Ohio Police & Fire Pension Fund

2018
COMPREHENSIVE ANNUAL FINANCIAL REPORT

FOR YEAR ENDED DECEMBER 31, 2018

2018 Comprehensive Annual Financial Report
For year ended Dec. 31, 2018
Prepared through the combined efforts of OP&F staff

Prudence • Integrity • Empathy
140 East Town Street
Columbus, Ohio 43215

Customer Service: 1-888-864-8363
General Information: (614) 228-2975
TTY: (614) 221-3846
FAX: (614) 628-1777
E-mail: questions@op-f.org

www.op-f.org

2018

COMPREHENSIVE ANNUAL FINANCIAL REPORT

FOR YEAR ENDED DEC. 31, 2018

PREPARED THROUGH THE COMBINED EFFORTS OF OHIO POLICE & FIRE PENSION FUND STAFF

TABLE OF CONTENTS

v

INTRODUCTION *unaudited*

01

FINANCIAL

67

INVESTMENTS *unaudited*

91

ACTUARIAL *unaudited*

TABLE OF CONTENTS
(continued)

121

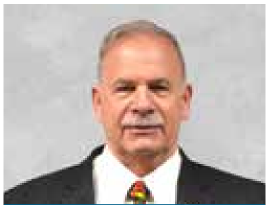
STATISTICAL *unaudited*

INTRODUCTION

2018 COMPREHENSIVE ANNUAL FINANCIAL REPORT

BOARD OF TRUSTEES
ADMINISTRATIVE STAFF
PROFESSIONAL CONSULTANTS
AWARDS
LETTER OF TRANSMITTAL
DEMOGRAPHICS AND ECONOMIC IMPACT

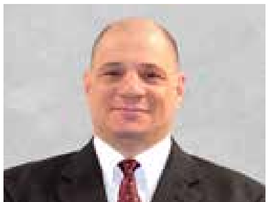
BOARD OF TRUSTEES


William E. Deighton


Daniel J. Desmond


Edward L. Montgomery


Jeffrey H. Moore


Timothy P. Patton, Jr.


John L. Wainscott


J. David Heller


Charles O. Moore


Karin Maloney Stifler

ABOUT THE BOARD OF TRUSTEES

Ohio law provides for the Ohio Police & Fire Pension Fund (OP&F) Board of Trustees to be comprised of nine members. There are six employee members elected to four-year terms by their respective member groups: two active representatives of police departments, two active representatives of fire departments, one retired police officer and one retired firefighter. The Board of Trustees also includes three statutory members. Each statutory member – one appointed by the Governor of Ohio, one by the Ohio Treasurer of State and one appointed jointly by the Ohio Senate President and the Ohio Speaker of the House – must have professional investment expertise.

The OP&F Board of Trustees appoints the Executive Director, an actuary and other advisors necessary for the transaction of business. By law, the Ohio Treasurer of State is custodian of OP&F's funds. The Board of Trustees meets monthly, except for one month each year. In 2018, the Board of Trustees did not meet in the month of July and in 2019 the Board of Trustees will not meet in the month of July. The Board of Trustees receives no compensation, but is reimbursed for necessary expenses.

Board of Trustee Members

William E. Deighton
Retired, Cleveland Fire, term began on June 1, 2015, expires on June 2, 2019.

Daniel J. Desmond
Chair Elect Toledo Fire, term began on June 1, 2015, expires on May 31, 2020.

Edward L. Montgomery
Columbus Police, term began on June 6, 2016, expires on May 31, 2020.

Jeffrey H. Moore
West Chester Fire, term began on June 1, 2015, expires on June 2, 2019.

Timothy P. Patton Jr.
Chair Cleveland Police, term began on June 1, 2015, expires June 2, 2019.

John L. Wainscott
Vice Chair Retired, Cincinnati Police, term began on June 6, 2016, expires on May 31, 2020.

J. David Heller
Investment Expert Member, appointed by the Ohio Senate and the Ohio House of Representatives, term began on Nov. 5, 2016, expires on Nov. 5, 2020.

Charles O. Moore
Investment Expert Member, appointed by the Governor of Ohio, term began on April 28, 2017, expires on Sept. 27, 2020.

Karin Maloney Stifler
Investment Expert Member, appointed by the Ohio Treasurer of State, term began March 5, 2019, expires on March 4, 2023.

ADMINISTRATIVE STAFF

Left to right: Caren R. Sparks, Theodore G. Hall, John J. Gallagher, Jr., Scott K. Miller, Keisha D. Proctor, Brian C. O'Brien, Jennifer L. Harville, Mary Beth Foley, and David B. Graham

Executive Staff

John J. Gallagher, Jr.
Executive Director

Mary Beth Foley
General Counsel

Brian C. O'Brien
Business and Technology Solutions Director

Theodore G. Hall
Chief Investment Officer

Jennifer L. Harville
Member Services Director

Scott K. Miller
Deputy Executive Director

Caren R. Sparks
Chief Audit Executive/Privacy and Ethics Officer

Keisha D. Proctor
Human Resources Director

David B. Graham
Communications Director

Professional Consultants *(not pictured)*

Actuary
Buck Global, LLC.

Legal Counsel
Ohio Attorney General, the Honorable Dave Yost

Custodian of OP&F's Funds
Ohio Treasurer of State, Robert Sprague

Custodial Banks
Huntington National Bank - Domestic
Northern Trust - International

Independent Accountants
RSM US LLP
(Under contract with the Ohio Auditor of State)

Medical Advisors
Gregory M. Jewell, M.D., M.S., M.M.M.,
OP&F Board Medical Advisor
Joel S. Steinberg, M.D.,
Disability Evaluation Panel Medical Advisor

Investment Consultants and Money Managers
(See page 79)

Schedule of Brokers' Fees Paid
(See page 80)

AWARDS

OP&F has been recognized by financial experts for their commitment to the highest possible fiscal standards. OP&F is honored to have been recognized with the following:

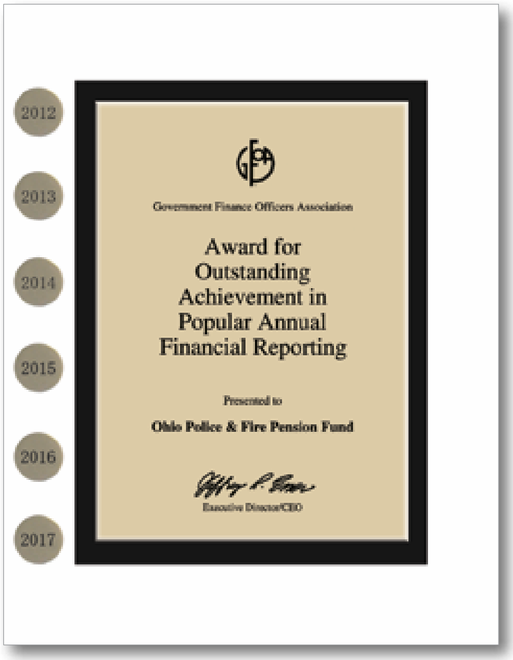
2017 Certificate of Achievement for Excellence in Financial Reporting

For 29 years, the Government Finance Officers Association of the United States and Canada (GFOA) awarded a Certificate of Achievement for Excellence in Financial Reporting to OP&F for its Comprehensive Annual Financial Report. In order to be awarded a Certificate of Achievement, a government must publish an easily readable and efficiently organized comprehensive annual financial report that satisfies both generally accepted accounting principles and applicable legal requirements.

2018 Distinguished Budget Presentation Award

OP&F was again recognized by GFOA's Distinguished Budget Presentation Award in 2018, representing the 17th consecutive year OP&F has achieved this distinction. OP&F has received the award annually since 2002. The GFOA established the Distinguished Budget Presentation Awards Program (Budget Awards Program) in 1984 to encourage and assist state and local governments to prepare budget documents of the very highest quality that reflect both the guidelines established by the National Advisory council on State and Local Budgeting and the GFOA's best practices on budgeting and then to recognize individual governments that succeed in achieving that goal.

AWARDS



2017 Award for Outstanding Achievement in Popular Annual Financial Reporting

For 17 years, the GFOA has awarded a Certificate of Outstanding Achievement in Popular Annual Financial Reporting to OP&F for its Popular Annual Financial Report. This award is a prestigious national award recognizing conformance with the highest standards of creativity, presentation, understandability and reader appeal for preparation of governmental popular reports.

PPCC

Public Pension Coordinating Council

Recognition Award for Administration 2018

Presented to

Ohio Police & Fire Pension Fund

In recognition of meeting professional standards for plan administration as set forth in the Public Pension Standards.

Presented by the Public Pension Coordinating Council, a confederation of

National Association of State Retirement Administrators (NASRA)
National Conference on Public Employee Retirement Systems (NCPERS)
National Council on Teacher Retirement (NCTR)

Alan H. Winkle
Program Administrator

2018 Public Pension Standards Award

Awarded to OP&F by the Public Pension Coordinating Council (PPCC). OP&F has received the award annually since 2009. This award recognizes OP&F's professional standards attained for administration. The PPCC's standards were established in 2002 to promote excellence in pension plan design and administration. These standards serve as a benchmark by which to measure current practices of defined benefit plans.

LETTER OF TRANSMITTAL

Ohio Police & Fire Pension Fund
140 East Town Street / Columbus, Ohio 43215-5164 / Tel. (614) 228-2975 / www.op-f.org

June 25, 2019

Dear Chair and Members of the Board of Trustees:

We are pleased to submit to you the Comprehensive Annual Financial Report (CAFR) of the Ohio Police & Fire Pension Fund (OP&F) for the fiscal year ending Dec. 31, 2018. OP&F's management is responsible for the accuracy of the data presented here, as well as the completeness and fairness of the presentation. This CAFR was prepared to aid interested parties in assessing OP&F's financial status on Dec. 31, 2018 and its results for the year then ended.

Accounting System and Internal Controls

The financial statements were prepared in accordance with accounting principles generally accepted in the United States of America (U.S.) applicable to governmental units, including the pronouncements of the Governmental Accounting Standards Board (GASB). Additional information on OP&F's significant accounting policies is contained in the Notes to the Basic Financial Statements in the Financial Section.

Management is responsible for establishing and maintaining an effective internal control structure designed to ensure that the assets of OP&F are protected from loss, theft, or misuse; and to ensure that adequate accounting data is compiled to allow for the preparation of Basic Financial Statements in conformity with accounting principles generally accepted in the U.S. The internal control structure is designed to provide reasonable, but not absolute, assurance that these objectives are met. The concept of reasonable assurance recognizes that:

(1) the cost of a control should not exceed the benefits likely to be derived; and
(2) the valuation of costs and benefits requires estimates and judgments by management.

Management believes its internal control structure meets these objectives.

OP&F History and Overview

OP&F is a cost-sharing, multiple-employer public employee retirement system and was created by the Ohio General Assembly in 1965, replacing 454 separate local police and firefighter relief and pension funds in Ohio. OP&F began operating as a statewide retirement fund on Jan. 1, 1967. On that date, the local pension funds transferred their assets and liabilities to OP&F. Assets transferred to OP&F totaled approximately $75 million, while OP&F's actuary computed the liabilities accrued up to 1966 at approximately $490 million. Employers are paying the remaining unfunded accrued liability, which began in 1969, over a 67-year period. As of Dec. 31, 2018, the balance totaled nearly $20.6 million.

OP&F provides pension, disability, Deferred Retirement Option Plan (DROP) and health care benefits to qualified members. In addition, OP&F provides survivor benefits, death benefits and sponsors health care programs for eligible survivors, spouses, children and dependent parents. Please refer to the Plan Summary in the Actuarial Section for further information on plan benefits.

Membership in OP&F is mandatory under Ohio law for all full-time police officers employed by Ohio municipalities and appointed under the required statutory provisions. Membership is also mandatory for all full-time firefighters employed by Ohio municipalities, townships (fire only), villages, joint fire districts or other political subdivisions. In order to become a member of OP&F, a full-time firefighter is required to satisfactorily complete or have satisfactorily completed a firefighter training course approved under former Section 3303.07, Section 4765.55, or conducted under Section 3737.33 of the Ohio Revised Code (ORC). The table below is a tabulation of current participating employers at Dec. 31, 2018:

Participating Employers

	Police	Fire	Total
Municipalities	248	197	445
Townships	–	161	161
Villages	280	40	320
TOTAL	**528**	**398**	**926**

Financial Overview

OP&F receives virtually all of its funds from the following sources: investment earnings, employer contributions, member contributions, benefit recipient health care premiums, state subsidies and reimbursements. Additions to the fiduciary net position were $395.6 million in 2018 which included contributions received from employers and members as well as depreciation on investments due to a negative return of 1.78%.

Contributions increased by 3.5% in 2018. This increase is due to an increase in membership payroll and an increase in the number of active members contributing into OP&F. Member and employer contributions are based on payroll; therefore, when membership payroll increases so does both member and employer contributions.

The statutory employer contribution rate remained unchanged from the prior year at 19.5% for police employers and 24% for fire employers. The statutory member contribution rate also remained unchanged from the prior year at 12.25% for both police and fire members. Both member and employer contributions are due monthly.

Statutory penalties are assessed if payments and/or the member contribution reports are received late and if a pre-employment physical is received late. It is OP&F's goal to help employers avoid penalty situations through employer education, courtesy calls and online tools. For example, just before each due date, OP&F sends an automated voice message to any employer who has not yet submitted their contribution payment and/or payroll report. OP&F also offers to our employers the ability to report electronically using OP&F's secured Employer Self Serve Web and to pay electronically using the online Automated Clearing House (ACH) payment options. By promoting these options and training employers on how to use them, a substantial reduction in penalties has resulted.

	2018	
Additions to Fiduciary Net Position (*dollars in millions*)	**Amount**	**Percent**
Net Investment Income	$(487.9)	(123.3)%
Contributions	858.6	217.0%
Other Additions	24.9	6.3%
TOTAL ADDITIONS	**$395.6**	**100.0%**

Deductions to Fiduciary Net Position (*dollars in millions*)	2018 Amount	Percent
Benefits	$1,514.1	97.7%
Refund of Member Contributions	18.3	1.2%
Administrative Expenses	17.0	1.1%
TOTAL DEDUCTIONS	**$1,549.4**	**100.0%**

Benefit payments represent the largest deduction and usage of the additions to fiduciary net position. In 2018, OP&F experienced a 5.9% increase in retirement benefits. This increase is due to a cost-of-living allowance (COLA) for eligible benefit recipients and a 1.6% increase in the number of beneficiaries receiving pension benefits.

In 2018, there was a 12.6% increase in the amount of health care benefit payments which include the $7.5 million prefunding of the health care stipend account. There was an 11.3% decrease in contributions refunded, and DROP benefits increased 8.9%. Upon termination of active service in a police or fire department, a member may withdraw their accumulated employee contributions on deposit with OP&F. Refunds and DROP benefits paid out fluctuate from year-to-year based on the timing of member requests to withdraw their funds on account.

Administrative expenses decreased this year by 16.8%. This decrease is primarily due to a decrease in GASB 68 pension expense. In accordance with GASB 68, OP&F is required to amortize a proportionate share of OPERS net pension liability and thus recognize a portion of this liability as pension expense based on the amortization schedule. Other deductions in 2018 were not material to the overall change in plan assets.

Please refer to the Management's Discussion and Analysis in the Financial Section for additional financial details.

Funding Practices and Actuarial Overview

Funds are derived from the excess of additions over deductions and are accumulated by OP&F in order to meet current and future benefit obligations to retirees and other beneficiaries. OP&F experienced a $1,153.8 million decrease in the 2018 fiduciary net position primarily due to the depreciation of the fair value of investments. In 2018, OP&F also administered a self-insured health care plan for its members. A portion of employer contributions and a portion of investment income (and losses) are set aside to operate the health care program.

In 2018, OP&F's investment portfolio returned a negative 1.78% gross of fees. As of Dec. 31, 2018, total investments at fair value stood at $14.70 billion.

In the annual actuarial report completed by Buck, in both 2017 and 2018, OP&F achieved a 28-year amortization period. OP&F continues to be compliant with Ohio's requirement of a funding period of 30 years or less. A funding period is the amount of time it is estimated to pay off all unfunded obligations. The actuarial report also showed a slight improvement in the funded ratio from 2017, at 69.9% (compared to 69.8% last year). The funded ratio indicates the percentage of the actuarial value of assets available to pay off all pension obligations of the system. These results reflect the changes in assumptions from the experience study completed in 2017, which reduced the assumed rate of return or discount rate from 8.25% to 8.00%. The actuarial valuation confirms that OP&F is able to meet its current and future pension obligations. For more information on assumption changes as a result of the experience study, please refer to the Actuarial Section. OP&F is not required by statute or GASB to pre-fund health care. As of Jan. 1, 2018 OP&F's health care stabilization fund had a solvency period until December 2033, or approximately 16 more years. This large improvement can be attributed to the transition from a self-insured health care model to a stipend-based model for retirees, which was implemented on Jan. 1, 2019.

A report by Wilshire Associates, an independent investment consultant, showed that OP&F's investment portfolio continues to weather challenging market fluctuations. In 2018, the total portfolio's investment return was (1.78)% placing it in the 20th percentile of Wilshire's Master Trusts – All Plans Universe, a common source to establish peer group rankings. With 2018's result, OP&F's three-year annualized return now stands at 7.78%, while the five-year annualized return was 6.13%. OP&F's 10-year annualized return was 10.05%, comfortably ahead of OP&F's 8.00% assumed rate of return. As mentioned earlier, the total portfolio's 2018 results ranked in the 20th percentile of Wilshire's Master Trusts – All Plans Universe, while the three-year, five-year and 10-year results ranked in the 6th, 13th and 8th percentiles, respectively, of that same peer universe.

Please see the Notes to the Basic Financial Statements, the Statistical Section and the Required Supplementary Information (RSI) Sections of this report for more detailed information.

Investment Policy

OP&F invests all available funds in order to maximize both current income and long-term appreciation. The primary objective of OP&F's investment policy is to ensure that OP&F meets its responsibilities for providing retirement and other benefits. The investment portfolio is diversified to provide adequate cash flow and to provide the highest possible total return for OP&F's assets while maintaining an acceptable level of risk. Over the past year, OP&F's total rate of return on its investment portfolio was a negative 1.78% in 2018.

Details of portfolio composition, rates of return, analysis of significant economic conditions, and additional information concerning OP&F's investment policy are provided in the Investment Section of this report.

Material Plan Amendments

There were no material plan amendments in 2018. See the Actuarial Section for the assumptions used within this report.

Independent Audit

RSM US LLP, independent certified public accountants, audited the financial statements of OP&F for the years ended Dec. 31, 2018, and their opinion thereon is included in the Financial Section.

Notes to Basic Financial Statements

The Notes to the Basic Financial Statements, which follow the Basic Financial Statements, contain additional information and are an integral part of such statements.

Certificate of Achievement

The Government Finance Officers Association of the United States and Canada (GFOA) awarded a Certificate of Achievement for Excellence in Financial Reporting to OP&F for its CAFR for the fiscal year ended Dec. 31, 2017. The Certificate of Achievement is the highest form of recognition for excellence in state and local government financial reporting.

In order to be awarded a Certificate of Achievement, a government unit must publish an easily readable and efficiently organized CAFR, whose contents conform to program standards. Such reports must satisfy both accounting principles generally accepted in the U.S. and applicable legal requirements. A Certificate of Achievement is valid for a period of one year only. OP&F believes the current report continues to conform to the Certificate of Achievement Program requirements and is submitting it to the GFOA to determine its eligibility for another certificate.

Acknowledgments

The preparation and contents of this report reflect the combined efforts of OP&F's staff under the direction of the Board of Trustees and are the responsibility of OP&F's management staff. It is intended to provide complete and reliable information as a basis for making management decisions, to disclose compliance with legal provisions and as a means of demonstrating responsible stewardship for the assets contributed by the members and their employers.

The cooperation of OP&F's employers is vital to our success and is greatly appreciated.

Respectfully submitted,

John J. Gallagher, Jr.
Executive Director

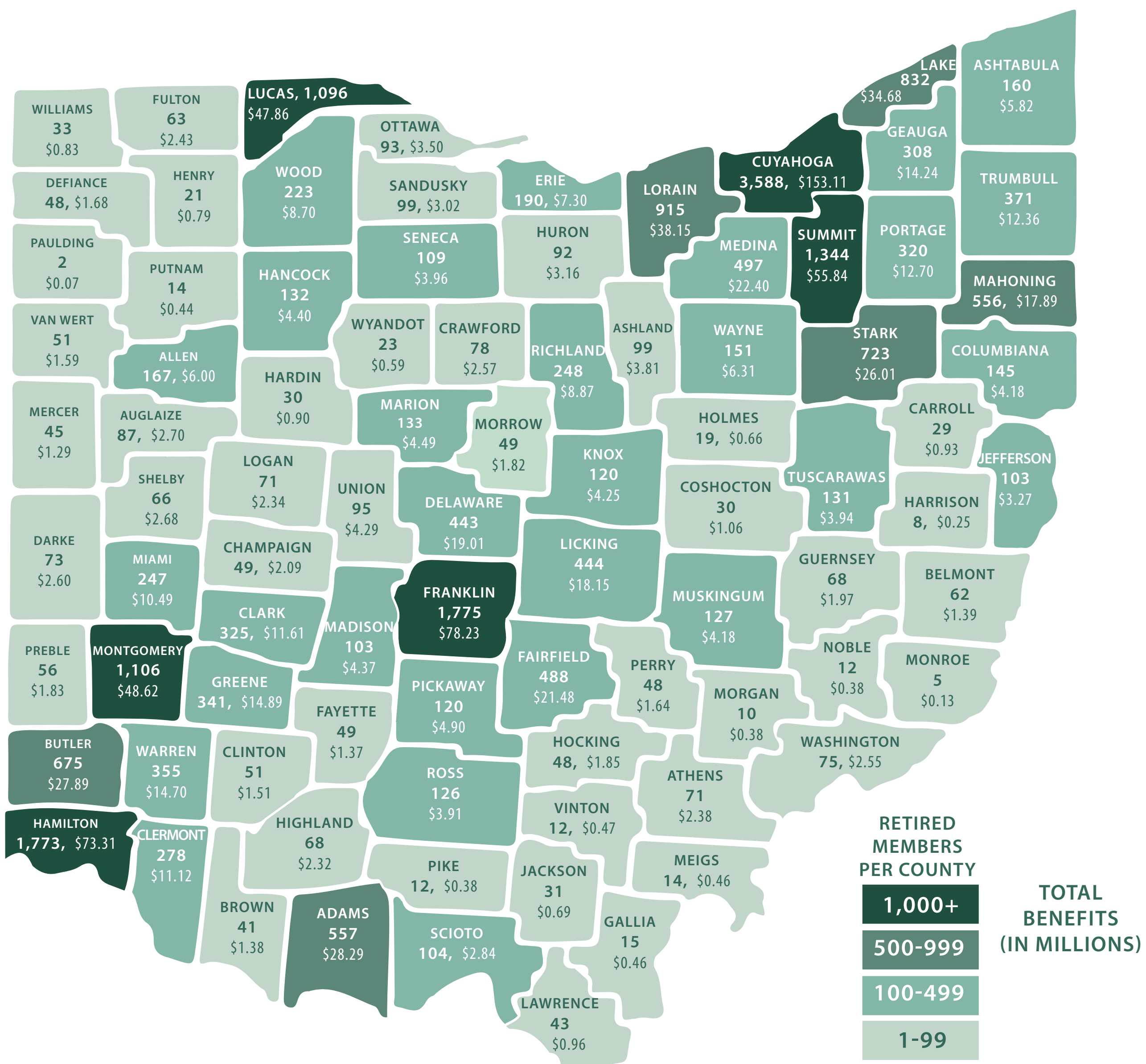
Scott K. Miller
Deputy Executive Director

DEMOGRAPHICS AND ECONOMIC IMPACT

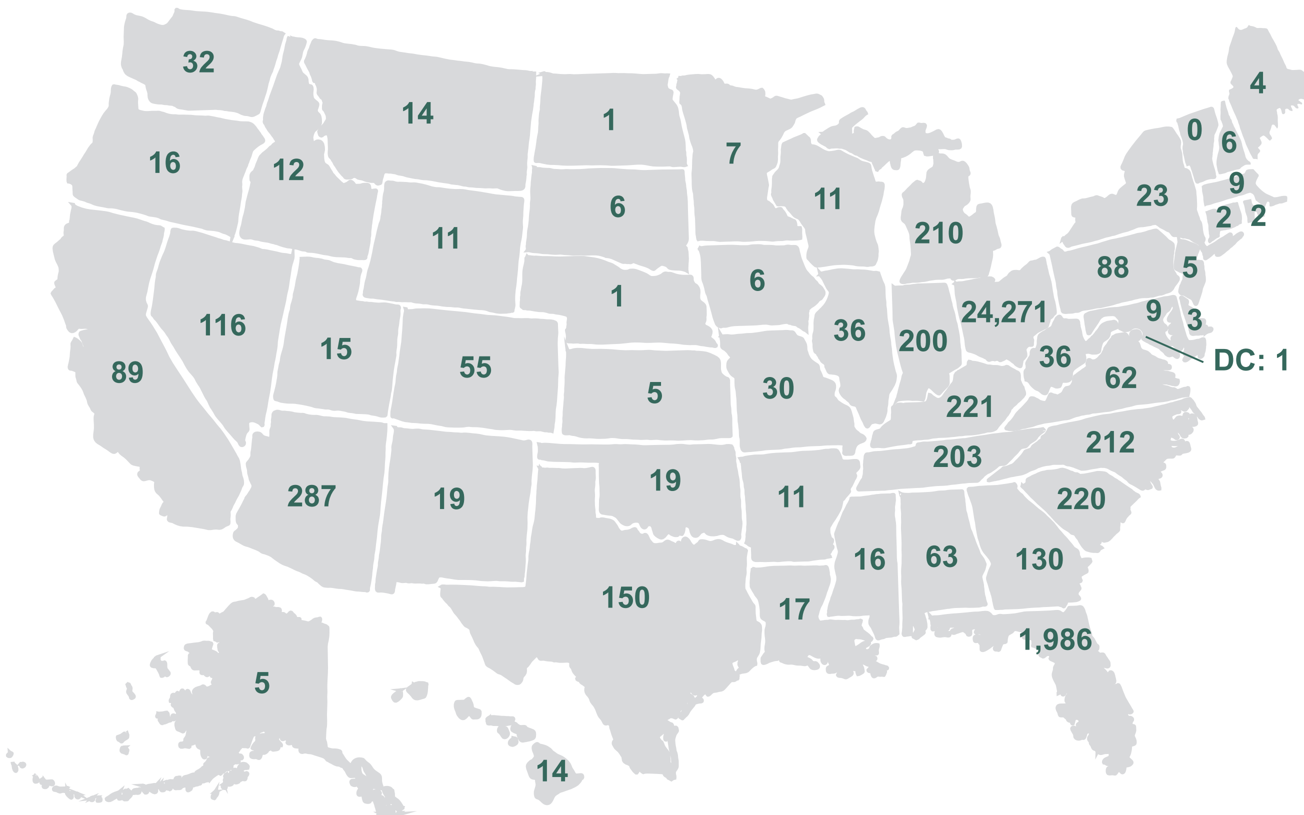
MEMBERSHIP RESIDENCE

Type of Member	Total Persons	Ohio Residents	Non-Residents	Percent of Non-Residents
Active Members (including DROP)	28,815	28,404	411	1.43%
Retirees	22,218	18,792	3,426	15.42%
Survivors	6,771	5,479	1,292	19.08%
TOTAL	**57,804**	**52,675**	**5,129**	**8.87%**
Active Members in DROP	4,220	4,170	50	1.18%

RETIREES AND BENEFITS PAID BY COUNTY



BENEFICIARIES BY STATE



BENEFICIARIES BY COUNTRY

Location	Retirees
United States	28,967
Canada	10
France	1
Ireland	1
Philippines	3
Portugal	1
Puerto Rico	1
Thailand	1
Virgin Islands	1
Armed Forces	3

FINANCIAL

2018 COMPREHENSIVE ANNUAL FINANCIAL REPORT

INDEPENDENT AUDITOR'S REPORT

RSM

RSM US LLP

Independent Auditor's Report

The Board of Trustees
Ohio Police & Fire Pension Fund and
The Honorable Keith Faber

Report on the Financial Statements
We have audited the accompanying basic financial statements of Ohio Police & Fire Pension Fund, which comprise the statement of fiduciary net position as of December 31, 2018, and the related statement of changes in fiduciary net position for the year ended December 31, 2018, and the related notes to the financial statements, (collectively, basic financial statements).

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.

Auditor's 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 auditor's 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 relevant to the entity'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 entity'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 basic financial statements referred to above present fairly, in all material respects, the fiduciary net position of Ohio Police & Fire Pension Fund as of December 31, 2018, and the changes in fiduciary net position for the year then ended in accordance 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 management's discussion and analysis and the required supplementary information, as listed in the table of contents, be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Other Information
Our audit was conducted for the purpose of forming an opinion on the financial statements that collectively comprise Ohio Police & Fire Pension Fund's basic financial statements. The additional information, including the schedule of administrative expenses, schedule of investment expenses, and the combining statement of changes in assets and liabilities – public officers' death benefit fund, 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.

The additional 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. Such 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 additional information is fairly stated, in all material respects, in relation to the basic financial statements as a whole.

The introductory, investments, actuarial and statistical sections, as listed in the table of contents have 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 them.

Other Reporting Required by *Government Auditing Standards*
In accordance with *Government Auditing Standards*, we have also issued our report dated June 24, 2019 on our consideration of Ohio Police & Fire Pension Fund'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 solely 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 the effectiveness of Ohio Police & Fire Pension Fund's 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 Ohio Police & Fire Pension Fund's internal control over financial reporting and compliance.

RSM US LLP

Columbus, Ohio
June 24, 2019

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)

This Management Discussion and Analysis (MD&A) of OP&F's financial performance provides a narrative overview of financial activities for the fiscal year ended Dec. 31, 2018. The MD&A is designed to focus on the current year's activities, resulting changes and currently known facts. OP&F encourages reading this in conjunction with the Basic Financial Statements, Notes to the Basic Financial Statements and the Letter of Transmittal included in the Introductory Section of this CAFR.

FINANCIAL HIGHLIGHTS

Additions are received primarily from investment income and employer and member pension contributions. For fiscal year 2018, these additions totaled $395.6 million compared to $2,781.8 million in 2017, which is an 85.8% decrease. Investment income can fluctuate dramatically because it includes realized and unrealized investment gains and losses based on performance of global capital markets.

The employer contribution rates of 19.5% for police and 24% for fire remained unchanged in both 2018 and 2017. The member contribution rate was 12.25% for both police and fire in 2018 and 2017.

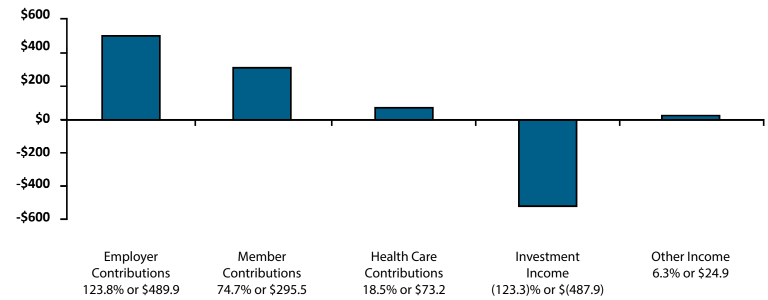
Deductions are incurred primarily for the purpose for which OP&F was created; the payment of pension, disability and survivor benefits to qualified members and survivors. Included in the deductions from OP&F's fiduciary net position for 2018 were benefits for retirement, DROP, disability, health care and survivors. Also included were contribution refunds, administrative and other expenses. Pension benefits are funded through a combination of investment earnings and employer and member contributions. Health care expenses are funded on a self-insured basis through a portion of employer contributions, health care premiums and investment income. Deductions totaled $1,549.4 million in 2018 and were $1,470.1 million in 2017, which is a 5.4% increase over 2017. Please refer to the Plan Summary in the Actuarial Section for further information on plan benefits.

OP&F administers the State of Ohio Public Safety Officers Death Benefit Fund. This program was established by the State of Ohio to provide monthly benefit payments to eligible surviving family members of Ohio public safety officers who have been killed in the line of duty or die of a duty-related injury or illness. Funds are disbursed to OP&F on a quarterly basis and are paid monthly by OP&F to eligible recipients. Annually the unused balance is returned to the State of Ohio. The Public Safety Officers Death Benefit Fund is considered to be an agency fund administered by OP&F and accordingly, its assets of $0.2 million and $0.4 million at Dec. 31, 2018 and 2017, respectively, and the related liability for unpaid benefits as of the same dates are included in the accompanying financial statements.

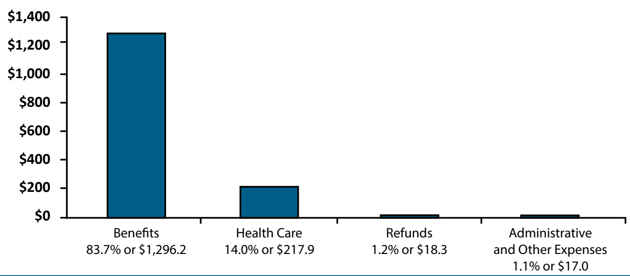
OVERVIEW OF FINANCIAL STATEMENTS

Following the MD&A are the Statements of Fiduciary Net Position and the Statements of Changes in Fiduciary Net Position. OP&F's financial statements are prepared using the accrual basis of accounting and are in compliance with applicable GASB Statements.

2018 ADDITIONS (DOLLARS IN MILLIONS) $395.6



2018 DEDUCTIONS (DOLLARS IN MILLIONS) $1,549.4



The Statement of Fiduciary Net Position provides a snapshot view at year-end for the amount OP&F has accumulated in assets to pay for benefits. The Statement of Changes in Fiduciary Net Position reflects what has happened to OP&F's assets during the fiscal year. If the fiduciary net position increased, then additions were greater than the deductions. If the fiduciary net position decreased, then additions were less than the deductions.

In addition to the Basic Financial Statements and accompanying Notes to the Basic Financial Statements, certain Required Supplementary Information (RSI) is provided. The RSI consists of information pertaining to OP&F's actuarial methods and assumptions and provides data on the net pension liability and the changes in net pension liability. Also included in the RSI is data on contributions from employers, along with other information useful in evaluating the financial condition of OP&F. Following the RSI are Schedules of Administrative Expenses and the Schedule of Investment Expenses.

In accordance with GASB Statement No. 68, Accounting and Financial Reporting for Pensions, which significantly revised accounting for pension costs and liabilities, OP&F recorded as a liability its proportionate share of the Ohio Public Employees Retirement System (OPERS) Net Pension Liability (NPL). However, OP&F is not responsible for certain key factors affecting the balance of this liability. In Ohio, the employee shares the obligation of funding pension benefits with the employer.

Employee contribution rates are set by Ohio law. State law permits the Board of Trustees to adjust the employee contribution rate if, in consultation with its actuary following an actuarial review, OP&F determines that an adjustment to the rate is appropriate. The Board of Trustees may increase the employee contribution rate if it determines that the increase is necessary to preserve the fiscal integrity of the pension fund. Likewise, the Board of Trustees may decrease the employee contribution rate if it determines that the decrease would not materially impair the fiscal integrity of the pension fund.

Employer contribution rates are also set by Ohio law. A change in the employer rates requires action by both Houses of the General Assembly and approval by the Governor. OP&F's benefit provisions are also determined by state statute.

In Ohio, at this time it does not appear that there are any legal means to enforce payments of the net pension liability of the pension system by public employers. The pension system is responsible for the administration of the plan.

Most long-term liabilities have set repayment schedules or, in the case of compensated absences (i.e. sick and vacation leave) are satisfied through paid time-off or termination payments. There is no repayment schedule for the NPL. Changes in pension benefits, contribution rates and return on investments affect the balance of the net pension liability, but are outside the control of the public employer. In the event that contributions, investment returns and other changes are insufficient to keep up with required pension payments, state statute does not assign/identify the responsible party for the unfunded portion.

In 2017, OP&F implemented GASB Statement No. 74, Financial Reporting for Post-Employment Benefit Plans Other Than Pension Plans, which resulted in an additional note disclosure to the financial statements and additional Required Supplementary Information related to OP&F's Retiree Health Care program. In 2018, OP&F implemented the provisions of GASB Statement No. 75, Accounting and Financial Reporting for Post-Employment Benefits Other Than Pensions, and recorded a liability representing OP&F's proportionate share of OPERS' Other Post-Employment Benefit (OPEB) liability.

GASB Statement No. 75 is very similar to GASB Statement No. 68, in that, OP&F is not responsible for certain key factors affecting the balance of this OPEB liability. Both standards affect financial reporting only, not funding. The requirement to report these liabilities may represent a significant figure on OP&F's financial statements, but does not affect the amount OP&F is required to fund under Ohio law. In Ohio, governmental employers are not legally bound to pay off the unfunded liabilities of OPERS. The intent of the standards is to enhance both the pension and OPEB related information in financial reports by providing greater transparency and to standardize the valuation practices from entity to entity.

A condensed version of OP&F's financial information is being provided as part of this discussion.

CONDENSED FIDUCIARY NET POSITION INFORMATION (DOLLARS IN MILLIONS)

			2018 Change	
	2018	2017	Amount	Percent
Cash and Short-term Investments	$948.7	$948.3	$0.4	-%
Receivables	240.6	221.8	18.8	8.5%
Investments, at Fair Value	14,557.1	15,877.1	(1,320.0)	(8.3)%
Capital Assets, Net of Depreciation	15.4	15.8	(0.4)	(2.5)%
Other Assets	0.3	0.2	0.1	50.0%
TOTAL ASSETS	**15,762.1**	**17,063.2**	**(1,301.1)**	**(7.6)%**
DEFERRED OUTFLOWS	5.2	4.4	0.8	18.2%
Benefits and Accounts Payable	81.4	82.7	(1.3)	(1.6)%
Investments Payable	944.1	1,096.0	(151.9)	(13.9)%
TOTAL LIABILITIES	**1,025.5**	**1,178.7**	**(153.2)**	**(13.0)%**
DEFERRED INFLOWS	6.9	0.2	6.7	3350.0%
FIDUCIARY NET POSITION, END OF YEAR	**$14,734.9**	**$15,888.7**	**$(1,153.8)**	**(7.3)%**

CONDENSED CHANGES IN FIDUCIARY NET POSITION INFORMATION (DOLLARS IN MILLIONS)

			2018 Change	
	2018	2017	Amount	Percent
Contributions	$858.6	$829.7	$28.9	3.5%
Net Investment Gain/(Loss)	(487.9)	1,923.5	(2,411.4)	(125.4)%
Other Additions	24.9	28.6	(3.7)	(12.8)%
TOTAL ADDITIONS	**395.6**	**2,781.8**	**(2,386.2)**	**(85.8)%**
Benefits	1,514.1	1,429.2	84.9	5.9%
Refunds	18.3	20.6	(2.3)	(11.2)%
Administrative Expenses and Other	17.0	20.3	(3.3)	(16.3)%
TOTAL DEDUCTIONS	**1,549.4**	**1,470.1**	**79.3**	**5.4%**
Net Increase/(Decrease)	**(1,153.8)**	**1,311.7**	**(2,465.5)**	**(188.0)%**
Fiduciary Net Position, Beginning of Year*	**15,888.7**	**14,577.0**	**1,311.7**	**9.0%**
FIDUCIARY NET POSITION, END OF YEAR	**$14,734.9**	**$15,888.7**	**$(1,153.8)**	**(7.3)%**

* 2017 was restated to reflect the implementation of GASB 75.

FINANCIAL ANALYSIS

FIDUCIARY NET POSITION

The fiduciary net position available for benefits and expenses in 2018 was $14,734.9 million versus $15,888.7 million in 2017, which represents a 7.3% net decrease. The overall net decrease in 2018 can be primarily attributed to net depreciation on the fair value of investments. Please refer to the Investment Section for additional information on OP&F's investment activities in 2018.

REVENUE ADDITIONS TO FIDUCIARY NET POSITION

Based on the rounded numbers found on page 6, overall contributions received by OP&F in 2018 increased 3.5% or $28.9 million compared to 2017. These changes are due to increases in the average annual salary and total annual payroll.

Pension contributions from employers increased $16.7 million, or 3.5%, in 2018. Employer pension contribution increases are also due to an increase in the average annual salary and total annual payroll. Employer contributions are not impacted by DROP and the employer contributions associated with DROP participation are not allocated to the individual DROP accounts.

In 2018, pension contributions from members increased $13.5 million, or 4.8%. The increase in 2018 can be attributed to the 0.6% increase in the average annual salary, from $76,608 to $77,083, and an increase in active member population, or contributing members, by 233 to 28,408, or by 0.8%.

In 2018, members purchasing service credit or transferring in their member contributions increased by $4.7 million, or 33.2% compared to 2017. These purchases and transfers-in fluctuate year-to-year based on the number and amount of the service credit being purchased by the membership and the number and amount of members transferring contributions from other retirement systems.

Contributions paid by members and beneficiaries for their share of health care costs decreased by 1.7% from $74.5 million in 2017 to $73.2 million in 2018. The annual changes in the contributions for health care can be attributed to the annual change in the contribution rates paid by plan participants along with fluctuations in the number of members and beneficiaries selecting to participate in the OP&F health care program.

In 2018, contributions received through the state-subsidy decreased $45,664, from $346,475 to $300,811. This trend is due to a normal decline in the population of survivors receiving this subsidized benefit.

Investment net depreciation totaled $487.9 million in 2018. The net depreciation of 2018 can be attributed to a negative return of 1.78% from OP&F's portfolio of investments. In 2017, investment net appreciation totaled $1,923.5 million. The net appreciation of 2017 can be attributed to an overall positive return on OP&F investments of 14.30%.

EXPENSE DEDUCTIONS FROM NET POSITION

Overall benefit deductions for service retirement, DROP, health care, disability and survivors increased $84.9 million or 5.9% in 2018. Part of the increases in pension benefits is due to increases in the number of retirees and beneficiaries. Service retirees increased by 457 individuals, or 3.1% in 2018, survivors and beneficiaries increased by 37 individuals, or 0.5% while disability retirees decreased by 46 individuals, or (0.7)%. In addition DROP benefit distributions increased $16.6 million or 8.9%.

In 2018, health care benefits increased by 12.6% and gross health care payments totaled $217.9 million and represented 14.1% of all plan deductions. In 2017, health care benefits totaled $193.6 million and represented 13.2% of all plan deductions. These increases in health care benefits in 2018 can be attributed to increases in medical and prescription claims paid as well as the prefunding of the stipend for OP&F's new retiree health care model which was implemented on Jan. 1, 2019.

Refunds to members decreased by $2.3 million in 2018. These refunds include actual refunds of pension contributions and member contributions on deposit for inactive members.

BASIC FINANCIAL STATEMENTS

STATEMENT OF FIDUCIARY NET POSITION AS OF DEC. 31, 2018

	Pensions	Post-Employment Health Care	2018 Total	Death Benefit Agency Fund
Assets:				
Cash and Short-term Investments	$896,323,147	$52,371,295	$948,694,442	$211,025
Receivables:				
Employers' Contributions	49,083,363	1,203,351	50,286,714	-
Members' Contributions	28,267,446	-	28,267,446	-
Accrued Investment Income	38,962,181	2,276,523	41,238,704	-
Investment Sales Proceeds	94,690,879	5,532,696	100,223,575	-
Local Funds Receivable	20,575,819	-	20,575,819	-
TOTAL RECEIVABLES	**231,579,688**	**9,012,570**	**240,592,258**	**-**
Investments, at fair value:				
Domestic Bonds	2,999,494,060	175,257,539	3,174,751,599	-
Non-U.S. Bonds	42,673,458	2,493,369	45,166,827	-
Mortgage and Asset-Backed Securities	501,501,904	29,302,272	530,804,176	-
Domestic Stocks	2,693,953,659	157,405,108	2,851,358,767	-
International Equities	2,326,933,002	135,960,446	2,462,893,448	-
Real Estate	1,682,586,633	98,311,910	1,780,898,543	-
Commercial Mortgage Funds	34,193,119	1,997,871	36,190,990	-
Private Debt	458,220,095	26,773,357	484,993,452	-
Private Equity	1,175,794,594	68,700,542	1,244,495,136	-
Real Assets	359,922,632	21,029,931	380,952,563	-
Master Limited Partnerships	780,577,589	45,608,394	826,185,983	-
Domestic Derivatives	2,127,681	124,318	2,251,999	-
Non-U.S. Derivatives	(1,858,367)	(108,583)	(1,966,950)	-
TOTAL INVESTMENTS	**13,056,120,059**	**762,856,474**	**13,818,976,533**	**-**
Collateral on Loaned Securities	697,426,630	40,749,964	738,176,594	-
Capital Assets, net of accumulated depreciation, where applicable:				
Land	3,200,000	-	3,200,000	-
Building and Improvements	11,045,581	-	11,045,581	-
Furniture and Equipment	325,640	-	325,640	-
Computer Software and Hardware	808,997	-	808,997	-
TOTAL CAPITAL ASSETS, NET	15,380,218	-	15,380,218	-
Prepaid Expenses and Other	276,581	-	276,581	-
TOTAL ASSETS	**14,897,106,323**	**864,990,303**	**15,762,096,626**	**211,025**
DEFERRED OUTFLOWS OF RESOURCES				
Deferred Outflows - Pension and OPEB	5,163,434	-	5,163,434	-
Liabilities:				
Health Care Payable	-	19,086,965	19,086,965	-
Investment Commitments Payable	194,550,156	11,367,378	205,917,534	-
Accrued Administrative Expenses	32,755,661	-	32,755,661	-
Due to State of Ohio	-	-	-	211,025
Obligations Under Securities Lending	697,426,630	40,749,964	738,176,594	-
Other Liabilities	29,594,126	-	29,594,126	-
TOTAL LIABILITIES	**954,326,573**	**71,204,307**	**1,025,530,880**	**211,025**
DEFERRED INFLOWS OF RESOURCES				
Deferred Inflows - Pension and OPEB	6,886,377	-	6,886,377	-
FIDUCIARY NET POSITION HELD IN TRUST FOR PENSION AND POST-EMPLOYMENT HEALTH CARE BENEFITS	**$13,941,056,807**	**$793,785,996**	**$14,734,842,803**	**$-**

See the Notes to the Basic Financial Statements. The accompanying notes are an integral part of the financial statements.

BASIC FINANCIAL STATEMENTS

STATEMENTS OF CHANGES IN FIDUCIARY NET POSITION FOR THE YEAR ENDED DEC. 31, 2018

	Pensions	Post-Employment Health Care	2018 Total
Additions:			
From Contributions:			
Members'	$295,472,374	$-	$295,472,374
Employers'	478,294,974	11,337,852	489,632,826
State of Ohio-Subsidies	300,811	-	300,811
Health Care Premiums	-	73,156,768	73,156,768
TOTAL CONTRIBUTIONS	**774,068,159**	**84,494,620**	**858,562,779**
From Investment Income:			
Net Appreciation (Depreciation)			
Value of Investments	(887,055,542)	(53,271,134)	(940,326,676)
Bond Interest	119,917,305	7,201,500	127,118,805
Dividends	107,261,586	6,441,475	113,703,061
Alternative Investment Income	148,438,434	8,914,305	157,352,739
Master Limited Partnership Income	72,249,616	4,338,870	76,588,486
Other Investment Income (Loss)	22,281,982	1,338,120	23,620,102
Less Investment Expenses	(48,580,550)	(2,917,451)	(51,498,001)
NET INVESTMENT INCOME	**(465,487,169)**	**(27,954,315)**	**(493,441,484)**
From Securities Lending Activities:			
Securities Lending Income	22,124,251	1,328,647	23,452,898
Securities Lending Expense	(16,853,168)	(1,012,098)	(17,865,266)
NET INCOME FROM SECURITIES LENDING	**5,271,083**	**316,549**	**5,587,632**
Interest on Local Funds Receivable	910,982	-	910,982
Other Income	570,320	23,446,262	24,016,582
TOTAL ADDITIONS	**315,333,375**	**80,303,116**	**395,636,491**
Deductions:			
Retirement Benefits	749,166,773	-	749,166,773
Disability Benefits	254,363,281	-	254,363,281
Health Care Benefits	-	217,862,957	217,862,957
Survivor Benefits	89,742,094	-	89,742,094
DROP Withdrawals	203,062,525	-	203,062,525
Contribution Refunds	18,273,823	-	18,273,823
Administrative Expenses	16,038,268	741,952	16,780,220
Other Expenses	196,128	-	196,128
TOTAL DEDUCTIONS	1,330,842,892	218,604,909	1,549,447,801
CHANGE IN FIDUCIARY NET POSITION	(1,015,509,517)	(138,301,793)	(1,153,811,310)
FIDUCIARY NET POSITION - BEG OF YEAR (as restated)*	**14,956,566,324**	**932,087,789**	**15,888,654,113**
FIDUCIARY NET POSITION - END OF YEAR	**$13,941,056,807**	**$793,785,996**	**$14,734,842,803**

* In 2018, OP&F implemented GASB 75, which required OP&F to restate the Beginning Of Year Fiduciary Net Position. For more information, see the Notes to the Basic Financial Statements. The accompanying notes are an integral part of the financial statements.

NOTES TO BASIC FINANCIAL STATEMENTS (DEC. 31, 2018)

1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

The following are the significant accounting policies followed by OP&F.

BASIS OF ACCOUNTING

OP&F's financial statements have been prepared using the accrual basis of accounting. Revenues are recognized when earned and expenses are recorded when a liability is incurred. Contributions are earned based on statutory requirements under Chapter 742 of the ORC.

NEW ACCOUNTING PRONOUNCEMENTS

During the year ended Dec. 31, 2018, OP&F adopted the provisions of GASB Statement No. 75, Post-Employment Benefit Plans Other Than Pensions. One of the primary requirements is for participating employers in OP&F to record a net OPEB liability based on their proportionate share of OP&F's total net OPEB liability. Likewise, OP&F is required to record a proportionate share of the total net OPEB liability of Ohio Public Employees Retirement System (OPERS). OP&F adopted GASB Statement No. 75 effective Jan. 1, 2018, resulting in a restatement of the beginning of year fiduciary net position of $7.1 million.

Also during the year ended Dec. 31, 2018, OP&F adopted the provisions of GASB Statement No. 85, Omnibus 2017, and GASB Statement No. 86, Certain Debt Extinguishment Issues. The adoption of these had no material impact on the financial statements.

The GASB also issued the following pronouncements: GASB Statement No. 83, Certain Asset Retirement Obligations, is effective for fiscal years beginning after June 15, 2018. GASB Statement No. 84, Fiduciary Activities, is effective for fiscal years beginning after Dec. 15, 2018. GASB Statement No. 87, Leases, is effective for fiscal years beginning after Dec. 15, 2019. GASB Statement No. 88, Certain Disclosures Related to Debt, including Direct Borrowings and Direct Placements, is effective for fiscal years beginning after June 15, 2018. GASB Statement No. 89, Accounting for Interest Cost Incurred before the End of a Construction Period, is effective for fiscal years beginning after Dec. 15, 2019. GASB Statement No. 90, Majority Equity Interests – an amendment of GASB Statements No. 14 and No. 61, is effective for fiscal years beginning after Dec. 15, 2018. OP&F is analyzing the impact that these GASB pronouncements will have on the financial statements.

MANAGEMENT USE OF ESTIMATES

The preparation of the financial statements requires management to make a number of estimates and assumptions relating to the reported amounts of assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the period. Significant items subject to estimates and assumptions include the fair value of certain investments, carrying amount of capital assets and assets and obligations related to employee and member benefits. Actual results could differ from those estimates.

INVESTMENTS

Investment purchases and sales are recorded on a trade-date basis. Dividend income is recognized on the ex-dividend date. Income on bonds, private equity, private debt, real estate funds and interest income are recognized when earned.

Investments are reported at fair value. Fair value is the amount reasonably expected to be received for an investment in a current sale between a willing buyer and a willing seller. Securities traded on a national or international exchange, including master limited partnerships, are valued at the last reported sales price at the then current exchange rates. Mortgages are valued on the basis of future principal payments discounted at prevailing interest rates for similar instruments. The fair value of real estate and timber are based on independent appraisals and internal valuations. Investments that do not have an established market are reported at estimated fair value received from the investment managers. The value of OP&F's private equity interests are based on values established by each partnership's valuation committee. Investments, for which no national exchanges or pricing services exist, such as private equity assets, are valued at fair value by the investment partnership based on the valuation methodology outlined in the partnership agreement. Real estate may be valued by the manager or independent appraisers. Commingled assets that are not traded on a national exchange are valued by the commingled manager. OP&F performs due diligence reviews of the investment pricing, process and infrastructure of private equity, commingled and real estate investments to assure that asset values provided by the managers are reasonable.

Net appreciation (depreciation) is determined by calculating the change in the fair value of investments between the end of the year and the beginning of the year, less the cost of investments purchased, plus reinvested proceeds from sales of investments at fair value. Investment expense consists of administrative expenses directly related to OP&F's investment operations and a proportional amount of all other administrative expenses allocated based on the ratio of OP&F's investment staff to total OP&F staff.

FEDERAL INCOME TAX STATUS

OP&F was determined to be a qualified trust under section 401(a) of the Internal Revenue Code that is exempt from Federal income taxes under Section 501(a) of the Internal Revenue Service Code. OP&F's DROP plan was also determined to be part of the 401(a) trust. A separate health care trust accrual account is maintained for health care benefits under Internal Revenue Service (IRS) Code Section 115 trust. An IRS Code Section 401(h) account is maintained for Medicare Part B reimbursements.

ADMINISTRATIVE COSTS

The cost of administering the plan is financed by investment income.

CONTRIBUTIONS, BENEFITS AND REFUNDS

Employer and member contributions are recognized when due or in the period the related member salaries are earned. Benefits and refunds are recognized when due and payable in accordance with the terms of the plan.

PROPERTY AND EQUIPMENT

Property and equipment are recorded at cost. Depreciation is computed using the straight-line method over the estimated useful lives of the related assets. The range of estimated useful lives is as follows:

Buildings and Improvements:	40 years
Furniture and Equipment:	3 to 10 years
Computer Software and Hardware:	2 to 7 years

CHANGES IN CAPITAL ASSETS*

Non-Depreciable Capital Assets	Jan. 1, 2018	Additions	Disposals	Dec. 31, 2018
Land	$3,200,000	$-	$-	$3,200,000

Depreciable Capital Assets	Jan. 1, 2018	Additions	Disposals	Dec. 31, 2018
Building and Improvements	$21,395,605	$-	$-	$21,395,605
Furniture and Equipment	3,130,475	239,816	(19,402)	3,350,889
Computer Software and Hardware	16,563,237	301,456	(11,207)	16,853,486
TOTAL DEPRECIABLE CAPITAL ASSETS	**41,089,317**	**541,272**	**(30,609)**	**41,599,980**

Accumulated Depreciation	Jan. 1, 2018	Additions	Disposals	Dec. 31, 2018
Building and Improvements	9,817,667	532,357	-	10,350,024
Furniture and Equipment	3,017,906	26,745	(19,402)	3,025,249
Computer Software and Hardware	15,638,924	416,772	(11,207)	16,044,489
TOTAL ACCUMULATED DEPRECIATION	**28,474,497**	**975,874**	**(30,609)**	**29,419,762**
TOTAL DEPRECIABLE CAPITAL ASSETS, NET	**$12,614,820**	**$(434,602)**	**$-**	**$12,180,218**

* Additions in capital assets are related to purchases of property and equipment in 2018. Increases in accumulated depreciation are a result of depreciation expensed over the useful life of the asset which was expensed in 2018. Decreases in both the capital assets and accumulated depreciation are related to the disposal of property and equipment in 2018.

2. CHANGE IN ACCOUNTING PRINCIPLE AND RESTATEMENT OF NET POSITION

On Jan. 1, 2018, OP&F implemented GASB Statement No. 75, Accounting and Financial Reporting for Post-employment Benefits Other Than Pensions. GASB Statement No. 75 establishes standards for recognizing and measuring the net other post-employment benefits liability, deferred outflows of resources, deferred inflows of resources, and expense/ expenditures of other post-employment benefits (OPEB). For defined benefit OPEB plans, this Statement also identifies the methods and assumptions that are required to be used to project benefit payments, discount projected benefit payments to their actuarial present value, and attribute that present value to periods of employee service.

The implementation of GASB Statement No. 75 had the following effect on the net position as reported Dec. 31, 2017:

Net Position, Dec. 31, 2017, as previously reported	$15,895,701,793
Adjustment: Net OPEB Liability	(7,047,680)
RESTATED NET POSITION, DEC. 31, 2017	**$15,888,654,113**

3. DESCRIPTION OF THE SYSTEM

ORGANIZATION

OP&F is a cost-sharing, multiple-employer public employee retirement system established by the ORC Chapter 742 in 1965 to consolidate the various individual local police and firefighter's relief and pension funds into one statewide plan. OP&F is administered by a nine member Board of Trustees, consisting of two active representatives of police departments, two active representatives of fire departments, one retired police officer and one retired firefighter. The Board of Trustees also includes three statutory members. Each statutory member—one appointed by the Governor of Ohio, one by the Ohio Treasurer of State and one appointed jointly by the Ohio Senate President and Ohio Speaker of the House of Representatives—must have professional investment expertise.

OP&F administers pension, disability, DROP and health care benefits to qualified members. In addition, OP&F administers survivor benefits, death benefits and sponsors health care programs for eligible survivors, spouses, children and dependent parents. OP&F is a separate financial reporting entity in accordance with criteria established by Governmental Accounting Standards Board Statement No.14, because OP&F is a legally separate entity, a voting majority of the governing board is not appointed by the State and it is fiscally independent of other state and local governments. OP&F also has a variety of professional consultants and money managers as listed on page vii and page 79.

BENEFITS

Plan benefits are established under ORC Chapter 742. OP&F offers four types of service retirement: normal, service commuted, age/service commuted and actuarially reduced. Each type has different eligibility guidelines and is calculated using the member's allowable average annual salary.

Since average annual salary is subject to certain statutory and administrative limitations, not all salary, earnings, or compensation may be used in the calculation. OP&F calculates allowable average annual salary as follows:

- For OP&F members with 15 or more years of service credit as of July 1, 2013, average annual salary is an average of the three years of highest allowable earnings, regardless of when in their career the highest years occurred.
- For OP&F members with less than 15 years of service credit as of July 1, 2013, average annual salary is an average of the five years of highest allowable earnings, regardless of when in their career the highest years occurred.
- A salary benchmark is established for members with 15 or more years of service credit as of July 1, 2013, under which certain increases are excluded from salary for the purpose of determining allowable average annual salary. This benchmarking does not apply to members with less than 15 years of service credit as of July 1, 2013.

PLAN MEMBERSHIP

Employer and member data as of Jan. 1, 2018, based on the most recent actuarial valuation, is as follows:

		2018	
Employee Members	**Police**	**Fire**	**Total**
Retirees and Beneficiaries			
Currently receiving benefits	16,808	12,553	29,361
Terminated employees entitled to benefits but not yet receiving them	206	140	346
TOTAL BENEFIT MEMBERS	**17,014**	**12,693**	**29,707**
Current Members			
Vested*	7,647	6,818	14,465
Non-vested	7,567	6,376	13,943
TOTAL CURRENT MEMBERS	**15,214**	**13,194**	**28,408**
TOTAL EMPLOYEE MEMBERS	**32,228**	**25,887**	**58,115**
Employer Members			
Municipalities	248	197	445
Townships	-	161	161
Villages	280	40	320
TOTAL EMPLOYER MEMBERS	**528**	**398**	**926**

* Includes Rehired Retirees.

NORMAL SERVICE RETIREMENT

ELIGIBILITY

- For members hired into an OP&F-covered position after July 1, 2013, minimum retirement age is 52 with at least 25 years of service credit.
- For members hired into an OP&F-covered position on or before July 1, 2013, minimum retirement age is 48 with 25 years of service credit.

BENEFIT

An annual pension equal to a percentage of the allowable average annual salary. The percentage equals 2.5% for each of the first 20 years of service credit, 2% for each of the next five years of service credit and 1.5% for each year of service credit in excess of 25 years. The maximum pension of 72% of the allowable average annual salary is paid after 33 years of service credit.

SERVICE COMMUTED RETIREMENT

ELIGIBILITY

- For members hired into an OP&F-covered position after July 1, 2013, the minimum retirement age is 52, they must have at least 15 years of service credit and 25 years have elapsed from the date of their full-time hire.
- For members hired into an OP&F-covered position on or before July 1, 2013, the minimum retirement age is 48, they must have at least 15 years of service credit and 25 years have elapsed from the date of their full-time hire.

BENEFIT

An annual pension equal to 1.5% of the allowable average annual salary multiplied by the number of full years of service credit (up to 25 years of service credit).

AGE/SERVICE COMMUTED RETIREMENT

ELIGIBILITY

Age 62, 15 years of service credit and still working as a full-time police officer or firefighter.

BENEFIT

An annual pension that uses the same formula as the normal service retirement benefit (up to 25 years of service credit).

ACTUARIALLY REDUCED

ELIGIBILITY

For members hired into an OP&F-covered position after July 1, 2013, age 48 with 25 years of service credit.

BENEFIT

An annual pension reduced to the actuarial equivalent of the amount payable had the member retired at age 52.

OTHER BENEFITS

In addition to retirement benefits, OP&F also provides disability, survivor and Death Benefit Fund (DBF) benefits. Disability benefits are available to all members and vary by length of service and type of disability. Statutory survivor benefits are specified dollar amounts paid to eligible surviving spouse, children and dependent parents upon the death of an active member or retiree. A one-time lump sum death benefit of $1,000 is payable to the surviving spouse, designated beneficiary or estate, as applicable, of each deceased retired member.

OP&F also administers the Ohio Public Safety Officers DBF, which is funded by the State of Ohio and provides special benefits to eligible survivors of public safety officers who are killed in the line of duty or who die from injuries or disease incurred in the performance of official duties. If the public safety officer had not qualified for age and service retirement these eligible survivors are entitled to receive the member's full base pay, which will be reduced at the member's retirement eligibility date. If the public safety officer would have qualified for age and service retirement, the survivors are eligible for a transitional benefit equal to 50% of the monthly base pay. The transitional benefit is paid in addition to any optional payment that may have been selected.

DEFERRED RETIREMENT OPTION PLAN

Effective January 2003, DROP is an optional benefit that allows eligible police officers and firefighters to accumulate a lump sum of money for retirement, subject to the member meeting certain criteria.

At Dec. 31, 2018, 4,273 members were enrolled in the DROP program, with total values of the DROP accounts equaling $1,656.5 million.

ELIGIBILITY

When a member is eligible for a normal service retirement they can enter DROP by delaying retirement and continuing to work as a full-time police officer or firefighter.

- For members hired into an OP&F-covered position after July 1, 2013, normal service retirement eligibility is age 52 with at least 25 years of service credit.
- For members hired into an OP&F-covered position on or before July 1, 2013, normal service retirement eligibility is age 48 with at least 25 years of service credit.

BENEFIT

DROP is a cost neutral benefit offered by OP&F. Upon the DROP effective date, the member's pension is calculated as if that were their date of retirement. While the member continues to work and draw their normal salary, the amount they would have received in retirement benefits, a portion of their ongoing OP&F employee contributions and interest, accumulates tax-deferred at OP&F on their behalf. Since the member's pension has already been calculated:

- The years of DROP service do not apply towards the member's normal service retirement.
- If a member earns a higher salary after their DROP effective date due to a raise, job promotion, etc., it will not be used to recalculate their pension and, therefore, will not result in that member receiving a higher pension upon retirement.

The DROP interest rate is set by administrative rule and is subject to change at any time. OP&F credits interest to all DROP balances each month at a rate equal to the 10-year United States Treasury Note Business Day Series, as published by the U.S. Department of the Treasury, with a cap of 5%. This variable interest rate is adjusted quarterly to match the published 10-year U.S. Treasury Note Business Day Series rate for the last trading business day of the preceding quarter and is in effect for the subsequent quarter.

Members whose election to participate in DROP is effective after July 1, 2013 do not qualify for annual cost-of-living allowances (COLA) at any time during DROP. Members whose election to participate in DROP is effective on or before July 1, 2013 will continue to receive a cost-of-living allowance during DROP, but only when they reach 55 years of age and have been participating in DROP for at least one year. Those members whose enrollment date into DROP qualifies them for a cost-of-living allowance during DROP will receive 3% of their base pension.

Member contributions are credited to their DROP account based on the number of years of DROP service. For those members whose election to participate in DROP is effective after July 1, 2013, OP&F applies contributions to DROP in the following manner:

Years of DROP Service	Percentage of Member Contributions
Years 1-3	50 percent of member's contributions
Years 4-5	75 percent of member's contributions
Years 6-8	100 percent of member's contributions

For this group of members, the minimum participation in DROP, without penalty, is five years and the maximum is eight years.

- If a member terminates employment within the first five years of joining DROP, then the member forfeits all of their DROP interest. In addition to losing their accumulated interest, members who choose to terminate employment before completing the required participation period cannot withdraw any of the funds in their DROP account until the minimum participation period has expired. The only exception to this rule is if the member dies during the DROP minimum participation period. The member's surviving spouse, designated beneficiary or estate, as applicable, will receive the entire DROP account balance determined at time of death.
- If a member chooses to continue working after eight years in DROP, the member forfeits all DROP benefits and receives the Normal Service Retirement benefit upon retirement, which will be calculated to include the service credit and salary earned during the DROP participation period.

For those members whose election to participate in DROP was on or before July 1, 2013, member contributions are applied to DROP under the following schedule:

Years of DROP Service	Percentage of Member Contributions
Years 1-2	50 percent of member's contributions
Year 3	75 percent of member's contributions
Years 4-8	100 percent of member's contributions

For this group of members, the minimum participation in DROP, without penalty, is three years and the maximum is eight.

- If a member terminates employment within the first three years of joining DROP, then the member forfeits all of their DROP interest. In addition to losing their accumulated interest, members who choose to terminate employment before completing the required participation period cannot withdraw any of the funds in their DROP account until the minimum participation period has expired. The only exception to this rule is if the member dies during the DROP minimum participation period. The member's surviving spouse, designated beneficiary or estate, as applicable, will receive the entire DROP account balance determined at time of death.

- If a member chooses to continue working after eight years in DROP, the member forfeits all DROP benefits and receives the Normal Service Retirement benefit upon retirement, which will be calculated to include the service credit and salary earned during the DROP participation period.

All DROP members retiring before the eight-year maximum participation period will receive their Normal Service Retirement benefit determined at the time of DROP entry, with the COLA adjustment (if applicable) to date of retirement when eligible. These members will also receive the DROP account balance as a lump sum or monthly annuity.

If a member dies while participating in DROP, the member's surviving spouse, designated beneficiary or estate, as applicable, will receive the entire DROP account balance determined at the time of death. The surviving spouse or contingent dependent beneficiary will receive the greater of the retirement allowance made at the time of DROP entry or the Normal Service Retirement benefit paid with COLA adjustments (if applicable) to the date of death, paid as if the member had elected a 50% joint and survivor option at death. All other statutory death benefits will apply.

If the member becomes disabled while in DROP, and has not terminated employment, the member must choose between receiving a disability benefit or DROP and a service retirement benefit. If the member stays in DROP, the disability benefit is forfeited. If the member chooses the disability benefit, the member forfeits all DROP benefits and receives the disability benefit, with service credit during the DROP period included.

REFUNDS

Upon termination of active service in a police or fire department, members may withdraw their accumulated employee contributions on deposit with OP&F. Acceptance of a refund of employee contributions cancels the member's rights, benefits and total service with OP&F. Employer contributions to OP&F are not refundable.

HEALTH CARE

In 2018, OP&F sponsored a comprehensive health care program for eligible benefit recipients and their eligible dependents administered by a third party provider. This program is not guaranteed and is subject to change at any time upon action of the Board of Trustees. The program includes medical, prescription drugs, dental, vision and reimbursement of Medicare Part B premiums. Benefit recipients pay a portion of the health care cost through a monthly premium contribution.

Under Ohio law, health care costs paid from the funds of the plan are included in the employer contribution rates, which are currently 19.5% and 24% of salaries for police and fire employers, respectively. During 2018, the Board of Trustees has allocated employer contributions equal to 0.5% of annual covered payroll to the Health Care Stabilization Fund (HCSF). The HCSF is part of the Pension Reserve Fund.

OP&F maintains funds for health care in two separate accounts: one account for health care benefits and one account for Medicare Part B reimbursements. A separate health care trust accrual account is maintained for health care benefits under IRS Code Section 115 trust. IRS Code Section 401(h) account is maintained for Medicare Part B reimbursements.

On Jan. 1, 2019, OP&F changed the way it supports retiree health care. A stipend-based health care model has replaced the self-insured group health care plan that had been in place. OP&F has contracted with a vendor who can assist eligible retirees in choosing health care plans that are available where they live (both Medicare-eligible and pre-65 populations). A stipend funded by OP&F is available to these members through a Health Reimbursement Arrangement and can be used to reimburse retirees for qualified health care expenses. As a result of this change, it is expected that OP&F will be able to provide stipends to eligible participants for the next 15 years.

4. CONTRIBUTIONS AND RESERVES

CONTRIBUTIONS

The ORC Chapter 742 requires contributions by active members and their employers. Contribution rates are subject to annual review by the Ohio Retirement Study Council (ORSC). Additionally, an actuary is used to determine the actuarial implications of the requirement. The adequacy of contribution rates is determined annually using the entry age normal actuarial cost method. Rates are at the statutory maximums and the maximum rates have been taken into consideration in the projection of pension benefits for financial accounting measurement purposes.

Rates established by the ORC Jan. 1, 2018 through Dec. 31, 2018:

Percentage of active member payroll	Police	Fire	Percent Contributed
Member	12.25%	12.25%	100%
Employer	19.50%	24.00%	100%
TOTAL STATUTORY RATE *	**31.75%**	**36.25%**	**100%**

* Combined member and employer contributions as a percentage of the total active member payroll required and made Jan. 1, 2018 through Dec. 31, 2018.

The ORC establishes the length of the amortization period for unfunded pension liability as the primary measure of OP&F's financial status, with a period of 30 years or less being considered satisfactory. This 30-year target was to be attained by Dec. 31, 2006 and maintained thereafter. As of Jan. 1, 2018, the amortization period was 28 years.

In accordance with the ORC, the State of Ohio is required to contribute additional amounts to finance the cost of certain state-legislated benefit improvements. The total amount contributed by the State of Ohio was $300,811 for the year ended Dec. 31, 2018.

The chart below summarizes the member and employer contributions for 2018:

LOCAL FUNDS RECEIVABLE

Local governments are required by state statute to pay the unfunded portion of the actuarially-determined liability of the local police and firefighter's relief and pension funds that were merged to form OP&F in 1967. The ORC designates this obligation of the local governments to the Employers' Accrued Liability. Interest on the outstanding balance is being accrued at the rate of 4.25%, compounded semi-annually. Local governments began repayment in 1969 and payments are required to be made until 2035.

The underpaid balance due at Dec. 31, 2018 includes $45,605 due from local governments, which had previously underpaid their semi-annual payment and from local governments that joined OP&F subsequent to 1967 according to a 20-year payment plan. Between 1969 and 1973, underpaid payments of principal and interest were received at incremental semi-annual rates ranging from 2% to 4% of the original receivable balance. Between 1973 and 2035, semi-annual payments of principal and interest are required to be made by the local governments at a rate of 5% of the original receivable balance. The following is a summary of the amounts due on the local funds receivable:

Year ending December 2019	$1,790,011
Year ending December 2020	1,750,850
Year ending December 2021	1,744,866
Year ending December 2022	1,744,866
Year ending December 2023	1,744,866
Thereafter	19,833,040
TOTAL PROJECTED PAYMENTS	**28,608,499**
Less future interest portion	(8,032,680)
BALANCE AT DEC. 31, 2018	**$20,575,819**

SUMMARY OF MEMBER AND EMPLOYER CONTRIBUTIONS

Year Ending Dec. 31	Police Member Contributions	Police Employer Contributions	Percent Contributed	Fire Member Contributions	Fire Employer Contributions	Percent Contributed
2018	$155,912,920	$228,888,536	100%	$139,559,454	$260,744,290	100%

RESERVES

The ORC requires that several reserve funds be maintained annually for tracking fund activities for both police and fire. Each year-end the reserve funds are managed and allocations are done to reflect the revenue and expense activities and funding balance transfers due to changes in membership status from active to retired.

The Guarantee Fund and Expense Fund are always zero at the end of each year as they are used to fund the Pension Reserve Fund from investment gains and losses and to account for the administrative operation expenses.

As required by the ORC, the following accounts have been established for the reserves held for current and future benefits and are separated between police and fire:

The Police Officers' and Firefighters' Contribution Fund
This fund accumulates the contributions deducted from the salaries of members. Upon retirement, a member's accumulated contributions are transferred to the Police Officers' or Firefighters' Pension Reserve Fund.

The Police Officers' and Firefighters' Employers' Contribution Fund
This fund is the depository for employer contributions. Based on actuarial valuations, amounts are transferred from this account to the Police Officers' and Firefighters' Pension Reserve Fund.

The Police Officers' and Firefighters' Pension Reserve Fund
This fund is the account from which all retirement, disability, DROP, health care and survivor benefits are paid. Included in this Fund is the Health Care Stabilization Fund from which payments for the health care benefits are made. Amounts are transferred into the Pension Reserve Fund from the Contribution Funds and the Guarantee Fund.

The Guarantee Fund
This fund records all investment earnings of OP&F. In addition, contributions from the State of Ohio, exclusive of death benefit contributions, are recorded in this fund. Annually, investment earnings are transferred to the Pension Reserve Fund and the Expense Fund, as defined below.

Ohio law provides that any deficit occurring in any other fund that will not be covered by payments to that fund, as otherwise provided by sections 742.01 to 742.61 of the ORC, must be paid by transfers of amounts from the Guarantee Fund to such fund or funds. Should the amount in the Guarantee Fund be insufficient at any time to meet the amounts payable therefrom, the amount of such deficiency, with regular interest, must be paid by an additional employer rate of current contributions as determined by the actuary and must be approved by the Board of Trustees of OP&F and the amount of such additional employer contribution will be credited to the Guarantee Fund.

The Expense Fund
This fund is used to record all expenses for the administration and management of OP&F. Annually funds are transferred from the Guarantee Fund to cover expenses incurred.

Fiduciary net position held in trust for benefits for the various funds were as follows:

	2018
Members' Contribution	$3,005,841,679
Employers' Contribution	(291,501,876)
Pension Reserve	12,020,503,000
TOTAL	**$14,734,842,803**

5. FAIR VALUE MEASUREMENT

OP&F measures and records its investments using fair value measurement guidelines established by the generally accepted accounting principles. These guidelines categorize the inputs to valuation techniques into three hierarchical levels, as follows:

LEVEL 1: Quoted (unadjusted) prices for identical investments in active markets.

LEVEL 2: Inputs other than quoted prices that are observable for the investments directly or indirectly. These inputs are quoted prices for similar assets in active markets, quoted prices for identical or similar assets in markets that are not active and observable inputs other than quoted prices. Such inputs may include interest rates, yield curves, implied volatilities and credit spreads.

LEVEL 3: Level 3 inputs are prices based on unobservable sources. These inputs include the best information available under the circumstances, which can include OP&F's own data and takes into account all information about market participant assumptions.

The classification of the levels, within the hierarchy, is based on the asset type and the pricing transparency. Level 1 assets are valued based on prices quoted by external pricing vendors furnished to OP&F's custodial banks.

Level 2 securities in Cash and Short-Term Investments primarily consist of commercial paper which are reported at cost plus earned discount which approximates market or fair value. Equity securities in Level 2 are valued using bid evaluation while fair values for debt and derivative securities in Level 2 are based on bid evaluations or matrix pricing method. Bid evaluations are typically based on market quotations, yields, maturities, call features and ratings. The matrix pricing technique is used to value securities based on the securities relationship to benchmark quoted prices.

The Level 3 Real Assets securities consists solely of investments in timberlands. Due to the significance of certain unobservable assumptions in the valuation of timberland this investment is valued using Income Capitalization, Sales Comparison or Cost methods. The Income Capitalization method involves using a range of discount rates to determine the present value of the future income that can be produced over the holding period. The sales comparison approach is a method of estimating the fair value based on open market prices recently paid for similar timberland properties in the market area. The cost approach is a method of estimating the fair value based on the concept that a market participant would pay no more than the real asset property than the cost to purchase and develop a comparable property having utility.

The fair values of investments in certain equity, fixed income and marketable alternative funds are based on the investments' net asset value provided by the investee. Investments that are measured at fair value using the net asset value as practical expedient are not classified in the fair value hierarchy.

The following table shows the classification of OP&F fair value measurement for its investments as of Dec. 31, 2018 (Dollars in thousands)

		Fair Value Measurements Using:		
	Dec. 31, 2018	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Investments by fair value level				
Corporate Bond Obligations	$2,026,606	$-	$2,026,606	$-
Domestic Stocks	476,779	378,409	98,370	-
International Equities	1,411,516	1,410,775	741	-
Master Limited Partnerships	826,186	811,400	14,786	-
Agency Mortgage and Asset-Backed Securities	292,176	-	292,176	-
Non-Agency Mortgage and Asset-Backed Securities	238,628	-	238,628	-
Municipal Bond Obligations	4,408	-	4,408	-
Non-U.S. Bonds	45,167	-	45,167	-
Real Assets	100,867	-	-	100,867
U.S. Government Treasury Obligations	122,369	-	122,369	-
U.S. Government Treasury STRIPS	6,769	-	6,769	-
TOTAL INVESTMENTS BY FAIR VALUE LEVEL	**$5,551,471**	**$2,600,584**	**$2,850,020**	**$100,867**
Investments measured at Net Asset Value (NAV)				
Commercial Mortgage	$36,191			
Domestic Commingled Bonds	1,014,599			
Domestic Pooled Stocks	1,168,410			
Domestic Stocks	1,206,170			
International Pooled Stocks	1,051,377			
Private Debt	484,993			
Private Equity	1,244,495			
Real Assets	280,086			
Real Estate	1,780,899			
TOTAL INVESTMENTS MEASURED AT NAV	**$8,267,220**			
Investment Derivatives				
Futures	$-	$-	$-	$-
Options/Swaptions	58	-	58	-
Foreign Currency Forwards	(1,231)	-	(1,231)	-
Interest Rate Swaps	1,634	-	1,634	-
Credit Default Swaps	(176)	-	(176)	-
TOTAL INVESTMENT DERIVATIVES	$285	**$-**	$285	**$-**
TOTAL INVESTMENTS	$13,818,976			

Securities not leveled in investment portfolio	
Cash Equivalents	$947,736

INVESTMENTS MEASURED AT THE NET ASSET VALUE (DOLLARS IN THOUSANDS)

	Dec. 31, 2018	Unfunded Commitments[1]	Redemption Frequency (If Currently Eligible)	Redemption Notice Period[2]
Bond/Credit Funds [3]	$1,413,919	$209,672	Daily, Semi-annually, Not Eligible	0 Days - Not Eligible
Domestic Equity Funds [4]	557,490	-	Daily	0 Days
Exchange Traded Funds [5]	347,082	-	Daily	0 Days
Hedge Funds [6]				
Global Macro	662,121	-	Monthly	5-90 Days
Credit	45,505	-	Quarterly	60 Days
Relative Value	25,158	-	Monthly	30 Days
Hedge Fund of Funds [7]				
Multi-Strategy	335,718	-	Daily	5 Days
Market Neutral	523,370	-	Daily, Quarterly	0-70 Days
International Equity Funds [8]	1,051,377	-	Daily, Bi-monthly	0-15 Days
Private Equity/Venture Capital Funds [9]	1,244,495	674,253	Not Eligible	Not Eligible
Real Estate Funds				
Open-End [10]	1,241,072	13,617	Quarterly	30-90 Days
Closed-End [11]	539,827	252,814	Not Eligible	Not Eligible
Real Assets Funds				
Open-End [12]	82,272	80,000	Quarterly	90 Days
Closed-End [13]	197,814	122,680	Not Eligible	Not Eligible
TOTAL INVESTMENTS MEASURED AT THE NAV	**$8,267,220**			

(1) Unfunded Commitments do not include distributions subject to recall.

(2) Days = Business or Calendar Days.

(3) **Bond/Credit Funds:** Five credit/bond funds, eight private debt funds and one commercial mortgage fund are considered bond/credit funds. Each is valued at the net asset value at the end of the period based on the value of the underlying assets. Distributions from the private debt funds are received when the underlying assets are liquidated. This is estimated to occur between from 5 to 8 years.

(4) **Domestic Equity Fund:** Consists of one fund, which tracks the Russell 1000 Index. It is valued at net asset value on a daily basis. The fund is eligible for redemption on a daily basis.

(5) **Exchange Traded Funds:** Consisting of the SPDR S&P 500 ETF Trust which is an exchange-traded fund incorporated in the U.S. It tracks the S&P 500 Index. The trust consists of a portfolio representing all stocks in the S&P 500 Index. The ETF is structured as a Unit Investment Trust and is valued at the net asset value on a daily basis.

(6) **Hedge Funds:** Three Global Macro, one Credit and one Relative Value funds. These funds can be redeemed monthly to quarterly basis with five to ninety days' notice.

(7) **Hedge Fund of Funds:** Consisting of one multi strategy and two market neutral funds. The multi strategy fund can be redeemed daily with five days' notice while the market neutral can be redeemed daily to quarterly with zero to 70 days' notice.

(8) **International Equity Funds:** Consisting of four commingled funds which invest in international developed and emerging markets equity securities. These investments are valued at net asset value on a daily basis. These funds are eligible for redemption on a daily to bi-monthly basis with zero to fifteen days' notice.

(9) **Private Equity/Venture Capital Funds:** Consisting of 102 commingled funds, fund-of-funds, and secondary funds involving domestic, international and global buyout, distressed debt, special situations, growth equity and venture capital funds. These are long-term lock-up vehicles, typically with 10-year terms plus available extensions. These investments are valued at net asset value, typically on a quarterly basis, as reported by the fund. The unfunded commitments can be called to make new investments or pay fees and expenses. Distributions are received when underlying assets are liquidated and this occurs from 5 to 15 years.

(10) **Open-End Real Estate Funds:** Consisting of 12 commingled funds which invest primarily in operating and substantially leased institutional quality properties located in the U.S. These investments are valued at net asset value, typically on a quarterly basis, as reported by the fund. The unfunded commitments can be called to make new investments or pay fees and expenses. These funds are eligible for redemption on a quarterly basis subject to available liquidity with thirty to ninety days' notice. In one investment, Ohio Police & Fire Pension Fund is currently subject to a three-year lock-up period from initial close as well as a two-year lock-up on commitments drawn subsequent to initial close. In two investments, Ohio Police & Fire Pension Fund is currently subject to a two-year lock-up period.

(11) **Closed-End Real Estate Funds:** Consisting of 38 commingled funds which invest in properties on a global basis having more risk and correspondingly higher expected returns than those in the Open-End Real Estate Funds. These are long-term lock-up vehicles, typically with 10-year terms plus available extensions. These investments are valued at net asset value, typically on a quarterly basis, as reported by the fund. The unfunded commitments can be called to make new investments or pay fees and expenses.

(12) **Open-End Real Assets Funds:** Consisting of one commingled fund which invests primarily in a diversified portfolio of infrastructure assets on a global basis. These investments are valued at net asset value, typically on a quarterly basis, as reported by the fund. The unfunded commitments can be called to make new investments or pay fees and expenses. These funds are eligible for redemption on a quarterly basis subject to available liquidity with ninety days' notice.

(13) **Closed-End Real Assets Funds:** Consisting of six commingled funds which invest either in timberland markets, agriculture or infrastructure assets on a global basis. These are long-term lock-up vehicles, typically with 10-year terms plus available extensions. These investments are valued at net asset value, typically on a quarterly basis, as reported by the fund. The unfunded commitments can be called to make new investments or pay fees and expenses. These funds are not eligible for redemption and distributions are received when underlying assets are liquidated and this occurs from 5 to 15 years.

6. CASH AND INVESTMENTS

A summary of cash and short-term securities and investments held at Dec. 31, 2018 is as follows:

Category	2018 Fair Value
Cash and Cash Equivalent*	$947,736,214
U.S. Government Obligations	122,369,353
U.S. Government Treasury STRIPS**	6,768,747
Agency Mortgage and Asset Backed Securities	292,176,057
Non-Agency Mortgage and Asset Backed Securities	238,628,119
Municipal Bond Obligations	4,407,914
Corporate Bonds and Obligations	2,026,606,461
Domestic Commingled Bonds	1,014,599,124
Non-U.S. Bonds	45,166,827
Domestic Stocks	1,682,948,542
Domestic Pooled Stocks	1,168,410,225
International Equities	2,462,893,448
Real Estate	1,780,898,543
Derivatives	285,049
Commercial Mortgage Funds	36,190,990
Private Equity	1,244,495,136
Private Debt	484,993,452
Real Assets	380,952,563
Master Limited Partnerships	826,185,983
GRAND TOTAL	**$14,766,712,747**

The investment type classification is based on the characteristics of the individual securities.
*Cash and cash equivalents are included in cash and short-term investments on the Statement of Fiduciary Net Position.
** STRIPS = Separate Trading of Registered Interest and Principal Securities.

MONEY WEIGHTED RETURN ON INVESTMENT

The money weighted rate of return expresses investment performance, net of investment expense, adjusted for the changing amounts actually invested. For the year ended Dec. 31, 2018, the annual money weighted rate of return on investments, net of investment expense was (2.854)%.

CUSTODIAL CREDIT RISK

The custodial credit risk for deposits is the risk that, in the event of the failure of a depository financial institution, an organization will not be able to recover deposits or will not be able to recover collateral securities that are in the possession of an outside party. The custodial credit risk for investments is the risk that, in the failure of the counterparty to a transaction, an organization will not be able to recover the value of investment or collateral securities that are in the possession of an outside party.

In accordance with ORC 135.18, the Ohio Treasurer of State, the statutory custodian for OP&F, requires that the amount in any demand deposit account not covered by federal deposit insurance be collateralized with securities permitted under ORC 135.18 at 102% of the value of the cash. Collateral is held in the Ohio Treasurer of State's name by a third party trustee for the benefit of OP&F. All of OP&F's depository-eligible securities are held in the custodial bank or its agent's nominee, for the benefit of OP&F. Any physical securities are held in the vaults of the custodial bank, or its agent. The custodial bank provides book entry accounting for OP&F's real estate and private market assets. The custody agreement between the custodial bank and the Ohio Treasurer of State has historically restricted the right of the custodial bank or its agents from putting any right, charge, security interest, lien or claim of any kind on the securities they hold. Despite OP&F objections, the Ohio Treasurer of State allowed language in the custody agreement that grants a security interest in OP&F assets. The cash held in foreign local banks for immediate settlement of pending trade transactions are not collateralized.

DEPOSITS EXPOSED TO CUSTODIAL CREDIT RISK AS OF DEC. 31, 2018

	2018
Uninsured deposits collateralized with securities held by the pledging financial institution	$225,835
Uninsured and uncollateralized deposits	$1,119,923

CREDIT RISK

Credit risk is the risk that an issuer or other counterparty to an investment will not fulfill its obligation to the holder of the investment. This risk is measured by the assignment of a rating by a nationally recognized statistical rating institution. OP&F's risk management policy over credit risk is based on the type of fixed income instruments. For credit risk purposes, OP&F classifies its fixed income securities into four main types: core, high yield, private credit and short-term fixed income. The credit risk policies related to these types are as follows:

CORE FIXED INCOME

OP&F's four core fixed income portfolios, all managed externally, contain government, mortgage and asset-backed securities, U.S. Agency and corporate bonds. These external managers invest in securities based on guidelines provided by the OP&F Board of Trustees. It is the policy of OP&F that a security in the core fixed income portfolio shall be rated BBB- or better by two standard rating services at the time of purchase. OP&F allows some of its investment managers to purchase securities that are "not rated" as long as they deem these securities to be at least equivalent to the minimum ratings at the time of purchase.

- Government instruments include those issued by the U.S. Treasury as well as fixed income instruments, other than mortgage-backed securities, of an agency or instrumentality of the U.S. government.

- Agency mortgage-backed instruments include collateralized mortgage obligations and Real Estate Mortgage Investment Conduits (REMIC's), whose payment of principal and interest is insured by the full faith and credit of the U.S. government, or an agency or instrumentality thereof. Also included in this category are secured assets issued by Government National Mortgage Association (GNMA) project loans, pools and participation certificates, Federal National Mortgage Association (FNMA) and Federal Home Loan Mortgage Corporation (FHLMC).

- Non-agency mortgage and asset-backed instruments refer to mortgage and asset-backed securities that are made up of mortgage loans not guaranteed by U.S. government supported agency.

- Corporate bonds consist of debt instruments issued by domestic corporations or U.S. dollar-denominated debt issued by foreign entities and managed by a U.S. based investment manager.

The following tables show ratings by asset class in OP&F's fixed income portfolio as of Dec. 31, 2018:

RATINGS BY ASSET CLASS – 2018

S&P Ratings	Corporate Bond Obligations	Domestic Commingled Bonds	Municipal Bond Obligations	Non-U.S. Bonds	U.S. Governmnent Treasury Obligations	U.S. Governmnent Treasury STRIPS	Agency Mortgage and Asset-Backed Securities	Non-Agency Mortgage and Asset-Backed Securities	GRAND TOTAL
AAA	$10,277,547	$-	$-	$4,681,852	$-	$-	$678,718	$66,414,613	$82,052,730
AA+	3,737,687	883,365,184	96,902	118,087	121,779,444	6,768,747	289,737,633	7,367,924	1,312,971,608
AA	12,194,703	-	320,961	749,642	589,909	-	-	7,884,365	21,739,580
AA-	32,523,349	-	1,298,176	-	-	-	-	1,734,492	35,556,017
A+	30,398,819	67,471,001	982,476	1,672,786	-	-	189,733	-	100,714,815
A	42,359,178	-	-	24,066,502	-	-	-	3,909,065	70,334,745
A-	67,398,766	-	201,127	651,015	-	-	-	261,801	68,512,709
BBB+	92,918,824	-	117,874	422,796	-	-	259,499	1,676,339	95,395,332
BBB	71,232,680	-	-	1,490,321	-	-	-	801,613	73,524,614
BBB-	253,090,182	-	1,311,634	2,751,637	-	-	-	836,084	257,989,537
BB+	257,523,113	-	-	723,672	-	-	-	-	258,246,785
BB	310,488,233	-	-	457,140	-	-	-	672,095	311,617,468
BB-	294,900,191	-	-	2,426,829	-	-	-	3,364,523	300,691,543
B+	195,598,186	-	-	2,783,802	-	-	-	-	198,381,988
B	150,809,387	-	-	5,038	-	-	-	728,373	151,542,798
B-	108,542,221	-	-	-	-	-	-	920,707	109,462,928
CCC+	39,869,888	-	-	-	-	-	-	-	39,869,888
CCC	4,729,205	-	78,764	-	-	-	-	12,613,884	17,421,853
CCC-	4,973,205	-	-	-	-	-	-	2,096,400	7,069,605
CC	589,750	-	-	-	-	-	-	8,460,951	9,050,701
C	-	-	-	-	-	-	-	345,955	345,955
D	-	-	-	-	-	-	-	6,623,889	6,623,889
NR	42,451,347	63,762,939	-	2,165,708	-	-	1,310,474	111,915,046	221,605,514
GRAND TOTAL	**$2,026,606,461**	**$1,014,599,124**	**$4,407,914**	**$45,166,827**	**$122,369,353**	**$6,768,747**	**$292,176,057**	**$238,628,119**	**$3,750,722,602**

*NR = Not Rated.

HIGH YIELD FIXED INCOME

As of Dec. 31 2018, OP&F had four high yield fixed-income portfolios that invest in publicly traded securities. All these portfolios were managed externally. The high yield bond asset class consists of the portion of the U.S. corporate bond market that is rated below BBB- by Standard & Poor's 500 (S&P) or below Baa3 by Moody's. Accordingly, credit risks associated with these bonds are greater than with core fixed income bonds. OP&F's policy is to invest in high yield bonds issued by U.S. Corporations with a minimum credit rating of CCC or equivalent. OP&F allows some of its investment managers to purchase securities that are "not rated" as long as they deem these securities to be at least equivalent to the minimum ratings at the time of purchase. It is possible after purchase that the security is downgraded. In the event of an investment guideline violation and in the event of a security downgrade, such that the ratings (Moody's, S&P, or Fitch Investor's Service) are below the allowable minimum security quality, the investment manager will inform OP&F in writing within five business days of such violation. Such notice will include the action the Manager intends to take with regard to the violation and over what time period that action will be taken. Both the method and timing of the violation resolution must be agreeable to OP&F.

PRIVATE CREDIT

As of Dec. 31 2018, OP&F had seven private credit strategies with six portfolio managers of which each is invested in a pooled fund. These pooled funds predominantly are not publicly listed and as such do not have specific rating. However, most of OP&F's private credit securities range from the equivalent of B to BB+ in terms of comparable S&P credit rating.

SHORT-TERM INVESTMENTS

The short-term investment portfolio consists mainly of commercial paper. OP&F's policy is that, at the time of purchase, the short-term instrument must be rated within the two highest classifications established by two standard rating services. However, it is possible that after the purchase the ratings could change. The following table lists the commercial paper ratings as of Dec. 31, 2018:

S&P/Moody's Rating	Fair Value 2018	Percent 2018
A1/P1	$266,282,121	57.93%
A1/P2	108,396,550	23.58%
A2/P1	5,998,900	1.31%
A2/P2	78,698,192	17.12%
A2/P3	257,784	0.06%
GRAND TOTAL	**$459,633,547**	**100.00%**

INTEREST RATE RISK

Interest rate risk is the risk that changes in interest rates will adversely affect the fair value of fixed income investments. This relationship can be measured using duration, which shows the sensitivity of the price of a fixed-income investment to a change in interest rates. OP&F uses effective duration to measure the interest rate risk of the core fixed income portfolio. The effective duration takes into account that expected cash flows will fluctuate as interest rates change.

All the core fixed income managers are also required to monitor and report the effective duration of their portfolio(s) on a monthly basis. As of Dec. 31 2018, the permissible ranges for the four core fixed income portfolio managers were:

Portfolio Benchmark	2018 Benchmark Duration (years)	Portfolio Manager	Portfolio Permissible Range
Bloomberg Barclays Aggregate Bond Index	5.81	PIMCO Total Return Bond *	Benchmark +/- 2 years
3 Month LIBOR	0.25	PIMCO Dynamic Bond *	3 years to + 8 years (Absolute)
Custom weighted-average mix of Barclays country indexes	15.45	Bridgewater Associates**	Replicate benchmark
Bloomberg Barclays Aggregate Bond Index	5.81	PGIM Core Bond	Benchmark +/- 2 years
Bloomberg Barclays Aggregate Bond Index	5.81	Loomis Core Bond	Benchmark +/- 2 years

*PIMCO is considered as one manager with two accounts; both are benchmarked against two times the Index.
**Bridgewater Associates holds a 2:1 levered portfolio.

Since portfolio level duration is the best measure of interest rate risk, OP&F does not require its managers to measure or report on the duration of each security sector. OP&F does not measure the duration of their high yield portfolios because interest rate risk is a very small part of the total risk of high yield securities. The major risks for high yield bonds are credit risk and interest rate spread risk.

The following table lists the effective duration for OP&F's fixed-income portfolio as of Dec. 31, 2018:

Investment Type	Fair Value 2018	Effective Duration 2018 (years)
U.S. Government Treasury Obligations	$122,369,353	8.37
U.S. Government STRIPS	6,768,747	8.04
U.S. Agency Mortgage and Asset Backed Securities	292,176,057	3.99
Non-Agency Mortgage and Asset Backed Securities	238,628,119	2.26
Municipal Bond Obligations	4,407,914	9.90
Corporate Bond Obligations	2,026,606,461	3.04
Non-U.S. Bonds	45,166,827	1.26
Domestic Commingled Bonds	1,014,599,124	13.68
TOTAL FIXED INCOME EFFECTIVE DURATION	**$3,750,722,602**	**6.11**

COLLATERALIZED MORTGAGE OBLIGATIONS

In general, mortgage-backed securities entitle their holders to receive both principal and interest payments from the payments made by the borrowers of the underlying mortgages over the lives of those loans. The life of the mortgage that underlies a mortgage-backed security can be shortened by several economic events, including borrower refinancing. When interest rates fall and remain very low, a growing number of borrowers will refinance their existing loans causing mortgage-backed security holders to be repaid more quickly than anticipated. This early repayment is a form of market risk assumed by OP&F and other owners of mortgage-backed securities.

To the contrary, when interest rates begin to rise, the refinancing of existing mortgages begins to slow. If the rates remain high for long periods of time, fewer borrowers refinance their mortgages. This causes mortgage-backed security holders to be repaid over longer periods of time. This prolonged repayment is known as extension risk and is another form of market risk assumed by OP&F and other owners of mortgage-backed securities.

These securities are based on cash flows from interest payments on underlying loans. Therefore, they are sensitive to prepayments by the debtor, which may result from a decline in interest rates.

VARIABLE RATE SECURITIES

OP&F's core fixed income and high yield managers are permitted to hold variable-rate coupons whose rates may vary directly or inversely with changes in a related interest rate. As of Dec. 31, 2018, OP&F did not hold any security with a variable-rate coupon that had a multiplier greater than one or any security with an inverse variable rate.

CONCENTRATION OF CREDIT RISK

Concentration of credit risk is the risk of loss attributed to the magnitude of an entity's investment in a single issuer. OP&F does not permit more than 10% of the core fixed income portfolio to be invested in the securities of any one issuer, and no more than 5% in any one issue on a dollar duration basis, with the exception of U.S. Government or Agency securities. For the high yield portfolio, no more than 10% of the entire portfolio at market shall be invested in securities of a single issue or issuer, unless otherwise approved by the Board of Trustees. At Dec. 31, 2018, OP&F did not hold investments in any one issuer that represented 5% or more of OP&F's net assets.

SECURITIES LENDING

OP&F participates in domestic and international securities lending programs, as authorized by the Board of Trustees. Securities are loaned to investment broker/dealers (borrower). Securities loaned are collateralized by the borrower at 102% of the domestic and 105% of the international loaned securities' fair value. OP&F has minimized its exposure to credit risk due to borrower default by having the lending agent bank determine daily that required collateral meets the specified collateral requirements. There are no restrictions on the amount of the securities that can be loaned. Contracts with lending agents require them to indemnify OP&F if the borrowers fail to return the securities or fail to pay OP&F for income distributions by the securities' issuer while the securities are on loan. All securities loans can be terminated on demand and the maturities of the investments made with an acceptable form of the collateral generally matches the maturities of the securities loans.

At year end, OP&F has no credit risk exposure to borrowers because the amounts that OP&F owes the borrowers exceed the amounts the borrowers owe OP&F. For custodial credit risk purposes, the $738,176,594 cash collateral received was held in a separate account by the securities lending agent in the name of OP&F.

OP&F has not experienced any losses due to credit or market risk on securities lending activity since implementation of the program. OP&F does have the ability to pledge or sell collateral securities in case of a borrower default. The following represents the balances relating to the securities lending transactions at Dec. 31, 2018:

SECURITIES LENT AS OF DEC. 31, 2018

Securities Lent	Underlying Security	Collateral Received	Collateral Fair Value	Type of Collateral
Domestic Corporate Fixed Income	$210,143,233	$216,664,858	$216,664,858	Cash
Domestic Equities	371,565,108	380,333,798	380,333,798	Cash
U.S. Government and Treasuries	74,662,552	76,341,556	76,341,556	Cash
Non-U.S. Bonds	25,631,712	26,445,759	26,445,759	Cash
International Equities	37,067,433	38,390,623	38,390,623	Cash
TOTAL SECURITIES LENT	**$719,070,038**	**$738,176,594**	**$738,176,594**	

FOREIGN CURRENCY RISK

Foreign currency risk is the risk that changes in exchange rates will adversely affect the fair value of an investment or a deposit. OP&F's target allocation to international equity holdings was 18.75% as of Dec. 31, 2018. While OP&F has no specific policy regarding the international custodial credit risk, cash for one international investment manager is limited to 5% or less of their total portfolio, cash for a second international manager is limited to 7% and cash for a third manager is limited to 10%. Apart from cash needed for immediate settlement of pending trade transactions, (local cash awaiting repatriation), any excess cash received in OP&F's trust accounts is invested in a U.S. Dollar denominated Short-Term Investment Fund (STIF). For the years ending Dec. 31, 2018, OP&F's exposure to foreign currency risk is as follows:

2018 EXPOSURE TO CURRENCY RISK

Currency	Fair Value (Cash Deposits)	Fair Value (Fixed Income)	Fair Value (Currency Contracts)	Fair Value (Equities)	Fair Value (Private Equity and Real Estate)	Fair Value (Derivatives)	Total Fair Value Cash Deposits and Securities
Argentinian Peso	$39,357	$1,262,964	$40,517	$-	$-	$-	$1,342,838
Australian Dollar	66,021	422,796	(475,146)	-	-	-	13,671
Brazilian Real	5,671	-	(56,223)	12,448,238	6,536,482	-	18,934,168
British Pound	420,650	4,030,614	-	267,706,455	-	(269,120)	271,888,599
Canadian Dollar	41,976	-	(589,509)	46,926,400	-	14,155	46,393,022
China Offshore Yuan	61	-	-	-	-	-	61
Colombian Peso	-	-	(46,582)	-	-	-	(46,582)
Denmark Kroner	6,806	3,621,241	199,256	25,568,608	-	-	29,395,911
Euro	70,265	6,353,035	(230,068)	320,141,314	168,176,387	263,613	494,774,546
Hong Kong Dollar	-	-	(34,464)	63,902,588	-	-	63,868,124
Indonesian Rupiah	-	-	-	2,184,933	-	-	2,184,933
Japanese Yen	205,743	24,066,503	77,546	155,615,534	4,378,804	(636,999)	183,707,131
Malaysian Ringgit	80,581	-	-	1,435,926	-	-	1,516,507
Mexican Peso	31,979	-	(100,329)	3,907,951	-	(90,184)	3,749,417
New Turkish Lira	228	-	-	3,494,321	-	-	3,494,549
New Zealand Dollar	3,491	-	67,268	-	-	-	70,759
Norwegian Kroner	-	-	-	6,498,479	-	-	6,498,479
Peru New Sol	-	452,780	-	-	-	-	452,780
Philippines Peso	-	-	-	330,173	-	-	330,173
Polish Zloty	-	-	-	1,399,129	-	-	1,399,129
Russian Ruble	-	-	(105,769)	-	-	-	(105,769)
Singapore Dollar	123,418	-	(10,568)	19,387,562	-	-	19,500,412
South African Rand	9,781	-	(290)	21,303,802	-	-	21,313,293
South Korean Won	-	-	-	31,613,201	-	-	31,613,201
Swedish Kroner	282	-	23,071	43,201,621	-	-	43,224,974
Swiss Franc	19,839	-	(1,701)	106,172,686	-	-	106,190,824
Taiwanese New Dollar	-	-	11,573	20,352,963	-	-	20,364,536
Thai Baht	-	-	-	8,655,262	-	-	8,655,262
United Arab Emirates Dirham	-	-	1	817,420	-	-	817,421
GRAND TOTAL	**$1,126,149**	**$40,209,933**	**$(1,231,417)**	**$1,163,064,566**	**$179,091,673**	**$(718,535)**	**$1,381,542,369**

DERIVATIVES

Derivatives are generally defined as investment instruments whose value depends on, or is derived from, the value of an underlying asset, reference rate, or index.

OP&F has classified the following as derivatives:

- Mortgage and Asset-Backed Securities: OP&F invested in Planned Amortization Class and Sequential Pay Real Estate Mortgage Investment Conduit bonds issued by GNMA, FHLMC, and FNMA. Planned Amortization Class bonds are retired according to a payment schedule so as to have a stable average life and yield even if expected prepayment rates change within a specified broad range of prepayment possibilities. Sequential pay bonds begin to pay principal when classes with an earlier priority have paid to a zero balance. Such bonds enjoy uninterrupted payment of principal until paid to a zero balance. In terms of credit risk, the U.S. government explicitly backs GNMA mortgage securities programs and is viewed by the market as implicitly backing FHLMC and FNMA mortgage securities programs.

- Futures Contracts: Futures contracts are contracts to buy or sell units of an index or financial instrument on a specified future date at a price agreed upon when the contract is originated. OP&F had futures exposure with nine external managers constituting $2.31 billion of notional value as of Dec. 31, 2018. This amount represented 15.71% of the total portfolio. OP&F uses this exposure to synthetics to maintain market exposure while also increasing liquidity and flexibility.

- Forward-Currency Contracts: Forward currency contracts are legal agreements between two parties to purchase and sell a foreign currency, for a price specified at the contract date, with delivery and settlement in the future. OP&F, through its external investment managers, enters into forward currency contracts to hedge underlying foreign currency exposure in its non-U.S. equity and fixed income portfolios back to the U.S. dollar or to provide the quantity of foreign currency needed to settle trades.

All the contracts are valued at the spot foreign exchange rate at Dec. 31, 2018. The changes in the value of the open contracts are recognized as unrealized appreciation/depreciation. A realized gain or loss is recorded at the time of the delivery/closing of the contract. The realized gain or loss is the difference between the value of the original contract and the closing/delivery value of such contracts. Both realized and unrealized gains and losses are included in the Statement of Changes in Fiduciary Net Position as net appreciation/depreciation. The following tables represent the balances of the outstanding currency transactions as of Dec. 31, 2018:

OPEN CURRENCY CONTRACTS AS OF DEC. 31, 2018

Purpose	Fair Value (Outstanding Purchases)	Fair Value (Outstanding Sales)	Unrealized Appreciation/ (Depreciation)
Trade Settlement	$1,564	$ -	$ 1,564
Position Hedging	(194,770)	(1,038,211)	(1,232,981)
GRAND TOTAL	**$(193,206)**	**$(1,038,211)**	**$ (1,231,417)**

On delivered/closed currency contracts OP&F had a realized loss of $(8,579,572) in 2018.

- Options: An option is the right, but not the obligation, to buy or sell a specific amount of a given security or other financial assets at a specified price during a specified period of time. OP&F's exposure represented less than 1% of the total portfolio fair value at year-end.

- Swaps: A swap is a derivative contract through which two parties exchange financial instruments that involve cash flows based on a notional principal amount that both parties agree to. Usually, the principal does not change hands but each cash flow comprises one leg of the swap. One cash flow is generally fixed, while the other is variable and based on a benchmark interest rate, floating currency exchange rate or index price.

OP&F invested in interest rate and credit default swaps through three external managers. The fair value for the total swap position at Dec. 31, 2018 was:

SWAP HOLDINGS AS OF DEC. 31, 2018:

Type of Swap	Fair Value (Receive Side)	Fair Value (Pay Side)	Fair Value (Total Swap Position)
Credit Default Swap	$(9,455)	$(166,566)	$(176,021)
Interest Rate Swap	3,677,641	(2,043,259)	1,634,382
TOTAL SWAP POSITION	**$3,668,186**	**$(2,209,825)**	**$1,458,361**

OP&F has not violated any legal, regulatory, or contractual provisions by its participation in these types of derivative instruments and there is no known undue credit, market, or legal risk. These instruments were purchased in order to enhance OP&F's overall rate of return.

7. DEFERRED COMPENSATION PLAN

OP&F does not sponsor a deferred compensation program. OP&F employees are eligible to participate in the deferred compensation plan sponsored by the State of Ohio. The state-sponsored plan was created in accordance with IRS Code Section 457. The plan is available to all OP&F employees and permits them to defer a portion of their salary until future years. Deferred compensation assets are not available to employees until termination, retirement, death, or unforeseeable emergency.

IRS Code Section 457 requires that the amount of compensation assets deferred under a plan, all property and rights and all income attributable to those amounts, property or rights, be held in trust for the benefit of the participants. This insulates IRS Code Section 457 benefits from the claims of an employer's general creditors. Accordingly, OP&F does not include the deferred compensation assets or liabilities of the Ohio Deferred Compensation Plan in its financial statements.

8. COMPENSATED ABSENCES

As of Dec. 31, 2018, $2.7 million were accrued for unused vacation and sick leave for OP&F employees. To help OP&F reduce and manage the vacation liability, all employees with at least one year of continuous service as of the beginning of the current calendar year are required to use five consecutive workdays of vacation leave each year. Upon termination of employment, employees will be paid for unused vacation time that has been earned through the last day of work. Three-fourths of accrued but unused sick leave will be paid at the employee's base rate upon termination of employment.

9. SELF-INSURED HEALTH CARE FOR EMPLOYEES OF OP&F

OP&F is self-insured for employee benefits for medical, dental, vision and prescription coverage. A third-party administrator manages the program. OP&F holds a stop-loss policy per covered life per year with a $100,000 specific deductible.

10. COMMITMENTS AND CONTINGENCIES

OP&F is a defendant in a number of lawsuits pertaining to matters that are incidental to performing routine business functions. OP&F's management is of the opinion that ultimate resolution of such claims will not result in a material, adverse effect on OP&F's financial position as of Dec. 31, 2018.

OP&F is committed to making additional capital contributions to the following investment types as of Dec. 31, 2018:

Asset Class	Unfunded Commitments	Fair Value At Dec. 31, 2018
Private Equity*	$674,252,987	$1,244,495,136
Private Debt	209,671,629	484,993,452
Real Estate	266,431,312	1,780,898,543
Real Assets	205,591,082	380,952,563
TOTAL	**$1,355,947,010**	**$3,891,339,694**

*Included in the Private Equity are seven Euro based unfunded commitments totaling as of Dec. 31, 2018: €66,054,154 (€ = Euro) ($75,509,809 USD)

Unfunded Commitments do not include distributions subject to recall.

11. State of Ohio Public Safety Officers Death Benefit Fund

Pursuant to ORC Section 742.62, the Board of Trustees of the OP&F administers the State of Ohio Public Safety Officers Death Benefit Fund. This program was established by the State of Ohio to provide monthly benefit payments to eligible surviving family members of Ohio public safety officers who have been killed in the line of duty or die of a duty-related injury or illness. Funds are disbursed to OP&F on a quarterly basis each state fiscal year (July 1-June 30) and are paid monthly by OP&F to eligible recipients. The unused balance at June 30 is returned to the State. The Public Safety Officers Death Benefit Fund is considered to be an agency fund administered by OP&F and, accordingly, its assets of $211,025 and the related liability for unpaid benefits are included in the accompanying financial statements as of Dec. 31, 2018.

12. Employers' Net Pension Liability (Asset)

The components of the net pension liability of employers as of Dec. 31, 2018:

Year Ending Dec. 31	(a) Total Pension Liability	(b) Plan Fiduciary Net Position	(a)-(b)=(c) Net Pension Liability (Asset)	(b) / (a) Plan Fiduciary Net Pension as a Percentage of Total Pension Liability	(d) Covered Payroll	(c) / (d) Net Pension Liability (Asset) as a Percentage of Covered Payroll
2018	$22,103,699,175	$13,941,056,807	$8,162,642,368	63.07%	$2,302,436,015	354.52%

The total pension liability is determined by OP&F's actuaries in accordance with GASB Statement No. 67, as part of their annual valuation. Actuarial valuations of an ongoing retirement plan involve estimates of the value of reported amounts and assumptions about probability of occurrence of events far into the future. Examples include assumptions about future employment mortality, salary increases, disabilities, retirements and employment terminations. Actuarially determined amounts are subject to continual review and potential modifications, as actual results are compared with past expectations and new estimates are made about the future.

The Schedule of Employers' Net Pension Liability presents multi-year trend information about whether the fiduciary net positions are increasing or decreasing over time relative to the total pension liability. These schedules are presented in the RSI section. The total pension liability as of Dec. 31, 2018, is based on the results of an actuarial valuation date of Jan. 1, 2018 and rolled-forward using generally accepted actuarial procedures.

A summary of the actuarial assumptions as of the latest actuarial valuation is shown below.

Actuarial Assumptions:

Valuation date	Jan. 1, 2018
Actuarial cost method	Entry age
Investment rate of return	8.00%
Projected salary increases	3.75% - 10.50%
Payroll increases	3.25%
Inflation assumptions	2.75%
Cost-of-living adjustments	2.20% and 3.00% simple
Healthy Mortality	RP-2014 Total Employee and Healthy Annuitant Mortality Tables rolled back to 2006, adjusted and projected with the Buck Modified 2016 Improvement Scale. Rates for surviving beneficiaries are adjusted by 120%.
Disability Mortality	RP-2014 Disability Mortality Tables rolled back to 2006, adjusted and projected with the Buck Modified 2016 Improvement Scale.

The long-term expected rate of return on pension plan investments was determined using a building-block approach and assumes a time horizon, as defined in the Statement of Investment Policy. A forecasted rate of inflation serves as the baseline for the return expected. Various real return premiums over the baseline inflation rate have been established for each asset class. The long-term expected nominal rate of return has been determined by calculating a weighted average of the expected real return premiums for each asset class, adding the projected inflation rate and adding the expected return from rebalancing uncorrelated asset classes. Best estimates of the long-term expected real rates of return for each major asset class included in OP&F's target asset allocation as of Dec. 31, 2018 are summarized below:

TARGET ALLOCATIONS (SOURCE: WILSHIRE ASSOCIATES)

Asset Class	Target Allocation	10 Year Expected Real Rate of Return**	30 Year Expected Real Rate of Return**
Cash and Cash Equivalents	-%	1.0%	0.8%
Domestic Equity	16.0%	5.3%	5.5%
Non-U.S. Equity	16.0%	6.1%	5.9%
Private Markets	8.0%	8.4%	8.4%
Core Fixed Income *	23.0%	2.2%	2.6%
High Yield Fixed Income	7.0%	4.2%	4.8%
Private Credit	5.0%	8.3%	7.5%
U.S. Inflation Linked Bonds *	17.0%	1.3%	2.3%
Master Limited Partnerships	8.0%	6.7%	6.4%
Real Assets	8.0%	7.0%	7.0%
Private Real Estate	12.0%	5.7%	6.1%
TOTAL	**120.0%**		

Note: Assumptions are geometric.
* Levered 2x.
** Numbers are net of expected inflation.

OP&F's Board of Trustees has incorporated the risk parity concept into OP&F's asset liability valuation with the goal of reducing equity risk exposure, which reduces overall Total Portfolio risk without sacrificing return and creating a more risk-balanced portfolio based on the relationship between asset classes and economic environments. From the notional portfolio perspective above, the Total Portfolio may be levered up to 1.20 times due to the application of leverage in certain fixed income asset classes.

Total pension liability was calculated using the discount rate of 8.00%. The projection of cash flows used to determine the discount rate assumed the contributions from employers and from members would be computed based on contribution requirements as stipulated by state statute. Projected inflows from investment earnings were calculated using the longer-term assumed investment rate of return 8.00%. Based on those assumptions, OP&F's fiduciary net position was projected to be available to make all future benefit payments of current plan members. Therefore, a long-term expected rate of return on pension plan investments was applied to all periods of projected benefits to determine the total pension liability.

Net pension liability is sensitive to changes in the discount rate. To illustrate the potential impact the following table presents the net pension liability calculated using the discount rate of 8.00%, as well as what the net pension liability would be if it were calculated using a discount rate that is 1.0% lower, 7.00%, or 1.0% higher, 9.00%, than the current rate.

CHANGES IN DISCOUNT RATE

Sensitivity of the Net Pension Liability to Changes in the Discount Rate at Dec. 31, 2018

	1% Decrease	Current Discount Rate	1% Increase
Discount Rate	7.00%	8.00%	9.00%
Total Pension Liability	$24,670,287,708	$22,103,699,175	$19,958,943,830
Plan Fiduciary Net Position	13,941,056,807	13,941,056,807	13,941,056,807
NET PENSION LIABILITY (ASSET)	**$10,729,230,901**	**$8,162,642,368**	**$6,017,887,023**

13. Net Other Post-Employment Benefits (OPEB) Liability and Actuarial Information

PLAN ADMINISTRATION

The OP&F Board of Trustees is responsible for administering the OP&F retiree health care plan, a cost-sharing, multiple-employer, defined benefit OPEB plan that provides various levels of health care to eligible benefit recipients and their eligible dependents. The OP&F Board of Trustees governs the health care plan under Chapter 742 of the ORC. The nine member Board of Trustees consists of four elected active members, two elected retired members and three state appointed professional investment experts.

PLAN MEMBERSHIP

As of Jan. 1, 2018, OP&F's health care plan membership consisted of the following:

PARTICIPANTS BY STATUS

Status	Number
Active Members*	28,212
Inactive Members Eligible for Allowances	336
Retiree Members or their Beneficiaries Currently Receiving Benefits	26,791
TOTAL	**55,339**

* Excludes Rehired Retirees.

BENEFITS PROVIDED

In 2018, OP&F's health care plan provided health care benefits to eligible benefit recipients receiving retirement, disability and survivor benefits, and to their eligible dependents. On the effective date of the member's retirement, new benefit recipients and their dependents qualify for OP&F's medical, prescription drug, dental, vision and reimbursement of Medicare Part B premiums as long as they meet OP&F's eligibility and enrollment guidelines. Members who were hired prior to July 1, 2013 are eligible to receive a pension at age 48 with 25 years of service credit or age 62 with 15 years of service credit. Members who were hired after July 1, 2013 are eligible to receive a pension at age 52 with 25 years of service credit or age 62 with 15 years of service credit. In addition, a member is eligible to enroll in the plan if they are receiving a disability pension or they are the survivor of a member. A member may enroll a spouse, dependent children, generally until age 26, and sponsored dependents. Only benefit recipients are eligible for reimbursement of Medicare Part B reimbursement. OP&F's health care program is not guaranteed.

On Jan. 1, 2019, OP&F changed the way it supports retiree health care. A stipend-based health care model has replaced the self-insured group health care plan that had been in place. OP&F has contracted with a vendor who can assist eligible retirees in choosing health care plans that are available where they live (both Medicare-eligible and pre-65 populations). A stipend funded by OP&F is available to these members through a Health Reimbursement Arrangement and can be used to reimburse retirees for qualified health care expenses. As a result of this change, it is expected that OP&F will be able to provide stipends to eligible participants for the next 15 years.

CONTRIBUTIONS

OP&F's health care plan is financed through a combination of employer contributions, recipient premiums, investment returns, and funds received on behalf of OP&F's participants in Medicare Part D. Based on GASB accounting rules, the retiree drug subsidy OP&F receives under Medicare Part D has not been recognized in the actuarial valuation. A portion of OP&F's investment gain/loss is allocated to the Health Care Stabilization Fund (HCSF). In 2018, OP&F's investment portfolio had an unfavorable gross return of negative 1.78%. During 2018, the Board of Trustees allocated employer contributions equal to 0.5% of annual covered payroll to the HCSF. In recognition of the declining funds available for retiree health care, the Board of Trustees looked for a more efficient use of the funds still available in an effort to extend the solvency of the health care trust fund. Therefore, on Jan. 1, 2019, OP&F changed to a stipend-based health care model which has resulted in an increase in the HCSF solvency period to the year 2033, as of Jan. 1, 2018, compared to the year 2025, as of Jan. 1, 2017, per the report of the Actuarial Solvency Projection of HCSF.

INVESTMENT POLICY

The health care plan follows the same investment policy and guidelines as the pension plan.

DISCOUNT RATE

The discount rate used to measure the total OPEB liability at Jan. 1, 2018 was 4.66% (using Dec. 31, 2017's S&P Municipal Bond 20 Year High Grade Rate Index of 4.13%). The discount rate used to measure the total OPEB liability as of Jan. 1, 2017 was 3.24% (using Dec. 31, 2016's S&P Municipal Bond 20 Year High Grade Rate Index of 3.16%). The projection of cash flows used to determine the discount rate assumed that OP&F will contribute at a rate equal to 0.50% of payroll. Based on those assumptions, the OPEB plan's fiduciary net position was projected to be available to make all projected OPEB payments for current active and inactive employees until 2031. After that time, the funding of benefit payments is uncertain. The discount rate is the single equivalent rate which results in the same present value as discounting future benefit payments made from assets at the long term expected rate of return and discounting future benefit payments funded on a pay-as-you-go basis on the municipal bond 20-year index rate.

RATE OF RETURN

The long-term expected rate of return on plan assets is reviewed as part of the actuarial five-year experience study. The most recent study covered fiscal years 2012 through 2016. Several factors are considered in evaluating the long-term rate of return assumption including long-term historical data, estimates inherent in current market data, each major investment asset class and expected inflation.

Based on this recent study it was recommended by the actuary and adopted by the Board of Trustees that the long-term expected rate of return be changed from 8.25% to 8.00%. This change was effective as of Jan. 1, 2017.

The long-term expected rate of return on pension plan investments was determined using a building-block approach and assumes a time horizon, as defined in the Statement of Investment Policy and Guidelines. A forecasted rate of inflation serves as the baseline for the return expected. Various real return premiums over the baseline inflation rate have been established for each asset class. The long-term expected nominal rate of return has been determined by calculating a weighted average of the expected real return premiums for each asset class, adding the projected inflation rate and adding the expected return from rebalancing uncorrelated asset classes.

PERIODS OF PROJECTED BENEFIT PAYMENTS

Future benefit payments for all current plan members were projected through 2117.

ASSUMED ASSET ALLOCATION

The target asset allocation and best estimates of geometric real rates of return for each major asset class is summarized as follows:

TARGET ALLOCATIONS (SOURCE: WILSHIRE ASSOCIATES)

Asset Class	Target Allocation	10 Year Expected Real Rate of Return**	30 Year Expected Real Rate of Return**
Cash and Cash Equivalents	-%	1.0%	0.8%
Domestic Equity	16.0%	5.3%	5.5%
Non-U.S. Equity	16.0%	6.1%	5.9%
Private Markets	8.0%	8.4%	8.4%
Core Fixed Income *	23.0%	2.2%	2.6%
High Yield Fixed Income	7.0%	4.2%	4.8%
Private Credit	5.0%	8.3%	7.5%
U.S. Inflation Linked Bonds *	17.0%	1.3%	2.3%
Master Limited Partnerships	8.0%	6.7%	6.4%
Real Assets	8.0%	7.0%	7.0%
Private Real Estate	12.0%	5.7%	6.1%
TOTAL	**120.0%**		

Note: Assumptions are geometric.
* Levered 2x.
** Numbers are net of expected inflation.

OP&F's Board of Trustees has incorporated the risk parity concept into OP&F's asset liability valuation with the goal of reducing equity risk exposure, which reduces overall Total Portfolio risk without sacrificing return and creating a more risk-balanced portfolio based on the relationship between asset classes and economic environments. From the notional portfolio perspective above, the Total Portfolio may be levered up to 1.20 times due to the application of leverage in certain fixed income asset classes.

NET OPEB LIABILITY OF OP&F

The total OPEB liability as of Dec. 31, 2018 was determined based on a no gain (loss) roll-forward of the Jan. 1, 2018 valuation. The components of the net OPEB liability of OP&F at Dec. 31, 2018, were as follows:

NET OPEB LIABILITY OF OP&F

Total OPEB Liability	$1,704,439,395
Plan Fiduciary Net Position	793,785,996
OP&F'S NET OPEB LIABILITY	**$910,653,399**
Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	46.57%
Net OPEB Liability as a Percentage of Covered Payroll	39.55%

ACTUARIAL ASSUMPTIONS

The actuarial assumptions used in the valuation were adopted as of Jan. 1, 2017 and were based on the results from the most recent actuarial experience review covering the period 2012 through 2016. The total OPEB liability as of Dec. 31, 2018, is based on the results of an actuarial valuation dated Jan. 1, 2018 and rolled-forward using generally accepted actuarial procedures.

The total OPEB liability used the following assumptions and other inputs:

ACTUARIAL ASSUMPTIONS:

Valuation Date	Jan. 1, 2018
Long-Term Return on Plan Assets	8.00%
Dec. 31, 2017 Discount Rate	4.66%
Dec. 31, 2017 Municipal Bond Index	4.13%
Actuarial Cost Method	Entry age normal cost.
Payroll Growth Rate	3.25% per annum
Stipend Increase Rate	The stipend is not assumed to increase over the projection period.
Projected Depletion Year of OPEB Assets	2031 (per GASB Statement No. 74 Report)
Health Care Cost Trend Rate	N/A-based on a medical benefit that is a flat dollar amount, therefore, it is unaffected by a health care cost trend rate.
Healthy Mortality	RP-2014 Total Employee and Healthy Annuitant Mortality Tables rolled back to 2006, adjusted and projected with the Buck Modified 2016 Improvement Scale. Rates for surviving beneficiaries are adjusted by 120%.
Disability Mortality	RP-2014 Disability Mortality Tables rolled back to 2006, adjusted and projected with the Buck Modified 2016 Improvement Scale.
Age of Spouse	Wives are assumed to be three years younger than their husbands.
Dependent Children	Each member is assumed to have two children, born when the member was age 26. Dependency is assumed to cease when the child is 22.

SENSITIVITY OF THE NET OPEB LIABILITY TO CHANGES IN THE DISCOUNT RATE

The following table presents the net OPEB liability of OP&F as of Dec. 31, 2018, calculated using the discount rate of 4.66%, as well as what OP&F's net OPEB liability would be if it were calculated using a discount rate that is 1.0% lower, 3.66%, or 1.0% higher, 5.66%, than the current discount rate:

SENSITIVITY OF THE NET OPEB LIABILITY TO CHANGES IN THE DISCOUNT RATE AT DEC. 31, 2018

	1% Decrease	Current Discount Rate	1% Increase
Discount Rate	3.66%	4.66%	5.66%
Net OPEB Liability	$1,109,424,466	$910,653,399	$743,802,266

14. DEFINED BENEFIT PENSION PLANS

NET PENSION LIABILITY

The net pension liability reported on the statement of fiduciary net position represents a liability to employees for pensions. Pensions are a component of exchange transactions, between an employer and its employees, of salaries and benefits for employee services. Pensions are provided to an employee, on a deferred-payment basis as part of the total compensation package offered by an employer for employee services each financial period. The obligation to sacrifice resources for pensions is a present obligation because it was created as a result of employment exchanges that already have occurred.

The net pension liability represents OP&F's proportionate share of each pension plan's collective actuarial present value of projected benefit payments attributed to past periods of service, net of each pension plan's fiduciary net position. The net pension liability calculation is dependent on critical long-term variables, including estimated average life expectancies, earnings on investments, cost of living adjustments and others. While these estimates use the best information available, unknown future events require this estimate to be adjusted annually.

ORC limits OP&F's obligation for this liability to annually required payments. OP&F cannot control benefit terms or the manner in which pensions are financed; however, OP&F does receive the benefit of employees' services in exchange for compensation including pension.

GASB No. 68 assumes the liability is solely the obligation of the employer, because (1) they benefit from employee services; and (2) state statute requires all funding to come from these employers. All contributions to date have come solely from these employers (which also includes costs paid in the form of withholdings from employees). State statute requires the pension plans to amortize unfunded liabilities within 30 years. If the amortization period exceeds 30 years, each pension plan's board must propose corrective action to the state legislature. Any resulting legislative change to benefits or funding could significantly affect the net pension liability. Resulting adjustments to the net pension liability would be effective when the changes are legally enforceable.

The proportionate share of each plan's unfunded benefits is presented as a long-term net pension liability on the accrual basis of accounting. Any liability for the contractually-required pension contribution outstanding at the end of the year is included in intergovernmental payable on the accrual basis of accounting.

PLAN DESCRIPTION – OHIO PUBLIC EMPLOYEES RETIREMENT SYSTEM (OPERS)

Public employees participate in OPERS, a cost-sharing multiple-employer public employee retirement system administered by OPERS. OPERS provides retirement and disability benefits to members and death and survivor benefits to beneficiaries. OPERS also provides health care benefits to some retirees and beneficiaries. OPERS issues a stand-alone financial report that includes financial statements, RSI and detailed information about OPERS' fiduciary net position. That report can be obtained by writing to OPERS, 277 E. Town Street, Columbus, OH 43215, or by visiting the OPERS website: www.OPERS.org.

New members have a choice of three retirement plans: The Traditional Plan (defined benefit plan); the Combined Plan (combination of defined benefit and defined contribution plans); and the Member Directed Plan (defined contribution plan with the option upon retirement to use the defined contribution account balance to purchase a defined benefit annuity). Benefits are established by Chapter 145 of the ORC. The defined benefit (DB) plan offers an annual retirement allowance based on final average salary multiplied by a percentage that varies based on years of service.

Senate Bill (SB) 343 was enacted into law with an effective date of Jan. 7, 2013. In the legislation, members were categorized into three groups with varying provisions of the law applicable to each group. Members who were eligible to retire under law in effect prior to SB 343 or who will be eligible to retire no later than five years after Jan. 7, 2013 comprise transition Group A. Members who have 20 years of service credit prior to Jan. 7, 2013 or who will be eligible to retire no later than 10 years after Jan. 7, 2013 are included in transition Group B. Group C includes those members who are not in either of the other groups and members who were hired on or after Jan. 7, 2013.

Benefit payments vary in amount depending on years of service credit, final average salary (FAS), age and plan of payment selection. FAS is the average of the three highest years of earnable salary for Group A and B; and the average of the five highest years of earnable salary for members in Group C. The age-and-service formula benefit cannot exceed 100% of the FAS (Law Enforcement is 90%) or the limits under IRC Section 415 and may be subject to the contribution-based benefit cap. The base benefit amount calculated by the formula will be reduced if a member begins receiving a retirement benefit before reaching the age-and-service requirements for an unreduced benefit.

In the Traditional Pension Plan (DB), the benefit formula for the state and local members in transition Group A and B applies a factor of 2.2% to the member's FAS for the first 30 years of service. A factor of 2.5% is applied to years of service in excess of 30. The benefit formula for state and local members in transition Group C applies a factor of 2.2% to the member's FAS for the first 35 years of service and a factor of 2.5% is applied to years of service in excess of 35.

In the Combined Plan, the benefit formula for the defined benefit component of the plan for state and local members in transition Group A and B applies a factor of 1% to the member's FAS for the first 30 years of service. A factor of 1.25% is applied to years of service in excess of 30. The benefit formula for transaction Group C applies a factor of 1% to the member's FAS and the first 35 years of service and a factor of 1.25% is applied to years in excess of 35.

When a benefit recipient has received benefits for 12 months, an annual COLA is provided. This COLA is calculated on the base retirement benefit at the date of retirement and is not compounded. For those retiring prior to Jan. 7, 2013, the COLA will continue to be 3% simple annual COLA. For those retiring after Jan. 7, 2013, beginning in calendar year 2019, the COLA will be based on the average percentage increase in the Consumer Price Index, capped at 3%.

A DB or Combined Plan member with five or more years of credit service who is determined to be disabled may qualify for a disability benefit.

FUNDING POLICY – OPERS

Employees covered by OPERS are required to contribute 10% of their salary to the plan and employers are required to contribute 14%. Both rates are at the statutory maximum.

OP&F's contractually required contribution to OPERS was $2,495,428 for year end Dec. 31, 2018. Of this amount $1,363,310 is reported as a deferred outflow – contribution subsequent to the measurement date.

PENSION LIABILITIES, PENSION EXPENSE, DEFERRED OUTFLOWS OF RESOURCES AND DEFERRED INFLOWS OF RESOURCES RELATED TO PENSIONS

The net pension liability was measured as of Dec. 31, 2017 and the total pension liability used to calculate the net pension liability was determined by an actuarial valuation as of that date. OP&F's proportion of the net pension liability was based on OP&F's share of contributions to the pension plan relative to the contributions of all participating entities. Following is information related to the proportionate share and pension expense:

OPERS	Traditional Pension Plan	Combined Plan	Member Directed Plan	TOTAL
Proportionate Share of the Net Pension Asset	$-	$175,453	$8,942	**$184,395**
Proportionate Share of the Net Pension Liability	$(9,597,642)	$-	$-	**$(9,597,642)**
Proportion of the Net Pension Asset/Liability	0.061178%	0.128884%	0.256198%	**.07%**
Pension Expense	$(177,673)	$(163,552)	$(334,057)	**$(675,282)**

At Dec. 31, 2018, OP&F reported deferred outflows of resources and deferred inflows of resources related to pensions from the following sources:

OPERS	Traditional Pension Plan	Combined Plan	Member Directed Plan	TOTAL
Deferred Outflows of Resources				
Differences between expected and actual experience	$95,115	$-	$14,575	**$109,690**
Net difference between projected and actual earnings on pension plan investments	1,484,507	12,931	668	**1,498,106**
Changes of Assumptions	1,487,505	15,026	1,018	**1,503,549**
Changes in proportion and differences	22,896	4,357	1,333	**28,586**
Contributions subsequent to the measurement date	1,127,480	73,669	162,161	**1,363,310**
TOTAL DEFERRED OUTFLOWS OF RESOURCES	**$4,217,503**	**$105,983**	**$179,755**	**$4,503,241**
Deferred Inflows of Resources				
Differences between expected and actual experience	$(150,642)	$(44,103)	$-	**$(194,745)**
Net difference between projected and actual earnings on pension plan investments	(4,912,820)	(52,117)	(3,898)	**(4,968,835)**
Changes of Assumptions	(1,056,535)	(2,150)	(141)	**(1,058,826)**
Changes in proportion and differences	(89,499)	(2,283)	(122)	**(91,904)**
TOTAL DEFERRED INFLOWS OF RESOURCES	**$(6,209,496)**	**$(100,653)**	**$(4,161)**	**$(6,314,310)**

Deferred outflows of resources related to pensions resulting from OP&F's contributions subsequent to the measurement date were $1,363,310 and will be recognized as a reduction of the net pension liability in the year ending Dec. 31, 2019. Other amounts reported as deferred outflows of resources and deferred inflows of resources related to pension will be recognized in pension expense as indicated in the following amortization schedule. Deferrals arising from differences between projected and actual earnings on pension plan investments will be amortized over five years for all three plans. Deferrals arising from differences between projected and actual experience will be amortized over the average remaining service life of the entire pool of employees. The Traditional Plan has 2.9546 years of average remaining service life. The Combined Plan has 9.3216 years of average remaining service life and the Member Directed Plan has 10.1908 years of average remaining service life.

OPERS Fiscal Year Ending Dec. 31:	Traditional Pension Plan	Combined Plan	Member Directed Plan	TOTAL
2019	$(244,768)	$(10,417)	$1,226	$(253,959)
2020	(242,551)	(11,216)	1,224	(252,543)
2021	(1,599,806)	(17,282)	893	(1,616,195)
2022	(1,032,348)	(14,971)	1,047	(1,046,272)
2023	-	(3,675)	1,905	(1,770)
2024	-	(3,699)	1,905	(1,794)
2025	-	(2,885)	1,897	(988)
2026	-	(1,727)	1,605	(122)
2027	-	(1,862)	973	(889)
2028	-	(605)	632	27
2029	-	-	126	126
TOTAL	**$(3,119,473)**	**$(68,339)**	**$13,433**	**$(3,174,379)**

ACTUARIAL ASSUMPTIONS – OPERS

OPERS' total pension liability was determined by their actuaries in accordance with GASB Statement No. 67, as part of their annual actuarial valuation for each defined benefit retirement plan. Actuarial valuations of an ongoing plan involve estimates of the value of reported amounts (e.g., salaries, credited service) and assumptions about the probability of occurrence of events far into the future (e.g., mortality, disabilities, retirements, employment termination). Actuarially determined amounts are subject to continual review and potential modifications, as actual results are compared with past expectations and new estimates are made about the future.

Projections of benefits for financial reporting purposes are based on the substantive plan (the plan as understood by the employers and plan members) and include the types of benefits provided at the time of each valuation and the historical pattern of sharing benefit costs between the employers and plan members to that point. The projection of benefits for financial reporting purposes does not explicitly incorporate the potential effects of legal or contractual funding limitations.

Actuarial calculations reflect a long-term perspective. For a newly hired employee, actuarial calculations will take into account the employee's entire career with the employer and also take into consideration the benefits, if any, paid to the employee after termination of employment until the death of the employee and any applicable contingent annuitant. In many cases actuarial calculations reflect several decades of service with the employer and the payment of benefits after termination.

Key methods and assumptions used in calculating the total pension liability in the latest actuarial valuation, prepared as of Dec. 31, 2017, are presented below:

KEY METHODS AND ASSUMPTIONS USED IN VALUATION OF TOTAL PENSION LIABILITY

Actuarial Information	Traditional Pension Plan	Combined Plan and Member Directed Plan
Valuation Date	Dec. 31, 2017	Dec. 31, 2017
Experience Study	5-Year Period Ended Dec. 31, 2015	5-Year Period Ended Dec. 31, 2015
Actuarial Cost Method	Individual entry age	Individual entry age
Actuarial Assumptions		
Investment Rate of Return	7.50%	7.50%
Wage Inflation	3.25%	3.25%
Projected Salary Increases	3.25%-10.75% (includes wage inflation at 3.25%)	3.25%-8.25% (includes wage inflation at 3.25%)
Cost-of-living Adjustments	Pre Jan. 7, 2013 Retirees: 3.00% Simple Post Jan. 7, 2013 Retirees: 3.00% Simple Through 2018, then 2.15% Simple	Pre Jan. 7, 2013 Retirees: 3.00% Simple Post Jan. 7, 2013 Retirees: 3.00% Simple Through 2018, then 2.15% Simple

Mortality rates are based on the RP-2014 Healthy Annuitant mortality table. For males, Healthy Annuitant Mortality tables were used, adjusted for mortality improvements back to the observation period base of 2006 and then established the base year as 2015. For females, Healthy Annuitant Mortality tables were used, adjusted for mortality improvements back to the observation period base year of 2006 and then established the base year as 2010. The mortality rates used in evaluating disability allowances were based on the RP-2014 Disabled mortality tables, adjusted for mortality improvements back to the observation base year of 2006 and then established the base year as 2015 for males and 2010 for females. Mortality rates for a particular calendar year for both healthy and disabled retiree mortality tables are determined by applying the MP-2015 mortality improvement scale to the above described tables.

DISCOUNT RATE – OPERS

The discount rate used to measure the total pension liability was 7.5%, post-experience study results, for the Traditional Pension Plan, Combined Plan and Member-Directed Plan. The projection of cash flows used to determine the discount rate assumed that contributions from plan members and those of the contributing employers are made at the contractually required rates, as actuarially determined. Based on those assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rates of return on pension plan investments for the Traditional Pension Plan, Combined Plan and Member-Directed Plan was applied to all periods of projected benefit payments to determine the total pension liability.

SENSITIVITY OF OP&F'S PROPORTIONATE SHARE TO THE NET PENSION LIABILITY TO CHANGES IN THE DISCOUNT RATE

The following table presents OP&F's proportionate share of the net pension liability calculated using the current period discount rate assumption of 7.5% as well as what OP&F's proportionate share of the net pension liability would be if it were calculated using a discount rate that is 1.0% lower, 6.5%, or 1.0% higher, 8.5%, than the current rate.

OP&F's proportionate share of the Net Pension Liability (Asset)	1% Decrease	Current Discount Rate	1% Increase
Discount Rate	6.5%	7.5%	8.5%
Traditional Pension Plan	$17,042,967	$9,597,642	$3,390,485
Combined Plan	$(95,374)	$(175,453)	$(230,702)
Member Directed Plan	$(5,124)	$(8,942)	$(12,810)

Asset Class	Target Allocation for 2017	Weighted Average Long-Term Expected Real Rate of Return (Arithmetic)
Fixed Income	23.00%	2.20%
Domestic Equities	19.00%	6.37%
Real Estate	10.00%	5.26%
Private Equity	10.00%	8.97%
International Equities	20.00%	7.88%
Other Investments	18.00%	5.26%
TOTAL	**100.00%**	**5.66%**

The table above displays OPERS' Board-approved asset allocation policy of the Defined Benefit portfolio for 2017 and long-term expected real rates of return.

The long-term expected rate of return on defined benefit investment assets was determined using a building-block method in which best-estimate ranges of expected future real rates of return are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage, adjusted for inflation.

During 2017, OPERS managed investments in three investment portfolios: the DB Portfolio, the Health Care portfolio, and the Defined Contribution portfolio. The DB portfolio contains the investment assets of the Traditional Pension Plan, the DB component of the Combined Plan and the annuitized accounts of the Member-Directed Plan. Within the DB Portfolio, contributions into the plans are all recorded at the same time, and benefit payments all occur on the first of the month. Accordingly, the money-weighted rate of return is considered to be the same for all plans within the portfolio. The annual money-weighted rate of return expressing investment performance, net of investment expenses and adjusted for the changing amounts actually invested, for the DB portfolio is 16.82% for 2017.

15. DEFINED BENEFIT OPEB PLAN

NET OPEB LIABILITY

The net OPEB liability reported on the statement of fiduciary net position represents the liability of employers and non-employer contributing entities to employees for defined benefit other post-employment benefits other than pensions. It is included in accounts payable and accrued expenses in the statement of fiduciary net position. OP&F, a cost-sharing, multiple-employer public employee retirement system, is required under GASB Statement No. 75 to recognize a liability for its proportionate share of the net OPEB liability from OPERS. The net OPEB liability is an actuarially determined portion of the present value of projected benefit payments to be provided to current active and inactive employees that is attributed to those employees' past periods of total service (total OPEB liability), less the amount of the OPEB plan's fiduciary net position. OP&F is also required to recognize OPEB expense and report deferred outflows and inflows of resources related to OPEB.

OPEB PLAN DESCRIPTION

OPERS is a cost-sharing, multiple-employer public employee retirement system comprised of three separate pension plans: the Traditional Pension Plan, a defined benefit plan; the Combined Plan, a combination defined benefit/defined contribution plan; and the Member-Directed Plan, a defined contribution plan. All state and local governmental employees in Ohio, except those covered by one of the other state or local retirement systems in Ohio, are members of OPERS. New public employees (those who establish membership in OPERS on or after Jan. 1, 2003) have 180 days from the commencement of employment to select membership in one of the three pension plans. Contributions to OPERS are effective with the first day of the member's employment. Contributions made prior to the member's plan selection are maintained in the Traditional Pension Plan and later transferred to the plan elected by the member, as appropriate.

As of December 2016, OPERS maintains one health care trust, the 115 Health Care Trust (115 Trust), which was established in 2014 to initially provide a funding mechanism for a health reimbursement arrangement (HRA), as the prior trust structure could not support the HRA. In March 2016, OPERS received two favorable rulings from the Internal Revenue Service (IRS) allowing OPERS to consolidate health care assets into the 115 Trust. The 401(h) Health Care Trust (401(h) Trust) was a prefunded trust that provided health care funding for eligible members of the Traditional Pension Plan and the Combined Plan through Dec. 31, 2015, when the plans funded through the 401(h) Trust were terminated. The Voluntary Employees' Beneficiary Association Trust (VEBA Trust) accumulated funding for retiree medical accounts for participants in the Member-Directed Plan through June 30, 2016. The 401(h) Trust and the VEBA Trust were closed as of June 30, 2016, and the net positions transferred to the 115 Trust on July 1, 2016. Beginning in 2016, the 115 Trust, established under Internal Revenue Code (IRC) Section 115, is the funding vehicle for all health care plans.

The OPERS health care plans are reported as other post-employment benefit plans (OPEB) based on the criteria established by the Governmental Accounting Standards Board (GASB). Periodically, OPERS modifies the health care program design to improve the ongoing solvency of the plans. Eligibility requirements for access to the OPERS health care options have changed over the history of the program for Traditional Pension Plan and Combined Plan members. Prior to Jan. 1, 2015, 10 or more years of service were required to qualify for health care coverage. Beginning Jan. 1, 2015, generally, members must be at least age 60 with 20 years of qualifying service credit to qualify for health care coverage or 30 years of qualifying service at any age. Beginning 2016, Traditional Pension Plan and Combined Plan retirees enrolled in Medicare A and B were eligible to participate in the OPERS Medicare Connector (Connector). The Connector, a vendor selected by OPERS, assists eligible retirees in the selection and purchase of Medicare supplemental coverage through the Medicare market. Retirees that purchase supplemental coverage through the Connector may receive a monthly allowance in their HRA that can be used to reimburse eligible health care expenses.

Upon separation or retirement, participants may be reimbursed for qualified medical expenses from these accounts. Members who elect the Member-Directed Plan after July 1, 2015 will vest in health care over 15 years at a rate of 10% each year starting with the sixth year of participation. Members who elected the Member-Directed Plan prior to July 1, 2015, vest in health care over a five-year period at a rate of 20% per year. Health care coverage is neither guaranteed nor statutorily required.

OPERS is administrated in accordance with Chapter 145 of the Ohio Revised Code (ORC). OPERS is not part of the state of Ohio financial-reporting entity, nor is OPERS a component unit of the state of Ohio. Responsibility for the organization is vested in the OPERS Board of Trustees; there is no financial interdependency with the state of Ohio. The OPERS Board of Trustees is the governing body of OPERS, with responsibility for administration and management. Of the OPERS Board of Trustees, seven members are elected by the group they represent; the retirees (two representatives), employees of the state, employees of counties, employees of municipalities, non-teaching employees of state colleges and universities and miscellaneous employees. The remaining four members are appointed or designated by position. The Governor, General Assembly and the Treasurer of the State of Ohio each appoint a representative. The Director of the Ohio Department of Administrative Services completes the OPERS Board of Trustees. The OPERS Board of Trustees appoints the Executive Director, an actuary, investment consultants and other consultants necessary for the transaction of business. The OPERS Board of Trustees meets monthly and receives no compensation, but is reimbursed for necessary expenses.

All state and local governmental employees, except those covered by another state retirement system in Ohio or the Cincinnati Retirement System, are required to become contributing members of OPERS when they begin public employment unless they are exempted or excluded as defined by the ORC. For actuarial purposes, employees who have earned sufficient service credit (60 contributing months) are entitled to a future pension benefit from OPERS. Employer, employee and retiree data as of Dec. 31, 2017, can be found in the OPERS 2017 CAFR.

OPEB BENEFITS - OPERS

All benefits of OPERS, and any benefit increases, are established by the legislature pursuant to ORC Chapter 145. The OPERS Board of Trustees, pursuant to ORC Chapter 145, has elected to maintain funds to provide health care coverage to eligible Traditional Pension Plan and Combined Plan retirees and survivors of members. Health care coverage does not vest and is not required under ORC Chapter 145. As a result, coverage may be reduced or eliminated at the discretion of the OPERS Board of Trustees. The health care portion of the employer contribution rate for the Traditional Pension Plan and Combined Plan is comparable, as the same coverage options are provided to participants in both plans.

Prior to Jan. 1, 2015, OPERS provided comprehensive health care coverage to retirees with 10 or more years of qualifying service credit and offered coverage to their dependents on a premium deduction or direct bill basis. Beginning Jan. 1, 2015, the service eligibility criteria for health care coverage increased from 10 years to 20 years with a minimum age of 60, or 30 years of qualifying service at any age. Beginning with January 2016 premiums, Medicare-eligible retirees could select supplemental coverage through the Connector, and may be eligible for monthly allowances deposited to an HRA to be used for reimbursement of eligible health care expenses. Coverage for non-Medicare retirees includes hospitalization, medical expenses and prescription drugs. OPERS determines the amount, if any, of the associated health care costs that will be absorbed by OPERS and attempts to control costs by using managed care, case management, and other programs. Participants in the Member-Directed Plan are not eligible for health care coverage offered to benefit recipients in the Traditional Pension Plan and Combined Plan. A portion of employer contributions for these participants is allocated to a retiree medical account. Upon separation or retirement, participants may be reimbursed for qualified medical expenses from these accounts.

An additional retiree medical account (RMA) was also established several years ago when three health care coverage levels were available to retirees. Monthly allowance amounts in excess of the cost of the retiree's selected coverage were notionally credited to the retiree's RMA. Retirees and their dependents could seek reimbursements from the RMA balances for qualified medical expenses. In 2013, the number of health care options available to retirees was reduced from three to one, eliminating the majority of deposits to the RMA. Wellness incentive payments were the only remaining deposits made to this RMA. Wellness incentives are no longer awarded starting with the 2017 plan year. These RMA balances were transferred to the HRA for retirees with both types of accounts. In addition, OPERS initiated an automatic claims payment process for reimbursements for retiree health care costs paid through pension deduction. This process will reimburse members for eligible health care premiums paid to OPERS, currently through pension deduction, up to the member's available RMA balance.

OPEB FUNDING POLICY – OPERS

The OPERS funding policy provides for periodic member and employer contributions to all three plans (Traditional Pension, Combined and Member-Directed) at rates established by the OPERS Board of Trustees, subject to limits set in statute. The rates established for member and employer contributions were approved based upon the recommendations of OPERS' external actuary. All contribution rates were within the limits authorized by the ORC.

Member and employer contribution rates, as a percent of covered payroll, were the same for each covered group across all three plans for the year ended Dec. 31, 2017. Within the Traditional Pension Plan and Combined Plan, member and employer contributions (employer contributions only for the Combined Plan) and an actuarially determined rate of return are adequate to accumulate sufficient assets to pay defined benefits when due. Member contributions within the Combined Plan are not used to fund the defined benefit retirement allowance. Employer contribution rates as a level percent of payroll dollars are determined using the entry age actuarial funding method. This formula determines the amount of contributions necessary to fund: (1) the current service cost, representing the estimated amount necessary to pay for defined benefits earned by the members during the current service year; and (2) the prior service cost for service earned prior to the current year and subsequent benefit increases. These contributions represent the amount necessary to fund accrued liabilities for retirement allowances and survivor benefits over a period of time. The annual employer contributions reported for the Traditional Pension Plan for 2017 were $1,722.9 million. Employer contributions for the Combined Plan for 2017 were $53.6 million. Employers satisfied 100% of the contribution requirements.

The member and employer contribution rates for the State and Local divisions are currently set at the maximums authorized by the ORC of 10% and 14%, respectively. With the assistance of OPERS' actuary and the OPERS Board of Trustees approval, a portion of each employer contribution to OPERS may be set aside for the funding of post-employment health care coverage. The portion of Traditional Pension Plan and Combined Plan employer contributions allocation to health care was 1% for 2017. The employer contribution as a percentage of covered payroll deposited for Member-Directed Plan health care accounts for 2017 was 4%. The 2018 allocation is expected to be 0% for health care funding, and expected to continue at that rate thereafter.

Due to the discretionary nature of health care funding and the potential for frequent changes in allocations, including no funding to health care for some plans, the calculation of proportionate shares of employers is based on total employer contributions. Total employer contributions were $1,989.9 million for the year ended Dec. 31, 2017. These contributions are included in the OPERS Combined Statement of Changes in Fiduciary Net Positon included in the OPERS 2017 CAFR and provided the basis for the proportionate share percentages calculated by OPERS and reported in the Schedule of Employer Allocations.

As of Dec. 31, 2017, the date of the last pension actuarial study, the funding period for all defined benefits of OPERS was 18 years.

In 2018, OPERS allocated 0% of employer contributions towards health care. Therefore, OP&F's contractually required employer contributions to OPERS for OPEB funding was $0.00 for fiscal year 2018.

OPEB INVESTMENT POLICY

The allocation of investment assets within the Health Care portfolio as approved by the OPERS Board of Trustees as outlined in the annual investment plan. Assets are managed on a total return basis with a long-term objective of continuing to offer a sustainable health care program for current and future retirees. OPERS' primary goal is to achieve and maintain a fully funded status for benefits provided through the defined pension plans. Health care is a discretionary benefit. The table below displays the OPERS Board of Trustees' approved asset allocation policy for 2017 and the long-term expected real rate of return.

Asset Class	Target Allocation for 2017	Weighted Average Long-Term Expected Real Rate of Return (Arithmetic)
Fixed Income	34.00%	1.88%
Domestic Equities	21.00%	6.37%
REITs	6.00%	5.91%
International Equities	22.00%	7.88%
Other Investments	17.00%	5.39%
TOTAL	**100.00%**	**4.98%**

The long-term expected rate of return on health care investment assets was determined using a building-block method in which best-estimate ranges of expected future real rates of return are developed for each major asset class. These ranges are combined to produce the long-term expected real rate of return by weighting the expected future real rates of return by the target asset allocation percentage, adjusted for inflation.

During 2017, OPERS managed investments in three investment portfolios: the Defined Benefit portfolio, the Health Care portfolio and the Defined Contribution portfolio. The Health Care portfolio includes the assets for health care expenses for the Traditional Pension Plan, Combined Plan and Member-Directed Plan eligible members. Within the Health Care portfolio, contributions into the plans are assumed to be received continuously throughout the year based on the actual payroll payable at the time contributions are made, and health care-related payments are assumed to occur mid-year. Accordingly, the money-weighted rate of return is considered to be the same for all plans within the portfolio. The annual money-weighted rate of return expressing investment performance, net of investment expenses and adjusted for the changing amounts actually invested, for the Health Care portfolio is 15.2% for 2017.

OPEB LIABILITIES (ASSETS), OPEB EXPENSE, AND DEFERRED OUTFLOWS OF RESOURCES AND DEFERRED INFLOWS OF RESOURCES RELATED TO OPEB

The net OPEB liability was measured as of Dec. 31, 2017, and the total OPEB liability used to calculate the net OPEB liability was determined by an actuarial valuation as of that date. OP&F's proportionate share of the net OPEB liability was based on OP&F's portion of employer contributions to the pension plan that were allocated to health care (1% of the 14% Traditional Pension Plan and Combined Plan employer contributions and 4% of the 14% Member-Directed Plan employer contributions). Gains and losses related to changes in total OPEB liability and fiduciary net position are recognized in OPEB expense systematically over time. Amounts are first recognized as deferred outflows and deferred inflows of resources related to OPEB and are to be recognized in future OPEB expense. The recognition period differs depending on the source of the gain or loss: net difference between projected and actual earnings on OPEB plan investments are recognized over a five-year period; all other amounts are recognized over expected average remaining service lives of all plan members. The following is information relative to OPEB proportionate share and OPEB expense:

OPERS	TOTAL
OP&F's Proportionate Share of the Net OPEB Liability	$(7,679,441)
OP&F's Proportion of the Net OPEB Liability	0.07072%
OP&F's OPEB Expense	$543,635

OPERS	TOTAL
Deferred Outflows of Resources	
Differences between expected and actual experience	$5,982
Net difference between projected and actual earnings on pension plan investments	-
Changes of Assumptions	559,145
Changes in proportion and differences	95,066
Contributions subsequent to the measurement date	-
TOTAL DEFERRED OUTFLOWS OF RESOURCES	**$660,193**
Deferred Inflows of Resources	
Differences between expected and actual experience	$-
Net difference between projected and actual earnings on pension plan investments	(572,067)
Changes of Assumptions	-
Changes in proportion and differences	-
TOTAL DEFERRED INFLOWS OF RESOURCES	**$(572,067)**

OPERS – AMORTIZATION OF NET DEFERRED INFLOWS AND DEFERRED OUTFLOWS OF RESOURCES

OPERS	TOTAL
Fiscal Year Ending Dec. 31:	
2019	$70,527
2020	70,527
2021	70,527
2022	(123,455)
TOTAL	**$88,126**

OPEB DISCOUNT RATE – OPERS

A single discount rate of 3.85% was used to measure the OPEB liability on the measurement date of Dec. 31, 2017. Projected benefit payments are required to be discounted to their actual present value using a single discount rate that reflects (1) long-term expected rate of return on OPEB plan investments (to the extent that the health care fiduciary net position is projected to be sufficient to pay benefits), and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating as of the measurement date (to the extent that the contributions for use with the long-term expected rate are not met). This single discount rate was based on an expected rate of return on the health care investment portfolio of 6.5% and a municipal bond rate of 3.31%. The projection of cash flows used to determine this single discount rate assumed that employer contributions will be made at rates equal to the actuarially determined contribution rate. Based on these assumptions, the health care fiduciary net position and future contributions were sufficient to finance health care costs through 2034. As a result, the long-term expected rate of return on health care investments was applied to projected costs through the year 2034, and the municipal bond rate was applied to all health care costs after that date.

SENSITIVITY OF OP&F'S PROPORTIONATE SHARE OF THE NET OPEB LIABILITY TO CHANGES IN THE DISCOUNT RATE

The following table presents the OPEB liability calculated using the single discount rate of 3.85%, and the expected net OPEB liability if it were calculated using a discount rate that is 1% lower, 2.85%, or 1% higher, 4.85%, than the current rate:

Sensitivity of OP&F's proportionate share of the Net OPEB Liability to changes in the discount rate	1% Decrease	Single Discount Rate	1% Increase
Discount Rate as of Dec. 31, 2017	2.85%	3.85%	4.85%
OPEB Plan	$10,202,774	$7,679,441	$5,638,506

SENSITIVITY TO OP&F'S PROPORTIONATE SHARE OF THE NET OPEB LIABILITY TO CHANGES IN THE HEALTH CARE COST TREND RATE

Retiree health care valuations use a health care cost-trend assumption that changes over several years built into the assumption. The near-term rates reflect increases in the current cost of health care; the trend starting in 2018 is 7.5%. If this trend continues, the projection indicates that years from now virtually all expenditures will be for health care. A more reasonable alternative is that in the not-too-distant future, the health plan cost trend will decrease to a level at, or near, wage inflation. On this basis, the actuaries project premium rate increases will continue to exceed wage inflation for approximately the next decade, but by less each year, until leveling off at an ultimate rate, assumed to be 3.25% in the most recent valuation.

Changes in the health care cost trend rate may also have a significant impact on the net OPEB liability. The following table presents the net OPEB liability calculated using the assumed trend rates, and the expected net OPEB liability if it were calculated using a health care cost trend rate that is 1% lower, 6.5%, or 1% higher, 8.5%, than the current rate:

Sensitivity of OP&F's proportionate share of the Net OPEB Liability to changes in the health care cost trend rate	1% Decrease	Current Health Care Cost Trend Rate Assumption	1% Increase
Discount Rate as of Dec. 31, 2017	6.5%	7.5%	8.5%
OPEB Plan	$7,347,808	$7,679,441	$8,022,477

OPEB AVERAGE REMAINING SERVICE LIFE

GASB Statement No. 75 requires that changes arising from differences between expected and actual experience or from changes in actuarial assumptions be recognized in OPEB expense over the average remaining service lives of all employees provided with coverage through the health care plans (active and inactive). This is to consider these differences on a pooled basis, rather than an individual basis, to reflect the expected remaining service lives of the entire pool of employees with the understanding that inactive employees have no remaining service period. As of Dec. 31, 2017, the average of the expected remaining service lives of all employees calculated by OPERS' external actuaries was 3.0916 years.

OPERS ACTUARIAL ASSUMPTIONS

Projections of health care costs for financial reporting purposes are based on the substantive plan and include the types of coverage provided at the time of each valuation and the historical pattern of sharing of costs between OPERS and plan members. The total OPERS liability was determined by an actuarial valuation as of Dec. 31, 2016, rolled forward to the measurement date of Dec. 31, 2017.

The actuarial valuation used the following actuarial assumptions applied to all prior periods included in the measurement in accordance with the requirements of GASB Statement No. 74:

KEY METHODS AND ASSUMPTIONS USED IN VALUATION OF TOTAL OPEB LIABILITY

Actuarial Information	OPEB Plan
Valuation Date	Dec. 31, 2016
Rolled-Forward Measurement Date	Dec. 31, 2017
Experience Study	5-Year Period Ended Dec. 31, 2015
Actuarial Cost Method	Individual entry age normal
Actuarial Assumptions	
Single Discount Rate	3.85%
Investment Rate of Return	6.50%
Municipal Bond Rate	3.31%
Wage Inflation	3.25%
Projected Salary Increases	3.25%-10.75% (includes wage inflation at 3.25%)
Health Care Cost Trend Rates	7.50% initial, 3.25% ultimate in 2028

Pre-retirement mortality rates are based on the RP-2014 Employees mortality table for males and females, adjusted for mortality improvement back to the observation period base year of 2006. The base year for males and females was then established to be 2015 and 2010, respectively. Post-retirement mortality rates are based on the RP-2014 Health Annuitant mortality table for males and females, adjusted for mortality improvement back to the observation period base year of 2006. The base year for males and females was then established to be 2015 and 2010, respectively. Post-retirement mortality rates for disabled retirees are based on the RP-2014 Disabled mortality table for males and females, adjusted for mortality improvement back to the observation period base year of 2006. The base year for males and females was then established to be 2015 and 2010, respectively. Mortality rates for particular calendar year are determined by applying the MP-2015 mortality improvement scale to all of the above described tables.

REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)

REQUIRED SUPPLEMENTARY PENSION INFORMATION

SCHEDULE OF CHANGES IN THE EMPLOYERS' NET PENSION LIABILITY *

Total Pension Liability	Year Ending Dec. 31, 2018	Year Ending Dec. 31, 2017	Year Ending Dec. 31, 2016	Year Ending Dec. 31, 2015	Year Ending Dec. 31, 2014
Service Cost	$331,600,261	$289,911,106	$273,592,476	$267,624,727	$262,846,976
Interest	1,663,040,537	1,623,441,004	1,570,560,385	1,519,848,287	1,472,778,463
Plan Changes	-	-	-	-	-
Differences Between Expected and Actual Experience	322,601,323	109,199,474	2,143,161	(21,544,278)	-
Changes in Assumptions	-	318,479,524	-	-	-
Benefit Payments, Including Refunds of Member Contributions	(1,314,608,496)	(1,256,254,446)	(1,187,020,466)	(1,170,476,866)	(1,126,154,321)
NET CHANGE IN TOTAL PENSION LIABILITY	1,002,633,625	1,084,776,662	659,275,556	595,451,870	609,471,118
TOTAL PENSION LIABILITY - BEGINNING	21,101,065,550	20,016,288,888	19,357,013,332	18,761,561,462	18,152,090,344
TOTAL PENSION LIABILITY - ENDING (a)	**$22,103,699,175**	**$21,101,065,550**	**$20,016,288,888**	**$19,357,013,332**	**$18,761,561,462**
Plan Fiduciary Net Position					
Contributions - Employer	$478,595,785	$462,394,203	$455,143,532	$428,972,949	$418,493,468
Contributions - Member	295,472,374	282,006,793	268,594,295	245,834,623	223,989,055
Net Investment Income	(458,734,784)	1,812,565,572	1,240,580,488	(11,259,198)	786,522,451
Benefit Payments, Including Refunds of Member Contributions	(1,314,608,496)	(1,256,254,446)	(1,187,020,466)	(1,170,476,866)	(1,126,154,321)
Administrative Expense	(16,234,396)	(19,487,358)	(18,851,765)	(15,635,762)	(15,480,687)
Other Changes	(7,047,680)	-	-	(6,940,426)	-
NET CHANGES IN PLAN FIDUCIARY NET POSITION	(1,022,557,197)	1,281,224,764	758,446,084	(529,504,680)	287,369,966
PLAN FIDUCIARY NET POSITION - BEGINNING	14,963,614,004	13,682,389,240	12,923,943,156	13,453,447,836	13,166,077,870
PLAN FIDUCIARY NET POSITION - ENDING (b)	**$13,941,056,807**	**$14,963,614,004**	**$13,682,389,240**	**$12,923,943,156**	**$13,453,447,836**
NET PENSION LIABILITY (SURPLUS) - ENDING (a)-(b)	**$8,162,642,368**	**$6,137,451,546**	**$6,333,899,648**	**$6,433,070,176**	**$5,308,113,626**
Plan Fiduciary Net Position as a Percentage of the Total Pension Liability	63.07%	70.91%	68.36%	66.77%	71.71%
Covered Payroll	$2,302,436,015	$2,224,675,422	$2,094,550,962	$2,046,601,668	$1,998,631,412
Net Pension Liability as a Percentage of Covered Payroll	354.52%	275.88%	302.40%	314.33%	265.59%

* Schedule is intended to show information for 10 years. Additional years will be displayed as they become available.

SCHEDULE OF EMPLOYERS' NET PENSION LIABILITY (ASSET) *

Year Ending Dec. 31	(a) Total Pension Liability	(b) Plan Fiduciary Net Position	(a)-(b)=(c) Net Pension Liability (Surplus)	(b) / (a) Plan Fiduciary Net Position as a Percentage of the Total Pension Liability	(d) Covered Payroll	(c) / (d) Net Pension Liability (Surplus) as a Percentage of Covered Payroll
2018	$22,103,699,175	$13,941,056,807	$8,162,642,368	63.07%	$2,302,436,015	354.52%
2017	21,101,065,550	14,963,614,004	6,137,451,546	70.91%	2,224,675,422	275.88%
2016	20,016,288,888	13,682,389,240	6,333,899,648	68.36%	2,094,550,962	302.40%
2015	19,357,013,332	12,923,943,156	6,433,070,176	66.77%	2,046,601,668	314.33%
2014	18,761,561,462	13,453,447,836	5,308,113,626	71.71%	1,998,631,412	265.59%
2013	18,152,090,344	13,166,077,870	4,986,012,474	72.53%		

* Schedule is intended to show information for 10 years. Additional years will be displayed as they become available.

SCHEDULE OF EMPLOYER CONTRIBUTIONS - PENSION TRUST FUND *

Year Ended Dec. 31	(a) Statutorily Due Employer Contributions	(b) Actual Employer Contributions	(a)-(b)=(c) Contribution Deficiency (Excess)	(d) Covered Payroll *	(a) / (d) Contributions as a Percentage of Covered Payroll
2018	$478,294,974	$478,294,974	$-	$2,209,258,449	21.65%
2017	462,047,728	462,047,728	-	2,180,910,604	21.19%
2016	454,745,371	454,745,371	-	2,060,850,564	22.07%
2015	428,526,214	428,526,214	-	1,986,568,535	21.57%
2014	417,993,316	417,993,316	-	1,942,269,436	21.52%
2013	349,461,765	349,461,765	-	1,913,382,667	18.26%
2012	286,752,750	286,752,750	-	1,897,413,344	15.11%
2011	278,175,108	278,175,108	-	1,868,502,282	14.89%
2010	285,251,945	285,251,945	-	1,895,195,693	15.05%
2009	277,684,455	277,684,455	-	1,900,935,000	14.61%

* Actuarial Estimate

SCHEDULE OF INVESTMENT RETURNS *

	2018	2017	2016	2015	2014
Annual Money Weighted Rate of Return, Net of Investment Expenses	(2.854)%	13.867%	10.048%	0.187%	6.540%

* Schedule is intended to show information for 10 years.
Additional years will be displayed as they become available.

NOTES TO REQUIRED SUPPLEMENTARY PENSION INFORMATION

1. SCHEDULE OF CHANGES IN THE EMPLOYERS' NET PENSION LIABILITY

The total pension liability contained in this schedule was provided by OP&F's actuary, Cavanaugh Macdonald Consulting. The net pension liability is measured as the total pension liability less the amount of OP&F's fiduciary net position.

2. SCHEDULE OF EMPLOYER CONTRIBUTIONS

The required employer contributions and percent of those contributions actually made are presented in this schedule.

3. ACTUARIAL ASSUMPTIONS

The valuation was based on the actuarial assumptions and methods that have been adopted by the Board of Trustees, including a valuation interest rate of 8.00% per annum compounded annually. The assumptions were effective Jan. 1, 2017, and recommended by the actuary based on a five-year experience review covering the period 2012 through 2016.

The information presented in the required supplementary schedules was used in the actuarial valuation for purposes of calculating the actuarially determined contribution rate. The assumptions and methods used for this actuarial valuation were recommended by the actuary and adopted by the Board of Trustees. Additional information as of the latest actuarial valuation follows.

DEFINED BENEFIT PLAN – PENSION TRUST FUND

ACTUARIAL ASSUMPTIONS

Valuation date	Jan. 1, 2018
Actuarial cost method	Entry age
Amortization method	Level percent of payroll, open
Amortization period	30 years
Asset valuation method	4-year adjusted fair value with a corridor of 20% of the fair value.
Investment rate of return	8.00%
Projected salary increases	3.75% - 10.50%
Payroll increases	3.25%
Inflation assumptions	2.75%
Cost-of-living adjustments	2.20% and 3.00% simple

REQUIRED SUPPLEMENTARY OPEB INFORMATION (UNAUDITED)

SCHEDULE OF CHANGES IN NET OPEB LIABILITY AND RELATED RATIOS (DOLLARS IN THOUSANDS)*

Total OPEB Liability	Year Ending Dec. 31, 2018	Year Ending Dec. 31, 2017
Service Cost	$269,914	$230,753
Interest	220,193	220,886
Changes of Benefit Terms	(4,945,195)	-
Differences Between Expected and Actual Experience	-	(32,754)
Changes in Assumptions	(293,715)	633,696
Net Benefit Payments	(144,706)	(103,062)
NET CHANGE IN TOTAL OPEB LIABILITY	(4,893,509)	949,519
TOTAL OPEB LIABILITY - BEGINNING	6,597,948	5,648,429
TOTAL OPEB LIABILITY - ENDING (a)	**$1,704,439**	**$6,597,948**
Plan Fiduciary Net Position		
Contributions - Employer	$11,338	$18,895
Net Investment Income	(4,192)	115,417
Benefit Payments	(144,706)	(103,062)
Administrative Expenses	(742)	(816)
Other	-	-
NET CHANGE IN PLAN FIDUCIARY NET POSITION	(138,302)	30,434
PLAN FIDUCIARY NET POSITION - BEGINNING	932,088	901,654
PLAN FIDUCIARY NET POSITION - ENDING (b)	**$793,786**	**$932,088**
NET OPEB LIABILITY (SURPLUS) - ENDING (a)-(b)	$910,653	$5,665,860
Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	46.57%	14.13%
Covered Payroll	$2,302,436	$2,180,911
Net OPEB Liability as a Percentage of Covered Payroll	39.55%	259.79%

* Schedule is intended to show information for 10 years. Additional years will be displayed as they become available.

SCHEDULE OF NET OPEB LIABILITY (ASSET) - (DOLLARS IN THOUSANDS)*

Year Ending Dec. 31	(a) Total OPEB Liability	(b) Plan Fiduciary Net Position	(a)-(b)=(c) Net OPEB Liability (Surplus)	(b) / (a) Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	(d) Covered Payroll	(c) / (d) Net OPEB Liability (Surplus) as a Percentage of Covered Payroll
2018	$1,704,439	$793,786	$910,653	46.57%	$2,302,436	39.55%
2017	6,597,948	932,088	5,665,860	14.13%	2,180,911	259.79%

* Schedule is intended to show information for 10 years. Additional years will be displayed as they become available.

SCHEDULE OF EMPLOYER CONTRIBUTIONS - RETIREE HEALTH CARE TRUST FUND

Year Ended Dec. 31	(a) Statutorily Due Employer Contributions	(b) Actual Employer Contributions	(a)-(b)=(c) Contribution Deficiency (Excess)	(d) Covered Payroll *	(a) / (d) Contributions as a Percentage of Covered Payroll
2018	$11,337,852	$11,337,852	$-	$2,209,258,449	0.51%
2017	10,871,479	10,871,479	-	2,180,910,604	0.50%
2016	10,708,739	10,708,739	-	2,060,850,584	0.52%
2015	10,211,723	10,211,723	-	1,986,568,535	0.51%
2014	9,895,274	9,895,274	-	1,942,269,436	0.51%
2013	68,720,879	68,720,879	-	1,913,382,667	3.59%
2012	130,285,935	130,285,935	-	1,897,413,344	6.87%
2011	129,297,720	129,297,720	-	1,868,502,282	6.92%
2010	128,774,894	128,774,894	-	1,895,195,693	6.79%
2009	126,649,859	126,649,859	-	1,900,935,000	6.66%

* Actuarial Estimate.

SCHEDULE OF INVESTMENT RETURNS *

	2018	2017	2016	2015	2014
Annual Money Weighted Rate of Return, Net of Investment Expenses	(2.854)%	13.867%	10.048%	0.187%	6.540%

* Schedule is intended to show information for 10 years. Additional years will be displayed as they become available.

NOTES TO REQUIRED SUPPLEMENTARY OPEB INFORMATION

1. SCHEDULE OF CHANGES IN THE EMPLOYERS' NET OPEB LIABILITY

The total OPEB liability contained in this schedule was provided by OP&F's actuary, Cavanaugh Macdonald Consulting. The net OPEB liability is measured as the total OPEB liability less the amount of OP&F's fiduciary net position.

2. SCHEDULE OF EMPLOYER CONTRIBUTIONS

The required employer contributions and percent of those contributions actually made are presented in this schedule.

3. ACTUARIAL ASSUMPTIONS

The valuation was based on the actuarial assumptions and methods that have been adopted by the Board of Trustees, including a valuation interest rate of 8.00% per annum compounded annually. The assumptions were effective Jan. 1, 2017, and recommended by the actuary based on a five-year experience review covering the period 2012 through 2016.

The information presented in the required supplementary schedules was used in the actuarial valuation for purposes of calculating the actuarially determined contribution rate. The assumptions and methods used for this actuarial valuation were recommended by the actuary and adopted by the Board of Trustees. Additional information as of the latest actuarial valuation follows.

RETIREE HEALTH CARE BENEFITS – HEALTH CARE TRUST FUND

Actuarial Assumptions

Valuation date	Jan. 1, 2018
Actuarial cost method	Entry age
Amortization method	Level percent of payroll, open
Amortization period	30 years
Asset valuation method	Fair value
Investment rate of return	8.00%
Projected salary increases	3.75% - 10.50%
Payroll increases	3.25%
Inflation assumptions	2.75%

OPERS RELATED REQUIRED SUPPLEMENTARY PENSION INFORMATION

SCHEDULE OF OP&F'S PROPORTIONATE SHARE OF THE NET PENSION LIABILITY
OHIO PUBLIC EMPLOYEES RETIREMENT PLAN - TRADITIONAL PENSION PLAN
LAST 10 FISCAL YEARS *

	2018	2017	2016	2015
OP&F's proportion of the net pension liability (asset)	$9,597,642	$13,874,911	$10,779,540	$7,534,305
OP&F's proportionate share of the net pension liability (asset)	0.061%	0.061%	0.062%	0.062%
OP&F's covered payroll	$7,507,300	$7,290,938	$7,745,508	$7,649,967
OP&F's proportionate share of the net pension liability (asset) as a percentage of its covered payroll	127.84%	190.30%	139.17%	98.49%
Plan fiduciary net position as a percentage of the total pension liability	84.66%	77.25%	81.08%	86.45%

SCHEDULE OF OP&F'S PROPORTIONATE SHARE OF THE NET PENSION LIABILITY
OHIO PUBLIC EMPLOYEES RETIREMENT PLAN - COMBINED PENSION PLAN
LAST 10 FISCAL YEARS *

	2018	2017	2016	2015
OP&F's proportion of the net pension liability (asset)	$(175,453)	$(69,235)	$(63,275)	$(52,363)
OP&F's proportionate share of the net pension liability (asset)	0.129%	0.124%	0.130%	0.136%
OP&F's covered payroll	$490,143	$446,969	$473,208	$478,275
OP&F's proportionate share of the net pension liability (asset) as a percentage of its covered payroll	(35.80)%	(15.49)%	(13.37)%	(10.95)%
Plan fiduciary net position as a percentage of the total pension liability	137.28%	116.55%	116.90%	114.83%

SCHEDULE OF OP&F'S PROPORTIONATE SHARE OF THE NET PENSION LIABILITY
OHIO PUBLIC EMPLOYEES RETIREMENT PLAN - MEMBER DIRECTED PLAN
LAST 10 FISCAL YEARS *

	2018	2017	2016	2015
OP&F's proportion of the net pension liability (asset)	$(8,942)	$(1,011)	$(837)	$(1,441)
OP&F's proportionate share of the net pension liability (asset)	0.256%	0.243%	0.219%	0.245%
OP&F's covered payroll	$1,002,986	$900,093	$1,045,000	$1,076,864
OP&F's proportionate share of the net pension liability (asset) as a percentage of its covered payroll	(0.89)%	(0.11)%	(0.08)%	(0.13)%
Plan fiduciary net position as a percentage of the total pension liability	124.46%	103.40%	103.91%	N/A

* The amounts presented were determined as of 12/31 of the prior calendar year. GASB 68 was implemented in 2015. This schedule is intended to show information for 10 years. Additional years will be displayed as they become available.

SCHEDULE OF CONTRIBUTIONS
OHIO PUBLIC EMPLOYEES RETIREMENT PLAN - TRADITIONAL PENSION PLAN
LAST 10 FISCAL YEARS *

	2018	2017	2016	2015
Contractually required contributions	$1,051,022	$947,822	$929,461	$917,996
Contributions in relation to the contractually required contributions	$1,051,022	$947,822	$929,461	$917,996
Contribution deficiency (excess)	$-	$-	$-	$-
OP&F's covered payroll	$7,507,300	$7,290,938	$7,745,508	$7,649,967
Contributions as a percentage of covered payroll	14%	13%	12%	12%

SCHEDULE OF CONTRIBUTIONS
OHIO PUBLIC EMPLOYEES RETIREMENT PLAN - COMBINED PENSION PLAN
LAST 10 FISCAL YEARS *

	2018	2017	2016	2015
Contractually required contributions	$68,620	$58,106	$56,785	$57,393
Contributions in relation to the contractually required contributions	$68,620	$58,106	$56,785	$57,393
Contribution deficiency (excess)	$-	$-	$-	$-
OP&F's covered payroll	$490,143	$446,969	$473,208	$478,275
Contributions as a percentage of covered payroll	14%	13%	12%	12%

SCHEDULE OF CONTRIBUTIONS
OHIO PUBLIC EMPLOYEES RETIREMENT PLAN - MEMBER DIRECTED PLAN
LAST 10 FISCAL YEARS *

	2018	2017	2016	2015
Contractually required contributions	$140,418	$126,013	$146,300	$150,761
Contributions in relation to the contractually required contributions	$140,418	$126,013	$146,300	$150,761
Contribution deficiency (excess)	$-	$-	$-	$-
OP&F's covered payroll	$1,002,986	$900,093	$1,045,000	$1,076,864
Contributions as a percentage of covered payroll	14%	14%	14%	14%

* The amounts presented were determined as of 12/31 of the prior calendar year. GASB 68 was implemented in 2015. This schedule is intended to show information for 10 years. Additional years will be displayed as they become available.

OPERS RELATED REQUIRED SUPPLEMENTARY OPEB INFORMATION

SCHEDULE OF OP&F'S PROPORTIONATE SHARE OF THE NET OPEB LIABILITY
OHIO PUBLIC EMPLOYEES RETIREMENT PLAN - OPEB PLAN
LAST 10 FISCAL YEARS *

	2018	2017
OP&F's proportion of the net OPEB liability (asset)	$7,679,441	$7,047,680
OP&F's proportionate share of the net OPEB liability (asset)	0.071%	0.070%
OP&F's covered payroll**	$7,997,443	$7,737,907
OP&F's proportionate share of the net OPEB liability (asset) as a percentage of its covered payroll	96.02%	91.08%
Plan fiduciary net position as a percentage of the total OPEB liability	54.14%	54.05%

SCHEDULE OF OPEB CONTRIBUTIONS
OHIO PUBLIC EMPLOYEES RETIREMENT PLAN
LAST 10 FISCAL YEARS *

	2018	2017
Contractually required contributions**	$-	$77,379
Contributions in relation to the contractually required contributions**	$-	$77,379
Contribution deficiency (excess)	$-	$-
OP&F's covered payroll**	$7,997,443	$7,737,907
Contributions as a percentage of covered payroll	-%	1%

* The amounts presented were determined as of Dec. 31 of the prior calendar year. GASB 75 was implemented in 2018. This schedule is intended to show information for 10 years. Additional years will be displayed as they become available.
** Excludes contributions and covered payroll related to OPERS - Member Directed Plan.

ADDITIONAL INFORMATION

SCHEDULE OF ADMINISTRATIVE EXPENSES *

		For the year ended Dec. 31, 2018
Personnel Services	Salaries and Wages	$10,801,376
	OPERS Contributions	1,340,383
	Insurance	2,170,537
	Fringe Benefits/Employee Recognition	12,494
	Tuition Reimbursement	12,099
	TOTAL PERSONNEL SERVICES	**14,336,889**
Professional Services	Actuarial	313,230
	Audit	122,870
	Custodial Banking Fees	863,953
	Investment Fees and Consulting	46,869,807
	Other Consulting (Disability, Software, Legal and Health Care)	1,066,931
	Banking Expense	57,712
	TOTAL PROFESSIONAL SERVICES	**49,294,503**
Communications Expense	Printing and Postage	337,128
	Telephone	80,296
	Member/Employer Education	13,988
	Other Communications	87,000
	TOTAL COMMUNICATIONS EXPENSE	**518,412**
Other Operating Expense	Conferences and Education	78,785
	Travel	131,705
	Computer Technology	1,113,582
	Other Operating	532,411
	Warrant Clearing	310
	ORSC Expense	52,104
	Depreciation Expense - Capital	975,875
	TOTAL OTHER OPERATING EXPENSES	**2,884,772**
NET BUILDING EXPENSES (includes rent)		**1,243,645**
TOTAL OPERATING EXPENSES		**68,278,221**
INVESTMENT EXPENSES		**(51,498,001)**
NET ADMINISTRATIVE EXPENSES		**$16,780,220**

* Includes investment related administrative expenses.

SCHEDULE OF INVESTMENT EXPENSES**

Category	2018
Investment Manager Services	$45,342,369
Custodial Banking Fees	863,953
Other Professional Services	1,527,438
Other Direct Investment Expenses	2,205,912
Allocation of Other Administrative Expenses	1,558,329
INVESTMENT EXPENSES	**$51,498,001**

** A portion of the non-Investment Department administrative expenses is allocated to Investment Expense based on the ratio of investment staff to total OP&F staff.

COMBINING STATEMENT OF CHANGES IN ASSETS AND LIABILITIES - PUBLIC SAFETY OFFICERS DEATH BENEFIT FUND

PUBLIC SAFETY OFFICERS DEATH BENEFIT FUND FOR THE YEAR ENDING DEC. 31, 2018

	Balance Dec. 31, 2017	Additions	Subtractions	Balance Dec. 31, 2018
Assets:				
Cash and Short-term Investments	$455,321	$20,000,000	$20,244,296	$211,025
TOTAL ASSETS	**455,321**	**20,000,000**	**20,244,296**	**211,025**
Liabilities:				
Due to State of Ohio	455,321	20,000,000	20,244,296	211,025
TOTAL LIABILITIES	**$455,321**	**$20,000,000**	**$20,244,296**	**$211,025**

INVESTMENTS

2018 COMPREHENSIVE ANNUAL FINANCIAL REPORT

INVESTMENT REPORT (PREPARED THROUGH A COMBINED EFFORT WITHIN THE INVESTMENT DEPARTMENT)

INTRODUCTION

The investment authority of OP&F is specified in Chapter 742 of the ORC. Importantly, the ORC requires that the Board of Trustees and other fiduciaries discharge their duties solely in the interest of the participants and beneficiaries, for the exclusive purpose of providing benefits to participants and their beneficiaries and defraying reasonable expenses of administering OP&F. Within the guidelines of the ORC, OP&F has developed an Investment Policy and Guideline statement that provides for appropriate diversification of assets and an acceptable expected return on investments after consideration of investment risks. Investment performance returns are prepared by Wilshire Associates. Investment activities are presented on a trade date basis and measurements are calculated using time weighted rates of return consistent with investment industry standards.

SIGNIFICANT DEVELOPMENTS IN 2018

With the adoption of a new long-term asset allocation policy in 2017, OP&F turned to reviewing the investment structures of several asset classes in 2018. Upon review, adoption of new investment structures occurred for both U.S. and Non-U.S. equity. Within domestic equity, the investment structure shifted from a 50/50 to a 40/60 split between traditional investment management approaches and portable alpha, respectively. Within the portable alpha structure, OP&F changed the structural target weights of several mandates for a new investment composition of Flight Fund I, LLC. For Non-U.S. equity, the new structure eliminated one investment mandate and resulted in the hiring of Harding Loevner and Arrowstreet to run ACWI ex-U.S. mandates. OP&F expects this new manager lineup to improve returns, lower risk and provide a better correlation profile for the Non-U.S. equity portfolio. In addition to the Non-U.S. equity structure review, OP&F's Board and consultant discussed the merits of continuing to include Non-U.S. equity within an institutional portfolio given its lagging performance relative to U.S. equity since the Global Financial Crisis. They also discussed whether or not to hedge currency risk and whether global equity mandates were a better implementation option than a combination of distinct U.S. and Non-U.S. equity mandates. Other significant accomplishments in 2018 included the implementation of a Total Fund derivative overlay program and, in conjunction, the establishment of a dedicated liquidity pool. The intent of the liquidity pool is to reduce the number of times cash needs to be raised for benefit payments as well as for private funds' capital calls. OP&F believes the liquidity pool will improve trading and operational efficiency and reduce the probability of having to raise cash during periods of market stress. The intent of the Total Fund derivative overlay program is to keep OP&F's assets, from an overall Total Fund perspective, better aligned with OP&F's policy benchmark. The program is expected to reduce performance-tracking error, improve returns and reduce administrative burdens. Along with all of the above, other significant noteworthy investment endeavors and issues addressed last year include the following:

- Worked toward long-term asset allocation targets by rebalancing between overweight and underweight asset classes.
- Approved investment manager guidelines for Harding Loevner International Equity investment mandate.
- Completed review and reallocation of assets within the PIMCO fixed income mandate.
- Amended OP&F's Investment Policy and Guidelines statement.
- Amended OP&F's Ohio Qualified Investment Manager Policy.
- Amended OP&F's Ohio-Qualified Broker Policy.
- Amended OP&F's Proxy Voting Policy.
- Approved the 2018 private markets investment plan.
- Continued to work toward target allocation in private markets:
    - Made commitments to EQT VIII, Harvest Partners VIII, Littlejohn Fund IV, Resolute Fund Partners IV and Vista Equity Partners Fund VII.
- Adopted OP&F's Private Credit Investment Policy.
- Approved the 2018 - 2019 private credit investment plan.
- Worked toward target allocation to private credit:
    - Made a commitment to ArrowMark Global Opportunities Fund II and extended the investment period for MC Credit Partners Fund I.
- Approved the 2019 real assets investment plan.
- Continued to work toward target allocation to real assets:
    - Made a commitment to AxInfra U.S. L.P. Fund.
- Amended OP&F's Real Estate Investment Policy.
- Amended OP&F's Real Estate Commingled Fund Search Policy.
- Approved the 2019 real estate investment plan.
- Continued to work toward target allocation in real estate:
    - Made commitments to Almanac Realty Securities Fund VIII and Cortland Partners Growth & Income Fund.
- Completed annual evaluation of OP&F's real estate strategic portfolio for possible rebalancing.

ECONOMIC ENVIRONMENT

In the U.S., economic growth rolled on as a strengthening labor market, moderate inflation, still low interest rates and rising household wealth all contributed to healthy consumer sentiment. Real gross domestic product (GDP) advanced 3.0% in 2018. Quarterly GDP gains, on average, rose relative to recent years even exceeding 4.0% for the first time since 2014. Payroll employment continued to grow at a very healthy pace in 2018, averaging 223,000 per month. The U.S. unemployment rate maintained its steady decline into September when it hit 3.7%, its lowest level since 1969, before edging higher to end the year at 3.9%. Consumer spending remained healthy supported by job growth and increased income due in part to the Tax Cuts and Jobs Act, which went into effect at the start of 2018. The annual rate of U.S. inflation as measured by the Consumer Price Index (CPI) pushed higher into mid-year, nearly reaching 3.0% in July, but turned lower to end 2018 with a modest year-over-year increase of 1.9%. Consumer confidence continued its climb well into the year, peaking in October and hitting levels not seen since September of 2000. On a weaker note, on the backs of rising mortgage rates and higher construction costs, housing activity moderated in 2018. As the year drew to a close, many indicators softened with a backdrop of trade tensions between the U.S. and China and significant turmoil in the financial markets.

As the economy continued to improve accompanied by solid employment growth, the Federal Reserve Open Market Committee (Fed) maintained its pace of interest rate increases boosting the federal funds rate four more times, 25 basis points (bps) each in March, June, September and December. This left the funds rate in a range of 2.25% to 2.50% at year-end. The Fed continued to gradually reduce the size of its balance sheet, slowly pulling back some of the liquidity it had supplied with quantitative easing. However, the Fed's direction was about to change as concerns about global growth and trade and financial market weakness grabbed the headlines.

Outside the U.S., real GDP slowed appreciably in several key developed market countries as the year progressed. In Japan and the Eurozone, slowing growth and continued low inflation, allowed the Bank of Japan (BOJ) and the European Central Bank (ECB) to maintain their easy monetary policies. The ECB did, however, end its balance sheet stimulus at the end of the year. Meanwhile, with the United Kingdom (U.K.) inflation above the Bank of England's 2.0% target, the Bank of England (BOE) again raised its Official Bank Rate by 25 bps in August, but has been on hold since given the potential problems posed by uncertainty surrounding Brexit. In the increasingly important country of China, government policies introduced to slow debt growth began to take hold as the economy slowed in the second half of 2018. This slowing along with concerns over the U.S. and China trade tensions caused Chinese authorities to adopt a slightly easier stance via both monetary and fiscal policy.

The United States entered 2019 in the midst of a federal government shutdown that began in late December and ran until late January, making it the longest U.S. government shutdown in history. Nevertheless, the U.S. unemployment rate has remained steady and stands at 3.8% for March. Payroll growth has stayed positive but did hit a minor bump when February gains came in at only 33,000 new jobs. March payroll gains returned to a more reasonable level of nearly 200,000 jobs. Meanwhile, the CPI fell back to a 1.5% annual rate in February before moving up to 1.9% in March. First quarter GDP growth has yet to be reported but is expected to slow to a less than 2.0% annual rate, as the effects of the government shutdown, late 2018 financial market turmoil and a recent dip in consumer confidence are expected to show up in weaker consumer spending. The Fed began signaling in early January that they would place their ongoing federal funds rate tightening on pause and would also end their balance sheet wind down later in 2019. This seemingly in response to signs of economic strains and the market distress that clearly played out in December. The S&P 500 essentially hit bear market territory (a 20% decline) in late December and ongoing yield curve flattening reached a bothersome level around that same time. The Fed has subsequently confirmed their decision to remain patiently on hold likely for the rest of the year while continuing to assess economic and market data before determining their next move.

TOTAL FUND

The total portfolio, on a trade date basis, was valued at $14.70 billion at the end of 2018, down from $15.85 billion at the end of 2017. Within OP&F's portfolio, strong absolute returns in private markets, real estate and real assets were overwhelmed by negative absolute returns in U.S. equity, high yield, TIPS and especially MLPs and non-U.S. equity to pull the overall portfolio return into negative territory in 2018. For calendar year 2018, the total portfolio's investment return was (1.78)% gross of fees, (2.40)% net of fees, compared to a policy index return of (2.67)%. This represents an outperformance of the total portfolio's policy index by 89 bps gross and 27 bps net. OP&F's investments in U.S. equity, non-U.S. equity, core fixed income, real estate, MLPs and inflation protected securities all outperformed their respective asset class benchmarks over the course of 2018.

While of little consolation, last year's negative absolute performance did, however, translate into decent relative peer group performance as OP&F's relatively lighter exposure to public equity helped place the peer group ranking in the 20th percentile of Wilshire's Master Trusts – All Plans Universe. With 2018's result, OP&F's three-year annualized gross of fees return now stands at 7.78%, and 7.16% net, while the five-year annualized gross of fees return is 6.13%, and 5.53% net. OP&F's 10-year gross of fees return is 10.05%, and 9.54% net. The 2018 results versus the policy index still kept OP&F's three-year relative return above the policy index return of 6.83% for the same period, while OP&F's five-year return also beat the policy return of 4.98%. The 10-year return also bested the policy return of 8.89%. As mentioned earlier, the total portfolio's 2018 results ranked in the 20th percentile of Wilshire's Master Trusts – All Plans Universe, while the three-year, five-year and 10-year results ranked in the 6th, 13th and 8th percentiles, respectively, of that same peer universe.

Through the first quarter of 2019, OP&F's manager composites for every asset class have posted positive absolute returns. OP&F's MLP managers have soared out of the gate, up almost 20% collectively, while the U.S. and international equity managers have returned nearly 14% and 11.25%, respectively. To cap off the public markets composites, OP&F's high yield managers are up 6.0%, the TIPS manager is up roughly 4.3% and the core fixed income managers are up nearly 2.6% for the quarter. While short term, time-weighted performance is not the best measure for private asset classes, to be consistent in this context, however, real estate and real assets are up slightly more than 2.0%, while private equity and private credit are up roughly 1.0%. Lastly, a new derivatives overlay strategy first employed in April 2018 has added an absolute 37 bps to the total fund performance through March. Overall, OP&F's unaudited year-to-date return through March 31, 2019 of 7.85% is outpacing its benchmark's return of 6.56%. After such a strong start to the year, OP&F's 2019 full year results are likely to hinge on whether the Federal Reserve takes any action that differs markedly from the stable-to-easing expectation that is currently discounted by the markets.

In mid-2017, OP&F adopted an updated asset allocation policy, which included a series of transitional policy benchmarks and asset class targets that laid out a roadmap to reach the new asset allocation benchmark over the course of several years. New target weights for each asset class kick in on Jan. 1 and July 1 each year. Generally, these six-month steps are de-risking the portfolio but in a risk parity sense. Of late, equity and equity-like, e.g. high yield, exposures are slowly being reduced as core fixed income, real assets and private credit exposures are ramping up. The increasing fixed income exposures include a 2x levered U.S. inflation protected securities mandate, which is at its 8% target, and the conversion of traditional core fixed income into a 2x levered core fixed income mandate. The managers for this latter mandate are in place and are almost fully funded, but the leverage component has yet to be activated. OP&F continues to search for solid risk/reward private credit opportunities to help diversify and strengthen this segment of the portfolio. In April 2018, OP&F deployed a derivatives overlay program that utilizes U.S. and international equity futures as well as U.S. Treasury futures and is meant to keep OP&F's asset classes better aligned with their policy target weights. OP&F also established a liquidity pool intended to fund monthly cash needs, thus reducing the number of times cash must be raised for benefit payments and private funds' capital calls.

The Board of Trustees and staff believe that a well-diversified portfolio will serve OP&F well over the long-term. As mentioned in prior reports, the Board of Trustee's 2010 adoption of risk parity at the asset allocation level and their ongoing reaffirmation and implementation of that approach demonstrate that OP&F is committed to creating and maintaining a well-diversified portfolio. A combination of reduced equity and equity-like exposures inherent in risk parity, along with a generally rising stock market and tightening credit spreads over the past several years, have kept equities and high yield above their allocation targets; thus, making them a natural source of funds to diversify into rising target allocations for fixed income and alternatives exposures. This ongoing shift out of equity and equity-like exposures has generally kept OP&F from any forced rebalancing efforts, but staff closely monitors the portfolio's status relative to asset class allocation ranges and occasional periods of extreme valuation. In addition to forcing OP&F to sell high and buy low, a disciplined rebalancing policy removes human emotion from the decision making process. As evident in the Board of Trustee's risk parity approach and asset class structure decisions, OP&F has and will continue to evaluate non-correlated, non-traditional strategies and asset classes in its search for optimal risk-adjusted returns.

EQUITIES – U.S. AND NON-U.S.

Returns in 2018 for most any asset class were negative and this held true for domestic and global equities as well. Domestic stock returns for the calendar year were (4.40)% and (5.26)% for the S&P 500 and the Wilshire 5000, respectively, and (11.03)% for the small cap Russell 2000 Index. All of the negative returns occurred in the fourth quarter as U.S. stocks were actually up roughly 10-12% for the first three quarters of the year. Similar to the trends of last several years, growth stocks outperformed value (for both large and small cap) in 2018 as more growth-oriented sectors like technology, health care, and consumer discretionary led cyclical sectors such as energy, materials, financials and industrials.

While domestic large cap equity performance was down modestly as mentioned previously, non-U.S. equities, both developed and emerging, were especially challenged. The Morgan Stanley Capital International All Country World Index excluding the U.S. Index (MSCI ACWI ex-U.S.), which includes both developed and emerging market companies, dropped 14.20% (in U.S. dollar terms). Both the developed and emerging market components of the MSCI ACWI ex-U.S. declined about the same, 14-15%. The strong U.S. dollar relative to other major developed country currencies was a roughly 4% headwind to U.S. dollar-based investors in overseas markets.
The U.S. stock market started January 2018 very strong, on the

heels of a powerful rally in 2017. However, in the last few days of January, the market suffered a sharp reversal, dropping about 11-12% over the course of two weeks. This was driven by concerns about excessive valuation as well as a scare from the collapse of several funds that fare poorly when stock volatility increases rapidly. From early April, however, the U.S. stock market rose about 14% through the end of September, while simultaneously the non-U.S. equity market was actually down slightly.

Driving markets and the economy during the year were a number of cross currents including the U.S.-China trade talks, the Feds, interest rates, and a slowing in economic growth overseas in Europe and China. The impact of the China trade talks was apparent throughout the year, both from a sentiment standpoint and from an actual economic impact. Although they had concerns about the trade negotiations and their potential negative impact, for much of the year investors in U.S. stocks accepted their reality and believed that eventually a favorable agreement would be reached. The positive impact from tax cuts and regulatory reform continued to drive solid employment numbers and decent economic growth. Long term interest rates rose and the Fed hiked short rates into the third quarter based on the strong economy. Eventually by the beginning of the fourth quarter, the China trade talks, rising rates, and slowing economic growth took its toll on investors, both here and abroad, and stocks fell sharply through almost the end of December.

OP&F's U.S. Equity Composite for 2018 declined (3.68)% net of fees. This compared favorably to the Wilshire 5000 and S&P 500 indices, which returned (5.26)% and (4.40)%, respectively, for the calendar year.

The OP&F Total International Equity Composite in 2018 dropped (17.60)% net of fees. The OP&F portfolio lagged the benchmark MSCI ACWI ex-U.S. Iran & Sudan Free Policy Index, which declined (14.76)%.

MASTER LIMITED PARTNERSHIPS (MLPS)

As was the case with the equity markets, the Alerian MLP Index started the year solidly rising 10% through January before declining 20% into the end of the first quarter. From that point, MLPs embarked on a strong four to five month move, rising over 28% before giving up that rally by year-end. MLPs experienced an incredibly volatile year in spite of crude oil rising over 30% in the first three quarters before collapsing from the mid-$70s in early October to the mid-$40s by year-end. Oil began its slide as China trade talks and rising interest rates created uncertainty for the energy markets, fearing that a trade war and higher rates would slow global economic growth and pressure demand for oil.

It is worth stating that MLP prices and crude oil/natural gas prices have not and should not, *in normal commodity environments*, be highly correlated because MLPs and their midstream operations (pipeline transmission, distribution, storage and related businesses) tend to have a business model that is relatively stable and not particularly dependent on changes in oil or natural gas prices. This business model stability stems from the fact that MLP pipeline companies 1) sign very long term (10 years or more) customer contracts, 2) have contracts that obligate their Exploration and Production customers to pay the pipeline company regardless of the volumes pushed through the pipelines, and 3) pipeline companies have a history of positive cash flow and increasing distributions. MLP and commodity price correlations can rise though if energy prices fall too far causing investors to begin to fear a major dislocation in the production of oil and the financial viability of the oil and gas producers.

The OP&F MLP composite underperformed the Alerian MLP Index for the year by 1.11%, declining (13.53)% net of fees compared to the (12.42)% drop in the Alerian MLP Index.

FIXED INCOME – CORE AND INFLATION PROTECTED BONDS

The 10-year U.S. Treasury note yield started calendar year 2018 at 2.41%. It peaked at 3.26% in early October as Federal Reserve officials stated that they would continue to raise short-term rates in order to prevent inflation from rising above target. Ultimately concerns about the economy drove rates back to 2.72% at year-end.

Interestingly, stock prices and Treasury yields were positively correlated throughout the year as they both rose in tandem in the first three quarters and fell in the last quarter, driven by the economic and market factors described previously. Although longer term yields were rising at a steady clip during the first three quarters of the year, short term rates rose even faster, causing the two year/ten year Treasury yield spread (2/10 spread) to narrow from around 80 bps in the first quarter to 20 bps later in the third quarter before collapsing to just 10 bps in late December. A negative 2/10 yield spread, which is when the two-year yield rises above the 10-year yield for a sustained period of several months, has historically been a good indicator of an increased probability of a recession. Thus, investors became very concerned about an impending recession when the 2/10 spread dropped to just 10 bps late in the year. The fears of a recession drove longer maturity bonds and stock prices lower for most of the fourth quarter of 2018.

The OP&F Core Fixed Income Composite returned 0.80% net of fees for the year, outperforming the Bloomberg Barclay's Aggregate Bond Index return of 0.01%. The Inflation Protected Securities Composite outperformed by 3.80%, falling (1.23)% net of fees compared to a drop of (5.04)% for the U.S. TIPS Index.

HIGH YIELD

Following two solid years of positive returns, high yield (HY) bond returns were slightly negative in 2018, falling (2.25)% for the year. High yield spreads tend to decline during periods of economic strength and widen when bond investors fear deteriorating economic conditions, either for the broad economy or in certain sectors. Deteriorating conditions typically lead to lower corporate earnings and the potential that HY corporate debt issuers may have difficulty repaying their debt.

Unlike the prior couple of years, higher quality bonds within the high yield space outperformed lower quality bonds. Consequently, OP&F's managers, which are typically overweight the higher quality end of the spectrum and underweight weaker credits, outperformed in 2018.

The OP&F High Yield Composite outperformed by 1.39% in 2018, falling (0.86)% net of fees compared to the (2.25)% return of the Merrill Lynch U.S. High Yield Constrained Index.

PRIVATE CREDIT

Our objective for OP&F's allocation to private credit focuses on more senior secured lending in the corporate middle market space, also known as direct lending. The private credit allocation will increase going forward as OP&F continues to lower the high yield holdings over the coming three years. Research has demonstrated that historically the relatively higher quality end of the direct lending market (direct loans to mostly private, corporate small and mid-sized companies) has provided better yields and returns, better loan covenant protections, lower default rates and higher recoveries than the public high yield market. In addition, the vast majority of the direct lending market is comprised of floating, or adjustable, rate loans tied to short term benchmark rates and should help insulate these loan portfolios from rising rates.

As public high yield bond spreads move, generally so move direct lending spreads. The narrowing of spreads, until the fourth quarter, presents a challenge to direct lending managers given their typically higher yields than the public markets. Also, some in the industry have become more aggressive to match the competitive environment in the space. In order to deploy capital, the market has accepted lower yields and weaker loan terms. OP&F is monitoring these trends because if the economy weakens too much, it may lead to higher defaults similar to what would likely occur in the public high yield market. OP&F attempts to mitigate these risks by primarily focusing on senior secured, first lien loans and by investing with managers with a long track record of operating in difficult economic environments and which have shown the ability to favorably navigate such periods.

Since the initial investment in April of 2014 through year-end 2018, OP&F's internal rate of return (IRR) for the overall private credit/direct lending program approximates 10.38%. This program is comprised of seven different funds managed by six distinct private credit managers.

REAL ESTATE

Real estate markets continued to drift toward equilibrium in 2018. Income returns held steady for stabilized assets. Appreciation continued to moderate, but remained slightly elevated relative to long-term expectations. Capital markets generally functioned well, and distress was isolated. While tenant demand was weak in some areas (e.g., retail) and while development was elevated in others (e.g., senior housing), supply and demand generally remained in balance.

For the year ending Sept. 30, 2018 (real estate returns are lagged by one quarter), OP&F's total real estate portfolio delivered a 13.69% return gross of fees and an 11.21% return net of fees. OP&F's net return exceeded the Open End Diversified Core Equity (ODCE) index net of fees by 345 bps during the year.

The portfolio is designed to exceed the ODCE index by 50 bps per year on a net basis over full market cycles. It has accomplished that goal over most long-term measurement periods. Over the trailing 10-year period, OP&F's portfolio exceeded the ODCE by 71 bps per year net of fees. The real estate program is divided into a lower-risk, lower-return strategic portfolio and a higher-risk, higher-return tactical portfolio.

OP&F's strategic portfolio is designed to deliver steady cash distributions throughout market cycles. Looking forward, returns in the strategic portfolio are expected to be driven by current income, rather than by the broad capital market uplift that drove appreciation returns for the past several years.

Following a portfolio rebalancing in 2017, OP&F did not readjust its strategic portfolio in 2018. Market exposure remained slightly above target, while diversification and overall risk profile were generally in-line with the benchmark.

In its tactical portfolio, OP&F seeks to generate higher returns over full market cycles by investing in assets that could benefit from improved management; by seeking to benefit from market dislocations; and by accepting other calculated risks. While OP&F continues to see and pursue attractive opportunities in this space, dislocation-driven opportunities have not been abundant over the past few years, as markets have been operating fairly efficiently. OP&F has responded by investing at a measured pace to conserve capital, by reducing the overall risk profile of its tactical portfolio, and by seeking unique opportunities to add value. As it has done in past years, OP&F helped launch an open-end core-plus vehicle in exchange for meaningful founding investor benefits that help to drive returns without a proportional increase in risk. OP&F's strong performance in 2018 was driven primarily by its tactical portfolio, which delivered a net return of 14.6%.

As in other asset classes, risk remains heightened due to trade policy, geopolitical conflict, high asset valuations, and other factors.

In addition to seeking to achieve its return target, OP&F remains focused on real estate's other strategic objectives: diversifying OP&F's broader portfolio and serving as a partial inflation hedge. Each investment is selected based on its risk/return profile and on its perceived ability to advance these other goals.

During the 12 months ended Dec. 31, 2018, OP&F's market exposure to real estate increased from 11.2% to 12.2%. Current exposure is near the 12% target allocation, and well within the targeted range for real estate. 53.3% of OP&F's real estate market exposure currently comes from the strategic portfolio, with the remainder coming from the tactical portfolio. OP&F is maintaining its philosophy of investing patiently and prioritizing attractive risk-adjusted returns.

REAL ASSETS

During 2016, OP&F established a 5.0% allocation to real assets. In 2017, OP&F increased the allocation to 8.0% after an asset-liability study was conducted. The allocation currently covers timberland, agriculture, and infrastructure, and is distinct from the separate allocations that OP&F has established for real estate and MLPs. The program is designed to provide diversification, to hedge against inflation, to preserve capital, and to generate attractive risk-adjusted returns through a combination of income and appreciation.

The real assets program replaced the timberland program that OP&F initiated in 2012. Recognizing that the market for timberland was competitive, OP&F sought to build its exposure in that space gradually and deliberately, conserving capital to be deployed at a more opportune time. That action left capital available for the real assets program. In 2016, assets in the legacy timberland program were rolled into the new real assets program.

During 2018, OP&F added one new infrastructure investment and reduced its timberland exposure slightly through a tactical sale at a significant premium to appraised value.

For the year ending Sept. 30, 2018 (real assets returns are lagged by one quarter), the portfolio delivered a gross of fees time-weighted return of 11.81%, and a net of fees return of 10.45%. For the trailing five-year period, the gross return was 5.82% and the net return was 4.64%.

The real assets portfolio is designed to deliver a return that exceeds inflation by 5.0% net of fees over full market cycles. The program does not yet have a sufficient history to measure a full market cycle. Based on the trailing five-year return, the real assets portfolio is behind pace, trailing the benchmark by 195 bps. As the portfolio develops, comparisons against this benchmark will become more meaningful.

The real assets program is still in development. At the end of the year, the program represented 2.6% of OP&F's total portfolio relative to a long-term target of 8.0%. Unfunded commitments represented another 2.2% of OP&F's total portfolio. Portfolio construction objectives include: building total exposure gradually; building diversification across the program's three main sectors; maintaining balance between lower risk strategic and higher-risk tactical investments; maintaining a focus on developed markets; and building long-term returns while controlling risk.

PRIVATE MARKETS

For the year ending Sept. 30, 2018 (private market returns are lagged by one quarter), OP&F's private markets portfolio provided a net return, on a time-weighted basis, of 15.65%. To note, evaluating private markets performance over short-time periods can be misleading. With that said, for the 10-year period ending Sept. 30, 2018, the portfolio provided an annualized net return of 11.82%.

In 2014, OP&F adopted changes to how it evaluates the performance of the private markets portfolio. The methodology evaluates the performance of the private markets program by developing a Public Markets Equivalent (PME) comparison. A PME comparison utilizes an IRR calculation of all historical cash flows, on a dollar-weighted basis, and compares the resulting performance to a public market proxy index, by assuming that all of the same cash flows are invested in the public market index. This methodology allows for the purest comparison of the private markets program performance to that of a public market alternative. Secondarily, the performance of the private markets program is evaluated relative to the Cambridge Associates Private Equity Pooled Horizon IRR: Net to Limited Partners peer universe, or equivalent. The Cambridge Associates peer universe data allows OP&F to compare the private markets program to other private markets programs and managers over specified periods. For the one-year and five-year period ending Sept. 30, 2018, OP&F's private markets program provided a net IRR of 19.7% and 15.2%, respectively, outperforming the Wilshire 5000 PME by 2.2% and 1.5% annualized, respectively. However, for the 10-year period ending Sept. 30, 2018, OP&F's private markets program provided a net IRR of 11.1%, underperforming the Wilshire 5000 PME by 1.5% annualized. Relative to the Cambridge Associates Private Equity Pooled Horizon IRR: Net to Limited Partners peer universe, OP&F's private markets program's net of fee IRR ranks above median across all time-periods measured as of Sept. 30, 2018.

From a secular standpoint, private markets remain a viable option for institutional investors because they exhibit several favorable characteristics compared to public market investments. Private markets offer the ability to earn higher returns, enhance portfolio diversification and provide downside protection versus publicly traded investments. There is also a greater number of private companies versus publicly traded companies, which expands the opportunity set and the ability to exploit inefficiencies in the marketplace. In addition, many of the companies today that are significant drivers of economic growth are not accessible through public market investment but only through private markets investment. This phenomenon can be somewhat explained by the growing sentiment among company executives to stay private longer or even permanently. Among the many benefits, private markets afford the opportunity to manage through challenging economic and market environments by establishing and managing to longer-term goals versus their public market counterparts.

On a cyclical perspective, private markets are currently in a relatively healthy state by being in a late-cycle environment. Fundraising remains strong across almost all strategies as investors continue to maintain or increase allocations to the asset class. In addition, given the strong distribution activity in recent years, investors continue to recycle their proceeds back into new opportunities. Given the healthy fundraising environment, investment activity remains strong as managers have more than enough capital to put to work which has led to valuation multiples (i.e. pricing) remaining elevated and a record amount of dry powder available for investment. To average down their purchase prices, managers have turned to add-on acquisitions as well as a focus on high growth companies in such sectors as information technology and health care. The exit environment remains strong especially on the M&A front leading to healthy distributions to investors. With respect to the initial public offerings (IPO) market, conditions appear to be improving as several prominent companies prepare to go public, the most notable as of this writing perhaps being Uber Technologies Inc.

However, with being late-cycle, the probability of being closer to an economic slowdown or recession is higher than the entrance into a new economic expansion. Investors may need to start thinking, if they have not already done so, of adding exposure to strategies that may afford some downside protection as well as the thought of reserving capital to take advantage of opportunities if a slowdown or recession does occur. Such strategies may include distressed debt, turnarounds, and secondary transactions. Additionally, on a relative basis, investors may want to focus on smaller managers and strategies utilizing lower leverage, with a focus on income and of a shorter duration.

On an invested basis, private markets comprised approximately 8.7% of OP&F's total assets as of year-end. Although the allocation at year-end was above the long-term target allocation of 8.0%, the private markets allocation is well within the policy range of 5.6% to 10.4%. OP&F will continue to manage the private markets allocation to OP&F's long-term target by adopting an annual private markets plan that allows OP&F the flexibility to manage the private markets portfolio based on suitable investment opportunities while also taking into consideration current market conditions. In addition, the annual private markets investment plan will seek to maintain appropriate vintage year diversification for the private markets portfolio. OP&F will mainly target commitments to domestic and global direct partnerships, and on an opportunistic basis, secondary partnerships. As always, OP&F and its dedicated private markets investment consultant will prudently recommend commitments that will seek for the private markets portfolio to remain compliant with its policies and guidelines.

2019 DEVELOPMENTS AND CHALLENGES AHEAD

In early 2019, OP&F changed the benchmark for the MLP asset class as well as for all of OP&F's MLP managers. In recent years, the MLP industry has experienced significant merger and acquisition activity, corporate consolidation and a general movement towards C-Corporation (C-Corp) structures due to fundamental, regulatory and tax law changes. This has led to a significant reduction in the number of MLPs in the previous index utilized by OP&F, the Alerian MLP Index. In addition, the Alerian MLP Index does not include C-Corps, which is the structure of several of the largest midstream companies. Given the ongoing consolidation and movement towards C-Corp structures, Alerian launched two new indices to address these issues, the Alerian Midstream Energy Index and the Alerian U.S. Midstream Energy Index. The only difference between the two being the Alerian Midstream Energy Index includes Canadian companies. After review and consideration, OP&F adopted the Alerian Midstream Energy Index for the asset class benchmark as well as the underlying benchmark for each manager in the MLP portfolio.

Below are some of the other items already addressed in 2019 and a number that still lie ahead:

- Amended OP&F's Investment Policy and Guidelines statement.
- Amended OP&F's Proxy Voting Policy.
- Approved a wider cash allocation policy range .
- Approved the 2019 private markets investment plan.
- Granted the Chief Investment Officer and senior investment officers more discretion between Board meetings.
- Continued to work toward target allocation in private markets:
    - Made commitments to Advent International IX and TA XIII.
- Evaluate composition of real estate strategic portfolio for possible rebalancing.
- Implement the 2019 private markets investment plan.
- Implement the 2019 real assets investment plan.
- Implement the 2019 real estate investment plan.
- Implement the 2018 - 2019 private credit investment plan.
- Approve the 2019 – 2020 private credit investment plan.
- Review the Real Estate Investment Policy for possible revisions.
- Review the Real Assets Investment Policy for possible revisions.
- Approve the 2020 real assets investment plan.
- Approve the 2020 real estate investment plan.

Another item of interest that OP&F will continue to evaluate in 2019 is OP&F's position on Chinese assets. Chinese asset markets are large, increasingly becoming more open and accessible to foreign investors and are expected to garner a greater share of global portfolios as index providers continue to increase China's weight in emerging market and global indices. Given these developments, investors will need to determine a strategy for how they add Chinese asset exposure to their portfolios. In 2018, OP&F began discussions on this topic and expects to continue these discussions in 2019. Beyond the already mentioned initiatives, OP&F will continue to look for ways to reduce the costs of its operations as well as to compare OP&F's current procedures to other approaches or best practices for areas of improvement or better efficiencies.

INVESTMENT PORTFOLIO SUMMARY

INVESTMENT PORTFOLIO SUMMARY - AS OF DEC. 31, 2018

Investment Type	Percent of Net Investment Value	Fair Value
Cash and Cash Equivalents	6.45%	$947,736,214
Commercial Mortgages	0.25%	36,190,990
Corporate Bond Obligations	13.78%	2,026,606,461
Derivatives	-%	285,049
Domestic Commingled Bonds	6.90%	1,014,599,124
Domestic Pooled Stocks	7.95%	1,168,410,225
Domestic Stocks	11.45%	1,682,948,542
International Equities	16.75%	2,462,893,448
Master Limited Partnerships	5.62%	826,185,983
Municipal Bond Obligations	0.03%	4,407,914
Non-U.S. Bonds	0.31%	45,166,827
Private Debt	3.30%	484,993,452
Private Equity	8.46%	1,244,495,136
Real Assets	2.59%	380,952,563
Real Estate	12.11%	1,780,898,543
U.S. Government Treasury Obligations	0.83%	122,369,353
U.S. Government Treasury STRIPS	0.05%	6,768,747
Non-Agency Mortgage and Asset-Backed Securities	1.62%	238,628,119
Agency Mortgage and Asset-Backed Securities	1.99%	292,176,057
TOTAL FAIR VALUE - CASH AND SECURITIES	**100.44%**	**$14,766,712,747**
Accrued Income	0.28%	41,238,704
Sales Receivable	0.68%	100,223,575
Purchases Payable	(1.40)%	(205,917,534)
NET INVESTMENT VALUE (TRADE DATE BASIS)	**100.00%**	**$14,702,257,492**

TEN LARGEST COMMON STOCKS (BY FAIR VALUE)

Stocks	Shares	Fair Value
Williams Cos.	3,709,548	$81,795,533
Oneok Inc.	803,462	43,346,775
Targa Resources Corp	1,070,299	38,552,170
Linde PLC Common Stock	192,789	30,534,585
Tallgrass Energy GP LP	1,146,713	27,910,994
Volkswagen AG Pfd	163,328	25,937,533
Cheniere Energy Inc.	432,523	25,601,036
Roche Holdings AG-Genusschein	95,296	23,529,160
WisdomTree India Earnings Fund	926,200	22,969,760
Takeda Chemical Industries	614,000	20,734,348

TEN LARGEST BONDS AND OBLIGATIONS (BY FAIR VALUE)

Description	Coupon	Maturity Date	Par Value	Fair Value
U.S. Treasury Note	2.000	May 31, 2024	$20,500,000	$19,951,065
U.S. Treasury Note	2.625	Jul. 31, 2020	10,530,000	10,541,520
U.S. Treasury Bond	2.875	Aug. 15, 2045	10,500,000	10,230,117
U.S. Treasury Bond	5.000	May 15, 2037	6,501,600	8,533,350
Multiplan	4.693	May 25, 2023	8,777,836	8,295,055
Burger King	4.595	Feb. 17, 2024	8,689,497	8,262,235
CDW LLC	4.100	Aug. 17, 2023	8,408,297	8,126,115
Vantiv LLC	4.190	Aug. 20, 2024	7,940,000	7,599,215
Las Vegas Sands LLC	4.095	Mar. 27, 2025	7,940,000	7,563,962
SBA Communications	4.052	Apr. 11, 2025	7,848,063	7,508,398

TEN LARGEST REAL ESTATE HOLDINGS (BY FAIR VALUE)

Description	Fair Value
JP Morgan Strategic Property	$218,476,325
Prudential PRISA	216,700,519
Heitman Core Property Fund	146,057,295
Morgan Stanley Prime Property	99,126,926
UBS Trumbull Property Fund	95,633,276
Jamestown Premier Property Fund	88,655,928
LaSalle Property Fund, LP	84,784,382
Lion Industrial Trust	73,836,646
Hancock U.S. Real Estate Fund LP	60,006,203
Brookfield Premier Real Estate Partners	58,426,188

A complete listing of portfolio holdings is available upon request.

SCHEDULE OF INVESTMENT RESULTS (FOR THE YEAR ENDED DEC. 31, 2018)

	Annualized Rates of Return		
	1-Year	3-Year	5-Year
U.S. Equity			
OP&F	**(3.30)%**	**11.00%**	**8.90%**
Wilshire 5000	(5.27)%	9.12%	8.07%
International Equity			
OP&F	**(17.32)%**	**3.13%**	**0.55%**
International Equity Policy Benchmark *	(14.91)%	4.40%	0.99%
Private Markets **			
OP&F	**15.65%**	**17.23%**	**16.40%**
Wilshire 5000 + 3%	21.11%	20.79%	17.05%
High Yield			
OP&F	**(0.48)%**	**6.32%**	**4.13%**
Merrill Lynch U.S. High Yield Constrained Index *	(2.25)%	7.41%	3.73%
Private Credit **			
OP&F	**7.51%**	**6.99%**	**NA**
S&P LSTA Levered Loan Index + 2%	7.30%	7.42%	NA
Treasury Inflation Protected Securities (TIPS)			
OP&F	**(0.26)%**	**6.82%**	**7.85%**
Bloomberg Barclays U.S. Gov't Inflation Linked Bond Index	(5.04)%	4.16%	5.55%
Real Estate **			
OP&F	**13.69%**	**12.37%**	**14.47%**
NCREIF ODCE Index	7.76%	7.84%	9.72%
Real Assets **			
OP&F	**11.81%**	**6.42%**	**5.82%**
CPI + 5%	7.38%	7.08%	6.59%
Master Limited Partnerships			
OP&F	**(13.06)%**	**0.14%**	**(3.66)%**
Alerian MLP Index	(12.42)%	(1.06)%	(7.31)%
Fixed Income			
OP&F - Core	**1.24%**	**3.20%**	**3.07%**
Bloomberg Barclays Aggregate	0.01%	2.06%	2.52%
OP&F - Commercial Mortgages **	**5.29%**	**4.59%**	**5.09%**
Bloomberg Barclays Mortgage Index **	(0.92)%	0.98%	2.02%
Total Portfolio			
OP&F	**(1.78)%**	**7.78%**	**6.13%**
Policy Index ***	(2.67)%	6.83%	4.98%

* a) International Equity benchmark is a blend of the MSCI ACWI ex U.S. (Net) through June 30, 2011, the MSCI ACWI ex U.S. Iran/Sudan Free (I/S Free) from July 1, 2011 through Sept. 30, 2012 and the MSCI ACWI ex U.S. Iran/Sudan Free IMI Index from Oct. 1, 2012 forward. b) High Yield benchmark is a blend of the CS First Boston Dev. Countries HY through Aug. 31, 2016, the CS First Boston High Yield from Sept. 1, 2016 through Nov. 30, 2016, and the Merrill Lynch U.S. High Yield Constrained Index from Dec. 1, 2016 forward.

** One quarter in arrears.

*** Interim Policy Index: 18.75 % Wilshire 5000, 18.75% MSCI ACWI ex-U.S.Iran/Sudan Free IMI Index, 10% Bloomberg Barclays Aggregate, 11% Merrill Lynch U.S. High Yield Constrained Index, 2.5% S&P LSTA Levered Loan Index + 2% Lagged, 8.5% Bloomberg Barclays U.S. Gov't Inflation Linked Bond Index X2 (-) Libor, 12% NCREIF ODCE Index (Net) Lagged, 7% Wilshire 5000 + 3% Lagged, 3.5% CPI + 5% (Net) Lagged, 8% Alerian MLP Index.

Long-Term Policy: 16% Wilshire 5000, 16% MSCI ACWI ex-U.S. Iran/Sudan Free IMI Index, 23% Bloomberg Barclays Aggregate, 7% Merrill Lynch U.S. High Yield Constrained Index, 5% S&P LSTA Levered Loan Index + 2%, 17% Bloomberg Barclays U.S. Gov't Inflation Linked Bond Index X2 (-) Libor, 12% NCREIF ODCE Index (Net) Lagged, 8% Wilshire 5000 + 3% Lagged, 8% CPI + 5% (Net) Lagged, 8% Alerian MLP Index. (adds to 120% as "Risk Parity" approach uses 2x levered U.S. Gov't Inflation-Protected Securities and 2x levered Core Fixed Income).

Time Weighted methodology, based upon fair values, is used when calculating performance.

INVESTMENT CONSULTANTS AND MONEY MANAGERS (FOR THE YEAR ENDED DEC. 31, 2018)

INVESTMENT CONSULTANTS
TorreyCove Capital Partners
(The) Townsend Group
Wilshire Associates

INVESTMENT MANAGERS
U.S. EQUITY
Bridgewater Associates, LP
Grosvenor Capital Management, LP
Macquarie Investment Management
N.A. Investcorp, LLC
Russell Investments Implementation Services, LLC
State Street Global Advisors

INVESTMENT MANAGERS
INTERNATIONAL EQUITY
Arrowstreet Capital, LP
Causeway Capital Management, LLC
Dimensional Fund Advisors
Fidelity Institutional Asset Management Trust Co.
Franklin Templeton
Harding Loevner, LP
Russell Investments Implementation Services, LLC

INVESTMENT MANAGERS
REAL ESTATE
Asana Partners
AEW Capital Management
Almanac Realty Investors
Aermont Capital LLP
(The) Blackstone Group
Brookfield Asset Management, Inc.
Clarion Partners
Colony Capital, LLC
Cortland Partners
DivcoWest Real Estate Services, LLC
Exeter Property Group
Fortress Japan Opportunity Management, LLC
Fremont Realty Capital, LP
(The) Gerrity Group
Greystar Investment Group, LLC
Hancock Capital Investment Management, LLC
Heitman Capital Management, LLC
Hunt Investment Management
Jamestown Premier GP, LP
JP Morgan Investment Management, Inc.
LaSalle Investment Management
Lone Star Funds
Lubert-Adler Management Co., LLC
Morgan Stanley Real Estate Advisors, Inc.
Prudential Real Estate Investors
Savanna Investment Management, LLC
Starwood Capital Group
Stockbridge Real Estate Fund
TA Realty Associates
Tricon Capital Group, Inc.
TriGate Capital
UBS Realty Investors, LLC
USAA Eagle Real Estate GP, LLC
VBI Real Estate
Walton Street Capital, LLC
Westbrook Partners, LLC

INVESTMENT MANAGERS
MASTER LIMITED PARTNERSHIPS
Harvest Fund Advisors, LLC
Salient Capital Advisors, LLC
Tortoise Capital Advisors, LLC

INVESTMENT MANAGERS
REAL ASSETS
ACM Management Company, LLC
Brookfield Timberlands Management
Forest Investment Associates
Global Forest Partners
Hancock Timber Resources Group
IFM Investors
Meridiam Infrastructure North America Corporation

INVESTMENT MANAGERS
FIXED INCOME
Bridgewater Associates, LP
Loomis Sayles & Company, LP
MacKay Shields, LLC
Neuberger Berman
Pacific Investment Management Company, LLC
PENN Capital
PGIM Inc.
Prima Capital Advisors, LLC
Russell Investments Implementation Services, LLC
Western Asset Management

INVESTMENT MANAGERS
PRIVATE CREDIT
CapitalSpring Direct Lending Partners
GSO Capital Partners, LP
Kohlberg Kravis Roberts & Co., LP
MC Credit Partners, LP
Owl Rock Capital Corporation
Tennenbaum Capital Partners, LLC

INVESTMENT MANAGERS
PRIVATE EQUITY
Abbott Capital Management, LLC
Adams Street Partners
Advent International
Altaris Capital Partners, LLC
Athenian Venture Partners
Blackstone Capital Partners
Blue Chip Venture Partners, LP
Blue Point Capital Partners, LP
Cinven
Coller Capital
Conway MacKenzie
EQT
Francisco Partners
Glendon Capital Management, LP
GTCR, LLC
HarbourVest Partners, LLC
Harvest Partners
Horsley Bridge Partners, LLC
(The) Jordan Company
Kirtland Capital Partners
Kohlberg Kravis Roberts & Co., LP
Landmark Equity Partners
Leonard Green & Partners, LP
Lexington Capital Partners
Linsalata Capital Partners
Marlin Equity Partners
MBK Partners
Montauk TriGuard Management, Inc.
Morgenthaler Venture Partners
NGP Energy Capital Management
Northgate Capital Group
Park Street Capital
Primus Venture Partners
Rhône Capital, LLC
(The) Riverside Company
Riverstone Investment Group, LLC
RRJ Capital
Stonepoint Capital
Summit Partners
TA Associates, LP
Tenex Capital Management, LP
Veritas Capital
Vista Equity Partners
Warburg Pincus
Wilshire Private Markets, LLC

SECURITIES LENDING AGENTS
Key Bank Securities Lending
Northern Trust

OTHER PROFESSIONAL CONSULTANTS
(see page vii)

SCHEDULE OF BROKERS' FEES PAID (FOR THE YEAR ENDED DEC. 31, 2018)

Broker Name	Fees Paid	Units Traded	Average Cost Per Unit
UBS Securities	$481,376	128,804,255	$0.0037
Goldman Sachs	433,079	4,692,962	0.0923
Morgan Stanley	228,126	108,624,155	0.0021
Instinet	208,277	23,868,513	0.0087
Mizuho Securities	169,784	12,744,687	0.0133
B. Riley FBR, Inc.	145,790	4,842,765	0.0301
Citigroup	121,631	9,786,282	0.0124
JP Morgan	115,767	9,512,946	0.0122
Merrill Lynch	114,224	15,808,383	0.0072
Credit Suisse First Boston	102,925	9,546,745	0.0108
Macquarie Securities, Inc.	90,133	34,161,526	0.0026
Investment Technology Group	85,524	10,934,116	0.0078
Knight Securities	58,703	5,870,295	0.0100
Barclays Capital, Inc.	54,214	2,509,056	0.0216
Liquidnet, Inc.	45,166	5,798,451	0.0078
Daiwa	45,108	1,389,967	0.0325
Jefferies & Co., Inc.	44,474	6,048,549	0.0074
Wells Fargo Securities	40,393	4,062,373	0.0099
Exane	38,595	939,447	0.0411
Deutsche Bank Securities	33,377	1,536,211	0.0217
Sanford C. Bernstein	27,232	2,943,107	0.0093
HSBC Securities, Inc.	26,676	4,895,526	0.0054
RBC Capital Markets	25,448	2,731,659	0.0093
Kepler Capital Markets	25,084	829,456	0.0302
CLSA Securities	21,338	700,554	0.0305
Brokers Less than $20,000	228,899	44,680,038	0.0051
TOTAL	**$3,011,343**	**458,262,024**	**$0.0066**

INVESTMENT POLICY AND GUIDELINES

Minor formatting edits have been made to the Board of Trustee approved investment policy and guidelines in order to provide style consistency throughout the CAFR.

1. INTRODUCTION

The purpose of this Investment Policy and Guidelines (Policy or Statement) is to define the framework for investing the assets (Total Portfolio) of the Ohio Police & Fire Pension Fund (OP&F or Plan). This Statement is intended to provide general principles for establishing the goals of OP&F, the allocation of assets and the employment of outside asset management. The statutory investment authority of the Board of Trustees (or the Board) is set forth in Sections 742.11 to 742.113 and Sections 742.114, 742.116 of the Ohio Revised Code (ORC), as amended from time to time. The Board may delegate these duties to an Investment Committee.

The objectives of OP&F have been established in conjunction with a comprehensive review of the current and projected financial requirements. These objectives are:

- To have the ability to pay all benefit and expense obligations when due.
- To maintain the purchasing power of the current assets and all future contributions by maximizing the rate of return on OP&F's assets at a reasonable level of risk.
- To maintain 30-year funding and achieve full funding on an actuarial accrued liability basis.
- To control the costs of administering OP&F and managing the investments.

The investment objectives of the Total Portfolio are:

- Long-term returns on Plan investments, in addition to contributions received from members and employers, should satisfy any current funding obligations of the Plan when and as prescribed by law and, once the Plan is fully funded, should keep pace with the growth of Plan liabilities.
- The investment performance goal for the Total Portfolio is to meet or exceed the return of the Total Portfolio policy benchmark over a full market cycle, generally measured over three to five years, without taking on additional risk as measured by standard deviation of returns. The Total Portfolio policy benchmark is a weighted average, based on the allocation target defined in Section 3 below, of each asset class benchmark.

In order to achieve these objectives, the Board of Trustees will conduct itself in accordance with ORC Section 742.11, which provides "The Board and other Fiduciaries shall discharge their duties with respect to OP&F solely in the interest of the participants and beneficiaries." These duties shall also be carried out "with care, skill, prudence, and diligence under the circumstances then prevailing that a prudent person acting in a like capacity and familiar with such matters would use in the conduct of an enterprise of a like character and like aims", as referenced in ORC Section 742.11. All aspects of this Statement should be interpreted in a manner consistent with OP&F's objectives. At least annually, the Board shall review and adopt policies, objectives or criteria for the operation of the investment program and make such changes as appropriate.

Investment policies and Investment Manager(s) guidelines referenced in this document are separate policies governing specific aspects of managing the Total Portfolio and are not reproduced in this Statement, but are incorporated by reference as governing documents of the Plan.

2. DEFINITION OF RESPONSIBILITIES

A. INVESTMENT COMMITTEE/BOARD OF TRUSTEES

The statutory investment authority of the Board with regard to the Plan is set forth in Chapter 742, as described above, provides that in its capacity as a fiduciary, the Board of Trustees/ Investment Committee must discharge its duties in a prudent manner and for the exclusive benefit of the participants and beneficiaries of the Plan.

In discharging its duties, the responsibilities of the Board of Trustees/Investment Committee pursuant to this Policy include the following:

- Establish the strategic investment policy (Asset Allocation Policy) for OP&F in accordance with the above goals, and periodically review Asset Allocation Policy in light of any changes in actuarial variables and/or market conditions.
- Approve the investment structure for applicable asset classes identified in the Asset Allocation Policy.
- Select qualified Investment Consultant(s) and Investment Manager(s) to advise on and manage OP&F's assets recognizing the goals set forth in ORC Sections 742.11 and 742.116.
- Monitor and review the performance of selected Investment Manager(s) to determine achievement of goals and compliance with policy guidelines.
- Monitor the costs of the investment operations at least annually.
- Review, at least annually, the current investment policies of OP&F and make such changes as appropriate.
- Review applicable annual investment plan(s) prepared by the staff and/or Investment Consultant(s). As conditions warrant, revise the annual investment plan(s) as the year progresses.

- Monitor investment activity for compliance with Board policies and adherence by Investment Manager(s) to strategy and direction.
- Review the overall investment performance to determine whether it meets established benchmarks.
- Evaluate and assign all Investment Manager(s) to a rating category as outlined in OP&F's Investment Manager Monitoring and Evaluation Policy.
- Review suggested changes or additions to the functions and operations regarding the investment operations of similar institutional investors.
- Review the proposed investment department annual operating budget and report its recommendations to the Finance Committee.
- Fulfill any other responsibilities as provided in the ORC and Investment Committee Charter.

The Board of Trustees/Investment Committee may authorize others such as OP&F staff, and may utilize the services of external advisors, such as actuaries, auditors, consultants and legal counsel, to implement decisions made by the Board. The comments and recommendations of such parties will be considered by the Board in conjunction with Board discussion of the issues for the purpose of making informed and prudent decisions.

B. STAFF

Staff will be the primary liaison between the Board of Trustees/ Investment Committee and the Investment Consultant(s), the Investment Manager(s), and the custodial bank(s). The Chief Investment Officer, Deputy Chief Investment Officer or Sr. Investment Officer – Public Markets are authorized in between meetings of the Board to take such actions as necessary in the best interests of the Total Portfolio and the Plan in keeping with the policies, strictures and guidelines which apply to the Board of Trustees. Staff's transactional authority is limited to ten percent of the Total Portfolio market value. In doing so, the staff will:

- Manage OP&F assets under its care and/or control in accordance with this Policy's objectives and guidelines set forth herein.
- Implement Board decisions regarding asset allocation, investment structure, Investment Manager(s) selection, and portfolio rebalancing procedures.
- Coordinate the Investment Manager(s) selection, evaluation, and retention decisions for the Plan's investments, consistent with OP&F's Investment Manager Search Policy.
- Monitor both internally and externally managed assets to ensure compliance with guidelines set forth in this Policy.
- Establish a process to promptly vote all proxies and related actions in a manner consistent with OP&F's long-term interests and objectives set forth herein and OP&F's Proxy Voting Policy. Maintain detailed records of said voting of proxies and related actions and comply with all regulatory objectives related thereto.
- Manage the overall liquidity in the Total Portfolio to ensure timely payment of member benefit payments and Plan expenses and the investment of contributions consistent with established asset allocation and portfolio rebalancing policies.
- Report to the Board at least quarterly regarding the status of the Total Portfolio and its performance for various time periods. Meet with the Board at least annually to report on Investment Manager(s) performance and compliance with goals and objectives.
- Acknowledge and agree in writing to their fiduciary responsibility to fully comply with this Policy set forth herein, and as modified in the future.

C. INVESTMENT CONSULTANT(S)

The Board of Trustees/Investment Committee may retain an investment consulting organization or organizations (the Investment Consultant(s)) to assist in the overall strategic investment direction of the Total Portfolio, or specific asset classes, and its implementation. Each such Investment Consultant(s), in recognition of its role as a fiduciary of the Plan, will assume specific duties. These duties shall generally include the following:

- Provide independent and unbiased information.
- Assist in the development of this Policy and other policies that govern the Plan investments.
- Assist in monitoring compliance with this Policy.
- Assist in the development and recommendation of strategic asset allocation targets, investment structure, and rebalancing procedures for the Total Portfolio or for a specified asset class.
- Assist in development of performance measurement standards.
- Assist in the Investment Manager(s) search and selection process consistent with OP&F's Investment Manager Search Policy.
- Monitor, evaluate and report to the Board on Total Portfolio and/or Asset Class and Investment Manager(s) performance on an ongoing basis.
- Conduct due diligence when an Investment Manager(s) fails to meet a standard.
- Establish a procedural due diligence search process.

D. INVESTMENT MANAGER(S)

The Board of Trustees/Investment Committee may, from time to time, cause the Plan to retain one or more qualified investment managers (Investment Manager(s)) to manage a portion of the Plan assets. When applicable, the Board of Trustees/Investment Committee shall approve each Investment Manager(s) guidelines, which may set forth the purpose, Investment Manager(s) philosophy and approach, authorized investments, prohibitions, typical portfolio characteristics, performance objectives and evaluation, and Investment Manager(s) communications. The Investment Manager(s) have certain responsibilities that include the following:

- Manage OP&F assets under its care, custody, where applicable, and/or control in accordance with this Policy's objectives and guidelines set forth herein and its governing agreement with OP&F.
- Exercise full investment discretion over the assets in their care within the guidelines set forth in this Policy and, where applicable, the specific guidelines established for the Investment Manager(s) in the governing agreements with OP&F.
- Constructing a portfolio of securities that reflects the execution of a specific investment strategy.
- Promptly inform the Board and staff in writing regarding all changes of a material nature pertaining to the firm's organization and professional staff.
- If directed, promptly vote all proxies and related actions in a manner consistent with OP&F's long-term interests and objectives set forth herein and OP&F's Proxy Voting Policy. Each Investment Manager(s) designated to vote shall keep detailed records of said voting of proxies and related actions and will comply with all regulatory obligations related thereto.
- Provide reporting to the Board or staff or Investment Consultant(s) quarterly regarding the status of the portion of the Total Portfolio managed by the Investment Manager(s) and its performance for various time periods. Meet or participate via teleconference or webcast with the Board or staff or Investment Consultant(s) annually or as needed to report on their performance and compliance with goals and objectives.
- Acknowledge and agree in writing to their fiduciary responsibility to fully comply with this Policy set forth herein, and as modified in the future.

E. OFFICE OF THE OHIO TREASURER/BOARD OF DEPOSIT/ CUSTODIAN(S)

Per Section 742.11 of the ORC, the Treasurer of the State of Ohio (the Treasurer of State) is designated as custodian of investment assets. As custodian, the Treasurer of State or its designee (as described below) will be responsible for holding and safekeeping Plan assets, settling purchases and sales of securities; and identifying and collecting income which becomes due and payable on assets held. The Treasurer of State may engage a qualified bank or trust company, as authorized agent of the Treasurer of State, to perform certain services on behalf of the Treasurer of State to fulfill its responsibilities as custodian.

3. ASSET ALLOCATION AND REBALANCING

It is the responsibility of the Board to determine the allocation of assets among distinct public and private market asset classes. The allocation will be completed in a manner consistent with commonly recognized financial principles. Application of these principles is expected to lead to a portfolio with the highest level of return consistent with the risk tolerance of OP&F.

The procedure for determining the allocation will consider the relevant characteristics of the liabilities and potential assets of OP&F. The liability considerations shall include, but not be limited to, current and expected future values of the benefits, and future contributions. These factors are important for identifying the investment horizon of OP&F and its cash flow requirements. The asset characteristics considered shall include, but not be limited to, current asset value, the potential return relative to the potential risk, and diversification characteristics.

The asset allocation must be consistent with the investment standards specified in ORC Section 742.11.

The risk/return characteristics of OP&F shall be reviewed on a periodic basis (no less than every five years) through a comprehensive asset liability valuation study. The goal of the study shall be to formulate an Asset Allocation Policy which maximizes return while minimizing overall risk through the most efficient combination of acceptable asset classes under the prudent person standard.

Based on an asset liability valuation study, which analyzed the expected returns, risk and correlations of various asset classes, projected liabilities, liquidity, and the risks associated with alternative asset mix strategies, the Board has established the following Asset Allocation Policy. The asset classes are "bucketed" or grouped together into macro-asset class buckets (i.e. growth, safety oriented and inflation hedging) based on their expected correlations to one another to create a better understanding of risk and diversification, and based on asset class exposures to the economic factors of growth and inflation.

Asset Class	Long-Term Target Allocation - Market Value	Range
Domestic Equity	16.0%	± 4.8%
Non-U.S. Equity	16.0%	± 4.8%
Private Markets	8.0%	± 2.4%
High Yield	7.0%	± 2.1%
Private Credit	5.0%	± 1.5%
TOTAL GROWTH ASSETS	**52.0%**	**± 9.0%**
Core Fixed Income	11.5%	± 2.3%
Cash	-%	+ 3.0%
TOTAL SAFETY ORIENTED ASSETS	**11.5%**	**± 2.3%**
U.S. Inflation Linked Bonds	8.5%	± 1.7%
Real Estate	12.0%	± 3.6%
Real Assets	8.0%	± 2.4%
Master Limited Partnerships (MLP or MLPs)	8.0%	± 2.4%
TOTAL INFLATION HEDGING ASSETS	**36.5%**	**± 9.0%**
TOTAL	**100.0%**	

Asset Class	Long-Term Target Allocation - Notional Exposure
Domestic Equity	16.0%
Non-U.S. Equity	16.0%
Private Markets	8.0%
High Yield	7.0%
Private Credit	5.0%
TOTAL GROWTH ASSETS	**52.0%**
Core Fixed Income	23.0%
Cash	-%
TOTAL SAFETY ORIENTED ASSETS	**23.0%**
U.S. Inflation Linked Bonds	17.0%
Real Estate	12.0%
Real Assets	8.0%
MLPs	8.0%
TOTAL INFLATION HEDGING ASSETS	**45.0%**
TOTAL	**120.0%**

The most recent study has shown that this is a favorable asset mix for meeting longer-term goals under multiple market conditions. In addition, this study incorporates the "risk parity" concept into OP&F's asset liability valuation with the goal of reducing equity risk exposure, which reduces overall Total Portfolio risk without sacrificing return, and creates a more risk-balanced portfolio based on the relationship between asset classes and economic environments. From the notional portfolio perspective above, the Total Portfolio may be levered up to 1.20 times due to the application of leverage in certain fixed income asset classes.

The Asset Allocation Policy represents a long-term strategy and thus, the Total Portfolio should strategically meet its performance objectives in the long term but not necessarily every year.

Short-term market shifts may cause the asset mix to drift from the allocation targets. Should the target percentage fall out of the indicated range for a particular asset class, the staff shall direct rebalancing transactions to reallocate assets from the over-allocated asset class to the under-allocated asset class. This rebalancing discipline is intended to encourage "buying low" and "selling high" and to keep the Total Portfolio invested at an appropriate overall risk level. Except when there is a perceived extraordinary downside risk in a particular asset class, movement outside the normal ranges should be avoided.

Investments in private markets, private credit, private real estate and private real assets are generally less liquid than investments in public markets securities and are typically implemented via periodic commitments to funds with limited partnership structures. As a result, actual allocations to these asset classes may deviate from their strategic targets for extended periods. Actual vs. target deviations for these asset classes shall not be considered in violation of the Asset Allocation Policy. Under/overweights to these asset classes shall be invested in public markets securities with the most similar risk/return characteristics as a short-term proxy for the private asset classes. To assist in rebalancing, OP&F has retained a derivative overlay Investment Manager(s) which provides several benefits including: (1) reduce OP&F's tracking error relative to target allocations; (2) improve Total Portfolio returns; (3) enhance liquidity, and (4) reduce the administrative burden associated with management of monthly cash flows.

The Board may adopt interim Asset Allocation Policy target allocations to reflect the transition from previous policy target allocations to new policy target allocations. The interim target allocations will reflect dollar cost averaging and/or opportunistic implementation to most prudently reach the new policy target allocations over time.

4. INVESTMENT IMPLEMENTATION

The implementation of an investment portfolio designed to achieve the Total Portfolio objectives must be consistent with governing statutes as specified in Sections 742.11 to 742.113, 742.114, 742.116 and with the Ohio-Qualified Investment Manager Policy, the Ohio-Qualified Broker Policy, and OP&F's Broker Policy.

Where appropriate, OP&F will invest assets through the use of qualified Investment Manager(s). The allocations to these Investment Manager(s) will be made in accordance with the results of the asset liability valuation study, investment structure analysis, and established procedures. For a complete description of the selection of Investment Manager(s), please see OP&F's Investment Manager Search Policy.

5. ASSET CLASS OBJECTIVES, CHARACTERISTICS AND INVESTMENT STRUCTURE

Investment structure targets will be established within applicable asset classes to address risk and return factors present in the respective asset class. For example, the domestic equity composite portfolio structural targets will be established to ensure style (growth vs. value) and market capitalization neutrality relative to the overall market, and to address active versus passive implementation decisions. External Investment Manager(s) will be hired to implement the structural targets in a diversified manner and will therefore have derived target weightings within the overall investment program. Where applicable, these are set forth below.

A. Growth Assets

1. DOMESTIC EQUITY

Investment Objectives

Total return of the domestic equity composite portfolio should exceed the return of the Wilshire 5000 Total Market Index over a full market cycle on an annualized basis. Total return of each Investment Manager's portfolio should rank above the median when compared to their peer group, if applicable, over a full market cycle on an annualized basis and should exceed their benchmark return as specified in each Investment Manager's guidelines or applicable documentation.

Investment Characteristics

The main focus of investing will be on companies headquartered and/or domiciled in the United States. The domestic equity composite portfolio shall have similar portfolio characteristics as that of the Wilshire 5000 Total Market Index, and should not exhibit size (market capitalization) or style (value vs. growth) bias.

Investment Structure

The structure of the domestic equity composite portfolio will be diversified among passive and active investment strategies as follows:

a. Passive Large Capitalization Core Exposure

The passive large capitalization core component has a target allocation of 30% of the domestic equity composite portfolio. This passive portfolio is intended to provide broad market exposure for and diversification to OP&F's domestic equity composite portfolio through holdings in large- and mid- capitalization equities or futures and is to be constructed so as to match the characteristics and return of the Russell 1000 Index.

b. Active Large Capitalization Portable Alpha Exposure

The active large capitalization portable alpha component has a target allocation of 60% of the domestic equity composite portfolio. The overall objective is to provide risk-adjusted returns greater than the return of the Standard & Poor's (S&P) 500 Index. S&P 500 market exposure, obtained through the use of derivatives and/or physicals, will be combined with strategies that represent diversified sources of alpha with a broad range of risk characteristics. For a complete description of the appropriate use of derivatives, please see OP&F's Derivatives Policy Statement.

c. Active Small Capitalization Core Exposure

The active small capitalization core component has a target allocation of 7.5% of the domestic equity composite portfolio.

d. Synthetic Small Capitalization Exposure

The synthetic small capitalization component has a target allocation of 2.5% of the domestic equity composite portfolio.

2. NON-U.S. EQUITY

Investment Objectives

Total return of the Non-U.S. equity composite portfolio should exceed the return of the Morgan Stanley Capital International All Country World Index ex-U.S. Investible Market Index – Iran and Sudan Free (MSCI ACWI-ex U.S. IMI I/S Free Index) over a full market cycle on an annualized basis. Total return of each Investment Manager's portfolio should rank above the median when compared to their peer group, if applicable, over a full market cycle on an annualized basis and should exceed their benchmark return as specified in each Investment Manager's guidelines or applicable documentation.

Investment Characteristics

The main focus of investing will be on companies headquartered or domiciled in the MSCI ACWI-ex U.S. IMI countries, which includes both developed and emerging markets. The Non-U.S. Equity composite portfolio shall have similar portfolio characteristics as that of the MSCI ACWI-ex U.S. IMI I/S Free Index.

Investment Structure

Non-U.S. equity assets will be managed on an active basis in order to exploit the perceived inefficiencies in the Non-U.S. equity markets. The structure of the Non-U.S. equity composite portfolio will be diversified among active ACWI-ex U.S. strategies and dedicated ACWI-ex U.S. small capitalization strategies as follows:

a. Active ACWI-ex U.S. Exposure

The Active ACWI-ex U.S. component has a target allocation of 75% of the Non-U.S. equity composite portfolio.

b. Active ACWI-ex U.S. Small Capitalization Exposure

The dedicated Active ACWI-ex U.S. Small Capitalization component has a target allocation of 25% of the Non-U.S. equity composite portfolio.

3. PRIVATE MARKETS

Investment Objectives

The performance objectives for the private markets composite portfolio and for individual investments are set forth in OP&F's Private Markets Investment Policy. Both the returns for the private markets composite portfolio and respective benchmark are lagged one quarter.

Investment Characteristics

Investments will be diversified by certain criteria as set forth in OP&F's Private Markets Investment Policy.

Investment Structure

The target allocation of Total Portfolio assets to private markets will be established by OP&F's long-term Asset Allocation Policy. In order to meet this allocation target, it will generally be necessary to make commitments in excess of the target because of the contribution and distribution cash flow characteristics inherent in the underlying private market investments. Annual commitment targets to such investments will be established by OP&F's Private Markets Investment Plan.

4. HIGH YIELD

Investment Objectives

Total return of the high yield fixed income composite portfolio should exceed the return of the B of A ML U.S. High Yield Constrained Index over a full market cycle on an annualized basis. Total return of each Investment Manager's portfolio should rank above the median when compared to their peer group, if applicable, over a full market cycle on an annualized basis and should exceed their benchmark return as specified in each Investment Manager's guidelines or applicable documentation.

Investment Characteristics

The main focus of investing will be on below investment grade fixed income securities, those securities rated below BBB- or equivalent. Positions may include publicly traded high yield bonds as well as public and private bank loans. The high yield fixed income composite portfolio shall have similar portfolio characteristics as that of the B of A ML U.S. High Yield Constrained Index. Each Investment Manager's portfolio shall have similar portfolio characteristics as that of their respective benchmark.

Investment Structure

High yield fixed income assets will be managed solely on an active basis in order to exploit the perceived inefficiencies in the high yield fixed income markets and to minimize the probability of exposure to securities in default.

5. PRIVATE CREDIT

Investment Objectives

The performance objectives for the private credit composite portfolio are set forth in OP&F's Private Credit Investment Policy. Both the returns for the private credit composite portfolio and respective benchmark are lagged one quarter.

Investment Characteristics

Investments will be diversified by certain criteria as set forth in OP&F's Private Credit Investment Policy.

Investment Structure

The target allocation of Total Portfolio assets to private credit will be established by OP&F's long-term Asset Allocation Policy. In order to meet this allocation target, it will generally be necessary to make commitments in excess of the target because of the contribution and distribution cash flow characteristics inherent in the underlying private credit investments. Annual commitment targets to such investments will be established by OP&F's Private Credit Investment Plan.

B. Safety Oriented Assets

1. CORE FIXED INCOME

Investment Objectives

Total return of the core fixed income composite should exceed the applicable levered return of the Bloomberg Barclays U.S. Aggregate Index over a full market cycle on an annualized basis. Total return of each Investment Manager's portfolio should rank above the median when compared to their peer group, if applicable, over a full market cycle on an annualized basis and exceed their benchmark return as specified in each Investment Manager's guidelines or applicable documentation.

Investment Characteristics

The main focus of investing will be a diversified mix of traditional and non-traditional fixed income securities and/or strategies. Each Investment Manager's portfolio shall have similar portfolio characteristics as that of their respective benchmark, however, certain Investment Manager(s) may have broad investment guidelines to allow for greater flexibility in expressing each Investment Manager's core investment themes and therefore, the core fixed income portfolio, as well as each Investment Manager's portfolio, may exhibit different portfolio characteristics as that of the Bloomberg Barclays U.S. Aggregate Index and respective benchmark, respectively.

Investment Structure

Core fixed income assets will be managed on an active basis in order to exploit the perceived inefficiencies in traditional and non-traditional fixed income markets. Given the core fixed income allocation target set forth in the Asset Allocation Policy above, the core fixed income composite portfolio may be levered up to 2.0x.

2. COMMERCIAL MORTGAGES

Investment Objectives

While in existence, the total return of the commercial mortgage composite portfolio should exceed the return of the Bloomberg Barclays U.S. Mortgage Backed Securities Index; both the returns for the commercial mortgage composite portfolio and Bloomberg Barclays U.S. Mortgage Backed Securities Index are lagged one quarter.

Investment Characteristics

While in existence, the main focus of investing will be on commercial mortgage whole loans which provide for fixed income payments derived from underlying property cash flows. Risk shall be controlled through diversification strategies and the retention of qualified Investment Manager(s) with acceptable loan underwriting and/or commercial mortgage acquisition experience.

Investment Structure

While in existence, commercial mortgage assets will be managed solely on an active basis in order to exploit the perceived inefficiencies in the commercial mortgage market. OP&F will utilize commingled fund investments to manage its commercial mortgage allocation.

3. CASH EQUIVALENTS/ENHANCED CASH

Investment Objectives

Cash equivalents are managed with a focus on capital preservation and providing a high degree of liquidity to meet ongoing cash flow needs of the Plan. Total return of the internally managed cash equivalents composite portfolio should exceed the 91-day Treasury Bill rate of return over rolling twelve-month periods. Total return of externally managed cash equivalents should meet or exceed a 3-month London Interbank Offered Rate (LIBOR) benchmark over rolling twelve-month periods.

Investment Characteristics

For internally managed cash, authorized investments, minimum short-term credit ratings, portfolio concentration limits and maturity limits for the short-term investment fund (STIF) shall be set forth in OP&F's Short-Term Cash Management Policy. In addition, the frequency of credit reviews of approved issuers of commercial paper will be based on the short-term credit rating of the issuer and set forth in OP&F's Short-Term Cash Management Policy.

For externally managed cash, the portfolio is expected to be invested in cash equivalents consistent with 2a7 money market rules and other short-duration fixed income securities that align with the specific mandate of the Investment Manager(s), including backing derivatives exposure for a total portfolio derivatives overlay program, and being a source of funds for near term benefit payments. Therefore, the portfolio will be managed to maintain a high amount of liquidity and may be laddered to meet cash flow needs.

Investment Structure

Cash, cash equivalents, and enhanced cash will be actively managed consistent with either OP&F's Short-Term Cash Management Policy for internally managed cash, or individual Investment Manager(s)' guidelines for externally managed cash.

C. Inflation Hedging Assets

1. U.S. INFLATION LINKED BONDS (TIPS)

Investment Objectives

Total return of the TIPS composite portfolio should exceed two times the Bloomberg Barclays U.S. Government Inflation-Linked Bond Index minus the cost of financing over a full market cycle on an annualized basis. Total return of each Investment Manager's portfolio should exceed their benchmark return as specified in each Investment Manager's guidelines or applicable documentation. In addition, there is a portable alpha component to the TIPS composite portfolio whereas the overall objective is to provide risk-adjusted returns greater than two times the return of the Bloomberg Barclays U.S. Government Inflation-Linked Bond Index minus the cost of financing.

Investment Characteristics

The main focus of investing will be on U.S. inflation-linked securities. The TIPS composite portfolio, as well as each Investment Manager's portfolio, shall have similar portfolio characteristics as that of the Bloomberg Barclays U.S. Government Inflation-Linked Bond Index.

Investment Structure

The TIPS allocation will be managed on an active basis. Given the TIPS allocation target set forth in the Asset Allocation Policy above, the TIPS composite portfolio will be levered approximately 2.0x. TIPS exposure, obtained through the use of derivatives and/or physical bonds, may be combined with a strategy that provides a diversified source of alpha with customized risk tolerances. Implementation of the TIPS composite portfolio will be consistent with OP&F's Derivatives Policy Statement, which provides a complete description of the appropriate use of derivatives in the Plan.

2. REAL ESTATE

Investment Objectives

The performance objectives for the real estate composite portfolio are set forth in OP&F's Real Estate Investment Policy. Both the returns for the real estate composite portfolio and respective benchmark(s) are lagged one quarter.

Investment Characteristics

Investments will be diversified by certain criteria as set forth in OP&F's Real Estate Investment Policy.

Investment Structure

The target allocation of Total Portfolio assets to real estate will be established by OP&F's long-term Asset Allocation Policy. In order to meet this allocation target, it will generally be necessary to make commitments in excess of the target because of the contribution and distribution cash flow characteristics inherent in the underlying real estate investments. Annual commitment targets to such investments will be established by OP&F's Real Estate Investment Plan.

3. REAL ASSETS

Investment Objectives

The performance objectives for the real assets composite portfolio are set forth in OP&F's Real Assets Investment Policy. Both the returns for the real assets composite portfolio and respective benchmark are lagged one quarter.

Investment Characteristics

Real assets investments will be diversified by certain criteria as set forth in OP&F's Real Assets Investment Policy.

Investment Structure

The target allocation of Total Portfolio assets to real assets will be established by OP&F's long-term Asset Allocation Policy. In order to meet this allocation target, it will generally be necessary to make commitments in excess of the target because of the contribution and distribution cash flow characteristics inherent in the underlying real assets investments. Annual commitment targets to such investments will be established by OP&F's Real Assets Investment Plan.

4. MASTER LIMITED PARTNERSHIPS (MLP)

Investment Objectives

Total return of the MLP composite portfolio should exceed the return of the Alerian Midstream Energy Index over a full market cycle on an annualized basis. Total return of each Investment Manager's portfolio should rank above the median when compared to their peer group, if applicable, over a full market cycle on an annualized basis and should exceed their benchmark return as specified in each Investment Manager's guidelines or applicable documentation.

Investment Characteristics

The main focus of investing will be on publicly traded partnership units of energy-focused MLP companies. The MLP composite portfolio as well as each Investment Manager's portfolio shall have similar portfolio characteristics as that of the Alerian Midstream Enegy Index.

Investment Structure

MLP assets will be managed solely on an active basis in order to exploit the perceived inefficiencies in the MLP publicly-traded partnership markets.

6. PROXY VOTING

OP&F's Board of Trustees believes that common stock proxies are valuable and should be voted in the long-term interests and objectives of the Plan set forth herein and OP&F's Proxy Voting Policy. Common stock proxies may be executed by the Sr. Investment Officer or the Chief Investment Officer, or their designees. Staff or their designee that exercises a proxy vote shall keep detailed records of said voting of proxies and related actions and will comply with all regulatory obligations related thereto and the policies set forth in OP&F's Proxy Voting Policy.

Staff shall provide a semi-annual summary report of proxy voting actions to the Board of Trustees/Investment Committee.

7. SECURITIES LENDING

The investment objective for the securities lending program is to generate incremental income within a high quality investment program that safeguards the return of principal, maintains adequate daily liquidity, ensures diversification and tightly controls exposure to fluctuating interest rates. The program may be operated by a bank trustee or a third party lending agent. Marking to market shall be performed daily by the agent(s) and a minimum average of at least 102 percent for domestic, and 105 percent for Non-U.S. collateral shall be diligently maintained. Securities lending reports shall be provided monthly by the agent(s) to staff. Staff will present a semi-annual summary report to Board of Trustees/Investment Committee.

8. INVESTMENT MANAGER MONITORING AND EVALUATION POLICY

The purpose of OP&F's Investment Manager Monitoring and Evaluation Policy is to establish the process and discipline for managing the Investment Manager(s) relationship. The policy states the process, responsibilities and important factors for consideration in the monitoring and evaluation process. For a complete description of the monitoring and evaluation process, please see OP&F's Investment Manager Monitoring and Evaluation Policy.

9. COMMUNICATIONS

Each Investment Manager(s) will provide hard copy reports at least quarterly, including performance measurement, asset inventories, transaction summaries, market commentary or anything else deemed significant at the time of reporting. Each Investment Manager(s) is expected to meet or participate via teleconference or webcast with OP&F's Board or staff or Investment Consultant(s) annually or as needed.

10. INVESTMENT MANAGER SEARCH POLICY

When applicable, the selection of Investment Manager(s) will be conducted under a Request for Proposal (RFP) process and the search may be on a closed or open manager universe basis. For a complete description of the selection of Investment Manager(s), please see OP&F's Investment Manager Search Policy.

11. SECURITIES LITIGATION POLICY

The Securities Litigation Policy has been adopted to ensure that OP&F takes prudent, effective, appropriate, and efficient actions to protect and increase the value of OP&F investments and to ensure that OP&F receives all money or assets which are due it as a result of the resolution of class action suits in a cost effective manner consistent with the Board's fiduciary duties. For a complete description of the policy objectives, monitoring, reporting requirements and procedures, please see OP&F's Securities Litigation Policy.

12. IRAN AND SUDAN DIVESTMENT POLICY

As required by uncodified provisions of Chapter 742 of the ORC, OP&F has adopted an Iran and Sudan Divestment Policy, the purpose of which is to divest and restrict the purchase of stocks and bonds issued by a publicly traded company with scrutinized business operations in Iran and Sudan, subject to the fiduciary responsibilities of the Board of Trustees, as set forth in Chapter 742 of the ORC. For a complete description of the responsibilities, process, reporting requirements, etc., please see OP&F's Iran and Sudan Divestment Policy.

This page intentionally left blank.

ACTUARIAL

2018 COMPREHENSIVE ANNUAL FINANCIAL REPORT

REPORT OF ACTUARY

Buck
500 Plaza Drive
Secaucus, NJ 07096-1533

October 2018

Board of Trustees
Ohio Police & Fire Pension Fund
140 East Town Street
Columbus, Ohio 43215

Members of the Board:

Buck is pleased to present this report on the results of the actuarial valuation of the Ohio Police & Fire Pension Fund (OP&F). This report presents the results of the annual actuarial valuation of the assets and liabilities of OP&F as of January 1, 2018, prepared in accordance with Chapter 742 of the Ohio Revised Code (ORC), as amended by Senate Bill No. 340. The valuation takes into account all of the promised benefits to which members are entitled, including pension and survivor benefits.

The principal results of the valuation do not take into account Medicare Part B premium reimbursements or any other health care benefits. However, at the request of the Ohio Retirement Study Council (ORSC), supplemental results have been prepared that do take into account the liability for Medicare Part B premium reimbursements and are presented in Table 1A in the report.

The purpose of the valuation is to determine the financial status of OP&F on an actuarial basis. Use of this report for any other purpose may not be appropriate and may result in mistaken conclusions due to failure to understand applicable assumptions, methodologies, or inapplicability of the report for that purpose. Buck will not accept any liability for any statement made about the report without prior review by Buck.

Where presented, references to "funded ratio" and "unfunded accrued liability" typically are measured on an actuarial value of assets basis. It should be noted that the same measurements using market value of assets would result in different funded ratios and unfunded accrued liabilities. Moreover, 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) for a portion or all of its liabilities.

This report does not include accounting disclosure information under Governmental Accounting Standards Board (GASB) Statement Nos. 67 and 68. Buck will provide disclosure information under Statement Nos. 67 and 68 in a separate report after OP&F's 2018 year-end. Buck prepares a separate valuation of OP&F retiree health care benefits.

The valuation was based on the actuarial assumptions and methods that have been adopted by the Board of Trustees, including a valuation interest rate of 8.00 percent per annum compounded annually. The assumptions were effective January 1, 2017 and recommended by the actuary based on a five-year experience review covering the period 2012-2016. The next experience review will cover the five-year period 2017-2021. Actuarial Standards of Practice require that the likelihood and extent of future mortality improvements be considered. We have reflected future mortality improvement in the valuation.

Assets and Membership Data

OP&F reported to the actuary the individual data for members as of the valuation date. While we did not verify the data at their source, we did perform tests for internal consistency and reasonableness. The amount of assets in the pension trust fund taken into account in the valuation was based on financial statements prepared for us by OP&F.

An assumption is made by Buck to account for salary adjustments reported by employers assumed to occur after the census information has been provided to Buck by OP&F.

Funding Objectives and Progress

The actuary uses an actuarial cost method to determine the portion of OP&F's liabilities accrued by the members as of the valuation date and the portion that is attributable to future years of service. The rate of contribution necessary to systematically fund the future service liabilities, the normal cost rate, is calculated under the cost method to be a level percentage of active member payroll. The portion of the liabilities accrued as of the valuation date, the actuarial accrued liability (AAL), is compared to a market-related, actuarial value of OP&F's assets. The amount of liabilities in excess of the assets is called the unfunded actuarial accrued liability (UAAL).

The actuary determines how many years are required by OP&F to completely amortize the UAAL (the funding period), using the member and employer contributions reduced by the amount allocated to health care and the amount of normal cost for the year. For 2003-2012, the funding period was infinite years, meaning the annual contribution toward the unfunded when compared to the unfunded amount was not sufficient to pay it off. As a result of benefit and member contribution changes under Senate Bill No. 340, changes to the DROP program, and a reduction in the contribution allocation to the Health Care Stabilization Fund by the Board of Trustees, and favorable asset investment gains, the pension funding period has decreased to 47 years, 33 years, 30 years, 29 years and 28 years for 2013, 2014, 2015, 2016 and 2017, respectively. As of January 1, 2018, the funding period remained at 28 years.

Section 742.16 of the ORC, as adopted by Senate Bill No. 82, sets forth an objective that the funding period is no more than 30 years. If the funding period exceeds 30 years, a plan shall be developed and presented by the Board of Trustees to the ORSC to reduce the funding period to not more than 30 years. Section 742.14 of the ORC, as amended by Senate Bill No. 340, sets forth that the 30-year funding analysis be performed every three years and the 30-year funding plan, if necessary, be developed and presented not later than 90 days after the Board of Trustees' receipt of the actuarial valuation and 30-year funding analysis. The most recent triennial analysis was based on the January 1, 2016 actuarial valuation, which showed the funding period was 29 years, so no 30-year funding plan is required. The next analysis will be performed based on the January 1, 2019 actuarial valuation.

The funded ratio (i.e., the ratio of actuarial assets to the AAL) determined as of January 1, 2018 is 69.9 percent, compared to 69.8 percent determined as of January 1, 2017. If measured using the market value of assets, the funded ratio would be higher at 71.6 percent on account of net investment gains not yet reflected in the actuarial assets. Taking into account the AAL for Medicare Part B premium reimbursements, the funded ratio would be 69.0 percent using the actuarial assets and 70.7 percent using the market value of assets. The funded ratio is not intended to measure the adequacy of funding in any analysis of a possible settlement of plan liabilities.

Supporting Schedules and Certification

The valuation report shows detailed summaries of the financial results of the valuation and membership data used in preparing this valuation. The actuary prepared the following supporting schedules for inclusion in the Actuarial and Statistical Sections of the OP&F Comprehensive Annual Financial Report: Analysis of Financial Experience, Short-Term Solvency Test, Schedule of Funding Progress, Calculation of Actuarial Value of Assets, and Retirees and Beneficiaries Added to and Removed from the Rolls.

The valuation assumptions were chosen by the Board of Trustees with the advice of the actuary. The assumptions used to develop the January 1, 2018 valuation are individually reasonable and in combination represent our best estimate of anticipated experience under the plan.

Future actuarial measurements may differ significantly from current measurements due to plan experience differing 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. Because of limited scope, Buck performed no analysis of the potential range of such future differences.

This report was prepared under the supervision of Aaron Shapiro and Wendy Ludbrook who are pension actuaries, Enrolled Actuaries, Fellows of the Society of Actuaries and Members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the pension actuarial opinions contained in this report. Bob Besenhofer is a health care actuary, Associate of the Society of Actuaries and Member of the American Academy of Actuaries and meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained in this report regarding the liability adjustments provided in Table 1A for Medicare Part B reimbursements. This report has been prepared in accordance with all Applicable Actuarial Standards of Practice. We are available to answer any questions on the material contained in the report, or to provide explanations or further details as may be appropriate.

Buck is completely independent of OP&F and its officers and key personnel. Neither we, nor anyone closely associated with us, has any relationship with them that would impair our independence.

Buck Global, LLC (Buck)

Respectfully submitted,

Aaron Shapiro

Aaron Shapiro, FSA, EA, MAAA
Principal, Retirement Consulting

Wendy Ludbrook

Wendy Ludbrook, FSA, EA, MAAA
Senior Consultant, Retirement Consulting

Bob Besenhofer, ASA, MAAA
Director, Health and Productivity

AS/WL -19428/OPF 100818 AS.WL_2018

Description of Actuarial Assumptions and Methods

Assumptions

The actuarial assumptions were adopted as of January 1, 2017, based on a five-year experience review covering the period 2012 through 2016. The next review of the actuarial assumptions is to be completed for adoption with the January 1, 2022 valuation.

Interest Rate

8.00 percent per annum, compounded annually.

Salary Increase Rates

Assumed annual salary increases are as follows:

Years of Service	Salary Increase Rate
Less than 1	10.50%
1	9.00%
2	8.00%
3	6.00%
4	4.50%
5 or more	3.75%

Payroll Growth Rate

3.25 percent per annum, compounded annually, consisting of inflation rate of 2.75 percent plus productivity increase rate of 0.5 percent.

DROP Interest Crediting Rate

4.0 percent per annum, compounded annually.

CPI-Based COLA

2.2 percent simple for increases based on the lesser of the increase in CPI and three percent.

Withdrawal Rates

The following sample withdrawal rates are based on age and service (for causes other than death, disability, or retirement):

Description of Actuarial Assumptions and Methods (continued)

Police

Years of Service	Age							
	25	30	35	40	45	50	55	60
0	9.62%	9.94%	15.93%	17.85%	15.22%	22.00%	18.68%	19.23%
1	5.88%	5.54%	6.49%	7.65%	5.99%	10.15%	11.21%	11.54%
2	3.27%	4.21%	3.92%	5.87%	5.80%	9.90%	9.34%	9.62%
3	4.11%	3.35%	4.66%	5.74%	5.61%	9.17%	8.78%	9.04%
4	3.64%	3.06%	4.29%	5.23%	4.95%	7.95%	7.47%	7.69%
5	2.59%	2.65%	3.49%	4.22%	4.22%	7.57%	8.79%	6.50%
6	2.64%	2.56%	3.28%	3.57%	3.44%	5.86%	7.03%	5.20%
7	2.58%	2.21%	3.18%	3.46%	3.44%	5.71%	6.90%	5.10%
8	2.39%	1.95%	2.56%	1.95%	2.06%	5.57%	6.63%	4.90%
9	2.12%	1.59%	1.74%	1.62%	1.18%	4.43%	6.09%	4.50%
10	1.56%	1.56%	1.66%	1.59%	1.09%	4.31%	6.03%	4.46%
11	1.49%	1.49%	1.58%	1.56%	1.00%	4.20%	5.98%	4.42%
12	1.41%	1.41%	1.50%	1.52%	0.91%	4.09%	5.92%	4.38%
13	1.31%	1.31%	1.42%	1.49%	0.83%	3.97%	5.87%	4.34%
14	1.21%	1.21%	1.33%	1.46%	0.74%	3.86%	5.82%	4.30%
15+	1.17%	1.17%	1.17%	0.91%	0.79%	0.91%	1.10%	1.96%

Firefighters

Years of Service	Age							
	25	30	35	40	45	50	55	60
0	2.69%	3.46%	3.66%	6.22%	8.48%	6.93%	8.73%	19.11%
1	2.11%	1.46%	2.96%	4.98%	7.01%	5.00%	7.16%	15.66%
2	1.53%	1.64%	1.83%	3.04%	4.98%	4.54%	7.16%	15.66%
3	1.44%	1.55%	1.74%	2.90%	4.80%	4.32%	7.16%	15.66%
4	1.15%	1.46%	1.66%	2.77%	4.61%	3.97%	5.73%	12.53%
5	0.83%	0.94%	1.33%	1.64%	2.05%	2.91%	5.33%	11.94%
6	0.78%	0.87%	1.24%	1.53%	1.72%	2.58%	3.66%	8.19%
7	0.78%	0.80%	1.19%	1.42%	1.51%	2.37%	3.35%	7.51%
8	0.72%	0.73%	1.05%	1.31%	1.40%	2.26%	3.05%	6.82%
9	0.73%	0.73%	0.86%	1.10%	1.18%	1.62%	2.29%	5.12%
10	0.73%	0.73%	0.84%	1.07%	1.16%	1.55%	2.21%	4.95%
11	0.71%	0.71%	0.82%	1.05%	1.14%	1.49%	2.13%	4.78%
12	0.68%	0.68%	0.80%	1.03%	1.12%	1.42%	2.06%	4.60%
13	0.65%	0.65%	0.78%	1.01%	1.10%	1.36%	1.98%	4.43%
14	0.61%	0.61%	0.76%	0.99%	1.07%	1.29%	1.91%	4.26%
15+	0.90%	0.90%	0.90%	0.47%	0.50%	0.59%	0.92%	1.21%

Description of Actuarial Assumptions and Methods (continued)

Rates of Disability

The following are sample rates of disability and occurrence of disability by type:

	Police		Fire	
Age	Hired Before July 2, 2013	Hired After July 1, 2013	Hired Before July 2, 2013	Hired After July 1, 2013
20	0.001%	0.001%	0.001%	0.001%
25	0.007%	0.007%	0.005%	0.005%
30	0.089%	0.089%	0.022%	0.022%
35	0.154%	0.154%	0.091%	0.091%
40	0.403%	0.403%	0.204%	0.204%
45	0.533%	0.533%	0.347%	0.347%
50	1.351%	0.691%	1.337%	0.475%
55	1.119%	1.119%	2.025%	2.025%
60	2.078%	2.078%	3.060%	3.060%
64	3.099%	3.099%	7.190%	7.190%

Upon attainment of normal retirement eligibility, the rate is 0.300%.

Type of disability

On duty permanent and total	17%
On duty partial	58%
Off duty ordinary	25%

Retirement Rates

The following rates of retirement apply to members who have not elected to be in DROP:

Age	Police	Firefighters
48	0%	0%
49-50	5%	4%
51	6%	4%
52	6%	6%
53	10%	6%
54	10%	7%
55-57	11%	11%
58	5%	16%
59	10%	16%
60	18%	20%
61	19%	20%
62	25%	50%
63	25%	20%
64	25%	25%
65-69	35%	25%
70	100%	100%

Description of Actuarial Assumptions and Methods (continued)

Deferred Retirement Option Plan Elections

90 percent of members who do not retire when first eligible are assumed to elect DROP.

DROP Retirement Rates

The following rates of retirement apply to members in DROP on or before July 1, 2013:

Police

	Years in DROP								
Age	0	1	2	3	4	5	6	7	8
48	5%	0%	0%	0%	0%	0%	0%	0%	0%
49	4%	4%	0%	0%	0%	0%	0%	0%	0%
50	4%	4%	4%	0%	0%	0%	0%	0%	0%
51	4%	4%	4%	10%	0%	0%	0%	0%	0%
52	3%	4%	4%	9%	9%	0%	0%	0%	0%
53	3%	4%	4%	9%	8%	12%	0%	0%	0%
54	4%	5%	5%	10%	9%	13%	13%	0%	0%
55	5%	5%	5%	16%	16%	14%	18%	44%	0%
56	5%	5%	5%	15%	15%	13%	17%	41%	100%
57	5%	5%	5%	16%	15%	14%	17%	43%	100%
58	5%	5%	5%	16%	15%	14%	17%	42%	100%
59	15%	5%	5%	15%	16%	16%	18%	44%	100%
60	17%	5%	5%	16%	17%	18%	19%	47%	100%
61	17%	5%	5%	17%	18%	18%	20%	48%	100%
62	16%	5%	5%	16%	17%	17%	19%	46%	100%
63	18%	6%	6%	18%	19%	19%	21%	50%	100%
64	19%	5%	5%	17%	17%	18%	19%	49%	100%
65	24%	6%	6%	23%	22%	22%	25%	59%	100%
66	24%	5%	6%	20%	19%	22%	22%	54%	100%
67	24%	5%	5%	20%	19%	22%	22%	53%	100%
68	24%	5%	5%	15%	19%	22%	22%	53%	100%
69	24%	5%	5%	20%	19%	22%	22%	47%	100%
70	100%	100%	100%	100%	100%	100%	100%	100%	100%

Description of Actuarial Assumptions and Methods (continued)

Firefighters

	Years in DROP								
Age	0	1	2	3	4	5	6	7	8
48	2%								
49	4%	3%							
50	5%	4%	4%						
51	3%	3%	3%	9%					
52	3%	3%	3%	8%	9%				
53	4%	3%	4%	10%	11%	13%			
54	4%	3%	3%	9%	11%	13%	13%		
55	6%	4%	4%	13%	13%	15%	17%	38%	
56	5%	3%	4%	13%	12%	14%	17%	37%	100%
57	5%	3%	4%	13%	12%	14%	17%	37%	100%
58	5%	3%	4%	17%	15%	15%	18%	46%	100%
59	6%	3%	4%	17%	15%	16%	19%	46%	100%
60	6%	3%	4%	18%	16%	16%	19%	48%	100%
61	6%	3%	4%	17%	15%	15%	18%	45%	100%
62	6%	3%	4%	17%	15%	16%	18%	46%	100%
63	29%	3%	4%	20%	18%	20%	18%	52%	100%
64	32%	3%	4%	21%	20%	22%	19%	55%	100%
65	33%	4%	4%	22%	21%	23%	20%	57%	100%
66	38%	4%	5%	26%	24%	23%	24%	64%	100%
67	38%	4%	5%	26%	24%	23%	24%	65%	100%
68	38%	4%	5%	26%	24%	23%	24%	65%	100%
69	38%	4%	5%	20%	25%	23%	24%	65%	100%
70	100%	100%	100%	100%	100%	100%	100%	100%	100%

The same rates apply for members entering DROP after July 1, 2013, except the rates for years three and four are replaced with the rates for year two.

Description of Actuarial Assumptions and Methods (continued)

The following rates of retirement apply to members who are not yet in DROP but may become eligible in the future:

Police

	Years Eligible for DROP									
Age	0	1	2	3	4	5	6	7	8	9+
47	6%									
48	12%									
49	7%	5%								
50	6%	5%	5%							
51	6%	5%	5%	5%						
52	6%	5%	5%	5%	5%					
53	11%	5%	5%	5%	5%	12%				
54	10%	5%	5%	5%	5%	13%	13%			
55	12%	6%	6%	6%	6%	14%	18%	43%		
56	12%	6%	5%	5%	5%	13%	17%	41%	96%	
57	13%	6%	5%	5%	5%	14%	17%	43%	94%	100%
58	7%	5%	5%	5%	5%	13%	17%	43%	98%	100%
59	10%	5%	5%	5%	5%	17%	18%	45%	97%	100%
60	20%	8%	6%	6%	6%	18%	20%	48%	98%	100%
61	32%	6%	5%	5%	5%	18%	19%	46%	93%	100%
62	29%	9%	5%	5%	5%	16%	17%	42%	92%	100%
63	33%	5%	7%	7%	7%	18%	19%	46%	95%	100%
64	31%	11%	7%	7%	7%	18%	19%	49%	93%	100%
65	47%	13%	6%	6%	6%	20%	22%	54%	100%	100%
66	47%	13%	5%	5%	5%	20%	20%	50%	100%	100%
67	47%	13%	18%	18%	18%	20%	20%	46%	100%	100%
68	47%	13%	18%	18%	18%	20%	20%	46%	100%	100%
69	47%	13%	18%	18%	18%	20%	20%	46%	100%	100%
70	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Description of Actuarial Assumptions and Methods (continued)

Firefighters

	Years Eligible for DROP									
Age	0	1	2	3	4	5	6	7	8	9+
47	3%									
48	6%									
49	6%	4%								
50	6%	4%	4%							
51	5%	3%	4%	4%						
52	5%	3%	3%	3%	3%					
53	5%	4%	4%	4%	4%	13%				
54	5%	3%	4%	4%	4%	13%	13%			
55	8%	5%	5%	5%	5%	15%	18%	38%		
56	8%	5%	4%	4%	4%	14%	17%	38%	95%	
57	8%	4%	5%	5%	5%	15%	17%	38%	98%	100%
58	8%	5%	4%	4%	4%	16%	19%	46%	97%	100%
59	9%	5%	5%	5%	5%	16%	19%	46%	97%	100%
60	10%	5%	7%	7%	7%	17%	20%	49%	86%	100%
61	11%	5%	4%	4%	4%	16%	19%	45%	93%	100%
62	15%	7%	12%	12%	12%	16%	20%	49%	95%	100%
63	33%	7%	4%	4%	4%	19%	16%	48%	100%	100%
64	37%	7%	3%	3%	3%	20%	18%	49%	100%	100%
65	37%	7%	8%	8%	8%	20%	18%	51%	100%	100%
66	37%	7%	4%	4%	4%	23%	23%	61%	100%	100%
67	37%	7%	4%	4%	4%	23%	23%	53%	100%	100%
68	37%	7%	4%	4%	4%	23%	23%	53%	100%	100%
69	37%	7%	4%	4%	4%	23%	23%	47%	100%	100%
70	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Retirement Age for Inactive Vested Participants

Commencement at age 48 and 25 years of service from full-time hire date, whichever is later.

Description of Actuarial Assumptions and Methods (continued)

Healthy Mortality

Mortality for non-disabled participants is based on the RP-2014 Total Employee and Healthy Annuitant Mortality Tables rolled back to 2006, adjusted according to the rates in the following table, and projected with the Buck Modified 2016 Improvement Scale. Rates for surviving beneficiaries are adjusted by 120%.

Age	Police	Fire
67 or less	77%	68%
68 – 77	105%	87%
78 and up	115%	120%

Disabled Mortality

Mortality for disabled participants is based on the RP-2014 Disabled Mortality Tables rolled back to 2006, adjusted according to the rates in the following table, and projected with the Buck Modified 2016 Improvement Scale.

Age	Police	Fire
59 or less	35%	35%
60 – 69	60%	45%
70 – 79	75%	70%
80 and up	100%	90%

Credited Service

Credited service on the valuation date, as provided by OP&F, includes all service credited under the plan, including service transferred from other municipal plans and purchased service. The valuation assumes future service will be credited at the rate of one year per year worked, with no assumed future crediting of transferred service or purchased service.

415 Limits

Benefits are limited by the IRC Section 415, assumed to increase 2.75 percent per annum.

Future Expenses

The normal cost is increased by all administrative expenses budgeted, net of the State Subsidy received from the State of Ohio.

Unknown Data for Members

Same as those exhibited by members with similar known characteristics. Deferred benefits are estimated at termination until OP&F has determined the actual amount at retirement. Reported salaries that are less than $10,000 when annualized are assumed to be anomalous and are reset to $60,000. The adjustment for late reported salaries is not applied in this case.

Description of Actuarial Assumptions and Methods (continued)

Late Reported Salaries

1.258 percent load to 2017 reported salaries to account for salaries accrued but not reported for the valuation. This adjustment is based on plan experience for the prior year. This adjustment will be reviewed annually for future late reported salaries.

Percent Married

75 percent of active members are assumed to be married.

Age of Spouse

Wives are assumed to be three years younger than their husbands.

Optional Form Election

33 percent of service retirees and 10 percent of disability retirees are assumed to elect the 40 percent Joint and Survivor pension at retirement. If the joint annuitant predeceases the retiree, the increase, or pop-up, in the retiree's benefit associated with the 40 percent Joint and Survivor pension is assumed to be 14.36 percent for disability retirees and 10.50 percent for all other retirees.

DROP Account Distributions

For members who terminate DROP before the required three or five years, distribution of the account balance is assumed to be made in a lump sum payment at the end of the three or five year period. Distributions for other members are assumed to be made in a lump sum or installments at retirements in a pattern equivalent to 25 percent receiving lump sums, 30 percent receiving installments over two years, and 45 percent receiving installments over 10 years.

Dependent Parents

None anticipated, but dependency of any dependent parent in receipt of benefits is assumed to continue for the parent's lifetime.

Dependent Children

Each member is assumed to have two children, born when the member was age 26. Dependency is assumed to cease when the child is 22.

Medicare Part B Premium Reimbursement

For service and disability retirements, as well as survivors, Ohio Police & Fire reimburses the standard Medicare Part B premium ($107.00 per month for 2018) provided the retiree is not eligible for reimbursement from any other sources.

90 percent of members are assumed to be eligible for reimbursement once they reach age 65.

The Medicare Part B Premium assumptions are only used to determine the cost if the Medicare Part B reimbursement payments were to be paid from the pension trust instead of the Health Care Stabilization Fund.

Description of Actuarial Assumptions and Methods (continued)

Methods

Actuarial Cost Method

Projected benefit method with individual level percentage entry age normal cost and actuarial accrued liability. Gains and losses are reflected in the actuarial accrued liability.

Adjustment for Re-Employed Retirees

The present value of future benefits and the actuarial accrued liability are increased by an amount for the re-employed retirees' defined contribution plan benefit equal to two times the re-employed retirees' post-retirement contribution balances on the valuation date.

Adjustment for Employer Accrued Liability

The actuarial accrued liability is reduced by the present value of special employer contributions -- referred to as "Local Funds." Local governments are required by state statute to pay the unfunded portion of the actuarially-determined liability of the local police and firefighter's relief and pension funds that were merged to form OP&F in 1967. The ORC designates this obligation of the local governments to the Employers' Accrued Liability. Interest on the outstanding balance is being accrued at the rate of 4.25 percent, compounded semiannually. Local governments began repayment in 1969 and payments are required to be made until 2035. The present value of the remaining payments on the valuation date is determined using the valuation interest rate.

Asset Valuation Method

A four-year moving average market value of assets that spreads the difference between the actual investment income and the expected income on the market value (based on the valuation interest rate) over a period of four years. The actuarial value shall not be less than 80 percent or more than 120 percent of market value.

Data

Census and Assets

The valuation was based on members of OP&F as of the valuation date and does not take into account future members. All census and asset data was supplied by OP&F. Salaries and benefits tabulated in the tables in this report were summed to pennies, but displayed to whole dollars, thus, totals may not be consistent with amounts displayed due to rounding.

Plan Summary

Summary of Benefit and Contribution Provisions

The following is intended to summarize the key provisions valued in this valuation. Members of OP&F and other parties should not rely on this summary as a substitute for or legal interpretation of the laws and rules covering this retirement plan.

Membership

Membership in OP&F is mandatory under Ohio Law for all full-time police officers employed by Ohio municipalities and appointed under the required statutory provisions. Membership is also mandatory for all full-time firefighters employed by Ohio municipalities, townships, villages, joint fire districts or other political subdivisions. In order to become members of OP&F, full-time firefighters are required to satisfactorily complete, or have satisfactorily completed, a firefighter training course approved under former Section 3303.07, Section 4765.55 or conducted under Section 3737.33 of the ORC.

Eligibility for Membership

Full-time police officers or firefighters are eligible for membership in OP&F immediately upon commencement of employment as a full-time police officer or firefighter.

Contributions

Employer and member contributions are established by statute and both are due monthly. Employers of police officers pay 19.5 percent of salary; employers of firefighters pay 24 percent of salary. Members contributed 10 percent of salary through July 1, 2013. On July 2, 2013, the member contribution rate increased by 0.75 percent to 10.75 percent. The member contribution rate increased annually by 0.75 percent until it reached the current 12.25 percent on July 2, 2015.

Employer Contribution Rates – Percentage of Active Member Payroll:

Time Frame of Rates	Police	Fire
Jan 1, 1986 thru Present	19.50%	24.00%

Member Contribution Rates – Percentage of Active Member Payroll:

Time Frame of Rates	Police	Fire
July 2, 2015 and Thereafter	12.25%	12.25%
July 2, 2014 thru July 1, 2015	11.50%	11.50%
July 2, 2013 thru July 1, 2014	10.75%	10.75%
Sept. 9, 1988 thru July 1, 2013	10.00%	10.00%

Plan Summary (continued)

Benefits

Service Retirement

Upon attaining a qualifying age with sufficient years of service, a member of OP&F may retire and receive a lifetime monthly pension. OP&F offers four types of service retirement: normal, service commuted, age/service commuted and actuarially reduced. Each type has different eligibility guidelines and is calculated using the member's average annual salary.

Since average annual salary is subject to certain statutory and administrative limitations, not all salary, earnings, or compensation may be used in the calculation. OP&F calculates allowable average annual salary as follows:

- For OP&F members with 15 or more years of service credit as of July 1, 2013, average annual salary is an average of the three years of highest allowable earnings, regardless of when in their career the highest years occurred.
- For OP&F members with less than 15 years of service credit as of July 1, 2013, average annual salary is an average of the five years of highest allowable earnings, regardless of when in their career the highest years occurred.
- A salary benchmark is established for members with 15 or more years of service credit as of July 1, 2013, under which certain increases are excluded from salary for the purpose of determining allowable average annual salary. This benchmarking does not apply to members with less than 15 years of service credit as of July 1, 2013.

Normal Service Retirement

Eligibility

For members hired into an OP&F-covered position after July 1, 2013, minimum retirement age is 52 with at least 25 years of service credit.

For members hired into an OP&F-covered position on or before July 1, 2013, minimum retirement age is 48 with 25 years of service credit.

Benefit

An annual pension equal to a percentage of the allowable average annual salary. The percentage equals 2.5 percent for each of the first 20 years of service, 2.0 percent for each of the next five years of service, and 1.5 percent for each year of service in excess of 25 years. The maximum pension of 72 percent of the allowable average annual salary is paid after 33 years of service.

Service Commuted Retirement

Eligibility

For members hired into an OP&F-covered position after July 1, 2013, the minimum retirement age is 52, they must have at least 15 years of service credit and 25 years have elapsed from the date of their full-time hire.

For members hired into an OP&F-covered position on or before July 1, 2013, the minimum retirement age is 48, they must have at least 15 years of service credit and 25 years have elapsed from the date of their full-time hire.

Plan Summary (continued)

Benefit

An annual pension equal to 1.5 percent of the allowable average annual salary multiplied by the number of full years of service credit (up to 25 years).

Age/Service Commuted Retirement

Eligibility

Age 62, 15 years of service credit and still working as a full-time police officer or firefighter.

Benefit

An annual pension that uses the same formula as for the Normal Service Retirement benefit.

Actuarially Reduced

Eligibility

For members hired into an OP&F-covered position after July 1, 2013, age 48 with 25 years of service credit.

Benefit

An annual pension reduced to the actuarial equivalent of the amount payable had the member retired at age 52.

Rights Upon Separation From Service

Deferred Pension

If a member meets the years of service credit requirement for any of the service retirement pension benefits but leaves service before attaining the minimum retirement age, a pension becomes payable upon attainment of the qualifying age and filing the appropriate paperwork with OP&F.

Refund of Employee Contributions

Upon separation from service, a member can receive the contributions that he or she made to the plan or the employee share of member contributions picked-up on the member's behalf by their employer. Employer contributions are not refundable.

Termination before Retirement with 25 Years of Service Credit

Benefit

Same as the Normal Service Retirement benefit, except benefit commences once the member reaches minimum retirement age.

- For members hired into an OP&F-covered position after July 1, 2013, minimum retirement age is 52.
- For members hired into an OP&F-covered position on or before July 1, 2013, minimum retirement age is 48.

Plan Summary (continued)

Termination before Retirement with 15 Years of Service Credit

Benefit

Same as the Service Commuted Retirement, except benefit commences once the member reaches minimum retirement age and 25 years have elapsed from the date of full-time hire.

- For members hired into an OP&F-covered position after July 1, 2013, the minimum retirement age is 52.
- For members hired into an OP&F-covered position on or before July 1, 2013, the minimum retirement age is 48.

Termination Before Retirement With Less Than 15 Years of Service Credit

Benefit

A lump sum amount equal to the sum of the member's contributions to OP&F.

Deferred Retirement Option Plan

Eligibility

When a member is eligible for a normal service retirement they can enter DROP by delaying retirement and continuing to work as a full-time police officer or firefighter.

- For members hired into an OP&F-covered position after July 1, 2013, normal service retirement eligibility is age 52 with at least 25 years of service credit.
- For members hired into an OP&F-covered position on or before July 1, 2013, normal service retirement eligibility is age 48 with at least 25 years of service credit.

Benefit

DROP is a cost neutral benefit offered by OP&F. Upon the DROP effective date, the member's pension is calculated as if that were their date of retirement. While the member continues to work and draw their normal salary, the amount they would have received in retirement benefits accumulates tax-deferred at OP&F on their behalf, as well as a portion of their OP&F employee contributions and interest. Since the member's pension has already been calculated:

- The years of DROP service do not apply towards the member's normal service retirement.
- If a member earns a higher salary after their DROP effective date due to a raise, job promotion, etc., it will not be used to recalculate their pension and, therefore, will not result in that member receiving a higher pension upon retirement.

The DROP interest rate is set by administrative rule and is subject to change at any time. OP&F credits interest to all DROP balances each month at a rate equal to the 10-year United States Treasury Note Business Day Series, as published by the U.S. Department of the Treasury, with a cap of five percent. This variable interest rate is adjusted quarterly to match the published 10-year U.S. Treasury Note rate for the last trading business day of the preceding quarter and is in effect for the subsequent quarter.

Members whose election to participate in DROP is effective after July 1, 2013 do not qualify for annual cost-of-living allowances (COLA) at any time during DROP. Members whose election to participate in DROP is effective on or before July 1, 2013 will continue to receive a cost-of-living allowance during DROP, but only when they reach 55 years of age and have been participating in DROP for at least one year. Those members whose enrollment date into DROP qualify them for a cost-of-living allowance during DROP will receive three percent of their base pension.

Plan Summary (continued)

Member contributions are credited to their DROP account based on the number of years of DROP service. For those members whose election to participate in DROP is effective after July 1, 2013, OP&F applies contributions to DROP in the following manner:

Years of DROP Service	Percentage of Member Contributions
Years 1-3	50 percent of member's contributions
Year 4-5	75 percent of member's contributions
Years 6-8	100 percent of member's contributions

For this group of members, the minimum participation in DROP, without penalty, is five years and the maximum is eight.

- If a member terminates employment within the first five years of joining DROP, then the member forfeits all of their DROP interest. In addition to losing their accumulated interest, members who choose to terminate employment before completing their required participation period cannot withdraw any of the funds in their DROP account until the minimum participation period has expired. The only exception to this rule is if the member dies during the minimum participation period. The member's surviving spouse, designated beneficiary or estate, as applicable, will receive the entire DROP account balance determined at the time of death.
- If a member chooses to continue working after eight years in DROP, the member forfeits all DROP benefits and receives the Normal Service Retirement benefit upon retirement, which will be calculated to include the service credit earned during the DROP participation period.

For those members whose election to participate in DROP was on or before July 1, 2013, member contributions are applied to DROP under the following schedule:

Years of DROP Service	Percentage of Member Contributions
Years 1-2	50 percent of member's contributions
Year 3	75 percent of member's contributions
Years 4-8	100 percent of member's contributions

For this group of members, the minimum participation in DROP, without penalty, is three years and the maximum is eight.

- If a member terminates employment within the first three years of joining DROP, then the member forfeits all of their DROP interest. In addition to losing their accumulated interest, members who choose to terminate employment before completing their required participation period cannot withdraw any of the funds in their DROP account until the minimum participation period has expired. The only exception to this rule is if the member dies during the minimum participation period. The member's surviving spouse, designated beneficiary or estate, as applicable, will receive the entire DROP account balance determined at the time of death.
- If a member chooses to continue working after eight years in DROP, the member forfeits all DROP benefits and receives the Normal Service Retirement benefit upon retirement, which will be calculated to include the service credit earned during the DROP participation period.

All DROP members retiring before the eight-year max receive their Normal Service Retirement benefit determined at the time of DROP entry, with the COLA adjustment (if applicable) to date of retirement when eligible. These members will also receive the DROP account balance as a lump sum or monthly annuity.

Plan Summary (continued)

If a member dies while participating in DROP, the member's surviving spouse, designated beneficiary or estate will receive the entire DROP account balance determined at the time of death. The surviving spouse or contingent dependent beneficiary will receive the greater of the retirement allowance made at the time of DROP entry or the Normal Service Retirement benefit paid with COLA adjustments (if applicable) to the date of death, paid as if the member had elected a 50 percent joint and survivor option at death. All other statutory death benefits will apply.

If the member becomes disabled while in DROP and has not terminated employment, the member must choose either to receive a disability benefit or a service retirement with DROP. If the member chooses the disability benefit, the member forfeits all DROP benefits and receives the disability benefit, with service credit during the DROP period included.

Disability Benefits

Members who become unable to perform their official duties and whose earning capacities are impaired may qualify for disability benefits. Disability benefits are classified as either service-incurred (on-duty) or non-service-incurred (off-duty) and differ in eligibility requirements and benefit formulas. Annual medical evaluations are required for disability benefit recipients who would not have met the age and service requirements for a Normal Service Retirement, unless the Board of Trustee waives this requirement based upon an OP&F physician's certification that the disability is ongoing and further evaluation would not be cost effective. Annual earnings statements are also required to be submitted to OP&F.

Permanent and Total Disability (On-Duty)

Eligibility

No age or service requirement.

Benefit

An annual benefit equal to 72 percent of the allowable average annual salary.

Partial Disability (On-Duty)

Eligibility

No age or service requirement.

Benefit

If the member has less than 25 years of service credit an annual benefit fixed by the Board of Trustees to be a certain percent up to 60 percent of the allowable average annual salary. If the member has 25 or more years of service credit, the annual disability benefit is equal to the Normal Service Retirement amount.

Non-Service Incurred Disability (off-Duty)

Eligibility

Any age and five years of service credit.

Benefit

An annual amount is the percent awarded by the Board of Trustees and may not exceed 60 percent of the allowable average annual salary. Service over 25 years cannot be used in calculating an off-duty disability award.

Plan Summary (continued)

Pre-Retirement Survivor Annuity

Eligibility

Upon death before retirement, but after having satisfied the requirements for a Normal Service Retirement or an Age/Service Commuted retirement.

Benefit

The surviving spouse or contingent dependent beneficiary will receive the equivalent of a 50 percent joint and survivor annuity, calculated under the assumption that the decedent had retired effective the day following his/her death.

Statutory Survivor Benefits

Eligibility

Upon death of any active or retired member of OP&F.

Benefit

- Surviving Spouse's Benefit

  An annual amount equal to $6,600 ($550 monthly), plus an annual COLA of three percent of the original base benefit, paid each July 1, beginning July 1, 2000. The benefit is paid to the surviving spouse for life.

  If the spouse is receiving a full death benefit under the Death Fund Benefit statute, the spouse's statutory survivor benefit is $4,920 ($410 monthly). The Death Benefit Fund is funded by the State of Ohio and provides special benefits to eligible survivors of public safety officers who are killed in the line of duty or who die from injuries or disease incurred in the performance of official duties. These eligible survivors are entitled to receive the member's full monthly salary, which will be reduced at the member's retirement eligibility date. These death benefit payments are in addition to any optional payment plan benefits elected by the member.

- Surviving Child's Benefit

  An annual amount equal to $1,800 ($150 monthly), payable until such child attains age 18 or marries, whichever occurs first. The payment can continue to an unmarried full-time student until age 22. A dependent disabled child, regardless of age at time of member's death, is entitled to a benefit until death or recovery from disability. A COLA of three percent of the original base is payable each July 1.

- Dependent Parents' Benefit

  If there is no surviving spouse or dependent children, an annual amount of $2,400 ($200 monthly) is payable to one dependent parent or $1,200 ($100 monthly) each to two dependent parents for life or until dependency ceases or remarriage. A COLA of three percent of the original base is payable each July 1.

Plan Summary (continued)

Survivors	Monthly Pension	Causes of Termination
Widow / Widower	current amount + future COLA	* Death
Minor child	current amount + future COLA	* Death * Marriage * Attainment of age 22
Dependent disabled child	current amount + future COLA	* Death * Recovery from disability
One dependent parent	current amount + future COLA	* Death * Re-marriage * Termination of dependency
Two dependent parents	½ current amount (each) + future COLA	

Benefit Type	Base Monthly Benefit Amount	Base Monthly Benefit Amount Plus Increases Through July 1, 2017	Monthly Increases Effective July 1, 2018
Spouse *	$550	$842.60 **	$16.50
Child	150	229.80 ***	4.50
One Parent	200	306.40 ****	6.00
Two Parents	100	153.20	3.00

* Spouse's benefit is $410 if spouse is receiving a full death benefit under the Death Fund Benefit statute. There is no annual increase on this benefit payment.

** On July 1, 2000 the Statutory Surviving Spouse Benefit increased by $12.10 per month. This increase was a percentage of the original benefit amount, equaling the percentage increase in the CPI plus unused prior increases, to a maximum of three percent. Every year after 2000, the monthly increase was $16.50 or three percent of the base benefit.

*** On July 1, 2000 the Statutory Child Benefit increased by $3.30 per month. This increase was a percentage of the original benefit amount, equaling the percentage increase in the CPI plus unused prior increases, to a maximum of three percent. Every year after 2000, the monthly increase was $4.50 or three percent of base benefit.

**** On July 1, 2000 the Statutory Surviving One Parent Benefit increased by $4.40 per month. This increase was a percentage of the original benefit amount, equaling the percentage increase in the CPI plus unused prior increases, to a maximum of three percent. Every year after 2000, the monthly increase was $6.00 or three percent of base benefit.

Plan Summary (continued)

Lump Sum Death Benefit

Eligibility

Upon death of any retired or disabled member of OP&F.

Benefit

A lump sum payment of $1,000 is paid to the member's surviving spouse or, if no surviving spouse, to a designated beneficiary. If there is no surviving spouse or beneficiary, then it is paid to the member's estate.

Annuities

Effective Feb. 28, 1980, for those members who are retiring on either a service pension or a disability benefit, optional annuity plans can be chosen, subject to certain limitations. The member can elect actuarially reduced benefits under a joint and survivor annuity, life annuity certain and continuous, or multiple beneficiary annuity plan. The optional annuity plans allow the member's beneficiary(ies) to receive a lifetime payment upon the member's death.

Annuity Types

Single Life Annuity

This plan pays the maximum retirement allowance that the member is entitled to receive and, upon the member's death, none of the pension or benefit is continued to any beneficiary. For unmarried members, this is the standard annuity plan. Married members may elect this plan only if the spouse consents to the selection in writing.

Joint and Survivor Annuity (JSA)

Under this plan, a member designates that, upon his or her death, a certain percentage of the member's actuarially reduced benefit is continued to a surviving designated beneficiary for life. Any percentage between one percent and 100 percent of the member's reduced pension may be continued to the surviving designated beneficiary, but the percent continued may be limited based on the beneficiary's age.

If a member is married at the time benefits are elected, the standard plan is a 50 percent JSA continuing one-half of the member's reduced monthly benefit to his or her surviving spouse. If the member wants to select a plan which provides for the continuation of benefits for someone other than the spouse or less than 50 percent JSA to the spouse, the spouse must consent in writing to this choice. This plan automatically terminates upon death of the beneficiary, to be effective the month following OP&F's receipt of notice of death, or it may be cancelled upon divorce with the consent of the member's spouse or a specific court order, at which point the annuity reverts to the single life annuity to the member. Elected option may be cancelled within one year after benefits commence, with the consent of the beneficiary.

Multiple Beneficiary Annuity

Under the multiple beneficiary annuity plan, a member may designate up to four beneficiaries at the time of retirement so that, upon death, a certain percentage of the member's actuarially reduced benefit is continued to the surviving designated beneficiaries for their lives. If the member is married at the time of retirement, the spouse must consent in writing for an annuity selection that provides for less than 50 percent JSA payable to the spouse.

Plan Summary (continued)

Life Annuity Certain and Continuous (LACC)

This plan provides a lifetime allowance to the member and will only be paid to a designated beneficiary if the member dies and the period elected by the member has not expired. The minimum guarantee period is five years and the maximum is 20 years. 100 percent of the member's reduced pension continues to the beneficiary for the guarantee period selected. The elected option may be cancelled within one-year after benefits commence, with the consent of the beneficiary. If the member is married at the time of retirement, the spouse must consent in writing for an annuity selection that provides for less than a 50 percent JSA payable to the spouse.

Tiered Retirement Plan – COLA or Terminal Pay (Non-COLA)

Members retiring on or after July 24, 1986, who had 15 or more years of service credit as of January 1, 1989, are eligible to select between two different pension calculation plans. Under the terminal pay method, a member's monthly pension benefit is calculated using terminal payouts at the time of retirement such as accrued sick leave and vacation compensation to increase the amount of the average annual salary, but subject to certain limitations, and these members are not eligible to receive cost-of-living allowance adjustments. Under the COLA method, terminal payments are not included in the calculation of a member's average annual salary, but the member is eligible to receive COLA increases. The COLA method is the automatic calculation method for any active member with fewer than 15 years of service as of January 1, 1989.

Under the COLA method, members who are at least 55 years old and have been receiving OP&F pension benefits for at least one year are eligible for cost-of-living allowance adjustments. The age 55 provision for receiving a COLA does not apply to those who are receiving a permanent and total disability benefit, surviving beneficiaries under optional plans and statutory survivors.

The COLA amount for members who have 15 or more years of service credit as of July 1, 2013 and members who are receiving a pension benefit that became effective before July 1, 2013 will be equal to three percent of the member's base pension benefit.

The COLA amount for members who have less than 15 years of service credit as of July 1, 2013, and members whose pension benefit became effective on or after July 1, 2013, will be equal to a percentage of the member's base pension benefit where the percentage is the lesser of three percent or the percentage increase in the consumer price index, if any, over the twelve-month period that ends on the thirtieth day of September of the immediately preceding year, rounded to the nearest one-tenth of one percent.

Members who retired prior to July 24, 1986 or their surviving beneficiaries under optional plans are entitled to cost-of-living allowance increases. The annual increase is paid on July 1st of each year. The annual COLA increase is $360 under a Single Life Annuity Plan with proportional reductions for optional payment plans.

Re-employed Retiree's Defined Contribution Plan Benefit

Effective June 30, 1991, every person who is retired under an Ohio public pension plan and who is re-employed in an OP&F covered position must contribute to OP&F at the same rate as other police officers or firefighters. The employer pays the normal rate as well. If the re-employed member terminates employment before age 60, Ohio law allows the member to receive a lump sum payment of post-retirement employee contributions made during the period of re-employment, plus interest. If the member waits until age 60 to receive this benefit, he or she can choose to receive either a lump sum payment in an amount equal to twice his or her contributions, plus

Plan Summary (continued)

interest, or a lifetime annuity paid monthly. If, after calculation, the member's lifetime monthly annuity is less than $25, the member may only select the lump sum payment option. If the member is married, spousal consent is required before payment can occur.

Group Health Insurance and Medicare

Update from OP&F to provide more current information:

Although support for retiree health care is not a vested right and is a discretionary benefit from OP&F subject to change at any time, the Board of Trustees has elected to continue to sponsor a plan for the last 45 years.

Beginning in 1974, OP&F sponsored a group health care program for retirees and their dependents by covering all or part of the plan premiums, in addition to paying all claims. Although several changes were made throughout the years, this group plan was in existence until Dec. 31, 2018.

Effective July 1992, retirees and survivors made monthly medical benefit contributions which are credited to the Health Care Stabilization Fund. These contributions were reviewed on an annual basis to determine adequacy with the rising cost of health care. In 2004, a new contribution strategy was implemented. Retirees and survivors then paid a percentage of the full cost of the benefit based on the year of retirement. Due to the rising cost of health care and the primary source requirements of pension reform legislation enacted in 2013, OP&F is no longer able to offer a plan as in the past. On Dec. 31, 2018, the group health care plan ended.

On Jan. 1, 2019, a stipend-based health care model replaced the self-insured group health care plan. OP&F contracted with a vendor who assists eligible retirees in choosing health care plans that are available where they live (both Medicare-eligible and pre-65 populations). A stipend funded by OP&F is available to these members through a Health Reimbursement Arrangement and can be used to reimburse retirees for qualified health care expenses. As a result of this change, it is expected that OP&F will be able to provide stipends to eligible participants for the next 15 years.

Regardless of a benefit recipient's participation in the health care program, OP&F is required by-law to pay eligible recipients of a service pension, disability benefit and spousal survivor benefit for their Medicare Part B insurance premium, up to the statutory maximum provided the benefit recipient is not eligible to receive reimbursement from any other source. Once OP&F receives the necessary documentation, a monthly reimbursement is included as part of the recipient's next benefit payment.

Note: This benefit is not included in the principal valuation results, but it is included in the results of the retiree health care valuation.

ANALYSIS OF FINANCIAL EXPERIENCE - PENSION TRUST FUND

GAINS AND LOSSES AS OF JAN. 1, 2018

Type of Activity	Experience Gain (Loss)
Plan experience:	
Turnover	**$(27,220,946)**
If more liabilities are released by withdrawal separations from active membership than assumed, there is a gain. If smaller releases, there is a loss.	
Retirement	**(6,766,327)**
If members retire at older ages than assumed, there is a gain. If younger, there is a loss.	
Death among retired members and beneficiaries	**(19,519,180)**
If more deaths occur than assumed, there is a gain. If fewer deaths than assumed, there is a loss.	
Disability Retirements	**3,477,918**
If disability claims are less than assumed, there is a gain. If more claims, there is a loss.	
Salary increase/decrease	**107,318,122**
If there are smaller pay increases than assumed, there is a gain. If greater increases, there is a loss.	
Return to work	**(1,185,692)**
If participants return to work with previous service restored, there is a loss.	
New Entrants	**(6,304,990)**
If new entrants join OP&F, there is a loss.	
Deaths among actives	**(1,236,303)**
If claim costs are less than assumed, there is a gain. If more claim costs, there is a loss.	
Investment	**(148,330,338)**
If there is a greater investment return than assumed, there is a gain. If less return, there is a loss.	
Other Experience and Payroll Growth	**5,633,515**
If other experience, including less than expected payroll growth, increases the unfunded liability, there is a loss. Otherwise, there is a gain.	
NET GAIN (OR LOSS) DURING THE YEAR DUE TO PLAN EXPERIENCE	**$(94,134,221)**

SHORT-TERM SOLVENCY TEST

A short-term solvency test is one means of checking a system's progress under its funding program. In a short-term solvency test, the plan's valuation assets are compared with: 1) Active member contributions on deposit; 2) The liabilities for future benefits to present retired lives; 3) The liabilities for service already rendered by active members. In a system that has been following the discipline of level percent of payroll financing, the liabilities for active member contributions on deposit (liability 1) and the liabilities for future benefits to present retired lives (liability 2) will be fully covered by present assets (except in rare circumstances). In addition, the liabilities for service already rendered by active members (liability 3) will be partially covered by the remainder of present assets. Generally, if the system has been using level cost financing, the funding portion of liability 3 will increase over time. Liability 3 being fully funded is very rare.

SHORT-TERM SOLVENCY TEST - PENSION TRUST FUND (DOLLARS IN THOUSANDS)

	Valuation as of Jan. 1	(1) Active Member Contributions	(2) Retirants and Beneficiaries	(3) Active Members (Employer Financed Portion)	Valuation Assets	Portion of Accrued Liabilities Covered by Valuation Assets (1)	(2)	(3)
Police	2018	$1,515,993	$6,870,423	$ 3,138,109	$8,052,548	100%	95%	-%
Fire	2018	1,345,237	5,150,080	2,867,386	6,542,014	100%	100%	2%
Police	2017	1,451,473	6,576,192	3,184,383	7,825,895	100%	97%	-%
Fire	2017	1,276,582	4,922,990	2,878,774	6,336,593	100%	100%	5%
Police	2016	1,386,649	6,085,896	3,002,889	7,473,979	100%	100%	-%
Fire	2016	1,213,330	4,614,250	2,832,862	6,179,025	100%	100%	12%
Police	2015	1,210,400	5,857,146	3,015,390	7,141,575	100%	100%	2%
Fire	2015	1,062,097	4,337,819	2,912,741	5,887,716	100%	100%	17%
Police	2014	1,171,496	5,368,637	2,583,711	6,088,816	100%	92%	-%
Fire	2014	1,028,465	3,924,388	2,501,058	4,974,383	100%	100%	1%
Police	2013	1,131,664	5,166,808	2,532,580	5,670,069	100%	88%	-%
Fire	2013	974,362	3,751,279	2,451,195	4,607,962	100%	97%	-%
Police	2012	1,100,146	4,960,051	2,969,900	5,694,783	100%	93%	-%
Fire	2012	965,598	3,581,800	2,769,204	4,614,176	100%	100%	2%
Police	2011	1,100,251	4,368,659	3,008,219	5,885,449	100%	100%	14%
Fire	2011	956,559	3,132,521	2,818,228	4,795,563	100%	100%	25%
Police	2010	1,067,209	4,216,219	2,926,199	5,975,121	100%	100%	24%
Fire	2010	916,033	3,004,267	2,700,815	4,818,972	100%	100%	33%
Police	2009	1,026,597	4,077,113	2,832,235	5,163,648	100%	100%	2%
Fire	2009	874,756	2,895,243	2,601,180	4,145,508	100%	100%	14%

ACTIVE MEMBER VALUATION DATA - PENSION TRUST FUND

Valuation as of Jan. 1	Number of Employers		Number of Active Members*		Average Annual Salary		Percentage of Average Annual Salary Increases		Annual Payroll (Millions)
	Police	Fire	Police	Fire	Police	Fire	Police	Fire	
2018	528	398	15,214	13,194	$76,397	$77,870	0.8%	0.4%	$2,209.3
2017	530	396	15,205	12,970	75,772	77,583	3.8%	4.5%	2,180.9
2016	527	388	14,846	12,778	72,976	74,229	4.2%	4.2%	2,060.9
2015	529	388	14,919	12,850	70,033	71,228	1.9%	1.6%	1,986.6
2014	532	386	14,841	12,764	68,724	70,087	0.8%	1.0%	1,942.3
2013	531	380	14,745	12,699	68,163	69,360	1.6%	1.0%	1,913.4
2012	537	380	14,854	12,769	67,094	68,663	2.2%	1.6%	1,897.4
2011	533	384	15,293	12,929	65,649	67,559	2.0%	2.0%	1,868.5
2010	536	385	15,581	13,038	64,373	66,223	1.4%	1.7%	1,895.2
2009	539	382	15,889	13,173	63,480	65,097	3.1%	3.3%	1,900.9

* Includes rehired retirees.

RETIREES AND BENEFICIARIES ADDED TO AND REMOVED FROM ROLLS - PENSION TRUST FUND (DOLLARS IN THOUSANDS)

	Added to rolls		Removed from rolls		Rolls end of year				
Year Ended Dec. 31	Number	Annual Allowances	Number	Annual Allowances	Number	Annual Allowances	Percentage Change in Allowance	Average Annual Allowances	Percentage Change in Membership
2017	1,458	$50,476	1,010	$24,321	29,361	$1,067,769	4.53%	$36.37	1.55%
2016	1,401	47,436	890	21,186	28,913	1,021,509	4.67%	35.33	1.80%
2015	1,450	48,864	1,011	22,141	28,402	975,929	4.81%	34.36	1.57%
2014	1,261	41,378	859	17,204	27,963	931,176	4.59%	33.30	1.46%
2013	1,362	44,842	1,044	23,851	27,561	890,288	4.42%	32.30	1.17%
2012	1,390	48,249	1,225	19,469	27,243	852,602	5.58%	31.30	0.61%
2011	1,783	65,572	779	16,397	27,078	807,550	8.52%	29.82	3.85%
2010	1,165	34,553	803	15,721	26,074	744,144	4.74%	28.54	1.41%
2009	1,128	30,920	733	14,566	25,712	710,463	4.52%	27.63	1.56%
2008	1,046	25,590	607	12,825	25,317	679,769	4.18%	26.85	1.76%

CALCULATION OF ACTUARIAL VALUE OF ASSETS - PENSION TRUST FUND

Item	Amount
1. Market Value of Assets as of Dec. 31, 2017	$14,963,614,004
2. Determination of Deferred Gain (Loss)	

	Return on Market Value of Assets					
Year	Actual	Expected	Gain/(Loss)	Percentage Deferred	Deferred Amount	
2017	$1,808,150,698	$1,073,514,102	$734,636,596	75%	$550,977,447	
2016	1,232,569,108	1,046,667,736	185,901,372	50%	92,950,686	
2015	(11,259,198)	1,088,245,528	(1,099,504,726)	25%	(274,876,182)	
2014	786,522,451	1,065,611,384	(279,088,933)	-%	-	
	Total Deferred Gain (Loss)				(369,051,951)	
	Total Deferred Loss					(369,051,951)

3. Adjustment for 20% corridor	-
4. Actuarial Value of Assets available for benefits (1) - (2) + (3)	$14,594,562,053

SCHEDULE OF FUNDING PROGRESS - PENSION TRUST FUND

FOR THE VALUATION YEAR ENDING JAN. 1, 2018
(DOLLARS IN MILLIONS)*

Valuation Year Jan. 1	Valuation Assets *	Actuarial Accrued Liabilities (AAL)	Unfunded Actuarial Accrued Liabilities (UAAL)	Ratio of Assets to AAL	Active Member Payroll	UAAL as a Percentage of Active Member Payroll
2018	$14,594.6	$20,887.2	$6,292.6	69.9%	$2,209.3	284.8%
2017	14,162.5	20,290.4	6,127.9	69.8%	2,180.9	281.0%
2016	13,653.0	19,135.9	5,482.9	71.3%	2,060.9	266.1%
2015	13,029.3	18,395.6	5,366.3	70.8%	1,986.6	270.1%
2014	11,063.2	16,577.8	5,514.6	66.7%	1,942.3	283.9%
2013	10,278.0	16,007.9	5,729.9	64.2%	1,913.4	299.5%
2012	10,309.0	16,346.7	6,037.7	63.1%	1,897.4	318.2%
2011	10,681.0	15,384.4	4,703.4	69.4%	1,868.5	251.7%
2010	10,794.1	14,830.7	4,036.6	72.8%	1,895.2	213.0%
2009	9,309.2	14,307.1	4,997.9	65.1%	1,900.9	262.9%

* The amounts reported in this schedule do not include assets or liabilities for post-employment health care benefits.

EMPLOYER CONTRIBUTION RATES (1967 - PRESENT)*

	Employer Rates	
Time Frame of Rates	Police	Fire
Jan. 1, 1986 thru Present	19.50%	24.00%
Jan. 1, 1985 thru Dec. 31, 1985	20.03%	24.59%
Jan. 1, 1984 thru Dec. 31, 1984	21.35%	24.59%
Jan. 1, 1983 thru Dec. 31, 1983	18.45%	23.57%
Jan. 1, 1982 thru Dec. 31, 1982	16.62%	22.39%
Jan. 1, 1981 thru Dec. 31, 1981	15.60%	20.72%
Jan. 1, 1980 thru Dec. 31, 1980	15.70%	19.87%
Jan. 1, 1979 thru Dec. 31, 1979	18.40%	20.11%
Jan. 1, 1978 thru Dec. 31, 1978	17.53%	18.90%
Jan. 1, 1977 thru Dec. 31, 1977	15.34%	16.77%
Jan. 1, 1976 thru Dec. 31, 1976	14.02%	15.57%
Jan. 1, 1975 thru Dec. 31, 1975	12.49%	13.78%
Jan. 1, 1974 thru Dec. 31, 1974	12.88%	13.60%
Jan. 1, 1973 thru Dec. 31, 1973	12.85%	13.41%
Jan. 1, 1972 thru Dec. 31, 1972	12.96%	13.26%
Jan. 1, 1971 thru Dec. 31, 1971	12.81%	12.96%
Jan. 1, 1970 thru Dec. 31, 1970	15.52%	15.52%
Jan. 1, 1969 thru Dec. 31, 1969	14.68%	14.49%
Jan. 1, 1968 thru Dec. 31, 1968	13.66%	13.50%
Jan. 1, 1967 thru Dec. 31, 1967	13.55%	13.13%

* For employer billing purposes, the September 1988 billing was carried through Sept. 30, 1988 and was not cut off at Sept. 8, 1988. The same goes for the employee rates for the most part.

MEMBER CONTRIBUTION RATES

	Member Rates	
Time Frame of Rates	Police	Fire
July 2, 2015 thru Present	12.25%	12.25%
July 2, 2014 thru July 1, 2015	11.50%	11.50%
July 2, 2013 thru July 1, 2014	10.75%	10.75%
Sept. 9, 1988 thru July 1, 2013	10.00%	10.00%
Aug. 1, 1986 thru Sept. 8, 1988	9.50%	9.50%
March 1, 1980 thru July 31, 1986	8.50%	8.50%
Jan. 1, 1968 thru Feb. 28, 1980	7.00%	7.00%
Jan. 1, 1967 thru Dec. 31, 1967	6.00%	6.00%

STATISTICAL

2018 COMPREHENSIVE ANNUAL FINANCIAL REPORT

STATISTICAL OBJECTIVES

STATISTICAL OBJECTIVES

The objectives of the statistical section are to provide additional historical perspective, context and relevant details to assist readers in using information in the financial statements, notes to the financial statements and RSI in order to understand and assess OP&F's overall financial condition. In support of these objectives, OP&F reports information in this section in compliance with GASB Statement 44, Economic Condition Reporting: The Statistical Section. This statement establishes standardized reporting requirements relative to the supplementary information provided in this section.

The schedules that follow show financial trend information about the growth of OP&F's assets for the past 10 years. These schedules provide detailed information about the trends of key sources of additions and deductions to OP&F's assets, which assist in providing a context framing how OP&F's financial position has changed over time. The financial trend schedules presented are:

- Changes in Fiduciary Net Position.
- Revenues by Source.
- Expenses by Type.
- Benefit Expenses by Type.
- DROP Program Balances.

The schedules beginning on page 128 show revenue capacity information, demographic and economic information and operating information. The demographic and economic information is designed to assist in understanding the environment in which OP&F operates. The operating information is intended to provide contextual information about OP&F's operations to assist in assessing OP&F's economic condition. The revenue capacity information, the demographic and economic information and the operating information presented include:

- Active Member and Total Payroll Base Statistics.
- Active Membership Data.
- Retired Membership by Type of Benefits.
- Retirees and Beneficiaries Statistics.
- Average Monthly Benefit Payments.
- Member Health Care Contributions.
- State of Ohio Subsidy Payments.
- OP&F's Cost of Living Allowance (COLA) History.
- Employer Contribution Rates.
- Member Contribution Rates.
- Health Care Allocation Rates from Employer Contributions.
- Actuarial Interest Rates.
- DROP and Reemployed Interest Rates.
- DROP Member Count Roll Forward.
- Actuarial Valuation Information – Pension Trust Fund.
- Historical Annual Investment Results.
- Number of Employer Units.
- Retired Membership by Type of Benefits and Average Annual Allowance.
- Schedule of Average Benefits.
- Principal Participating Employers.
- OP&F Employee Budgeted Position Counts.
- Personnel Salaries by Year.
- OP&F Budget.
- Other Operating Statistics.
- Death Benefit Fund.

To help readers of this CAFR, OP&F has added a List of Professional Acronyms and Symbols at the end of the statistical section.

FINANCIAL TRENDS

CHANGES IN FIDUCIARY NET POSITION

COMBINED TRUST FUND (DOLLARS IN MILLIONS)

	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Additions										
Employer Contributions	$489.9	$473.2	$465.4	$438.7	$427.8	$418.2	$417.0	$407.5	$414.0	$404.3
Member Contributions and Purchases	295.5	282.0	268.6	245.8	224.0	211.4	177.5	176.8	175.5	168.4
Investment Income	(487.9)	1,923.5	1,317.4	(10.0)	860.7	2,053.0	1,657.9	229.6	1,651.8	1,894.9
Health Care Contributions	73.2	74.5	73.2	71.2	70.0	66.6	65.1	62.5	58.9	59.1
Other Revenues	24.9	28.6	36.3	29.2	25.2	28.5	30.7	40.5	25.8	24.3
TOTAL ADDITIONS	**395.6**	**2,781.8**	**2,160.9**	**774.9**	**1,607.7**	**2,777.7**	**2,348.2**	**916.9**	**2,326.0**	**2,551.0**
Deductions										
Benefit Payments	1,514.1	1,429.2	1,396.4	1,369.9	1,310.5	1,302.5	1,236.4	1,204.2	1,132.1	1,085.1
Refund of Member Contributions	18.3	20.6	14.2	13.8	15.2	16.0	26.5	22.0	15.8	15.7
Administrative Expenses	17.0	20.3	19.6	16.3	16.2	15.9	15.4	15.4	15.1	16.3
TOTAL DEDUCTIONS	**1,549.4**	**1,470.1**	**1,430.2**	**1,400.0**	**1,341.9**	**1,334.4**	**1,278.3**	**1,241.6**	**1,163.0**	**1,117.1**
CHANGES IN FIDUCIARY NET POSITION	**(1,153.8)**	**1,311.7**	**730.7**	**(625.1)**	**265.8**	**1,443.3**	**1,069.9**	**(324.7)**	**1,163.0**	**1,433.9**
FIDUCIARY NET POSITION - BEGINNING OF YEAR	**$15,888.7**	**$14,577.0***	**$13,853.3**	**$14,478.4****	**$14,219.6**	**$12,776.3*****	**$10,468.5**	**$10,793.2**	**$9,630.2**	**$8,196.3**
FIDUCIARY NET POSITION - END OF YEAR	**$14,734.9**	**$15,888.7**	**$14,584.0**	**$13,853.3**	**$14,485.4**	**$14,219.6**	**$11,538.4**	**$10,468.5**	**$10,793.2**	**$9,630.2**
Reserve Fund Balances:										
Employers' Contribution Reserves	$(291.5)	$1,535.3	$1,155.8	$1,058.3	$2,701.1	$2,907.9	$873.8	$901.6	$1,515.9	$674.6
Members' Contribution Reserves	3,005.9	2,861.2	2,728.1	2,600.0	2,491.3	2,393.7	2,122.8	2,065.8	2,056.8	1,983.2
Health Care Contribution Reserves	793.8	932.1	901.6	929.4	1,031.9	1,053.5	935.6	780.1	717.7	573.4
Pension Reserves	11,226.7	10,560.1	9,798.5	9,265.6	8,261.1	7,864.5	7,606.2	6,721.0	6,502.8	6,399.0
TOTAL FIDUCIARY NET POSITION	**$14,734.9**	**$15,888.7**	**$14,584.0**	**$13,853.3**	**$14,485.4**	**$14,219.6**	**$11,538.4**	**$10,468.5**	**$10,793.2**	**$9,630.2**

* Net Position was restated due to the implementation of GASB 75 during 2018.

** Net Position was restated due to the implementation of GASB 68 during 2015.

*** Net Position was restated due to the implementation of GASB 67 during 2014.

CHANGES IN FIDUCIARY NET POSITION

PENSION TRUST FUND (DOLLARS IN MILLIONS)

	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Additions										
Employer Contributions	$478.6	$462.3	$454.7	$428.5	$418.0	$349.5	$286.7	$278.2	$285.2	$277.7
Member Contributions and Purchases	295.5	282.0	268.6	245.8	224.0	211.4	177.5	176.8	175.5	168.4
Investment Income	(460.3)	1,808.1	1,232.6	(16.7)	779.8	1,893.9	1,531.0	210.6	1,551.3	1,791.3
Health Care Contributions	-	-	-	-	-	-	-	-	-	-
Other Revenues	1.5	4.5	8.4	5.9	7.2	12.9	9.5	11.9	9.1	9.5
TOTAL ADDITIONS	**315.3**	**2,556.9**	**1,964.3**	**663.5**	**1,429.0**	**2,467.7**	**2,004.7**	**677.5**	**2,021.1**	**2,246.9**
Deductions										
Benefit Payments	1,296.2	1,235.6	1,172.8	1,156.7	1,110.9	1,111.2	1,049.0	1,027.9	972.2	916.4
Refund of Member Contributions	18.3	20.6	14.2	13.8	15.2	16.0	26.5	22.0	15.8	15.7
Administrative Expenses	16.3	19.5	18.8	15.6	15.5	15.1	14.8	14.7	14.4	15.6
TOTAL DEDUCTIONS	**1,330.8**	**1,275.7**	**1,205.8**	**1,186.1**	**1,141.6**	**1,142.3**	**1,090.3**	**1,064.6**	**1,002.4**	**947.7**
CHANGES IN FIDUCIARY NET POSITION	**(1,015.5)**	**1,281.2**	**758.5**	**(522.6)**	**287.4**	**1,325.4**	**914.4**	**(387.1)**	**1,018.7**	**1,299.2**
FIDUCIARY NET POSITION - BEGINNING OF YEAR	**$14,956.6**	**$13,675.4***	**$12,923.9**	**$13,446.5****	**$13,166.1**	**$11,840.7*****	**$9,688.4**	**$10,075.5**	**$9,056.8**	**$7,757.6**
FIDUCIARY NET POSITION - END OF YEAR	**$13,941.1**	**$14,956.6**	**$13,682.4**	**$12,923.9**	**$13,453.5**	**$13,166.1**	**$10,602.8**	**$9,688.4**	**$10,075.5**	**$9,056.8**
Reserve Fund Balances:										
Employers' Contribution Reserves	$(291.5)	$1,535.3	$1,155.8	$1,058.3	$2,701.1	$2,907.9	$873.8	$901.6	$1,515.9	$674.6
Members' Contribution Reserves	3,005.9	2,861.2	2,728.1	2,600.0	2,491.3	2,393.7	2,122.8	2,065.8	2,056.8	1,983.2
Pension Reserves	11,226.7	10,560.1	9,798.5	9,265.6	8,261.1	7,864.5	7,606.2	6,721.0	6,502.8	6,399.0
TOTAL FIDUCIARY NET POSITION	**$13,941.1**	**$14,956.6**	**$13,682.4**	**$12,923.9**	**$13,453.5**	**$13,166.1**	**$10,602.8**	**$9,688.4**	**$10,075.5**	**$9,056.8**

* Net Position was restated due to the implementation of GASB 75 during 2018.

** Net Position was restated due to the implementation of GASB 68 during 2015.

*** Net Position was restated due to the implementation of GASB 67 during 2014.

CHANGES IN FIDUCIARY NET POSITION

RETIREE HEALTH CARE TRUST FUND (DOLLARS IN MILLIONS)

	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Additions										
Employer Contributions	$11.3	$10.9	$10.7	$10.2	$9.8	$68.7	$130.3	$129.3	$128.8	$126.6
Member Contributions and Purchases	-	-	-	-	-	-	-	-	-	-
Investment Income	(27.6)	115.4	84.8	6.7	80.9	159.1	126.9	19.0	100.5	103.6
Health Care Contributions	73.2	74.5	73.2	71.2	70.0	66.6	65.1	62.5	58.9	59.1
Other Revenues	23.4	24.1	27.9	23.3	18.0	15.6	21.2	28.6	16.7	14.8
TOTAL ADDITIONS	**80.3**	**224.9**	**196.6**	**111.4**	**178.7**	**310.0**	**343.5**	**239.4**	**304.9**	**304.1**
Deductions										
Benefit Payments	217.9	193.6	223.6	213.2	199.6	191.3	187.4	176.3	159.9	168.7
Refund of Member Contributions	-	-	-	-	-	-	-	-	-	-
Administrative Expenses	0.7	0.8	0.8	0.7	0.7	0.8	0.6	0.7	0.7	0.7
TOTAL DEDUCTIONS	**218.6**	**194.4**	**224.4**	**213.9**	**200.3**	**192.1**	**188.0**	**177.0**	**160.6**	**169.4**
CHANGES IN FIDUCIARY NET POSITION	**(138.3)**	**30.5**	**(27.8)**	**(102.5)**	**(21.6)**	**117.9**	**155.5**	**62.4**	**144.3**	**134.7**
FIDUCIARY NET POSITION - BEGINNING OF YEAR	**$932.1**	**$901.6**	**$929.4**	**$1,031.9**	**$1,053.5**	**$935.6**	**$780.1**	**$717.7**	**$573.4**	**$438.7**
FIDUCIARY NET POSITION - END OF YEAR	**$793.8**	**$932.1**	**$901.6**	**$929.4**	**$1,031.9**	**$1,053.5**	**$935.6**	**$780.1**	**$717.7**	**$573.4**
Reserve Fund Balances:										
Health Care Contribution Reserves	$793.8	$932.1	$901.6	$929.4	$1,031.9	$1,053.5	$935.6	$780.1	$717.7	$573.4
TOTAL FIDUCIARY NET POSITION	**$793.8**	**$932.1**	**$901.6**	**$929.4**	**$1,031.9**	**$1,053.5**	**$935.6**	**$780.1**	**$717.7**	**$573.4**

REVENUES BY SOURCE (DOLLARS IN MILLIONS)

Year	Employer Contributions	Member Contributions and Purchases	Employer Contributions as a Percentage of Covered Payroll	Investment and Securities Lending Income	Health Care Contributions	Other Revenues	Total Revenues
2018	$489.9	$295.5	22.2%	$(487.9)	$73.2	$24.9	$395.6
2017	473.2	282.0	21.7%	1,923.5	74.5	28.6	2,781.8
2016	465.4	268.6	22.6%	1,317.4	73.2	36.3	2,160.9
2015	438.7	245.8	22.1%	(10.0)	71.2	29.2	774.9
2014	427.8	224.0	22.0%	860.7	70.0	25.2	1,607.7
2013	418.2	211.4	21.9%	2,053.0	66.6	28.5	2,777.7
2012	417.0	177.5	22.0%	1,657.9	65.1	30.7	2,348.2
2011	407.5	176.8	21.8%	229.6	62.5	40.5	916.9
2010	414.0	175.5	21.8%	1,651.8	58.9	25.8	2,326.0
2009	404.3	168.4	21.3%	1,894.9	59.1	24.3	2,551.0

EXPENSES BY TYPE (DOLLARS IN MILLIONS)

Year	Benefit Payments	Refund of Member Contributions	Administrative Expenses	Total Expenses
2018	$1,514.1	$18.3	$17.0	$1,549.4
2017	1,429.2	20.6	20.3	1,470.1
2016	1,396.4	14.2	19.6	1,430.2
2015	1,369.9	13.8	16.3	1,400.0
2014	1,310.5	15.2	16.2	1,341.9
2013	1,302.5	16.0	15.9	1,334.4
2012	1,236.4	26.5	15.4	1,278.3
2011	1,204.2	22.0	15.4	1,241.6
2010	1,132.1	15.8	15.1	1,163.0
2009	1,085.1	15.7	16.3	1,117.1

BENEFIT EXPENSES BY TYPE (DOLLARS IN MILLIONS)

Year	Service	Disability	Health Care	Survivor	DROP	Total Benefits
2018	$749.2	$254.3	$217.9	$89.7	$203.0	$1,514.1
2017	710.3	252.0	193.6	86.9	186.4	1,429.2
2016	672.6	248.9	223.6	84.6	166.7	1,396.4
2015	631.6	245.7	213.2	82.1	197.3	1,369.9
2014	598.8	242.1	199.6	79.6	190.4	1,310.5
2013	563.2	239.0	191.3	76.8	232.2	1,302.5
2012	529.9	232.8	187.4	74.2	212.1	1,236.4
2011	490.2	225.0	176.3	71.6	241.1	1,204.2
2010	444.4	217.8	159.9	69.0	241.0	1,132.1
2009	423.7	211.1	168.8	66.1	215.4	1,085.1

DROP PROGRAM BALANCES (DOLLARS IN MILLIONS)

	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Police										
DROP Program Beginning Balance	$819.3	$770.6	$721.9	$687.8	$661.0	$666.5	$694.7	$650.8	$544.9	$436.9
Accrued Pension and COLA	117.4	111.3	108.2	103.0	97.6	95.4	90.7	92.3	98.3	92.4
Accrued Member Share Contributions	17.3	16.8	18.7	15.2	12.3	11.9	11.3	11.7	12.5	13.0
Accrued Interest	22.4	18.2	13.8	14.6	15.1	14.2	17.8	32.2	29.2	23.9
Withdrawals	(96.2)	(97.6)	(92.0)	(98.7)	(98.2)	(127.0)	(148.0)	(92.3)	(34.1)	(21.3)
DROP PROGRAM ENDING BALANCE - POLICE	**880.2**	**819.3**	**770.6**	**721.9**	**687.8**	**661.0**	**666.5**	**694.7**	**650.8**	**544.9**
Fire										
DROP Program Beginning Balance	739.9	692.2	641.0	616.4	584.6	571.4	593.1	536.2	441.4	344.5
Accrued Pension and COLA	108.3	104.1	101.3	101.3	97.8	94.0	88.4	89.3	89.6	80.0
Accrued Member Share Contributions	16.2	15.9	17.2	14.9	12.9	12.0	11.0	11.2	11.2	11.3
Accrued Interest	20.2	16.5	12.2	13.1	13.3	12.4	15.2	27.3	23.8	19.2
Withdrawals	(108.3)	(88.8)	(79.5)	(104.7)	(92.2)	(105.2)	(136.3)	(70.9)	(29.8)	(13.6)
DROP PROGRAM ENDING BALANCE - FIRE	**776.3**	**739.9**	**692.2**	**641.0**	**616.4**	**584.6**	**571.4**	**593.1**	**536.2**	**441.4**
Combined Police and Fire										
DROP Program Beginning Balance	1,559.2	1,462.8	1,362.9	1,304.2	1,245.6	1,237.9	1,287.8	1,187.0	986.3	781.4
Accrued Pension and COLA	225.7	215.4	209.5	204.3	195.4	189.4	179.1	181.6	187.9	172.4
Accrued Member Share Contributions	33.5	32.7	35.9	30.1	25.2	23.9	22.3	22.9	23.7	24.3
Accrued Interest	42.6	34.7	26.0	27.7	28.4	26.6	33.0	59.5	53.0	43.1
Withdrawals	(204.5)	(186.4)	(171.5)	(203.4)	(190.4)	(232.2)	(284.3)	(163.2)	(63.9)	(34.9)
DROP PROGRAM ENDING BALANCE - COMBINED	**$1,656.5**	**$1,559.2**	**$1,462.8**	**$1,362.9**	**$1,304.2**	**$1,245.6**	**$1,237.9**	**$1,287.8**	**$1,187.0**	**$986.3**

REVENUE CAPACITY INFORMATION

ACTIVE MEMBER AND TOTAL PAYROLL BASE STATISTICS (DOLLARS IN MILLIONS)

10-YEAR HISTORY OF MEMBERSHIP DATA *

Year	Total Annual Payroll	Member Contributions	Number of Active Members*	Percentage Change in Payroll	Percentage Change in Member Contributions	Percentage Change in Members
2018	$2,209.3	$295.5	28,408	1.3%	4.8%	0.8%
2017	2,180.9	282.0	28,175	5.8%	5.0%	2.0%
2016	2,060.9	268.6	27,624	3.7%	9.3%	(0.5)%
2015	1,986.6	245.8	27,769	2.3%	9.7%	0.6%
2014	1,942.3	224.0	27,605	1.5%	6.0%	0.6%
2013	1,913.4	211.4	27,444	0.8%	19.1%	(0.6)%
2012	1,897.4	177.5	27,623	1.5%	0.4%	(2.1)%
2011	1,868.5	176.8	28,222	(1.4)%	0.7%	(1.4)%
2010	1,895.2	175.5	28,619	(0.3)%	4.2%	(1.5)%
2009	1,900.9	168.4	29,062	3.8%	(2.4)%	0.7%

* Includes rehired retirees.

ACTIVE MEMBERSHIP DATA

NUMBER AND ALLOWABLE AVERAGE ANNUAL SALARY AS OF JAN. 1, 2018 *

	Years of Service									
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40+**	**TOTAL**
Under 25	853									**853**
	$50,327									**$50,327**
25-29	2,672	359								**3,031**
	$58,551	$73,754								**$60,351**
30-34	1,895	1,566	476	2						**3,939**
	$60,113	$75,213	$81,853	$69,169						**$68,748**
35-39	790	1,028	1,525	598	4					**3,945**
	$59,577	$74,823	$79,929	$85,516	$89,701					**$75,380**
40-44	263	383	896	1,928	650	9				**4,129**
	$55,071	$73,312	$78,724	$83,920	$88,002	$105,805				**$80,661**
45-49	129	161	548	1,473	2,454	745	7			**5,517**
	$54,127	$72,065	$76,021	$80,819	$87,664	$92,450	$91,412			**$84,092**
50-54	30	57	158	485	1,154	1,639	594	10	1	**4,128**
	$56,117	$66,066	$73,418	$79,292	$85,323	$89,264	$92,736	$87,431	$79,584	**$86,316**
55-59	22	22	60	146	379	704	619	68	5	**2,025**
	$57,584	$72,137	$70,501	$78,367	$81,379	$86,231	$91,829	$99,300	$81,865	**$85,965**
60-64	9	10	22	30	114	158	161	36	12	**552**
	$47,962	$57,423	$74,328	$66,316	$83,071	$79,018	$90,413	$96,995	$95,385	**$82,932**
Over 64		6	3	5	17	30	14	8	10	**93**
		$55,010	$81,987	$71,558	$80,514	$76,454	$92,042	$75,766	$99,680	**$80,513**
TOTAL	**6,663**	**3,592**	**3,688**	**4,667**	**4,772**	**3,285**	**1,395**	**122**	**28**	**28,212**
	$57,813	**$74,365**	**$78,840**	**$82,358**	**$86,511**	**$88,772**	**$92,052**	**$96,104**	**$93,940**	**$77,083**

* Excludes rehired retirees.

RETIRED MEMBERSHIP BY TYPE OF BENEFITS (SOURCE: ACTUARIAL VALUATION)

AS OF JAN. 1, 2018

	Service		Survivors		Disability		
Year	Police	Fire	Police	Fire	Police	Fire	Total Beneficiaries
2018	8,558	6,612	4,540	3,414	3,710	2,527	29,361
2017	8,307	6,406	4,484	3,433	3,732	2,551	28,913
2016	8,048	6,207	4,424	3,406	3,754	2,563	28,402
2015	7,842	5,972	4,403	3,386	3,784	2,576	27,963
2014	7,623	5,784	4,395	3,351	3,820	2,588	27,561
2013	7,459	5,683	4,352	3,321	3,834	2,594	27,243
2012	7,204	5,540	4,543	3,389	3,825	2,577	27,078
2011	6,762	5,185	4,479	3,310	3,772	2,566	26,074
2010	6,619	5,108	4,416	3,268	3,762	2,539	25,712
2009	6,546	5,060	4,300	3,194	3,721	2,496	25,317

RETIREES AND BENEFICIARIES STATISTICS (DOLLARS IN MILLIONS)

Year	Benefit Payments*	Refunds	Total Payments*	Number of Benefit Recipients**	Percentage Change in Benefit Recipients	Percentage Change in Total Benefit Payments
2018	$1,296.2	$18.3	$1,314.5	29,707	2.0%	4.6%
2017	1,235.6	20.6	1,256.2	29,113	1.7%	5.8%
2016	1,172.8	14.2	1,187.0	28,638	1.8%	1.4%
2015	1,156.7	13.8	1,170.5	28,143	1.6%	3.9%
2014	1,110.9	15.2	1,126.1	27,703	1.2%	(0.1)%
2013	1,111.2	16.0	1,127.2	27,380	0.7%	4.8%
2012	1,049.0	26.5	1,075.5	27,184	3.7%	2.4%
2011	1,027.9	22.0	1,049.9	26,225	1.4%	6.3%
2010	972.2	15.8	988.0	25,853	1.6%	6.0%
2009	916.4	15.7	932.1	25,439	1.7%	5.3%

* Excludes health care benefits.

** Includes Terminated employees entitled to benefits but not yet receiving them.

AVERAGE MONTHLY BENEFIT PAYMENTS *** FOR MEMBERS PLACED ON RETIREMENT ROLLS**

SERVICE RETIREMENT

Year	Normal	Service Commuted	Age Commuted	Age / Service
2018	$3,859	$1,445	$-	$3,061
2017	3,797	1,268	-	2,569
2016	3,681	1,444	-	2,724
2015	3,651	1,522	-	2,707
2014	3,606	1,698	-	2,455
2013	3,530	1,292	-	2,590
2012	3,466	1,241	-	2,341
2011	3,442	1,282	-	2,699
2010	3,339	1,374	-	3,016
2009	3,301	1,460	-	2,359

DISABILITY RETIREMENT *

Year	Permanent and Total	Permanent and Total Presumptive	Partial	Partial Presumptive	Off Duty
2018	$4,618	$4,295	$3,299	$3,465	$3,222
2017	4,466	3,998	2,970	2,696	2,809
2016	4,681	4,074	2,882	3,047	2,563
2015	3,864	3,602	2,757	3,239	2,647
2014	3,642	4,252	3,040	3,147	2,258
2013	3,997	5,038	2,865	2,599	2,731
2012	4,276	3,717	2,928	3,338	2,770
2011	3,838	3,870	2,963	2,983	2,510
2010	3,495	3,886	2,827	3,659	2,785
2009	3,626	3,810	2,807	2,966	2,697

* Source: Numbers calculated by taking an average of final placements for retirees as listed in OP&F Board of Trustees monthly reports.

MEMBER HEALTH CARE PREMIUM CONTRIBUTIONS (DOLLARS IN MILLIONS)

Year	Premium Contributions	Percentage Change in Premium Contributions Received	Number of Covered Lives *	Health Care Benefit Payments	Percentage of Benefit Payments Covered by Premium Contributions	Net Benefit Payment Per Covered Life
2018	$73.2	(2)%	26,320	$217.9	34%	$0.005
2017	74.5	2%	26,587	193.6	38%	0.004
2016	73.2	3%	26,319	223.6	33%	0.006
2015	71.2	2%	26,822	213.2	33%	0.005
2014	70.0	5%	26,794	199.6	35%	0.005
2013	66.6	2%	26,723	191.3	35%	0.005
2012	65.1	4%	26,044	187.4	35%	0.005
2011	62.5	6%	25,396	176.3	35%	0.004
2010	58.9	-%	25,308	159.9	37%	0.004
2009	59.1	4%	25,366	168.7	35%	0.004

* In 2012 OP&F restated the number of covered lives column using Buck Consultants, LLC actuarially certified number of covered lives.

STATE OF OHIO SUBSIDY PAYMENTS

Year	Subsidy Amount	Percentage Change
2018	$300,811	(13)%
2017	346,475	(13)%
2016	398,161	(11)%
2015	446,735	(11)%
2014	500,152	(6)%
2013	530,573	(9)%
2012	580,657	(9)%
2011	639,099	(8)%
2010	692,634	(11)%
2009	782,060	(9)%

OP&F'S COST OF LIVING ALLOWANCE (COLA) HISTORY

COLA Payment Dates	Members who are 55 years old with less than 15 years of service credit as of July 1, 2013 and have been receiving Benefits for at least one year COLA Paid	Members who are 55 years old with 15 or more years of service credit as of July 1, 2013 and have been receiving Benefits for at least one year COLA Paid	EDOR* July 1, 2000 to June 30, 2012 COLA Paid	EDOR* July 1, 1999 to June 30, 2000 COLA Paid	EDOR* July 1, 1998 to June 30, 1999 COLA Paid	EDOR* July 1, 1997 to June 30, 1998 COLA Paid
Nov. 1, 2018 thru Oct. 31, 2019	2.30%	3.00%	3.00%	3.00%	3.00%	3.00%
Nov. 1, 2017 thru Oct. 31, 2018	2.30%	3.00%	3.00%	3.00%	3.00%	3.00%
Nov. 1, 2016 thru Oct. 31, 2017	1.20%	3.00%	3.00%	3.00%	3.00%	3.00%
Nov. 1, 2015 thru Oct. 31, 2016	-%	3.00%	3.00%	3.00%	3.00%	3.00%
Nov. 1, 2014 thru Oct. 31, 2015	1.70%	3.00%	3.00%	3.00%	3.00%	3.00%
Nov. 1, 2013 thru Oct. 31, 2014	1.20%	3.00%	3.00%	3.00%	3.00%	3.00%
July 1, 2013 thru Oct. 31, 2013	2.00%	3.00%	3.00%	3.00%	3.00%	3.00%
July 1, 2012 thru June 30, 2013			3.00%	3.00%	3.00%	3.00%
July 1, 2011 thru June 30, 2012			3.00%	3.00%	3.00%	3.00%
July 1, 2010 thru June 30, 2011			3.00%	3.00%	3.00%	3.00%
July 1, 2009 thru June 30, 2010			3.00%	3.00%	3.00%	3.00%
July 1, 2008 thru June 30, 2009			3.00%	3.00%	3.00%	3.00%
July 1, 2007 thru June 30, 2008			3.00%	3.00%	3.00%	3.00%
July 1, 2006 thru June 30, 2007			3.00%	3.00%	3.00%	3.00%
July 1, 2005 thru June 30, 2006			3.00%	3.00%	3.00%	3.00%
July 1, 2004 thru June 30, 2005			3.00%	3.00%	3.00%	3.00%
July 1, 2003 thru June 30, 2004			3.00%	3.00%	3.00%	3.00%
July 1, 2002 thru June 30, 2003			3.00%	3.00%	3.00%	3.00%
July 1, 2001 thru June 30, 2002			3.00%	3.00%	3.00%	3.00%
July 1, 2000 thru June 30, 2001				2.20%	2.20%	2.20%
July 1, 1999 thru June 30, 2000					1.30%	1.30%
July 1, 1998 thru June 30, 1999						2.30%
July 1, 1997 thru June 30, 1998						
July 1, 1996 thru June 30, 1997						
July 1, 1995 thru June 30, 1996						
July 1, 1994 thru June 30, 1995						
July 1, 1993 thru June 30, 1994						
July 1, 1992 thru June 30, 1993						
July 1, 1991 thru June 30, 1992						
July 1, 1990 thru June 30, 1991						
July 1, 1989 thru June 30, 1990						
July 1, 1988 thru June 30, 1989						

* EDOR = Effective Date of Retirement
Additional Notes:
1) First COLAs were paid July 1, 1988 through June 30, 1989
2) July 1, 2002 COLAs were a flat 3% (regardless of the CPI)
3) Beginning July 1, 2013
A) Retired members who are at least 55 years old and have been receiving benefits for at least one year may be eligible for a cost-of-living allowance adjustment.
B) The age 55 provision for receiving a COLA does not apply to those who are receiving a permanent and total disability benefit, statutory survivors and annuity beneficiaries.
C) Members with less than 15 years of service credit on July 1, 2013, will receive a COLA equal to either 3% or the percent increase, if any, in the Consumer Price Index (CPI) over the 12-month period ending on Sept. 30 of the immediately preceding year, whichever is less. D) The COLA

OP&F'S COST OF LIVING ALLOWANCE (COLA) HISTORY - CONTINUED

EDOR* July 1, 1996 to June 30, 1997 COLA Paid	EDOR* July 1, 1995 to June 30, 1996 COLA Paid	EDOR* July 1, 1994 to June 30, 1995 COLA Paid	EDOR* July 1, 1993 to June 30, 1994 COLA Paid	EDOR* July 1, 1992 to June 30, 1993 COLA Paid	EDOR* July 1, 1991 to June 30, 1992 COLA Paid	EDOR* July 1, 1990 to June 30, 1991 COLA Paid	EDOR* July 1, 1986 to June 30, 1990 COLA Paid
3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	3.00%
1.30%	1.30%	2.90%	2.70%	2.70%	1.30%	2.90%	3.00%
2.30%	2.30%	3.00%	3.00%	3.00%	2.40%	3.00%	3.00%
2.90%	2.90%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
	2.90%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
		-%	3.00%	3.00%	3.00%	3.00%	3.00%
			-%	-%	3.00%	3.00%	3.00%
				3.00%	3.00%	3.00%	3.00%
					3.00%	3.00%	3.00%
						3.00%	3.00%
							3.00%
							3.00%
							3.00%

amount for members with at least 15 years of service credit as of July 1, 2013 is equal to 3% of their base pension or disability benefit.

EMPLOYER CONTRIBUTION RATES (1967 - PRESENT)*

	Employer Rates	
Time Frame of Rates	Police	Fire
Jan. 1, 1986 thru Present	19.50%	24.00%
Jan. 1, 1985 thru Dec. 31, 1985	20.03%	24.59%
Jan. 1, 1984 thru Dec. 31, 1984	21.35%	24.59%
Jan. 1, 1983 thru Dec. 31, 1983	18.45%	23.57%
Jan. 1, 1982 thru Dec. 31, 1982	16.62%	22.39%
Jan. 1, 1981 thru Dec. 31, 1981	15.60%	20.72%
Jan. 1, 1980 thru Dec. 31, 1980	15.70%	19.87%
Jan. 1, 1979 thru Dec. 31, 1979	18.40%	20.11%
Jan. 1, 1978 thru Dec. 31, 1978	17.53%	18.90%
Jan. 1, 1977 thru Dec. 31, 1977	15.34%	16.77%
Jan. 1, 1976 thru Dec. 31, 1976	14.02%	15.57%
Jan. 1, 1975 thru Dec. 31, 1975	12.49%	13.78%
Jan. 1, 1974 thru Dec. 31, 1974	12.88%	13.60%
Jan. 1, 1973 thru Dec. 31, 1973	12.85%	13.41%
Jan. 1, 1972 thru Dec. 31, 1972	12.96%	13.26%
Jan. 1, 1971 thru Dec. 31, 1971	12.81%	12.96%
Jan. 1, 1970 thru Dec. 31, 1970	15.52%	15.52%
Jan. 1, 1969 thru Dec. 31, 1969	14.68%	14.49%
Jan. 1, 1968 thru Dec. 31, 1968	13.66%	13.50%
Jan. 1, 1967 thru Dec. 31, 1967	13.55%	13.13%

* For employer billing purposes, the September 1988 billing was carried through Sept. 30, 1988 and was not cut off at Sept. 8, 1988. The same goes for the employee rates for the most part.

MEMBER CONTRIBUTION RATES

	Member Rates	
Time Frame of Rates	Police	Fire
July 2, 2015 thru Present	12.25%	12.25%
July 2, 2014 thru July 1, 2015	11.50%	11.50%
July 2, 2013 thru July 1, 2014	10.75%	10.75%
Sept. 9, 1988 thru July 1, 2013	10.00%	10.00%
Aug. 1, 1986 thru Sept. 8, 1988	9.50%	9.50%
March 1, 1980 thru July 31, 1986	8.50%	8.50%
Jan. 1, 1968 thru Feb. 28, 1980	7.00%	7.00%
Jan. 1, 1967 thru Dec. 31, 1967	6.00%	6.00%

HEALTH CARE ALLOCATION RATES FROM EMPLOYER CONTRIBUTIONS

Time Frame of Rates	Percentage
Jan. 1, 2014 thru Present	0.50%
June 1, 2013 thru Dec. 31, 2013	2.85%
Jan. 1, 2013 thru May 31, 2013	4.69%
Jan. 1, 2007 thru Dec. 31, 2012	6.75%
Jan. 1, 2002 thru Dec. 31, 2006	7.75%
Jan. 1, 2001 thru Dec. 31, 2001	7.50%
Jan. 1, 2000 thru Dec. 31, 2000	7.25%
Jan. 1, 1999 thru Dec. 31, 1999	7.00%
Jan. 1, 1992 thru Dec. 31, 1998	6.50%
Jan. 1, 1974 thru Dec. 31, 1991	Rate equal to dollar of Benefits Paid

ACTUARIAL INTEREST RATES

	Actuarial Interest Rates	
Time Frame of Rates	Police	Fire
Jan. 1, 2017 thru Present	8.000%	8.000%
Jan. 1, 1989 thru Dec. 31, 2016	8.250%	8.250%
Jan. 1, 1986 thru Dec. 31, 1988	7.750%	7.750%
Jan. 1, 1983 thru Dec. 31, 1985	7.500%	7.500%
Jan. 1, 1980 thru Dec. 31, 1982	6.375%	6.375%
Jan. 1, 1979 thru Dec. 31, 1979	6.000%	6.000%
Jan. 1, 1974 thru Dec. 31, 1978	5.000%	5.000%
Jan. 1, 1972 thru Dec. 31, 1973	4.750%	4.750%
Jan. 1, 1970 thru Dec. 31, 1971	4.625%	4.625%
Jan. 1, 1967 thru Dec. 31, 1969	4.250%	4.250%

DROP AND RE-EMPLOYED INTEREST RATES

	Member Rates	
Time Frame of Rates *	Police	Fire
April 1, 2019 thru June 30, 2019	2.41%	2.41%
Jan. 1, 2019 thru March 31, 2019	2.69%	2.69%
Oct. 1, 2018 thru Dec. 31, 2018	3.05%	3.05%
July 1, 2018 thru Sept. 30, 2018	2.85%	2.85%
April 1, 2018 thru June 30, 2018	2.74%	2.74%
Jan. 1, 2018 thru March 31, 2018	2.40%	2.40%
Oct. 1, 2017 thru Dec. 31, 2017	2.33%	2.33%
July 1, 2017 thru Sept. 30, 2017	2.31%	2.31%
April 1, 2017 thru June 30, 2017	2.40%	2.40%
Jan. 1, 2017 thru March 31, 2017	2.45%	2.45%
Oct. 1, 2016 thru Dec. 31, 2016	1.60%	1.60%
July 1, 2016 thru Sept. 30, 2016	1.49%	1.49%
April 1, 2016 thru June 30, 2016	1.78%	1.78%
Jan. 1, 2016 thru March 31, 2016	2.27%	2.27%
Oct. 1, 2015 thru Dec. 31, 2015	2.06%	2.06%
July 1, 2015 thru Sept. 30, 2015	2.35%	2.35%
April 1, 2015 thru June 30, 2015	1.94%	1.94%
Jan. 1, 2015 thru March 31, 2015	2.17%	2.17%
Oct. 1, 2014 thru Dec. 31, 2014	2.52%	2.52%
July 1, 2014 thru Sept. 30, 2014	2.53%	2.53%
April 1, 2014 thru June 30, 2014	2.73%	2.73%
Jan. 1, 2014 thru March 31, 2014	3.04%	3.04%
Oct. 1, 2013 thru Dec. 31, 2013	2.64%	2.64%
July 1, 2013 thru Sept. 30, 2013	2.52%	2.52%
April 1, 2013 thru June 30, 2013	1.87%	1.87%
Jan. 1, 2013 thru March 31, 2013	1.78%	1.78%
Oct. 1, 2012 thru Dec. 31, 2012	1.65%	1.65%
July 1, 2012 thru Sept. 30, 2012	1.67%	1.67%
April 2, 2012 thru June 30, 2012	2.23%	2.23%
Jan. 19, 2003 thru April 1, 2012	5.00%	5.00%

* Effective April 2, 2012 the interest rate is equal to the 10-year U.S. Treasury Note Business Day Series, as published by the United States Department of the Treasury, with a cap of 5%.

DROP MEMBER COUNT ROLL FORWARD *(AS OF DEC. 31)*

POLICE		2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Balance Beginning of Year		**2,158**	2,050	2,001	1,918	1,883	1,795	1,801	1,985	1,990	1,893
Number of members that entered into DROP	Increases	**388**	415	369	364	322	384	329	356	289	289
Number of members that terminated DROP	Decreases	**(301)**	(307)	(320)	(281)	(287)	(296)	(335)	(540)	(294)	(192)
SUB-TOTAL AT YEAR END - POLICE		**2,245**	**2,158**	**2,050**	**2,001**	**1,918**	**1,883**	**1,795**	**1,801**	**1,985**	**1,990**
FIRE											
Balance Beginning of Year		**1,996**	1,902	1,887	1,907	1,862	1,741	1,740	1,888	1,744	1,648
Number of members that entered into DROP	Increases	**328**	369	301	290	346	369	283	315	349	258
Number of members that terminated DROP	Decreases	**(296)**	(275)	(286)	(310)	(301)	(248)	(282)	(463)	(205)	(162)
SUB-TOTAL AT YEAR END - FIRE		**2,028**	**1,996**	**1,902**	**1,887**	**1,907**	**1,862**	**1,741**	**1,740**	**1,888**	**1,744**
COMBINED POLICE AND FIRE											
Balance Beginning of Year		**4,154**	3,952	3,888	3,825	3,745	3,536	3,541	3,873	3,734	3,541
Number of members that entered into DROP	Increases	**716**	784	670	654	668	753	612	671	638	547
Number of members that terminated DROP	Decreases	**(597)**	(582)	(606)	(591)	(588)	(544)	(617)	(1,003)	(499)	(354)
TOTAL AT YEAR END - COMBINED		**4,273**	**4,154**	**3,952**	**3,888**	**3,825**	**3,745**	**3,536**	**3,541**	**3,873**	**3,734**

ACTUARIAL VALUATION INFORMATION - PENSION TRUST FUND (DOLLARS IN MILLIONS) *

As of Jan. 1	Valuation Assets *	Actuarial Accrued Liabilities (AAL) *	Unfunded Actuarial Accrued Liabilities (UAAL)	Ratio of Assets to AAL	Active Member Payroll	UAAL as a Percentage of Active Member Payroll
2018	$14,594.6	$20,887.2	$6,292.6	69.9%	$2,209.3	284.8%
2017	14,162.5	20,290.4	6,127.9	69.8%	2,180.9	281.0%
2016	13,653.0	19,135.9	5,482.9	71.3%	2,060.9	266.1%
2015	13,029.3	18,395.6	5,366.3	70.8%	1,986.6	270.1%
2014	11,063.2	16,577.8	5,514.6	66.7%	1,942.3	283.9%
2013	10,278.0	16,007.9	5,729.9	64.2%	1,913.4	299.5%
2012	10,309.0	16,346.7	6,037.7	63.1%	1,897.4	318.2%
2011	10,681.0	15,384.4	4,703.4	69.4%	1,868.5	251.7%
2010	10,794.1	14,830.7	4,036.6	72.8%	1,895.2	213.0%
2009	9,309.2	14,307.1	4,997.9	65.1%	1,900.9	262.9%

* The amounts reported in this schedule do not include assets or liabilities for post-employment health care benefits.

HISTORICAL ANNUAL INVESTMENT RESULTS

	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
U.S. Equity										
OP&F	(3.30)%	22.41%	15.60%	0.53%	11.27%	35.53%	15.88%	0.94%	22.43%	32.82%
International Equity *										
OP&F	(17.32)%	29.12%	2.75%	(0.77)%	(5.56)%	21.01%	19.96%	(12.37)%	15.11%	39.58%
Private Markets **										
OP&F	15.65%	21.80%	14.37%	12.06%	18.34%	11.50%	9.58%	17.66%	12.57%	(11.61)%
High Yield										
OP&F - High Yield*	(0.48)%	7.05%	12.80%	(0.95)%	2.81%	6.15%	15.64%	6.00%	15.02%	47.02%
Private Credit **										
OP&F	7.51%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Treasury Inflation Protected Securities (TIPS)										
OP&F - TIPS	(0.26)%	2.89%	18.76%	0.26%	19.43%	(10.62)%	14.93%	35.50%	15.28%	9.84%
Real Estate **										
OP&F	13.69	10.30%	13.14%	16.83%	18.57%	15.11%	13.06%	18.01%	4.86%	(37.27)%
Real Assets **										
OP&F	11.81%	4.65%	2.99%	1.03%	8.99%	3.37%	N/A	N/A	N/A	N/A
Master Limited Partnerships										
OP&F	(13.06)%	(4.08)%	20.42%	(29.31)%	16.91%	32.25%	N/A	N/A	N/A	N/A
Fixed Income										
OP&F - Core	1.24%	4.26%	4.14%	1.45%	4.07%	(1.05)%	6.31%	6.41%	9.72%	11.76%
OP&F - Commercial Mortgage**	5.29%	2.87%	5.63%	3.21%	8.56%	6.72%	5.28%	4.99%	16.63%	(0.63)%
Total Portfolio										
OP&F	(1.78)%	14.30%	11.51%	0.65%	6.79%	16.94%	15.41%	2.57%	15.85%	20.73%
Policy Index ***	(2.67)%	12.41%	11.45%	(2.18)%	6.87%	14.61%	14.94%	2.43%	12.61%	22.81%

* a) International Equity benchmark is a blend of the MSCI ACWI ex U.S. (Net) through June 30, 2011, the MSCI ACWI ex U.S. Iran/Sudan Free (I/S Free) from July 1, 2011 through Sept. 30, 2012 and the MSCI ACWI ex U.S. Iran/Sudan Free IMI Index from Oct. 1, 2012 forward.
b) High Yield benchmark is a blend of the CS First Boston Dev. Countries HY through Aug. 31, 2016, the CS First Boston High Yield from Sept. 1, 2016 through Nov. 30, 2016, and the Merrill Lynch U.S. High Yield Constrained Index from Dec. 1, 2016 forward.

** One quarter in arrears.

*** Interim Policy Index: 18.75% Wilshire 5000, 18.75% MSCI ACWI ex-U.S. Iran/Sudan Free IMI Index, 10% Bloomberg Barclays Aggregate, 11% Merrill Lynch U.S. High Yield Constrained Index, 2.5% S&P LSTA Levered Loan Index + 2% Lagged, 8.5% Bloomberg Barclays U.S. Gov't Inflation Linked Bond Index X2 (-) Libor, 12% NCREIF ODCE Index (Net) Lagged, 7% Wilshire 5000 + 3% Lagged, 3.5% CPI + 5% (Net) Lagged, 8% Alerian MLP Index.

Long-Term Policy: 16% Wilshire 5000, 16% MSCI ACWI ex-U.S. Iran/Sudan Free IMI Index, 23% Bloomberg Barclays Aggregate, 7% Merrill Lynch U.S. High Yield Constrained Index, 5% S&P LSTA Levered Loan Index + 2%, 17% Bloomberg Barclays U.S. Gov't Inflation Linked Bond Index X2 (-) Libor, 12% NCREIF ODCE Index (Net) Lagged, 8% Wilshire 5000 + 3% Lagged, 8% CPI + 5% (Net) Lagged, 8% Alerian MLP Index. (adds to 120% as "Risk Parity" approach uses 2x levered U.S. Gov't Inflation-Protected Securities and 2x levered Core Fixed Income).

Time Weighted methodology, based upon fair values, is used when calculating performance.

DEBT CAPACITY INFORMATION

OP&F does not have any outstanding debt, nor are there any plans to ever pursue issuing debt anytime in the future.

DEMOGRAPHIC AND ECONOMIC INFORMATION

NUMBER OF EMPLOYER UNITS *

	Municipalities		Townships		Villages		Total		Total
Year	Police	Fire	Police	Fire	Police	Fire	Police	Fire	Combined
2018	248	197	-	161	280	40	528	398	926
2017	248	199	-	162	282	35	530	396	926
2016	248	221	-	130	279	37	527	388	915
2015	249	220	-	131	280	37	529	388	917
2014	249	221	-	129	283	36	532	386	918
2013	249	223	-	124	282	33	531	380	911
2012	249	225	-	122	288	33	537	380	917
2011	250	227	-	123	283	34	533	384	917
2010	252	229	-	123	284	33	536	385	921
2009	252	229	-	121	287	32	539	382	921

* Beginning in 2017 OP&F reclassified Fire Districts under Townships.

OPERATING INFORMATION

RETIRED MEMBERSHIP BY TYPE OF BENEFITS AND AVERAGE ANNUAL ALLOWANCE (SOURCE: ACTUARIAL VALUATION) AS OF JAN. 1, 2018

Age Last Birthday	Number	Annual Allowance	Average Annual Allowance
Service Retirees			
Under 60	2,797	$137,090,334	$49,013
60 - 64	3,132	165,603,456	52,875
65 - 69	3,077	159,573,795	51,860
70 - 74	2,591	127,321,192	49,140
75 - 79	1,771	77,684,298	43,865
Over 79	1,802	61,735,277	34,259
TOTAL	**15,170**	**$729,008,352**	**$48,056**
Survivors and Beneficiaries			
Under 60	1,222	$12,278,644	$10,048
60 - 64	572	7,392,061	12,923
65 - 69	935	11,926,100	12,755
70 - 74	1,030	11,946,968	11,599
75 - 79	1,202	13,164,750	10,952
Over 79	2,993	30,360,861	10,144
TOTAL	**7,954**	**$87,069,384**	**$10,947**
Disability Retirees			
Under 60	2,189	$87,803,219	$40,111
60 - 64	1,014	45,023,865	44,402
65 - 69	1,079	46,011,129	42,642
70 - 74	958	38,793,906	40,495
75 - 79	570	21,212,863	37,216
Over 79	427	12,846,365	30,085
TOTAL	**6,237**	**$251,691,347**	**$40,355**

SCHEDULE OF AVERAGE BENEFITS*

This schedule displays the number of new retirees each year, grouped by years of credited service. Prior year numbers are not adjusted as members roll off the rolls. Retirement benefits are calculated based on the Final Average Salary (FAS) of the member. For members with 15 years or more of service credit as of July 1, 2013, FAS represents the member's three highest years of allowable earnings. For members with less than 15 years of service credit as of July 1, 2013, FAS represents the member's five highest years of allowable earnings.

The Total New Retirees column represents the average monthly benefit and average FAS for the retiree counts listed in each year.

RETIREMENT EFFECTIVE DATES		YEARS CREDITED SERVICE							TOTAL NEW RETIREES
		0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30+	
2018	Average Monthly Benefit	$-	$3,001	$3,753	$2,691	$3,352	$4,240	$5,419	$4,153
	Average Final Average Salary	$-	$60,515	$78,920	$73,634	$76,564	$79,029	$84,710	$78,769
	Number of Active Recipients	-	4	12	35	49	720	29	849
2017	Average Monthly Benefit	$-	$1,892	$2,792	$2,781	$3,119	$4,139	$4,707	$4,019
	Average Final Average Salary	$-	$46,107	$68,897	$69,634	$70,690	$77,000	$74,777	$76,051
	Number of Active Recipients	-	2	11	39	49	731	33	865
2016	Average Monthly Benefit	$1,395	$2,314	$2,638	$2,477	$3,234	$4,075	$4,277	$3,925
	Average Final Average Salary	$34,158	$59,041	$59,716	$63,590	$73,762	$75,132	$69,681	$73,889
	Number of Active Recipients	1	6	14	44	40	737	31	873
2015	Average Monthly Benefit	$-	$1,332	$2,387	$2,445	$3,175	$4,127	$4,944	$3,976
	Average Final Average Salary	$-	$49,515	$59,939	$64,106	$71,568	$75,267	$77,280	$74,128
	Number of Active Recipients	-	5	17	48	43	728	40	881
2014	Average Monthly Benefit	$-	$2,243	$2,577	$2,349	$3,096	$4,011	$4,738	$3,910
	Average Final Average Salary	$-	$62,465	$58,188	$62,903	$72,772	$72,161	$76,831	$71,822
	Number of Active Recipients	-	8	9	29	38	708	36	828
2013	Average Monthly Benefit	$2,612	$2,487	$2,736	$2,216	$3,251	$3,994	$4,832	$3,830
	Average Final Average Salary	$52,748	$69,490	$61,462	$61,232	$71,553	$71,014	$74,792	$70,293
	Number of Active Recipients	2	5	25	43	47	638	29	789
2012	Average Monthly Benefit	$879	$2,247	$2,876	$2,783	$2,968	$3,932	$4,398	$3,761
	Average Final Average Salary	$42,089	$55,994	$65,733	$63,252	$68,219	$68,661	$68,067	$67,858
	Number of Active Recipients	1	14	27	69	56	662	73	902
2011	Average Monthly Benefit	$2,042	$2,698	$2,758	$2,582	$3,124	$3,906	$4,722	$3,895
	Average Final Average Salary	$52,736	$56,748	$64,823	$61,478	$68,588	$66,645	$69,404	$66,659
	Number of Active Recipients	2	23	42	61	37	907	215	1287
2010	Average Monthly Benefit	$1,989	$2,307	$2,923	$2,858	$2,907	$3,653	$4,415	$3,602
	Average Final Average Salary	$52,986	$63,760	$63,148	$64,760	$64,611	$64,545	$67,106	$64,829
	Number of Active Recipients	4	18	41	39	51	452	122	727
2009	Average Monthly Benefit	$2,592	$2,476	$2,878	$3,122	$3,208	$3,533	$4,205	$3,466
	Average Final Average Salary	$50,696	$53,112	$60,367	$61,952	$64,972	$64,170	$67,365	$63,683
	Number of Active Recipients	5	20	39	54	44	380	70	612

* All years begin Jan. 1 and end Dec. 31.

PRINCIPAL PARTICIPATING EMPLOYERS AS OF DEC. 31, 2018

Employer Name	Covered Employees	Rank	Percentage of Total Covered Members
City of Columbus	3,685	1	13.0%
City of Cleveland	2,533	2	8.9%
City of Cincinnati	1,939	3	6.8%
City of Toledo	1,228	4	4.3%
City of Akron	833	5	2.9%
City of Dayton	664	6	2.3%
City of Canton	320	7	1.1%
City of Youngstown	288	8	1.0%
City of Springfield	270	9	1.0%
City of Hamilton	222	10	0.8%
All Others	16,426		57.9%
TOTAL	**28,408**		**100.0%**

PRINCIPAL PARTICIPATING EMPLOYERS AS OF DEC. 31, 2009

Employer Name	Covered Employees	Rank	Percentage of Total Covered Members
City of Columbus	3,424	1	11.8%
City of Cleveland	2,621	2	9.1%
City of Cincinnati	1,989	3	6.8%
City of Toledo	1,122	4	3.9%
City of Akron	854	5	2.9%
City of Dayton	756	6	2.6%
City of Canton	349	7	1.2%
City of Youngstown	331	8	1.1%
City of Springfield	261	9	0.9%
City of Hamilton	233	10	0.8%
All Others	17,122		58.9%
TOTAL	**29,062**		**100.0%**

OP&F EMPLOYEE BUDGETED POSITION COUNTS

Department*	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Administration	19	20	19	36	48	47	45	46	46	47
Finance	24	21	21	21	21	22	22	13	13	13
Business and Technology Solutions	41	45	44	26	25	24	24	24	24	24
Investments	16	16	15	14	14	14	15	15	15	14
Member Services	46	46	46	46	34	34	38	46	46	51
TOTAL FULL-TIME POSITIONS	**146**	**148**	**145**	**143**	**142**	**141**	**144**	**144**	**144**	**149**

* In 2018, Purchasing was transitioned to Finance from BTS. In 2015, Customer Service was transitioned to Member Services and Purchasing was transitioned to BTS from Administration. In 2012, Employer Services was transitioned to Finance from Member Services.

PERSONNEL SALARIES BY YEAR (DOLLARS IN THOUSANDS)

	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Salaries and Wages	$10,801.4	$10,317.3	$9,971.3	$9,635.1	$9,054.2	$9,248.5	$8,756.9	$8,807.9	$8,313.9	$8,660.2
Average Salary per Budgeted Staff	$74.0	$69.7	$68.8	$67.4	$63.8	$65.6	$60.8	$61.2	$57.7	$58.1

OP&F BUDGET (DOLLARS IN MILLIONS)

	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Administrative Expenses (Actual) *	$67.3	$70.3	$63.6	$59.4	$61.6	$59.4	$52.8	$50.3	$46.5	$41.0
Administrative Expenses (Budget) *	$72.5	$70.2	$66.0	$65.4	$62.6	$62.6	$58.7	$54.5	$45.6	$46.5
Percentage of Budget vs Actual	93%	100%	96%	91%	98%	95%	90%	92%	102%	88%
Capital (Actual)	$0.5	$0.4	$0.5	$1.3	$2.1	$3.1	$2.9	$1.7	$2.0	$0.6
Capital (Budget)	$2.9	$4.3	$4.6	$3.0	$2.8	$3.4	$3.4	$3.7	$4.4	$3.2
Percentage of Budget vs Actual	17%	9%	11%	43%	75%	91%	85%	46%	45%	19%
Operating Expenses (Actual) *	$15.8	$18.9	$17.9	$14.6	$14.4	$14.3	$13.6	$13.6	$13.1	$14.0
Investment Expenses (Actual) *	$51.5	$51.4	$45.7	$44.8	$47.2	$45.1	$39.2	$36.7	$33.4	$27.0

* Excludes depreciation expense.

OTHER OPERATING STATISTICS

	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Total Staff	146	148	145	143	142	141	144	144	144	149
Investment Staff	16	16	15	14	14	14	15	15	15	14
Investment Actual Expenses	$51.5	$51.4	$45.7	$44.8	$47.2	$45.1	$39.2	$36.7	$33.4	$27.0
Investment Income	$(487.9)	$1,923.5	$1,317.4	$(10.0)	$860.7	$2,053.0	$1,657.9	$229.6	$1,651.8	$1,894.9
Investment Staff to Investment Expense Ratio	$3.2	$3.2	$3.0	$3.2	$3.4	$3.2	$2.6	$2.4	$2.2	$1.9
Total Staff to Investment Income Ratio	$(3.3)	$13.0	$9.1	$(0.1)	$6.1	$14.6	$11.5	$1.6	$11.5	$12.7
Investment Staff to Investment Income Ratio	$(30.5)	$120.2	$87.8	$(0.7)	$61.5	$146.6	$110.5	$15.3	$110.1	$135.4

DEATH BENEFIT FUND

Pursuant to Section 742.63 of the Ohio Revised Code, the Board of Trustees of OP&F administers the State of Ohio DBF. This program was established by the State of Ohio to provide monthly benefit payments to surviving family members of Ohio fire fighters and law enforcement officers who have been killed in the line of duty or die of a duty-related accident or illness. Funds are disbursed to OP&F, on a quarterly basis, each State fiscal year (July 1-June 30) and benefits are paid monthly by OP&F to eligible recipients. The unused balance at June 30 is returned to the State. The assets and liabilities of the DBF are included in the Fund's combining statement of plan net assets as of Dec. 31, 2018 as an agency fund. The following is a schedule of DBF financial activity:

Balance Jan. 1, 2018	**$ 455,321**
Less: Survivor Benefits Paid Jan. 1 thru June 30, 2018	(9,267,175)
Balance returned to State of Ohio	(1,188,146)
State Funding Received	20,000,000
Less: Survivor Benefits Paid July 1 thru Dec. 31, 2018	(9,788,975)
BALANCE DEC. 31, 2018	**$ 211,025**

LIST OF PROFESSIONAL ACRONYMS AND SYMBOLS

AAL = Actuarial Accrued Liabilities

ACH = Automated Clearing House

ACWI Ex-U.S. = All Country World Index Ex-U.S.

BOE = Bank of England

BOJ = Bank of Japan

bps = Basis Points

CAFR = Comprehensive Annual Financial Report

C-Corp = C-Corporation

COLA = Cost of Living Allowance

Connector = OPERS Medicare Connector

CPI = Consumer Price Index

DB = Defined Benefits

DBF = Death Benefit Fund

DROP = Deferred Retirement Option Plan

ECB = European Central Bank

EDOR = Effective Date of Retirement

€ = Euro

FAS = Final Average Salary

FED = Federal Reserve

FHLMC = Federal Home Loan Mortgage Corporation

FNMA = Federal National Mortgage Association

GASB = Government Accounting Standards Board

GDP = Gross Domestic Product

GFOA = Government Finance Officers Association of the U.S. and Canada

GNMA = Government National Mortgage Association

HCSF = Health Care Stabilization Fund

HRA= Health Care Reimbursement Arrangement

HY = High Yield

IMI = Investment Market Index

IPO = Initial Public Offering

IRC = Internal Revenue Code

IRR = Internal Rate of Return

IRS = Internal Revenue Service

I/S Free = Iran and Sudan Free

JSA = Joint and Survivor Annuity

LACC = Life Annuity Certain and Continuous

LIBOR = London Interbank Offered Rate

MD&A = Management Discussion and Analysis

MLPs = Master Limited Partnerships

MSCI = Morgan Stanley Capital International

NAV = Net Asset Value

NPL = Net Pension Liability

NR = Not Rated

ODCE = Open End Diversified Core Equity

OP&F = Ohio Police & Fire Pension Fund

OPEB = Other Post-Employment Benefit

OPERS = Ohio Public Employees Retirement System

ORC = Ohio Revised Code

ORSC = Ohio Retirement Study Council

PIMCO = Pacific Investment Management Company

PME = Public Market Equivalent

PPCC = Public Pension Coordination Council

REMICs = Real Estate Mortgage Investment Conduits

RFP = Request for Proposal

RMA = Retiree Medical Account

RSI = Required Supplementary Information

S&P = Standard and Poor's

SB = Senate Bill

STIF = Short Term Investment Fund

TIPS = Treasury Inflation Protected Securities

LIST OF PROFESSIONAL ACRONYMS AND SYMBOLS - CONTINUED

2x = Two Times

TTY = TeletypeWriter

UAAL = Unfunded Actuarial Accrued Liabilities

U.K. = United Kingdom

U.S. = United States of America

U.S.D. = United States Dollar

Veba Trust = Voluntary Employees' Beneficiary Association Trust

This page intentionally left blank.

Ohio Police & Fire Pension Fund

PRUDENCE | INTEGRITY | EMPATHY

Securing the future for Ohio's police and firefighters

140 East Town Street
Columbus, Ohio 43215

www.op-f.org

CUSTOMER SERVICE
1-888-864-8363

GENERAL INFORMATION
614-228-2975

TTY
614-221-3846

FAX
614-628-1777

E-MAIL
questions@op-f.org