EMPLOYEES' RETIREMENT SYSTEM

of the
County of Milwaukee

2018
Annual Report
of the Pension Board

as of and for the Years Ended
December 31, 2018 and 2017

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Employees' Retirement System of the County of Milwaukee

2018 Annual Report of the Pension Board

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EMPLOYEES' RETIREMENT SYSTEM (ERS)

Milwaukee County

ERS Members:

We are pleased to present the 2018 Annual Report of your Pension Board. The Employees' Retirement System ("ERS") experienced a negative investment return for the year of (2.4%). Net position restricted for pensions decreased $168.2 million. This decrease was mainly due to investment returns below the requirement and an increase in pension benefit payments. Total net position at the end of the year was $1.62 billion. The management discussion and analysis, the financial statements, and the footnotes provide detailed information regarding ERS performance. The description of ERS included in this report highlights major plan provisions. County Ordinances, labor agreements, Pension Board Rules, and Governmental Accounting Standards Board (GASB) pronouncements prevail over the contents of this report. If you have any questions, please call (414) 278-4207.

Members who retire or otherwise leave County service have several options available with respect to pension benefits. To make informed decisions before terminating employment, members should fully understand and carefully consider the various options available.

Members considering retirement within the next few years are reminded to watch for announcements from the County for retirement information programs. Please check the Retirement website (https://county.milwaukee.gov/EN/Human-Resources/Retirement-Services) for further information regarding these programs. If you would like to meet with a Retirement Analyst to discuss retirement, please schedule an appointment by calling (414) 278-4207.

Remember to keep your beneficiary designations current by informing the Retirement office of any changes. Retired members should notify the Retirement office in writing of any address changes to insure benefit payments and year-end Form 1099-R statements are properly mailed.

Respectfully,

The Pension Board

COURTHOUSE, ROOM 210-C • 901 NORTH 9th STREET • MILWAUKEE, WI 53233 • (414) 278-4207 • (877) 652-6377

INDEPENDENT AUDITORS' REPORT

To the Members of the Pension
Board of the Employees' Retirement System of the County of Milwaukee
Milwaukee, Wisconsin

Report on the Financial Statements

We have audited the accompanying statements of fiduciary net position of the Employees' Retirement System of the County of Milwaukee (the "Retirement System"), as of December 31, 2018 and 2017, the statements of changes in fiduciary net position for the years then ended, and the related notes to the financial statements, which collectively comprise the Retirement System's basic financial statements as listed in the table of contents.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control over financial reporting relevant to the Retirement System's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances but not for the purpose of expressing an opinion on the effectiveness of the Retirement System's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the fiduciary net position of the Retirement System as of December 31, 2018 and 2017, and the changes in fiduciary net position of the Retirement System for the years then ended in conformity with accounting principles generally accepted in the United States of America.

Other Matters

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the Management's Discussion and Analysis, the Schedules of Changes in Net Pension Liability and Related Ratios, Contributions, and Investment Returns, and the notes to the required supplementary information as listed in the table of contents be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Other Information

Our audit was conducted for the purpose of forming an opinion on the financial statements that collectively comprise the Retirement System's basic financial statements. The Letter from the Pension Board, Ten-year Historical Trend and related information on pages 32 through 35 are presented for purposes of additional analysis and are not a required part of the basic financial statements. Such information has not been subjected to the auditing procedures applied in the audit of the basic financial statements, and accordingly, we do not express an opinion or provide any assurance on it.

Baker Tilly Virchow Krause, LLP

Milwaukee, Wisconsin
July 15, 2019

Management's Discussion & Analysis (Unaudited)
(In Thousands of Dollars)

Management is pleased to provide this overview and analysis of the financial activities of the Employees' Retirement System of the County of Milwaukee ("ERS", or the "Retirement System") for the year ended December 31, 2018. Readers are encouraged to consider the information presented in conjunction with the Financial Statements.

FINANCIAL HIGHLIGHTS

FIDUCIARY NET POSITION

- Fiduciary net position for ERS decreased ($168,190) as of 12/31/18 vs. 12/31/17 following an increase of $114,726 as of 12/31/17 vs. 12/31/16. Real Estate, Infrastructure and Private Equity have experienced positive returns in 2018, unfortunately they were not able to offset the losses in Fixed Income, US Equity, International Equity and Hedged Equity. All asset classes, with the exception of Fixed Income, have experienced positive returns in 2017, with International stocks and Private Equity leading the way.
- The rate of return on total assets of the pension fund, net of fees, was (2.4%), 15.8%, and 6.9%, for the years ended December 31, 2018, 2017, and 2016, respectively.
- Receivables increased by $2,160 as of 12/31/18 vs. 12/31/17 due primarily to an increase in accrued interest and dividends. Receivables decreased by ($4,320) as of 12/31/17 vs. 12/31/16 due primarily to a decrease in receivables from the County of Milwaukee.
- Other assets increased $8,313 as of 12/31/18 vs. 12/31/17 and decreased ($10,524) as of 12/31/17 vs. 12/31/16 due largely to changes in securities lending – collateral of $9,043 and ($9,712) respectively.
- Liabilities increased $11,276 from 2018 to 2017. This increase was due to an increase in securities lending—collateral and in increase in payables for securities purchased. Liabilities decreased ($9,854) from 2017 to 2016, due to a decrease in securities lending—collateral.
- ERS buys and sells financial futures contracts to improve the performance of the fund. ERS purchases contracts that approximate the amount of cash held by US equity managers and cash used to pay benefits and expenses.

ADDITIONS AND DEDUCTIONS TO FIDUCIARY NET POSITION

- Total additions decreased ($279,951) in 2018 vs. 2017 and increased $145,714 in 2017 vs. 2016. The 2018 decrease is primarily the result of decreases in net appreciation in fair value of investments. The 2017 increase is primarily the result of increases in investment income, as well as an increase in contributions from the County of Milwaukee.
- Benefits payments increased $3,387 in 2018 and decreased ($14,311) in 2017. The increase in 2018 was due to an increase in monthly benefits of $2,531, and an increase of $856 in Lump Sum payments. The decrease in 2017 was due to an decrease in monthly benefits of ($9,734), and an decrease of ($4,577) in Lump Sum payments.
- 2018 saw a 1.6% decrease in retirements from 2017. 2017 saw a 15.5% decrease in retirements from 2016. There were no significant changes to benefits in 2018 that would explain this decrease.
- Pursuant to Governmental Accounting Standards Board Statement No. 67, as of December 31, 2018, and December 31, 2017, the ERS funded ratio was 70.6% and 77.4% respectively. The funding ratio gives an indication of how well the liabilities of the pension plan are funded. The higher the funding ratio, the better the plan is funded. The ratio increases due to investment gains and pension contributions, and declines due to investment losses, increases in plan benefits, large pension payouts, and underpayment by the County of pension annual required contributions.

The Board of Trustees of ERS ("The Board") has the responsibility for the overall performance of the Retirement System. The Board's principal means to achieve this goal is by (a) determining an asset allocation policy which is expected to provide the long-term rate of return sufficient to fund benefits while minimizing the risk of loss through diversification, (b) selecting an appropriate number of investment managers to manage the assets within an asset class and monitoring the performance of such investment managers relative to specified benchmarks, and (c) implementing cost containment measures intended to reduce the investment fees and costs associated with investing the Retirement System's assets. The Board is the fiduciary of the Retirement System and is responsible for carrying out the investment functions solely in the interest of the members and benefit recipients.

OVERVIEW OF THE FINANCIAL STATEMENTS

The discussion and analysis is intended to serve as an introduction to the Retirement System's financial statements. The financial section is comprised of four components: (1) financial statements, (2) notes to the financial statements, (3) required supplementary information, and (4) other supplementary schedules.

Financial Statements – There are two financial statements presented for the plan. The Statements of Fiduciary Net Position as of December 31, 2018 and 2017 indicates the fiduciary net position available to pay future benefits and gives a snapshot of the financial assets available for pension benefits at a particular point in time. The Statements of Changes in Fiduciary Net Position for the years ended December 31, 2018 and 2017 provides a view of additions and deductions to the plan for the years presented.

Notes to financial statements – The notes provide additional information that is essential for a full understanding of the data provided in the financial statements.

Required supplementary information – The required supplementary information consists of a Schedule of Changes in the Net Pension Liability and Related Ratios, Schedule of Employer Contributions, Schedule of Investment Returns, and related notes concerning the funding status of the plan. These schedules provide historical trend information, that contribute to understanding the changes in the funded status of the plan over time.

(See independent auditors' report)

(In Thousands of Dollars)

Other supplementary schedules – The additional schedules (Ten-Year Historical Trend Information, Fiduciary Net Position at Fair Value, Actual County and Participant Contributions, Active Membership Statistics, Retirements and Survivors Statistics) are presented for the purpose of additional analysis.

COMPARATIVE FINANCIAL STATEMENTS

Retirement System's Fiduciary Net Position	12/31/2018	12/31/2017	12/31/2016	2018 vs. 2017 Difference	2018 vs. 2017 % Change
Assets					
Cash and cash equivalents	$ 48,264	$ 65,949	$ 58,343	($17,685)	(26.8%)
Receivables	5,922	3,762	8,081	2,160	57.4%
Investments, at fair value	1,572,749	1,722,451	1,610,342	(149,702)	(8.7%)
Other assets	34,528	26,215	36,739	8,313	31.7%
Total Assets	1,661,463	1,818,377	1,713,505	(156,914)	(8.6%)
Liabilities					
Security lending obligations	33,534	24,491	34,203	$9,043	36.9%
Other liabilities	9,710	7,477	7,619	2,233	29.9%
Total Liabilities	43,244	31,968	41,822	11,276	35.3%
Net position restricted for pensions	$ 1,618,219	$ 1,786,409	$ 1,671,683	($ 168,190)	(9.4%)

Retirement System's Changes in Fiduciary Net Position	12/31/2018	12/31/2017	12/31/2016	2018 vs. 2017 Difference	2018 vs. 2017 % Change
Additions					
Employer contributions	$ 61,178	$ 53,661	$ 50,625	$ 7,517	14.0%
Member contributions	12,651	12,330	12,144	321	2.6%
Investment income (Loss)	(34,961)	252,828	110,336	(287,789)	(113.8%)
Total Additions	38,868	318,819	173,105	(279,951)	(87.8%)
Deductions					
Benefit payments	(200,241)	(196,853)	(211,164)	(3,388)	1.7%
Administrative expenses	(4,894)	(5,502)	(4,912)	608	(11.1%)
Withdrawals	(1,923)	(1,738)	(1,498)	(185)	10.6%
Total Deductions	(207,058)	(204,093)	(217,574)	(2,965)	1.5%
Net increase (decrease) in net position	(168,190)	114,726	(44,469)	(282,916)	(246.6%)
Net position restricted for pensions:					
Beginning of year	1,786,409	1,671,683	1,716,152	114,726	6.9%
End of year	$ 1,618,219	$ 1,786,409	$ 1,671,683	($ 168,190)	(9.4%)

Requests for financial information:

The financial report is designed to provide the Board, our membership, taxpayers, investment managers, and creditors with a general overview of ERS' finances and to demonstrate ERS' accountability for the funds under its stewardship. Please address any questions about this report or requests for additional financial information to:

Milwaukee County ERS
901 N. 9th Street Room 210C
Milwaukee, WI 53233

Email: ers@milwaukeecountywi.gov

(See Independent auditors' report)

EMPLOYEES' RETIREMENT SYSTEM OF THE COUNTY OF MILWAUKEE
STATEMENTS OF FIDUCIARY NET POSITION
AS OF:

	December 31, 2018	December 31, 2017
ASSETS		
CASH AND CASH EQUIVALENTS	$ 48,264,389	$ 65,949,193
RECEIVABLES		
Due from sale of investments	629,891	509,822
Accrued interest and dividends	3,195,261	1,431,426
County of Milwaukee	-	169,695
Plan Members	995,731	958,986
Miscellaneous receivables	1,100,899	691,849
TOTAL RECEIVABLES	**5,921,782**	**3,761,778**
INVESTMENTS AT FAIR VALUE		
Domestic common and preferred stocks	382,744,394	498,883,645
Futures	18,279	359,044
Long/Short hedge funds	144,820,542	166,441,628
Fixed income	310,334,969	253,867,013
International common and preferred stocks	220,884,750	302,188,231
Real estate and REIT's	183,424,903	177,650,646
Infrastructure	147,036,035	166,716,333
Private equity	183,484,911	156,344,279
TOTAL INVESTMENTS	**1,572,748,783**	**1,722,450,819**
OTHER ASSETS		
Software development costs, net (See Note 2)	994,066	1,724,065
Securities lending - collateral (See Note 6)	33,534,017	24,490,712
TOTAL OTHER ASSETS	**34,528,083**	**26,214,777**
TOTAL ASSETS	**$ 1,661,463,037**	**$ 1,818,376,567**
LIABILITIES		
Securities lending - collateral (See Note 6)	33,534,017	24,490,712
Miscellaneous payables	2,635,289	4,730,037
Payable for securities purchased	4,162,306	599,154
Payable to OBRA retirement plan	2,912,055	2,148,099
TOTAL LIABILITIES	**43,243,667**	**31,968,002**
NET POSITION RESTRICTED FOR PENSIONS	**$ 1,618,219,370**	**$ 1,786,408,565**

The accompanying notes are an integral part of these financial statements

EMPLOYEES' RETIREMENT SYSTEM OF THE COUNTY OF MILWAUKEE
STATEMENTS OF CHANGES IN FIDUCIARY NET POSITION
FOR THE YEARS ENDED:

	December 31, 2018	December 31, 2017
ADDITIONS:		
CONTRIBUTIONS		
County of Milwaukee	$ 61,177,816	$ 53,660,695
Plan participants	12,651,528	12,330,305
TOTAL CONTRIBUTIONS	**73,829,344**	**65,991,000**
INVESTMENT INCOME (LOSS)		
Net appreciation (depreciation) in fair value	(55,248,062)	239,131,483
Interest and dividends	12,286,402	9,768,581
Securities lending income	450,227	392,261
Other income	10,917,950	7,036,199
TOTAL INVESTMENT INCOME (LOSS)	(31,593,483)	256,328,524
Less: Securities lending rebates and fees, net	(361,135)	(314,119)
Less: Investment expense	(3,006,628)	(3,186,226)
Net investment income (loss)	(34,961,246)	252,828,178
TOTAL ADDITIONS	**38,868,098**	**318,819,178**
DEDUCTIONS:		
Benefits paid to retirees & beneficiaries	(200,240,292)	(196,852,807)
Administrative expenses	(4,893,840)	(5,502,195)
Withdrawal of membership accounts	(1,923,161)	(1,737,942)
TOTAL DEDUCTIONS	**(207,057,293)**	**(204,092,944)**
NET INCREASE (DECREASE) IN NET POSITION	**(168,189,195)**	**114,726,234**
NET POSITION RESTRICTED FOR PENSIONS		
Beginning of year	**1,786,408,565**	**1,671,682,331**
End of year	**$ 1,618,219,370**	**$ 1,786,408,565**

The accompanying notes are an integral part of these financial statements

(1) Description of Retirement System –

The following brief description of the provisions of the Employees' Retirement System of the County of Milwaukee ("ERS" or the "Retirement System") is provided for financial statement purposes only. Members should refer to Section 201.24 and Appendix B (ERS Rules) of the General Ordinances of Milwaukee County, and their respective collective bargaining agreements.

The Retirement System is a single-employer defined benefit plan that was created to encourage qualified personnel to enter and remain in the service of the County of Milwaukee (the "County") by providing for a system of retirement, disability and death benefits to or on behalf of its employees. Under Chapter 201 of the Laws of Wisconsin for 1937, the County was mandated to create the Retirement System as a separate legal entity. The County did so by passing Section 201.24 of the General Ordinances of Milwaukee County. The authority to manage and control the Retirement System is vested in the Pension Board of ERS (the "Board"). The Board consists of a maximum of ten members – three members appointed by the County Executive (subject to confirmation by the County Board of Supervisors), three employee members elected by active employee members, two members appointed by the County Board chairperson, one employee member appointed by the Milwaukee Deputy Sheriffs' Association, and one retiree member elected by retirees.

The Board created two (2) committees to assist in the administration of the Board's duties. The Investment Committee reviews the investment portfolio on a periodic basis, endorses strategies, and submits investment recommendations to the full Board. The Audit Committee reviews legal issues, Ordinance adherence, and submits recommendations to the full Board regarding the annual audit and the Annual Report of the Pension Board. The Pension Board, with the assistance of its actuarial professionals, determines and recommends how much the County should contribute to ERS based on what the Pension Board believes is necessary to properly fund the current and future payment of benefits. The Pension Board oversees the tax qualification of ERS and oversees the administration of ERS in accordance with adopted County Ordinances (the "Ordinances"), any amendments to the Ordinances, and ERS Rules. The Pension Board oversees the benefit payment process from ERS to determine whether these payments are made in accordance with the Ordinances and ERS Rules.

Pension Plan membership, which is open to new members, consisted of the following:

	As of December 31	
Members	**2018**	**2017**
Inactive plan members currently receiving benefits	**8,037**	**8,063**
Inactive plan members entitled to but not yet receiving benefits	**1,371**	**1,394**
Current employees	**3,502**	**3,488**
Total participants	**12,910**	**12,945**

Membership data above is as of January 1, 2018, the date of the actuary report used to determine the total pension liability for each year, and reasonably approximates membership data through December 31, 2018.

Contributions –

The Retirement System had been substantially noncontributory. However, starting in 2011, certain members began making mandatory contributions. Most full-time, regularly-appointed employees were required to make contributions starting in 2012. The employee contributions varied from 6.5% of compensation to 8.3% for 2018, and 6.5% of compensation to 8.1% for 2017. These percentages may change from year to year based on an analysis performed by the Retirement System's actuary.

Employees who terminate County employment and are not eligible for an immediate pension payment may request a refund of all accumulated contributions made, with simple interest at 5% per annum. Effective December 19, 2013, employees, who terminate employment with the County, must request a refund of accumulated contributions within one hundred eighty (180) days of terminating County employment. Prior to December 19, 2013, terminated employees had sixty (60) days to request a refund of their contributions. The Retirement System will send an employee who terminates a written notice of the refund option. Any employee receiving this refund will forfeit his or her service credit and will no longer be a member of ERS.

Contributions due from the County to the Retirement System consist of actuarially determined amounts sufficient to fund the annual service cost and interest on and amortization of the net pension liability less the expected contributions from the participants.

In 2012, the County of Milwaukee started receiving contributions from the State of Wisconsin for members who were transferred from Milwaukee County to the State of Wisconsin for future service. As a result of the agreement between the State and the County, non-vested members of the Retirement System were able to continue to accrue pension benefits with ERS, while they were employed with the State. Once the member is vested, they are transferred to the state retirement plan, unless they remained in the same position and opted to remain in the Milwaukee County ERS plan. There are currently 2 employees that have opted to remain in the Milwaukee County ERS plan. The state employees were required to contribute 6.5% of their wages to ERS in 2018 and 6.5% of their wages to ERS in 2017, and the state contributed the same percentages to the County for 2018 and 2017.

The County makes contributions to the Retirement System based upon Actuarially Determined Contributions and legal requirements, at the discretion of the County Board. Data used in the determination of the contribution is based upon the prior fiscal year's demographics. The actual contribution made to the pension plan is set during the County's budget process and may differ from the Actuarially Determined Contribution as a result of changes in plan provisions implemented subsequent to establishment of the Actuarially Determined Contribution and budgetary restraints. During the year, the Retirement System accrues those contributions that the County has included in its current year's budget. The County contribution recorded by the Retirement System was $2,406,763 greater than, and $191,549 greater than, the Actuarially Determined Contribution for 2018 and 2017, respectively.

The Actuarially Determined Contribution is calculated by the Retirement System's actuary, hired by the Pension Board, using census data, following plan guidelines, and compared to current net assets. The objective is to calculate a contribution that allows the Retirement System to fulfill its obligations to its members.

Benefits –

The normal retirement benefit is a monthly pension for the life of the member beginning at normal retirement age. The pension amount is determined by the following formula:

Multiplier x Creditable Service x Final Average Salary

For most members, the normal retirement age is either 60 or 64 depending on factors including ERS enrollment date and any relevant collective bargaining agreement. A few collective bargaining agreements also require a minimum of 5 years creditable service in addition to the age requirement. For deputy sheriff members, the normal retirement age is 57 or age 55 with 15 years of creditable service. Depending on enrollment date and collective bargaining agreement, some active members are eligible to retire when their age added to their years of creditable service equals 75 (the "Rule of 75"). The multiplier is determined by Ordinance, collective bargaining agreements, and ERS enrollment date. At this time, the multiplier percentage can be 1.5%, 1.6%, 2% or 2.5%. A member's three or five consecutive years of highest earnings are used to calculate their final average salary as defined by the Ordinance and labor agreements. Annually after retirement, the monthly benefit is increased by 2% of the benefit paid for the first full month of retirement, subject to IRS limits. By Ordinance, the maximum benefit (excluding post-retirement increases) payable to a member cannot exceed the sum of 80% of the member's final average monthly salary.

For some members, depending on enrollment date and collective bargaining agreement, the member may elect to receive a backdrop benefit. This benefit permits an employee to receive a lump-sum payment plus a monthly pension benefit upon retirement. The lump-sum payment is the total of the monthly pension amounts, adjusted for post retirement increases that a member would be entitled to from a prior date ("backdrop date") to the date that the member terminates employment plus compounded interest. The backdrop date must be at least one calendar year prior to the termination date and the member must have been eligible to retire as of that date. The member will be entitled to a post retirement increase based on the backdrop date once the member terminates employment.

In 2012, the County Board passed an ordinance limiting the amount of backdrop benefit for most eligible employees who choose a backdrop date after April 1, 2013. If the member chooses a backdrop date after April 1, 2013, then the monthly backdrop benefit is calculated using the member's final average salary, service credit, and applicable multipliers as of April 1, 2013.

A member who meets the requirements for an accidental disability retirement benefit is entitled to an amount computed in the same manner as a normal pension but not less than 60% of the member's final average salary for accidental disability (75% for a represented deputy sheriff). The ordinary disability pension will not be less than 25% of the member's final average salary. A total of 15 years of creditable service is required to apply for ordinary disability.

Most members are immediately vested upon attaining age 60 or 64. A vested member is eligible for a deferred pension beginning as of the member's normal retirement date.

A member who is 55 years of age and has 15 years of credited service may be eligible for and may elect to receive early reduced retirement benefits. The member would be entitled to a benefit equal to the normal retirement benefit with a lifetime reduction of 5% for each year prior to the normal retirement date.

Upon the death of a member (generally after 1 year of service and depending on collective bargaining agreements), a spouse with a dependent child as defined by Ordinance will receive 40% of the deceased member's salary, reduced by Social Security benefits payable to the spouse. An additional 10% of salary, reduced by Social Security benefits, is paid for each dependent child. Generally, the total benefit, including Social Security benefits, cannot exceed 90% of the prior salary level of the member. At age 60, the spouse will receive 50% of the normal retirement benefit based on the member's projected service to age 60. If there is no spouse or child, the death benefit payable to a designated beneficiary is equal to 50% of the deceased member's final average salary, but not to exceed $2,000.

A member who becomes eligible for normal retirement, but continues to work may elect a Protective Survivorship Option ("PSO") designating a person to receive a pension (100% option) in the event of their death while in active service. Previously there had been a 50% option for PSOs; however, on December 17, 2015 the County Board of Supervisors amended Ordinance section 201.24(7.1) and removed that option. The PSO election must be filed in writing on an approved form. In the absence of an election, a surviving spouse will be paid a 100% survivorship pension.

Currently, members may choose among several benefit payment options when retiring. The available pension options are:

-Maximum Option

Benefit payable for the member's lifetime and ceases upon member's death.

-25% Joint & Survivor

This option is an actuarially reduced pension benefit that is payable over the life of the member. Upon the member's death, 25% of the pension benefit is payable over the life of a named beneficiary, if living;

-50% Joint & Survivor

This option is an actuarially reduced pension benefit that is payable over the life of the member. Upon the member's death, 50% of the pension benefit is payable over the life of a named beneficiary, if living;

-75% Joint & Survivor

This option is an actuarially reduced pension benefit that is payable over the life of the member. Upon the member's death, 75% of the pension benefit is payable over the life of a named beneficiary, if living;

-100% Joint & Survivor

This option is an actuarially reduced pension benefit that is payable over the life of the member. Upon the member's death, 100% of the pension benefit is payable over the life of a named beneficiary, if living;

-10 Year Certain and Life

This option is an actuarially reduced pension benefit payable over the member's life but is guaranteed for a period of 10 years. In the event the member should die within 10 years after the retirement date, the benefit continues to the named beneficiary for the balance of the 10 years.

Benefits of $200.2 million and $196.9 million were paid in 2018 and 2017, respectively, including periodic pension payments of $179.5 million and $177.0 million, respectively, and backdrop lump sum pension payments of $20.7 million and $19.9 million in 2018 and 2017, respectively.

(2) Summary of Significant Accounting Policies

Basis of Accounting –

The accompanying financial statements are prepared using the accrual basis of accounting. Employee and employer contributions are recognized as revenues in the period in which employee services are performed and expenses are recorded when the corresponding liabilities are incurred. Benefit payments to members are recognized in the period in which the payment was due to the member.

Reporting Entity –

As defined by accounting standards generally accepted in the United States of America ("U.S. GAAP"), the financial reporting entity consists of a primary government, as well as its component units, which are legally separate organizations for which the elected officials of the primary government are financially accountable. Based upon required criteria, the Retirement System has no component units and is not a component unit of any other government. These basic financial statements cover all of the defined benefits and operations administered by the Board for the ERS and the OBRA 1990 Retirement System of the County of Milwaukee.

Contributions –

The Retirement System records employee contributions as earned. Contributions earned but not yet received from the County are reflected as contributions receivable.

Investments –

Investments, primarily stocks, bonds, certain government loans and mortgage-backed certificates, are stated at quoted fair value. Temporary cash investments are valued at cost, which approximates fair value. Investments in venture capital partnerships, real estate, long/short hedge and infrastructure are valued at estimated fair value, as provided by the Retirement System's investment managers. Investment transactions are recorded on the trade date. Dividends and interest are recorded as earned. Realized gains and losses are computed based on the average cost method. Unrealized gains and losses in the fair value of investments represent the net change in the fair value of the investments held during the period.

Investment securities, in general, are exposed to various risks, such as interest, credit, and overall market volatility. Due to the level of risk associated with certain investment securities, it is reasonably possible that changes in the values of investment securities will occur in the near term and that such changes could materially affect amounts reported in the Statements of Fiduciary Net Position.

A summary of cash and investments at cost is as follows:

	As of December 31,	
	2018	2017
Fixed income	$ 315,085,327	$ 242,338,187
Domestic common and preferred stocks	378,674,689	346,799,800
International common and preferred stocks	225,873,329	227,480,848
Long/Short hedge funds	112,362,861	124,470,098
Infrastructure	92,253,836	119,663,703
Real estate and REIT's	119,591,302	119,591,302
Private equity	147,083,737	134,433,992
Cash & cash equivalents	46,297,368	60,895,627
Total investments at cost	**$ 1,437,222,449**	**$ 1,375,673,557**

Valuation of International Securities –

Securities and other assets and liabilities denominated in foreign currencies are translated into U.S. dollar amounts on the date of valuation. Purchases and sales of securities and income items denominated in foreign currencies are translated into U.S. dollar amounts on the respective dates of such transactions.

Software Development Costs –

Capitalized software development costs represent direct costs related to the development and implementation of software programs utilized in the Retirement System. The amounts are being amortized over ten years using the straight-line method. Amortization expense is included in Administrative Expenses in the accompanying Statements of Changes in Fiduciary Net Position.

	As of December 31, (in thousands of dollars)	
	2018	**2017**
Software development costs		
Beginning balance	$ 8,497	$ 8,490
Acquisitions	80	7
Ending Balance	**$ 8,577**	**$ 8,497**
Accumulated amortization		
Beginning balance	$ 6,773	$ 5,954
Amortization expense.............................	810	819
Ending Balance	**$ 7,583**	**$ 6,773**
Software development costs, net	**$ 994**	**$ 1,724**

Expenses –

Administrative expenses incurred by the County related to the Retirement System are to be considered additional County contributions-administrative, paid in the month they are incurred, retroactively effective January 1, 2018. Prior to 2018, these expenses were payable by the Retirement System to the County. Such expenses totaled $1,703,344 and $1,677,304 in 2018 and 2017, respectively.

Rate of Return –

For the year ended December 31, 2018, and December 31, 2017, the annual money-weighted rate of return on pension plan investments, net of pension plan investment expense, was (2.4%) percent and 15.8 percent, respectively. The money-weighted rate of return expresses investment performance, net of investment expense, adjusted for the changing amounts actually invested.

Use of Estimates –

The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

Contingencies –

Claims and judgments are recorded as liabilities if all conditions of Governmental Accounting Standards Board ("GASB") pronouncements are met. Claims and judgments are recorded as expenses when the related liabilities are incurred.

New Accounting Standards –

Statement No. 82, *Pension Issues (an amendment of GASB Statements No. 67, No. 68, and No. 73)*. The objective of this Standard is to improve consistency in the application of pension accounting and financial reporting requirements. The requirements of this Statement will improve financial reporting by enhancing consistency in the application of financial reporting requirements to certain pension issues. ERS adopted the guidance for the 2017 fiscal year and the adoption of the standard had no impact on the basic financial statements or note disclosures.

3) Fair Value Measurements –

The GASB Board issued Statement 72 to update the existing standards on fair value (primarily Statement 31). A review of existing standards by the Board, found opportunities to improve the measurement of resources available to governments, and to increase comparability and accountability. Statement 72 was implemented January 1, 2016.

Three input categories are used to assist in the process:

Level 1: Quoted prices (unadjusted) in active markets for identical assets or liabilities, most reliable.

Level 2: Quoted prices for similar assets or liabilities, quoted prices for identical or similar assets or liabilities in markets that are not active, or other than quoted prices that are observable.

Level 3: Unobservable inputs, least reliable.

U.S. treasury securities, equity securities, real estate investment trusts, and exchange traded funds classified as Level 1 are valued using active market pricing. These investments trade in robust markets where buyers and sellers can transact quickly and easily, making these investments highly liquid in nature. Additionally, futures contracts are considered in Level 1 valuations. These are defined as future contracts traded on an organized exchange based on an agreement to buy or sell at a fixed price on a future date.

Debt and debt derivative securities classified in Level 2 (including corporate securities, asset backed securities, foreign securities, SWAPS, etc.) are valued using either a bid evaluation or a matrix pricing technique. Bid evaluations may include market quotations, yields, maturities, call features and ratings. Matrix pricing is used to value securities based on the securities relationship to benchmark quoted prices. Index linked debt securities are valued by multiplying the external market price feed by the applicable day's index ratio. Level 2 debt securities also have nonproprietary information from multiple independent sources that are readily available to market participants who are known to be actively involved in the market.

U.S. equity, international equity and equity derivative securities classified in Level 2 are securities whose values are derived daily from associated traded securities. They include pooled investments that give access to diversified portfolios of equity securities whose performance is tracked as a change in the total market cap of the associated fund. These investments can be purchased and sold daily based on the funds closing net asset value.

The system assessment of the significance of particular inputs to these fair value measurements requires judgment and considers factors specific to each asset or liability. When inputs used to measure fair value fall into different levels in the fair value hierarchy, fair value measurements in their entirety are categorized based on the lowest level input that is significant to the valuation.

Valuation techniques should be applied consistently, though a change might be appropriate in certain circumstances. There were no changes to the methodologies during the years ended December 31, 2018 and December 31, 2017.

- *Real estate investments* consist of three core open-end real estate funds and two of these three core real estate managers have the opportunity to invest a small portion of their total allocation in value-add real estate investments, primarily in the US commercial space. The fair values of these investments have been determined using the NAV per share of the System's ownership interest in partners' capital. These investments are eligible for redemption on a quarterly basis with notice periods ranging from 30 – 90 days.
- *Short Hedge fund investments* consist of two open-end global long/short equity hedge fund of funds portfolios that primarily invests both long and short in publicly traded global equities. The fair values of these investments have been determined using the NAV per share of the investments. These investments are eligible for redemption on a quarterly basis with a notice period of 45 days.
- *Private equity fund investments* consist of four private equity fund of funds investing primarily in leveraged buyout funds, venture capital funds, special situation funds and secondary funds. The fair values of these investments have been determined using the NAV per share of the investments. These investments are not eligible for redemption.
- *Infrastructure investments* consist of two core open-end infrastructure funds that primarily invest in global infrastructure assets. The fair values of these investments have been determined using the NAV per share of the investments. These investments are eligible for redemption on a quarterly basis with a notice period of 90 days.

Fair Value Disclosure Requirements

		Fair Value Measurements Using:		
	12/31/2018	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable inputs (Level 2)	Significant Unobservable inputs (Level 3)
Investments by fair value level:				
Equity Securities				
- Domestic Common Stocks	$ 119,393,043	$ 119,393,043	$ -	$ -
- Domestic Stock Funds	215,090,919	215,090,919	-	-
- International Stock Funds	269,145,182	163,205,875	105,939,307	-
TOTAL EQUITY SECURITIES	603,629,144	497,689,837	105,939,307	-
Fixed Income Securities				
- Corporate Bonds / US Gov't	194,182,084	-	194,182,084	-
- Corporate Bond Funds	116,152,885	116,152,885	-	-
TOTAL FIXED INCOME SECURITIES	310,334,969	116,152,885	194,182,084	-
Futures				
- Futures Contracts	18,279	18,279	-	-
TOTAL FUTURES	18,279	18,279	-	-
TOTAL INVESTMENTS BY FAIR VALUE LEVEL	$ 913,982,392	$ 613,861,001	$ 300,121,391	$ -

Investments measured at the net asset value (NAV):

Alternative Investments	Net Asset Value	Unfunded Commitments	Redemption Frequency	Redemption Notice Period
- Long/Short Hedge Funds				
ABS INVESTMENT MANAGEMENT	$ 68,048,736	$ -	Quarterly	45 Days
PARAMETRIC DEF EQUITY FUND LLC	76,771,806	-	Monthly	5 Days
TOTAL ALTERNATIVE INVESTMENTS	144,820,542			
Private Equity				
- Venture Capital				
ADAMS STREET	99,576,028	17,752,055	Illiquid	--
MESIROW FINANCIAL	31,192,986	44,100,000	Illiquid	--
PROGRESSIVE INVESTMENT MANAGEMENT	333	-	Illiquid	--
SIGULER GUFF	52,715,564	25,796,637	Illiquid	--
- Infrastructure				
IFM INFRASTRUCTURE	78,214,405	-	Quarterly	90 Days
JP MORGAN INFRASTRUCTURE	68,821,630	-	Semi-Annually	90 Days
TOTAL PRIVATE EQUITY	330,520,946			
Real Estate and REIT's				
- Real Estate				
AMERICAN REALTY ADVISORS	42,121,156	-	Quarterly	30 Days
MORGAN STANLEY PRIME PROPERTY FUND	98,137,733	-	Quarterly	90 Days
UBS TRUMBULL R/E	43,166,014	-	Quarterly	60 Days
TOTAL REAL ESTATE	183,424,903			
TOTAL INVESTMENTS MEASURED AT NAV	658,766,391			
TOTAL INVESTMENTS	$ 1,572,748,783			

Fair Value Disclosure Requirements

	12/31/2017	Fair Value Measurements Using: Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable inputs (Level 2)	Significant Unobservable inputs (Level 3)
Investments by fair value level:				
Equity Securities				
- Common Stocks	$ 287,019,253	$ 287,019,253	$ -	$ -
- Domestic Stock Funds	141,402,139	42,081,598	99,320,541	-
- International Stock Funds	372,650,484	-	372,650,484	-
TOTAL EQUITY SECURITIES	801,071,876	329,100,851	471,971,025	-
Fixed Income Securities				
- Corporate Bonds / US Gov't	157,406,738	-	157,406,738	-
- Corporate Bond Funds	96,460,275	-	96,460,275	-
TOTAL FIXED INCOME SECURITIES	253,867,013	-	253,867,013	-
Futures				
- Futures Contracts	359,044	359,044	-	-
TOTAL FUTURES	359,044	359.044	-	-
TOTAL INVESTMENTS BY FAIR VALUE LEVEL	$ 1,055,297,933	$ 329,459,895	$ 725,838,038	$ -

Investments measured at the net asset value (NAV):

Alternative Investments	Net Asset Value	Unfunded Commitments	Redemption Frequency	Redemption Notice Period
- Hedge Funds				
ABS INVESTMENT MANAGEMENT	$ 72,595,332	$ -	Quarterly	45 Days
PARAMETRIC DEF EQUITY FUND LLC	93,846,296	-	Monthly	5 Days
TOTAL ALTERNATIVE INVESTMENTS	166,441,628			
Private Equity				
- Venture Capital				
ADAMS STREET	88,185,726	26,392,055	Illiquid	--
MESIROW FINANCIAL	18,249,928	13,500,000	Illiquid	--
PROGRESSIVE INVESTMENT MANAGEMENT	25,924	-	Illiquid	--
SIGULER GUFF	49,882,701	33,257,551	Illiquid	--
- Infrastructure				
IFM INFRASTRUCTURE	86,343,477	-	Quarterly	90 Days
JP MORGAN INFRASTRUCTURE	80,372,856	-	Semi-Annually	90 Days
TOTAL PRIVATE EQUITY	323,060,612			
Real Estate				
- Real Estate				
AMERICAN REALTY ADVISORS	41,104,606	-	Quarterly	30 Days
MORGAN STANLEY PRIME PROPERTY FUND	94,501,281	-	Quarterly	90 Days
UBS TRUMBULL R/E	42,044,760	-	Quarterly	60 Days
TOTAL REAL ESTATE	177,650,646			
TOTAL INVESTMENTS MEASURED AT NAV	667,152,886			
TOTAL INVESTMENTS	$ 1,722,450,819			

(4) Income Taxes –

Management submitted a supplemental report to the IRS in 2014, followed by a revised submission in 2017, that details any new compliance issues as well as proposed corrections. The Retirement System is awaiting direction from the IRS.

(5) Contributions Required and Contributions Made –

The Retirement System's funding policy provides for periodic County contributions at actuarially determined rates that, expressed as percentages of annual covered payroll, are sufficient to accumulate sufficient assets to pay benefits when due. Payroll contribution rates are determined using the Aggregate Entry Age Normal method of funding. The Retirement System also uses the level percentage of payroll method to amortize the unfunded liability over a 30 year period. The significant actuarial assumptions used to compute the contribution requirements are the same as those used to compute the pension benefit obligation.

County contributions totaling $61,177,816 and $53,660,695 were recorded in 2018 and 2017, respectively. The 2018 contributions were $2,406,763 above and the 2017 contributions were $191,549 above the Funding Contribution Amount ("FCA"), respectively. The County contributions do not include contributions made by the members. Member contributions were $12,651,528 for the year ended December 31, 2018 and $12,330,305 for the year ended December 31, 2017. The increase was due to the increase in the employee contribution percentages from 6.5%-8.3% of pensionable compensation in 2018 from 6.5%-8.1% in 2017. See the Schedule of Contributions in the Required Supplementary Information.

The 2018 and 2017 contributions reflected in the accompanying statements were actuarially determined as of January 1, 2017 and 2016. These amounts were included in the County's 2018 and 2017 budgets. The Retirement System's financial statements as of December 31, 2018 reflects the 2018 contributions that were fully paid in 2018. The financial statements as of December 31, 2017 reflects the unpaid portion of the 2017 contributions as a contribution receivable.

(6) Deposit and Investment Risk Disclosure –

As provided by state legislative act and County Ordinance, the Board has exclusive control and management responsibility of the Retirement System's funds and full power to invest the funds. In exercising its fiduciary responsibility, the Board is governed by the "prudent person" rule in establishing investment policy. The "prudent person" rule, requires the exercise of that degree of judgment, skill and care under the circumstances then prevailing which persons of prudence, discretion and intelligence exercise in the management of their own affairs, not in regard to speculation, but in regard to permanent disposition of their funds, considering the probable income as well as the probable safety of the principal. The Board has adopted a Statement of Investment Policy to formally document investment objectives and responsibilities. This policy establishes guidelines for permissible investments of the Retirement System. The Retirement System's investments are subject to various risks. Among them are credit risk, concentration of credit risk, custodial credit risk, interest rate risk, and foreign currency risk. Each of these risks is discussed in more detail below.

Concentration of Credit Risk –

Concentration of credit risk is a risk of loss that may be attributed to the magnitude of the Retirement System's investment in a single issuer, generally investments in any one issuer that represents five (5) percent or more of total investments. Investments issued or explicitly guaranteed by the U.S. Government and investments in mutual funds, external investment pools, and other pooled investments are excluded from this definition. The Retirement System has no investments in one issuer other than U.S. Government securities and mutual funds that exceed five (5) percent of the total investments.

Credit Risk –

Credit risk is the risk that an issuer or other counterparty to an investment will not fulfill its obligations. The credit risk of a debt instrument is measured by nationally recognized statistical rating agencies such as Moody's Investors Services ("Moody's"), Standard and Poor's ("S & P") and Fitch Ratings ("Fitch's"). With the exception of the Northern Trust Aggregate Bond Index Fund-portfolio, bonds purchased and owned in each portfolio must have a minimum quality rating of "Baa3" (Moody's) or "BBB-"(S & P or Fitch's). The average quality of each portfolio must be "A" or better. The fixed income securities for the Northern Trust Aggregate Bond Index Fund portfolio should have a minimum quality rating of "A", with the exception of 15% of the portfolio which may have a minimum quality rating of "BBB". Moody's quality rating of "BAA3" or above is considered investment grade. Of the $15.9 million not rated by Moody's as of December 31, 2018, $11.3 million was rated by S & P as investment grade ("BBB-" or higher). As of December 31, 2018, $4.6 million was not rated by S & P or Moody's. Of the $7.9 million not rated by Moody's as of December 31, 2017, $7.3 million was rated by S & P as investment grade ("BBB-" or higher). As of December 31, 2017, $0.6 million was not rated by S & P or Moody's. The credit quality ratings of investments in fixed income securities by Moody's as of December 31, 2018, and 2017, are as follows: (amounts are in thousands of dollars)

Moody's Quality Ratings	12/31/2018 Fair Value	12/31/2017 Fair Value
AAA	$ 32,409	$ 66,712
AA1	4,317	4,701
AA2	5,082	5,392
AA3	3,766	3,751
A1	5,888	4,518
A2	6,654	3,072
A3	8,850	9,199
BAA1	15,882	10,368
BAA2	7,310	5,817
BAA3	7,097	3,734
BA1	6,218	3,639
BA2	3,983	2,430
BA3	8,350	7,374
B1	2,115	2,109
B2	472	354
NR	15,888	7,879
Total Credit Risk Fixed Income Securities	**$ 134,281**	**$ 141,049**
U.S. Government and Agencies	59,901	16,358
NT Agg Bond Index Fund (Not Rated)	116,153	96,460
Total Investment in Fixed Income	**$ 310,335**	**$ 253,867**

Custodial Credit Risk – Deposits and Investments –

Custodial credit risk is the risk that, in the event a financial institution or counterparty fails, the Retirement System will not be able to recover the value of its deposits, investments or securities. Investment securities are exposed to custodial credit risk if the securities are uninsured, are not registered in the Retirement System's name and are held by the counterparty.

No formal policy exists on custodial risk. However, substantially all assets of the Retirement System are held in its name. The Retirement System did not own any repurchase agreements as of December 31, 2018 or December 31, 2017.

As of December 31, 2018 and 2017, all deposits with banks are fully insured by the Federal Depository Insurance Corporation or the State Deposit Guarantee Fund.

The following table presents the Retirement System's total cash, deposits and cash equivalents as of December 31, 2018 and December 31, 2017: (amounts are in thousands of dollars)

Schedule of Cash and Cash Equivalent Investments

	12/31/18		12/31/17	
	Carrying Value	Bank Balance	Carrying Value	Bank Balance
Cash held by various investment managers..........................	$ 46,297	$ 46,297	$ 61,717	$ 61,717
Deposits with banks..	1,967	2,586	4,232	4,777
Total Deposits...	**$ 48,264**	**$ 48,883**	**$ 65,949**	**$ 66,494**

The difference between the carrying value and bank balances are due to outstanding checks and deposits not yet processed by the bank.

Foreign Currency Risk –

Foreign currency risk is the risk that changes in currency exchange rates will adversely affect the fair value of an investment or deposit.

This footnote is a required disclosure when the Retirement System directly owns investments denominated in a foreign currency. As of December 31, 2018, and 2017, the Retirement System directly owned approximately $0 dollars and $42,900 dollars in investments denominated in foreign currencies, respectively.

Interest Rate Risk –

Interest rate risk is the risk that changes in interest rates will adversely affect the fair market value of an investment. Duration is a measure of an investment's sensitivity to changes in interest rates. The higher the duration, the greater the changes in fair value when interest rates change. The Option-Adjusted Duration for a security is the percentage price sensitivity to interest rates changes of 100 basis points (or 1.0%), as of December 31, 2018 and 2017. For example, an Option-Adjusted Duration of 5.20 means that the price of the security should fall approximately 5.20% for a 1.0% rise in the level of interest rates. Conversely, the price of a security should rise approximately 5.20% for a 1.0% fall in the level of interest rates. Interest rate changes will affect securities with negative durations in the opposite direction. The Option-Adjusted Duration method of measuring duration takes into effect the embedded options on cash flows.

The Retirement System does not have a formal investment policy that limits investment maturities as a means of managing exposure to losses arising from increasing interest rates with the exception of the cash equivalent portfolio. The investment policy limits the duration of individual securities held in the cash equivalent portfolio to 2.5 years. In addition, the duration of the entire cash equivalent portfolio should be between 1 and 2 years.

As of December 31, 2018 and 2017, the Retirement System had the following Option-Adjusted Durations for the fixed income investments: (amounts are in thousands of dollars)

	12/31/18	
Investment Type	**Fair Value***	**Option Adjusted Duration**
Asset Backed Securities	$ 8,882	2.79
Commercial Mortgage-Backed	14,274	3.59
Corporate Bonds	87,700	6.22
Government Agencies	6,825	5.01
Government Bonds	12,497	12.21
Government Mortgage Backed Securities	49,527	4.08
Municipal/Provincial Bonds	3,486	12.18
Non-Government Backed C.M.O.s	151	3.02
Other *	10,840	
	194,182	
NT Agg Bond Index Fund	116,153	
Total	**$ 310,335**	

* For 2018, this represents Fixed Income where the effective duration is unavailable—$1,041 in Government Mortgage Backed Securities, $9,791 in Municipal/Provincial Bonds, and $8 in Non-Government Backed C.M.O.s.

	12/31/17	
Fixed Income Sector	**Fair Value***	**Option Adjusted Duration**
ABS-Car Loan	$ 1,971	0.92
ABS-Credit Cards	1,022	0.96
ABS-Small Business Administration	8,933	5.02
Aerospace & Defense	1,428	4.57
Agency for Int'l. Devel. Backed Debt	369	6.80
Banking & Finance	10,761	5.01
Capital Goods	2,110	3.85
Chemicals	1,678	4.91
CMBS - Conduit	12,287	4.25
Commercial Services & Supp.	4,348	11.92
Communications	1,378	3.29
FHLMC Multiclass	752	4.91
FHLMC Pools	14,127	3.65
FNMA Pools	21,868	3.74
FNMA REMIC	1,208	3.47
Food Beverage & Tobacco	205	5.40
Food Products	851	6.90
GNMA Multi Family Pools	381	4.13
GNMA Single Family Pools	1,007	4.03
Health Care	7,054	11.25
Household Products	593	5.75
Industrial	3,152	3.50
Insurance	627	4.20
Oil & Gas	7,260	4.91
Other Corporate Bonds	375	3.16
Other U.S. Govt. Obligations	627	4.10
Paper & Forest Products	374	7.78
Pvt Placements-More than 1 yr	7,144	3.81
Real Estate	31	6.66
REITS	4,798	4.84
Taxable Municipals	10,362	8.75
Technology	2,974	4.88
Transportation	1,656	4.31
U.S. Governments	16,203	10.23
Utility-Electric	4,743	7.91
Utility-Gas	353	4.48
Utility-Telephone	2,131	10.91
Whole Loan - CMO	9	-
Whole Loan - Re-securitization	257	0.11
Other*	96,460	
Total	**$ 253,867**	

* For 2017, this represents $99,717 in units of participation, $510 in FNMA REMIC, $1,850 in Utilities, $1,903 in Whole Loans, and ($7,520) in Cash transfer to be invested.

Securities Lending –

Section 201.24 (9.1) of the General Ordinances of Milwaukee County and Board policies permit ERS to lend its securities to broker-dealers and other entities with a simultaneous agreement to return the collateral for the same securities in the future. ERS participates in such a securities lending program through its custodian, Northern Trust, acting as ERS's securities lending agent. ERS requires collateral from the borrower in the form of cash or securities. Collateral for domestic issues is set at 102% of the fair value of the securities loaned at the time of the initial transaction. If the value falls to 100% of the fair value of the securities loaned, additional collateral is obtained to reestablish collateral at 102% of the fair value of securities loaned. Collateral for international securities is maintained at a level of 105% of the fair value of securities loaned at all times. The securities lending program guidelines attempt to preserve capital while earning a moderate rate of return. Earnings from securities lending, after all fees are paid, are split on a percentage basis with the custodian. For 2018 and 2017, the net investment income realized from security lending was $89,092 and $78,142 respectively.

ERS also invested in several commingled funds managed by Northern Trust that participated in securities lending programs. The earnings and losses attributable to the commingled funds' securities lending programs are combined with the commingled funds' performance and are not reported separately in ERS's financial statements.

Securities loaned and the collateral held were as follows: (amounts are in thousands of dollars)

	As of December 31			
	2018		2017	
Securities Lent for Cash Collateral	**Securities Lent**	**Collateral**	**Securities Lent**	**Collateral**
Fixed income	$ 15,163	$ 15,463	$ 9,063	$ 9,280
Domestic stocks	17,736	18,071	14,893	15,211
Subtotal	**32,899**	**33,534**	**23,956**	**24,491**
Securities Lent for Securities Collateral				
Fixed income	-	-	4,535	4,718
Domestic stocks	-	-	858	876
Subtotal	**-**	**-**	**5,393**	**5,594**
Grand Total	**$ 32,899**	**$ 33,534**	**$ 29,349**	**$ 30,085**
Percent Collateral to Securities Loaned		**101.93%**		**102.51%**

The collateral received from securities lending transactions are recorded as assets at quoted fair value as of the financial statement date. The Retirement System records an identical amount as a liability, representing the obligation of the Retirement System to return the collateral at the time the borrower of the Retirement System's securities return those securities.

The collateral received from securities lending transactions includes cash (in thousands) of approximately $33,534 and $24,491 and U.S. Treasury securities, Domestic stocks, and REIT's of approximately $0 and $5,594 for the years ended December 31, 2018 and 2017, respectively. Under the terms of the securities lending agreement, the Retirement System has the right to sell or pledge the cash collateral. The non-cash collateral in the amounts of approximately $0 and $5,594 for the years ended December 31, 2018 and 2017, respectively, is controlled by the custodian and, correspondingly, not reflected in the Statements of Fiduciary Net Position.

At year-end, the Retirement System has no credit risk exposure to borrowers because the amounts the Retirement System owes the borrowers exceed the amounts the borrowers owe the Retirement System. The contract with the Retirement System's custodian requires it to indemnify the Retirement System if a borrower fails to return the securities (and if the collateral is inadequate to replace the securities lent) or fails to pay the Retirement System for income distributions by the securities' issuers while the securities are on loan.

(7) Financial Instruments with Off-Balance Sheet Risks –

A currency forward is a contractual agreement between two parties to pay or receive amounts of foreign currency at a future date in exchange for another currency at an agreed-upon exchange rate. Forward commitments are entered into with the foreign exchange department of a bank located in a major money market. These transactions are entered into in order to hedge risks from exposure to foreign currency rate fluctuations. Recognition of realized gain or loss depends on whether the currency exchange rate has moved favorably or unfavorably to the contract holder upon termination of the contract. Prior to termination of the contract, the Retirement System records the amount receivable or payable at fair value, with the unrealized gain or loss reported as a component of net appreciation in fair value. All contracts are short-term in duration and mature within 90 days.

The Retirement System did not hold any financial instruments with off-balance sheet risk as of December 31, 2018 and December 31, 2017.

ERS invests in financial futures contracts in order to improve the performance of the fund. The Retirement System purchases contracts that approximate the amount of cash held by US equity investment managers and cash used to pay benefits and expenses. Financial futures contracts are agreements to buy or sell a specified amount at a specified delivery or maturity date for an agreed upon price.

The market values of the futures contracts vary from the original contract price. A gain or loss is recognized and paid to or received from the clearinghouse. Financial futures represent an off balance sheet obligation, as there are no balance sheet assets or liabilities associated with those contracts. The cash or securities to meet these obligations are held in the investment portfolio. All contracts are short-term in duration and mature within 90 days.

ERS is subject to credit risk in the event of non-performance by counter parties to financial futures and forward contracts. ERS generally only enters into transactions with credit-worthy institutions. The Retirement System is exposed to market risk, the risk that future changes in market conditions may make an instrument less valuable. Exposure to market risk is managed in accordance with risk limits set by ERS management and by buying or selling futures or forward contracts. The cash or securities to meet these obligations are held in the investment portfolio.

The futures contracts held by the Retirement System are as follows: (amounts are in thousands of dollars)

	As of December 31			As of December 31	
	2018	2017		2018	2017
			Cash Used to Pay Benefits		
US Equity Managers			**and Expenses**		
Cash Held			Cash Held	$ 31,202	$ 29,361
US Equity Investment Managers	$ 15,096	$ 30,962			
			Futures Purchased		
			Barclays AGG (Fixed Income)	10,228	13,245
Futures Purchased			S&P 500 (US Equity)	9,770	16,324
S&P 500 (US Equity)	11,023	13,915	MSCI EAFE (International Equity)	5,405	6,852
Futures Above\(Below) Cash	(4,073)	(17,047)	Total Futures Purchased	25,403	36,421
			Futures Above\(Below) Cash	(5,799)	7,060
Market Value	$ 18	$ 359	Market Value	-	-
			Total Market Value	$ 18	$ 359

(8) Commitments and Contingencies –

The Retirement System is involved in litigation and certain other disputes arising during the normal course of operations. Management does not believe the settlement of such matters will have a material impact on the Retirement System's financial statements.

(9) OBRA 1990 Retirement System of the County of Milwaukee –

The County established the OBRA 1990 Retirement System of the County of Milwaukee ("OBRA") to cover seasonal and certain temporary employees who are not enrolled in the Retirement System. Assets of the OBRA system are commingled for investment purposes with the assets of the Retirement System. The assets of the Retirement System are legally available to pay benefits of either the ERS or OBRA and all assets have been commingled. The Retirement System and OBRA are considered a single plan for financial reporting purposes.

Net assets identified for OBRA benefits as of December 31, 2018 and 2017 were as follows:

Statement of Fiduciary Net Position

	(Unaudited)	
Assets	**2018**	**2017**
Cash	**$ 36,821**	**$ 69,994**
Assets held by Retirement System.....	**2,912,055**	**2,148,099**
Total assets	**2,948,876**	**2,218,093**
Liabilities		
Taxes Payable	**(5,415)**	**(12,822)**
Net position restricted for pensions.....	**$ 2,943,461**	**$ 2,205,271**

Changes in plan net position available for benefits for OBRA for the years ended December 31, 2018 and 2017, were as follows:

Statements of Change in Fiduciary Net Position

	(Unaudited)	
	2018	**2017**
Contributions from the County	$ 836,000	$ 833,000
Contributions from the County-Admin	68,000	
Investment income	346,862	242,489
Investment and administrative expenses	(228,372)	(204,323)
Benefits paid	(284,300)	(179,481)
Net increase in net position restricted for pensions	**$ 738,190**	**$ 691,685**

As of December 31, 2018 and 2017, respectively, there were 5,801 and 5,712 participants with vested benefits in OBRA. The total pension liability of OBRA at December 31, 2018 and 2017, was $6,582,278 and $5,806,199, respectively, leaving net assets available less than the total pension liability of ($3,638,817) and ($3,600,928), respectively. These amounts are not reflected in the required supplementary information tables that follow the notes to the financial statements.

(10) Net Pension Liability

The components of the net pension liability of the Retirement System and OBRA at December 31, 2018 and December 31, 2017 were as follows:

ERS	2018	2017
Total pension liability......	$ 2,293,063,354	$ 2,307,848,750
Plan fiduciary net position......	(1,618,219,370)	(1,786,408,565)
Net pension liability......	**$ 674,843,894**	**$ 521,440,185**
Plan fiduciary net position as a percentage of the total pension liability......	**70.6%**	**77.4%**

OBRA	2018	2017
Total pension liability......	$ 6,582,278	$ 5,806,199
Plan fiduciary net position......	(2,943,461)	(2,205,271)
Net pension liability......	**$ 3,638,817**	**$ 3,600,928**
Plan fiduciary net position as a percentage of the total pension liability......	**44.7%**	**38.0%**

Actuarial assumptions—The last actuarial valuation was performed as of January 1, 2018, and these amounts were used to roll forward the total pension liability for the year ended December 31, 2018, and was determined using the following actuarial assumptions, applied to all prior periods included in the measurement:

Valuation date	1/1/2018
Actuarial cost method	Entry Age Normal—Level Percentage of Pay
Asset valuation method	10-year smoothed market
Amortization methods	For pension expense; the difference between expected and actual liability experience and changes of assumptions are amortized over the average of the expected remaining service lives of all members. The difference between projected and actual earnings is amortized over a closed period of five years.
Inflation Assumption	3.00%
Mortality Table	Healthy pensioners: The sex-distinct UP-2014 Mortality Table with Projection scale AA to 2012 and then fully generational thereafter using scale AA. Active members: 70% of the rates applicable to healthy pensioners.
Experience study	The actuarial assumptions used for ERS were based on the results of an actuarial experience study for the period January 1, 2012 through December 31, 2016. The actuarial assumptions used for OBRA were based on the results of an actuarial experience study for the period January 1, 2012 through December 31, 2016.

The long-term expected rate of return on pension plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of position 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. Best estimates of arithmetic real rates of return for each major asset class included in the pension plan's target asset allocation as of December 31, 2018 and 2017, respectively, are summarized in the following table:

	2018		2017	
Asset Class	Policy	Long-term Expected Real Rate of Return *	Policy	Long-term Expected Real Rate of Return *
Fixed income	**18.00%**	**1.90%**	**18.00%**	**0.80%**
Domestic common and preferred stocks	**25.00%**	**5.60%**	**25.00%**	**5.20%**
International common and preferred stocks ...	**20.00%**	**5.80%**	**20.00%**	**5.50%**
Long/Short hedge funds	**8.50%**	**4.30%**	**8.50%**	**4.20%**
Infrastructure	**8.50%**	**5.50%**	**8.50%**	**5.60%**
Real estate and REIT's	**10.00%**	**5.20%**	**10.00%**	**5.30%**
Private equity	**10.00%**	**8.80%**	**10.00%**	**9.00%**
Cash & cash equivalents	**0.00%**	**0.00%**	**0.00%**	**0.00%**
	100.00%		**100.00%**	

* Provided by Marquette Associates

Discount rate — The discount rate used to measure the total pension liability was 7.75 percent. The projection of cash flows used to determine the discount rate assumed that the Retirement System's contributions will continue to follow the current funding policy. Based on those assumptions, the Retirement System's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members.

Sensitivity of the net pension liability to changes in the discount rate — The following presents the 2018 net pension liability of the Retirement System, calculated using the discount rate of 7.75 percent, as well as what the Retirement System and OBRA's net pension liability would be if it were calculated using a discount rate that is 1-percentage-point lower (6.75 percent) or 1-percentage-point higher (8.75 percent) than the current rate:

2018	1% Decrease (6.75%)	Current Discount (7.75%)	1% Increase (8.75%)
ERS' net pension liability..	$ 897,269,336	$ 674,843,894	$ 486,917,713
OBRA's net pension liability.......................................	$ 4,929,753	$ 3,638,817	$ 2,687,433

The following presents the 2017 net pension liability of the Retirement System, calculated using the discount rate of 7.75 percent, as well as what the Retirement System and OBRA's net pension liability would be if it were calculated using a discount rate that is 1-percentage-point lower (6.75 percent) or 1-percentage-point higher (8.75 percent) than the current rate:

2017	1% Decrease (6.75%)	Current Discount (7.75%)	1% Increase (8.75%)
ERS' net pension liability..	$ 747,699,917	$ 521,440,185	$ 330,647,176
OBRA's net pension liability.......................................	$ 4,564,006	$ 3,600,928	$ 2,852,346

11) Subsequent Events

The Retirement System has evaluated subsequent events occurring through July 15, 2019, the date the financial statements were available to be issued for events requiring recording or disclosure in the Retirement System's financial statements. Management feels that no material events occurred that would require disclosure, except for the following.

In January 2019, the Pension Board adopted the following changes:

- The Pension Board voted unanimously to approve the revisions to the Investment Policy Statement and asset allocation targets as proposed by Marquette Associates.

In February 2019, the Pension Board adopted the following changes:

- The Pension Board voted unanimously to reinvest the dividends from IFM and JP Morgan to those infrastructure portfolios.

- The Pension Board voted unanimously to approve TCW Group as ERS's new Emerging Market Debt investment manager.

In March 2019, the following events occurred:

- On March 19, 2019 the Wisconsin State Supreme Court ruled in favor of the plaintiffs in the Milwaukee District Council 48 v. Milwaukee County matter. Based on the Court's ruling, any member of District Council 48 (DC48) who was still employed with the County on September 29, 2011 and began pension-qualifying County employment before January 1, 2006, may retire under the Rule of 75 described in Milwaukee County Ordinance § 201.24(4.1)(2)(a). The Rule of 75 means that an eligible member may receive retirement benefit when their age plus service credit equal or exceed 75.

- On March 24, 2019 the Milwaukee County Board of Supervisors adopted a resolution/ordinance to amend Section 201.24 of the Milwaukee County Code of General Ordinances regarding the Employees' Retirement System to improve the accuracy of benefit calculations, and to provide procedures to resolve payment errors.

    ◊ For all new applications filed on or after July 1, 2019, all retirements, including disability retirements, as well as any other benefit enhancements, shall only commence on the first day of the month immediately following a member's last day of employment, and any retirement or annuity benefit payable to a member or beneficiary shall terminate upon the last day of the month of the date of death of retiree or beneficiary under option.

    ◊ Section 201.24(8.24) is created for Correction of Underpayment and Overpayment of Benefits, which details the process to be followed when underpayments and overpayments are discovered, including notice, overpayment collection options, waiver of repayment, collection methods, interest, de minimis, and claim period.

In April 2019, the following event occurred:

- On April 25, 2019 the Milwaukee County Board of Supervisors adopted a resolution/ordinance to eliminate the payment from the Employees' Retirement System Trust to the County for administrative expenses in 2018. These expenses are to be reported as Milwaukee County Employer Contributions—Administrative paid in the month they are incurred.

REQUIRED SUPPLEMENTARY INFORMATION

SCHEDULE OF CHANGES IN THE NET PENSION LIABILITY AND RELATED RATIOS

Last 5 Fiscal Years

ERS	2018	2017	2016	2015	2014
Total pension liability					
Service cost	$ 15,874,798	$ 15,190,699	$ 16,094,324	$ 15,740,283	$ 15,299,451
Interest	172,254,741	173,929,104	173,972,802	171,661,372	172,040,282
Changes in benefit terms	-	-	-	-	-
Differences between expected and actual experience	(751,483)	(2,919,790)	16,052,053	41,648,688	(17,331,161)
Changes in assumptions	-	63,931,243	-	-	-
Benefit payments including refunds of member contributions	(202,163,452)	(198,590,749)	(212,662,113)	(188,819,565)	(177,366,124)
Net change in total pension liability	(14,785,396)	51,540,507	(6,542,934)	40,230,778	(7,357,552)
Total pension liability—beginning	2,307,848,750	2,256,308,243	2,262,851,177	2,222,620,399	2,229,977,951
Total pension liability—ending	$ 2,293,063,354	$ 2,307,848,750	$ 2,256,308,243	$ 2,262,851,177	$ 2,222,620,399
Plan fiduciary net position					
Contributions—employer	$ 61,177,816	$ 53,660,695	$ 50,625,672	$ 39,080,593	$ 19,005,395
Contributions—member	12,651,528	12,330,305	12,143,510	9,324,866	10,051,605
Net investment income (loss)	(34,961,246)	252,828,178	110,336,000	39,451,296	96,725,837
Benefit payments, including refunds of member contributions	(202,163,453)	(198,590,749)	(212,662,113)	(188,819,564)	(177,366,124)
Administrative expenses	(4,893,840)	(5,502,195)	(4,912,501)	(5,465,123)	(5,066,956)
Other	-	-	-	-	-
Net change in plan fiduciary net pension	(168,189,195)	114,726,234	(44,469,432)	(106,427,932)	(56,650,243)
Total plan fiduciary net position—beginning	1,786,408,565	1,671,682,331	1,716,151,763	1,822,579,695	1,879,229,938
Total plan fiduciary net position—ending	$ 1,618,219,370	$ 1,786,408,565	$ 1,671,682,331	$ 1,716,151,763	$ 1,822,579,695
Net pension liability—ending	$ 674,843,984	$ 521,440,185	$ 584,625,912	$ 546,699,414	$ 400,040,704
Plan fiduciary net position as a percentage of total pension liability	70.6%	77.4%	74.1%	75.8%	82.0%
Covered-employee payroll	$ 189,451,404	$ 186,213,740	$ 194,871,557	$ 191,432,915	$ 188,605,492
Net pension liability as a percentage of covered-employee payroll	356.2%	280.0%	300.0%	285.6%	212.1%

The plan implemented GASB Statement No. 67 in the fiscal year 2014. Information calculated utilizing GASB 67 prior to fiscal year 2014 is not available.

(See independent auditor's report and notes to required supplementary information)

REQUIRED SUPPLEMENTARY INFORMATION

SCHEDULE OF CHANGES IN THE NET PENSION LIABILITY AND RELATED RATIOS

Last 5 Fiscal Years

OBRA	2018	2017	2016	2015	2014
Total pension liability					
Service cost	$ 110,678	$ 110,678	$ 95,763	$ 111,283	$ 97,190
Interest	447,541	370,220	320,348	298,507	297,724
Changes in benefit terms	-	-	-	-	-
Differences between expected and actual experience	502,160	676,340	405,683	103,770	(233,437)
Changes in assumptions	-	222,590	-	-	-
Benefit payments including refunds of member contributions	(284,300)	(179,481)	(244,349)	(206,452)	(126,636)
Net change in total pension liability	776,079	1,200,347	577,445	307,108	34,841
Total pension liability—beginning	5,806,199	4,605,852	4,028,407	3,721,299	3,686,458
Total pension liability—ending	$ 6,582,278	$ 5,806,199	$ 4,605,852	$ 4,028,407	$ 3,721,299
Plan fiduciary net position					
Contributions—employer	$ 904,000	$ 833,000	$ 819,000	$ 440,000	$ 440,000
Contributions—member	-	-	-	-	-
Net investment income	346,862	242,489	87,752	37,449	98,786
Benefit payments, including refunds of member contributions	(284,300)	(179,481)	(244,349)	(206,452)	(126,636)
Administrative expenses	(228,372)	(204,323)	(459,362)	(520,844)	(454,752)
Other	-	-	-	-	-
Net change in plan fiduciary net pension	738,190	691,685	203,041	(249,847)	(42,602)
Total plan fiduciary net position—beginning	2,205,271	1,513,586	1,310,545	1,560,392	1,602,994
Total plan fiduciary net position—ending	$ 2,943,461	$ 2,205,271	$ 1,513,586	$ 1,310,545	$ 1,560,392
Net pension liability—ending	$ 3,638,817	$ 3,600,928	$ 3,092,266	$ 2,717,862	$ 2,160,907
Plan fiduciary net position as a percentage of total pension liability	44.7%	38.0%	32.9%	32.5%	41.9%
Covered-employee payroll	$ 3,282,100	$ 3,640,233	$ 3,926,027	$ 3,925,214	$ 3,477,968
Net pension liability as a percentage of covered-employee payroll	110.9%	98.9%	78.8%	69.2%	62.1%

The plan implemented GASB Statement No. 67 in the fiscal year 2014. Information calculated utilizing GASB 67 prior to fiscal year 2014 is not available.

(See independent auditor's report and notes to required supplementary information)

SCHEDULE OF COUNTY CONTRIBUTIONS
Last 10 Fiscal Years

ERS

FYE December 31	2018	2017	2016	2015	2014
Actuarially Determined Contribution (ADC)	$71,422,581	$65,799,451	$63,067,396	$57,853,824	$ 29,564,925
Contributions related to ADC	73,829,344	65,991,000	62,769,182	48,405,459	29,057,000
Contribution deficiency/(excess)	(2,406,763)	(191,549)	298,214	9,448,365	507,925
Covered Employee Payroll	189,451,404	186,213,740	194,871,557	191,432,915	188,605,492
Contributions as a percentage of Covered Employee Payroll	38.97%	35.44%	32.21%	25.29%	15.41%

FYE December 31	2013	2012	2011	2010	2009
Actuarially Determined Contribution (ADC)	$ 32,136,934	$28,406,232	$ 29,621,216	$ 29,529,322	$ 30,355,535
Contributions related to ADC	30,952,781	27,407,519	31,494,090	31,290,863	457,789,154
Contribution deficiency/(excess)	1,184,153	998,713	(1,872,874)	(1,761,541)	(427,433,619)
Covered Employee Payroll	189,131,711	190,747,973	221,647,443	237,040,117	233,820,179
Contributions as a percentage of Covered Employee Payroll	16.37%	14.37%	14.21%	13.20%	195.79%

OBRA

FYE December 31	2018	2017	2016	2015	2014
Actuarially Determined Contribution (ADC)	$577,392	$804,281	$826,567	$ 770,384	$ 373,500
Contributions related to ADC	904,000	833,000	819,000	440,000	440,000
Contribution deficiency/(excess)	(326,608)	(28,719)	7,567	330,384	(66,500)
Covered Employee Payroll	3,282,100	3,640,233	3,926,027	3,925,214	3,477,968
Contributions as a percentage of Covered Employee Payroll	27.54%	22.88%	20.86%	11.21%	12.65%

FYE December 31	2013	2012	2011	2010	2009
Actuarially Determined Contribution (ADC)	$ 388,625	$ 446,452	$ 807,028	$ 716,439	$ 660,925
Contributions related to ADC	360,000	880,000	2,022,000	786,000	660,925
Contribution deficiency/(excess)	28,625	(433,548)	(1,214,972)	(69,561)	-
Covered Employee Payroll	7,735,644	8,939,076	8,936,146	6,901,021	8,498,484
Contributions as a percentage of Covered Employee Payroll	4.65%	9.84%	22.63%	11.39%	7.78%

Notes to Schedules

Valuation date: Actuarially Determined Contributions (ADC) are calculated as of the January 1 of the fiscal year in which the contribution is made. That is, the contribution calculated for fiscal year ending December 31, 2018 is from the January 1, 2018 actuarial valuation. The contributions related to the ADC are a combination of employee contributions made during the fiscal year and the lump sum employer contribution made for the year.

The methods and assumptions used to calculate the Actuarially Determined Contributions are in the respective January 1 actuarial valuation reports. Prior to fiscal year ending December 31, 2014 the ADC shown is calculated based upon GASB No 25.

(See independent auditors' report and notes to required supplementary information)

REQUIRED SUPPLEMENTARY INFORMATION
SCHEDULE OF INVESTMENT RETURNS
Last 5 Fiscal Years

Fiscal Year	Total Investment Plan Assets	Annual Money-Weighted Rate of Return, Net of Investment Expense
2018	$ 1,572,748,783	(2.4%)*
2017	$ 1,722,450,819	15.8% *
2016	$ 1,610,341,450	6.9% *
2015	$ 1,634,904,202	2.2% *
2014	$ 1,715,303,583	5.3% *

* Calculated by Marquette Associates, Inc.
The plan implemented GASB Statement No. 67 in the fiscal year 2014.
Information calculated utilizing GASB 67 prior to fiscal year 2014 is not available.

(See independent auditors' report and notes to required supplementary information)

1. This information presented is the required supplementary schedules, for pension funding purposes, was based on the actuarial valuations at the dates indicated. Additional information as of the latest actuarial valuation is as follows:

Valuation date	1/1/2018
Actuarial cost method	Aggregate Entry Age Normal
Asset valuation method	10-year smoothed market
Amortization methods:	
Contribution variance	Level dollar, closed
Administrative expenses	Level dollar, closed
All other unfunded liability	Level percent of payroll, closed
Remaining amortization periods:	
Contribution variance	5 years
Administrative expenses	10 years
All other unfunded liability	30 years
Actuarial Assumptions:	
Investment rate of return	7.75%
Projected salary increases	3.50% to 6.21%, varying by age, including inflation and productivity
Post-retirement benefit increases	2%, simple

2. The total pension liability contained in the Schedule of Net Pension Liability and Related Ratios was provided by the Retirement System and OBRA's actuary. The net pension liability is measured as the total pension liability less the amount of the fiduciary net position of the Retirement System and OBRA.

3. The required employer contributions and percent of those contributions actually made are presented in the Schedule of Contributions.

(See independent auditors' report and notes to required supplementary information)

TEN-YEAR HISTORICAL TREND INFORMATION

REVENUES BY SOURCE AND EXPENSES BY TYPE

(UNAUDITED)

Revenues by Source

Fiscal Year	Participant Contributions(1a)	County Contributions (1b)	Investment Income (Loss)(2)	Total
2018	$ 12,651,528	$ 61,177,816	($ 31,954,618)	$ 41,874,726
2017	12,330,305	53,660,695	256,014,405	322,005,405
2016	12,143,510	50,625,672	112,917,408	175,686,590
2015	9,324,866	39,080,593	42,890,830	91,296,289
2014	10,051,605	19,005,395	99,655,955	128,712,955
2013	8,954,525	21,998,256	260,834,765	291,787,546
2012	9,040,652	18,410,496	186,091,377	213,542,525
2011	3,313,807	28,275,594	11,186,780	42,776,181
2010	75,584	32,893,562	210,905,464	243,874,610
2009	131,766	457,789,154	319,997,171	777,918,091

Expenses by Type

Fiscal Year	Benefits(3)	Investment and Administrative Expenses (4)	Withdrawals	Total
2018	$ 200,240,292	$ 7,900,468	$ 1,923,161	$ 210,063,921
2017	196,852,807	8,688,421	1,737,942	207,279,170
2016	211,163,822	7,493,909	1,498,291	220,156,022
2015	187,512,204	8,904,657	1,307,360	197,724,221
2014	176,263,605	7,997,073	1,102,520	185,363,198
2013	172,583,835	7,963,552	444,848	180,992,235
2012	178,557,030	8,445,509	212,245	187,214,784
2011	187,460,030	8,305,984	70,123	195,836,137
2010	162,664,454	8,445,062	138,136	171,247,652
2009	145,306,937	7,846,655	38,583	153,192,175

FOOTNOTES ARE IN THOUSANDS OF DOLLARS

(1a) Participant contributions are calculated by the actuary and are a percentage of the employees' pensionable compensation.

(1b) County contributions are set during the County's budget process and are made at the discretion of the County Board.

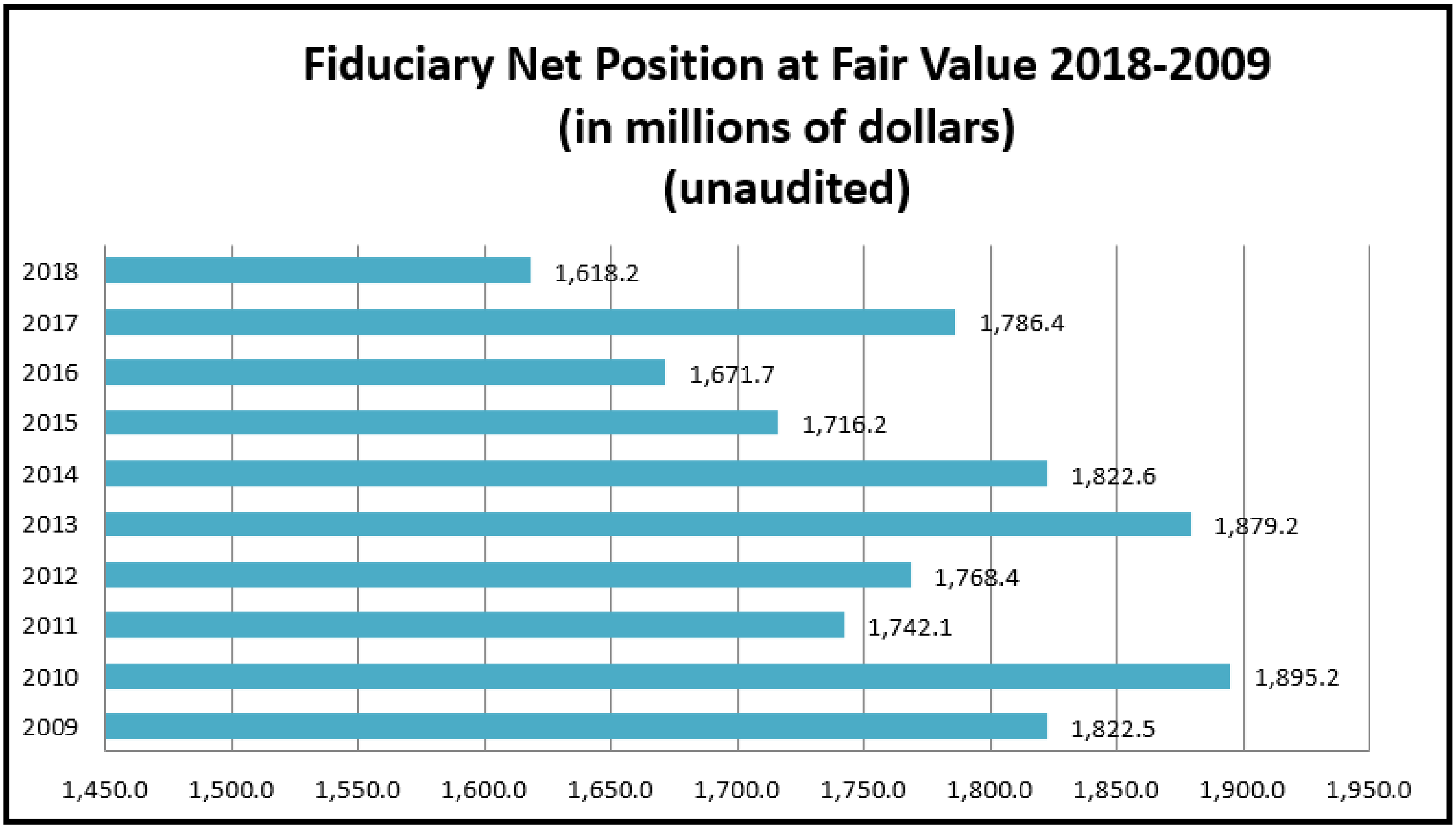
(2) Includes interest and dividends, net appreciation (depreciation) of fair value, net security lending income and other income.

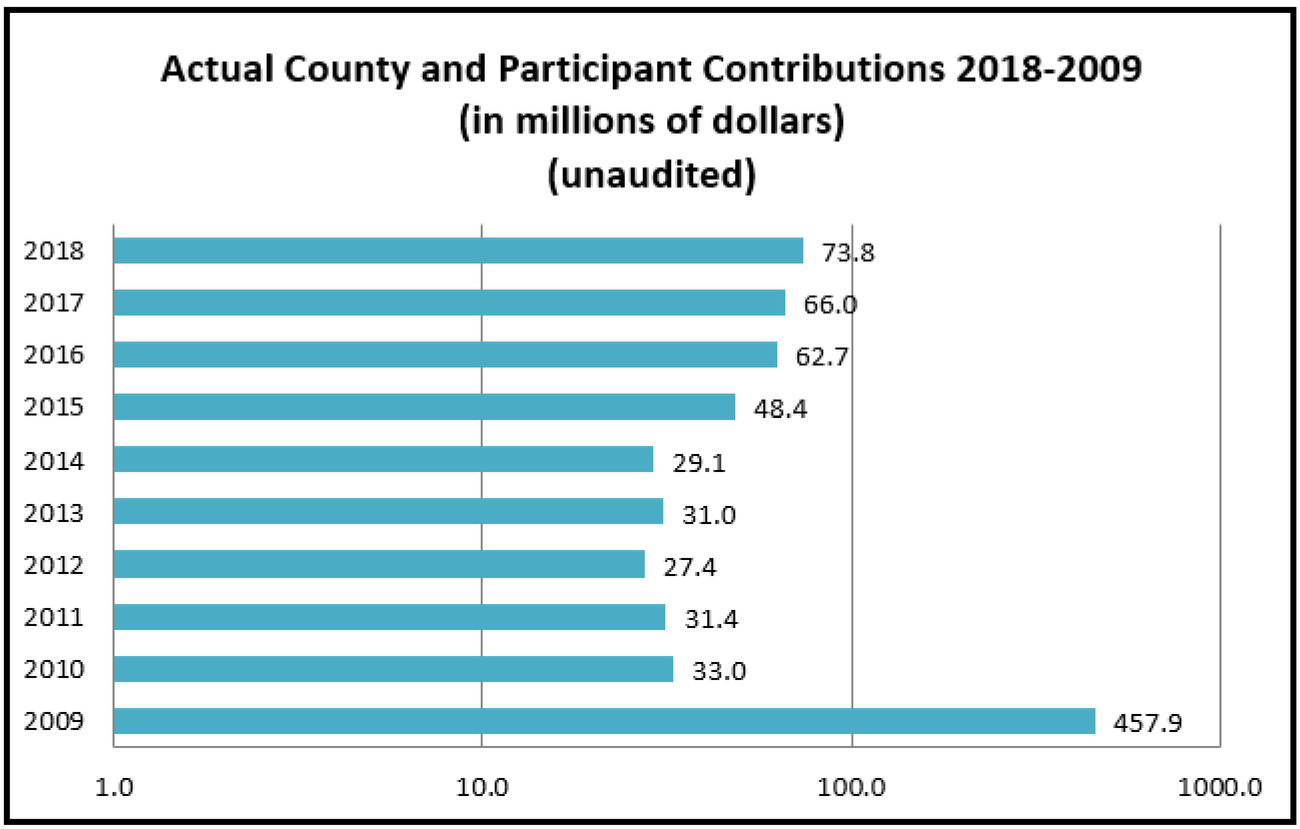
(3) Included in the benefits for 2018, 2017, 2016, 2015, 2014, 2013, 2012, 2011, 2010, and 2009 are back drop lump-sum payments of $20.7, $19.9, $24.4, $19.8, $12.6, $11.7, $21.7, $38.8, $20.3, and $8.7, respectively.

(4) There was a increase in investment and administrative expenses of $53.8 from the past ten years ago, due mainly to the following expenses:

- Outside consultants increased in 2009, and 2015 to support retirement systems. In 2018, outside consultants have decreased ($52.7) from 2009, and decreased ($370.0) from 2017;
- Milwaukee County OCC has taken over more involvement in pension litigation, resulting in a decrease in outside legal fees of ($222.7) from 2009, and a decrease of ($271.0) from 2017; Milwaukee County OCC costs increased $97.0 due to more involvement in 2018;
- Salaries and wages/benefits have increased by $193.2, due to an increase in staff/benefits;
- Investment Manager Fees decreased ($500.6), due to an increase of index funds.
- Outside Services, Computer system expenses and depreciation of $421.1. (Note: the plan started using its current computer system as of 1/1/09.)

(See independent auditors' report)





(See independent auditors' report)

ACTIVE MEMBERSHIP STATISTICS
(unaudited)

	2018	2017
Members as of January 1............................	3,502	3,488 *
Changes During the Year:		
New enrollments.................................	488	494
Terminations..	(170)	(275)
Retirements...	(142)	(157)
Deaths in active service........................	(3)	(4)
Withdrawals	(250)	(44)
Data adjustments.................................	-	-
Members as of December 31.......................	3,425	3,502 *

* The 2017 total previously included vested inactive members of 1,394 and 1,371 as of the beginning and end of the year, respectively, which has been eliminated from this table in order to report only active membership statistics.

RETIREMENTS AND SURVIVORS STATISTICS (unaudited)

	Retirements Granted								Survivors & Benefi-ciaries	Total
	Maximum Pension	Option								
		Refund	100%	75%	50%	25%	10-yr.	Other		
January 1, 2018	**3,321**	**250**	**1,487**	**278**	**953**	**520**	**272**	**47**	**909**	**8,037**
Changes During the Year:										
Adjustments (actuary)*	(7)	7	(2)	-	(2)	-	1	-	-	(3)
Retirements	100	1	54	18	33	15	16	-	78	315
Benefits Expired	-	-	-	-	-	-	-	-	(3)	(3)
Pensioner deaths	(100)	(28)	(51)	(6)	(42)	(4)	(4)	(5)	(64)	(304)
December 31, 2018	**3,314**	**230**	**1,488**	**290**	**942**	**531**	**285**	**42**	**920**	**8,042**

*Adjustments as a result of reclassifications made to beginning balances by the actuary

(See independent auditors' report)

LIST OF CONSULTANTS
as of December 31, 2018

Legal Advisors
Milwaukee County
Corporation Counsel
Margaret Daun

Reinhart, Boerner, Van Deuren S.C.
Steven D. Huff, Secretary of the Pension Board
Milwaukee, Wisconsin

Actuary
Segal Consulting
Chicago, Illinois

Disbursing Agent
County Treasurer

Custodian/Securities Agent
The Northern Trust Company
Chicago, Illinois

Medical Board
Managed Medical Review Organization, Inc.
Novi, Michigan

Investment Consultant
Marquette Associates, Inc.
Chicago, Illinois

Cash Equitization Manager
The Northern Trust Company
Chicago, Illinois

Infrastructure Managers
IFM Investment Advisor
New York, New York

JP Morgan Investment Management
New York, New York

Long/Short Managers
ABS Investment Management
Greenwich, Connecticut

Parametric
Minneapolis, Minnesota

Fixed-Income Investment Managers
Galliard Capital Management
Minneapolis, Minnesota

The Northern Trust Company
Chicago, Illinois

U.S. Equity Investment Managers
Robeco Investment Management
Boston, Massachusetts

Silvercrest Asset Management Group
New York, New York

Northern Trust Investments
Chicago, Illinois

QMA
Chicago, Illinois

International Investment Managers
Segall Bryant & Hamill
Oaks, Pennsylvania

Northern Trust Investments
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OFI Global Asset Management
New York, New York

Real Estate Investment Managers
American Realty Advisors
Glendale, California

Morgan Stanley Real Estate
New York, New York

UBS Realty Investors, LLC
Hartford, Connecticut

Private Equity Managers
Adams Street Partners
Chicago, Illinois

Progress Investment Management Company
San Francisco, California

Siguler Guff & Company, LLC
New York, New York

Mesirow Financial Equity Management
Chicago, Illinois

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