 and then projected forward with generational projection using scale MP-2016. For females, 107% of RP-2014 Healthy Annuitant female, projected back to 2006 using scale MP-2014 and then projected forward with generational projection using scale MP-2016.</p> <p><i>Disabled Annuitants:</i> For males, 97% of RP-2014 Disabled male, projected back to 2006 using scale MP-2014 and then projected forward with generational projection using scale MP-2016. For females, 95% of RP-2014 Disabled female, projected back to 2006 using scale MP-2014 and then projected forward with generational projection using scale MP-2016.</p> <p><i>Death in Active Service:</i> For males, RP-2014 Employee male, projected back to 2006 using scale MP-2014 and then projected forward with generational projection using scale MP-2016. For females, RP-2014 Employee female, projected back to 2006 using scale MP-2014 and then projected forward 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.
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:	<p>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.</p> <p>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%.</p> <p>The administrative costs incurred by the County related to the System are payable by the System to the County. The County then reimburses the System for this payment in the annual contribution.</p> <p>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.</p>

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 \$275,000 in 2018, 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"> • Elected Officials: 2% of compensation. • Non-represented employees: 4% of compensation.
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 <ul style="list-style-type: none"> ○ 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
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, 2018

Active Participants

	General Employees	Deputy Sheriffs	Elected Officials	Total
Number of Participants	3,230	264	5	3,499
Average Annual Salaries*	\$53,209	\$63,765	\$114,402	\$54,098
Average Age	45.2	43.0	59.9	45.0
Average Service	9.8	16.0	15.1	10.3

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

Inactive Participants

	General Employees	Elected Officials	Deputy Sheriffs	Total
Participants with Deferred Benefits	1,371	\$11,372,612	\$8,295	50.8
Retired Participants	6,859	155,289,040	22,640	71.6
Beneficiaries	909	15,252,519	16,779	78.5
Disability Retirees	269	6,599,435	24,533	64.5
Total	9,408	\$188,513,605	\$20,038	69.0

TABLE 2 – MEMBERSHIP STATISTICS (UNAUDITED)

Active Participants

Members as of January 1, 2017	4,882
Changes during the year:	
New enrollments	488
Nonvested terminations	(197)
Retirements	(240)
Deaths in active service	(4)
New deferred beneficiaries	-
Withdrawals	(87)
Data Adjustment	31
Members as of December 31, 2017	4,873

Retirements and Survivors

	Maximum Pension	Refund	100%	75%	50%	25%	5%	10-Yr	Survivors and Beneficiaries	Total
January 1, 2017	3,303	276	1,500	271	981	512	45	259	916	8,063
Changes during the year:										
Adjustments (actuary)	10	(1)	(12)	-	1	(1)	2	-	4	3
Retirements	117	1	63	13	21	14	-	20	68	317
Benefits Expired	-	-	-	-	-	-	-	-	(1)	(1)
Pensioner Deaths	(109)	(26)	(64)	(6)	(50)	(5)	-	(7)	(78)	(345)
December 31, 2017	3,321	250	1,487	278	953	520	47	272	909	8,037

**TABLE 3A – PARTICIPANTS IN ACTIVE SERVICE AS OF DECEMBER 31, 2017
BY AGE, YEARS OF CREDITABLE SERVICE, AND AVERAGE PAYROLL**

All Employee Groups

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	112	112	--	--	--	--	--	--	--	--
	\$40,907	\$40,907	--	--	--	--	--	--	--	--
25 - 29	273	256	16	1	--	--	--	--	--	--
	\$43,071	\$42,607	--	--	--	--	--	--	--	--
30 - 34	421	314	93	14	--	--	--	--	--	--
	\$46,743	\$45,458	\$50,707	--	--	--	--	--	--	--
35 - 39	409	222	89	67	30	1	--	--	--	--
	\$52,090	\$50,933	\$52,957	\$53,293	\$54,496	--	--	--	--	--
40 - 44	450	181	96	59	93	21	--	--	--	--
	\$55,392	\$50,970	\$60,904	\$55,375	\$56,519	\$63,355	--	--	--	--
45 - 49	562	145	80	64	130	108	34	1	--	--
	\$58,790	\$53,252	\$54,986	\$62,837	\$57,593	\$66,165	\$65,035	--	--	--
50 - 54	510	118	61	38	97	94	86	14	2	--
	\$56,044	\$50,290	\$54,792	\$61,192	\$53,634	\$58,731	\$60,698	--	--	--
55 - 59	430	83	49	51	83	55	74	31	4	--
	\$57,531	\$57,482	\$50,968	\$54,621	\$53,263	\$60,542	\$61,246	\$70,194	--	--
60 - 64	267	60	38	34	45	32	37	15	5	1
	\$60,165	\$54,430	\$61,994	\$51,743	\$58,364	\$61,741	\$70,581	--	--	--
65 & over	68	10	9	19	7	8	8	4	1	2
	\$70,248	--	--	--	--	--	--	--	--	--
Total	3,502	1,501	531	347	485	319	239	65	12	3
	\$54,098	\$48,430	\$54,926	\$57,202	\$55,552	\$62,388	\$63,767	\$71,991	--	--

**TABLE 3B – PARTICIPANTS IN ACTIVE SERVICE AS OF DECEMBER 31, 2017
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	100	100	--	--	--	--	--	--	--	--	--
	\$39,889	\$39,889	--	--	--	--	--	--	--	--	--
25 - 29	246	230	15	1	--	--	--	--	--	--	--
	\$42,200	\$41,670	--	--	--	--	--	--	--	--	--
30 - 34	399	298	88	13	--	--	--	--	--	--	--
	\$46,552	\$45,220	\$50,704	--	--	--	--	--	--	--	--
35 - 39	390	213	87	66	23	1	--	--	--	--	--
	\$51,765	\$50,951	\$52,982	\$53,038	\$49,869	--	--	--	--	--	--
40 - 44	419	180	93	58	76	12	--	--	--	--	--
	\$54,500	\$50,974	\$61,342	\$55,072	\$53,512	--	--	--	--	--	--
45 - 49	464	144	80	63	104	48	24	1	--	--	--
	\$56,709	\$53,274	\$54,986	\$63,644	\$54,692	\$61,778	\$63,587	--	--	--	--
50 - 54	469	118	60	37	89	76	73	14	2	--	--
	\$54,723	\$50,290	\$53,478	\$61,003	\$52,257	\$56,117	\$59,066	--	--	--	--
55 - 59	415	83	48	51	80	48	70	31	4	--	--
	\$57,064	\$57,482	\$50,145	\$54,621	\$52,688	\$59,385	\$60,728	\$70,194	--	--	--
60 - 64	264	60	38	34	45	30	36	15	5	1	--
	\$59,588	\$54,430	\$61,994	\$51,743	\$58,364	\$59,051	\$68,965	--	--	--	--
65 & over	67	10	9	18	7	8	8	4	1	2	--
	\$69,947	--	--	--	--	--	--	--	--	--	--
Total	3,233	1,436	518	341	424	223	211	65	12	3	--
	\$53,215	\$48,345	\$54,804	\$57,134	\$53,558	\$58,949	\$62,734	\$71,991	--	--	--

**TABLE 3C – PARTICIPANTS IN ACTIVE SERVICE AS OF DECEMBER 31, 2017
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	12	12	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
25 - 29	27	26	1	--	--	--	--	--	--	--
	\$51,007	\$50,900	--	--	--	--	--	--	--	--
30 - 34	22	16	5	1	--	--	--	--	--	--
	\$50,210	--	--	--	--	--	--	--	--	--
35 - 39	19	9	2	1	7	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
40 - 44	31	1	3	1	17	9	--	--	--	--
	\$67,440	--	--	--	--	--	--	--	--	--
45 - 49	98	1	--	1	26	60	10	--	--	--
	\$68,640	--	--	--	\$69,198	\$69,675	--	--	--	--
50 - 54	40	--	--	1	8	18	13	--	--	--
	\$69,596	--	--	--	--	--	--	--	--	--
55 - 59	14	--	--	--	3	7	4	--	--	--
	--	--	--	--	--	--	--	--	--	--
60 - 64	1	--	--	--	--	1	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
65 & over	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
Total	264	65	11	5	61	95	27	--	--	--
	\$63,765	\$50,296	--	--	\$69,407	\$69,761	\$69,427	--	--	--

**TABLE 3D – PARTICIPANTS IN ACTIVE SERVICE AS OF DECEMBER 31, 2017
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	655	3	32	690
2018	94	0	16	110
2019	68	0	4	72
2020	75	1	4	80
2021	90	0	3	93
2022	79	0	12	91
Total Over Next 5 Years	406	1	39	446
Grand Total Eligible	1,061	4	71	1,136

Deferred Vested Members Reaching Retirement Age

Year	Total
2018	77
2019	75
2020	56
2021	81
2022	60
Total Over Next 5 Years	349

TABLE 5 – RETIREE AND BENEFICIARY MEMBERSHIP DATA AS OF JANUARY 1, 2018

Number and Average Annual Benefits

Age Last Birthday	Number	Annual Benefit	Average Annual Benefit
Retired Participants			
Under 60	517	\$15,234,716	\$29,468
60 – 64	1,158	26,035,276	22,483
65 – 69	1,731	39,366,510	22,742
70 – 74	1,315	30,954,593	23,540
75 – 79	825	18,473,527	22,392
80 & over	1,313	25,224,418	19,211
Total	6,859	\$155,289,040	\$22,640
Beneficiaries			
Under 60	54	\$858,880	\$15,905
60 – 64	65	1,168,213	17,973
65 – 69	102	1,960,218	19,218
70 – 74	120	2,223,711	18,531
75 – 79	96	1,715,514	17,870
80 & over	472	7,325,982	15,521
Total	909	\$15,252,519	\$16,779
Disabled Participants			
Under 60	102	\$3,083,719	\$30,233
60 – 64	48	1,133,179	23,608
65 – 69	34	804,688	23,667
70 – 74	26	491,367	18,899
75 – 79	23	471,830	20,514
80 & over	36	614,651	17,074
Total	269	\$6,599,435	\$24,533
Grand Total	8,037	\$177,140,993	\$22,041

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
2018	3502	0.40%	\$189,298,469	1.66%
2017	3488	(3.62)%	186,213,740	(4.44)%
2016	3619	(1.66)%	194,871,557	(1.70)%
2015	3680	(5.91)%	198,235,780	5.11%
2014	3911	(0.58)%	188,605,492	4.81%

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
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%
2014	7,940	319	246	(0.58)%	162,296,676	2.69%

TABLE 7A – DETAILED TABULATIONS OF THE DATA

The Number and Annual Salaries of Members in Active Service Distributed by Age as of January 1, 2018 All Employees

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

Age	Men		Women		Total	
	Number	Compensation	Number	Compensation	Number	Compensation
20	2	--	1	--	3	--
21	4	--	--	--	4	--
22	5	--	5	--	10	--
23	14	--	12	--	26	\$1,046,153
24	25	\$1,029,253	19	--	44	1,796,056
25	20	902,384	17	--	37	1,552,866
26	29	1,258,993	16	--	45	1,922,203
27	30	1,349,211	24	\$936,187	54	2,285,398
28	32	1,428,610	34	1,441,032	66	2,869,642
29	25	1,209,404	40	1,634,409	65	2,843,814
30	30	1,401,454	33	1,375,136	63	2,776,590
31	41	1,915,109	56	2,165,750	97	4,080,859
32	43	2,254,083	42	1,894,417	85	4,148,500
33	42	2,012,786	38	1,651,132	80	3,663,918
34	37	2,002,596	48	2,481,215	85	4,483,812
35	35	1,755,678	42	1,803,254	77	3,558,933
36	28	1,416,157	45	2,051,962	73	3,468,119
37	35	2,051,784	47	2,211,359	82	4,263,144
38	38	2,086,340	45	2,175,861	83	4,262,201
39	31	1,739,321	57	3,298,985	88	5,038,306
40	46	2,562,476	34	1,761,620	80	4,324,096
41	46	2,610,171	51	2,720,502	97	5,330,673
42	56	3,470,135	52	2,540,693	108	6,010,828
43	54	3,517,990	48	2,501,882	102	6,019,873
44	23	1,276,653	43	2,112,155	66	3,388,808
45	53	3,016,876	45	2,700,032	98	5,716,908
46	55	3,310,701	52	2,725,370	107	6,036,072
47	58	3,645,366	54	3,067,715	112	6,713,081

Age	Men		Women		Total	
	Number	Compensation	Number	Compensation	Number	Compensation
48	70	4,276,487	62	3,740,017	132	8,016,504
49	37	2,238,393	59	3,313,065	96	5,551,458
50	44	2,881,558	66	3,202,350	110	6,083,908
51	60	4,065,161	72	3,779,800	132	7,844,961
52	51	2,856,765	53	2,838,674	104	5,695,439
53	33	1,757,653	60	2,972,380	93	4,730,033
54	48	3,177,193	44	2,311,085	92	5,488,277
55	38	2,196,937	45	2,398,026	83	4,594,964
56	29	1,827,476	38	1,897,180	67	3,724,656
57	51	3,121,660	61	3,526,658	112	6,648,318
58	47	3,163,814	42	2,365,525	89	5,529,339
59	36	2,105,647	46	2,176,718	82	4,282,365
60	31	1,807,640	34	2,029,121	65	3,836,761
61	30	2,127,463	35	1,679,211	65	3,806,674
62	41	2,909,018	33	1,701,301	74	4,610,319
63	20	1,289,069	18	--	38	2,349,790
64	23	1,428,846	20	1,034,533	43	2,463,379
65	10	--	18	--	28	1,558,389
66	12	--	9	--	21	1,833,370
67	7	--	4	--	11	--
68	3	--	3	--	6	--
69	5	--	3	--	8	--
70	2	--	2	--	4	--
71	3	--	1	--	4	--
72	1	--	1	--	2	--
73	--	--		--		--
74	--	--	1	--	1	--
75	--	--	1	--	1	--
76	1	--	1	--	2	--
Total	1,670	\$96,706,026	1,832	\$92,745,378	3,502	\$189,451,404

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, 2018 All Employees

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

Service	Men		Women		Total	
	Number	Compensation	Number	Compensation	Number	Compensation
0	149	\$6,703,132	151	\$5,896,965	300	\$12,600,098
1	174	8,808,131	223	10,251,444	397	19,059,575
2	138	7,552,748	188	8,611,628	326	16,164,376
3	78	4,227,124	143	6,879,099	221	11,106,222
4	71	4,372,636	105	5,278,867	176	9,651,503
5	78	4,247,155	71	3,366,763	149	7,613,918
6	72	4,091,213	66	3,524,581	138	7,615,794
7	53	3,099,173	46	2,468,200	99	5,567,373
8	29	1,586,590	25	1,247,111	54	2,833,701
9	54	3,338,908	54	2,887,463	108	6,226,371
10	41	2,199,386	46	2,453,976	87	4,653,362
11	30	1,659,550	39	2,587,261	69	4,246,811
12	39	2,067,031	51	2,748,172	90	4,815,203
13	41	2,619,324	44	2,328,193	85	4,947,517
14	20	1,133,134	23	1,261,538	43	2,394,671
15	38	2,135,838	29	1,444,504	67	3,580,342
16	44	2,718,144	35	1,722,046	79	4,440,190
17	63	3,716,560	64	3,041,841	127	6,758,401
18	49	2,747,089	57	3,087,456	106	5,834,545
19	54	3,303,258	46	2,537,240	100	5,840,499
20	50	3,127,230	37	2,347,953	87	5,475,183
21	44	2,908,384	28	1,556,210	72	4,464,594
22	26	1,743,733	23	1,233,626	49	2,977,359
23	49	3,360,810	20	1,151,331	69	4,512,141
24	29	1,776,557	34	1,901,663	63	3,678,220
25	25	1,736,712	27	1,511,287	52	3,247,999

Service	Men		Women		Total	
	Number	Compensation	Number	Compensation	Number	Compensation
26	31	2,191,646	25	1,447,035	56	3,638,682
27	20	1,307,288	20	1,083,815	40	2,391,103
28	25	1,784,234	26	1,540,375	51	3,324,609
29	14	--	35	2,153,523	49	3,117,829
30	10	--	15	--	25	1,678,132
31	7	--	7	--	14	--
32	7	--	8	--	15	--
33	8	--	6	--	14	--
34	3	--	7	--	10	--
35	--	--	--	--	--	--
36	3	--	2	--	5	--
37	1	--	3	--	4	--
38	1	--	2	--	3	--
39	--	--	--	--	--	--
40	--	--	--	--	--	--
41	1	--	1	--	2	--
42	1	--	--	--	1	--
Total	1,670	\$96,627,075	1,832	\$92,671,394	3,502	\$189,298,469

TABLE 7C – DETAILED TABULATIONS OF THE DATA

The Number and Annual Salaries of Members in Active Service Distributed by Age as of January 1, 2018

General Employees

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

Age	Men		Women		Total	
	Number	Compensation	Number	Compensation	Number	Compensation
20	2	--	1	--	3	--
21	4	--	--	--	4	--
22	5	--	5	--	10	--
23	12	--	12	--	24	\$952,101
24	20	\$781,802	18	--	38	1,494,536
25	14	--	17	--	31	1,262,315
26	23	958,179	15	--	38	1,566,869
27	23	976,917	24	\$936,187	47	1,913,104
28	28	1,224,533	34	1,441,032	62	2,665,565
29	19	--	40	1,634,409	59	2,545,312
30	28	1,296,700	31	1,272,686	59	2,569,386
31	36	1,668,735	54	2,060,458	90	3,729,193
32	39	2,051,017	41	1,843,761	80	3,894,779
33	39	1,860,063	38	1,651,132	77	3,511,196
34	33	1,809,765	48	2,481,215	81	4,290,980
35	34	1,703,190	42	1,803,254	76	3,506,444
36	25	1,264,379	43	1,947,674	68	3,212,053
37	33	1,931,834	45	2,106,978	78	4,038,812
38	36	1,945,683	45	2,175,861	81	4,121,545
39	28	1,547,582	56	3,229,112	84	4,776,694
40	42	2,329,203	34	1,761,620	76	4,090,823
41	44	2,472,215	50	2,651,761	94	5,123,975
42	45	2,747,968	50	2,392,371	95	5,140,340
43	48	3,137,966	46	2,364,667	94	5,502,633

Age	Men		Women		Total	
	Number	Compensation	Number	Compensation	Number	Compensation
44	21	1,139,438	42	2,043,547	63	3,182,986
45	42	2,257,314	44	2,630,992	86	4,888,307
46	41	2,397,622	48	2,450,944	89	4,848,566
47	41	2,457,828	49	2,742,013	90	5,199,841
48	53	3,104,240	60	3,598,514	113	6,702,754
49	18	--	54	2,963,233	72	3,883,726
50	36	2,309,473	60	2,785,709	96	5,095,182
51	46	3,038,833	70	3,637,208	116	6,676,041
52	43	2,290,321	52	2,770,067	95	5,060,388
53	31	1,620,180	59	2,905,077	90	4,525,257
54	42	2,758,948	44	2,311,085	86	5,070,033
55	35	1,991,115	44	2,322,585	79	4,313,700
56	26	1,622,567	38	1,897,180	64	3,519,747
57	48	2,915,837	61	3,526,658	109	6,442,495
58	41	2,730,339	42	2,365,525	83	5,095,864
59	35	2,037,040	46	2,176,718	81	4,213,758
60	31	1,807,640	34	2,029,121	65	3,836,761
61	27	1,794,523	35	1,679,211	62	3,473,734
62	41	2,909,018	33	1,701,301	74	4,610,319
63	20	1,289,069	18	--	38	2,349,790
64	23	1,428,846	20	1,034,533	43	2,463,379
65	10	--	18	--	28	1,558,389
66	12	--	9	--	21	1,833,370
67	7	--	4	--	11	--
68	3	--	3	--	6	--
69	4	--	3	--	7	--
70	2	--	2	--	4	--
71	3	--	1	--	4	--
72	1	--	1	--	2	--
73	--	--	--	--	--	--
74	--	--	1	--	1	--
75	--	--	1	--	1	--
76	1	--	1	--	2	--
Total	1,444	\$82,118,372	1,786	\$89,745,876	3,230	\$171,864,248

Section 6: Additional Summary Tables of Member Data as of January 1, 2018 for the Employees' Retirement System of the County of Milwaukee

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, 2018

General Employees

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

Service	Men		Women		Total	
	Number	Compensation	Number	Compensation	Number	Compensation
0	136	\$ 6,104,480	151	\$ 5,896,965	287	\$ 12,001,445
1	161	8,169,213	221	10,149,563	382	18,318,776
2	119	6,579,902	183	8,350,004	302	14,929,906
3	75	4,071,284	142	6,829,025	217	10,900,309
4	65	4,068,121	103	5,172,137	168	9,240,258
5	73	4,065,162	70	3,313,680	143	7,378,842
6	69	3,895,551	66	3,524,581	135	7,420,131
7	52	2,965,539	45	2,415,861	97	5,381,400
8	26	1,438,844	25	1,247,111	51	2,685,956
9	54	3,338,908	54	2,887,463	108	6,226,371
10	39	2,080,109	46	2,453,976	85	4,534,085
11	28	1,594,962	39	2,587,261	67	4,182,223
12	39	2,067,031	51	2,748,172	90	4,815,203
13	40	2,549,185	44	2,328,193	84	4,877,378
14	19	--	23	1,261,538	42	2,321,750
15	33	1,767,287	29	1,444,504	62	3,211,791
16	41	2,507,683	35	1,722,046	76	4,229,729
17	56	3,232,460	62	2,904,496	118	6,136,956
18	38	1,996,516	52	2,743,153	90	4,739,668
19	38	2,171,381	42	2,262,125	80	4,433,506
20	36	2,166,734	34	2,139,391	70	4,306,125
21	18	--	23	1,202,459	41	2,280,345
22	19	--	20	1,028,455	39	2,231,794
23	28	1,889,244	19	--	47	2,970,302
24	15	--	31	1,684,433	46	2,491,937
25	10	--	24	1,365,899	34	2,068,213
26	23	1,582,644	22	1,240,296	45	2,822,939
27	19	--	20	1,083,815	39	2,318,579

Service	Men		Women		Total	
	Number	Compensation	Number	Compensation	Number	Compensation
28	22	1,578,411	25	1,471,767	47	3,050,179
29	11	--	34	2,086,220	45	2,837,870
30	10	--	15	--	25	1,678,132
31	7	--	7	--	14	
32	7	--	8	--	15	
33	8	--	6	--	14	
34	3	--	7	--	10	
35	--	--		--		
36	3	--	2	--	5	
37	1	--	3		4	
38	1	--	2		3	
39	--	--	--	--	--	--
40	--	--	--	--	--	--
41	1	--	1		2	
42	1	--			1	
Total	1,444	\$82,118,372	1,786	\$89,745,876	3,230	\$171,864,248

TABLE 7E – DETAILED TABULATIONS OF THE DATA

The Number and Annual Salaries of Members in Active Service Distributed by Age as of January 1, 2018 Deputy Sheriffs

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

Age	Men		Women		Total	
	Number	Compensation	Number	Compensation	Number	Compensation
23	2	--	--	--	2	--
24	5	--	1	--	6	--
25	6	--	--	--	6	--
26	6	--	1	--	7	--
27	7	--	--	--	7	--
28	4	--	--	--	4	--
29	6	--	--	--	6	--
30	2	--	2	--	4	--
31	5	--	2	--	7	--
32	4	--	1	--	5	--
33	3	--	--	--	3	--
34	4	--	--	--	4	--
35	1	--	--	--	1	--
36	3	--	2	--	5	--
37	2	--	2	--	4	--
38	2	--	--	--	2	--
39	3	--	1	--	4	--
40	4	--	--	--	4	--
41	2	--	1	--	3	--
42	10	--	2	--	12	--
43	6	--	2	--	8	--
44	2	--	1	--	3	--
45	11	--	1	--	12	--
46	14	--	4	--	18	--
47	17	--	5	--	22	\$1,513,240
48	17	--	2	--	19	--
49	18	--	5	--	23	1,588,782
50	8	--	6	--	14	--

Age	Men		Women		Total	
	Number	Compensation	Number	Compensation	Number	Compensation
51	13	--	1	--	14	--
52	8	--	1	--	9	--
53	2	--	1	--	3	--
54	6	--	--	--	6	--
55	3	--	1	--	4	--
56	3	--	--	--	3	--
57	3	--	--	--	3	--
58	5	--	--	--	5	--
59	1	--	--	--	1	--
60	--	--	--	--	--	--
61	1	--	--	--	1	--
Total	219	\$13,908,501	45	\$2,925,518	264	\$16,834,019

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, 2018

Deputy Sheriffs

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

Service	Men		Women		Total	
	Number	Compensation	Number	Compensation	Number	Compensation
0	13	--	--	--	13	--
1	13	--	2	--	15	--
2	18	--	5	--	23	\$1,206,276
3	3	--	1	--	4	--
4	6	--	2	--	8	--
5	4	--	1	--	5	--
6	2	--	--	--	2	--
7	--	--	1	--	1	--
8	3	--	--	--	3	--
9	--	--	--	--	--	--
10	2	--	--	--	2	--
11	2	--	--	--	2	--
12	--	--	--	--	--	--
13	1	--	--	--	1	--
14	1	--	--	--	1	--
15	4	--	--	--	4	--
16	3	--	--	--	3	--
17	7	--	2	--	9	--
18	11	--	5	--	16	--
19	16	--	4	--	20	1,406,992
20	14	--	3	--	17	--
21	26	\$1,830,498	5	--	31	2,184,249
22	6	--	3	--	9	--
23	21	1,471,566	1	--	22	1,541,838
24	14	--	3	--	17	--
25	15	--	2	--	17	--
26	7	--	3	--	10	--
27	1	--	--	--	1	--

Service	Men		Women		Total	
	Number	Compensation	Number	Compensation	Number	Compensation
28	3	--	1	--	4	--
29	3	--	1	--	4	--
Total	219	\$13,908,501	45	\$2,925,518	264	\$16,834,019

TABLE 7G – DETAILED TABULATIONS OF THE DATA

The Number and Annual Salaries of Members in Active Service Distributed by Age as of January 1, 2018 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	\$572,009	--	--	5	\$572,009

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, 2018 Elected Officials

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

Service	Men		Women		Total	
	Number	Compensation	Number	Compensation	Number	Compensation
6	1	--	--	--	1	--
7	1	--	--	--	1	--
8	--	--	--	--	--	--
9	--	--	--	--	--	--
10	--	--	--	--	--	--
11	--	--	--	--	--	--
12	--	--	--	--	--	--
13	--	--	--	--	--	--
14	--	--	--	--	--	--
15	1	--	--	--	1	--
16	--	--	--	--	--	--
17	--	--	--	--	--	--
18	--	--	--	--	--	--
19	--	--	--	--	--	--
20	--	--	--	--	--	--
21	--	--	--	--	--	--
22	1	--	--	--	1	--
23	--	--	--	--	--	--
24	--	--	--	--	--	--
25	--	--	--	--	--	--
26	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, 2018
All Members

Age	Men		Women		Total	
	Number	Annuities	Number	Annuities	Number	Annuities
24	--	--	1	\$19,744	1	\$19,744
25	--	--	--	--	--	--
26	--	--	--	--	--	--
27	--	--	--	--	--	--
28	--	--	1	19,744	1	19,744
29	--	--	1	9,903	1	9,903
30	1	\$5,253	--	--	1	5,253
31	--	--	--	--	--	--
32	--	--	--	--	--	--
33	--	--	--	--	--	--
34	--	--	--	--	--	--
35	1	3,895	--	--	1	3,895
36	1	16,332	--	--	1	16,332
37	--	--	1	4,389	1	4,389
38	1	21,205	--	--	1	21,205
39	1	43,217	1	16,687	2	59,904
40	2	38,520	--	--	2	38,520
41	--	--	1	6,426	1	6,426
42	1	27,201	1	19,091	2	46,292
43	3	78,732	1	46,469	4	125,201
44	--	--	1	47,847	1	47,847
45	1	25,288	--	--	1	25,288
46	1	45,757	4	87,020	5	132,777
47	6	221,214	1	34,139	7	255,352
48	6	187,285	1	23,290	7	210,575
49	7	222,567	1	31,137	8	253,705
50	3	124,844	6	134,244	9	259,088
51	8	309,181	10	246,602	18	555,783
52	11	397,686	19	627,926	30	1,025,612
53	13	483,973	26	688,530	39	1,172,503

Age	Men		Women		Total	
	Number	Annuities	Number	Annuities	Number	Annuities
54	16	604,282	35	1,033,909	51	1,638,191
55	30	889,578	35	999,871	65	1,889,449
56	26	714,657	30	736,028	56	1,450,685
57	28	805,144	67	1,719,506	95	2,524,650
58	23	672,654	76	1,841,521	99	2,514,175
59	47	1,440,644	68	1,780,452	115	3,221,096
60	50	1,632,499	96	2,474,577	146	4,107,076
61	89	2,140,808	143	2,976,037	232	5,116,845
62	100	2,687,231	126	2,548,896	226	5,236,128
63	111	2,871,261	165	3,067,469	276	5,938,731
64	125	3,296,627	178	3,502,513	303	6,799,139
65	141	3,658,140	193	3,873,430	334	7,531,570
66	145	4,066,235	202	3,817,868	347	7,884,104
67	170	4,608,856	214	3,792,779	384	8,401,635
68	162	4,045,650	217	3,958,565	379	8,004,215
69	185	5,336,107	220	3,981,801	405	9,317,909
70	154	4,179,515	203	4,078,138	357	8,257,653
71	194	5,332,538	212	4,380,223	406	9,712,761
72	105	3,002,937	153	3,512,749	258	6,515,687
73	120	2,901,885	141	2,797,885	261	5,699,770
74	87	2,363,137	140	2,592,902	227	4,956,039
75	92	2,449,690	143	2,664,390	235	5,114,081
76	86	2,454,680	119	2,092,683	205	4,547,363
77	79	2,142,396	98	1,975,091	177	4,117,487
78	72	1,805,631	106	1,902,277	178	3,707,908
79	69	1,777,962	109	2,073,839	178	3,851,801
80	60	1,591,612	109	1,888,834	169	3,480,447
81	70	1,758,902	103	1,703,819	173	3,462,721
82	60	1,493,195	100	1,867,736	160	3,360,931
83	42	1,293,637	104	1,816,199	146	3,109,836
84	49	1,397,321	70	1,145,017	119	2,542,338
85	59	1,387,142	77	1,271,486	136	2,658,628
86	46	1,267,422	72	1,247,563	118	2,514,984
87	42	908,387	106	1,781,999	148	2,690,386
88	32	810,397	93	1,344,522	125	2,154,919

Section 6: Additional Summary Tables of Member Data as of January 1, 2018 for the Employees' Retirement System of the County of Milwaukee

Age	Men		Women		Total	
	Number	Annuities	Number	Annuities	Number	Annuities
89	32	657,454	88	1,229,044	120	1,886,498
90	28	584,922	66	917,857	94	1,502,779
91	22	521,253	64	778,842	86	1,300,095
92	17	317,570	55	810,283	72	1,127,853
93	17	295,806	34	493,211	51	789,016
94	16	266,113	35	452,417	51	718,530
95	5	105,499	35	403,521	40	509,020
96	8	112,124	21	199,664	29	311,787
97	4	79,257	24	251,236	28	330,493
98	3	26,114	8	75,211	11	101,325
99	2	51,606	8	84,802	10	136,407
100	--	--	6	46,408	6	46,408
101	--	--	4	19,352	4	19,352
102	--	--	1	7,906	1	7,906
103	--	--	1	6,851	1	6,851
Total	3,187	\$85,058,629	4,850	\$92,082,365	8,037	\$177,140,993

TABLE 7J – DETAILED TABULATIONS OF THE DATA

**The Number and Annual Benefits Payable to Members Receiving Benefits Distributed by Age as of January 1, 2018
Retired Members**

Age	Men		Women		Total	
	Number	Annuities	Number	Annuities	Number	Annuities
46	--	--	1	\$45,773	1	\$45,773
47	--	--	--	--	--	--
48	--	--	--	--	--	--
49	--	--	1	31,137	1	31,137
50	2	\$70,140	4	97,482	6	167,622
51	5	220,197	5	141,933	10	362,130
52	9	343,218	13	405,444	22	748,663
53	10	392,324	15	367,938	25	760,262
54	9	392,682	26	769,087	35	1,161,769
55	27	809,713	27	816,975	54	1,626,688
56	24	643,069	25	667,888	49	1,310,957
57	27	791,494	57	1,510,464	84	2,301,958
58	22	624,933	62	1,615,263	84	2,240,196
59	40	1,277,174	63	1,672,346	103	2,949,520
60	45	1,537,486	86	2,292,432	131	3,829,917
61	80	1,933,769	127	2,675,689	207	4,609,458
62	93	2,522,874	114	2,289,920	207	4,812,794
63	106	2,809,692	150	2,809,217	256	5,618,909
64	113	3,066,184	158	3,040,751	271	6,106,935
65	132	3,407,573	182	3,615,692	314	7,023,265
66	133	3,817,310	189	3,523,682	322	7,340,992
67	161	4,414,532	194	3,479,631	355	7,894,163
68	156	3,899,470	199	3,531,521	355	7,430,991
69	175	5,148,303	198	3,596,719	373	8,745,022
70	147	4,068,076	188	3,787,424	335	7,855,500
71	184	5,109,114	187	3,887,497	371	8,996,610
72	102	2,948,477	130	2,945,892	232	5,894,370
73	105	2,715,405	123	2,397,594	228	5,112,998
74	81	2,273,687	118	2,206,015	199	4,479,702
75	83	2,325,080	116	2,277,675	199	4,602,755

Age	Men		Women		Total	
	Number	Annuities	Number	Annuities	Number	Annuities
76	80	2,346,515	105	1,862,171	185	4,208,685
77	76	2,099,008	79	1,565,144	155	3,664,152
78	67	1,741,023	90	1,635,633	157	3,376,656
79	63	1,711,114	92	1,662,967	155	3,374,081
80	56	1,506,263	87	1,538,200	143	3,044,462
81	60	1,602,820	72	1,195,659	132	2,798,479
82	53	1,393,081	71	1,269,316	124	2,662,397
83	40	1,233,730	82	1,426,392	122	2,660,123
84	43	1,238,340	46	772,692	89	2,011,032
85	50	1,234,831	57	986,323	107	2,221,154
86	43	1,245,955	36	500,261	79	1,746,216
87	33	771,656	70	1,139,183	103	1,910,839
88	29	798,350	65	961,442	94	1,759,792
89	26	574,271	55	746,687	81	1,320,957
90	21	482,610	37	505,982	58	988,592
91	19	475,419	37	454,298	56	929,717
92	16	302,865	27	368,571	43	671,436
93	13	265,589	17	239,837	30	505,426
94	13	250,219	19	196,053	32	446,272
95	4	56,911	22	224,360	26	281,272
96	5	65,495	14	144,096	19	209,592
97	4	79,257	16	138,487	20	217,745
98	2	23,362	3	27,463	5	50,826
99	2	51,606	6	68,849	8	120,455
100	--	--	3	18,144	3	18,144
101	--	--	2	14,728	2	14,728
102	--	--	1	7,906	1	7,906
103	--	--	1	6,851	1	6,851
Total	2,889	\$79,112,264	3,970	\$76,176,776	6,859	\$155,289,040

TABLE 7K – DETAILED TABULATIONS OF THE DATA

The Number and Annual Benefits Payable to Members Receiving Benefits Distributed by Age as of January 1, 2018
Disabled Members

Age	Men		Women		Total	
	Number	Annuities	Number	Annuities	Number	Annuities
24	--	--	1	\$19,744	1	\$19,744
25	--	--	--	--	--	--
26	--	--	--	--	--	--
27	--	--	--	--	--	--
28	--	--	1	19,744	1	19,744
29	--	--	1	9,903	1	9,903
30	1	\$5,253	--	--	1	5,253
31	--	--	--	--	--	--
32	--	--	--	--	--	--
33	--	--	--	--	--	--
34	--	--	--	--	--	--
35	1	3,895	--	--	1	3,895
36	1	16,332	--	--	1	16,332
37	--	--	1	4,389	1	4,389
38	--	--	--	--	--	--
39	--	--	1	16,687	1	16,687
40	1	2,452	--	--	1	2,452
41	--	--	1	6,426	1	6,426
42	--	--	1	19,091	1	19,091
43	1	8,296	--	--	1	8,296
44	--	--	--	--	--	--
45	--	--	--	--	--	--
46	--	--	2	9,656	2	9,656
47	--	--	--	--	--	--
48	--	--	--	--	--	--
49	2	21,851	--	--	2	21,851
50	--	--	1	5,777	1	5,777
51	--	--	2	48,957	2	48,957
52	--	--	2	67,005	2	67,005
53	--	--	3	15,906	3	15,906

Age	Men		Women		Total	
	Number	Annuities	Number	Annuities	Number	Annuities
54	2	51,836	3	105,102	5	156,937
55	1	8,711	2	63,306	3	72,016
56	--	--	1	12,590	1	12,590
57	--	--	6	95,794	6	95,794
58	--	--	8	100,306	8	100,306
59	1	18,308	3	57,084	4	75,392
60	--	--	7	82,257	7	82,257
61	2	40,500	5	94,807	7	135,307
62	3	59,148	9	194,040	12	253,188
63	3	27,809	13	213,873	16	241,682
64	5	36,762	18	426,598	23	463,360
65	1	13,359	10	224,097	11	237,456
66	7	129,492	11	238,899	18	368,391
67	9	194,324	15	184,664	24	378,988
68	3	53,120	13	340,657	16	393,777
69	6	84,335	19	341,410	25	425,745
70	5	51,589	14	272,217	19	323,806
71	8	159,693	22	450,760	30	610,453
72	1	11,327	23	566,857	24	578,184
73	8	81,013	15	364,517	23	445,530
74	4	38,208	18	310,947	22	349,154
75	7	71,476	23	325,982	30	397,459
76	4	55,262	9	142,100	13	197,362
77	1	4,483	16	333,507	17	337,991
78	3	26,036	14	223,638	17	249,674
79	5	48,540	17	410,872	22	459,412
80	3	58,953	20	314,164	23	373,117
81	7	90,341	28	464,295	35	554,636
82	5	58,819	28	575,090	33	633,909
83	1	51,213	20	363,488	21	414,700
84	5	139,130	21	320,599	26	459,730
85	8	133,723	18	259,218	26	392,941
86	3	21,467	32	670,958	35	692,425
87	9	136,731	32	571,565	41	708,297
88	3	12,048	28	383,080	31	395,127

Section 6: Additional Summary Tables of Member Data as of January 1, 2018 for the Employees' Retirement System of the County of Milwaukee

Age	Men		Women		Total	
	Number	Annuities	Number	Annuities	Number	Annuities
89	6	83,183	29	421,542	35	504,725
90	7	102,312	28	396,028	35	498,339
91	3	45,835	26	310,776	29	356,611
92	1	14,705	27	427,928	28	442,633
93	4	30,216	17	253,374	21	283,590
94	3	15,894	15	240,234	18	256,128
95	1	48,588	13	179,161	14	227,748
96	3	46,628	7	55,567	10	102,196
97	--	--	8	112,748	8	112,748
98	1	2,752	5	47,748	6	50,500
99	--	--	2	15,953	2	15,953
100	--	--	3	28,264	3	28,264
101	--	--	2	4,625	2	4,625
Total	169	\$2,415,949	740	\$12,836,570	909	\$15,252,519

TABLE 7L – DETAILED TABULATIONS OF THE DATA

The Number and Annual Benefits Payable to Members Receiving Benefits Distributed by Age as of January 1, 2018
Beneficiaries

Age	Men		Women		Total	
	Number	Annuities	Number	Annuities	Number	Annuities
38	1	\$21,205	--	--	1	\$21,205
39	1	43,217	--	--	1	43,217
40	1	36,068	--	--	1	36,068
41	--	--	--	--	--	--
42	1	27,201	--	--	1	27,201
43	2	70,436	1	\$46,469	3	116,905
44	--	--	1	47,847	1	47,847
45	1	25,288	--	--	1	25,288
46	1	45,757	1	31,591	2	77,348
47	6	221,214	1	34,139	7	255,352
48	6	187,285	1	23,290	7	210,575
49	5	200,717	--	--	5	200,717
50	1	54,704	1	30,985	2	85,689
51	3	88,984	3	55,712	6	144,696
52	2	54,467	4	155,477	6	209,944
53	3	91,649	8	304,685	11	396,334
54	5	159,764	6	159,720	11	319,484
55	2	71,154	6	119,590	8	190,745
56	2	71,588	4	55,550	6	127,138
57	1	13,650	4	113,248	5	126,898
58	1	47,721	6	125,952	7	173,673
59	6	145,162	2	51,021	8	196,183
60	5	95,013	3	99,888	8	194,901
61	7	166,540	11	205,541	18	372,080
62	4	105,210	3	64,936	7	170,147
63	2	33,760	2	44,380	4	78,140
64	7	193,681	2	35,164	9	228,844
65	8	237,208	1	33,641	9	270,849
66	5	119,433	2	55,287	7	174,720
67	--	--	5	128,484	5	128,484

Age	Men		Women		Total	
	Number	Annuities	Number	Annuities	Number	Annuities
68	3	93,060	5	86,388	8	179,447
69	4	103,470	3	43,672	7	147,142
70	2	59,850	1	18,497	3	78,347
71	2	63,731	3	41,966	5	105,697
72	2	43,133	--	--	2	43,133
73	7	105,467	3	35,774	10	141,241
74	2	51,243	4	75,941	6	127,183
75	2	53,134	4	60,733	6	113,867
76	2	52,903	5	88,412	7	141,316
77	2	38,905	3	76,439	5	115,344
78	2	38,571	2	43,007	4	81,578
79	1	18,308	--	--	1	18,308
80	1	26,397	2	36,471	3	62,867
81	3	65,741	3	43,865	6	109,606
82	2	41,295	1	23,330	3	64,625
83	1	8,694	2	26,319	3	35,013
84	1	19,852	3	51,725	4	71,577
85	1	18,588	2	25,945	3	44,533
86	--	--	4	76,344	4	76,344
87	--	--	4	71,250	4	71,250
89	--	--	4	60,815	4	60,815
90	--	--	1	15,848	1	15,848
91	--	--	1	13,767	1	13,767
92	--	--	1	13,783	1	13,783
94	--	--	1	16,130	1	16,130
Total	129	\$3,530,416	140	\$3,069,019	269	\$6,599,435