

**EMPLOYEES' RETIREMENT SYSTEM  
OF THE CITY OF MILWAUKEE**

**COMPREHENSIVE ANNUAL FINANCIAL REPORT**

**For the Year Ended December 31, 2018**

Employees' Retirement System of the City of Milwaukee  
789 North Water Street, Suite 300  
Milwaukee, WI 53202

# **COMPREHENSIVE ANNUAL FINANCIAL REPORT**

## **EMPLOYEES' RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE**

*For the year ended December 31, 2018*

*Prepared by:*

*Bernard J. Allen, Executive Director,  
David Silber, CFA, CAIA, Chief Investment Officer, &  
Daniel Gopalan, CPA, Chief Financial Officer*

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# INTRODUCTORY SECTION





**City of Milwaukee**  
Employees' Retirement System

**Bernard J. Allen**  
Executive Director

**David M. Silber, CFA, CAIA**  
Chief Investment Officer

**Melody Johnson**  
Deputy Director

## Executive Director's Letter of Transmittal

July 15, 2019

On behalf of the Annuity and Pension Board (the Board) of the Employees' Retirement System of the City of Milwaukee (ERS, the System, or the Plan), we are pleased to present this Comprehensive Annual Financial Report (CAFR) of the Employees' Retirement System of the City of Milwaukee as of and for the year ended December 31, 2018. This report consists of five sections:

1. The *Introductory Section*, which contains this Letter of Transmittal, the list of principal officials, the list of professional relationships, and the organization chart.
2. The *Financial Section*, which contains the opinion of the independent certified public accountant, the Management Discussion and Analysis (MD&A), the financial statements of the Plan, and other required supplementary financial information and tables. The MD&A provides an overview of the current year's financial activity with an analysis of the effects of any significant changes from the prior year.
3. The *Investment Section*, which contains a report on investment policies and activity, investment results, and various investment schedules.
4. The *Actuarial Section*, which contains the Plan's actuarial certification letter and various actuarial tables.
5. The *Statistical Section*, which contains various statistical tables consisting of significant data pertaining to the Plan.

ERS is a defined benefit plan created under Chapter 396 of the Laws of Wisconsin of 1937 and the City of Milwaukee Charter, Chapter 36. ERS is a qualified retirement plan under the Internal Revenue Code. The ERS Pension and Annuity Board (the Board) serves as trustee of the Plan.

ERS was created to provide retirement, survivor, and disability benefits to eligible employees. Currently, this includes eligible employees of the City of Milwaukee and some of its agencies, such as Milwaukee Metropolitan Sewerage District, Wisconsin Center District, Veolia Water Milwaukee LLC, Milwaukee Housing and Redevelopment Authorities, and non-certified staff of Milwaukee Public Schools (Agencies).

### **Financial Information**

The System's administration is responsible for the accuracy of the data, completeness, and fairness of the presentation of the CAFR, including all disclosures. The Plan's record-keeping, financial statement, and investment controls are also performed by the System's administration. To the best of our knowledge and belief, this report is accurate in all material respects and is reported in a manner designed to present fairly

the fiduciary net position and the change in fiduciary net position. All disclosures necessary to enable the reader to gain an understanding of the Plan's financial activities have been included. Users of this report are strongly encouraged to review the Management's Discussion and Analysis portion of the financial section in order to obtain a more complete understanding of ERS' financial condition and activity.

## **Major Initiatives**

There were four major undertakings during 2018: selection of a new actuary, a review of custodial services, updates to ERS' audited financial statements, and upgrades to ERS' information technology infrastructure. All four endeavors resulted in changes that directly affected the Plan.

*Selection of new actuary:* ERS completed an actuarial services Request for Proposals (RFP) in 2018. Seven firms responded to the RFP. After review by staff and presentations by the finalists, the Board selected Cavanaugh Macdonald, LLC (CMC). CMC serves only public sector benefit plans. The new actuary reviewed and verified the prior year's actuarial valuation and the assumptions used by ERS' old actuary. CMC performed the January 1, 2019 actuarial valuation used in calculating the employer pension contributions due January 31, 2020.

*Review of Custodial Services:* ERS engaged its investment consultant, Callan Associates, to perform a review of ERS' custody needs and the performance of its investment custodian. ERS considers it a best practice to evaluate custody services periodically, as it would increase understanding of custodial services and highlight any potential gaps in services currently provided to the plan. As a result of the review, ERS decided to keep its current custodian, Northern Trust, and not issue an RFP for custody services.

*Updates to ERS' audited financial statements:* In 2018, ERS hired a new Chief Financial Officer, Daniel Gopalan, CPA. Upon review of the financial statements, ERS decided to update its financial reporting processes, and create a CAFR to give ERS' stakeholders better disclosures and more financial transparency into ERS' operations. ERS plans to submit its 2018 CAFR to the Government Finance Officers Association's Certificate of Achievement for Excellence in Financial Reporting Program.

*Information Technology Infrastructure Upgrades:* In 2018, ERS completed two major upgrades to its IT infrastructure. ERS replaced its network hardware and storage area network in order to increase the performance of its networks to move data faster, securely, and reliably. The new network equipment will aid the ERS to meet its operational standards and provide continuity of operations. These upgrades will allow ERS to manage its data growth through 2028.

## **Actuarial and Funding Results**

ERS' actuaries prepare three actuarial reports. The three reports are as follows:

- The actuarial valuation is prepared for funding purposes and produced annually. The most recent actuarial valuation was prepared by Buck Consultants (AKA Buck Global LLC) on January 1, 2018 and this report determines the contributions due to ERS from employers on January 31, 2019.

- The GASB Statement No. 67 report is prepared annually, with the most recent report completed for December 31, 2018 by Cavanaugh Macdonald. The GASB 67 report focuses on the reporting aspects of ERS' assets and liabilities.
- The experience study is completed every five years and the study sets the actuarial assumptions used to calculate the pension liabilities for ERS. The most recent experience study was completed by Buck Consultants on December 31, 2016.

For funding purposes, the valuation showed the actuarial value of assets, which is a smoothed asset value used for funding purposes was \$5.23 billion as of January 1, 2018. When compared to the actuarial liability of \$5.82 billion, there was an unfunded actuarial liability of \$586 million. The System's funded ratio, which is the ratio of actuarial assets to actuarial liability, decreased from 96.1% in 2017 to 89.9% in 2018. A majority of this decrease in ERS' funded ratio is attributable to assumption changes as a result of the most recent experience study prepared by Buck Consultants.

The required employer contribution is determined actuarially, based on the annual cost of accrual of benefits and amortization of the unfunded actuarial liability offset by employee contributions. The recommended employer contribution for 2018 was \$89.8 million for all ERS employers and is due to ERS by January 31, 2019. This contribution represents 15.6% of the employee pensionable compensation.

The following table presents the annual employer contributions for the Global Combined Fund as of January 1, 2019 using the discount rate of 7.50 percent, a discount rate that is 1-percentage-point lower (6.50 percent) and a discount rate that is 1-percentage-point higher (8.50 percent) (in thousands):

	<b>1% Decrease (6.50%)</b>	<b>Current Discount (7.50%)</b>	<b>1% Increase (8.50%)</b>
<b>Annual employer contributions</b>	<b>\$ 216,658</b>	<b>\$ 151,507</b>	<b>\$ 92,997</b>

Additional information regarding the actuarial valuation can be found in the Actuarial section of this report.

For reporting purposes, the System's Fiduciary Net Position (FNP) declined from \$5.40 billion as of December 31, 2017 to \$4.95 billion as of December 31, 2018. This was an 8.3% decrease compared to the 2017 results. The FNP was insufficient to offset the Total Pension Liability (TPL) of \$6.29 billion as of December 31, 2018 resulting in a Net Pension Liability (NPL) of \$1.34 billion as provided on page 34. The NPL is the difference between the TPL less the FNP. This represents an increase of \$976 million in NPL from 2017. The increase in NPL is mainly attributed to the change in the investment return assumption and, to a lesser extent, the negative investment return in 2018. All data related to GASB 67 is provided in the Notes to Basic Financial Statements and the Required Supplementary Information sections.

The Annuity and Pension Board changed the long-term assumed rate of return to 7.50% from the blended rate of 8.24%. This change was adopted by the Board at the April 29, 2019 meeting and is effective for the measurement date of December 31, 2018.

## **Investments**

The Board is responsible for the investment of the System's assets. The responsibilities of the Board relating to the investment management of the System's assets include: establishing reasonable investment objectives and policy guidelines; using reasonable care, skill and caution in selecting investment professionals; and evaluating performance results of investment managers and other investment professionals on a systematic and regularly scheduled basis. The Board has a fiduciary duty to exercise its investment authority prudently and solely in the interest of the System's participants and beneficiaries.

The System's investment goal is to obtain the highest return possible on its investments within corresponding acceptable levels of minimum investment risk and liquidity requirements in recognition of prudent person standards and applicable local, state, and federal laws.

The System's investment objective is to earn or exceed the actuarial assumption rate or to outperform its policy benchmark over the long term. Although the System outperformed its policy benchmark for the fiscal year, it fell short of the actuarial assumed rate of return. The shortfall is an illustration of the short-term challenges investors face when seeking to achieve a long-term expected return that is materially above the current level of the risk-free interest rate. The investment consultant provides the Board with quarterly and annual evaluation reports. A summary of their annual analysis and the target asset allocation is found in the Investment Section of this report. Please refer to the MD&A for more investment and financial analysis.

## **Professional Services**

The Board retains professional consultants to prudently discharge its fiduciary responsibility for the proper administration of the Plan. Cavanaugh Macdonald provides actuarial services and the corresponding certification. Previously, the System's actuary was Buck Consultants. Northern Trust serves as the master custodian. Callan Associates provides investment consulting and other investment-related services. ERS' financial statements are audited by Baker Tilly Virchow Krause, LLP and reviews of operations are performed by Experis. The City Attorney's Office provides legal representation.

## **Acknowledgements**

The guidance provided by the Board is greatly appreciated. The preparation of this report is a collaborative effort of many individuals and I would like to acknowledge the hard work of the ERS staff. This report is intended to provide complete and reliable information to the members of ERS, employers of the members, the City of Milwaukee, and other important users of ERS' financial and demographic information.

Respectfully submitted,

A handwritten signature in cursive script that reads "Bernard J. Allen".

Bernard J. Allen  
*Executive Director*

# List of Principal Officials

## Annuity & Pension Board Members as of December 31, 2018\*

### **Elected Representative - Active:**

Vacant

Vacant

Vacant

### **Elected Representative - Retirees:**

Thomas Klusman

Retired

### **Appointed by the President of the Common Council:**

Nik Kovac

Alderman for 3rd District

Deborah Ford

Retired

Rudolph Konrad

Retired

### **Ex-Officio Member:**

Martin Matson - Board Chairman

City of Milwaukee Comptroller

*\* On July 6, 2018, the Wisconsin Supreme Court issued a decision on Case No. 2015-AP-2375 that invalidated certain 2013 Amendments to the Milwaukee City Charter Chapter 36. As a result of the decision, the composition of the Annuity and Pension Board (the Board) is as follows:*

- *Three representatives appointed by the President of the Common Council*
- *Three trustees elected by the active members of ERS*
- *City Comptroller, who serves as an ex-officio voting member*
- *One representative elected by retired members of the ERS*

*The Wisconsin Supreme Court decision vacated the employee elected members of the Pension and Annuity Board. In December 2018, ERS held an election for the three active member trustee positions. The terms for these positions began in January 2019.*

## List of Professional Relationships

### **Investment Managers:**

Abbott Capital Management, LLC  
Allianz Global Investors  
Almanac Realty Investors, LLC  
Apollo Global Real Estate Management, LP  
AQR Capital Management, LLC  
BlackRock, Inc.  
Brandes Investment Partners, LP  
Bryanston Realty Partners  
Carlyle Group  
CastleArk Management, LLC  
Colony Capital, LLC  
Cypress Acquisition Partners  
Deutsche Asset Management  
Dimensional Fund Advisors  
Drawbridge Realty Partners Holdings, LP  
Earnest Partners  
Fortress Investment Group  
GE Polish  
Greenfield Partners  
H/2 Capital Partners  
JP Morgan Asset Management  
LaSalle Investment Management, Inc.  
Loomis-Sayles & Company  
Lubert-Adler Partners  
M&G Real Estate  
Mesirow Financial  
MFS Institutional Advisors  
Morgan Stanley Real Estate Advisor, Inc.  
Neuberger Berman  
Newton Capital Management, LLC  
Northern Trust Company  
Polen Capital Management  
Principal Global Investors, LLC  
Private Advisors, LLC  
Prologis, Inc.  
Reams Asset Management Company  
Square Mile Capital Management, LLC  
Standard Life  
Stockbridge Capital Partners, LLC  
UBS Alternative & Quantitative Investments, LLC  
Walton Street Capital  
William Blair & Company

### **Investment Trading Analytics:**

Global Trading Analytics

### **Legal Counsel:**

Foley & Lardner LLP  
Ice Miller LLP  
Reinhart Boerner Van Deuren  
Grant F. Langley, Milwaukee City Attorney

### **Bank:**

Wells Fargo Bank Wisconsin, NA

### **Investment Consultants:**

Callan Associates

### **Custodian:**

The Northern Trust Company  
G. Spencer Coggs, City of Milwaukee Treasurer

### **Auditors:**

Baker Tilly Virchow Krause, LLP  
Experis

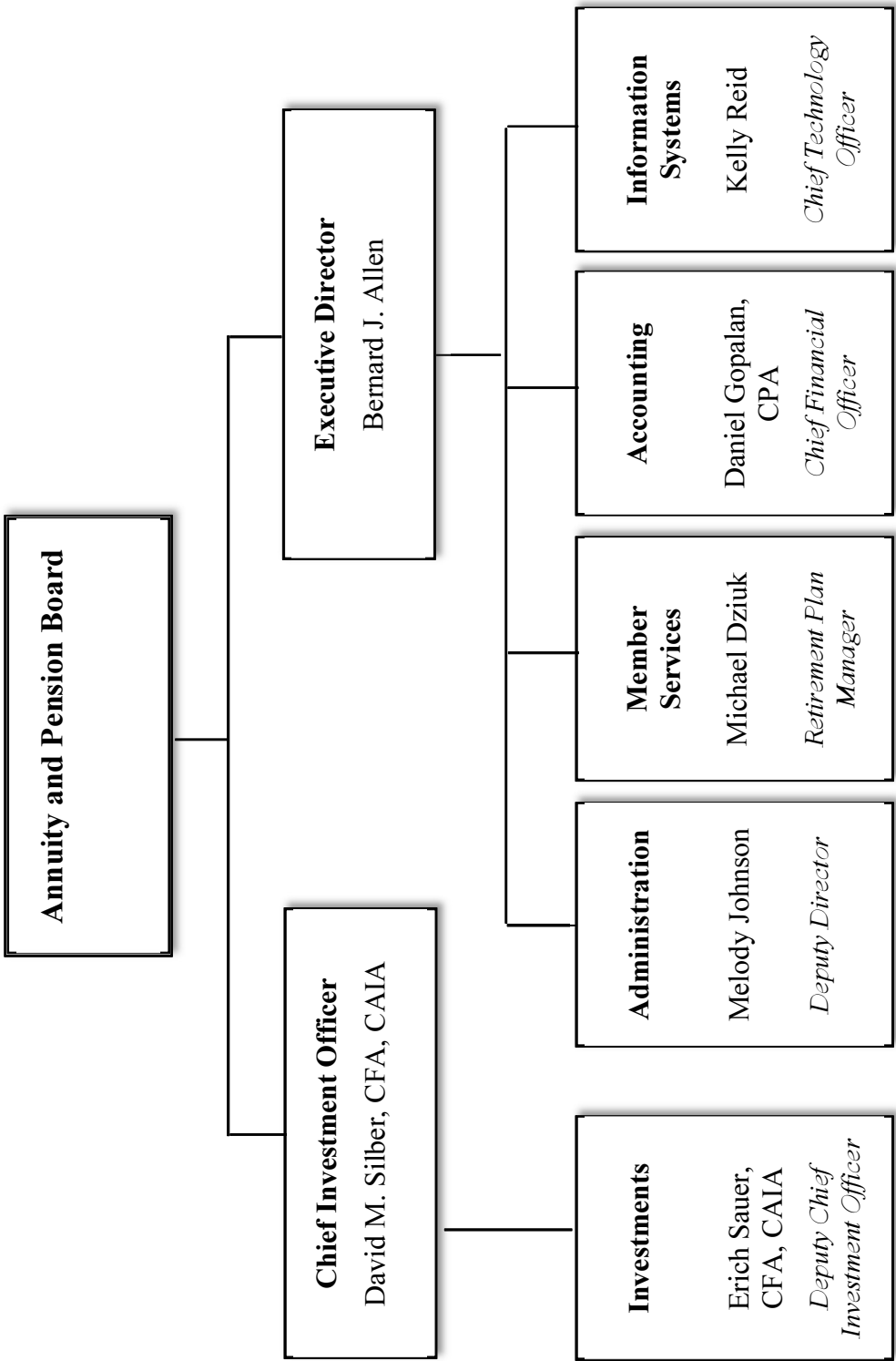
### **Actuaries:**

Cavanaugh Macdonald Consulting, LLC  
Buck Global LLC

### **Medical Advisors:**

Gregory Brotzman, M.D.  
David L. Drury, M.D.  
William Greaves, M.D.  
Michael Borkowski, M.D.  
Robin Clark, M.D.  
Caroline Palmer, M.D.  
Azhar M. Yunus, M.D.

Employees' Retirement System Organization Chart



Investments are managed externally through investment managers. Please refer to the Summary of Management Fees on page 67 in the Investment Section and the Schedule of Brokerage Commissions on page 68 in the Investment Section.

# FINANCIAL SECTION



## INDEPENDENT AUDITORS' REPORT

To the Annuity and Pension Board of the Employees'  
Retirement System of the City of Milwaukee  
Milwaukee, Wisconsin

### **Report on the Financial Statements**

We have audited the accompanying statement of fiduciary net position of the Employees' Retirement System of the City of Milwaukee (the "Retirement System"), as of December 31, 2018, the statement of changes in fiduciary net position for the year 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 audit. We conducted our audit in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States. 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 the changes in fiduciary net position of the Retirement System for the year 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, Net Pension Liability and Investment Returns, Employers' Contributions, 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.

### *Supplementary 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 Schedules of Administrative Expenses, Investment Expenses, and Payments to Consultants, Non-Consenter Combining Statement of Fiduciary Net Position and the Non-Consenter Combining Statement of Changes in Fiduciary Net Position are presented for purposes of additional analysis and are not a required part of the basic financial statements. The information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the basic financial statements. The information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the Schedules of Administrative Expenses, Investment Expenses, and Payments to Consultants, Non-Consenter Combining Statement of Fiduciary Net Position and the Non-Consenter Combining Statement of Changes in Fiduciary Net Position are fairly stated in all material respects, in relation to the basic financial statements as a whole.

### *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 Introductory, Investment, Actuarial and Statistical sections as listed in the table of contents 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.

### **Other Reporting Required by *Government Auditing Standards***

In accordance with *Government Auditing Standards*, we have also issued our report dated July 15, 2019 on our consideration of the Retirement System's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering Retirement System's internal control over financial reporting and compliance.

*Baker Tilly Virchow Krause, LLP*

Milwaukee, Wisconsin  
July 15, 2019

## **EMPLOYEES' RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)**

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We are pleased to provide this analytical overview of the financial activities of the Employees' Retirement System of the City of Milwaukee ("ERS," "the System," or "the Plan,") for the year ended December 31, 2018. The information provided is intended to be considered in conjunction with the Plan's financial statements.

### **Financial Highlights**

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- The System's Fiduciary Net Position declined by \$445,646,000 and 8.3% during 2018. The decrease in Net Position is mainly attributed to benefit payments exceeding contributions and, to a lesser extent, a result of the negative investment return.
- As members consent to the Global Pension Settlement, their member balances are transferred from the Non-Consenter fund to the Global Combined Fund. Balances transferred for 2018 totaled \$2,099,000.
- The ERS's funding objective is to meet long-term benefit obligations through contributions and investment income. As of December 31, 2018, pursuant to GASB Statement No. 67, ERS's funded ratio is 78.7%. In general, this means the Plan has 78.7 cents of assets to cover every dollar of benefits due.
- For 2018, Northern Trust, the ERS custodian, reported a negative 2.9% annual net of fees total fund return, while in 2017 the return was 16.4%. Returns are calculated using geometrically-linked, time and asset-weighted returns, net of investment manager fees. As of December 31, 2018, the fund's five-year performance ranked in the top quartile of the Callan Associates database. This database consists of public employee pension funds, including both Callan client funds and surveyed non-client funds.

(See Independent Auditors' Report)

## EMPLOYEES' RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)

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### Overview of the Financial Statements

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The following discussion and analysis are intended to serve as an introduction to the plan's financial statements and the Financial Section of this report.

The **Statement of Fiduciary Net Position** presents ERS' assets and liabilities, as well as the net position restricted for pensions at December 31, 2018. The assets comprise receivables, mainly from investment activity, investments at fair market value, and securities lending collateral.

The **Statement of Changes in Fiduciary Net Position** presents information showing how the Plan's net position changed during the year. Plan member contributions are recognized in the period in which the contributions are due. Employer contributions are recognized when a formal commitment has been made by the City or Agencies to provide the contributions. All investment gains and losses are shown at trade date. Both realized and unrealized gains and losses are shown on investments. Benefits and refunds are recognized when due and payable in accordance with the terms of the Plan.

The **Notes to Basic Financial Statements** provide additional information that is essential to a full understanding of the data provided in the financial statements. The notes are an integral part of the financial statements and included detailed information not readily evident in the basic financial statements.

The statements and notes are presented in conformity with U.S. generally accepted accounting principles. These principles require certain financial statement presentations and disclosures, including the use of accrual basis of accounting to record assets and liabilities, and revenues and expenses.

The Statement of Fiduciary Net Position and the Statement of Changes in Fiduciary Net Position can be found on page 22 and 23 of this report.

The **Required Supplementary Information** that follows immediately after the notes to the basic financial statements include the Schedules of Changes in Net Pension Liability, Net Pension Liability, Investment Returns, Contributions, and the Notes to Required Supplementary Information. See the Required Supplementary Information beginning on page 50 of this report.

The remaining supplemental schedules provide additional detailed information concerning administrative expenses, investment expenses, and payments to consultants. All of this information is considered useful in understanding and evaluation the financial activities of the Plan.

(See Independent Auditors' Report)

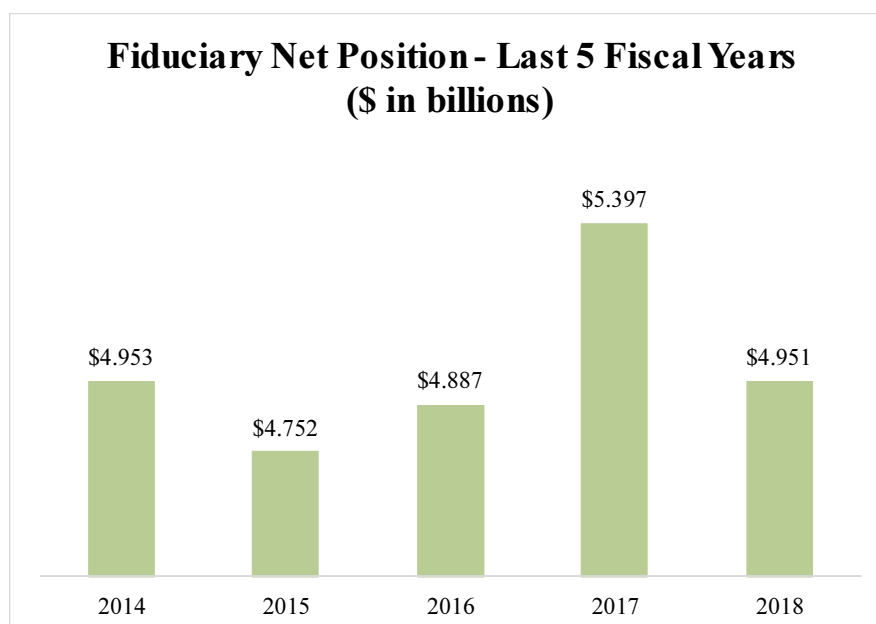
**EMPLOYEES' RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE  
MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)**

## Financial Analysis

### Net Position

Net position may serve over time as a useful indicator of the ERS's financial position. At December 31, 2018, assets exceeded liabilities by \$4.95 billion. The net position is available to meet ERS' ongoing obligation to participants and their beneficiaries. As of December 31, 2018, total net position decreased by 8.3% over the prior year. The decrease is attributable to the decline on investment market value in 2018. Management believes that ERS is in a strong financial position to meet its obligations to the members, retirees, and their beneficiaries.

Fiduciary Net Position (\$ in thousands)	For the year ended December 31,		Increase / (Decrease)	Percentage Change
	2018	2017		
Investments	\$ 4,904,551	\$ 5,352,416	\$ (447,865)	-8.4%
Other assets	328,384	512,394	(184,010)	-35.9%
Total assets	5,232,935	5,864,810	(631,875)	-10.8%
Total liabilities	(282,054)	(468,283)	186,229	-39.8%
Total net position	<u>\$ 4,950,881</u>	<u>\$ 5,396,527</u>	<u>\$ (445,646)</u>	-8.3%



(See Independent Auditors' Report)

# EMPLOYEES' RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE

## MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)

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### Investments

ERS is a long-term investor and manages its assets with long-term objectives in mind. A primary element of this investment philosophy is to employ a diversification of assets as the best possible way to achieve its goals. After conducting an asset-liability study with investment staff and ERS' consultant, the Board established an asset allocation plan taking into account the risk associated with each asset class as well as the financial objectives of the plan. Investments are stated at fair value and include the recognition of unrealized gains and losses in the current period.

The rate of return on investments (net of investment fees) for the year ended December 31, 2018 was negative 2.9%, a 19.3% decrease compared to the fiscal year 2017 rate of return of 16.4%. Returns are calculated using geometrically-linked, time and asset-weighted returns, net of investment manager fees. The Fund's performance declined along with the majority of the stock and bond markets. The Fund exceeded the benchmark performance by 0.4%. The annualized rate of return (net of fees) for the last three and five periods ended December 31, 2018 were 7.1% and 5.4%, respectively. The positive rate of return is attributable to positive returns across all of the major asset classes the Fund was invested in.

The Investment Section beginning on page 59 gives detailed information on the ERS's investment policies. See page 69 of this report for a table showing the asset allocation targets established by the Board and actual asset allocation of the System's assets at December 31, 2018.

### Liabilities

The liabilities are payables incurred by the transaction activity of the investment assets, securities lending, retirement benefit expenses, and administrative expenses of the Fund.

#### Changes in Fiduciary Net Position

*(\$ in thousands)*

	2018	2017	Increase / (Decrease)	Percentage Change
<b>Additions</b>				
Employer contributions	\$ 83,166	\$ 83,524	\$ (358)	-0.4%
Member contributions	32,085	32,494	(409)	-1.3%
Net (depreciation) appreciation in fair value of investments	(214,697)	735,547	(950,244)	-129.2%
Interest, dividends and other investment income	103,963	94,435	9,528	10.1%
Less: investment expense	(49,456)	(42,173)	(7,283)	17.3%
<b>Total Additions:</b>	<b>\$ (44,939)</b>	<b>\$ 903,827</b>	<b>\$ (948,766)</b>	<b>-105.0%</b>
<b>Deductions</b>				
Administrative expenses	\$ (7,181)	\$ (8,637)	\$ 1,456	-16.9%
Benefits paid	(388,889)	(380,001)	(8,888)	2.3%
Refund of contributions	(4,637)	(5,331)	694	-13.0%
<b>Total Deductions</b>	<b>\$ (400,707)</b>	<b>\$ (393,969)</b>	<b>\$ (6,738)</b>	<b>1.7%</b>
<b>Net (Decrease) Increase</b>	<b>\$ (445,646)</b>	<b>\$ 509,858</b>	<b>\$ (955,504)</b>	<b>-187.4%</b>

(See Independent Auditors' Report)

## **EMPLOYEES' RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)**

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### **Contributions and Investment Income**

Employer contributions decreased by 0.2% over last year's contributions. The employers' contributions are actuarially determined in the prior year and due by January 31st of the following year. Plan members' contributions decreased by 1.3%. Plan member contributions are determined by the City Charter and by contracts signed with bargaining units. In 2018, the Fund generated negative returns (net of fees) as the Fund's performance declined along with the majority of the stock and bond markets. Net investment income includes securities lending income and investment expenses.

### **Retirement Benefits and Administrative Expenses**

The Plan was created to provide lifetime service retirement benefits, survivor benefits, and disability benefits to eligible members and their beneficiaries. The cost of such programs includes recurring benefit payments, death benefits, payments to terminated members, and the administrative expenses of the ERS. The primary source of expense during 2018 was for the payment of continuing retirement benefits totaling \$389 million, compared to \$380 million in 2017. The increase was attributable to new retirees and cost of living increases to retirees.

The decrease in administrative expenses is attributable to the reclassification of certain investment-related expenses 2018. In previous years, investment expenses paid by ERS were classified as administrative expenses. These expenses consist of investment personnel salaries and fringe benefits, certain professional service fees, and the cost of due diligence trips. In 2018, these expenses are included in investment expenses.

### **Requests for Information**

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Members of the Annuity and Pension Board and ERS senior management are fiduciaries of the pension fund and are responsible for ensuring that ERS assets are used exclusively for the benefit of plan participants and their beneficiaries. This financial report is designed to provide an overview of the financial condition of ERS, and to account for the resources entrusted to ERS for the benefit its stakeholders. Questions concerning any of the information provided in this report or requests for additional financial information should be addressed to:

Bernard J. Allen  
Executive Director and Secretary  
Employees' Retirement System – City of Milwaukee  
789 North Water Street, Suite 300  
Milwaukee, WI 53202

(See Independent Auditors' Report)



# BASIC FINANCIAL STATEMENTS

**EMPLOYEES' RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE**  
**Statement of Fiduciary Net Position**  
**As of December 31, 2018**  
**(in thousands)**

	Employee's Retirement System Funds				Fiduciary Fund	
	Global Combined Fund	Non-consenter Retirement Funds	Employers' Reserve Fund	Securities Lending Fund	Total Employees' Retirement System Fund	Total Policemen's Annuity & Benefit Fund
<b>ASSETS</b>						
CASH AND CASH EQUIVALENTS	\$ 79,870	\$ 1,070	\$ 698	\$ 1,140	\$ 82,778	\$ 3 82,781
INVESTMENTS (Notes 1 and 8)						
Fixed income	1,211,350	3,522	15,331	-	1,230,203	- 1,230,203
Public equity	2,229,030	6,480	-	-	2,235,510	- 2,235,510
Absolute return	476,297	1,384	-	-	477,681	- 477,681
Real assets	574,352	1,670	-	-	576,022	- 576,022
Private equity	384,019	1,116	-	-	385,135	- 385,135
Total Investments	4,875,048	14,172	15,331	-	4,904,551	- 4,904,551
<b>RECEIVABLES AND OTHER ASSETS</b>						
Employer (Note 1)	88	-	-	-	88	- 88
Member (Note 1)	821	-	-	-	821	- 821
Actuarially determined contributions (Note 2)	-	1	-	-	1	- 1
Interest, dividends and foreign tax recoverable (Note 1)	7,771	25	14	-	7,810	- 7,810
Investments sold	14,150	40	-	-	14,190	- 14,190
Software development and equipment, net of depreciation (Note 1)	706	-	-	-	706	- 706
Securities lending collateral (Note 8)	-	-	-	221,990	221,990	- 221,990
Total Receivables and Other Assets	23,536	66	14	221,990	245,606	- 245,606
<b>Total Assets</b>	4,978,454	15,308	16,043	223,130	5,232,935	3 5,232,938
<b>LIABILITIES</b>						
Benefits payable	364	-	-	-	364	- 364
Unearned contributions	23,559	-	-	-	23,559	- 23,559
City of Milwaukee (Notes 4 and 6)	1,081	-	-	-	1,081	- 1,081
Securities lending obligation (Note 8)	-	-	-	221,953	221,953	- 221,953
Investments purchased	34,846	102	149	-	35,097	- 35,097
Total Liabilities	59,850	102	149	221,953	282,054	- 282,054
<b>NET POSITION RESTRICTED FOR PENSIONS</b>	\$ 4,918,604	\$ 15,206	\$ 15,894	\$ 1,177	\$ 4,950,881	\$ 3 4,950,884

See Independent Auditors' Report.

*The accompanying notes to financial statements are an integral part of these financial statements.*

**EMPLOYEES' RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE**  
**Statement of Changes in Fiduciary Net Position**  
**As of December 31, 2018**  
**(in thousands)**

	Employee's Retirement System Funds				Fiduciary Fund	
	Global Combined Fund	Non-consenter Retirement Funds	Employers' Reserve Fund	Securities Lending Fund	Total Employees' Retirement System Fund	Total Policemen's Annuity & Benefit Fund
<b>ADDITIONS</b>						
Contributions						
Employer (Note 5)	\$ 83,000	\$ 166	\$ -	\$ -	\$ 83,166	\$ 159
Member	32,067	18	-	-	32,085	-
<b>Total Contributions</b>	<b>115,067</b>	<b>184</b>	<b>-</b>	<b>-</b>	<b>115,251</b>	<b>159</b>
						<b>115,410</b>
<b>Investment Income</b>						
Net (depreciation) appreciation in fair value of investments	(214,119)	(624)	(5)	51	(214,697)	-
Interest, dividends and other investment income	96,692	282	274	6,715	103,963	-
<b>Total Investment Income</b>	<b>(117,427)</b>	<b>(342)</b>	<b>269</b>	<b>6,766</b>	<b>(110,734)</b>	<b>-</b>
						<b>(110,734)</b>
Investment Expense (Note 6)	(43,870)	-	(12)	(5,574)	(49,456)	-
<b>Net Investment Income</b>	<b>(161,297)</b>	<b>(342)</b>	<b>257</b>	<b>1,192</b>	<b>(160,190)</b>	<b>-</b>
						<b>(160,190)</b>
<b>Total Additions</b>	<b>(46,230)</b>	<b>(158)</b>	<b>257</b>	<b>1,192</b>	<b>(44,939)</b>	<b>159</b>
						<b>(44,780)</b>
<b>DEDUCTIONS</b>						
Administrative expenses (Note 6)	(5,649)	-	-	(1,532)	(7,181)	(7)
Benefits paid	(388,758)	(131)	-	-	(388,889)	(152)
Refunds of contributions	(4,537)	(100)	-	-	(4,637)	-
Interfund transfers	2,099	(2,099)	-	-	-	-
<b>Total Deductions</b>	<b>(396,845)</b>	<b>(2,330)</b>	<b>-</b>	<b>(1,532)</b>	<b>(400,707)</b>	<b>(159)</b>
						<b>(400,866)</b>
<b>NET (DECREASE) INCREASE IN NET POSITION</b>	<b>(443,075)</b>	<b>(2,488)</b>	<b>257</b>	<b>(340)</b>	<b>(445,646)</b>	<b>-</b>
						<b>(445,646)</b>
<b>NET POSITION RESTRICTED FOR PENSIONS</b>						
Beginning of Year	5,361,679	17,694	15,637	1,517	5,396,527	3
<b>End of Year</b>	<b>\$ 4,918,604</b>	<b>\$ 15,206</b>	<b>\$ 15,894</b>	<b>\$ 1,177</b>	<b>\$ 4,950,881</b>	<b>\$ 3</b>
						<b>\$ 4,950,884</b>

See Independent Auditors' Report.

*The accompanying notes to financial statements are an integral part of these financial statements.*

# NOTES TO BASIC FINANCIAL STATEMENTS

**EMPLOYEES' RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE**  
**NOTES TO BASIC FINANCIAL STATEMENTS**  
**AS OF AND FOR THE YEAR ENDED DECEMBER 31, 2018**

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**1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES**

**Basis of Presentation**

For accounting and financial reporting purposes, the Employees' Retirement System of the City of Milwaukee ("ERS,, "the Retirement System,, "the System,, or "the Plan,,) conforms with accounting principles generally accepted in the United States and reporting standards as promulgated by the Governmental Accounting Standards Board (GASB), which designates accounting principles and financial reporting standards applicable to the Plan. This report includes solely the accounts of the Plan.

**Reporting Entity**

The reporting entity for the ERS consists of the primary government and its component units. Component units are legally separate organizations for which the elected officials of the primary government are financially accountable or other organizations for which the nature and significance of their relationship with the primary government are such that their exclusion would cause the reporting entity's financial statements to be misleading. The primary government is financially accountable if:

- 1) It appoints a voting majority of the organization's governing body and it is able to impose its will on that organization;
- 2) It appoints a voting majority of the organization's governing body and there is a potential for the organization to provide specific financial benefits to, or impose specific financial burdens on, the primary government; or
- 3) The organization is fiscally dependent on and there is a potential for the organization to provide specific financial benefits to, or impose specific financial burdens on, the primary government.

Certain legally separate, tax exempt organizations should also be reported as a component unit entity if all of the following criteria are met:

- 1) The economic resources received or held by the separate organization are entirely or almost entirely for the direct benefit of the primary government, its component units, or its constituents;
- 2) The primary government is entitled to, or has the ability to otherwise access, a majority of the economic resources received or held by the separate organization;
- 3) The economic resources received or held by an individual organization that the specific primary government, or its component units, is entitled to, or has the ability to otherwise access, are significant to that primary government.

Component units are reported using one of two methods, discrete presentation or blending. Generally, component units should be discretely presented in a separate column in the financial statements.

**EMPLOYEES' RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE**  
**NOTES TO BASIC FINANCIAL STATEMENTS**  
**AS OF AND FOR THE YEAR ENDED DECEMBER 31, 2018**

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**1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (cont.)**

A component unit should be reported as part of the primary government using the blending method if it meets any one of the following criteria:

- 1) The primary government and the component unit have substantively the same governing body and a financial benefit or burden relationship exists,
- 2) The primary government and the component unit have substantively the same governing body and management of the primary government has operational responsibility for the component unit,
- 3) The component unit serves or benefits, exclusively or almost exclusively, the primary government rather than its citizens, or
- 4) The total debt of the component unit will be paid entirely or almost entirely from resources of the primary government.

*Blended Component Units*

CMERS Low Beta, LLC

CMERS Low Beta, LLC was created by the ERS to serve as a hedge fund of funds investment vehicle for the Retirement System. The LLC is a legally separate entity governed by a board of directors appointed by the Annuity and Pension Board of the ERS. UBS Hedge Fund Solutions serves as investment manager for the hedge fund of funds portfolio. Although it is a legally separate entity, the LLC is reported and included as part of the ERS because its sole purpose is for the benefit of the Retirement System. MUFG Alternative Fund Services (Cayman) Limited is the administrator and Ernst and Young is the external auditor for the LLC. Separate financial statements are issued annually for CMERS Low Beta, LLC.

**Basis of Accounting**

The financial statements have been prepared on the accrual basis of accounting. Investment income is recorded when earned and expenses are recorded when they are incurred. Plan member and employer contributions are recognized in the period in which the contributions are due. Benefits and refunds are recognized when due and payable in accordance with the terms of the Plan.

**Contributions**

The Retirement System records employee contributions as they are earned. Contributions earned but not yet received from the City of Milwaukee, participating city agencies and members are reported as contributions receivable. Overpayments and prepayments of contributions are reported as liabilities.

**Cash and Cash Equivalents**

Cash and cash equivalents are composed of cash in local banks, cash held by the custodian, and cash equivalents. Cash equivalents are defined as short-term, highly liquid investments that are both (a) readily convertible to known amounts of cash and (b) so near maturity they present insignificant risk of changes

**EMPLOYEES' RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE**  
**NOTES TO BASIC FINANCIAL STATEMENTS**  
**AS OF AND FOR THE YEAR ENDED DECEMBER 31, 2018**

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**1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (cont.)**

in value due to changes in interest rates. Investments with an original maturity of three months or less are considered cash equivalents. Restricted securities held as collateral for Securities Lending are not included as cash equivalents.

**Methods Used to Value Investments**

Investments of the Retirement System are reported at fair value in accordance with applicable GASB statements. Fair value is defined as the amount that a plan can reasonably expect to receive for an investment in a current sale between a willing buyer and a willing seller. The fair value of investments is based on published market prices and quotations from major investment brokers at current exchange rates, as available. Many factors are considered in arriving at that value. In general, however, bonds and mortgage obligations are valued based on yields currently available on comparable securities of issuers with similar credit ratings.

Receivables and payables relating to investment transactions that were initiated but not settled at year-end, are recorded as assets or liabilities.

Real estate consists of equity and debt participation in diversified real estate investments. The majority of properties in the portfolio are offices, industrial warehouses, multi-family and retail. Real estate investments are carried at market value, which approximates fair value, as of December 31, 2018. Annual assessments performed by independent professional appraisers are used for market values.

Private equity consists of equity and debt participation in diversified private equity investments. The majority of investments in the portfolio consist of buyouts and venture capital. Private equity investments are carried at market value, which approximates fair value, as of December 31, 2018.

The Retirement System may have investments in certain derivative vehicles, including interest rate, credit, index volatility, and currency futures; bond futures; deliverable and non-deliverable forward contracts; bond forwards; currency forwards; currency options; options on bond futures, U.S. equity indices, U.S. equity index futures, volatility indices, volatility futures, and ETFs; total return swaps; and to-be-announced (TBA) securities. The ERS allows UBS Hedge Fund Solutions to allocate funds within CMERS Low Beta, LLC to hedge fund managers who may invest in derivatives including, but not limited to, the derivatives listed earlier. Derivative investments comply with the Annuity and Pension Board Investment Policy and Guidelines. Additional information on derivatives for ERS, including the notional and contractual amounts, market values and unrealized gains and losses of holdings, are contained in Note 8.

All investments are made in accordance with the provisions of Section 36-09 of Chapter 36 of the Milwaukee City Charter. The provisions require several funds of the Retirement System to be invested within the requirements of ss. 40.03(1) (n) and 62.63 (3) Wisconsin Statutes. During 2018, investments were in compliance with the Annuity and Pension Board Investment Policy and Guidelines.

**EMPLOYEES' RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE**  
**NOTES TO BASIC FINANCIAL STATEMENTS**  
**AS OF AND FOR THE YEAR ENDED DECEMBER 31, 2018**

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**1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (cont.)**

Investments in stocks of corporations in 2018, as measured by their cost, did not exceed 48.9% of the total assets.

The Retirement System invests in financial instruments such as U.S. Treasury Strips, collateralized mortgage obligations and asset backed securities. Investment managers may temporarily invest small amounts of available cash in short-term investments prior to purchasing securities.

The Retirement System's international equity managers may invest in warrants and foreign exchange forward contracts as a hedge for foreign currency fluctuations. The unrealized gains and losses on these positions as of December 31, 2018, are detailed in Note 8.

Investment securities, in general, are exposed to various risks, such as, but not limited to, interest rate, 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. These value changes could materially affect the amounts reported in the Statement of Fiduciary Net Position.

**Investment Income**

Dividends, interest and realized gains and losses are recorded as earned. Investment income is allocated to each individual fund based on fund balances at the beginning of the year.

**Estimates**

The financial statements are presented in conformity with generally accepted accounting principles. These principles require management to make estimates and assumptions that affect the reported amounts of assets and liabilities, disclosures 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 may differ from those estimates.

**Capitalization**

The Retirement System capitalizes hardware and software development costs. Amounts incurred for hardware (including printers, monitors, disk drives, network infrastructure, switches) are capitalized in a yearly hardware pool and depreciated over three years. Capitalized costs are depreciated over their useful lives, with a half of a year's depreciation expensed in the year of acquisition.

Costs related to the development of the Pension Management Information System were capitalized as Software Development costs. The system went live in 2006 and as of December 31, 2014, the development costs were fully depreciated. As of December 31, 2018, the cost of the Retirement System's hardware and software development totaled \$18,514,798 and accumulated depreciation totaled \$17,808,305. During 2018, depreciation of \$344,127 was recognized and included in Administrative Expenses in the accompanying Statement of Changes in Fiduciary Net Position.



**EMPLOYEES' RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE**  
**NOTES TO BASIC FINANCIAL STATEMENTS**  
**AS OF AND FOR THE YEAR ENDED DECEMBER 31, 2018**

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**1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (cont.)**

**Contingencies**

Claims and judgments are recorded if all the conditions of GASB pronouncements are met. Claims and judgments are recorded as expenses when the related liabilities are probable and management can reasonably estimate the amounts.

**Tax Status**

The Plan is a tax-exempt governmental plan qualified under Section 401 and exempt under Section 501(a) of the Internal Revenue Code.

**New Pronouncements**

In January 2017, the GASB issued Statement No. 84, Fiduciary Activities (an amendment of GASB Statements No. 67, No. 68, and No. 73). The objective of this Statement is to enhance the consistency and comparability of fiduciary activity reporting by state and local governments. This Statement establishes criteria for identifying fiduciary activities of all state and local governments. When Statement No. 84 becomes effective, application of this standard may result in restatement of a portion of these financial statements.

**2. DESCRIPTION OF RETIREMENT SYSTEM**

The following description of the more common provisions of the Employees' Retirement System of the City of Milwaukee is provided for financial statement purposes only. The provisions reflect changes to the Retirement System enacted in 2000, known as the Global Pension Settlement (GPS). GPS increased benefits to current and future retirees and also allowed changes to the ERS administration, including permitting the use of ERS funds to pay costs related to plan administration. The 99.0% of existing members who have consented to GPS are accounted for in the Global Combined Fund. Members who have not consented are accounted for in one or more of the non-consenter funds. Refer to Chapter 36 of the City of Milwaukee Charter for more complete information.

GPS requires that members enrolled through June 28, 2000 provide written consent to ERS in order to be eligible for the benefit enhancements of GPS. Members enrolled after June 28, 2000, are automatically eligible and are included in the Combined Fund.

Subsequent to completion of the January 1, 2018 actuarial valuation, 9 members who were enrolled as of June 28, 2000 and had not consented to GPS, elected to consent. The January 1, 2019 actuarial valuation reflects the impact of this change.

**EMPLOYEES' RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE**  
**NOTES TO BASIC FINANCIAL STATEMENTS**  
**AS OF AND FOR THE YEAR ENDED DECEMBER 31, 2018**

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**2. DESCRIPTION OF RETIREMENT SYSTEM (cont.)**

**Plan Administration**

The Retirement System was established pursuant to the Retirement Act (Chapter 396 of the Laws of Wisconsin of 1937) to provide payment of retirement and other benefits to employees of the City of Milwaukee (City). Chapter 441 of the Laws of Wisconsin of 1947 made the benefits contractual and vested. The ERS is a cost-sharing, multi-employer plan, which provides benefits to employees of the Milwaukee Metropolitan Sewerage District, Wisconsin Center District, Veolia Water Milwaukee LLC, Milwaukee Housing and Redevelopment Authorities, non-certified staff of Milwaukee Public Schools, and some employees of the Milwaukee Area Technical College (Agencies). City employees comprise approximately 54.8% of the active participants in the Retirement System.

On July 6, 2018, the Wisconsin Supreme Court issued a decision on Case No. 2015-AP-2375 that invalidated certain 2013 Amendments to the Milwaukee City Charter Chapter 36. As a result of the decision, the composition of the Annuity and Pension Board (the Board) is as follows:

- Three representatives appointed by the President of the Common Council
- Three trustees elected by the active members of ERS
- City Comptroller, who serves as an ex-officio voting member
- One representative elected by retired members of the ERS

The Wisconsin Supreme Court decision vacated the employee elected members of the Pension and Annuity Board. In December 2018, ERS held an election for the three active member trustee positions.

**Membership**

Full-time employees, part-time employees who are eligible under adopted rules and regulations, and elected officials who have evidenced their intent to join are members of the Retirement System.

At January 1, 2018, the measurement date, the membership of the plan was as follows:

<b>Plan members currently receiving benefits</b>	<b>13,196</b>
<b>Inactive plan members entitled to, but not yet receiving benefits</b>	<b>3,135</b>
<b>Current employees:</b>	
Vested	7,327
Non-vested	<u>3,518</u>
<b>Total</b>	<b><u>27,176</u></b>

This membership data is as of January 1, 2018, and reasonably approximates membership data through December 31, 2018.

**EMPLOYEES' RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE**  
**NOTES TO BASIC FINANCIAL STATEMENTS**  
**AS OF AND FOR THE YEAR ENDED DECEMBER 31, 2018**

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**2. DESCRIPTION OF RETIREMENT SYSTEM (cont.)**

**Contributions**

Member contributions to the ERS are required under Chapter 36-08-7. The City of Milwaukee in its legislative capacity has sole authority to make changes to Chapter 36, and to set contribution requirements and benefit terms. It is a section 401(a), Internal Revenue Code, qualified cost-sharing, multiple-employer defined benefit plan for participating public employees.

Contribution rates, as a percentage of earnable compensation, are as follows:

- a) General Employees
  - i. Tier 1 (enrolled prior to January 1, 2014) – 5.5%
  - ii. Tier 2 (enrolled on or after January 1, 2014) – 4.0%
- b) Firemen and Policemen – 7.0%
- c) Elected Officials
  - i. Tier 1
    - i. Enrolled prior to January 1, 2014 and elected to an office prior to January 1, 2014 – 7.0%
    - ii. Enrolled prior to January 1, 2014, and elected for the first time to an office on or after January 1, 2014, and employee was paying contributions prior to being elected – employee pays contributions at the rate they were paying prior to becoming an elected official
    - iii. Enrolled prior to January 1, 2014, and elected for the first time to an office on or after January 1, 2014, and employer was paying contributions on behalf of the employee prior to being elected – employer pays 7.0%
  - ii. Tier 2 (enrolled on or after January 1, 2014) – 4.0%

Commencing in 1999, contributions of one dollar of each police officer's longevity pay per year are made by police officers on their own behalf. This excludes sergeant of police, detective lieutenant and any ranks above same.

In addition to the above percentage contributions, additional contributions were required of general city employees who were enrolled as active members after January 1, 2000. To participate in the Global Combined Fund, each new member was required to contribute 1.6% of his or her pensionable earnings for a period of eight years. However, the 1.6% required contributions did not apply to members required to make member contributions under 36-08-7-a or c.

The Retirement System requires regular payroll contributions from its agencies and members for all active employees covered by the plan on a biweekly basis. To provide for disciplined, predictable and stable funding of pension obligations as a percentage of covered compensation, the City amended its charter to revise the method used to determine employer contributions to the ERS Combined Fund (referred to as the Stable Employer Contribution Policy). This amendment repealed the full-funding limit.

**EMPLOYEES' RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE**  
**NOTES TO BASIC FINANCIAL STATEMENTS**  
**AS OF AND FOR THE YEAR ENDED DECEMBER 31, 2018**

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**2. DESCRIPTION OF RETIREMENT SYSTEM (cont.)**

The amendment achieves stable and predictable contribution levels.

The 2011 Wisconsin Act 10, known as the governor's Budget Repair Bill, created Wis. Stat. 62.623 addresses payment of contributions in an employee retirement system of a first class city. The Act requires certain members to pay employee required contributions, and prohibits their employer from making contributions on their behalf.

**Benefits Provided**

The normal retirement benefit is a monthly pension for the life of the member. A service retirement allowance is payable to any member who meets one of the following eligibility criteria:

<u>Class</u>	<u>Enrollment Date</u>	<u>Eligibility for Service Retirement*</u>
General City	Prior to January 1, 2014	Age 60, or age 55 with 30 years of creditable service
General City	On/after January 1, 2014	Age 65, or age 60 with 30 years of creditable service
Fire	Prior to July 30, 2016	Age 57, or age 49 with 22 years of creditable fire or police service
Fire	On/after July 30, 2016	Age 57, or age 52 with 25 years of creditable fire service
Police	Prior to December 20, 2015	Age 57, or any age with 25 years of creditable fire or police service
Police	On/after December 20, 2015	Age 57, or age 50 with 25 years of creditable police service

*\*These eligibility criteria assume consent to the provisions of the Global Pension Settlement (GPS); most members have consented to GPS.*

For General City employees, the service retirement allowance is 2%, or 1.6% for members enrolled on or after January 1, 2014, of the member's final average salary (the highest average of earnable compensation during any 3 years preceding retirement, death or termination) for each year of creditable service. The service retirement allowance for General City employees who retire after January 1, 1989, cannot exceed 70% of their final average salary.

For police officers and firefighters, the retirement allowance is 2.5% of their final average salary (computed on the year of creditable service during which earnable compensation was highest) for each year of creditable service. The retirement allowance for firefighters hired after March 1, 1989, and police officers hired after July 1, 1989, is limited to 90% of their final average salary (excluding any imputed service credit provided under the GPS).

For elected officials enrolled prior to January 1, 2014, the retirement allowance is 2.6% of their final average salary for each year of creditable service as an elected official for years before 1996 and is limited to 70% of the final average salary. For the years 1996 and forward, the accrual rate is 2.5% (For

**EMPLOYEES' RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE**  
**NOTES TO BASIC FINANCIAL STATEMENTS**  
**AS OF AND FOR THE YEAR ENDED DECEMBER 31, 2018**

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**2. DESCRIPTION OF RETIREMENT SYSTEM (cont.)**

the Mayor, the accrual rate is 2.0%) for creditable service, imputed military service, or seasonal service and is limited to 70% of their final average salary. However, elected officials who were enrolled prior to 2014 and are first elected to office on or after January 1, 2014, have an accrual rate of 2% for each year if they contribute 5.5% of their earnable compensation, or 2.5% for each year if they contribute 7% of their earnable compensation. For elected officials enrolled on or after January 1, 2014, the accrual rate is 1.6% of their final average salary for each year of creditable service as an elected official, and is limited to 70% of their final average salary.

Chapter 36 of the Milwaukee City Charter addresses pension escalators. General City employees participating in the Global Combined Fund and enrolled prior to January 1, 2014 and retiring on a service retirement allowance on or after January 1, 2000, are eligible for a pension escalator of 1.5% on the second, third and fourth anniversaries of their retirement, and 2% on each anniversary thereafter. Police officers and firefighters participating in the Global Combined Fund retiring on a service retirement allowance on or after January 1, 2000, are eligible for a pension escalator based upon the percentage increase in the prior year's Consumer Price Index-All Urban Consumers (CPI-U), effective on their first anniversary and each anniversary thereafter. The percentage increase is determined annually by measuring the change in the Index from November to November of each year. The pension escalator is guaranteed to be at least two percent, but is capped at three percent.

General City employees enrolled on or after January 1, 2014, retiring on a service retirement allowance are eligible for a pension escalator of 2% on their fifth anniversary of retirement and each anniversary thereafter.

Rules governing pension escalators provided to retirees retiring prior to January 1, 2000, before the Global Pension Settlement, differ from those described herein. In addition, a one-time "catch up," adjustment was provided in January of 1996 to employees who retired on a service retirement allowance on or before September 30, 1987, to partially offset the increase in inflation. For a complete description of the escalator rules, see Chapter 36 of the Milwaukee City Charter.

**3. CONSENT STATUS CHANGES**

Members who have not consented to the GPS have either objected to the settlement or never responded. The deadline to consent of April 24, 2004, has been extended indefinitely for those who never responded. Often, non-responders consent to GPS at the time they apply for benefits. As of the January 1, 2018, actuarial valuation, 310 members were non-consenting, including 72 active members, 223 inactive members, and 15 benefit recipients. During 2018, nine members elected to consent to the GPS, resulting in a transfer of \$2,099,000 to the Global Combined Fund from the non-consenter funds.

**EMPLOYEES' RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE**  
**NOTES TO BASIC FINANCIAL STATEMENTS**  
**AS OF AND FOR THE YEAR ENDED DECEMBER 31, 2018**

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**4. EMPLOYERS' RESERVE FUND**

The City of Milwaukee and other Agencies participating in the Retirement System may voluntarily contribute to the Employers' Reserve Fund which was established per Section 36-08-8 of Chapter 36. Deposits to the Employers' Reserve Fund may be used to fund contribution requirements, but this requires a formal resolution directing a fund transfer. Employers' Reserve Fund resources are invested according to City of Milwaukee investment policies.

For 2018, there was no transfer from the Employers' Reserve Fund. As of December 31, 2018, the City of Milwaukee is the only employer participating in the fund.

**5. NET PENSION LIABILITY**

The components of the pension liability at December 31, 2018, were as follows (in thousands):

Total pension liability	\$ 6,289,760
Plan fiduciary net position	<u>(4,950,881)</u>
Net pension liability	<u><u>\$ 1,338,879</u></u>

Plan fiduciary net position as a percentage of the total pension liability	78.71%
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**5. NET PENSION LIABILITY (cont.)**

**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. The valuation was determined using the following actuarial assumptions, which were applied to all prior periods included in the measurement:

Valuation Date	January 1, 2018
Actuarial Cost Method	Entry Age Normal - Level Percentage of Pay
Amortization Method	Level percent of payroll, closed
Asset Valuation Method	5-year smoothing of difference between expected return on actuarial value and actual return on market value
<b>Actuarial Assumptions:</b>	
Investment Rate of Return	7.50% per annum, compounded annually
Projected Salary Increases	General City: 2.5% - 5.5% Police & Fire: 4.0% - 13.4%
Inflation Assumption	2.50%
Cost of Living Adjustments	Varies by employee group and decrement type (see plan provisions)
Mortality Table	Post-retirement mortality rates are based on the RP-2014 Healthy Annuitant Mortality Table, using 111% of rates for males and 110% of rates for females, projected generationally with Scale MP-2016. Disabled mortality rates are based on RP-2014 Disabled Mortality Table, using 102% of rates for males and 98% of rates for females, projected generationally using Scale MP-2016. Active mortality rates are based on the RP-2014 Employee Mortality Table, projected generationally using Scale MP-2016.
Experience Study	The actuarial assumptions used in the December 31, 2018 valuation were based on the results of an actuarial experience study for the period January 1, 2012-December 31, 2016.

The total pension liability as of December 31, 2018 was determined by rolling forward the total pension liability as of January 1, 2018 to December 31, 2018.

The actuarial assumptions used in this valuation, other than the long-term rate of return, are based on the results of the most recent experience review performed by the consultants, Conduent HR Consulting, LLC. The results of the experience review were adopted by the Board at the October 23, 2017 meeting. The long-term rate of return is based on analysis performed by Cavanaugh Macdonald Consulting, LLC and adopted by the Board at the April 29, 2019 meeting.

The rate of return assumption was based on the Retirement System's target asset allocation. In the experience review, the consultants developed best estimate ranges of expected future real rates of return (net of inflation) for the portfolio, based on the expected returns of each major asset class and their weights within the portfolio.

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**5. NET PENSION LIABILITY (cont.)**

The consultants used an econometric model that forecasts a variety of economic environments and then calculates asset class returns based on functional relationships between the economic variables and the asset classes. Expected investment expenses were subtracted and expected inflation was added to arrive at the long-term expected nominal return. The rate for the long term expected return was selected for the portfolio such that there was a better than 50% likelihood of the emerging returns exceeding the expected return.

Best estimates of arithmetic real rates of return (net of inflation) for each major asset class included in the Retirement System's target asset allocation as of December 31, 2018 are listed in the table below:

<u>Asset Class</u>	<u>Asset Allocation</u>	<u>Long-term Expected Real Rate of Return*</u>
Public Equity	47.0%	7.3%
Fixed Income & Cash	25.0%	3.1%
Real Estate	7.7%	5.6%
Real Assets	3.3%	4.5%
Private Equity	8.0%	10.6%
Absolute Return	9.0%	2.9%
	<u>100.0%</u>	

*\* Rates provided by Callan Associates*

**Discount Rate:** The discount rate used to measure the total pension liability was 7.50 percent. The projection of cash flows used to determine the discount rate assumed that contributions from plan members will be made at the current contribution rate and that contributions from the City and Agencies will be made at contractually required rates, as determined by the actuary. Based on those assumptions, the ERS' fiduciary net position was projected to be available to make projected future benefit payments for current members. The cross over analysis produced a single rate of 7.50 percent, which reflects the long-term expected rate of return on ERS investments. Based on the analysis, the discount rate was applied to all periods of projected benefit payments to determine the total pension liability. The Annuity and Pension Board changed the long-term assumed rate of return to 7.50% from the blended rate of 8.24% used in the 2017 fiscal year. This change was adopted by the board at the April 29, 2019 meeting and is effective for the measurement date of December 31, 2018.



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**5. NET PENSION LIABILITY (cont.)**

**Sensitivity of the net pension liability to changes in the discount rate:** The following presents the net pension liability calculated using the discount rate of 7.50 percent, a discount rate that is 1-percentage-point lower (6.50 percent) and a discount rate that is 1-percentage-point higher (8.50 percent) (in thousands):

	<b>1% Decrease (6.50%)</b>	<b>Current Discount (7.50%)</b>	<b>1% Increase (8.50%)</b>
Net pension liability	\$ 2,094,227	\$ 1,338,879	\$ 710,281

**6. EXPENSES**

Under the Milwaukee City Charter, as provided in the GPS, administrative and investment expenses of the Retirement System are the direct obligation of the Global Combined Fund. Expenses are normally paid by the City of Milwaukee and then reimbursed to the City by ERS.

Investment-related fees of approximately \$49,456,000 and administrative expenses of approximately \$7,188,000 were charged to the Retirement System in 2018. In addition, the Annuity and Pension Board authorized the payment of \$1,532,000 of administrative costs from the Securities Lending Fund during 2018. This reduced the amount needed from the Global Combined Fund for costs to administer the Retirement System (see Note 8).

**7. INCOME TAX STATUS**

The most recent determination letter is dated February 7, 2017, with the Internal Revenue Service (IRS) stating that the Retirement System, as then designed and in conjunction with the proposed amendments required by the IRS, was in compliance with the applicable requirements of the Internal Revenue Code. The Retirement System's management believes that the plan is currently designed and being operated in compliance with the applicable requirements of the Internal Revenue Code. Therefore, the accompanying basic financial statements reflect no provision for income taxes.

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## **8. INVESTMENTS**

### **Investment Policies**

The Retirement System's policy for the allocation of invested assets is established, and amended, as needed, by the ERS Board. The ERS Board's adopted asset allocation policy as of December 31, 2018 is provided on page 36. Plan assets are managed on a total return basis with a long-term objective of achieving and maintaining a fully funded status for the benefits provided through the Retirement System.

ERS publishes its latest Investment Policy on its website. The latest general investment policy was approved by the board in December 2018. The major changes were a decrease of the allocation to Public Equities, and an increase of the allocations to Private Equity, Fixed Income, and Absolute Return.

### **Rate of Return**

For the year ended December 31, 2018, the annual money-weighted rate of return on ERS investments, net of pension plan investment expense, was negative 2.75 percent. The money-weighted rate of return expresses investment performance, net of investment expense, adjusted for the changing amounts actually invested.

### **Fair Value Measurement**

The Retirement System categorizes their fair value measurements within the fair value hierarchy established by generally accepted accounting principles. ERS had the following recurring fair value measurements as of December 31, 2018 (in thousands):

<b>Investment Type</b>	<b>Fair Market Value</b>	<b>Fair Value Measurements Using</b>		
		<b>Level 1</b>	<b>Level 2</b>	<b>Level 3</b>
Public Equity	\$ 2,235,510	\$ 1,139,034	\$ 1,008,576	\$ 87,900
Fixed Income	1,230,203	-	742,758	487,445
Absolute Return	477,681	-	120,049	357,632
Public Diversified Real Assets	161,727	-	161,727	-
Total assets in the Fair Value Hierarchy	\$ 4,105,121	\$ 1,139,034	\$ 2,033,110	\$ 932,977
Investments measured at Net Asset Value *	799,430			
Investments at Fair Value	<u>\$ 4,904,551</u>			

*\* Per GASB 72, investments that are measured using the net asset value per share (or its equivalent) are not classified in the fair value hierarchy. The fair value presented in this table are intended to permit reconciliation of the fair value hierarchy to the line items presented in the Statement of Fiduciary Net Position.*

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**8. INVESTMENTS (cont.)**

The hierarchy is based on the valuation inputs used to measure the fair value of the asset and give the highest priority (Level 1) to unadjusted quoted prices in active markets for identical assets or liabilities and the lowest priority (Level 3) to unobservable inputs.

**Level 1:** Unadjusted quoted prices for identical instruments in active markets.

**Level 2:** Quoted prices for similar instruments in active markets; quoted prices for identical or similar instruments in markets that are not active; and model-derived valuations in which all significant inputs are observable.

**Level 3:** Valuations derived from valuation techniques in which significant inputs are unobservable.

The following is a description of the valuation methodologies used for assets measured at fair value. There were no changes to the methodologies during the year ended December 31, 2018.

U.S. treasury securities, equity securities, Real Estate Investment Trusts, and Exchange Traded Funds classified in Level 1 are valued using prices quoted in active markets for those securities.

Debt and debt derivative securities classified in Level 2 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 were readily available to market participants who are known to be actively involved in the market. Equity and equity derivative securities classified in Level 2 are securities whose values are derived daily from associated traded securities.

The System's 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.

Real estate and private equity are valued using the net asset value (NAV) per share (or its equivalent). These investments are considered "alternative investments," and, unlike more traditional investments, generally do not have readily obtainable market values and take the form of limited partnerships. These investments are valued based on the partnerships' audited financial statements. If December 31 statements are available, those values are used. If December 31 values are not available, the valuation is adjusted

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**8. INVESTMENTS (cont.)**

from the most recently available valuation taking into account subsequent calls and distributions, adjusted for unrealized appreciation/depreciation, other income, and fees.

The summary of unfunded commitments for these types of alternative investments is reported below (in thousands).

<b>Investment Type</b>	<b>Fair Value</b>	<b>Unfunded Commitments</b>	<b>Redemption Frequency (If Currently Eligible)</b>	<b>Redemption Notice Period</b>
Private Equities	\$ 385,135	\$ 237,605	N/A	N/A
Real Assets - Non-Core	69,578	24,956	N/A	N/A
Real Assets - Core	344,717	-	Quarterly	90 Days
<b>Totals</b>	<b>\$ 799,430</b>	<b>\$ 262,561</b>		

**Private Equities**

This consists of four “fund of funds,, managers that invest in a multitude of underlying private equity funds. The primary investment type of the underlying funds is buyout and growth equity. Investments can never be redeemed from the funds. Instead, distributions are received through the liquidation of the underlying assets of the funds. It is expected that the funds will be liquidated over the next 15-20 years. The funds are valued on a quarterly basis using appraisals based on the best estimate of market value.

**Real Estate Investments – Non-Core**

This consists of 21 closed-end funds that invest primarily in U.S. commercial real estate. Investments can never be redeemed from the funds. Instead, distributions are received through the liquidation of the underlying assets of the funds. It is expected that the funds will be liquidated over the next 7 to 10 years. The funds are valued on a quarterly basis using appraisals based on the best estimate of market value.

**Real Estate Investments – Core**

This consists of four open-end funds that invest primarily in U.S. commercial real estate. Investments can be redeemed from the funds on a quarterly basis with 90 days’ notice, subject to availability of sufficient capital to cover the redemption. The funds are valued on a quarterly basis using appraisals based on the best estimate of market value.

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**8. INVESTMENTS (cont.)**

**Deposits and Custodial Credit Risk**

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 held by the counterparty. As of December 31, 2018, no investments or securities were exposed to custodial credit risk.

The Retirement System is also exposed to custodial credit risk for uncollateralized cash and cash equivalents that are not covered by federal depository insurance. As of December 31, 2018, approximately \$482,000 of cash and cash equivalents was exposed to custodial credit risk.

The Retirement System was established to provide for the present and future retirement, disability, and death and survivor benefit payments for all city and city agency employees. All of the funds of the Retirement System taken in the aggregate constitute a special trust subject to applicable local, state, and federal laws, including but not limited to sections 36-15, 36-09-1, and 36-09-6 of the Milwaukee City Charter.

**Concentration of Credit Risk**

Concentration of credit risk is the risk of loss attributed to magnitude of an entity's investment in a single issuer. As of December 31, 2018, the Retirement System has no single issuer that exceeds 5% 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.

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**8. INVESTMENTS (cont.)**

**Interest Rate Risk**

Interest rate risk is the risk that changes in interest rates will adversely affect the fair value of an investment. The Retirement System's investment guidelines limit how much each fixed income manager may deviate duration from their respective benchmarks. Duration is the approximate percentage change in price for a 100-basis-point change in yield. Depending on the investment manager, the duration of the Retirement Systems active fixed income managers must either be between 50% and 250% of the duration of the Bloomberg Barclays U.S. Aggregate Index or +/- 2 years of the Bloomberg Barclays U.S. Aggregate Index. As of December 31, 2018, the segmented time distribution of the various investment types of debt securities for the Retirement System is as follows (in thousands):

<b>Investment Type</b>	<b>Fair Market Value</b>	<b>1 Year or Less</b>	<b>1 to 5 Years</b>	<b>6 to 10 Years</b>	<b>More than 10 Years</b>
Asset Backed Securities	\$ 8,426	\$ 121	\$ 4,572	\$ 150	\$ 3,583
Commercial Mortgage-Backed	7,715	-	-	-	7,715
Corporate Bonds	333,247	23,896	153,286	97,437	58,628
Corporate Convertible Bonds	9,232	666	4,825	233	3,508
Government Bonds	263,307	22,529	109,924	93,049	37,805
Government Mortgage Backed Securities	100,377	-	46,699	20,539	33,139
Gov't-issued Commercial Mortgage-Backed	7,752	-	5,875	1,877	-
Index Linked Government Bonds	11,289	-	-	11,289	-
Municipal/Provincial Bonds	6,131	-	-	-	6,131
Short Term Bills and Notes	4,514	4,514	-	-	-
<b>Totals</b>	<b>\$ 751,990</b>	<b>\$ 51,726</b>	<b>\$ 325,181</b>	<b>\$ 224,574</b>	<b>\$ 150,509</b>

Assets held in commingled funds are classified based on the individual fund's characteristics as of December 31, 2018. As a result, Fair Market Values for individual Investment Types within this table may differ from the Summary of Investment Holdings provided on page 69.

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**8. INVESTMENTS (cont.)**

**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. ERS investment guidelines allow foreign currency contracts for defensive hedging purposes. In addition, the guidelines recommend adequate diversification by country and currency. As of December 31, 2018, the Retirement System's exposure to foreign currency risk, expressed in U.S. Dollars, is as follows (in thousands):

<b>Foreign Currency</b>	<b>Equities</b>	<b>Fixed Income</b>	<b>Real Estate and Private Equity</b>	<b>Total Fair Market Value</b>
Australian dollar	\$ 9,282	\$ -	\$ -	\$ 9,282
Brazilian real	9,420	1,758	-	11,178
British pound sterling	128,724	902	3,346	132,972
Canadian dollar	13,244	1,012	-	14,256
Danish krone	6,854	-	-	6,854
Euro	183,561	-	1,209	184,770
Hong Kong dollar	15,272	-	-	15,272
Indian rupee	656	-	-	656
Japanese yen	85,558	-	1,862	87,420
Mexican peso	7,591	7,352	-	14,943
New Taiwan dollar	4,353	-	-	4,353
New Zealand dollar	-	3,182	-	3,182
Norwegian krone	341	441	-	782
South Korean won	20,170	-	-	20,170
Swedish krona	4,200	-	-	4,200
Swiss franc	43,388	-	-	43,388
<b>Totals</b>	<b>\$ 532,614</b>	<b>\$ 14,647</b>	<b>\$ 6,417</b>	<b>\$ 553,678</b>

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**8. INVESTMENTS (cont.)**

**Credit Risk of Debt Securities**

Credit risk is the risk that an issuer or other counterparty to an investment will not fulfill its obligations. The Retirement System's investment guidelines require its fixed income managers to have an Investment Grade average portfolio. The Retirement System's active fixed income managers are allowed to hold a maximum of 20% of their respective portfolio's market value in issues rated B- or B3, and an additional 5% may be invested in non-rated issues. The quality ratings of investments in fixed income securities of the Retirement System as described by Standard & Poor's as of December 31, 2018, are as follows (in thousands):

Investment Type	Fair Market		US Government								Not Rated									
	Value		AAA	AA	A	BBB	BB	B	CCC	Guaranteed	Quality Rating	Not Available								
Asset Backed Securities	\$	8,426	\$	2,557	\$	870	\$	4,492	\$	-	\$	-	\$	507	**					
Commercial Mortgage-Backed		7,715		1,570		-		-		-		-		-	6,145	**				
Corporate Bonds		333,247		15,671		31,292		74,076		108,419		62,830		39,434		915	**			
Corporate Convertible Bonds		9,232		-		-		1,054		-		5,254		-		2,353	**			
Government Bonds		263,307		441		3,183		6,983		-		1,757		-		250,167	**			
Government Mortgage Backed Securities		100,377		-		-		-		-		-		-		100,377	-			
Gov't-issued Commercial Mortgage-Backed		7,752		-		-		-		-		-		-		7,752	-			
Index Linked Government Bonds		11,289		-		-		-		-		-		-		11,289	-			
Municipal/Provincial Bonds		6,131		-		-		-		-		-		6,131		-	-			
Short Term Bills and Notes		4,514		-		-		-		-		-		-		4,514	-			
Totals	\$	751,990	\$	20,239	\$	35,345	\$	86,605	\$	108,419	\$	69,841	\$	45,565	\$	2,963	\$	374,099	\$	8,914

\*\* Bonds listed as Not Rated by S&P are rated Investment Grade by Moody's.

Assets held in commingled funds are classified based on the individual fund's characteristics as of December 31, 2018. As a result, Fair Market Values for individual Investment Types within this table may differ from the Summary of Investment Holdings provided on page 69.



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**8. INVESTMENTS (cont.)**

**Derivatives**

The ERS' Statement of Investment Policy written objectives and guidelines governing the investment of Fund assets allows separate account investment managers to use forward contracts and derivatives traded on a recognized derivatives exchange for hedging and efficient portfolio management purposes if the Board approves their use within the individual manager's written guidelines. No assets shall be committed to futures, options, options on futures, forwards and other derivatives unless approved by the Board.

Prohibited investments in separate accounts include mortgage interest only, principal only, inverse floaters or other CMO derivatives that have uncertain or volatile duration or price movement.

In 2018, the Retirement System's separate account investment managers utilized currency forwards, bond futures, and credit default swaps. Currency forwards are necessary to purchase or sell non-U.S. securities. Bond forwards and futures are sometimes more liquid and easier to trade than the respective underlying security and can allow an investment manager to reduce the costs of constructing an efficient portfolio.

Currency Forwards

A foreign 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. The Retirement System's International Equity and Global Equity managers entered into foreign exchange positions, such as forward and spot contracts, to hedge foreign currency exposure or obtain a currency for a pending cash transaction. The ERS has two Fixed Income managers who are allowed to invest globally, and they enter into spot contracts to obtain a currency for a pending cash transaction. The majority of the contracts are short-term in duration and mature within 90 days. However, as of December 31, 2018, some contract positions had longer durations that did not exceed 3 years.

Bond Futures

A futures contract is a standardized contractual agreement between two parties, made through an organized exchange, to buy or sell a pre-determined amount of a bond at a future date in exchange for a price agreed upon today. The counterparty credit risk for a futures contract is generally less than privately negotiated forward contracts because the organized exchange acts as a clearinghouse that typically settles net changes to futures contract values daily. ERS had no futures contracts as of December 31, 2018.

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**8. INVESTMENTS (cont.)**

The following table summarizes the aggregate notional or contractual amounts for the ERS' separate account managers as of December 31, 2018 (in thousands):

	<b>Notational/ Contractual Amounts</b>	<b>Fair Market Value</b>	<b>Gain/(Loss)</b>
Foreign exchange forward spot contracts receivable	\$ 299	\$ 299	\$ -
Foreign exchange forward spot contracts payable	(299)	(299)	-
Foreign exchange forward long-term receivable	508	508	-
Foreign exchange forward long-term payable	(508)	(512)	(4)

These instruments are recorded in cash and cash equivalents, investment receivables, and investments in the Statements of Fiduciary Net Position. The changes in fair value are included in investment income in the Statement of Changes in Fiduciary Net Position.

Fixed Income Index Credit Default Swaps

A credit default swap is a type of swap designed to transfer the credit exposure of a fixed income product from one party to another. ERS grants one of its managers the ability to sell protection on the CDS index. This position is equivalent to the credit risk of holding the underlying bonds, but carries significantly lower trading costs. The CDS may not be used to create leverage, and must be fully collateralized by cash or US Treasury securities.

Derivative Risk

The total exposure of all hedges is limited to 100% of the total portfolio value, at market. Shorting currency exposure in countries without any underlying security exposure is prohibited.

The ERS is also exposed to market risk, the risk that future changes in market conditions may make an instrument less valuable. Exposure to market risk is managed through the limits placed on an investment manager within the Statement of Investment Policy.

The ERS is exposed to credit risk in the event of non-performance by counterparties to financial instruments. Typical counterparties for ERS are major financial institutions and broker-dealers. A counterparty's financial condition, cash on hand, and general credit worthiness is evaluated prior to entering into a transaction. In addition, ratings agencies' evaluations are reviewed.

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**8. INVESTMENTS (cont.)**

The following table summarizes the counterparty credit risk amounts for the ERS' for derivatives as of December 31, 2018 (in thousands):

				Exchange	Not Rated
Investment Type		A	BBB	Traded	Quality Rating
					Not Available
Assets					
Warrants	Equity Contracts	\$ -	\$ -	\$ -	\$ 163
Liabilities					
Forwards	Foreign Exchange Contracts	-	-	-	(4)
Total Value by Rating		\$ -	\$ -	\$ -	\$ 159

**Securities Lending**

ERS started the securities lending program in 1993. Eligible securities are loaned out through the ERS custodian, Northern Trust. ERS earns a daily fee for securities loaned and incurs a reduction in earnings per the indemnification agreement with the custodian. Each security loan is initially collateralized by securities or cash for at least 102% of its market value (105% for international securities). Collateral is held by the custodian. Cash collateral received from borrowers is invested in a short-term investment pool, which is managed by Northern Trust. The custodian's lending program does not operate the collateral investments as a "matched program,, where the length of the loaned assets is specifically matched to the length of the portfolio investments. Loans are open and renewed each day until they are no longer needed. The loans can be terminated at any time by either the agent or the borrower.

Revenue earned from securities lending is used to offset expenses of the Retirement System. If revenues are not expended within one calendar year following receipt, the remaining amount is distributed to the Non-Consenter Retirement Fund. For the year ended December 31, 2018, the Retirement System earned revenue from securities lending of approximately \$6,766,000, and paid custodian fees and rebates of approximately \$5,574,000. The ERS also disbursed \$1,532,000 to offset some of the Retirement System's administrative costs.

As of December 31, 2018, ERS has securities on loan with a fair value of approximately \$217,874,000 and the short-term collateral investment pool has a fair value of approximately \$221,990,000.

<b>Investment Type</b>		<b>Securities on Loan</b>
		<b>Fair Value</b>
<b>Global Equities</b>	\$	14,830,787
<b>US Corporate Fixed</b>		23,500,261
<b>US Equities</b>		98,844,869
<b>US Government Fixed</b>		63,894,650
<b>Other Securities</b>		16,803,383
<b>Totals</b>	<b>\$</b>	<b>217,873,950</b>

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**8. INVESTMENTS (cont.)**

The two main risks in securities lending are counterparty risk and collateral investment risk. Counterparty risk is the risk that the borrower defaults on a loan and is unable to return the security. The ERS' contract with Northern Trust indemnifies ERS of any losses suffered as a result of the securities lending program due to counterparty default. Collateral investment risk is the risk that an investment in a collateral option becomes impaired or decreases in value. ERS is responsible to refund any losses to the borrower as a result of losses in the collateral pool. As of December 31, 2018, the ERS' collateral pool was trading at or near fair market value with no impairments.

**9. COMMITMENTS & CONTINGENCIES**

The Retirement System is involved in litigation and 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 basic financial statements.

**10. FIDUCIARY RESPONSIBILITY OF THE POLICEMEN'S ANNUITY & BENEFIT FUND**

On December 14, 2005, the Policemen's Annuity and Benefit Fund (PABF) board adopted a resolution to dissolve and to liquidate all assets of the fund, and transfer the assets and full administrative control to the ERS. Charter Ordinances ss. 35-01-3-b and 36-15-1-e, enacted under common council file #050744, transferred the administrative and managerial responsibilities of the PABF to the ERS, authorizing the ERS Annuity and Pension Board to invest the assets of the PABF and to manage its operations. All assets of the PABF were transferred to the systems custodian, Northern Trust, early in 2006. The ERS board assumed custodial authority and responsibility for the fund's assets on January 3, 2006. These resources are disclosed as a separate fiduciary fund and valuations were prepared by the ERS actuary.

The plan's funding policy is specified in the Milwaukee City Charter, Chapter 35, as amended by Charter Ordinances, Numbers 356 and 357. The annual requirement consists of an amount sufficient to amortize the present value of benefits to all active and retired employees less the value of actuarial assets in the Fund by a series of level payments over the remainder of the funding period. File numbers 950930 and 970052 provide that the Board shall adopt the assumptions which the actuary uses in the annual valuation and tax levy certification. This contribution will comply with GASB, which requires that the annual required contributions (ARC) of the employer should be actuarially determined and have a provision for amortizing the unfunded liability. In general, GASB allows an amortization period of up to 30 years, but 10 years was deemed appropriate for this Fund. No tax levy was budgeted for 2018.

As of December 31, 2018, the composition of the PABF consisted of 2 annuitants and 14 widows. When all annuitants and widows are deceased, the fund is to be closed and remaining funds are to be remitted back to the City of Milwaukee.

**EMPLOYEES' RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE**  
**NOTES TO BASIC FINANCIAL STATEMENTS**  
**AS OF AND FOR THE YEAR ENDED DECEMBER 31, 2018**

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**10. FIDUCIARY RESPONSIBILITY OF THE POLICEMEN'S ANNUITY & BENEFIT FUND (cont.)**

During 2015, the Policemen's Annuity and Benefit Fund became insolvent on an actuarial basis. Because of this, the City of Milwaukee started funding the benefits and administrative expenses on a monthly basis. On July 31, 2017, the ERS pension board approved a resolution to discontinue preparing the PABF actuarial valuation.

As of December 31, 2018, the PABF has a fund balance of \$2,500. Based upon the size of the PABF, ERS believes that the GASB Statement No. 67 disclosures for PABF are immaterial to the Comprehensive Annual Financial Report as a whole and that eliminating the separate GASB No. 67 disclosures for the PABF will result in less confusion to the users of the financial statements.

**11. SUBSEQUENT EVENTS**

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

# REQUIRED SUPPLEMENTARY INFORMATION

(See Independent Auditors' Report)

**EMPLOYEES' RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE**  
**Required Supplementary Information**  
**Schedule of Changes in the Net Pension Liability**  
**Last 5 Fiscal Years**  
**(in thousands)**

	2018	2017	2016	2015	2014
Total pension liability					
Service cost	\$ 75,119	\$ 77,681	\$ 70,377	\$ 70,500	\$ 69,693
Interest	464,845	441,811	430,745	418,874	409,899
Changes in benefit items	-	-	-	-	-
Differences between expected and actual experience	(91,515)	67,154	(9,921)	(30,035)	-
Changes of assumptions	475,766	244,993	-	(5,206)	-
Benefit payments including refunds of member contributions	(393,526)	(385,331)	(351,303)	(347,889)	(342,569)
Net change in total pension liability	530,689	446,308	139,898	106,244	137,023
Total pension liability - beginning	5,759,071	5,312,763	5,172,865	5,066,621	4,929,598
Total pension liability - ending	<u>\$ 6,289,760</u>	<u>\$ 5,759,071</u>	<u>\$ 5,312,763</u>	<u>\$ 5,172,865</u>	<u>\$ 5,066,621</u>
Plan fiduciary net position					
Contributions - employer	\$ 83,166	\$ 83,524	\$ 74,095	\$ 72,198	\$ 72,844
Contributions - member	32,085	32,494	35,918	49,553	43,663
Net investment income	(160,190)	787,809	383,747	34,982	238,985
Benefit payments, including refunds of member contributions	(393,526)	(385,332)	(351,303)	(347,889)	(342,569)
Administrative expense	(7,181)	(8,637)	(8,096)	(9,686)	(10,831)
Net change in plan fiduciary net pension	(445,646)	509,858	134,361	(200,842)	2,092
Plan fiduciary net position - beginning	5,396,527	4,886,669	4,752,308	4,953,150	4,951,058
Plan fiduciary net position - ending	<u>\$ 4,950,881</u>	<u>\$ 5,396,527</u>	<u>\$ 4,886,669</u>	<u>\$ 4,752,308</u>	<u>\$ 4,953,150</u>
Net pension liability - ending	<u>\$ 1,338,879</u>	<u>\$ 362,544</u>	<u>\$ 426,094</u>	<u>\$ 420,557</u>	<u>\$ 113,471</u>

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.*

**EMPLOYEES' RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE**  
**Required Supplementary Information**  
**Schedules of Net Pension Liability and Investment Returns**  
**Last 5 Fiscal Years**  
**(in thousands)**

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**Schedule of Net Pension Liability**

	<b>2018</b>	<b>2017</b>	<b>2016</b>	<b>2015</b>	<b>2014</b>
Total pension liability	\$ 6,289,760	\$ 5,759,071	\$ 5,312,763	\$ 5,172,865	\$ 5,066,621
Plan fiduciary net position	(4,950,881)	(5,396,527)	(4,886,669)	(4,752,308)	(4,953,150)
Net pension liability	<u>\$ 1,338,879</u>	<u>\$ 362,544</u>	<u>\$ 426,094</u>	<u>\$ 420,557</u>	<u>\$ 113,471</u>
Plan fiduciary net position as a percentage of total pension liability	78.71%	93.70%	91.98%	91.87%	97.76%
Employee payroll	\$ 574,394	\$ 577,119	\$ 583,950	\$ 535,802	\$ 529,939
Net pension liability as a percentage of employee payroll	233.09%	62.82%	72.97%	78.49%	21.41%

**Schedule of Investment Returns**

	<b>2018</b>	<b>2017</b>	<b>2016</b>	<b>2015</b>	<b>2014</b>
Annual money-weighted rate of return, net of investment expense	-2.75%	16.41%	8.77%	0.55%	5.17%

The plan implemented GASB Statement No. 67 in the fiscal year 2014. Information for calculating the effects of GASB 67 prior to fiscal year 2014 is not available.

*See independent auditors' report and notes to required supplementary information.*



**EMPLOYEES' RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE**  
**Required Supplementary Information**  
**Schedule of Employers' Contributions**  
**For Last Ten Fiscal Years**  
**(in thousands)**

	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Actuarially Determined Contributions	\$ 83,166	\$ 83,524	\$ 74,095	\$ 72,198	\$ 72,844	\$ 79,533	\$ 73,159	\$ -	\$ -	\$ 60,098
Contributions in relation to the actuarially determined contribution	83,166	83,524	74,095	72,198	72,844	79,533	73,159	-	-	60,098
Contribution deficiency (excess)	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>
Employee payroll	\$ 574,394	\$ 577,119	\$ 583,950	\$ 535,802	\$ 529,939	\$ 521,651	\$ 523,738	\$ 525,181	\$ 538,218	\$ 553,846
Contributions as a percentage of employee payroll	14.48%	14.47%	12.69%	13.47%	13.75%	15.25%	13.97%	0.00%	0.00%	10.85%

*See independent auditors' report and notes to required supplementary information.*

**EMPLOYEES' RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE**  
**Notes to Required Supplementary Information**  
**As of and for the year ended December 31, 2018**

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1. This information presented in 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:

<b>Valuation Date</b>	January 1, 2018
<b>Actuarial Cost Method</b>	Entry Age Normal Cost
<b>Amortization Method</b>	Closed - Level Percent of Pay
	Pay assumed to grow 3% per year
<b>Remaining Amortization Period</b>	25 years as of January 1, 2018
<b>Asset Valuation Method</b>	5-year smoothed market
<b>Actuarial Assumptions:</b>	
<b>Investment Rate of Return</b>	8.25% return for calendar years 2013 through 2017 and 8.50% beginning with calendar year 2018
<b>Projected Salary Increases</b>	General City 2.5% - 4.93%
	Police & Fire 4.0% - 9.47%
<b>Inflation Assumption</b>	2.50%
<b>Cost of Living Adjustments</b>	Vary by Employee Group as explained in summary of plan provisions
<b>Mortality Table</b>	For regular retirees and for survivors, the RP-2014 Combined Mortality Table with mortality improvements projected to the year 2016 for males and females, including full generational projection using mortality improvement Scale AA.
<b>Experience Study</b>	The actuarial assumptions used in the January 1, 2018 valuation were based on the results of an actuarial experience study for the period January 1, 2012-December 31, 2016.

2. The total pension liability contained in the Schedule of Net Pension Liability was provided by the Retirement System's actuaries, Cavanaugh Macdonald Consulting LLC for 2018 and Conduent HR Consulting, LLC for years prior to 2018. The net pension liability is measured as the total pension liability less the amount of the fiduciary net position of the Retirement System.
3. The required employer contributions and percent of contributions made are presented in the Schedule of Contributions.

*See independent auditors' report and notes to required supplementary information.*

# SUPPLEMENTARY INFORMATION

(See Independent Auditors' Report)

**EMPLOYEES' RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE**  
**Schedules of Administrative Expenses, Investment Expenses, and Payments to Consultants**  
**For the Year Ended December 31, 2018**

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**Schedule of Administrative Expenses**

Salaries	\$ 2,316,820
Fringe benefits	1,042,521
Professional services	899,487
Information technology services	1,230,737
Equipment rental	21,907
Facility rent & property services	518,602
General office expense	172,680
Other operating services & supplies	634,073
Depreciation	344,127
Policemen's Annuity & Benefit Fund	7,440
	<u>\$ 7,188,394</u>

**Schedule of Investment Expenses**

Investment manager expense	\$ 42,301,793
Security lending rebates	5,292,282
Security lending fees	281,518
Investment consulting fees	581,854
Investment custodian fees	300,000
Other investment related expenses	698,282
	<u>\$ 49,455,729</u>

**Schedule of Payments to Consultants**

Actuary services	\$ 189,658
Audit	190,791
Legal services	165,409
Medical advisors	277,222
Memberships	13,345
Other professional services	63,062
	<u>\$ 899,487</u>

(See Independent Auditors' Report)

**EMPLOYEES' RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE**  
**Combining Statement of Fiduciary Net Position**  
**Non-Consenter Funds**  
**As of December 31, 2018**  
**(in thousands)**

	Retirement Fund	Combined Retirement Fund	General Employees' Disability Fund	Firemen's and Policemen's Disability Fund	Firemen's Heart and Lung Fund	Firemen's and Policemen's Survivorship Fund	Total
<b>ASSETS</b>							
CASH AND CASH EQUIVALENTS	\$ 620	\$ 446	\$ 4	\$ -	\$ -	\$ -	\$ 1,070
INVESTMENTS (Notes 1 and 8):							
Fixed income	2,437	1,064	21	-	-	-	3,522
Public equity	4,484	1,958	38	-	-	-	6,480
Absolute return	958	418	8	-	-	-	1,384
Real assets	1,155	505	10	-	-	-	1,670
Private equity	773	336	7	-	-	-	1,116
Total Investments	9,807	4,281	84	-	-	-	14,172
RECEIVABLES AND OTHER ASSETS							
Actuarially determined contributions (Note 2)	-	1	-	-	-	-	1
Interest, dividends and foreign tax recoverable (Note 1)	16	9	-	-	-	-	25
Investments sold	28	12	-	-	-	-	40
Total Receivables and Other Assets	44	22	-	-	-	-	66
<b>Total Assets</b>	<b>10,471</b>	<b>4,749</b>	<b>88</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>15,308</b>
<b>LIABILITIES</b>							
Investments purchased	70	31	1	-	-	-	102
<b>Total Liabilities</b>	<b>70</b>	<b>31</b>	<b>1</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>102</b>
<b>NET POSITION RESTRICTED FOR PENSIONS</b>	<b>\$ 10,401</b>	<b>\$ 4,718</b>	<b>\$ 87</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 15,206</b>

See Independent Auditors' Report.

**EMPLOYEES' RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE**  
**Combining Statement of Changes in Fiduciary Net Position**  
**Non-Consenter Funds**  
**For the Year Ended December 31, 2018**  
(in thousands)

	Retirement Fund	Combined Retirement Fund	General Employees' Disability Fund	Firemen's and Policemen's Disability Fund	Firemen's Heart and Lung Fund	Firemen's and Policemen's Survivorship Fund	Total
<b>ADDITIONS</b>							
<b>Contributions</b>							
Employer (Note 5)	\$ -	\$ 166	\$ -	\$ -	\$ -	\$ -	\$ 166
Member	15	3	-	-	-	-	18
<b>Total Contributions</b>	15	169	-	-	-	-	184
<b>Investment Income</b>							
Net depreciation in fair value of investments	(432)	(188)	(4)	-	-	-	(624)
Interest, dividends and other investment income	195	85	2	-	-	-	282
<b>Total Investment Income</b>	(237)	(103)	(2)	-	-	-	(342)
Investment Expense (Note 6)	-	-	-	-	-	-	-
<b>Net Investment Income</b>	(237)	(103)	(2)	-	-	-	(342)
<b>Total Additions</b>	(222)	66	(2)	-	-	-	(158)
<b>DEDUCTIONS</b>							
Benefits paid	(98)	(33)	-	-	-	-	(131)
Refunds of contributions	(71)	(29)	-	-	-	-	(100)
Interfund transfers	(2,058)	(22)	(19)	-	-	-	(2,099)
<b>Total Deductions</b>	(2,227)	(84)	(19)	-	-	-	(2,330)
<b>NET DECREASE IN NET POSITION</b>	(2,449)	(18)	(21)	-	-	-	(2,488)
<b>NET POSITION RESTRICTED FOR PENSIONS</b>							
Beginning of Year	12,850	4,736	108	-	-	-	17,694
End of Year	\$ 10,401	\$ 4,718	\$ 87	\$ -	\$ -	\$ -	\$ 15,206

See Independent Auditors' Report.

# INVESTMENT SECTION



**City of Milwaukee**  
Employees' Retirement System

**Bernard J. Allen**  
Executive Director

**David M. Silber, CFA, CAIA**  
Chief Investment Officer

**Melody Johnson**  
Deputy Director

## Report on Investment Activities

July 15, 2019

To the Annuity and Pension Board (Board) and Our Members:

The Board, as trustee of the funds in the Employees' Retirement System of the City of Milwaukee ("the Fund,"), employs a prudent investment process. Together with the Fund's staff and the Fund's investment consultant, Callan Associates, the Board oversees the investment strategy through periodic reviews of return and volatility assumptions, asset class structures, and investment manager implementation.

In 2018, the majority of asset classes declined in value. The Fund's investment portfolio declined along with the markets, while managing to add value compared to its policy benchmark, net of fees.

- The Fund had a return of -2.9% in 2018, net of investment management fees, which exceeded its benchmark by 37 basis points.
- As a result of the -2.9% investment return, along with benefit payments exceeding contributions, the System's Fiduciary Net Position declined from \$5.40 billion in 2017 to \$4.95 billion in 2018.
- Over the past 10 years, the Fund generated annualized returns of 9.3%, net of investment management fees, which exceeded its benchmark by an annualized 68 basis points.
- Strong returns generated within the Fund's Private Equity and Private Real Estate allocations partially offset the negative returns reported within the Fund's Public Equity allocation in 2018.

The Consultant's Commentary; a summary of the Fund's goals, objectives, and guidelines; and selected investment schedules follow for your review.<sup>1</sup>

Sincerely,

A handwritten signature in dark ink that reads "David Silber".

David M. Silber, CFA, CAIA  
CMERS Chief Investment Officer

<sup>1</sup> Data provided to the Fund by its custodian and its investment consultant form the basis of the information that is presented throughout the Investment Section. All portfolio rates of return are presented using time and asset-weighted returns. Returns are calculated net of investment manager fees.





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June 11, 2019

Annuity and Pension Board  
Employees' Retirement System of the City of Milwaukee  
789 N. Water Street, Suite 300  
Milwaukee, WI 53202

Dear Annuity and Pension Board,

Callan Associates, Inc. is pleased to present the Employees' Retirement System of the City of Milwaukee ("Fund") results for fiscal year ended December 31, 2018. As of year-end, the Fund reported a fair value of \$4.95 billion.

Investors' appetite for risk, while elevated for much of 2018, evaporated as the year drew to a close and wiped out positive returns for the year across broad asset classes (T-bills being a notable exception). U.S. Equity markets as measured by the S&P 500 Index experienced the first negative year since 2008. Concerns over tighter monetary policy and the global withdrawal of stimulus measures, unresolved trade disputes, falling oil prices, slower global growth, and softer data in some U.S. indicators overshadowed other robust aspects of the domestic economy. U.S. Treasury prices rose, and the S&P 500 had its worst December since 1931. Market sentiment clearly reflected the "glass half empty" viewpoint, with the S&P 500 at one point falling nearly 20% from a record level hit only a few months earlier. Meanwhile, the "safe haven" status of U.S. Treasuries attracted investors and pushed yields lower—the yield of the 10-year Treasury dropped 55 bps from a multi-year high of 3.24% reached in early November to close the year at 2.69%.

For the year, the stock market reached new highs and gave it all back by the end of December. As spring approached, growth in equities began to pick up steam, leading to record highs in several of the benchmark indexes during the summer months. However, volatility reemerged in the fall, followed by a brief respite, and resumed in December. Larger capitalization securities outperformed smaller capitalization securities by a substantial margin. For the year, global public equities lost 10.1% as measured by the MSCI ACWI IMI Index. Domestic large cap equities as measured by the S&P 500 Index fell (-4.4%) while small cap stocks experienced a greater downturn (-11.0%, Russell 2000 Index). Non-U.S. developed equity market investments also suffered as measured by the MSCI EAFE Index (-13.8%). U.S. investors were hurt by a strengthening dollar that detracted from \$USD returns. Emerging markets were also negative for the year (-14.6%).

The negative total return of U.S. 10-year Treasuries reflected the increase in the yield, which rose from 2.41% to 2.69% between the start of the year and the end of December. Strong growth, wage inflation, rate hikes and a seemingly more hawkish Federal Reserve chair all contributed to persistent upward pressure on yields. The significant 3% yield level was broken in September and remained above that level until early December when risk aversion returned. The return on the Bloomberg Barclays U.S. Aggregate Bond Index was flat for the year as the Fed increased the short-term rate four times, but took on a more dovish tone in December.

Real Estate returns were steady once again in 2018 as the NCREIF Open End Diversified Core Equity Index (ODCE) produced a +7.89% return. U.S. core real estate returns continue to shift toward income with limited appreciation.

As noted in the Schedule of Investment Results, the Fund generated a total return of -2.91% net-of-fees for the year ended December 31, 2018, which exceeded the -3.27% return of the Fund's target benchmark (the Policy Benchmark). In aggregate, the Fund's allocations to public and private equity exceeded their benchmarks as did private real estate. Aggregate fixed income exposure trailed its benchmark in 2018 after exceeding it by a significant margin in the prior year. Absolute return strategies generated positive returns for the year, albeit trailing its benchmark. Lastly, during the year, an investment was launched in a portable alpha strategy designed to exceed the broad U.S. fixed income benchmark. For the last three- and five-year periods, the Fund return has exceeded that of the target benchmark.

Sincerely,

A handwritten signature in blue ink, appearing to read "John P. Jackson".

John P. Jackson, CFA  
Senior Vice President, Callan LLC

# **EMPLOYEES' RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE**

## **Summary of Investment Policies**

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### **INVESTMENT GOALS AND OBJECTIVES**

The overall investment goal is to provide participants with retirement, disability and death and survivor benefits. The purpose of the Fund establishing an investment policy is to obtain the highest return possible on Fund investments within corresponding acceptable levels of minimum investment risk and liquidity requirements in recognition of prudent person standards and compliance with applicable local, state, and federal laws governing the operation and activities of the Fund. In particular, the Fund is bound by the City of Milwaukee Charter Chapter 36.

### **FUNDING LEVELS AND LIQUIDITY REQUIREMENTS**

The Board seeks to keep Plan benefits as well funded as possible at all times. Additionally, the Board wishes to remain as fully invested as possible at all times, while maintaining appropriate liquidity. Generally, the Fund will maintain enough liquidity to meet one month of payments and expenses.

### **ASSET ALLOCATION CONSIDERATIONS**

The Board implements an asset allocation policy that is predicated on a number of factors, including:

1. A projection of actuarial assets, liabilities, and benefit payments and the cost of contributions;
2. Historical and expected long-term capital market risk and return behavior;
3. An assessment of future economic conditions, including inflation and interest rate levels; and
4. The current and projected funding status

**EMPLOYEES' RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE**  
**Summary of Investment Policies**

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**TARGET ALLOCATIONS**

The Board has determined that the following asset allocation policy is appropriate for the Fund. This allocation policy will be reviewed periodically and may be modified, if appropriate, in light of changes in the structure or goals of the Fund.

<b><u>Public Equity</u></b>	<b><u>Target</u></b>	<b><u>Minimum</u></b>	<b><u>Maximum</u></b>
Domestic Equity			
Passive Large Cap	8.6%		
Active Large Cap	5.5%		
Active Mid/Small Cap	7.3%		
Total Domestic Equity	<b>21.4%</b>	<b>17.4%</b>	<b>25.4%</b>
Total International Equity	<b>17.1%</b>	<b>14.1%</b>	<b>20.1%</b>
Total Global Equity	<b>8.5%</b>	<b>4.5%</b>	<b>12.5%</b>
<b>Total Public Equity</b>	<b>47%</b>	<b>42%</b>	<b>52%</b>
<b><u>Fixed Income</u></b>			
Cash	1%	0%	1.5%
Passive Fixed Income	4%		
Portable Alpha Fixed Income	9%		
Core Opportunistic Fixed Income	11%		
<b>Total Fixed Income</b>	<b>25%</b>	<b>22%</b>	<b>28%</b>
<b><u>Real Assets</u></b>			
Private Real Estate	<b>7.7%</b>	<b>5.7%</b>	<b>9.7%</b>
Public Diversified Real Assets	<b>3.3%</b>	<b>1.3%</b>	<b>5.3%</b>
<b>Total Real Assets</b>	<b>11%</b>	<b>8%</b>	<b>14%</b>
<b><u>Private Equity</u></b>	<b>8%</b>	<b>5%</b>	<b>13%</b>
<b><u>Absolute Return</u></b>	<b>9%</b>	<b>6%</b>	<b>14%</b>
<b><u>Total</u></b>	<b><u>100%</u></b>		

**EMPLOYEES' RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE**  
**Schedule of Investment Results**  
**For the Year Ended December 31, 2018**

	<b>2018</b>	<b>3 Years</b>	<b>5 Years</b>
Total Fund	-2.9%	7.1%	5.4%
Policy Benchmark <sup>1</sup>	-3.3%	6.3%	5.2%
Fixed income	-0.4%	4.0%	2.6%
Bloomberg Barclays U.S. Aggregate Index	0.0%	2.1%	2.5%
Public equity	-9.9%	6.9%	4.9%
ACWI IMI <sup>2</sup>	-10.1%	6.5%	4.2%
Absolute return	1.4%	4.1%	N/A
90 Day Treasury Bill +3%	5.0%	4.1%	N/A
Public Diversified Real Assets	-7.5%	2.8%	N/A
Blended Benchmark <sup>3</sup>	-7.3%	4.8%	N/A
Private Real Estate	8.3%	8.6%	10.4%
NCREIF Fund Index ODCE <sup>4</sup>	7.4%	7.3%	9.4%
Private equity <sup>5</sup>	21.5%	15.8%	15.0%
Cambridge Private Equity Index	10.5%	13.6%	11.5%

<sup>1</sup> The policy benchmark is a composite index designed to track the target asset allocation. Historical data on the Total Fund benchmark allocations can be found in the Fund's Statement of Investment Policy.

<sup>2</sup> ACWI IMI was adopted as the Public Equity benchmark on January 1, 2016. Data on earlier time periods is presented for illustrative purposes only.

<sup>3</sup> The blended benchmark is as follows: 35% Barclays TIPS, 20% S&P Global Infrastructure, 20% Global Natural Resources, 10% FTSE EPRA/NAREIT Developed, 15% Bloomberg Commodity Total Return

<sup>4</sup> NCREIF Fund Index ODCE was adopted as the Private Real Estate benchmark on January 1, 2015. Data on earlier time periods is presented for illustrative purposes only.

<sup>5</sup> Private Equity returns shown above are calculated by the Fund's custodian at a 1-quarter lag.

N/A - Not Applicable. Asset class not held during the stated time period.

Note: With the exception of Real Estate, returns are calculated by the Fund's custodian using geometrically-linked, time and asset-weighted returns. Returns are calculated net of investment manager fees.

**EMPLOYEES' RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE**  
**Schedules of Top Ten Largest Holdings**  
**For the Year Ended December 31, 2018**

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<b>Top 10 Equity Holdings</b>	<b>Fair Value</b>
Microsoft Corp.	\$ 17,467,704
AT&T Inc.	14,723,044
Sanofi EUR2	13,217,081
GlaxoSmithKline PLC	13,004,094
Visa Inc.	12,700,149
Nike Inc.	9,915,113
Alphabet Inc.	9,878,007
Starbucks Corp.	9,790,668
Accenture PLC	9,763,391
Engie SA	9,690,291

<b>Top 10 Fixed Income Holdings</b>	<b>Fair Value</b>
U.S. Treasury Note 2.75% Due 4/30/2025	\$ 40,998,963
U.S. Treasury Note 1.625% Due 10/31/2023	21,130,107
U.S. Treasury Note 1.375% Due 9/30/2019	17,734,282
U.S. Treasury Note 2.25% Due 11/15/2027	16,271,883
U.S. Treasury Note 2.375% Due 4/30/2020	15,957,504
U.S. Treasury Bond 2.75% Due 8/15/2047	13,083,772
U.S. Treasury Note 2.5% Due 1/31/2025	12,884,476
U.S. Treasury Note 1.25% Due 10/31/2021	11,295,200
U.S. Treasury Inflation Indexed Note 0.75% Due 7/15/2028	11,289,283
FNMA Single Family Mortgage 3.5% 30 Years	10,991,933

*The schedules above exclude commingled funds.*

*A complete list of the portfolio holdings is available for review upon request.*

# EMPLOYEES' RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE

## Summary of Management Fees For the Year Ended December 31, 2018

	Assets Under Management	Management Fee	Performance Fee	Fund of Fund Fee	Total Fees
<b>Public Equity</b>					
Domestic					
<i>Passive Large Cap Equity</i>	\$ 411,577,095	\$ 57,860	\$ -	\$ -	\$ 57,860
<i>Active Large Cap Equity</i>	275,731,486	981,944	-	-	981,944
<i>Active Mid/Small Cap Equity</i>	334,494,994	1,469,409	-	-	1,469,409
International					
<i>Active International Equity</i>	803,552,834	4,702,818	-	-	4,702,818
Global					
<i>Active Global Equity</i>	424,086,265	965,046	1,408,375	-	2,373,421
<b>Total Public Equity</b>	<u>\$ 2,249,442,674</u>	<u>\$ 8,177,077</u>	<u>\$ 1,408,375</u>	<u>\$ -</u>	<u>\$ 9,585,452</u>
<b>Private Equity Fund of Funds<sup>1</sup></b>	<u>\$ 385,135,214</u>	<u>\$ 5,430,626</u>	<u>\$ 2,804,754</u>	<u>\$ 4,038,340</u>	<u>\$ 12,273,720</u>
<b>Fixed Income</b>					
Cash	\$ 26,472,063	\$ -	\$ -	\$ -	\$ -
Passive Fixed Income	201,764,113	45,053	-	-	45,053
Portable Alpha Fixed Income	487,445,428	-	2,150,468	-	2,150,468
Active Fixed Income	554,777,944	909,846	-	-	909,846
<b>Total Fixed Income</b>	<u>\$ 1,270,459,548</u>	<u>\$ 954,899</u>	<u>\$ 2,150,468</u>	<u>\$ -</u>	<u>\$ 3,105,367</u>
<b>Absolute Return<sup>1</sup></b>	<u>\$ 477,189,829</u>	<u>\$ 4,031,414</u>	<u>\$ 5,320,165</u>	<u>\$ 1,858,000</u>	<u>\$ 11,209,579</u>
<b>Real Estate</b>					
Private Real Estate - Core	\$ 344,717,404	\$ 2,282,298	\$ 178,662	\$ -	\$ 2,460,960
Private Real Estate - Non-Core	69,577,512	1,168,448	1,383,350	-	2,551,798
<b>Total Real Estate</b>	<u>\$ 414,294,916</u>	<u>\$ 3,450,746</u>	<u>\$ 1,562,012</u>	<u>\$ -</u>	<u>\$ 5,012,758</u>
<b>Real Assets</b>					
Public Real Assets	<u>\$ 161,726,891</u>	<u>\$ 1,114,917</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ 1,114,917</u>
<b>Total External Management Fees</b>		<u>\$ 23,159,679</u>	<u>\$ 13,245,774</u>	<u>\$ 5,896,340</u>	<u>\$ 42,301,793</u>

Classifications of Assets Under Management may not agree to other schedules throughout this report due to commingled funds.

Fees are paid quarterly on quarter-end asset values for the majority of investment managers. Basis point calculations made from the data presented here would not be reflective of the fund's true fee rates.

<sup>1</sup> Management Fee and Performance Fee for Private Equity Fund of Funds and Hedge Fund of Funds (included in Absolute Return) includes, but may not be limited to, management fees and performance/carry at the underlying fund level, respectively.

**EMPLOYEES' RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE**  
**Schedule of Brokerage Commissions**  
**For the Year Ended December 31, 2018**

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<b>Broker Name</b>	<b>Number of Shares</b>	<b>Commissions</b>	<b>Cost Per Share</b>
Credit Suisse	8,256,181	\$ 70,113	\$ 0.0085
Goldman Sachs	184,599,265	54,415	0.0003
J.P. Morgan Securities	71,953,944	50,931	0.0007
Merrill Lynch	383,410,223	45,784	0.0001
Citigroup Global Markets	275,595,615	40,703	0.0001
William Blair & Co.	1,338,232	39,740	0.0297
Jefferies & Co., Inc.	5,726,933	39,015	0.0068
UBS Securities	33,944,902	36,612	0.0011
Morgan Stanley and Co.	71,774,259	32,548	0.0005
Sanford C. Bernstein & Co.	3,310,235	30,047	0.0091
Total - Top Ten Brokers	1,039,909,789	439,908	0.0004
Total - Other Brokers	1,339,093,875	432,713	0.0003
<b>Grand Total</b>	<b>2,379,003,664</b>	<b>\$ 872,621</b>	<b>\$ 0.0004</b>

*The schedule above excludes commingled funds.*



**EMPLOYEES' RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE**  
**Summary of Investment Holdings**  
**For the Year Ended December 31, 2018**  
**(in thousands)**

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<u>Asset Class</u>	<u>Fair Value</u>	<u>Percent of Total</u>	<u>Target Allocation</u>
Cash and cash equivalents	82,083	2%	1%
Fixed income	1,214,872	24%	24%
Public equity	2,235,510	45%	47%
Absolute return	477,681	10%	9%
Real assets	576,022	12%	11%
Private equity	385,135	8%	8%
	<u>4,971,303</u>	<u>100%</u>	<u>100%</u>

The latest general investment policy was approved by the board in December 2018. The major changes were a decrease of the allocation to Public Equities, and an increase of the allocations to Private Equity, Fixed Income, and Absolute Return.

The summary above excludes investments held as part of the Employers' Reserve Fund.

# ACTUARIAL SECTION



9401 James Avenue, Suite 140  
Bloomington, MN 55431

June 18, 2018 (Revised July 23, 2018)

Annuity and Pension Board  
Employees' Retirement System of the City of Milwaukee  
789 N. Water St., #300  
Milwaukee, WI 53202

### **Certification of Actuarial Valuation**

#### **Members of the Board:**

Conduent HR Consulting, LLC, was retained to prepare this report of the results of the annual actuarial valuation of the assets and liabilities of the Employees' Retirement System of the City of Milwaukee ("ERS") as of January 1, 2018. The report was prepared in accordance with Section 36-15-15 of the Milwaukee City Charter (MCC). The valuation takes into account all of the promised benefits to which members were entitled as of January 1, 2018.

Global Pension Settlement (GPS) benefits have been provided to nine individuals who consented to the GPS since the last valuation. As a result, assets have been transferred from the non-consenter funds in which these members previously participated to the Global Combined Fund.

The valuation was based on the actuarial assumptions and methods adopted by the Board of Trustees, as specified by the Charter. An amendment to the MCC was adopted by the Common Council on April 30, 2013 to establish the Stable Employer Contribution Policy. Under the Stable Employer Contribution Policy, an actuarial contribution rate is separately calculated for Policeman, Fireman, and General Employees of the Combined Fund and is applicable for the subsequent five-year period. These rates are established every five years following the Experience Study based on a study performed by the actuary. The actuary establishes these rates based on the actuarial assumptions adopted by the Members of the Board of the Annuity and Pension Board of the ERS and the asset smoothing, asset corridor and amortization methods specified in the Charter. These rates are established in conformity with applicable Actuarial Standards of Practice and result in a funded status at the end of five years that is at least actuarially equivalent to what would have been expected to develop under contributions based on redevelopment of employer contribution rates annually under the same assumptions and methods without limiting the contributions with the Full Funding Limit, which has been eliminated. Conduent has recommended actuarial contribution rates under the Stable Employer Contribution Policy for Policeman, Fireman, and General Employees of 25.22%, 26.83% and 7.48%, respectively. These rates are in effect for employer contributions through January 1, 2023.

Effective February 13, 2018, Section 36-15-15 of the MCC was amended to implement a new actuarial cost method and a new amortization method. The Full Funding Limit (Section 36-08-6-h) was eliminated with the implementation of the Stable Employer Contribution Policy. The 20% asset corridor (Section 36-15-15-b) was removed effective January 1, 2018. The assumptions and methods used for this valuation are individually, and in the aggregate, reasonable and were selected in accordance with applicable Actuarial Standards of Practice. As required under Section 36-15-14, experience reviews have been performed every five years. This valuation was prepared on the basis of the interest, salary and demographic assumptions that were recommended on the basis of an Experience Study covering the period from January 1, 2012 to December 31, 2016, which was prepared by Conduent and approved by the Board for use beginning with the January 1, 2018 actuarial valuation. These assumptions will remain in effect for valuation purposes until such time as the Board adopts

revised assumptions. The next review of actuarial assumptions is scheduled to be performed before the January 1, 2023 actuarial valuation.

Future actuarial measurements may differ significantly from those presented in this report due to such factors as: plan experience different from that anticipated by the economic and demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements; and changes in plan provisions or applicable law. An analysis of the potential range of such future differences is beyond the scope of this report.

#### **Assets and Membership Data**

The individual data for members of the System as of the valuation date were reported to the actuary by the ERS. While we did not verify the data at their source, we did perform tests for internal consistency and reasonability. The amount of assets in the trust fund taken into account in the valuation was based on statements prepared for us by the ERS. The accuracy of the results of this valuation is dependent upon the accuracy and correctness of the member data and asset information provided.

#### **Financing Objective and Employer Contribution**

The results of the January 1, 2018 valuation are among those used to monitor the impact of the Stable Employer Contribution on the System. The Stable Employer Contribution Policy is designed to:

- (a) Fully fund all current costs based on the normal contribution payable determined under the funding method irrespective of the funded status of the System, that is, the Employer Normal Cost is always funded; and
- (b) Liquidate the unfunded accrued liability, if any, over the amortization period s adopted by the Board and specified in the MCC. Effective with the January 1, 2018 actuarial valuation, the Board adopted a closed-layered amortization method with amortization payments for each base increasing by 2.00% per year. The outstanding balance of the unfunded actuarial accrued liability (UAAL) as of January 1, 2018 will be amortized over a fixed 25-year period. At each subsequent valuation date, any changes to the UAAL arising from actuarial gains or losses will be amortized over a fixed 15-year period and any changes to the UAAL arising from changes in assumptions, methods, or plan provisions will be amortized over a fixed 25 year period.

On this basis, the valuation indicates that the employer contribution of \$89,765,992 (payable January 31, 2019) to both the Combined Fund and the Combined Retirement & Disability Fund would be sufficient to provide for the payment of the promised pension and survivor benefits in accordance with the adopted funding policy.

#### **Financial Results and Membership Data**

Detailed summaries of the financial results of the valuation and of the membership data used in preparing the valuation are shown in this valuation report.



**Events During 2017 that Impacted the 2018 Results**

Results of this valuation differ from what would have been projected based on last year's valuation for many reasons:

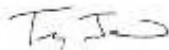
- (a) The return on assets at market of 16.41%, compared to the 8.25% assumed annual rate of return, which increased the funded ratio.
- (b) The cost method was changed from Projected Unit Credit to Entry Age Normal. This increased the actuarial accrued liability by \$156.6 million and decreased the funded ratio.
- (c) The amortization method was changed to a closed layered amortization method with amortization payments for each base increasing by 2.00% per year. The outstanding balance of the unfunded actuarial accrued liability (UAAL) as of January 1, 2018 will be amortized over a fixed 25-year period. At each subsequent valuation date, any changes to the UAAL arising from actuarial gains or losses will be amortized over a fixed 15-year period, and any changes to the UAAL arising from changes in assumptions, methods, or plan provisions will be amortized over a fixed 25-year period. This change did not affect the funded ratio, but did affect the actuarially determined contribution level.
- (d) Decrement assumptions, optional form assumptions, and interest rate assumptions were updated according to an experience study completed in 2017. This increased the actuarial accrued liability by \$296.5 million and decreased the funded ratio.
- (e) As noted earlier, since the January 1, 2017 actuarial valuation was completed, nine individuals who were eligible for ERS benefits as of June 28, 2000 – and who had not consented to GPS – have now consented.
- (f) Overall, the funded ratio was lower than would have been projected on the basis of the prior actuarial valuation, as a result of the events of 2017.

References to "funded ratio" and "unfunded accrued liability" are typically measured on an actuarial value of assets basis. Measurements made using the market value of assets would result in different funded ratios and unfunded accrued liabilities. The funded ratio presented is appropriate for evaluating the need and level of future contributions, but makes no assessment regarding the funded status of the plan if the plan were to settle (i.e., purchase annuities to cover) a portion, or all, of its liabilities.

I am a Fellow of the Society of Actuaries and a Member of the American Academy of Actuaries. I meet the Qualification Standards of the Academy to render the actuarial opinions contained in this report. This report has been prepared in accordance with all applicable Actuarial Standards of Practice, and I am available to answer questions about it.

Sincerely,

Conduent HR Consulting, LLC



Troy Jaros, FSA, EA, MAAA, FCA  
Senior Consultant, Retirement Actuary

## Introduction

The law governing the Employees' Retirement System (ERS) requires the Actuary, as the technical advisor to the Annuity and Pension Board, to "... prepare an annual valuation of the assets and liabilities of the funds of the retirement system." (Section 36-15-15 of the MCC). Conduent Human Resource Services, the Actuary, has completed the eightieth annual actuarial valuation of the ERS as of January 1, 2018.

In this report we present the results of the January 1, 2018 valuation and the recommended employer contributions for the year ending December 31, 2018. For purposes of disclosure, we also include the schedule of funding progress required by Governmental Accounting Standards Board (GASB) No. 25, to be used only for comparison of relevant Statement No. 67 information.

This valuation was prepared using membership and financial data provided by the staff of ERS. The majority of actuarial assumptions, outlined on "Description of Actuarial Methods and Assumptions for Pension Funding Purpose" section, were adopted as of January 1, 2018, based on the experience study for the five-year period ended December 31, 2016. The next experience review will be completed for the January 1, 2023 actuarial valuation. The 2.5% inflation assumption was adopted as of January 1, 2018. The entry age normal actuarial cost method was adopted as of January 1, 2018, as prescribed in MCC Section 36-15. The actuarial asset valuation method and the amortization method were adopted as of January 1, 2018, as prescribed in MCC Section 36-15.

References to "funded ratio" and "unfunded accrued liability" are typically measured on an actuarial value of assets basis. Measurements made using the market value of assets would result in different funded ratios and unfunded accrued liabilities. The funded ratio presented is appropriate for evaluating the need and level of future contributions, but makes no assessment regarding the funded status of the plan if the plan were to settle (i.e., purchase annuities to cover) a portion, or all, of its liabilities.

### Changes Since Last Year's Valuation

The following changes have been made since the actuarial valuation dated January 1, 2017:

- The retirement rates, withdrawal rates, disability rates and mortality assumption, as well as the assumed rate of return and the salary increase and inflation assumptions were updated according to an experience study completed in 2017.
- The cost method was changed from Projected Unit Credit to Entry Age Normal. In addition, the amortization method was changed to a closed layered amortization method with amortization payments for each base increasing by 2.00% per year. The outstanding balance of the unfunded actuarial accrued liability (UAAL) as of January 1, 2018 will be amortized over a fixed 25-year period. At each subsequent valuation date, any changes to the UAAL arising from actuarial gains or losses will be amortized over a fixed 15-year period and any changes to the UAAL arising from changes in assumptions, methods, or plan provisions will be amortized over a fixed 25-year period.
- The Global Pension Settlement (GPS) provides that members enrolled through June 28, 2000, must provide written consent to the ERS in order to be eligible for the benefit enhancements of GPS. Members enrolled after June 28, 2000, are automatically participants in the Combined Fund. Since the January 1, 2017 actuarial valuation was completed, nine individuals who were eligible for ERS benefits as of June 28, 2000 – and who had not previously consented to GPS – have now consented. This January 1, 2018 valuation reflects the impact of this change.

### Fiscal Impact of Changes

The assumption changes made according to the experience study increased the actuarial accrued liability by about \$296.5 million.

The change to the Entry Age Normal cost method increased the plan's actuarial accrued liability by \$156.6 million.

# Summary of Plan Provisions

## Eligibility for Membership

Membership is optional for all employees that were in service as of January 1, 1938. New employees are automatically members as a condition of employment. Membership is optional for elected officials. Note that unless specifically stated, elected officials follow the same rules as General Employees. Additionally, effective January 1, 2014, there are two tiers of benefits. Tier 1 is for General Employees enrolled prior to January 1, 2014, and all Fire and Police employees. Tier 2 is for General Employees enrolled on or after January 1, 2014.

## Participation in the Combined Fund

On January 19, 2001 the Combined Fund was created and was retroactive to January 1, 2000. Individuals who participate in the Combined Fund may be eligible for certain benefit enhancements which are described in this Summary of Plan Provisions. Members who enroll in the ERS after June 28, 2000, and their eligible survivors, are automatically participants in the Combined Fund. Members enrolled in the ERS on or before June 28, 2000, and their eligible survivors, participate in the Combined Fund provided that the members consented in writing to the Global Pension Settlement. Eligible survivors of members or retirees who died on or before June 28, 2000 participate in the Combined Fund provided that the eligible survivors consented in writing to the Global Pension Settlement. Members or survivors whose benefit payments ceased prior to January 1, 2000, are not eligible for benefits from the Combined Fund.

## Creditable Service

Creditable service equals prior service plus membership service. Prior service includes service as an employee prior to January 1, 1938, or prior to an amendment which made the employee eligible for membership in the ERS. Membership service means service as an employee since last becoming a member, on account of which contributions are made.

- For most employees, 2080 hours of service constitute one year of creditable service. For prevailing wage Employees (carpenters and other tradespeople) 2000 hours constitute one year. For members employed by the school board for a 10-month school year, 1600 hours of service constitute a year of creditable service. After July 2006, for members serving as firefighters, 2590 hours of service constitutes one year of creditable service. After September 2016, for members serving as firefighters, 2756 hours of service constitutes one year of creditable service.
- Under certain conditions creditable service may be granted for periods of absence due to military service.
- For purposes of computing the service retirement allowance only, creditable service is granted for periods of eligibility for a duty disability retirement allowance.
- No more than one year of creditable service is granted for service in a single calendar year.

## Imputed Service

Imputed service credit may be granted, under specified conditions, to members who consented to the Global Pension Settlement. Imputed service credit is used to calculate the amount of certain benefits, but is not used to determine eligibility for any kind of benefit. An individual may be eligible for one or more types of imputed service credit.

## Eligibility for Imputed Service Credit

Only individuals participating in the Combined Fund can become eligible for the following types of imputed service credit.

- **Imputed military service credit:** The member must have been active in the armed forces of the United States of America prior to his or her enrollment in the ERS, and must have been honorably discharged. A member must be described as in 36-04-1-c. An individual eligible for imputed military service credit must apply for the credit.
- **Imputed fire and police service credit:** The member must be described as in 36-04-4-a. The member must have been in active ERS service as a fireman or policeman as of January 1, 2000, and must also

retire from ERS service as a fireman or policeman, or die while a fireman or policeman eligible for protective survivorship option benefits. To be eligible, the member must retire or die as a policeman or fireman and must have attained the minimum service retirement requirements as outlined in 36-05-1.

- **Imputed service credit under the dissolution of the Firemen and Policemen,s Survivorship Fund, (the “Fund”):** The member must be described as in 36-04-4-b. The member must have been a policeman who was an active member of the “Fund” as of January 1, 2000. If the policeman was in active ERS service as of January 1, 2000, he must either retire as a policeman on a service retirement allowance at the minimum service retirement age of 57 or after completing 25 years of creditable service as a fireman or policeman; or he must retire on a policeman’s duty disability retirement allowance and subsequently convert to a service retirement allowance. If the policeman was retired on a duty disability retirement allowance as of January 1, 2000, then he must subsequently convert to a service retirement allowance.

#### **Benefits Affected by Imputed Service Credit**

- **Imputed military service credit and/or imputed fire and police service credit:** The amount of the service retirement allowance, the conversion service retirement allowance, protective survivorship option benefits, and the extended life duty disability retirement allowance are affected. If the eligible individual is also entitled to a 5% Lump Sum Bonus, and/or an 8.6% Dissolution Bonus that is based on the affected benefit, then the imputed service credit is included in calculating the base for the bonus payment(s).
- **Imputed service credit under the dissolution of the Firemen and Policemen,s Survivorship Fund:** The amount of the service retirement allowance and the conversion service retirement allowance are affected. If the service retirement allowance is affected, then the imputed service credit is included in calculating the base for the 5% Lump Sum Bonus.

See the benefit descriptions later in this summary for further details on how imputed service credit is used.

#### **Amount of Imputed Service Credit**

- **Imputed military service credit:** A period of eligible military service consists of a period of at least 90 consecutive days of active service in the armed forces of the United States prior to enrollment in the ERS. Total eligible military service equals the sum of all periods of eligible military service. Imputed military service credit equals one-third of the member’s total eligible military service, to a maximum of three years of imputed military service credit.
- **Imputed fire and police service credit:** For policemen and firemen with 20 years of creditable service as a fireman or policeman - 1.5 years. For firemen with less than 20 years of creditable service as a fireman or policeman: 1.5 years times the full years of creditable fire and police service, divided by 20.
- **Imputed service credit under the dissolution of the Firemen and Policemen,s Survivorship Fund:** Two years.

#### **Seasonal Service**

Seasonal service credit may be granted under specified conditions to certain General City Employees. Seasonal service credit is used to calculate the amount of certain benefits but is not used to determine eligibility for any kind of benefit.

#### **Eligibility for Seasonal Service Credit**

In order to be eligible for seasonal service credit, a member must be a General City employee with five or more years of City service credit, and a member of one of the groups as outlined in 36-04-1-d.

#### **Benefits Affected by Seasonal Service Credit**

Seasonal service credit affects the amount of the service retirement allowance, the conversion service retirement allowance and protective survivorship option benefits. If the eligible individual is also entitled to a 5% Lump Sum Bonus that is based on the affected benefit, then the seasonal service credit is included in calculating the base for the bonus payment.



### **Amount of Seasonal Service Credit**

Seasonal service is based on the hours worked as a City Labor-Seasonal employee and/or Playground Laborer-Seasonal employee (MPS), but limited to one year of additional service credit.

### **Qualifying for an ERS Benefit**

Rules regarding qualifying time are encapsulated in the ERS Board Rules & Regulations, XV.G. The rules have been adopted and applied prospectively for enrollments prior to 1995, 1995 to 2001 and post 2001. All members are fully vested after attaining four years of qualifying time.

### **Earnable Compensation**

The annual regular base salary that would be payable to a member if he or she worked the full normal working time for his or her position as described in 36-02-12. Earnable compensation for the calendar year preceding retirement may also include special pays as negotiated in labor agreements such as longevity in rank pay, (limited) variable shift assignment pay, police liaison officer pay, and/or certification pay for policemen; and emergency medical technician pay for firemen. Earnable compensation for school board employees represented by Local 950, OEIU, also includes site differential pay.

### **Final Average Salary**

- a) For General Employees, final average salary means the average annual earnable compensation computed on the 3 years of creditable service preceding retirement, death or separation from service during which earnable compensation was the highest.
- b) For policemen and firemen, final average salary means the average annual earnable compensation computed on the year of creditable service preceding retirement, death or separation from service during which earnable compensation was the highest.
- c) For members converting from a duty disability retirement allowance to a service retirement allowance, the service retirement allowance is computed on the basis of the current compensation of the member's position at the service retirement date.

### **Eligibility for Service Retirement**

For Tier 1 Benefits (applicable to General Employees enrolled prior to January 1, 2014 and all Fire and Police employees), eligibility for service retirement is as defined under 36-05-01 as follows:

- a) A service retirement allowance is payable to any member who elects to retire after attaining the minimum service retirement age, which is age 60 for General Employees and age 57 for policemen and firemen.
- b) General Employees that have attained age 55 and completed 30 years of qualifying time are eligible for service retirement.
- c) Policemen who participate in the Combined Fund are eligible for service retirement at any age after attaining 25 years of fire or police qualifying time, if they were hired prior to December 20, 2015
- d) Policemen who participate in the Combined Fund, who have attained age 50 are eligible for service retirement after completing 25 years of police qualifying time, if they were hired on/after December 20, 2015
- e) Firemen who participate in the Combined Fund, who have attained age 49 and completed 22 years of fire or police qualifying time, are eligible for service retirement, if they were hired prior to July 30, 2016
- f) Firemen who participate in the Combined Fund, who have attained age 52 and completed 25 years of fire qualifying time, are eligible for service retirement, if they were hired on/after July 30, 2016
- g) Policemen and firemen who are not participants in the Combined Fund are eligible for service retirement after attaining age 52 and completing 25 years of fire or police qualifying time.

For Tier 2 Benefits (applicable to General Employees enrolled on or after January 1, 2014), eligibility for service retirement is as defined under 36-05-01 as follows:

- a) A service retirement allowance is payable to any member who elects to retire after attaining the minimum service retirement age, which is age 65 for General Employees.

- b) General Employees that have attained age 60 and completed 30 years of qualifying time are eligible for service retirement.

### **Amount of Service Retirement Allowance**

The amount of a member's service retirement allowance under 36-05-01 is equal to the following:

- a) For General Employees, enrolled prior to January 1, 2014, 2% of final average salary for each year of creditable service, imputed military service, or seasonal service limited to 70% of final average salary. For General Employees, enrolled on or after January 1, 2014, 1.6% of final average salary for each year of creditable service, imputed military service, or seasonal service limited to 70% of final average salary.
- b) For firemen enrolled prior to March 1, 1989, and policemen enrolled prior to July 1, 1989, and who were in active service on or after January 1, 1995, 2.5% of final average salary for each year of creditable service or imputed service (of any kind).
- c) For firemen enrolled after February 28, 1989, and policemen enrolled after June 30, 1989, 2.5% of final average salary for each year of creditable service or imputed military service, limited to 90% of final average salary, plus 2.5% of final average salary for each year of imputed fire and police service or imputed service under the dissolution of the Firemen and Policemen's Survivorship Fund.
- d) For elected officials enrolled prior to January 1, 2014, 2.6% of final average salary for each year of creditable service as an elected official for years before 1996, limited to 70% of the final average salary; from 1996 forward the rate of accrual for creditable service, imputed military service, or seasonal service is 2.5% except for the mayor, who will have an accrual rate of 2.0%, limited to 70% of the final average salary, except for elected officials who were enrolled prior to 2014 and are first elected to office on or after January 1, 2014, in which case their accrual rate is 2% for each year if they contribute 5.5% of their earnable compensation, or 2.5% for each year if they contribute 7% of their earnable compensation. For elected officials enrolled on or after January 1, 2014, 1.6% of final average salary for each year of creditable service as an elected official limited to 70% of the final average salary

### **Funds Charged with Service Retirement Allowance**

For individuals participating in the Combined Fund, service retirement allowance payments are charged to the Combined Fund. For all other individuals, the service retirement allowance is charged to (i) the Retirement Fund if the member's enrollment date is prior to February 1, 1996, and (ii) the Combined Retirement and Disability Fund if the member enrolled on or after February 1, 1996.

### **Eligibility for Ordinary Disability Retirement Allowance**

A member who the medical council certifies is mentally or physically incapacitated for further performance of duty that such incapacity is likely to be permanent and that such member should be retired, is eligible for the ordinary disability retirement allowance. The ordinary disability allowance is not payable if the member qualifies for the duty disability allowance.

### **Amount of Ordinary Disability Retirement Allowance**

Imputed service credit and seasonal service credit are not used in any part of the calculation of the Ordinary Disability Retirement Allowance. The "service retirement allowance" referred to below is calculated based on creditable service only.

- a) For General Employees, 90% of the service retirement allowance based on creditable service to date of disability retirement, but no less than 25% of final average salary, provided such amount does not exceed 90% of the retirement allowance payable had the member continued in service to the minimum service retirement age.
- b) For policemen and firemen hired after January 1, 1971, who have 5 years of service, 25% of final average salary plus 2% thereof for each year of creditable service in excess of 5 years up to a maximum of 50% of final average salary.
- c) For policemen and firemen hired before January 1, 1971, the greater of the benefit described in (a), or the benefit described in (b).
- d) The benefit is payable for life while the member remains disabled, except that for General Employees with less than 10 years of qualifying time, the duration is limited to one-fourth (1/4) of the period of the

service accrued to the date of disability.

- e) Members receiving benefits for life may elect reduced benefits under an optional form of payment in order to provide a death benefit to a designated beneficiary.

### **Funds Charged with Ordinary Disability Retirement Allowance**

Ordinary disability retirement allowance payments are charged to the Combined Fund if the eligible individual is a participant in the Combined Fund. Otherwise, the allowance is charged to (i) the Retirement Fund, if the member's enrollment date is before February 1, 1996, and (ii) the Combined Retirement and Disability Fund, if the member's enrollment date is on or after February 1, 1996.

### **Eligibility for Duty Disability Retirement Allowance**

If a member becomes permanently and totally incapacitated for duty as a result of the performance of his duty, and his mental or physical incapacitation is medically certified, such member is eligible for a duty disability retirement allowance. Unless the member is beyond his/her conversion age, in which case the member would be eligible for an extended lifetime Duty Disability benefit. The medical certification is made by the Medical Council for General Employees, for members of the MPA enrolled after June 28, 2005, and for members of the MPFFA enrolled after December 13, 2005 with disability based on a mental injury. For all other members, the medical certification is made by the Medical Panel, except as indicated below. There are certain diseases that are considered presumptive for purposes of duty disabilities.

All new duty disability applications are reviewed by the Medical Council effective June 19, 2016 for MPA members, effective January 1, 2016 for MPSO members, and effective July 29, 2016 for MPFFA members. Effective July 14, 2015, a new state law was enacted related to duty disability benefits for mental injuries (section 62.624 Wis. Stat.). The ERS may only provide a duty disability benefit for a mental injury if the following criteria are met:

- The mental injury resulted from a situation of greater dimensions than the day-to-day mental stresses and tension and post-traumatic stress that all similarly situated employees must experience as part of the employment, **and**
- The employer certifies that the mental injury is a duty-related injury

Only if a duty-related mental injury has occurred, can the duty disability application be forwarded to the Medical Panel or Medical Council for the examination and requisite certification.

### **Amount of Duty Disability Related Benefits**

Imputed service credit and seasonal service credit are not used when calculating a duty disability retirement allowance. Imputed service credit or seasonal service credit is used when calculating the conversion service retirement allowance referred to in paragraphs (a) - (c) below. Eligibility for imputed military service credit depends upon the date of the conversion, not upon the date of the duty disability retirement.

- a) For General Employees, the duty disability retirement allowance equals 75% of the member's final average salary. Members receive the allowance, while disability continues, until the later of age 65, or for a period of 5 years, at which time they convert to a service retirement allowance. General Employees receiving duty disability benefits may elect reduced benefits under an optional form of payment in order to provide a death benefit to a designated beneficiary.
- b) For firemen and policemen, the duty disability retirement allowance is 75% of the current annual salary for the position held by the member at retirement, plus \$40 per month for each child younger than age 18 (up to a maximum of 20% of the member's salary). In certain cases of extreme disability, when approved by a panel of physicians, the disability allowance will be 90% of such salary. Duty disability benefits paid to firemen on account of heart and lung disease are at the 75% level. In the event of the death of a policeman or fireman receiving a 75% or 90% disability allowance, 70% or 75%, respectively, of the amount of the member's allowance shall be paid to the member's spouse during her lifetime.

The 90% duty disability allowances are payable for life. For policemen enrolled on or after January 1, 1990, and firemen enrolled on or after December 17, 1989, the 75% duty disability allowances are payable until the earlier of attainment of age 57, or completion of 25 years of service and attainment of

age 52, at which time the member must either convert to a service retirement allowance or irrevocably elect to receive a recalculated duty disability allowance, referred to as an extended life duty disability allowance, as described in (c), below. Different conversion age requirements apply to policemen enrolled prior to January 1, 1990, and firemen enrolled prior to December 17, 1989, as discussed in (d), below. A fireman or policeman who becomes duty disabled on or after his conversion age may choose between a service retirement or extended life duty disability retirement.

- c) The extended life duty disability allowance referred to in (b), above, equals the lesser of the conversion service retirement allowance, or 75% of the current annual salary, provided further that the benefit will not be less than 57% of current annual salary for a fireman, or 60% of current annual salary for a policeman. "Current annual salary" here refers to the salary at the conversion age, for the position held by the member at the time of injury. The extended life duty disability allowance is payable for life and, unlike the duty disability allowance, is a fixed amount that does not change after the conversion age, notwithstanding any cost of living adjustments. Firemen or policemen receiving extended life duty disability benefits may elect reduced benefits under an optional form of payment in order to provide a death benefit to a designated beneficiary. Their spouses are not eligible to receive the 70% benefit payable to surviving spouses of firemen and policemen who die while in receipt of the 75% duty disability benefit.
- d) For policemen enrolled prior to January 1, 1990, and firemen enrolled prior to December 17, 1989, the conversion age determination depends upon the member's enrollment date and whether or not the member signed the DeBraska II release form.

Under Charter Ordinance 980130 Substitute 2 (DeBraska I), duty disabled firemen and policemen who retired on duty disability before October 17, 1992, have a conversion age equal to the greater of the conversion age in effect when they were enrolled, or the conversion age in effect at the time of their disability retirement.

Under Charter Ordinance 000789 (DeBraska II), duty disabled firemen and policemen who signed the DeBraska II release form are subject to the following conversion requirements: (i) members retired on duty disability prior to February 8, 1972, will receive duty disability benefits for life; (ii) members enrolled prior to February 8, 1972, who are either policemen who retired on duty disability on or after August 1, 1985, or firemen who retired on duty disability on or after March 1, 1984, will have a conversion age of 63; (iii) members enrolled on or after February 8, 1972, who retired on duty disability on or after October 17, 1992, will not be required to convert to service retirement prior to the conversion age requirements that were in effect when they enrolled; and (iv) for all other members who signed the DeBraska II release form, there is no difference between the conversion requirements of Charter Ordinance 980130 Substitute 2, and Charter Ordinance 000789. In general, only members who were duty disabled prior to January 1, 2001 were given the opportunity to sign the DeBraska II release form.

Under the Charter Ordinance (which reflects the Rehrauer decision) firemen and policemen who retire (or previously retired) on duty disability and who did not sign the DeBraska II release form will convert at the highest conversion age agreed upon during their employment (Section 36-05-3). Members who enrolled prior to February 8, 1972, who are either policemen who retired on duty disability on or after November 1, 1976, or firemen who retired on duty disability on or after October 1, 1977, will receive duty disability for life if they did not sign the DeBraska II release form, and will have a conversion age of 63 if they did sign the DeBraska II release form.

#### **Funds Charged with Duty Disability Related Benefits**

- a) For participants in the Combined Fund, duty disability benefits paid to members, benefits paid to survivors of members who die while duty disabled, child allotment payments, conversion service retirement benefits, and extended life duty disability benefits are paid from the Combined Fund.
- b) For General Employees who do not participate in the Combined Fund, duty disability benefits, and survivor benefits paid to beneficiaries of General Employees who elect an optional form of payment and die while disabled, are paid from (i) the General Employees Duty Disability Fund if the member's enrollment date is prior to February 1, 1996, and (ii) the Combined Retirement and Disability Fund if the member's enrollment date is on or after February 1, 1996.
- c) For members who do not participate in the Combined Fund, benefits paid after conversion to either a service retirement allowance or an extended life disability benefit are charged to (i) the Retirement Fund if

the member's enrollment date is prior to February 1, 1996, and (ii) the Combined Retirement and Disability Fund if the member's enrollment date is on or after February 1, 1996.

### **Ordinary Death Benefit**

- a) In the event of death of a member while in service, a death benefit equal to the sum of the member's accumulated contributions, plus if the member has one or more years of active service, one-half his final average salary is payable to the designated beneficiary. Optional forms of payment of such benefit to the beneficiary are provided. If the member had elected a protective survivorship option – and duty death benefits are not payable – such option will become effective and the ordinary death benefit will not be payable. If a duty death benefit is payable the ordinary death benefit will not be paid.
- b) Unless the member elects an optional death benefit, the death benefit subsequent to retirement is the amount remaining, if any, of the member's contributions with interest to retirement less the sum of the allowance payments made prior to the member's death.

### **Funds Charged with Ordinary Death Benefits**

Ordinary death benefits paid on behalf of a participant in the Combined Fund are charged to the Combined Fund. Otherwise, ordinary death benefits are charged to (i) the Retirement Fund if the member's enrollment date is prior to February 1, 1996, and (ii) the Combined Retirement and Disability Fund if the member's enrollment date is on or after February 1, 1996.

### **Protective Survivorship Option**

Firemen hired before July 30, 2016, may elect a Protective Survivorship Option (PSO) during the 6 months that precede the earlier of attainment of age 49 and completion of 22 years of qualifying time as a fireman or policeman, or age 52 and 25 years of qualifying time as a fireman or policeman, or age 57. Policemen hired before December 20, 2015, may elect a Protective Survivorship Option (PSO) during the 6 months that precede the earlier of attainment of age 57, or completion of 25 years of qualifying time as a policeman or fireman. Firemen hired on/after July 30, 2016, may elect a Protective Survivorship Option (PSO) during the 6 months that precede the earlier of attainment of age 52 and completion of 25 years of qualifying time as a fireman, or age 57. Policemen hired on/after December 20, 2015, may elect a Protective Survivorship Option (PSO) during the 6 months that precede the earlier of attainment of age 57, or age 50 and completion of 25 years of qualifying time as a policeman. Firemen and policemen who fail to elect a PSO during the eligible period are deemed to have elected an Option 2 PSO with the spouse as the named beneficiary.

General Employees who enrolled prior to January 1, 2014, may elect a PSO during the 6 months that precede the earlier of attainment of age 60 or completion of 30 years of qualifying time and attainment of age 55. General Employees who enrolled on or after January 1, 2014, may elect a PSO during the 6 months that precede the earlier of attainment of age 65, or completion of 30 years of qualifying time and attainment of age 60.

Firemen and policemen are allowed to reselect a PSO if they marry, or divorce, and to select a different option and/or beneficiary at retirement, if they wish. As of June 5, 2012, General Employees may also reselect a PSO if they marry, or divorce, or select a different option and/or beneficiary at retirement.

The PSO may be canceled if the joint annuitant predeceases the member before retirement; or if the member is divorced from the joint annuitant before retirement.

Under a PSO, if a member eligible to retire on a service retirement allowance dies prior to retirement, benefits begin to the named beneficiary just as if the member retired under such option immediately prior to his or her death, except that imputed service credit arising from the dissolution of the Firemen and Policemen's Survivorship Fund will not be used in the calculation of the PSO benefit. If a fireman eligible for PSO coverage dies prior to age 49 (or age 52 if hired on/after July 30, 2016), benefits for the named beneficiary will be deferred until the date the fireman would have attained age 49 (or age 52). Imputed military service, imputed fire and police service, and seasonal service credit may be used in the calculation of the deferred PSO benefit.

In all cases where the requirements are met for both a PSO benefit and a duty death benefit, the duty death benefit will be payable in lieu of the PSO.

## **Funds Charged with PSO Benefits**

PSO benefits for participants in the Combined Fund are charged to the Combined Fund. Benefits for individuals who do not participate in the Combined Fund are charged to (i) the Retirement Fund if the member's enrollment date is prior to February 1, 1996, and (ii) the Combined Retirement and Disability Fund if the member's enrollment date is on or after February 1, 1996.

## **Duty Death Benefits**

In the event the member's death occurs in the performance of his duty, a lump sum payment equal to the member's accumulated contributions, plus an annuity of 60% of such deceased member's final average salary will be paid to one of the following (payable in this order):

- The member's surviving spouse
- The member's children until their 21st birthday
- The member's dependent parents
- Death of a fireman that is due to heart or lung disease is considered a duty death.

## **Funds Charged with Duty Death Benefits**

Benefits payable to participants in the Combined Fund are charged to the Combined Fund. Heart & Lung duty death benefits payable to individuals who are not participants in the Combined Fund are charged to the Heart & Lung Fund. Duty death benefits (other than Heart & Lung) payable to individuals who are not participants in the Combined Fund are charged to (i) the Retirement Fund for members whose enrollment dates are prior to February 1, 1996; and (ii) the Combined Retirement and Disability Fund for members whose enrollment dates are on or after February 1, 1996.

## **Member Contributions**

Member contribution rates are the following percentages of annual salary:

General Employees	5.5% (tier 1 – enrolled prior to January 1, 2014)
	4.0% (tier 2 – enrolled on or after January 1, 2014)
Firemen and Policemen	7.0%
Elected Officials	7.0% (tier 1 – enrolled prior to January 1, 2014 and elected to an office prior to January 1, 2014; if enrolled prior to January 1, 2014, and elected or the first time to an office on or after January 1, 2014, and employee was paying contributions prior to being elected, employee pays contributions at the rate they were paying prior to becoming an elected official; if enrolled prior to January 1, 2014, and elected or the first time to an office on or after January 1, 2014, and employer was picking up contributions on behalf of the employee prior to being elected, employer pays 7.0%)
	4.0% (tier 2 – enrolled on or after January 1, 2014)

Under state law, per 2011 Wisconsin Act 10, participating employers are no longer permitted to make contributions on the member's behalf (with the exception of contractually agreed upon arrangements).

Member contributions made for or by participants in the Combined Fund are credited to the Combined Fund. Member contributions made for or by individuals who are not participants in the Combined Fund are credited to (i) the Retirement Fund for members whose enrollment dates are prior to February 1, 1996; and (ii) the Combined Retirement and Disability Fund for members whose enrollment dates are on or after February 1, 1996.

## Pension Escalators

Several different pension escalators are paid by the ERS as listed and described under section 36-05-1(h). They are as follows:

- Fire and Police \$50 Escalator

Firemen in Local 215 who retired under a service retirement allowance between March 1, 1990, and December 31, 1992; members of the Milwaukee Police Association (MPA) who retired under a service retirement allowance between January 1, 1990, and December 31, 1992; members of the Milwaukee Police Supervisors Organization who retired under a service retirement allowance between January 1, 1991, and December 31, 1992; and firemen in Local 215 or members of the MPA who elect a deferred retirement allowance after separating from service between January 1, 1993, and December 31, 1994, with 25 years of service; are eligible for a pension escalator which increases their allowance by \$50 per month on the 4th, 7th, and 10th anniversary of retirement.

Members who both retired on duty disability and converted from duty disability to service retirement during the eligibility period are eligible for the escalators on the 4th, 7th, and 10th anniversaries of their conversion dates.

The surviving spouses of eligible retirees, or of members who died during the eligibility period, are eligible provided that the member elected an optional benefit at retirement – or elected a protective survivorship option (PSO) prior to retirement – with the spouse as beneficiary. The member's surviving spouse receives increases on the member's 4th, 7th, and 10th anniversary of retirement (or spouse's retirement date in the case of a PSO) with the amount of the escalator adjusted to reflect the option elected by the member. Fire and Police \$50 escalators paid to participants in the Combined Fund are charged to the Combined Fund. Fire and Police \$50 escalators paid to individuals who are not participants in the Combined Fund are charged to the Retirement Fund.

- January 1996 Catch-up COLA for pre-October 1987 Retirees

Eligible Group:

- a) General Employees that attained the minimum service retirement age and retired with a service retirement allowance prior to October 1, 1987, or who retired on a duty disability allowance and converted to a service retirement allowance prior to October 1, 1987.
- b) Firemen and policemen who retired prior to October 1, 1987, who became eligible to retire on service retirement at age 57, or after attaining age 52 and completing 25 years of service. Also, firemen and policemen who retired on a duty disability allowance and converted to a service retirement allowance prior to October 1, 1987.
- c) Surviving spouses of eligible retirees, or of members who elected a PSO and died prior to October 1
- d) 1987, after naming their spouse as the designated beneficiary under Option 2, Option 3, or Option 4 with a percentage to the beneficiary.

## Timing and Amount of Increase

The catch-up COLA was a permanent increase in the ERS monthly benefit which was granted effective January 1, 1996. The increase was an amount equal to (i) the total ERS benefit in payment, multiplied by the greater of (ii) the total percentage change in the cost of living for each full calendar month between the 8th anniversary of service retirement and October 1, 1995, and (iii) the total percentage change required to bring the member's allowance to 60% of its full inflation adjusted value considering inflation for the period from retirement to October 1, 1995. The percentage change in the cost of living was measured by the increase in the CPI-U, U.S. Cities, as reported by the U.S. Department of Labor, Bureau of Labor Statistics.

When the catch-up COLA was calculated, the factor was not applied to supplemental, pass through benefits, which are paid by the ERS but are not a liability of the ERS. These pass-through benefits, which appear on the pension payroll data supplied to the actuary, are part of an old guaranteed minimum program. The ERS is a paying agent for these benefits, but is reimbursed by the City for all such payments.

Catch-up COLA amounts paid to participants in the Combined Fund are charged to the Combined Fund. Catchup COLA amounts paid to individuals who are not participants in the Combined Fund are charged to the Retirement Fund.

- 2% Escalator for pre-1993 Retirees

Eligible Group:

- a) General employees that attained the minimum service retirement age and retired with a service retirement allowance prior to January 1, 1993, or who retired on a duty disability allowance and converted to a service retirement allowance prior to January 1, 1993.
- b) Firemen and policemen who retired prior to January 1, 1993, who became eligible to retire on service retirement at age 57, or after attaining age 52 and completing 25 years of service. Also, firemen and policemen who retired on a duty disability allowance and converted to a service retirement allowance prior to January 1, 1993.
- c) Surviving spouses of eligible members who elected Option 3 with the spouse as the beneficiary, or of members who died prior to January 1, 1993 after electing an Option 3 PSO with the spouse as the beneficiary.

**Timing and Amount of Increase:**

The first increase occurs with the later of the January 1996 installment or the installment next following the 8th anniversary of the member's service retirement date (or the 8th anniversary of the surviving spouse's retirement date in the case of a PSO). Thereafter, increases occur annually on the anniversary of the first increase.

The first increase is 2% of the total ERS benefit in payment. That is, the monthly benefit to which the increase is applied includes \$50 fire and police escalators, and the January 1996 catch-up COLA amount, if any, but it excludes supplemental pass through payments, if any. Increases after the first are also 2%, and are compounded -- that is, they are applied to the total ERS benefit in payment, including all prior increases, and again, excluding any supplemental pass through payments. The benefit initially payable to an eligible spouse upon the member's death includes 50% of any increases in payment at the member's death.

2% escalators paid to participants in the Combined Fund are charged to the Combined Fund. 2% escalators paid to individuals who are not participants in the Combined Fund are charged to the Retirement Fund.

- CPI Escalator for post-1992 Fire and Police Retirees who don't Participate in the Combined Fund and Pre2000 CPI Escalator for post-1992 Fire and Police Retirees who do Participate in the Combined Fund

Eligible Group:

- a) Firemen and policemen in active service on or after January 1, 1993, who become eligible to retire on service retirement at age 57 or after attaining age 52 and completing 25 years of service.
- b) Firemen and policemen who retire on either a 75% Fire & Police duty disability benefit or a Heart & Lung duty disability benefit (i) between January 1, 1993, and December 31, 1994, and thereafter convert to service retirement; or (ii) on or after January 1, 1995, and who are eligible to elect between service retirement and extended life duty disability benefits at their conversion age.
- c) Police in active service on or after January 1, 1995, who separate with 25 years of service and elect a deferred retirement allowance.
- d) Surviving spouses of eligible members who elect Option 2 or 3, or who elect Option 4 with a percentage to the spouse, or who elect a PSO with a percentage to the spouse.

**Timing and Amount of Increase:**

For members who retired on service retirement between January 1, 1993, and December 31, 1994; or who retired on duty disability between January 1, 1993, and December 31, 1994, and later convert to service retirement; and for eligible surviving spouses of members who died prior to retirement between January 1, 1993, and December 31, 1994, with PSO coverage in effect; the first increase occurs for March of the year



following the first full calendar year of service retirement. For all others, the first increase occurs one full year after the member's service retirement date. Thereafter, increases occur annually on the anniversary of the first increase.

The monthly benefit is increased by an amount equal to (i) the total allowance for the preceding December (including all prior increases), multiplied by the lesser of (ii) 3%, and (iii) the increase in the CPI-U, U.S. Cities Average, for the calendar year preceding the increase. The benefit initially payable to an eligible spouse upon the member's death includes a proportionate share of any increases in payment at the member's death, based on the option elected.

Benefits payable to participants in the Combined Fund are charged to the Combined Fund. For individuals who are not participants in the Combined Fund: (i) benefits are charged to the Retirement Fund for members whose enrollment dates are prior to February 1, 1996; and (ii) benefits are charged to the Combined Retirement and Disability Fund for members whose enrollment dates are on or after February 1, 1996.

- Post-1999 CPI Escalator for post-1992 Fire and Police Retirees Who Participate in the Combined Fund

**Eligible Group:**

The eligible group is restricted to individuals who were firemen and policemen who retired on duty disability between October 17, 1992, and December 31, 1992; or who were in active service on or after January 1, 1993, who either retire as firemen or policemen, or who die in active service as firemen or policemen; and their eligible surviving spouses. The types of benefits that receive the CPI escalator include:

- a) The service retirement allowance and ordinary disability retirement allowance.
- b) Benefits paid to members after the duty disability conversion age: the conversion service retirement allowance or the extended life duty disability retirement allowance.
- c) Benefits paid to members after separation from service: the deferred retirement allowance, early retirement allowance, involuntary separation allowance, or the ERS allowance paid under the County transfer or State reciprocity provisions.
- d) The spouse survivor allowance paid to the surviving spouse of an eligible member who elects Option 2 or 3, or who elects Option 4 with a percentage to the spouse, or who elects a PSO with a percentage to the spouse.
- e) The fire and police or heart & lung duty disability surviving spouse allowance.
- f) The duty death surviving spouse allowance.

**Timing and Amount of Increases that occur after 1999:**

- a) The first post-1999 increase occurs for January 2000 for eligible Option 2 and 4 spouse survivors of members retired on a service retirement allowance or a conversion service retirement allowance – and for eligible Option 2 and 4 PSO spouse survivors – when the member's date of retirement or pre-retirement death was prior to January 1988.
- b) The first post-1999 increase occurs the later of the year 2000 anniversary or the 2nd anniversary of the member's date of death for: duty disability surviving spouses of firemen and policemen.
- c) For all others, the first post-1999 increase occurs the later of the year 2000 anniversary or the 2nd anniversary of the member's retirement or pre-retirement death.

Thereafter, increases occur annually on the anniversary of the first increase.

All increases for the group described in paragraph (a) are 2% increases. For paragraphs (b) and (c), an increase which takes effect on the 2nd, 3rd, or 4th anniversary is a 1.5% increase. An increase which takes effect on the 5th or subsequent anniversary is a 2% increase. Increases after the first one are compounded -- that is, they are applied to the total benefit in payment, including all prior increases. The benefit initially payable to an eligible spouse upon the member's death includes the spouse's proportionate share of any increases in payment at the member's death, based on the option elected.

Tier 2 Employees receive an increase of 2% on the fifth anniversary of their retirement and on each anniversary, that follows, but only for service retirement.

Benefits are charged to the Combined Fund.

### **Fire and Police Survivorship Benefits Prior to the Global Pension Settlement**

The survivors of firemen or policemen who die in active service or while in receipt of a disability allowance may be entitled to a survivorship benefit. The survivorship benefit is payable to the spouse of the deceased member provided the spouse has one or more eligible children in her care. Eligible children include unmarried children who are either under the age of 18, or are over age 18, but who suffer from a disability which commenced before the age of 18. The amount of the survivorship benefit for a death occurring in 2000 is \$600 monthly for the spouse and one child or for two or more eligible children. If there is no surviving widow and only one child, the benefit is \$300. Upon attainment of age 57, \$300 is payable to the spouse for her lifetime. Benefits payable to a spouse cease on remarriage and benefits payable in respect of children cease on attainment of age 18 (unless disabled prior to age 18) or marriage. For member deaths that occurred prior to 2000 the monthly amount payable depends upon the plan provisions in effect at the member's death.

### **Fire and Police Survivorship Benefits for Survivors Participating in the Combined Fund**

Survivors of firemen or policemen who died prior to 2000 while in active service or while retired on disability (and contributing to the Fire and Police Survivorship Fund) may be entitled to a survivorship benefit. The survivorship benefit is payable to the spouse of the deceased member provided the spouse has one or more eligible children in her care. For participants in the Combined Fund, the amount of the survivorship benefit for a death occurring prior to 2000 is \$600 monthly for the spouse and one child under age 18, or for two or more children under age 18. If there is no surviving widow and only one child, the benefit is \$300. The monthly amount payable to a disabled child over the age of 18 depends upon the plan provisions in effect at the member's death. Upon attainment of age 57, \$300 is payable to the spouse for her lifetime. Benefits payable to a spouse cease on remarriage and benefits payable in respect of children cease on attainment of age 18 (unless disability commenced prior to age 18) or marriage.

Survivorship Benefits for Participants in the Combined Fund are charged to the Combined Fund.

### **Separation Benefits**

Should a member separate from service, and no other benefit is payable, such a member will possibly be entitled to one of the options outlined below. Additional eligibility information about Separation Benefits is provided under 36-05-6.

- a) If the member has less than four years of creditable service, a refund of member contributions (not paid by the member's employer). Interest on the 4%, 5.5%, or 7% member paid contributions is also payable.
- b) If the member has four years of creditable service, a deferred allowance payable at the minimum service retirement age.
- c) A refund of the member contributions and interest, including contributions paid on the member's behalf, is payable to (i) General Employees after 4 years of creditable service, or (ii) firemen or policemen after 10 years of creditable service.
- d) If the member's service is involuntarily terminated, or the member terminates voluntarily after attaining age 55 and completing 15 years of creditable service, such member may elect to receive a deferred allowance at the minimum service retirement age, or an immediate allowance that is the actuarial equivalent of the deferred allowance.
- e) If the member has 25 years of qualifying time as a fireman or policeman, and is not participating in the Combined Fund, a deferred allowance payable at age 52.
- f) If the member is a fireman with 25 years of qualifying time as a fireman or policeman, had not attained age 49 at the date of separation from service, and is participating in the Combined Fund, a deferred allowance payable at age 52.

Imputed service credit and seasonal service credit are not used when calculating separation benefits.

## **Funds Charged with Separation Benefits**

Benefits paid to participants in the Combined Fund are charged to the Combined Fund. Separation benefits paid to individuals not participating in the Combined Fund are charged to (i) the Retirement Fund if the member's enrollment date is prior to February 1, 1996, and (ii) the Combined Fund if the member's enrollment date is on or after February 1, 1996.

## **Lump Sum Bonus Payments**

Under the Global Pension Settlement, various lump sum bonus payments may be made to eligible individuals participating in the Combined Fund. An individual may be eligible for one or more types of lump sum bonus payments.

### **Eligibility for Lump Sum Bonus Payments**

Only individuals participating in the Combined Fund can become eligible for the following types of lump sum bonus payments. In addition, the following conditions apply to the individual lump sum bonuses.

a) 5% lump sum bonus

Members who are inactive as of January 1, 2000, will become eligible at the time that their deferred retirement allowance commences.

Members in active service as of January 1, 2000, will become eligible when they first retire. If a member in active service as of January 1, 2000, dies prior to retirement and the member's surviving spouse is eligible for either a surviving spouse duty death benefit (including Heart & Lung duty death) or a PSO spouse survivor benefit then the surviving spouse is eligible for this bonus payment.

Only one 5% lump sum bonus will be paid on account of an individual member. Thus, if a member receiving a duty disability retirement allowance receives a 5% lump sum bonus on account of the duty disability benefit, then the member will not be eligible for an additional 5% lump sum bonus at the time of conversion.

b) 8.6% lump sum bonus:

A fireman or policeman in active service as of January 1, 2000, who (i) retires as a fireman or policeman on a service retirement allowance; or (ii) converts to service retirement or elects an extended life duty disability retirement allowance after retiring as a fireman or policeman on duty disability; (iii) attains age 63 while in receipt of an ordinary disability retirement allowance or a lifetime Fire & Police or Heart & Lung duty disability retirement allowance, is eligible for this bonus so long as the member did not receive 2 years of imputed service credit under the dissolution of the Firemen and Policemen's Survivorship Fund; (iv) or retires as a fireman or policeman on an extended life duty disability.

If a fireman or policeman in active service as of January 1, 2000, dies prior to retirement and the member's surviving spouse is eligible for either a surviving spouse duty death benefit (including Heart & Lung duty death) or a PSO spouse survivor benefit then the surviving spouse is eligible for this bonus payment.

A fireman or policeman retired on disability as of January 1, 2000, who is also an active member of the Firemen and Policemen's Survivorship Fund as of January 1, 2000 - under age 57 at January 1, 2000, and made all required contributions to the Survivorship Fund - is eligible for this bonus if he (i) converts to service retirement or elects an extended life duty disability retirement allowance; or (ii) is ineligible to convert to service retirement and attains age 63 while in receipt of the disability retirement allowance; provided that he (iii) did not receive 2 years of imputed service credit under the dissolution of the Firemen and Policemen's Survivorship Fund.

### **Amount of Lump Sum Bonus Payments**

Age factors are used in the 5% lump sum bonus and the 8.6% lump sum bonus calculations. The age factors for these bonus payments are contained in s. 36-05-11-a.

a) 5% lump sum bonus:

For members who are either inactive or active as of January 1, 2000, who retire in the future, the bonus payment equals 5% times their initial annual retirement allowance times a factor based on attained age on the retirement date. The retirement allowance used in the bonus calculation is to be reduced for early retirement, if applicable, but is not to be reduced for any optional election the member might have made under s. 36-05-7.

If a member in active service as of January 1, 2000 dies prior to retirement and the member's surviving spouse is eligible for this bonus payment, then the bonus will equal 5% times the spouse's initial annual benefit times a factor based on the spouse's attained age when the benefit commences.

b) 8.6% lump sum bonus

In the explanation that follows, whenever an annual allowance is used in calculating a bonus due to a member, the allowance used is the allowance that would be paid if the member did not elect an option under s. 36-05-7.

For members who retire on service retirement: 8.6% times the annual service retirement allowance times a factor based on attained age at retirement. For surviving spouses who receive either a PSO benefit or a duty death benefit: 8.6% times the initial annual allowance payable to the spouse times a factor based on the spouse's attained age when the benefit commences.

For a member who is retired on duty disability as of January 1, 2000 - or who retires on duty disability thereafter - and who is eligible to convert to service retirement: 8.6% times the annual conversion service retirement allowance earned as of the conversion age times a factor based on attained age at conversion.

For a member who is retired on disability as of January 1, 2000 - or who retired on disability thereafter - who is ineligible to convert to service retirement, and who is age 63 or younger at the later of 1/1/2000 or the disability retirement date: 8.6% times the "hypothetical" annual conversion service retirement allowance earned at age 63 times the attained age factor for age 63. The "hypothetical" allowance is calculated as if the member were eligible to convert at age 63.

For a member who retires on disability after January 1, 2000, who is older than age 63 at the disability retirement date: 8.6% times the annual disability allowance payable when the allowance commences times a factor based on the member's attained age at retirement.

The 5% lump sum bonus and the 8.6% lump sum bonus are paid from the Combined Fund.

### **Benefits Not Valued**

Best practice supports use of a three to five-year amortization period for amortization of liabilities generated by early retirement incentives such as the Bonus Year. While it is not clear whether a member retired due to an incentive, best practice would indicate that the additional liabilities generated by the Bonus Year should be amortized over a shorter period more in line with the period of payroll saving anticipated to be generated by the window. We recommend that the Bonus Year liabilities be isolated and amortized over a period not to exceed five years.

# Description of Actuarial Methods and Assumptions for Pension Funding Purposes

## Actuarial Cost Method

The method of financing the ERS is prescribed in Section 36.08 of the MCC.

### Method

The method used to determine Normal Cost and Accrued Actuarial Liability (AAL) is the Individual Entry Age Normal Cost Method. The UAAL, under this method, is the AAL over the Actuarial Value of Assets. The total Employer contribution is the sum of the Employer portion of the Normal Cost (Total Normal Cost less expected member contributions) plus an amount to amortize the UAAL according to the Amortization Method. If the Actuarial Value of Assets exceeds the sum of the AAL and the Employer portion of the Normal Cost, there is no Employer contribution required for that year.

### Asset Values

Two asset values are used in this report. A description of each and a brief explanation of where they are used follows.

- **Market Value**

The market value of assets is the value of investments if they were to be sold on the date valued. The market value of assets is used to develop the actuarial value of assets.

- **Actuarial Value**

The actuarial value of the assets in the Employers' Reserve Fund is equal to the market value of assets.

The actuarial value of assets for the remaining funds is a smoothed value of assets. The smoothed value is developed as follows. Under this method, we start with the Preliminary Actuarial Value of Assets from the prior valuation. Then we develop an actual market return and an expected market return based on the applicable valuation interest rate. The difference between this actual and expected amount is captured each year and reported. We amortize, or divide, the difference over the past five years as an amount to recognize each year. The preliminary actuarial value for the current valuation becomes the preliminary actuarial value from the prior year plus non-investment cash flows (contributions less benefits and refunds) plus the expected return on the market value of assets at the applicable valuation interest rate and the current year's amortization.

The actuarial value of assets is used in the determination of the Employer's actuarial contribution requirements.

### Amortization Method

Closed layered amortization method with amortization payments for each base increasing by 2.00% per year. The outstanding balance of the unfunded actuarial accrued liability (UAAL) as of January 1, 2018 will be amortized over a fixed 25-year period. At each subsequent valuation date, any changes to the UAAL arising from actuarial gains or losses will be amortized over a fixed 15-year period and any changes to the UAAL arising from changes in assumptions, methods, or plan provisions will be amortized over a fixed 25-year period.

### Other Considerations

Where necessary for determination of separate contributions, assets allocable to various groups were estimated.

## Actuarial Assumptions

Adopted Effective January 1, 2018 (except as noted)

### Interest Rate and Inflation

Interest: 8.00% return for calendar years 2018 through 2022 and 8.25% beginning with calendar year 2023

Inflation: 2.5% per annum

### Salary Increases

Representative values are as follows:

Age	General	Fire and Police
25	4.93%	9.47%
30	3.79	7.72
35	3.78	5.78
40	2.89	4.68
45	2.50	4.28
50	2.50	4.08
55	2.50	4.00
60	2.50	4.00
65	2.50	4.00

Annual increases of 2.5% per annum is assumed for policemen, firemen, and General Employees on duty disability. (The increases for duty disabled fire and police affect both current duty disability benefits and future service retirement or extended life conversion benefits. The increases for General Employees affect only service retirement conversion benefits.)

## Early and Normal Retirement

Illustrative rates of retirement are as follows:

Age at Beginning of Year	Early Retirement		Normal Retirement			
	General Employees	General Employees		Police		
		Males	Females	Firemen	Not in Combined Fund	In Combined Fund
42						10%
43						25
44						25
45						25
46						32
47						32
48				10%		32
49				13		25
50				13		25
51				13	44%	25
52				18	44	25
53				18	24	25
54		35%	26%	20	24	25
55	4%	45	26	25	24	25
56	4	30	17	25	40	25
57	4	27	15	30	35	25
58	4	27	20	35	35	25
59	4	22	20	35	35	25
60		19	19	35	35	25
61		19	20	50	35	25
62		28	25	50	50	50
63		20	18	100	100	100
64		20	18	100	100	100
65		30	25	100	100	100
66		30	30	100	100	100
67		18	20	100	100	100
68		18	20	100	100	100
69		18	20	100	100	100
70		100	100	100	100	100

## Survivor Benefits and Duty Disability Child Allotments

It is assumed that the female spouse is three years younger than the male. In absence of evidence to the contrary, it is assumed that 85% of General Employees and 95% of Policemen and Firemen are married, with dependent children, described by the following table:

Member's Age at Death or Disability	Number of Dependent Children	Age of Youngest Child
20	0	N/A
25	1.5	1
30	2.5	2
35	2.5	5
40	2.5	8
45	2.0	11
50	1.5	14
55	1.0	15
60 and Over	0	N/A

The percentage of retiring employees assumed to elect option 3, the subsidized 50% option, is 25% for males and 15% for females. The percentage of General Employees assumed electing the 100% PSO option before retirement is 40% for males and 15% for females. For firemen and policemen, 95% are assumed to elect the 100% PSO option before retirement.

## Duty Deaths

The following percentages of deaths in active service are assumed to incur in the performance of duty:

General Employees: 5%

Police & Fire: 10% In addition, amongst firemen, 25% of duty deaths are assumed to occur under the Heart and Lung Law.

## Duty Disabilities

Employee Group	Percentage of Disabilities	Percentage of Duty Disabilities Assumed		Assumption Adopted January 1
	Incurred in the Performance of Duty	Eligible For the 90% Benefit	Under the Heart & Lung Law	
General	10.0%	N/A	N/A	2018
Police other than MPA	70.0%	5.0%	N/A	2018
MPA enrolled on or before 4/18/2005	70.0%	5.0%	N/A	2018
MPA enrolled after 4/18/2005	62.5%	7.5%	N/A	2008
Fire other than MPFFA	90.0%	5.0%	15.0%	2008
MPFFA enrolled on or before 10/3/2005	90.0%	5.0%	15.0%	2008
MPFFA enrolled after 10/3/2005	81.2%	6.9%	20.8%	2008



### Imputed Military Service

The following percentages of eligible members are assumed to earn 1 year of imputed military service credit:

General Employees: 10%  
 Police: 13%  
 Fire: 13%

These percentages are based on troop strength statistics from the Department of Defense website.(Adopted 1/1/2003)

### Illustrative Rates of Termination for General Employees, Firemen, and Policemen

Age	Less than 5 Years' Service		At least 5 Years' Service	
	Males	Females	Males	Females
<b>General Employees</b>				
20	17.62%	24.05%	13.00%	14.30%
25	15.93	24.12	12.68	14.30
30	11.31	16.77	6.92	8.45
35	10.66	15.60	7.19	7.27
40	8.78	10.40	4.51	8.45
45	9.10	9.23	2.99	4.67
50	8.32	8.58	2.38	3.38
55	6.83	7.80	1.99	3.64
60	-	-	-	-
<b>Fire and Police</b>				
20	6.15%	5.55%	-	-
25	2.33	4.65	1.34%	2.33%
30	2.75	7.38	1.13	3.34
35	3.38	6.63	1.10	1.88
40	4.40	4.40	0.90	0.97
45	5.40	4.40	1.08	1.53
50	8.80	4.40	4.05	6.70
55	10.00	4.40	-	-
60	-	-	-	-

### Seasonal Service Credit

The following percentages of eligible members are assumed to receive one year of seasonal service credit:

Member's Union or Bargaining Group	Percentage with Seasonal Service	Assumption Adopted January 1
District Council 48, AFSCME	27.09%	2005
Fire Equipment Dispatchers Local 494, IBEW	0.00%	2006
Electrical Group Local 494, IBEW	31.00%	2006
Machine Shop Local 494, IBEW	12.00%	2005
Bridge Operators Local 195, IBEW	28.57%	2005
Joint 129/48 Local 139, IOUE & DC48	100.00%	2005
Machinists Local 510, IAM	5.00%	2005
Sanitation Local 61, LIUNA	98.06%	2005
TEAM (Techs, Eng, Archs of Milw)	5.00%	2005
MBCTC (Bricklayers, Carpenters, Cement Masons, Painters, Iron Workers)	10.00%	2005
Police Sworn Management, Police Civilian Management, Managers, Elected Officials (except mayor)	3.13%	2005
Non-represented in the Police Department and General City non-represented.	5.00%	2005

### Miscellaneous

For members active on the valuation date, credited service in each future year is assumed to be the greater of credited service earned in the year prior to the valuation, or the average of the three highest years of service credit out of the five years that preceded the valuation date (adopted 1/1/2007).

Active members who worked less than 100 hours in the prior year, but who have not officially terminated employment are considered to be inactive. These members are not assumed to earn additional service credit in future years.

## Illustrative Rates of Disability, and Remarriage for General Employees, Firemen, and Policemen

Age	Disability	Remarriage
<b>General Employees</b>		
20	0.050%	14.46%
25	0.050	9.45
30	0.060	5.94
35	0.077	4.02
40	0.131	2.80
45	0.162	1.75
50	0.256	0.96
55	0.527	0.26
60	0.077	-
65	0.200	-
<b>Fire</b>		
20	0.064%	14.46%
25	0.136	9.45
30	0.280	5.94
35	0.760	4.02
40	0.960	2.80
45	0.960	1.75
50	1.080	0.96
55	1.080	0.26
60	1.080	-
65	1.080	-
<b>Police</b>		
20	0.030%	14.46%
25	0.030	9.45
30	0.100	5.94
35	0.187	4.02
40	0.231	2.80
45	0.231	1.75
50	0.210	0.96
55	0.210	0.26
60	0.210	-
65	0.210	-

## Illustrative Rates of Health and Disability Mortality for General Employees, Firemen, and Policemen

For regular retirees and for survivors, the RP-2014 Healthy Annuitant Mortality Table (using 111% of rates for males and 110% of rates for females) projected generationally with Scale MP-2016. For duty and ordinary disability retirees, the RP-2014 Disability Mortality Table (using 102% of rates for males and 98% of rates for females) projected generationally with Scale MP-2016 was used. For death in active service, the RP-2014 Nonannuitant Mortality Table projected generationally with Scale MP-2016.

### Active Membership – General City Employees Number and Average Annual Salary As of December 31, 2017

Age	Years of Credited Service									Total
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	
Under 25	35 \$36,470									35 \$36,470
25 to 29	171 \$45,682	23 \$47,944								194 \$45,950
30 to 34	221 \$47,819	80 \$54,578	27 \$49,067							328 \$49,570
35 to 39	204 \$48,727	85 \$56,344	62 \$62,415	28 \$54,737	1 \$37,915					380 \$53,079
40 to 44	140 \$46,918	72 \$54,152	59 \$61,495	66 \$56,202	17 \$55,783	1 \$54,677				355 \$52,980
45 to 49	142 \$44,561	95 \$54,444	78 \$58,966	109 \$58,940	81 \$63,181	20 \$58,786	3 \$44,040			528 \$54,828
50 to 54	100 \$46,419	62 \$49,226	51 \$50,777	92 \$55,183	91 \$58,792	94 \$63,833	33 \$62,659	12 \$58,500		535 \$55,104
55 to 59	87 \$46,014	62 \$51,938	53 \$56,802	67 \$61,783	91 \$63,264	117 \$65,809	59 \$72,373	31 \$63,956	2 \$81,775	569 \$60,187
60 to 64	42 \$48,427	35 \$46,278	32 \$57,720	34 \$52,374	34 \$60,787	36 \$68,145	40 \$68,431	15 \$75,223	8 \$60,721	276 \$58,525
Over 64	9 \$45,830	22 \$55,001	21 \$57,218	10 \$57,601	13 \$60,529	11 \$62,140	6 \$85,721	4 \$72,859	13 \$78,423	109 \$61,429
<b>Total</b>	<b>1,151 \$46,554</b>	<b>536 \$53,043</b>	<b>383 \$57,626</b>	<b>406 \$57,240</b>	<b>328 \$61,173</b>	<b>279 \$64,757</b>	<b>141 \$68,947</b>	<b>62 \$66,200</b>	<b>23 \$72,558</b>	<b>3,309 \$54,685</b>

# Active Membership – Water Department

## Number and Average Annual Salary As of December 31, 2017

Age	Years of Credited Service									Total
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	
Under 25	3 \$40,594									3 \$40,594
25 to 29	13 \$45,951	3 \$53,280								16 \$47,325
30 to 34	21 \$46,000	6 \$54,602	1 \$54,664							28 \$48,153
35 to 39	21 \$43,440	6 \$57,378	6 \$60,790	2 \$70,824	1 \$73,119					36 \$51,000
40 to 44	16 \$47,538	6 \$52,715	7 \$61,022	7 \$67,941	1 \$92,826					37 \$56,013
45 to 49	10 \$45,188	10 \$53,494	8 \$57,529	4 \$61,725	5 \$67,677	2 \$63,905				39 \$55,388
50 to 54	10 \$46,155	14 \$49,367	11 \$57,602	7 \$56,836	9 \$62,086	12 \$66,898	6 \$73,142			69 \$57,747
55 to 59	7 \$44,798	9 \$52,212	1 \$59,401	2 \$70,844	8 \$55,657	14 \$61,522	14 \$73,930	1 \$49,191		56 \$60,274
60 to 64	4 \$44,892	1 \$42,826	3 \$59,517	1 \$46,339	1 \$47,299	5 \$74,995	6 \$77,298	1 \$49,136	1 \$94,263	23 \$64,206
Over 64		1 \$40,467		1 \$42,221	3 \$66,814		2 \$90,790	1 \$70,971		8 \$66,960
Total	105 \$45,377	56 \$52,273	37 \$58,875	24 \$62,176	28 \$62,718	33 \$65,662	28 \$75,687	3 \$56,432	1 \$94,263	315 \$56,090



**Active Membership – School Board  
Number and Average Annual Salary  
As of December 31, 2017**

Age	Years of Credited Service									Total
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	
<b>Under 25</b>	121 \$25,504									121 \$25,504
<b>25 to 29</b>	384 \$26,141	4 \$28,785								388 \$26,168
<b>30 to 34</b>	353 \$28,054	37 \$36,766	8 \$36,539							398 \$29,034
<b>35 to 39</b>	294 \$30,063	78 \$31,862	25 \$37,732	14 \$42,869						411 \$31,307
<b>40 to 44</b>	262 \$29,536	88 \$28,432	47 \$30,173	29 \$47,159	11 \$44,104	1 \$57,014				438 \$30,978
<b>45 to 49</b>	239 \$27,276	95 \$29,339	93 \$29,933	71 \$32,426	40 \$41,851	9 \$54,675				547 \$30,271
<b>50 to 54</b>	180 \$28,506	107 \$31,355	104 \$26,411	112 \$32,653	91 \$38,655	45 \$48,656	15 \$53,595	2 \$47,704		656 \$32,769
<b>55 to 59</b>	180 \$29,069	81 \$25,957	108 \$22,475	134 \$28,747	98 \$39,428	50 \$43,198	22 \$53,271	13 \$51,280	1 \$31,867	687 \$31,308
<b>60 to 64</b>	110 \$24,588	45 \$23,967	66 \$25,321	82 \$30,741	51 \$35,437	25 \$43,295	12 \$54,368	2 \$36,485	2 \$45,394	395 \$29,572
<b>Over 64</b>	45 \$23,612	22 \$21,807	24 \$22,839	13 \$28,948	7 \$32,301	6 \$28,341	2 \$30,249	1 \$23,517		120 \$24,558
<b>Total</b>	2,168 \$27,792	557 \$29,202	475 \$27,012	455 \$32,256	298 \$38,839	136 \$45,227	51 \$52,722	18 \$47,696	3 \$40,885	4,161 \$30,142

**Active Membership – Milwaukee Technical College  
Number and Average Annual Salary  
As of December 31, 2017**

None as of December 31, 2017

**Active Membership – Sewerage Commission  
Number and Average Annual Salary  
As of December 31, 2017**

Age	Years of Credited Service									Total
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	
Under 25	2 \$63,321									2 \$63,321
25 to 29	17 \$64,297	1 \$78,121								18 \$65,065
30 to 34	12 \$65,222	12 \$75,092	2 \$81,757							26 \$71,049
35 to 39	11 \$62,116	12 \$88,452	4 \$77,288							27 \$76,069
40 to 44	9 \$81,430	9 \$87,316	9 \$85,696	2 \$79,857						29 \$84,472
45 to 49	3 \$65,901	3 \$106,954	8 \$86,373	5 \$106,908	1 \$138,736	1 \$65,796				21 \$92,791
50 to 54	5 \$97,342	3 \$76,495	4 \$82,935	3 \$125,434	3 \$105,495	10 \$82,095	1 \$65,796			29 \$90,602
55 to 59	4 \$70,772	2 \$110,881	6 \$80,929	7 \$119,140	3 \$68,295	9 \$78,528	2 \$80,732	2 \$80,021		35 \$87,358
60 to 64	5 \$90,495	3 \$76,649	1 \$63,866	5 \$114,234	1 \$96,491	2 \$66,775	4 \$83,030	3 \$107,920		24 \$91,807
Over 64	2 \$91,125	1 \$122,448	4 \$76,434	2 \$80,106			1 \$98,337	2 \$147,482		12 \$96,996
<b>Total</b>	<b>70 \$71,725</b>	<b>46 \$85,891</b>	<b>38 \$82,153</b>	<b>24 \$109,830</b>	<b>8 \$94,575</b>	<b>22 \$78,502</b>	<b>8 \$82,214</b>	<b>7 \$111,252</b>		<b>223 \$83,631</b>

**Active Membership – Veolia**  
**Number and Average Annual Salary**  
**As of December 31, 2017**

Age	Years of Credited Service									Total
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	
<b>Under 25</b>										
<b>25 to 29</b>										
<b>30 to 34</b>										
<b>35 to 39</b>										
<b>40 to 44</b>										
<b>45 to 49</b>					1 \$68,276					1 \$68,276
<b>50 to 54</b>					1 \$81,864	2 \$81,855				3 \$81,858
<b>55 to 59</b>					4 \$91,076	11 \$77,451	1 \$84,076			16 \$81,272
<b>60 to 64</b>					1 \$95,277	3 \$74,508	4 \$91,080	2 \$82,118		10 \$84,736
<b>Over 64</b>						2 \$82,131				2 \$82,131
<b>Total</b>					7 \$87,103	18 \$77,970	5 \$89,679	2 \$82,118		32 \$82,057



**Active Membership – Wisconsin Center District  
Number and Average Annual Salary  
As of December 31, 2017**

Age	Years of Credited Service									Total
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	
Under 25	2 \$36,694									2 \$36,694
25 to 29	4 \$58,717	1 \$41,273								5 \$55,228
30 to 34	2 \$41,257									2 \$41,257
35 to 39	4 \$48,821		2 \$47,284							6 \$48,309
40 to 44	6 \$54,563	2 \$71,095	4 \$44,858	1 \$48,919						13 \$53,686
45 to 49	3 \$26,927	1 \$18,448		1 \$82,000	2 \$65,399					7 \$44,575
50 to 54	4 \$51,751	1 \$20,318	4 \$51,693	2 \$81,668	2 \$48,552	1 \$61,348	1 \$36,718			15 \$52,840
55 to 59	3 \$63,808	2 \$51,939	2 \$62,467		2 \$125,452	1 \$39,190	1 \$48,039	1 \$120,625		12 \$73,250
60 to 64	2 \$10,063	2 \$26,164	2 \$43,514	3 \$101,164	1 \$49,588		1 \$71,389			11 \$53,087
Over 64		2 \$37,871	1 \$14,157		1 \$48,627				1 \$114,330	5 \$50,571
<b>Total</b>	30 \$47,092	11 \$41,289	15 \$47,126	7 \$85,393	8 \$72,128	2 \$50,269	3 \$52,049	1 \$120,625	1 \$114,330	78 \$54,362

**Active Membership – Housing Authority**  
**Number and Average Annual Salary**  
**As of December 31, 2017**

Age	Years of Credited Service									Total
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	
Under 25	1 \$45,130									1 \$45,130
25 to 29	6 \$50,789									6 \$50,789
30 to 34	6 \$43,965	2 \$36,811	1 \$56,276							9 \$43,743
35 to 39	9 \$38,425	3 \$47,935	3 \$53,894							15 \$43,421
40 to 44	12 \$48,928	3 \$48,458	4 \$53,787	2 \$58,970	1 \$47,114					22 \$50,578
45 to 49	10 \$47,369	4 \$50,825	3 \$61,145	8 \$68,403	1 \$82,774	1 \$66,505				27 \$57,664
50 to 54	4 \$52,233	8 \$65,641	3 \$51,554	4 \$57,063	6 \$85,105	1 \$67,989	3 \$71,999			29 \$65,917
55 to 59	5 \$48,720	3 \$64,148	2 \$66,581	9 \$74,369	5 \$61,302	2 \$82,469	3 \$78,405			29 \$67,076
60 to 64	1 \$32,015	7 \$62,235	4 \$75,209		1 \$53,970	3 \$64,192		1 \$100,774		17 \$65,636
Over 64	1 \$32,089	2 \$51,991	1 \$73,533	2 \$105,245		2 \$99,263				8 \$77,327
<b>Total</b>	<b>55</b> \$46,126	<b>32</b> \$56,978	<b>21</b> \$60,892	<b>25</b> \$70,929	<b>14</b> \$71,500	<b>9</b> \$76,726	<b>6</b> \$75,202	<b>1</b> \$100,774		<b>163</b> \$59,238

**Active Membership – Redevelopment Authority  
Number and Average Annual Salary  
As of December 31, 2017**

Age	Years of Credited Service									Total
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	
Under 25										
25 to 29										
30 to 34										
35 to 39		1 \$53,480	1 \$92,855							2 \$73,167
40 to 44		1 \$54,471		1 \$75,925						2 \$65,198
45 to 49			1 \$127,473							1 \$127,473
50 to 54						1 \$105,117				1 \$105,117
55 to 59			1 \$103,768			1 \$87,593				2 \$95,680
60 to 64										
Over 64										
<b>Total</b>		2 \$53,975	3 \$108,032	1 \$75,925		2 \$96,355				8 \$87,585

**Active Membership – General Employees  
Number and Average Annual Salary  
As of December 31, 2017**

Age	Years of Credited Service									Total
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	
<b>Under 25</b>	164 \$28,837									164 \$28,837
<b>25 to 29</b>	595 \$33,747	32 \$46,784								627 \$34,413
<b>30 to 34</b>	615 \$36,692	137 \$51,306	39 \$48,502							791 \$39,806
<b>35 to 39</b>	543 \$38,519	185 \$47,986	103 \$56,660	44 \$51,692	2 \$55,517					877 \$43,346
<b>40 to 44</b>	445 \$37,562	181 \$43,343	130 \$51,072	108 \$55,139	30 \$52,447	2 \$55,845				896 \$43,348
<b>45 to 49</b>	407 \$34,522	208 \$43,447	191 \$46,310	198 \$51,199	131 \$57,639	33 \$58,421	3 \$44,040			1,171 \$44,134
<b>50 to 54</b>	303 \$36,756	195 \$40,375	177 \$37,645	220 \$44,999	203 \$51,392	166 \$61,516	59 \$61,509	14 \$56,957		1,337 \$45,358
<b>55 to 59</b>	286 \$35,900	159 \$39,690	173 \$36,674	219 \$44,003	211 \$53,047	205 \$61,323	102 \$68,684	48 \$62,065	3 \$65,139	1,406 \$47,300
<b>60 to 64</b>	164 \$33,066	93 \$37,193	108 \$38,412	125 \$41,780	90 \$46,852	74 \$60,273	67 \$68,974	24 \$76,634	11 \$60,984	756 \$45,054
<b>Over 64</b>	57 \$29,638	50 \$40,648	51 \$42,022	28 \$48,759	24 \$52,586	21 \$57,923	11 \$77,703	8 \$85,111	14 \$80,988	264 \$46,887
<b>Total</b>	3,579 \$35,645	1,240 \$43,517	972 \$43,736	942 \$47,230	691 \$52,589	501 \$60,877	242 \$67,120	94 \$66,986	28 \$71,431	8,289 \$43,421

**Active Membership – Policemen  
Number and Average Annual Salary  
As of December 31, 2017**

Age	Years of Credited Service									Total
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	
<b>Under 25</b>	76 \$61,336									76 \$61,336
<b>25 to 29</b>	130 \$58,130	53 \$85,995	19 \$88,828							202 \$68,328
<b>30 to 34</b>	115 \$65,811	70 \$86,578	97 \$90,679	13 \$90,697						295 \$80,012
<b>35 to 39</b>	42 \$63,624	34 \$83,837	144 \$90,192	71 \$91,586	14 \$94,460					305 \$86,346
<b>40 to 44</b>	16 \$63,625	8 \$85,041	92 \$88,467	115 \$90,461	67 \$95,864	4 \$92,384				302 \$89,512
<b>45 to 49</b>	5 \$61,857	6 \$84,795	34 \$87,909	96 \$89,900	219 \$94,768	33 \$100,158				393 \$92,867
<b>50 to 54</b>	3 \$60,476	1 \$82,998	18 \$88,265	42 \$88,570	93 \$92,604	39 \$97,992	2 \$117,698			198 \$92,133
<b>55 to 59</b>			2 \$86,379	15 \$88,451	27 \$89,801	18 \$90,837	5 \$95,731	1 \$86,623		68 \$90,066
<b>60 to 64</b>			2 \$86,526	2 \$86,099	3 \$87,853	2 \$96,742		1 \$98,733		10 \$90,103
<b>Over 64</b>		1 \$155,751			1 \$87,627	1 \$97,070	1 \$112,602		2 \$105,474	6 \$110,666
<b>Total</b>	387 \$61,932	173 \$86,107	408 \$89,543	354 \$90,209	424 \$94,074	97 \$97,135	8 \$103,331	2 \$92,678	2 \$105,474	1,855 \$85,102



**Active Membership – Firemen  
Number and Average Annual Salary  
As of December 31, 2017**

Age	Years of Credited Service									Total
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	
<b>Under 25</b>	62 \$54,649									62 \$54,649
<b>25 to 29</b>	6 \$47,111	6 \$83,239								12 \$65,175
<b>30 to 34</b>	12 \$62,256	44 \$80,270	39 \$88,960	5 \$83,530						100 \$81,660
<b>35 to 39</b>	14 \$60,143	45 \$83,194	15 \$86,869	34 \$92,603	18 \$91,245					126 \$84,759
<b>40 to 44</b>	3 \$63,905	17 \$85,925	18 \$89,945	39 \$90,403	22 \$88,538					99 \$88,333
<b>45 to 49</b>	1 \$62,534	12 \$81,045	8 \$90,161	39 \$90,219	98 \$91,193	10 \$105,320				168 \$90,863
<b>50 to 54</b>		2 \$79,183	3 \$87,786	16 \$90,210	42 \$89,032	34 \$92,770	5 \$95,067			102 \$90,529
<b>55 to 59</b>		1 \$154,200		5 \$90,662	3 \$84,106	12 \$93,910	6 \$103,669	1 \$82,534		28 \$96,117
<b>60 to 64</b>				1 \$93,905		1 \$93,342	1 \$87,486	1 \$114,084		4 \$97,204
<b>Over 64</b>										
<b>Total</b>	98 \$56,267	127 \$82,842	83 \$88,869	139 \$90,654	183 \$90,267	57 \$95,222	12 \$98,736	2 \$98,309		701 \$84,651

**Reconciliation of Membership Data  
From January 1, 2017 to January 1, 2018**

	Active Members	Inactive Members	Benefit Recipients			
			Disableds	Service Retirees	Beneficiaries	Total
Participants as of January 1, 2017	11,083	3,416	905	9,881	2,102	27,387
Changes due to:		-				-
New participants	1,094	-	-	-	162	1,256
Vested terminations	(355)	355	-	-	-	-
Retirements	(463)	(191)	-	654	-	-
Disabilities	(19)	(7)	26	-	-	-
Return to work	61	(61)	-	-	-	-
Refund/Withdrawal	(523)	(87)	-	-	-	(610)
Death	(27)	(10)	(34)	(340)	(159)	(570)
Cessation of benefits	-	-	(1)	(12)	(2)	(15)
Assumed Refund	-	(297)	-	-	-	(297)
Data adjustments	(6)	17	7	8	(1)	25
Total changes	(238)	(281)	(2)	310	-	(211)
Participants as of January 1, 2018	10,845	3,135	903	10,191	2,102	27,176

**Funded Ratio**

The ERS funded status is measured by comparing the valuation assets with the accrued liability. The accrued liability is the present value of benefits accumulated to date under the ERS funding method, reflecting future pay increases for active employees.

On this basis, the ERS funded ratio is 89.9% as of January 1, 2018. The funded ratio is based on an actuarial value of assets of \$5.233 billion and an accrued liability of \$5.820 billion.

**Reasons for Change in the Funded Ratio**

The funded ratio based on the actuarial value of assets decreased from 96.1% as of January 1, 2017 to 89.9% as of January 1, 2018. The funded ratio based on the market value of assets decreased from 92.9% as of January 1, 2017 to 92.7% as of January 1, 2018. A reconciliation of the changes in funded ratio is as follows:

	Funded Ratio Based on	
	Actuarial Value of Asset	Market Value of Asset
January 1, 2017	96.1%	92.9%
Expected change	0.3%	0.0%
Valuation updates	1.1%	1.1%
Change due to cost method	-3.0%	-3.1%
Change due to assumptions	-5.7%	-5.9%
Change due to asset return	2.5%	9.2%
Change due to liabilities	-1.4%	-1.5%
Change due to plan	0.0%	0.0%
Total change	-6.2%	-0.2%
January 1, 2018	89.9%	92.7%

### Schedule of Funding Progress

Valuation as of January 1	Actuarial Value of Assets	Actuarial Accrued Liability (AAL)	Unfunded Actuarial Accrued Liability (UAAL)	Funded Ratio	Covered Payroll	UAAL as a Percentage of Covered Payroll
2018	\$ 5,233,486	\$ 5,819,762	\$ 586,276	89.9%	\$ 577,118	101.6%
2017	5,055,700	5,259,300	203,600	96.1%	583,950	34.9%
2016	4,899,155	5,065,141	165,986	96.7%	535,802	31.0%
2015	4,797,437	4,935,482	138,045	97.2%	529,939	26.0%
2014	4,580,729	4,831,689	250,960	94.8%	521,651	48.1%
2013	4,259,889	4,689,814	429,925	90.8%	523,738	82.1%
2012	4,404,635	4,587,915	183,280	96.0%	525,181	34.9%
2011	4,641,425	4,447,548	-	104.4%	538,218	0.0%
2010	4,814,402	4,269,324	-	112.8%	553,846	0.0%
2009	4,076,297	4,113,089	36,792	99.1%	536,558	6.9%
2008	5,192,000	3,958,061	-	131.2%	532,412	0.0%

### Rate of Return

The investments return on all ERS assets on a market value basis (i.e. Total return including both realized and unrealized gains and losses) for the plan year ended December 31, 2017, was 16.41% reported by ERS staff. The return based on the actuarial value of assets used for determining the System's funded status was 9.09%. A five-year history of the rate of return on the actuarial value of assets and the market values of assets is shown below.

Plan Year Ended December 31	Return on Actuarial Value	Return on Market Value
2017	9.09 %	16.41 %
2016	8.33	8.83
2015	7.00	0.52
2014	9.91	4.72
2013	12.85	18.44



# STATISTICAL SECTION

## Overview of Statistical Section

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The Statistical Section presents detailed information that assists users in using the basic financial statements, notes to basic financial statements, and required supplementary information to assess the economic condition of ERS. The source of the information in this section is derived from ERS internal records.

### *Financial Trends*

The following schedule shows trend information about the changes and growth in ERS's fiduciary net position over the past 10 years:

- Changes in Fiduciary Net Position

### *Demographic and Economic Information*

These schedules offer demographic and economic indicators to help readers understand the environment within which the System's financial activities take place.

- Schedule of Retired Members by Type of Pension Benefit
- Schedule of Average Benefit Payment Amounts – Age/Service
- Schedule of Average Benefit Payment Amounts – Death
- Schedule of Average Benefit Payment Amounts – Disability
- Principal Participating Employers

**EMPLOYEES' RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE**  
**Changes in Fiduciary Net Position**  
**For Last Ten Fiscal Years**  
**(in thousands)**

	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
<b>Additions</b>										
Member contributions	\$ 32,085	\$ 32,494	\$ 35,918	\$ 49,553	\$ 43,663	\$ 42,624	\$ 38,809	\$ 35,325	\$ 35,699	\$ 35,894
Employer contributions	83,166	83,524	74,095	72,198	72,844	79,533	100,159	17,350	-	60,098
Investment earnings (net of expenses)	(160,190)	787,809	383,747	34,982	238,985	798,204	539,970	(67,932)	557,801	796,147
<b>Total additions to fiduciary net position</b>	<b>(44,939)</b>	<b>903,827</b>	<b>493,760</b>	<b>156,733</b>	<b>355,492</b>	<b>920,361</b>	<b>678,938</b>	<b>(15,257)</b>	<b>593,500</b>	<b>892,139</b>
<b>Deductions</b>										
Benefit payments										
Age/Service	354,553	343,430	313,927	301,667	289,877	280,110	269,885	254,487	241,569	227,181
Death	1,970	2,305	2,167	2,287	2,208	2,170	1,883	1,699	1,565	1,345
Disability	32,366	34,266	30,843	29,382	29,194	28,416	27,711	26,942	25,806	24,173
<b>Total benefit payments</b>	<b>388,889</b>	<b>380,001</b>	<b>346,937</b>	<b>333,336</b>	<b>321,279</b>	<b>310,696</b>	<b>299,479</b>	<b>283,128</b>	<b>268,940</b>	<b>252,699</b>
Refund of contributions										
Final death payout	1,647	1,688	971	949	1,486	1,624	1,223	1,272	1,263	1,117
Retirement lump sum equivalent	142	223	332	294	359	437	505	432	282	286
Withdrawal	2,848	3,420	3,063	2,910	6,045	3,702	1,232	733	1,224	912
<b>Total refunds of contributions</b>	<b>4,637</b>	<b>5,331</b>	<b>4,366</b>	<b>4,153</b>	<b>7,890</b>	<b>5,763</b>	<b>2,960</b>	<b>2,437</b>	<b>2,769</b>	<b>2,315</b>
Administrative expenses	7,181	8,637	8,096	9,686	10,831	11,745	9,739	12,134	13,275	12,247
Interfund Transfers	-	-	-	10,400	13,400	18,399	-	-	7,000	5,581
<b>Total deductions from fiduciary net position</b>	<b>400,707</b>	<b>393,969</b>	<b>359,399</b>	<b>357,575</b>	<b>353,400</b>	<b>346,603</b>	<b>312,178</b>	<b>297,699</b>	<b>291,984</b>	<b>272,842</b>
<b>Change in fiduciary net position</b>	<b>\$ (445,646)</b>	<b>\$ 509,858</b>	<b>\$ 134,361</b>	<b>\$ (200,842)</b>	<b>\$ 2,092</b>	<b>\$ 573,758</b>	<b>\$ 366,760</b>	<b>\$ (312,956)</b>	<b>\$ 301,516</b>	<b>\$ 619,297</b>

*For the fiscal years ended 2013, 2014, and 2015, the presentation of interfund transfers has been reclassified from refunds of contributions to interfund transfers.*

**EMPLOYEES' RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE**  
**Schedule of Retired Members by Type of Pension Benefit**  
**As of December 31, 2018**

Amount of Annual Pension Benefit	Number of Recipients	Type of Pension Benefit		
		Age/Service	Death	Disability
General City				
\$0 - \$10,000	4,182	3,684	129	369
\$10,001 - \$20,000	2,222	1,961	34	227
\$20,001 - \$30,000	1,652	1,553	3	96
\$30,001 - \$40,000	1,161	1,121	1	39
\$40,001 - \$50,000	532	524	-	8
\$50,001 - \$60,000	242	239	-	3
\$60,001 - \$70,000	119	118	-	1
\$70,001 - \$80,000	62	62	-	-
\$80,001 - \$90,000	24	24	-	-
\$90,001 - \$100,000	8	8	-	-
\$100,001 - \$110,000	5	5	-	-
\$110,001 - \$120,000	2	2	-	-
Totals	10,211	9,301	167	743
Police				
\$0 - \$10,000	128	107	18	3
\$10,001 - \$20,000	217	199	8	10
\$20,001 - \$30,000	164	139	10	15
\$30,001 - \$40,000	233	207	2	24
\$40,001 - \$50,000	339	327	-	12
\$50,001 - \$60,000	710	625	-	85
\$60,001 - \$70,000	452	424	-	28
\$70,001 - \$80,000	158	157	-	1
\$80,001 - \$90,000	62	60	-	2
\$90,001 - \$100,000	23	23	-	-
\$100,001 - \$110,000	13	13	-	-
\$110,001 - \$120,000	6	6	-	-
\$120,001 - \$130,000	1	1	-	-
\$130,001 - \$140,000	4	4	-	-
\$140,001 - \$150,000	-	-	-	-
\$150,001 - \$160,000	-	-	-	-
\$160,001 - \$170,000	1	1	-	-
Totals	2,511	2,293	38	180
Fire				
\$0 - \$10,000	50	32	9	9
\$10,001 - \$20,000	78	68	2	8
\$20,001 - \$30,000	113	85	6	22
\$30,001 - \$40,000	143	111	-	32
\$40,001 - \$50,000	237	198	-	39
\$50,001 - \$60,000	346	262	-	84
\$60,001 - \$70,000	274	212	-	62
\$70,001 - \$80,000	88	78	-	10
\$80,001 - \$90,000	45	42	-	3
\$90,001 - \$100,000	13	12	-	1
\$100,001 - \$110,000	5	5	-	-
\$110,001 - \$120,000	5	5	-	-
\$120,001 - \$130,000	2	2	-	-
\$130,001 - \$140,000	2	2	-	-
Totals	1,401	1,114	17	270

**EMPLOYEES' RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE**  
**Schedule of Average Benefit Payment Amounts – Age/Service**  
**For Last Ten Fiscal Years**

Retirement Year	Employment Class	Category	Age/Service						
			Service Credit						
			0-5	5-10	11-15	16-20	20-25	26-30	31+
2009	General City	Average Annual Benefits	\$ 1,578	\$ 3,369	\$ 6,725	\$ 9,960	\$ 13,979	\$ 20,220	\$ 26,311
		Average Final Average Salary	\$ 19,158	\$ 19,958	\$ 22,954	\$ 25,333	\$ 28,601	\$ 33,006	\$ 35,336
		Number of Retired Members	481	1,131	982	966	874	1,124	2,027
	Police	Average Annual Benefits	\$ 15,713	\$ 7,760	\$ 10,262	\$ 17,725	\$ 31,881	\$ 35,314	\$ 40,785
		Average Final Average Salary	\$ 59,999	\$ 37,129	\$ 32,853	\$ 32,214	\$ 42,368	\$ 41,759	\$ 42,507
		Number of Retired Members	9	14	8	11	233	877	835
	Fire	Average Annual Benefits	\$ 2,041	\$ 25,560	\$ 13,253	\$ 15,405	\$ 30,798	\$ 35,608	\$ 38,683
		Average Final Average Salary	\$ 17,233	\$ 18,882	\$ 39,014	\$ 29,446	\$ 45,556	\$ 44,551	\$ 42,713
		Number of Retired Members	5	2	2	5	72	299	542
2010	General City	Average Annual Benefits	\$ 1,623	\$ 3,466	\$ 7,129	\$ 10,251	\$ 14,063	\$ 20,210	\$ 26,536
		Average Final Average Salary	\$ 19,412	\$ 20,782	\$ 23,770	\$ 27,119	\$ 31,008	\$ 34,957	\$ 37,360
		Number of Retired Members	484	1,145	975	1,019	935	1,203	2,134
	Police	Average Annual Benefits	\$ 12,163	\$ 7,911	\$ 13,761	\$ 16,604	\$ 33,319	\$ 36,060	\$ 42,324
		Average Final Average Salary	\$ 63,574	\$ 35,781	\$ 35,705	\$ 37,796	\$ 43,100	\$ 42,954	\$ 43,118
		Number of Retired Members	11	15	7	13	227	898	844
	Fire	Average Annual Benefits	\$ 2,611	\$ 17,354	\$ 15,030	\$ 15,121	\$ 32,226	\$ 37,381	\$ 40,927
		Average Final Average Salary	\$ 17,505	\$ 21,683	\$ 39,014	\$ 29,446	\$ 47,149	\$ 45,245	\$ 43,715
		Number of Retired Members	4	3	2	5	73	307	552
2011	General City	Average Annual Benefits	\$ 1,681	\$ 3,558	\$ 7,201	\$ 10,732	\$ 15,271	\$ 21,538	\$ 27,433
		Average Final Average Salary	\$ 19,829	\$ 21,785	\$ 24,505	\$ 28,297	\$ 32,941	\$ 36,374	\$ 39,101
		Number of Retired Members	508	1,226	1,017	1,064	979	1,218	2,236
	Police	Average Annual Benefits	\$ 12,343	\$ 8,249	\$ 12,021	\$ 19,971	\$ 33,770	\$ 37,467	\$ 42,827
		Average Final Average Salary	\$ 62,188	\$ 36,345	\$ 36,906	\$ 39,599	\$ 43,400	\$ 44,493	\$ 44,188
		Number of Retired Members	10	15	9	15	226	904	863
	Fire	Average Annual Benefits	\$ 2,654	\$ 10,774	\$ 10,507	\$ 15,377	\$ 32,590	\$ 38,092	\$ 42,684
		Average Final Average Salary	\$ 17,505	\$ 23,134	\$ 43,226	\$ 29,446	\$ 49,529	\$ 46,011	\$ 44,930
		Number of Retired Members	4	5	3	5	79	313	552
2012	General City	Average Annual Benefits	\$ 1,752	\$ 3,757	\$ 7,395	\$ 11,231	\$ 16,116	\$ 22,446	\$ 29,186
		Average Final Average Salary	\$ 20,581	\$ 22,750	\$ 25,361	\$ 29,649	\$ 33,909	\$ 37,763	\$ 40,200
		Number of Retired Members	524	1,288	1,039	1,103	1,006	1,239	2,259
	Police	Average Annual Benefits	\$ 10,976	\$ 8,452	\$ 13,502	\$ 21,093	\$ 34,833	\$ 39,836	\$ 45,298
		Average Final Average Salary	\$ 53,178	\$ 36,345	\$ 37,337	\$ 40,257	\$ 44,020	\$ 45,456	\$ 45,213
		Number of Retired Members	12	15	10	18	227	905	869
	Fire	Average Annual Benefits	\$ 2,699	\$ 10,518	\$ 16,107	\$ 16,000	\$ 36,774	\$ 39,413	\$ 44,719
		Average Final Average Salary	\$ 17,505	\$ 24,102	\$ 43,226	\$ 35,371	\$ 52,276	\$ 48,444	\$ 45,710
		Number of Retired Members	4	6	3	6	80	326	556
2013	General City	Average Annual Benefits	\$ 1,837	\$ 3,870	\$ 7,633	\$ 11,726	\$ 16,806	\$ 23,178	\$ 30,200
		Average Final Average Salary	\$ 21,545	\$ 23,675	\$ 26,459	\$ 30,661	\$ 35,368	\$ 39,095	\$ 41,391
		Number of Retired Members	541	1,341	1,061	1,123	1,014	1,264	2,254
	Police	Average Annual Benefits	\$ 10,704	\$ 7,571	\$ 14,146	\$ 21,041	\$ 35,993	\$ 41,140	\$ 47,335
		Average Final Average Salary	\$ 51,974	\$ 37,145	\$ 40,425	\$ 42,244	\$ 46,552	\$ 46,433	\$ 46,235
		Number of Retired Members	13	17	11	19	226	914	868
	Fire	Average Annual Benefits	\$ 2,745	\$ 10,105	\$ 16,521	\$ 17,930	\$ 36,802	\$ 42,199	\$ 45,320
		Average Final Average Salary	\$ 17,505	\$ 25,052	\$ 43,226	\$ 40,650	\$ 53,476	\$ 50,684	\$ 46,605
		Number of Retired Members	4	7	3	7	86	331	565

**EMPLOYEES' RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE**  
**Schedule of Average Benefit Payment Amounts – Age/Service**  
**For Last Ten Fiscal Years**

<b>Age/Service - Continued</b>									
<b>Retirement Year</b>	<b>Employment Class</b>	<b>Category</b>	<b>Service Credit</b>						
			<b>0-5</b>	<b>5-10</b>	<b>11-15</b>	<b>16-20</b>	<b>20-25</b>	<b>26-30</b>	<b>31+</b>
<b>2014</b>	<b>General City</b>	Average Annual Benefits	\$ 1,932	\$ 4,083	\$ 7,888	\$ 12,092	\$ 17,610	\$ 23,781	\$ 30,727
		Average Final Average Salary	\$21,809	\$24,397	\$27,271	\$31,455	\$36,225	\$40,389	\$42,471
		Number of Retired Members	551	1,402	1,070	1,143	1,006	1,296	2,280
	<b>Police</b>	Average Annual Benefits	\$11,032	\$ 7,979	\$14,413	\$21,691	\$36,392	\$42,096	\$48,371
		Average Final Average Salary	\$51,974	\$35,813	\$43,783	\$45,067	\$46,953	\$47,130	\$47,082
		Number of Retired Members	13	17	13	20	228	924	872
	<b>Fire</b>	Average Annual Benefits	\$ 2,792	\$10,382	\$16,804	\$19,832	\$38,748	\$43,372	\$47,302
		Average Final Average Salary	\$17,505	\$25,052	\$43,226	\$43,025	\$55,286	\$51,958	\$48,195
		Number of Retired Members	4	7	3	8	90	341	562
<b>2015</b>	<b>General City</b>	Average Annual Benefits	\$ 1,991	\$ 4,255	\$ 8,309	\$12,541	\$18,101	\$24,946	\$31,947
		Average Final Average Salary	\$22,370	\$25,181	\$28,282	\$32,174	\$37,678	\$42,241	\$43,590
		Number of Retired Members	572	1,441	1,068	1,148	1,008	1,323	2,286
	<b>Police</b>	Average Annual Benefits	\$11,241	\$ 6,993	\$15,952	\$24,070	\$39,029	\$42,750	\$49,811
		Average Final Average Salary	\$51,974	\$36,363	\$45,816	\$45,734	\$48,781	\$49,122	\$47,978
		Number of Retired Members	13	21	14	19	218	950	870
	<b>Fire</b>	Average Annual Benefits	\$ 2,841	\$ 9,707	\$13,086	\$22,290	\$39,423	\$44,635	\$48,604
		Average Final Average Salary	\$17,505	\$25,720	\$43,802	\$43,025	\$56,688	\$53,316	\$49,154
		Number of Retired Members	4	8	4	8	94	347	557
<b>2016</b>	<b>General City</b>	Average Annual Benefits	\$ 2,029	\$ 4,342	\$ 8,455	\$12,760	\$18,514	\$25,975	\$32,531
		Average Final Average Salary	\$22,634	\$25,694	\$29,210	\$33,330	\$38,696	\$43,430	\$44,644
		Number of Retired Members	591	1,493	1,094	1,176	1,018	1,337	2,313
	<b>Police</b>	Average Annual Benefits	\$10,689	\$ 7,428	\$16,958	\$24,777	\$38,908	\$43,989	\$51,088
		Average Final Average Salary	\$50,632	\$36,078	\$45,816	\$47,087	\$48,979	\$51,967	\$48,721
		Number of Retired Members	14	24	14	19	222	985	866
	<b>Fire</b>	Average Annual Benefits	\$ 2,890	\$ 9,782	\$16,452	\$22,595	\$38,227	\$45,319	\$48,852
		Average Final Average Salary	\$17,505	\$25,720	\$43,802	\$43,025	\$59,582	\$55,504	\$51,893
		Number of Retired Members	4	8	4	8	106	363	567
<b>2017</b>	<b>General City</b>	Average Annual Benefits	\$ 2,096	\$ 4,430	\$ 8,763	\$13,324	\$19,037	\$26,583	\$33,276
		Average Final Average Salary	\$23,289	\$26,128	\$29,934	\$34,209	\$39,784	\$44,761	\$46,059
		Number of Retired Members	602	1,522	1,104	1,185	1,031	1,357	2,363
	<b>Police</b>	Average Annual Benefits	\$11,044	\$ 8,016	\$15,306	\$26,203	\$41,359	\$45,231	\$52,108
		Average Final Average Salary	\$50,632	\$37,646	\$46,698	\$47,087	\$50,984	\$55,902	\$50,640
		Number of Retired Members	14	24	17	19	212	1,092	878
	<b>Fire</b>	Average Annual Benefits	\$ 2,829	\$11,696	\$15,561	\$21,233	\$40,455	\$47,937	\$52,389
		Average Final Average Salary	\$20,169	\$25,720	\$43,471	\$43,025	\$62,265	\$57,378	\$53,802
		Number of Retired Members	5	8	5	8	117	376	575
<b>2018</b>	<b>General City</b>	Average Annual Benefits	\$ 2,149	\$ 4,552	\$ 9,001	\$13,492	\$19,642	\$27,379	\$34,536
		Average Final Average Salary	\$23,695	\$26,975	\$30,734	\$34,961	\$40,767	\$46,009	\$47,329
		Number of Retired Members	617	1,560	1,118	1,202	1,054	1,377	2,373
	<b>Police</b>	Average Annual Benefits	\$ 8,578	\$ 8,543	\$16,217	\$24,061	\$42,583	\$48,585	\$54,637
		Average Final Average Salary	\$49,931	\$41,594	\$45,854	\$47,632	\$51,925	\$58,490	\$51,979
		Number of Retired Members	16	29	17	22	210	1,133	866
	<b>Fire</b>	Average Annual Benefits	\$ 3,064	\$11,342	\$16,304	\$24,575	\$43,416	\$49,715	\$54,200
		Average Final Average Salary	\$20,169	\$28,340	\$43,471	\$47,079	\$63,897	\$58,938	\$54,760
		Number of Retired Members	5	8	5	7	125	384	578

**EMPLOYEES' RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE**  
**Schedule of Average Benefit Payment Amounts – Death**  
**For Last Ten Fiscal Years**

<b>Death</b>									
<b>Retirement Year</b>	<b>Employment Class</b>	<b>Category</b>	<b>Service Credit</b>						
			<b>0-5</b>	<b>5-10</b>	<b>11-15</b>	<b>16-20</b>	<b>20-25</b>	<b>26-30</b>	<b>31+</b>
<b>2009</b>	<b>General City</b>	Average Annual Benefits	\$ 4,460	\$ 4,823	\$ 5,330	\$21,781	\$ 6,507	\$ 7,847	\$11,498
		Average Final Average Salary	\$28,014	\$19,801	\$26,548	\$61,257	\$41,162	\$36,818	\$16,421
		Number of Retired Members	8	9	17	6	22	11	5
	<b>Police</b>	Average Annual Benefits	\$ 8,516	\$ 8,553	\$ 6,325	\$11,044	\$ 4,745	\$ 8,765	\$ 3,600
		Average Final Average Salary	\$37,857	\$44,503	\$37,788	\$40,751	\$19,359	\$40,436	N/A
		Number of Retired Members	16	14	7	9	7	4	1
	<b>Fire</b>	Average Annual Benefits	\$ 7,715	\$16,236	\$15,620	\$ 4,730	\$14,257	\$10,597	\$19,824
		Average Final Average Salary	\$18,210	\$27,061	\$31,050	\$ 9,767	\$32,642	\$23,325	\$33,040
		Number of Retired Members	6	2	4	4	3	2	2
<b>2010</b>	<b>General City</b>	Average Annual Benefits	\$ 4,516	\$ 5,156	\$ 5,390	\$15,880	\$ 7,516	\$ 8,344	\$11,181
		Average Final Average Salary	\$28,107	\$35,896	\$26,548	\$62,669	\$41,197	\$36,818	\$34,054
		Number of Retired Members	8	13	16	9	22	9	20
	<b>Police</b>	Average Annual Benefits	\$ 8,578	\$ 9,749	\$ 6,379	\$11,961	\$ 4,775	\$ 8,869	\$ 3,600
		Average Final Average Salary	\$37,968	\$45,047	\$38,424	\$41,526	\$19,706	\$41,124	N/A
		Number of Retired Members	16	14	7	8	7	4	1
	<b>Fire</b>	Average Annual Benefits	\$ 7,798	\$16,554	\$15,735	\$ 5,654	\$14,463	\$10,130	\$20,141
		Average Final Average Salary	\$18,487	\$27,591	\$31,304	\$16,270	\$33,159	\$23,766	\$33,568
		Number of Retired Members	6	2	4	3	3	2	2
<b>2011</b>	<b>General City</b>	Average Annual Benefits	\$ 3,218	\$ 4,135	\$ 6,337	\$23,774	\$ 7,534	\$ 8,773	\$11,704
		Average Final Average Salary	\$28,788	\$37,916	\$30,832	\$62,669	\$41,232	\$42,778	\$34,887
		Number of Retired Members	12	21	20	9	22	13	19
	<b>Police</b>	Average Annual Benefits	\$ 7,862	\$ 9,857	\$ 6,435	\$13,573	\$ 3,667	\$ 8,974	\$ 3,600
		Average Final Average Salary	\$38,070	\$45,226	\$39,073	\$42,317	\$ 6,666	\$41,827	N/A
		Number of Retired Members	16	14	7	7	6	4	1
	<b>Fire</b>	Average Annual Benefits	\$ 7,868	\$16,879	\$11,856	\$ 5,684	\$14,675	\$ 8,915	\$20,464
		Average Final Average Salary	\$18,719	\$28,131	\$22,685	\$16,421	\$33,687	\$24,215	\$34,107
		Number of Retired Members	6	2	4	3	3	2	2
<b>2012</b>	<b>General City</b>	Average Annual Benefits	\$ 4,101	\$ 4,473	\$ 7,018	\$22,843	\$ 6,635	\$10,617	\$10,788
		Average Final Average Salary	\$28,853	\$37,953	\$32,645	\$61,443	\$47,838	\$52,597	\$38,765
		Number of Retired Members	12	21	19	13	26	21	23
	<b>Police</b>	Average Annual Benefits	\$11,476	\$ 9,966	\$ 6,406	\$13,780	\$ 3,600	\$ 8,782	\$ 3,600
		Average Final Average Salary	\$23,692	\$45,409	\$39,734	\$43,123	N/A	\$42,543	N/A
		Number of Retired Members	9	14	7	7	5	4	1
	<b>Fire</b>	Average Annual Benefits	\$ 7,987	\$17,209	\$12,162	\$ 5,715	\$13,990	\$ 9,202	\$13,121
		Average Final Average Salary	\$19,116	\$28,683	\$24,912	\$16,574	\$34,225	\$24,674	\$21,868
		Number of Retired Members	6	2	3	3	3	2	2
<b>2013</b>	<b>General City</b>	Average Annual Benefits	\$ 4,416	\$ 3,965	\$ 6,086	\$16,268	\$ 9,348	\$12,462	\$13,035
		Average Final Average Salary	\$30,623	\$39,497	\$30,286	\$61,443	\$47,868	\$52,597	\$47,181
		Number of Retired Members	11	28	23	13	26	21	38
	<b>Police</b>	Average Annual Benefits	\$12,653	\$10,165	\$ 7,041	\$13,992	\$ 3,120	\$11,055	\$ 3,600
		Average Final Average Salary	\$23,244	\$45,740	\$40,409	\$43,946	N/A	\$43,274	N/A
		Number of Retired Members	8	14	6	7	5	3	1
	<b>Fire</b>	Average Annual Benefits	\$ 8,084	\$17,547	\$12,323	\$ 5,746	\$20,864	\$ 9,342	\$23,581
		Average Final Average Salary	\$19,438	\$29,245	\$25,317	\$16,731	\$34,774	\$25,141	\$39,301
		Number of Retired Members	6	2	3	3	2	2	1

**EMPLOYEES' RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE**  
**Schedule of Average Benefit Payment Amounts – Death**  
**For Last Ten Fiscal Years**

**Death - Continued**

Retirement Year	Employment Class	Category	Service Credit						
			0-5	5-10	11-15	16-20	20-25	26-30	31+
<b>2014</b>	<b>General City</b>	Average Annual Benefits	\$ 4,842	\$ 4,614	\$ 8,328	\$15,425	\$ 9,285	\$12,560	\$16,308
		Average Final Average Salary	\$30,966	\$42,453	\$37,102	\$48,370	\$47,899	\$52,597	\$47,181
		Number of Retired Members	10	28	14	13	26	20	38
	<b>Police</b>	Average Annual Benefits	\$12,326	\$ 7,946	\$ 7,110	\$15,975	\$ 3,150	\$11,204	\$ 3,600
		Average Final Average Salary	\$22,621	\$46,388	\$41,097	\$44,785	N/A	\$44,020	N/A
		Number of Retired Members	8	14	6	6	4	3	1
	<b>Fire</b>	Average Annual Benefits	\$ 7,546	\$17,891	\$12,488	\$ 5,778	\$21,200	\$ 3,076	\$23,980
		Average Final Average Salary	\$19,692	\$29,819	\$25,729	\$16,890	\$35,334	\$ 4,252	\$39,967
		Number of Retired Members	6	2	3	3	2	2	1
<b>2015</b>	<b>General City</b>	Average Annual Benefits	\$ 4,891	\$ 4,931	\$ 7,908	\$12,165	\$ 9,508	\$12,560	\$15,342
		Average Final Average Salary	\$31,048	\$42,480	\$38,019	\$48,744	\$47,930	\$52,597	\$47,181
		Number of Retired Members	10	28	17	17	25	20	38
	<b>Police</b>	Average Annual Benefits	\$13,367	\$17,139	\$14,770	\$15,782	\$ 3,600	\$11,356	\$ 3,600
		Average Final Average Salary	\$24,992	\$28,565	\$62,160	\$45,640	N/A	\$44,780	N/A
		Number of Retired Members	7	6	10	6	3	3	1
	<b>Fire</b>	Average Annual Benefits	\$ 8,621	\$18,242	\$12,657	\$ 5,611	\$21,543	\$ 3,600	\$24,388
		Average Final Average Salary	\$19,948	\$30,403	\$26,150	\$17,053	\$35,905	N/A	\$40,647
		Number of Retired Members	5	2	3	3	2	1	1
<b>2016</b>	<b>General City</b>	Average Annual Benefits	\$ 4,941	\$ 4,947	\$ 5,086	\$10,037	\$ 8,530	\$ 9,749	\$16,988
		Average Final Average Salary	\$31,132	\$42,508	\$38,019	\$45,675	\$51,104	\$56,809	\$50,694
		Number of Retired Members	10	28	17	21	29	24	30
	<b>Police</b>	Average Annual Benefits	\$13,450	\$17,415	\$14,813	\$19,073	\$ 3,600	\$11,511	\$ 3,600
		Average Final Average Salary	\$25,153	\$29,026	\$62,303	\$46,513	N/A	\$45,556	N/A
		Number of Retired Members	7	6	10	5	3	3	1
	<b>Fire</b>	Average Annual Benefits	\$ 7,416	\$18,600	\$12,828	\$ 6,966	\$21,892	\$ 3,600	\$24,804
		Average Final Average Salary	\$20,127	\$31,000	\$26,579	\$17,219	\$36,488	N/A	\$41,339
		Number of Retired Members	6	2	3	2	2	1	1
<b>2017</b>	<b>General City</b>	Average Annual Benefits	\$ 3,881	\$ 4,963	\$ 5,857	\$ 7,816	\$ 7,885	\$10,255	\$17,341
		Average Final Average Salary	\$33,585	\$42,537	\$35,417	\$43,227	\$50,959	\$57,001	\$51,088
		Number of Retired Members	14	28	13	25	45	24	31
	<b>Police</b>	Average Annual Benefits	\$13,593	\$17,698	\$14,857	\$19,393	\$ 3,600	\$10,118	\$ 3,600
		Average Final Average Salary	\$25,431	\$29,496	\$62,449	\$47,403	N/A	\$38,592	N/A
		Number of Retired Members	7	6	10	5	3	3	1
	<b>Fire</b>	Average Annual Benefits	\$ 7,924	\$18,965	\$13,003	\$ 7,017	\$22,249	\$ 3,600	\$25,228
		Average Final Average Salary	\$20,413	\$31,609	\$27,017	\$17,388	\$37,082	N/A	\$42,046
		Number of Retired Members	6	2	3	2	2	1	1
<b>2018</b>	<b>General City</b>	Average Annual Benefits	\$ 5,360	\$ 4,015	\$ 3,240	\$ 8,988	\$ 8,875	\$11,469	\$ 9,726
		Average Final Average Salary	\$35,969	\$42,566	\$45,266	\$39,896	\$48,195	\$51,554	\$57,259
		Number of Retired Members	13	28	17	25	41	20	23
	<b>Police</b>	Average Annual Benefits	\$10,530	\$17,985	\$14,451	\$17,851	\$ 8,117	\$ 3,600	\$ 3,600
		Average Final Average Salary	\$19,474	\$29,976	\$62,598	\$59,005	\$79,173	N/A	N/A
		Number of Retired Members	7	6	10	5	7	2	1
	<b>Fire</b>	Average Annual Benefits	\$ 7,784	\$19,338	\$13,182	\$ 7,068	\$22,613	\$ 3,600	\$25,660
		Average Final Average Salary	\$20,780	\$32,230	\$27,463	\$17,561	\$37,688	N/A	\$42,767
		Number of Retired Members	6	2	3	2	2	1	1



**EMPLOYEES' RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE**  
**Schedule of Average Benefit Payment Amounts – Disability**  
**For Last Ten Fiscal Years**

		<b>Disability</b>							
<b>Retirement</b>	<b>Employment</b>	<b>Service Credit</b>							
<b>Year</b>	<b>Class</b>	<b>Category</b>	<b>0-5</b>	<b>5-10</b>	<b>11-15</b>	<b>16-20</b>	<b>20-25</b>	<b>26-30</b>	<b>31+</b>
<b>2009</b>	<b>General City</b>	Average Annual Benefits	\$ 17,949	\$ 8,448	\$ 9,308	\$ 10,955	\$ 11,930	\$ 15,355	\$ 17,090
		Average Final Average Salary	\$ 28,195	\$ 25,132	\$ 30,267	\$ 26,327	\$ 27,065	\$ 28,992	\$ 23,539
		Number of Retired Members	16	121	139	127	133	85	33
	<b>Police</b>	Average Annual Benefits	\$ 50,422	\$ 34,216	\$ 39,240	\$ 37,569	\$ 37,909	\$ 47,249	\$ 46,637
		Average Final Average Salary	\$ 63,292	\$ 64,493	\$ 59,193	\$ 57,109	\$ 54,498	\$ 66,390	\$ 65,255
		Number of Retired Members	15	25	27	32	28	13	18
	<b>Fire</b>	Average Annual Benefits	\$ 42,228	\$ 43,565	\$ 38,710	\$ 39,275	\$ 33,961	\$ 40,186	\$ 46,991
		Average Final Average Salary	\$ 60,406	\$ 61,004	\$ 57,917	\$ 59,994	\$ 54,198	\$ 61,430	\$ 72,087
		Number of Retired Members	20	31	26	42	42	47	23
<b>2010</b>	<b>General City</b>	Average Annual Benefits	\$ 20,834	\$ 8,399	\$ 9,234	\$ 11,354	\$ 12,924	\$ 15,893	\$ 17,393
		Average Final Average Salary	\$ 28,967	\$ 25,789	\$ 30,674	\$ 27,277	\$ 27,982	\$ 29,325	\$ 24,813
		Number of Retired Members	14	126	147	126	128	85	36
	<b>Police</b>	Average Annual Benefits	\$ 50,467	\$ 36,921	\$ 40,277	\$ 37,590	\$ 37,842	\$ 47,297	\$ 46,980
		Average Final Average Salary	\$ 63,359	\$ 64,595	\$ 59,329	\$ 58,740	\$ 54,357	\$ 66,467	\$ 67,088
		Number of Retired Members	15	27	28	34	28	13	20
	<b>Fire</b>	Average Annual Benefits	\$ 42,276	\$ 41,746	\$ 38,659	\$ 38,220	\$ 36,259	\$ 40,248	\$ 42,795
		Average Final Average Salary	\$ 60,500	\$ 59,976	\$ 62,921	\$ 60,673	\$ 54,129	\$ 62,713	\$ 74,440
		Number of Retired Members	20	32	26	44	42	49	28
<b>2011</b>	<b>General City</b>	Average Annual Benefits	\$ 17,881	\$ 8,467	\$ 8,995	\$ 11,294	\$ 13,053	\$ 16,090	\$ 18,187
		Average Final Average Salary	\$ 28,509	\$ 26,516	\$ 30,936	\$ 28,352	\$ 29,591	\$ 30,313	\$ 25,700
		Number of Retired Members	17	130	161	133	128	89	36
	<b>Police</b>	Average Annual Benefits	\$ 44,119	\$ 38,374	\$ 38,993	\$ 40,832	\$ 36,809	\$ 47,684	\$ 47,199
		Average Final Average Salary	\$ 55,844	\$ 64,018	\$ 59,208	\$ 60,139	\$ 53,699	\$ 68,483	\$ 67,088
		Number of Retired Members	17	28	30	33	29	14	20
	<b>Fire</b>	Average Annual Benefits	\$ 42,025	\$ 44,601	\$ 39,683	\$ 37,799	\$ 37,947	\$ 41,417	\$ 50,275
		Average Final Average Salary	\$ 60,245	\$ 61,846	\$ 63,139	\$ 62,914	\$ 56,472	\$ 64,088	\$ 76,566
		Number of Retired Members	20	31	28	49	41	50	27
<b>2012</b>	<b>General City</b>	Average Annual Benefits	\$ 14,894	\$ 9,325	\$ 9,480	\$ 11,248	\$ 13,687	\$ 17,014	\$ 19,268
		Average Final Average Salary	\$ 28,106	\$ 28,012	\$ 31,240	\$ 28,535	\$ 31,508	\$ 31,218	\$ 26,284
		Number of Retired Members	20	126	160	139	130	86	33
	<b>Police</b>	Average Annual Benefits	\$ 50,074	\$ 38,996	\$ 39,347	\$ 41,205	\$ 38,927	\$ 49,263	\$ 48,324
		Average Final Average Salary	\$ 65,276	\$ 66,229	\$ 60,353	\$ 62,198	\$ 55,809	\$ 69,579	\$ 67,088
		Number of Retired Members	15	30	31	35	28	14	20
	<b>Fire</b>	Average Annual Benefits	\$ 41,831	\$ 45,039	\$ 41,368	\$ 41,587	\$ 37,969	\$ 45,162	\$ 53,882
		Average Final Average Salary	\$ 61,065	\$ 64,243	\$ 65,431	\$ 63,677	\$ 57,428	\$ 66,849	\$ 77,336
		Number of Retired Members	20	32	30	50	42	50	28
<b>2013</b>	<b>General City</b>	Average Annual Benefits	\$ 19,451	\$ 9,389	\$ 9,211	\$ 10,314	\$ 14,517	\$ 17,107	\$ 18,194
		Average Final Average Salary	\$ 29,493	\$ 28,834	\$ 32,100	\$ 31,909	\$ 31,776	\$ 32,180	\$ 25,708
		Number of Retired Members	16	133	171	160	128	86	34
	<b>Police</b>	Average Annual Benefits	\$ 46,399	\$ 39,871	\$ 40,416	\$ 41,971	\$ 38,977	\$ 49,794	\$ 45,931
		Average Final Average Salary	\$ 61,480	\$ 64,090	\$ 62,804	\$ 61,593	\$ 59,361	\$ 69,842	\$ 67,886
		Number of Retired Members	16	32	33	36	28	14	21
	<b>Fire</b>	Average Annual Benefits	\$ 40,499	\$ 44,276	\$ 43,185	\$ 40,821	\$ 39,697	\$ 44,907	\$ 49,953
		Average Final Average Salary	\$ 59,775	\$ 61,483	\$ 66,071	\$ 63,440	\$ 59,370	\$ 66,115	\$ 75,187
		Number of Retired Members	20	34	32	52	42	50	30

**EMPLOYEES' RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE**  
**Schedule of Average Benefit Payment Amounts – Disability**  
**For Last Ten Fiscal Years**

**Disability - Continued**

Retirement Year	Employment Class	Category	Service Credit						
			0-5	5-10	11-15	16-20	20-25	26-30	31+
2014	General City	Average Annual Benefits	\$18,708	\$ 9,611	\$ 9,403	\$11,043	\$13,646	\$18,109	\$18,019
		Average Final Average Salary	\$27,539	\$28,279	\$32,087	\$31,994	\$37,437	\$32,818	\$26,283
		Number of Retired Members	15	133	180	158	145	84	33
	Police	Average Annual Benefits	\$50,123	\$41,520	\$42,712	\$44,306	\$40,681	\$50,023	\$45,903
		Average Final Average Salary	\$66,647	\$66,192	\$62,040	\$64,594	\$58,626	\$69,890	\$65,227
		Number of Retired Members	15	33	34	36	28	14	21
	Fire	Average Annual Benefits	\$39,685	\$44,593	\$44,023	\$43,369	\$39,094	\$44,944	\$52,578
		Average Final Average Salary	\$59,781	\$62,726	\$65,435	\$64,797	\$58,235	\$68,050	\$77,203
		Number of Retired Members	20	33	33	50	41	54	30
2015	General City	Average Annual Benefits	\$19,075	\$ 9,537	\$ 9,559	\$11,193	\$14,170	\$19,033	\$19,735
		Average Final Average Salary	\$25,491	\$28,147	\$32,507	\$32,202	\$37,795	\$34,539	\$27,379
		Number of Retired Members	14	133	182	161	144	81	29
	Police	Average Annual Benefits	\$48,855	\$39,124	\$40,842	\$42,403	\$42,757	\$52,008	\$48,977
		Average Final Average Salary	\$64,689	\$62,994	\$59,312	\$61,801	\$62,513	\$71,666	\$66,246
		Number of Retired Members	15	33	36	36	28	14	20
	Fire	Average Annual Benefits	\$42,449	\$45,206	\$40,620	\$42,980	\$40,457	\$44,829	\$52,367
		Average Final Average Salary	\$65,481	\$64,009	\$64,085	\$63,882	\$61,057	\$68,086	\$76,838
		Number of Retired Members	18	32	36	50	39	58	32
2016	General City	Average Annual Benefits	\$22,435	\$ 9,875	\$ 9,937	\$11,213	\$14,344	\$19,527	\$19,635
		Average Final Average Salary	\$29,740	\$28,875	\$32,647	\$32,813	\$38,407	\$35,348	\$27,993
		Number of Retired Members	12	133	176	161	140	78	28
	Police	Average Annual Benefits	\$60,448	\$47,224	\$48,980	\$47,777	\$51,388	\$56,365	\$52,484
		Average Final Average Salary	\$79,452	\$74,098	\$71,998	\$69,675	\$71,002	\$75,847	\$66,246
		Number of Retired Members	14	33	38	37	28	14	20
	Fire	Average Annual Benefits	\$41,396	\$44,862	\$41,587	\$40,471	\$40,655	\$47,560	\$53,366
		Average Final Average Salary	\$63,475	\$63,765	\$64,241	\$61,942	\$61,880	\$70,091	\$77,702
		Number of Retired Members	18	32	37	52	41	58	31
2017	General City	Average Annual Benefits	\$22,882	\$ 9,417	\$ 9,600	\$11,875	\$13,920	\$20,423	\$20,586
		Average Final Average Salary	\$30,090	\$29,583	\$32,948	\$33,274	\$36,145	\$36,187	\$27,036
		Number of Retired Members	12	141	186	158	144	77	26
	Police	Average Annual Benefits	\$56,361	\$42,779	\$48,749	\$46,454	\$47,113	\$56,586	\$51,247
		Average Final Average Salary	\$74,193	\$67,398	\$71,253	\$72,135	\$67,831	\$78,723	\$66,246
		Number of Retired Members	13	34	36	35	29	14	20
	Fire	Average Annual Benefits	\$48,429	\$55,565	\$50,837	\$55,184	\$48,302	\$54,320	\$63,596
		Average Final Average Salary	\$71,007	\$78,164	\$76,053	\$81,113	\$71,530	\$76,761	\$82,874
		Number of Retired Members	17	33	38	52	43	58	31
2018	General City	Average Annual Benefits	\$23,339	\$ 9,790	\$ 9,501	\$11,967	\$14,533	\$18,635	\$21,735
		Average Final Average Salary	\$30,448	\$29,746	\$33,471	\$34,062	\$36,476	\$36,728	\$27,571
		Number of Retired Members	12	133	193	160	137	85	23
	Police	Average Annual Benefits	\$53,898	\$44,200	\$49,099	\$48,487	\$47,837	\$57,648	\$48,808
		Average Final Average Salary	\$71,524	\$69,497	\$71,315	\$71,307	\$70,565	\$78,998	\$65,601
		Number of Retired Members	13	33	37	34	28	14	21
	Fire	Average Annual Benefits	\$49,931	\$47,452	\$47,234	\$49,220	\$48,607	\$51,174	\$59,296
		Average Final Average Salary	\$72,619	\$68,957	\$72,578	\$71,919	\$69,912	\$72,998	\$81,132
		Number of Retired Members	13	34	37	52	44	59	31

**EMPLOYEES' RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE**  
**Principal Participating Employers**  
**Current Year and Nine Years Ago**

	<b>As of December 31, 2018</b>			<b>As of December 31, 2009</b>		
	<b>Active</b>	<b>Percentage</b>	<b>Rank</b>	<b>Active</b>	<b>Percentage</b>	<b>Rank</b>
	<b>Members</b>	<b>of Total Plan</b>		<b>Members</b>	<b>of Total Plan</b>	
<b>Participating Government</b>						
City of Milwaukee	5,945	54.79%	1	6,429	55.84%	1
Milwaukee Public Schools	4,092	37.71%	2	4,100	35.61%	2
Milwaukee Water Works	333	3.07%	3	322	2.80%	3
Milwaukee Metropolitan Sewerage District	225	2.07%	4	237	2.06%	4
Housing Authority - City of Milwaukee	150	1.38%	5	207	1.80%	5
Wisconsin Center District	82	0.76%	6	96	0.83%	7
Veolia Water	24	0.22%	7	121	1.05%	6
Milwaukee Technical College	-	0.00%	N/A	2	0.02%	8
<b>Total</b>	<b>10,851</b>	<b>100%</b>		<b>11,514</b>	<b>100%</b>	