Ohio Police & Fire Pension Fund

2020 COMPREHENSIVE ANNUAL FINANCIAL REPORT

FOR YEAR ENDED DECEMBER 31, 2020

Ohio Police & Fire Pension Fund

2020 Comprehensive Annual Financial Report
For year ended Dec. 31, 2020
Prepared through the combined efforts of OP&F staff

Prudence • Integrity • Empathy
Securing the future for Ohio's police and firefighters

140 East Town Street
Columbus, Ohio 43215

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2020

COMPREHENSIVE ANNUAL FINANCIAL REPORT

FOR YEAR ENDED DEC. 31, 2020

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

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INTRODUCTION

2020 COMPREHENSIVE ANNUAL FINANCIAL REPORT

PHOTO PROVIDED BY CITY OF WESTERVILLE

BOARD OF TRUSTEES


Stephen A. Corvi


Robert E. Britt, II


Tanya S. Czack


John R. Deal


Mark E. Drum


Marco J. Miller


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 to two months each year. In 2020, the Board of Trustees did not meet in the months of July and November. In 2021, 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

Stephen A. Corvi, Chair
Columbus Fire

Robert E. Britt, II, Vice Chair
Toledo Police

Tanya S. Czack
Parma Heights Police

John R. Deal
Cincinnati Fire

Mark E. Drum
Retired, Delaware Police

Marco J. Miller
Retired, Columbus Fire

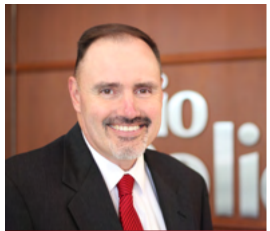
J. David Heller
Investment Expert Member, appointed by the Ohio Senate and the Ohio House of Representatives

Charles O. Moore
Investment Expert Member, appointed by the Governor of Ohio

Karin Maloney Stifler
Investment Expert Member, appointed by the Ohio Treasurer of State

ADMINISTRATIVE STAFF


Mary Beth Foley


Scott K. Miller


David B. Graham


Theodore G. Hall


Jennifer L. Harville


Brian C. O'Brien


Keisha D. Proctor


Caren R. Sparks

EXECUTIVE STAFF

Mary Beth Foley
Interim Executive Director/General Counsel

Scott K. Miller
Deputy Executive Director

David B. Graham
Communications Director

Theodore G. Hall
Chief Investment Officer

Jennifer L. Harville
Member Services Director

Brian C. O'Brien
Business and Technology Solutions Director

Keisha D. Proctor
Human Resources Director

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

PROFESSIONAL CONSULTANTS

(NOT PICTURED)

Actuary
Cavanaugh Macdonald Consulting, 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 77)

Schedule of Brokers' Fees Paid
(See Page 78)

AWARDS

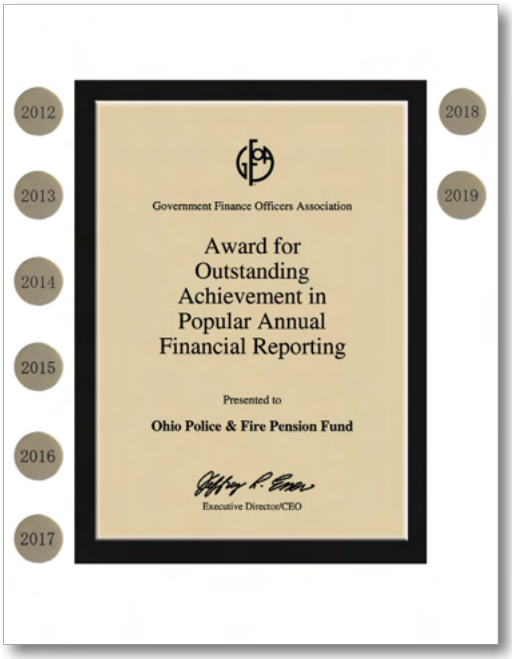
OP&F has been recognized by financial experts for their commitment to the highest possible fiscal standards. OP&F is honored to have been recognized with the following:

2019 CERTIFICATE OF ACHIEVEMENT FOR EXCELLENCE IN FINANCIAL REPORTING

For 31 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.

2020 DISTINGUISHED BUDGET PRESENTATION AWARD

OP&F was again recognized by GFOA's Distinguished Budget Presentation Award in 2020, representing the 19th 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.



2019 AWARD FOR OUTSTANDING ACHIEVEMENT IN POPULAR ANNUAL FINANCIAL REPORTING

For 19 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.

2020 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 30, 2021

Dear Chair and Members of the Board of Trustees:

We are pleased to submit to you the Comprehensive Annual Financial Report (Annual Report) of the Ohio Police & Fire Pension Fund (OP&F) for the fiscal year ending Dec. 31, 2020. 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 Annual Report was prepared to aid interested parties in assessing OP&F's financial status on Dec. 31, 2020 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, 2020, the balance totaled nearly $18.0 million.

OP&F provides pension, disability, deferred retirement option plan (DROP) and health care stipend benefits to qualified members. In addition, OP&F provides survivor benefits, death benefits and health care stipend benefits 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, 2020:

PARTICIPATING EMPLOYERS

	Police	Fire	Total
Municipalities	248	204	452
Townships	–	178	178
Villages	277	37	314
TOTAL	**525**	**419**	**944**

FINANCIAL OVERVIEW

OP&F receives virtually all of its funds from the following sources: investment earnings, employer contributions, member contributions, state subsidies and reimbursements. Additions to the fiduciary net position were $2,281.3 million in 2020 which included contributions received from employers and members as well as appreciation on investments due to a positive return of 9.21%.

Overall contributions increased by $25.0 million or 3.1% in 2020. This increase is due to an increase in member and employer contributions and is offset slightly by the elimination of health care contributions. Under the new stipend plan, beneficiaries no longer have health care contributions deducted from their benefit payments.

The statutory employer contribution rate remained unchanged from the prior year at 19.5% for police employers and 24.0% 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.

	2020	
Additions to Fiduciary Net Position (*dollars in millions*)	**Amount**	**Percent**
Net Investment Income	$1,436.7	63.0%
Contributions	843.2	36.9%
Other Additions	1.4	0.1%
TOTAL ADDITIONS	**$2,281.3**	**100.0%**

Deductions to Fiduciary Net Position (*dollars in millions*)	2020 Amount	Percent
Benefits	$1,467.2	97.6%
Refund of Member Contributions	17.5	1.1%
Administrative Expenses	19.2	1.3%
TOTAL DEDUCTIONS	**$1,503.9**	**100.0%**

Benefit payments represent the largest deduction and usage of the additions to fiduciary net position. In 2020, OP&F experienced:

- A 5.0% increase in retirement benefits. This increase is due to a cost-of-living allowance (COLA) for eligible benefit recipients and a 0.8% increase in the number of beneficiaries receiving pension benefits.
- A 9.7% increase in the amount of health care benefit payments. This increase is due to an increase in the amount of stipend benefits paid to members and beneficiaries participating in the stipend program.
- A 16.8% decrease in DROP benefits. DROP benefits paid out fluctuate from year-to-year based on the timing of member requests to withdraw their funds on account.
- A 27.5% increase in contributions refunded. Upon termination of active service in a police or fire department, a member may withdraw their accumulated employee contributions on deposit with OP&F. Similar to DROP benefits, contribution refunds paid out fluctuate from year-to-year based on the timing of member requests to withdraw their funds on account.
- An 11.1% decrease in administrative services. This decrease is primarily due to a decrease in Investment Management Fees. In addition, the proportionate share of Ohio Public Employees Retirement System (OPERS) pension liability recognized as GASB 68 pension expense decreased in 2020 compared to 2019.
- Other deductions in 2020 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 $777.4 million increase in the 2020 fiduciary net position primarily due to the appreciation of the fair value of investments. In addition, a portion of employer contributions and a portion of investment income (and losses) are allocated to operate OP&F's health care stipend program.

In 2020, OP&F investment portfolio returned a positive 9.21%. As of Dec. 31, 2020, total investments at fair value stood at $17.27 billion.

In the annual actuarial report dated Jan. 1, 2020 completed by Cavanaugh Macdonald Consulting, 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 increase in the funded ratio as of Jan. 1, 2020 to 69.7% (compared to 69.4% as of Jan. 1, 2019). 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 actuarial assumption please refer to the Actuarial Section.

OP&F is not required by statute or GASB to pre-fund health care. As of Jan. 1, 2020 OP&F's Health Care Stabilization Fund (HCSF) had a solvency period until July 2038, or approximately 18.5 more years. Extending the solvency period of the HCSF can be attributed to the transition from a self-insured health care model to a stipend-based model for retirees and beneficiaries, which was implemented on Jan. 1, 2019.

A report by Wilshire, an independent investment consultant, showed that OP&F's investment portfolio continues to weather challenging market fluctuations. In 2020, the total portfolio's investment return was 9.21% placing it in the 85th percentile of Wilshire's All Public Plans - Total Fund Universe a common source to establish peer group rankings. With 2020's result, OP&F's three-year annualized return now stands at 8.23%, while the five-year annualized return was 9.95%. OP&F's 10-year annualized return was 9.10%, comfortably ahead of OP&F's 8.00% assumed rate of return. As mentioned earlier, the total portfolio's 2020 results ranked in the 85th percentile of Wilshire's All Public Plans - Total Fund Universe while the three-year, five-year and 10-year results ranked in the 58th, 37th and 19th 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 calendar year 2020, OP&F's total gross rate of return on its investment portfolio was a positive 9.21%.

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 2020. 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, 2020, 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 Comprehensive Annual Financial Report for the fiscal year ended Dec. 31, 2019. 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 Annual Report, 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,

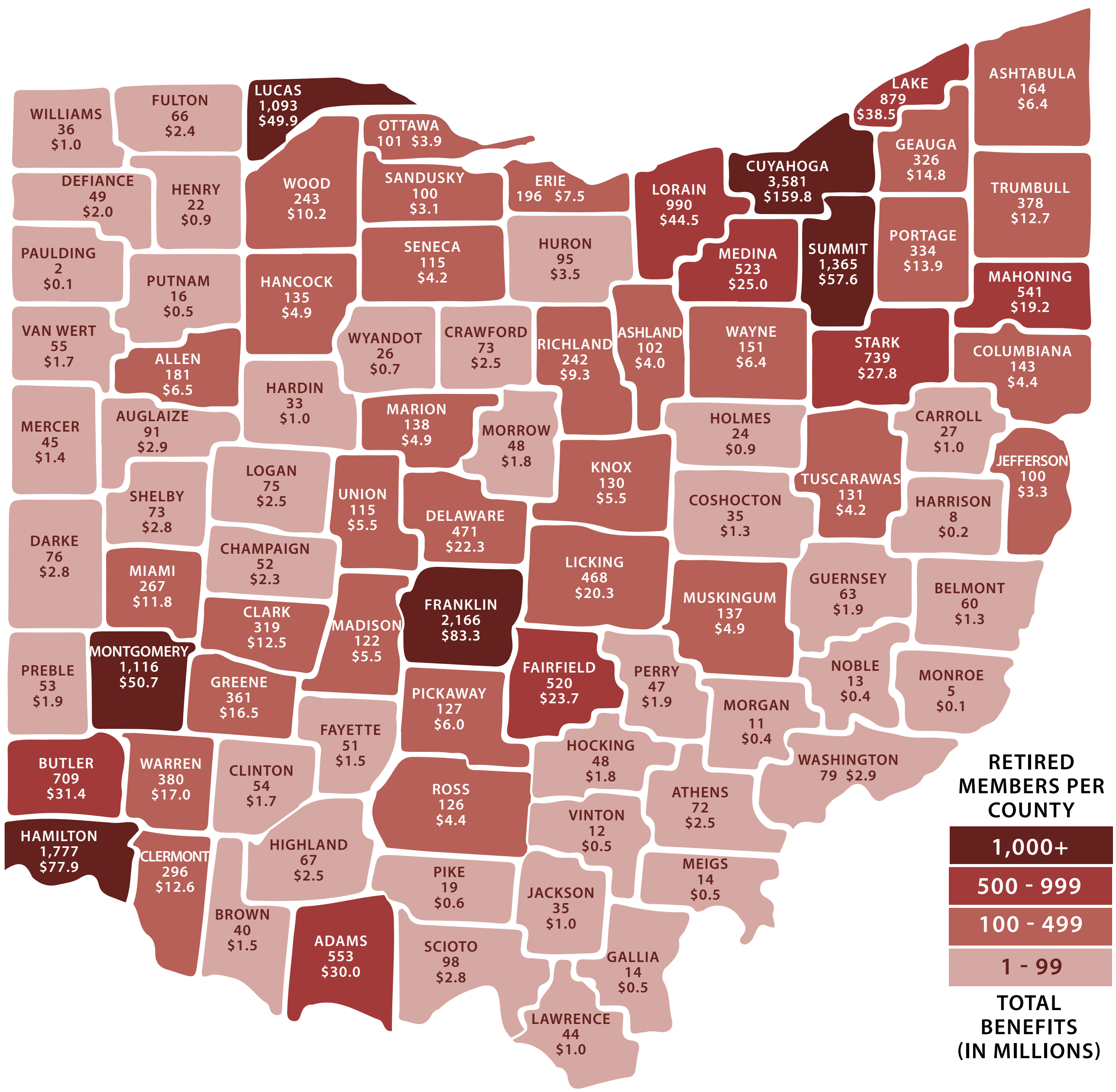
Mary Beth Foley	Scott K. Miller
Interim Executive Director	Deputy Executive Director

DEMOGRAPHICS AND ECONOMIC IMPACT

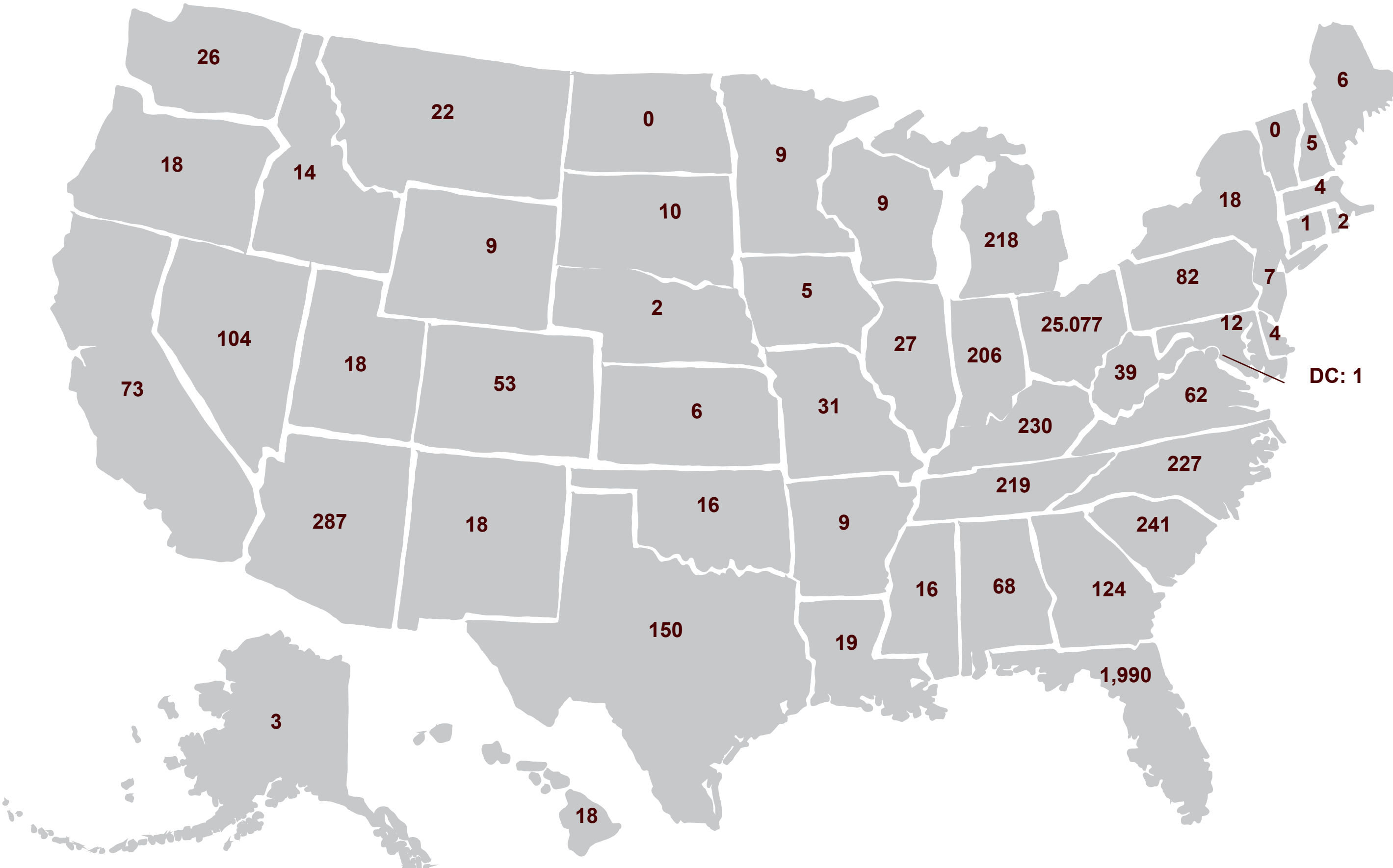
MEMBERSHIP RESIDENCE

Type of Member	Total Persons	Ohio Residents	Non-Residents	Percent of Non-Residents
Active Members (including DROP)	29,141	28,626	515	1.8%
Retirees	23,010	19,542	3,468	15.1%
Survivors	6,827	5,535	1,292	18.9%
TOTAL	**58,978**	**53,703**	**5,275**	**8.9%**
Active Members in DROP	4,354	4,292	62	1.4%

RETIREES AND BENEFITS PAID BY COUNTY



BENEFICIARIES BY STATE



BENEFICIARIES BY COUNTRY

Location	Retirees
United States	29,815
Canada	10
Columbia	1
France	1
Ireland	1
Philippines	3
Puerto Rico	2
Thailand	1
Virgin Islands	2
Armed Forces, Europe	1

ECONOMIC IMPACT ANALYSIS

OP&F hired the University of Cincinnati Economics Center to conduct an economic impact analysis of the Ohio Police & Fire Pension Fund in 2018. The Economics Center calculated the economic and fiscal impacts of OP&F's operations and capital expenditures using salary, non-wage expenditure, and capital expenditure data provided. These data, provided by OP&F, were applied to Economic Modeling Specialists International (EMSI) input-output model multipliers. The EMSI model captures the interdependencies of an economy's various industries, quantifying how direct expenditures on goods or services by a particular industry (or to individuals in the form of wages) yield additional expenditures within that economy. The State of Ohio is the primary geographic area of analysis for this study.

OP&F provides vital pension and disability benefits to the State's full-time and retired police officers and firefighters, as well as their beneficiaries. OP&F members totaled approximately 59,000 individuals as of year-end 2018, with a nearly even split between active members and retirees and their beneficiaries. OP&F paid out $1.17 billion in gross benefits to members worldwide in 2018, with approximately $1.00 billion going to Ohio residents. Of this total, these Ohioans spent approximately $811 million on products and services in the Ohio economy in 2018. This direct spending supported nearly 7,100 direct jobs and approximately $276 million in employee earnings. The direct spending, in turn, generated indirect impacts of approximately $871 million in spending, 6,885 jobs, and nearly $312 million in earnings. The Economics Center estimates that household spending impacts in Ohio resulting from OP&F pension payments totaled $1.68 billion in output, supported nearly 14,000 jobs, and more than $587 million in employee earnings. OP&F operations and capital spending also benefited the Ohio economy in 2018, with combined total economic impacts of approximately $147 million in spending, 410 jobs, and nearly $29 million in employee earnings. The Economics Center estimates that OP&F's total economic impact in 2018 to the Ohio economy included approximately $1.83 billion in output, more than 14,000 jobs, and more than $616 million in employee earnings.

OP&F's operations and pension distributions also generated substantial fiscal impacts to the State of Ohio, Ohio Counties and Transit Authorities, and the City of Columbus in 2018. OP&F distributions to Ohio residents generated approximately $23.5 million in income tax revenues for the State of Ohio. In addition, beneficiaries' purchases of goods and services generated approximately $13.8 million in State sales tax revenues, as well as $2.7 million in County sales tax revenues and $0.7 million in Transit Authority revenues. Earnings paid to OP&F employees in 2018 resulted in income tax collections of approximately $338,000 by the State of Ohio and approximately $266,000 by the City of Columbus. Total fiscal impacts of OP&F operations, pension distributions, and resulting household spending in 2018 totaled $41.3 million which included approximately $37.6 million to the State of Ohio, $2.7 million to Ohio Counties, $0.7 million to Ohio Transit Authorities, and $0.3 million to the City of Columbus.

The complete report of the economic impact analysis of OP&F conducted by the University of Cincinnati Economic Center can be found on OP&F's website.

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FINANCIAL

2020 COMPREHENSIVE ANNUAL FINANCIAL REPORT

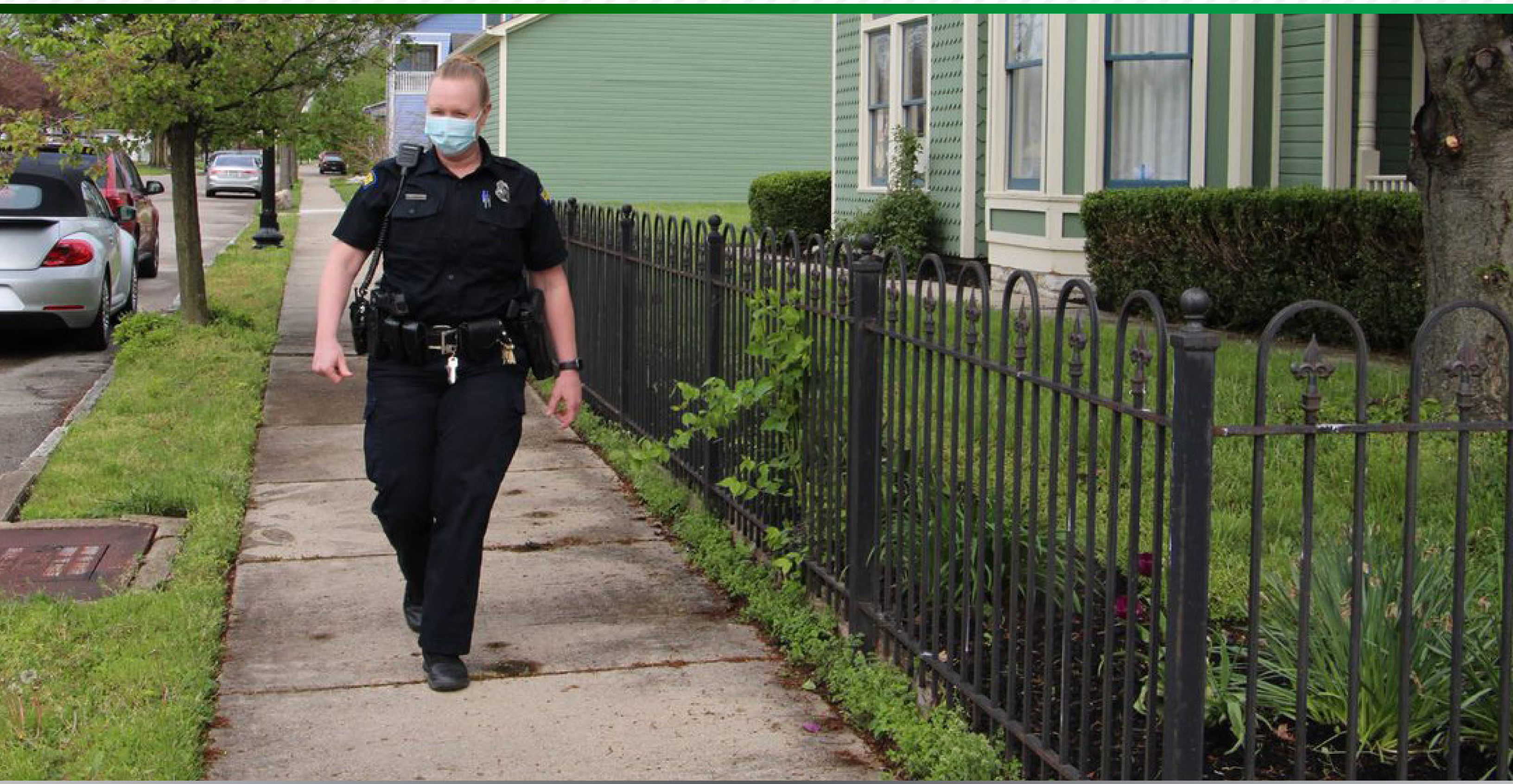


PHOTO PROVIDED BY CITY OF DAYTON

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 financial statements of Ohio Police & Fire Pension Fund, which comprise the statement of fiduciary net position as of December 31, 2020, and the related statement of changes in fiduciary net position for the year ended December 31, 2020, 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 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, 2020, 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 safety 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 17, 2021 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 17, 2021

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, 2020. 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 Annual Report.

FINANCIAL HIGHLIGHTS

Additions are received primarily from investment income and employer and member pension contributions. For fiscal year 2020, these additions totaled $2,281.3 million compared to $3,273.0 million in 2019, which is a 30.3% 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 24.0% for fire remained unchanged in both 2020 and 2019. The member contribution rate was 12.25% for both police and fire in 2020 and 2019.

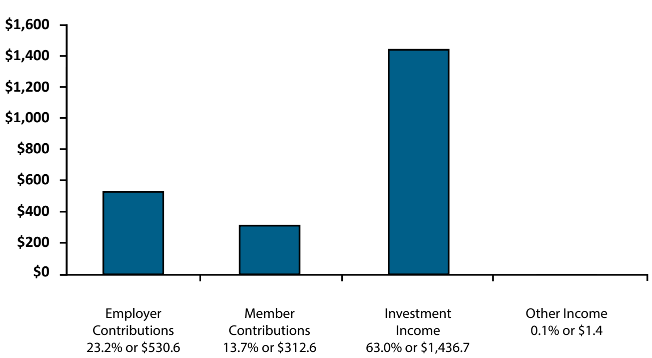
Deductions are incurred primarily for the purpose for which OP&F was created; the payment of pension, disability and survivor benefits to qualified members and survivors. Included in the deductions from OP&F's fiduciary net position for 2020 were benefits for retirement, DROP, disability, health care 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 stipends are funded through an allocation of employer contributions and investment income. Deductions totaled $1,503.9 million in 2020 and were $1,492.6 million in 2019, which is a 0.8% increase over 2019. 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 Death Fund assets and related liability for unpaid benefits were $1.3 million and $1.2 million at Dec. 31, 2020 and 2019. This fund is included in the accompanying financial statements.

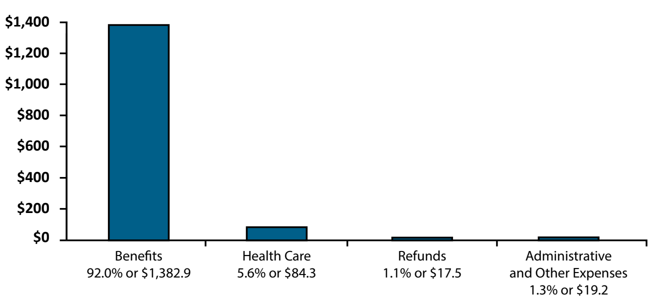
OVERVIEW OF FINANCIAL STATEMENTS

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.

2020 ADDITIONS (DOLLARS IN MILLIONS) $2,281.3



2020 DEDUCTIONS (DOLLARS IN MILLIONS) $1,503.9



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)

			2020 Change	
	2020	**2019**	**Amount**	**Percent**
Cash and Short-term Investments	$1,534.6	$1,124.2	$410.4	36.5%
Receivables	162.7	173.0	(10.3)	(6.0)%
Investments, at Fair Value	16,309.8	15,793.3	516.5	3.3%
Capital Assets, Net of Depreciation	14.9	15.3	(0.4)	(2.6)%
Other Assets	-	-	-	-%
TOTAL ASSETS	**18,022.0**	**17,105.8**	**916.2**	**5.4%**
DEFERRED OUTFLOWS	3.7	5.1	(1.4)	(27.5)%
Benefits and Accounts Payable	77.0	78.9	(1.9)	(2.4)%
Investments Payable	650.0	515.5	134.5	26.1%
TOTAL LIABILITIES	**727.0**	**594.4**	**132.6**	**22.3%**
DEFERRED INFLOWS	6.0	1.2	4.8	400.0%
FIDUCIARY NET POSITION, END OF YEAR	**$17,292.7**	**$16,515.3**	**$777.4**	**4.7%**

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

			2020 Change	
	2020	**2019**	**Amount**	**Percent**
Contributions	$843.2	$818.2	$25.0	3.1%
Net Investment Gain/(Loss)	1,436.7	2,434.3	(997.6)	(41.0)%
Other Additions	1.4	20.5	(19.1)	(93.2)%
TOTAL ADDITIONS	**2,281.3**	**3,273.0**	**(991.7)**	**(30.3)%**
Benefits	1,467.2	1,457.1	10.1	0.7%
Refunds	17.5	13.7	3.8	27.7%
Administrative Expenses and Other	19.2	21.8	(2.6)	(11.9)%
TOTAL DEDUCTIONS	**1,503.9**	**1,492.6**	**11.3**	**0.8%**
Net Increase/(Decrease)	**777.4**	**1,780.4**	**(1,003.0)**	**(56.3)%**
Fiduciary Net Position, Beginning of Year	**16,515.3**	**14,734.9**	**1,780.4**	**12.1%**
FIDUCIARY NET POSITION, END OF YEAR	**$17,292.7**	**$16,515.3**	**$777.4**	**4.7%**

FINANCIAL ANALYSIS

FIDUCIARY NET POSITION

The fiduciary net position available for benefits and expenses in 2020 was $17,292.7 million versus $16,515.3 million in 2019, which represents a 4.7% net increase. The overall net increase in 2020 can be primarily attributed to net appreciation on the fair value of investments. Please refer to the Investment Section for additional information on OP&F's investment activities in 2020.

REVENUE ADDITIONS TO FIDUCIARY NET POSITION

Based on the rounded numbers found on Page six, overall contributions received by OP&F in 2020 increased 3.1% or $25.0 million compared to 2019. This increase is primarily due to the increase in member and employer contributions received in 2020.

Pension contributions from employers increased $16.4 million, or 3.2%, in 2020. 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 2020, pension contributions from members increased $9.2 million, or 3.0%. The increase in 2020 can be attributed to the 2.7% increase in the average annual salary, from $78,488 to $80,628, and an increase in active member population, or contributing members, by 464 to 29,551, or by 1.6%.

In 2020, members purchasing service credit or transferring in their member contributions increased by $3.0 million, or 23.7% compared to 2019. 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.

In 2020, contributions received through the state-subsidy decreased $34,812, from $260,488 to $225,676. This trend is due to a normal decline in the population of survivors receiving this subsidized benefit.

Investment net appreciation totaled $1,436.7 million in 2020. The net appreciation of 2020 can be attributed to a positive gross return of 9.21% from OP&F's investment portfolio. In 2019, investment net appreciation totaled $2,434.3 million. The net appreciation of 2019 can be attributed to positive gross return of 17.89% from OP&F's investment portfolio.

EXPENSE DEDUCTIONS FROM NET POSITION

Overall benefit deductions for service retirement, DROP, disability and survivors increased $2.6 million or 0.2% in 2020. Part of the increases in pension benefits is due to increases in the number of retirees and beneficiaries. Service retirees increased by 427 individuals, or 2.8% in 2020, survivors and beneficiaries increased by 28 individuals, or 0.4% while disability retirees decreased by 58 individuals, or 0.9%. In addition, the increase in benefit deductions was offset by a decrease in DROP benefit distributions of $40.6 million or 16.8% in 2020 compared to 2019.

In 2020, health care benefits increased by 9.7% and gross health care payments totaled $84.2 million and represented 5.6% of all plan deductions. In 2019, health care benefits totaled $76.8 million and represented 5.2% of all plan deductions. The increase in health care benefits in 2020 can be attributed to the amount of stipend payments made to members and beneficiaries participating in the stipend program.

Refunds to members increased by $3.8 million in 2020. These refunds include actual refunds of member contributions on deposit for inactive members.

BASIC FINANCIAL STATEMENTS

STATEMENT OF FIDUCIARY NET POSITION

AS OF DEC. 31, 2020

	Pensions	Post-Employment Health Care	2020 Total	Death Benefit Fund
Assets:				
Cash and Short-term Investments	$1,456,318,005	$78,238,141	$1,534,556,146	$1,291,245
Receivables:				
Employers' Contributions	42,103,627	997,183	43,100,810	-
Members' Contributions	24,191,466	-	24,191,466	-
Accrued Investment Income	41,307,583	2,219,178	43,526,761	-
Investment Sales Proceeds	32,164,184	1,727,965	33,892,149	-
Local Funds Receivable	17,991,077	-	17,991,077	-
TOTAL RECEIVABLES	**157,757,937**	**4,944,326**	**162,702,263**	**-**
Investments, at fair value:				
Domestic Bonds	3,260,947,969	175,188,733	3,436,136,702	-
International Bonds	44,043	2,366	46,409	-
Mortgage and Asset-Backed Securities	708,937,301	38,086,418	747,023,719	-
Domestic Equities	3,364,304,904	180,741,404	3,545,046,308	-
International Equities	3,015,860,861	162,021,857	3,177,882,718	-
Real Estate	1,599,296,433	85,919,407	1,685,215,840	-
Private Debt	420,873,126	22,610,674	443,483,800	-
Private Equity	1,724,615,576	92,651,959	1,817,267,535	-
Real Assets	542,996,172	29,171,521	572,167,693	-
Master Limited Partnerships	338,973,518	18,210,760	357,184,278	-
Domestic Derivatives	(4,696)	(252)	(4,948)	-
International Derivatives	(880,612)	(47,309)	(927,921)	-
TOTAL INVESTMENTS	**14,975,964,595**	**804,557,538**	**15,780,522,133**	**-**
Collateral on Loaned Securities	502,265,951	26,983,361	529,249,312	-
Capital Assets, net of accumulated depreciation, where applicable:				
Land	3,200,000	-	3,200,000	-
Building and Improvements	9,993,379	-	9,993,379	-
Furniture and Equipment	113,422	-	113,422	-
Computer Software and Hardware	1,551,234	-	1,551,234	-
TOTAL CAPITAL ASSETS, NET	14,858,035	-	14,858,035	-
Prepaid Expenses and Other	75,564	-	75,564	-
TOTAL ASSETS	**17,107,240,087**	**914,723,366**	**18,021,963,453**	**1,291,245**
DEFERRED OUTFLOWS OF RESOURCES				
Deferred Outflows - Pension and OPEB	3,674,092	-	3,674,092	-
Liabilities:				
Investment Commitments Payable	114,579,566	6,155,588	120,735,154	-
Accrued Administrative Expenses	39,986,198	-	39,986,198	-
Due to State of Ohio	-	-	-	1,291,245
Obligations Under Securities Lending	502,265,951	26,983,361	529,249,312	-
Other Liabilities	36,994,957	-	36,994,957	-
TOTAL LIABILITIES	**693,826,672**	**33,138,949**	**726,965,621**	**1,291,245**
DEFERRED INFLOWS OF RESOURCES				
Deferred Inflows - Pension and OPEB	5,962,250	-	5,962,250	-
FIDUCIARY NET POSITION HELD IN TRUST FOR PENSION AND POST-EMPLOYMENT HEALTH CARE BENEFITS	**$16,411,125,257**	**$881,584,417**	**$17,292,709,674**	**$-**

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

STATEMENTS OF CHANGES IN FIDUCIARY NET POSITION

FOR THE YEAR ENDED DEC. 31, 2020

	Pensions	Post-Employment Health Care	2020 Total
Additions:			
From Contributions:			
Members'	$312,628,926	$-	$312,628,926
Employers'	518,204,527	12,166,558	530,371,085
State of Ohio-Subsidies	225,676	-	225,676
TOTAL CONTRIBUTIONS	**831,059,129**	**12,166,558**	**843,225,687**
From Investment Income:			
Net Appreciation			
Value of Investments	1,017,534,114	55,830,286	1,073,364,400
Bond Interest	111,063,069	6,093,833	117,156,902
Dividends	82,765,599	4,541,201	87,306,800
Alternative Investment Income	150,027,243	8,231,728	158,258,971
Master Limited Partnerships Income	40,506,295	2,222,508	42,728,803
Other Investment Income	6,492,995	356,259	6,849,254
Less Investment Expenses	(48,078,974)	(2,638,008)	(50,716,982)
NET INVESTMENT INCOME	**1,360,310,341**	**74,637,807**	**1,434,948,148**
From Securities Lending Activities:			
Securities Lending Income	3,387,083	185,843	3,572,926
Securities Lending Expense	(1,728,340)	(94,831)	(1,823,171)
NET INCOME FROM SECURITIES LENDING	**1,658,743**	**91,012**	**1,749,755**
Interest on Local Funds Receivable	785,439	-	785,439
Other Income	64,458	563,964	628,422
TOTAL ADDITIONS	**2,193,878,110**	**87,459,341**	**2,281,337,451**
Deductions:			
Retirement Benefits	828,626,076	-	828,626,076
Disability Benefits	258,818,861	-	258,818,861
Health Care Benefits	-	84,249,181	84,249,181
Survivor Benefits	94,772,207	-	94,772,207
DROP Withdrawals	200,714,768	-	200,714,768
Contribution Refunds	17,481,972	-	17,481,972
Administrative Expenses	18,903,295	314,740	19,218,035
Other Expenses	26,481	-	26,481
TOTAL DEDUCTIONS	**1,419,343,660**	**84,563,921**	**1,503,907,581**
CHANGE IN FIDUCIARY NET POSITION	774,534,450	2,895,420	777,429,870
FIDUCIARY NET POSITION - BEG OF YEAR	**15,636,590,807**	**878,688,997**	**16,515,279,804**
FIDUCIARY NET POSITION - END OF YEAR	**$16,411,125,257**	**$881,584,417**	**$17,292,709,674**

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, 2020)

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

There we no new accounting pronouncements adopted during 2020.

The GASB has issued the following pronouncements: GASB Statement No. 87, Leases, is effective for fiscal years beginning after June 15, 2021. GASB Statement No. 91, Conduit Debt Obligations, is effective for fiscal years beginning after Dec. 15, 2021. GASB Statement No. 92, Omnibus 2020, the requirements related to Statement 87 are effective upon issuance, the rest is effective for fiscal years beginning after June 15, 2021. GASB Statement No. 93, Replacement of Interbank Offered Rates, is effective for reporting periods ending after June 15, 2020. GASB Statement No. 94, Public-Private and Public-Public Partnerships and Availability Payment Arrangements, is effective for fiscal years beginning after June 15, 2022. GASB Statement No. 96, Subscription-Based Information Technology Arrangements, is effective for fiscal years beginning after June 15, 2022. GASB Statement No. 97, Certain Component Unit Criteria, and Accounting and Financial Reporting for Internal Revenue Code Section 457 Deferred Compensation Plans – an amendment of GASB Statement No. 14 and No. 84, and a supersession of GASB Statement No. 32, is effective for fiscal years beginning after June 15, 2021. 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 Service (IRS) Code that is exempt from Federal income taxes under Section 501(a) of the IRS 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 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, 2020	Additions	Disposals	Dec. 31, 2020
Land	$3,200,000	$-	$-	$3,200,000

Depreciable Capital Assets	Jan. 1, 2020	Additions	Disposals	Dec. 31, 2020
Building and Improvements	$21,395,605	$-	$-	$21,395,605
Furniture and Equipment	3,421,379	7,683	(28,436)	3,400,626
Computer Software and Hardware	17,745,220	782,998	(239,514)	18,288,704
TOTAL DEPRECIABLE CAPITAL ASSETS	**42,562,204**	**790,681**	**(267,950)**	**43,084,935**

Accumulated Depreciation	Jan. 1, 2020	Additions	Disposals	Dec. 31, 2020
Building and Improvements	10,876,303	525,923	-	11,402,226
Furniture and Equipment	3,233,160	82,480	(28,436)	3,287,204
Computer Software and Hardware	16,375,591	601,393	(239,514)	16,737,470
TOTAL ACCUMULATED DEPRECIATION	**30,485,054**	**1,209,796**	**(267,950)**	**31,426,900**
TOTAL DEPRECIABLE CAPITAL ASSETS, NET	**$12,077,150**	**$(419,115)**	**$-**	**$11,658,035**

* Additions in capital assets are related to purchases of property and equipment in 2020. Increases in accumulated depreciation are a result of depreciation expensed over the useful life of the asset which was expensed in 2020. Decreases in both the capital assets and accumulated depreciation are related to the disposal of property and equipment in 2020.

2. 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 stipend benefits to qualified members. In addition, OP&F administers survivor benefits, death benefits and a health care stipend benefit 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 77.

PLAN MEMBERSHIP

Employer and member data as of Jan. 1, 2020, based on the most recent actuarial valuation, is as follows:

		2020	
Employee Members	**Police**	**Fire**	**Total**
Retirees and Beneficiaries			
Currently receiving benefits	17,017	12,763	29,780
Terminated employees entitled to benefits but not yet receiving them	151	83	234
TOTAL BENEFIT MEMBERS	**17,168**	**12,846**	**30,014**
Current Members			
Vested*	7,314	6,736	14,050
Non-vested	8,526	6,975	15,501
TOTAL CURRENT MEMBERS	**15,840**	**13,711**	**29,551**
TOTAL EMPLOYEE MEMBERS	**33,008**	**26,557**	**59,565**
Employer Members			
Municipalities	248	204	452
Townships	-	178	178
Villages	277	37	314
TOTAL EMPLOYER MEMBERS	**525**	**419**	**944**

* Includes Rehired Retirees.

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.

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, 2.0% 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 an 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 until the officer would have been eligible to retire as of the maximum age and service pension for the officer's position, which will be reduced at the member's maximum pension eligibility date. If the public safety officer would have qualified for maximum age and service retirement, the survivors are eligible for a transitional benefit equal to 75% of the monthly base pay. The transitional benefit is paid in addition to any other payment that they might be eligible to receive without offset.

DEFERRED RETIREMENT OPTION PLAN (DROP)

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, 2020, 4,245members were enrolled in the DROP program, with total values of the DROP accounts equaling $1,838.4 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, 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 5.0% and a floor of 2.5%, approved by OP&F's Board of Trustees effective Jan. 1, 2020. 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 3.0% 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% of member's contributions
Years 4-5	75% of member's contributions
Years 6-8	100% 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% of member's contributions
Year 3	75% of member's contributions
Years 4-8	100% 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 their date of retirement when eligible. These members will also receive the DROP account balance as a lump sum or monthly distribution.

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. Also, the member's surviving spouse or contingent dependent beneficiary will receive either the retirement allowance at the time of DROP entry, or elected by the member, a 50% joint and survivor annuity, whichever is greater. 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 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. 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

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 the solvency of the HCSF will be extended allowing OP&F to provide stipends to eligible participants.

Health care costs paid from the funds of the plan are included in the employer contribution rates, which are currently 19.5% and 24.0% of salaries for police and fire employers, respectively. During 2020, the Board of Trustees has allocated employer contributions equal to 0.5% of annual covered payroll to the 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.

3. 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, 2020 through Dec. 31, 2020:

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, 2020 through Dec. 31, 2020.

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, 2020, 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 $225,676 for the year ended Dec. 31, 2020.

The chart below summarizes the member and employer contributions for 2020:

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 following is a summary of the amounts due on the local funds receivable:

Local Funds Receivable	
Year ending December 2021	$1,672,711
Year ending December 2022	1,673,934
Year ending December 2023	1,673,934
Year ending December 2024	1,673,934
Year ending December 2025	1,673,934
Thereafter	15,753,521
TOTAL PROJECTED PAYMENTS	**24,121,968**
Less future interest portion	(6,130,891)
BALANCE AT DEC. 31, 2020*	**$17,991,077**

* The Local Funds Receivable balance due at Dec. 31, 2020 includes $21,121 due from two employers, which had previously underpaid their semi-annual payment.

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.

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
2020	$162,662,460	$249,545,321	100%	$149,966,466	$280,825,764	100%

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 stipend and survivor benefits are paid. Included in this Fund is the Health Care Stabilization Fund from which payments for the health care stipend payments 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:

	2020
Members' Contribution	$3,310,753,987
Employers' Contribution	1,030,795,687
Pension Reserve	12,951,160,000
TOTAL	**$17,292,709,674**

4. 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 hierarchal 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: 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 and 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 value of investments in certain equity, fixed income and marketable alternative funds are based on the investments' net asset value. 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, 2020 (Dollars in thousands):

		Fair Value Measurements Using:		
	Dec. 31, 2020	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 and Obligations	$2,053,018	$-	$2,053,018	$-
Domestic Equities	785,908	774,746	11,149	13
International Equities	1,734,337	1,733,499	838	-
Master Limited Partnerships	357,184	357,184	-	-
Non-Agency Mortgage and Asset-Backed Securities	473,839	-	473,839	-
Municipal Bond Obligations	4,296	-	4,296	-
International Bonds	46	-	46	-
Real Assets	92,191	-	-	92,191
U.S. Agency Mortgage and Asset-Backed Securities	273,184	-	273,185	-
U.S. Government Treasury Obligations	339,681	-	339,681	-
U.S. Government Treasury STRIPS*	10,297	-	10,297	-
TOTAL INVESTMENTS BY FAIR VALUE LEVEL	**$6,123,981**	**$2,865,429**	**$3,166,348**	**$92,204**
Investments measured at Net Asset Value (NAV)				
Domestic Commingled Bonds	1,028,845			
Domestic Pooled Equities	1,402,649			
Domestic Equities	1,356,489			
International Equities	1,443,546			
Private Debt	443,484			
Private Equity	1,817,268			
Real Assets	479,977			
Real Estate	1,685,216			
TOTAL INVESTMENTS MEASURED AT NAV	**$9,657,474**			
Investment Derivatives				
Futures	$-	$-	$-	$-
Options/Swaptions	-	-	-	-
Foreign Currency Forwards	(909)	-	(909)	-
Credit Default Swap - International	(19)	-	(19)	-
Credit Default Swaps-Domestic	(4)	-	(4)	-
Interest Rate Swap - International	-	-	-	-
Interest Rate Swaps - Domestic	-	-	-	-
TOTAL INVESTMENT DERIVATIVES	**($932)**	**$-**	**($932)**	**$-**
TOTAL INVESTMENTS	**$15,780,523**			
Securities not leveled in investment portfolio				
Cash Equivalents	**$1,534,684**			

* Separate Trading of Registered Interest and Principal Securities (STRIPS).

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

	Dec. 31, 2020	Unfunded Commitments[1]	Redemption Frequency (If Currently Eligible)	Redemption Notice Period[2]
Bond/Credit Funds [3]	$1,472,329	$120,302	Daily, Semi-annually, Not Eligible	1 Day - Not Eligible
Domestic Equity Funds [4]	676,411	-	Daily	0 Days
Exchange Traded Funds [5]	415,210	-	Daily	0 Days
Hedge Funds [6]				
Global Macro	726,238	-	Monthly	5 Days
Hedge Fund of Funds [7]				
Multi-Strategy	940,851	-	Daily	5 Days
Market Neutral	428	-	Daily	0 Days
International Equity Funds [8]	1,443,546	-	Daily, Bi-monthly	0-9 Days
Private Equity/Venture Capital Funds [9]	1,817,268	459,548	Not Eligible	Not Eligible
Real Estate Funds				
Open-End [10]	1,147,379	50,000	Quarterly	30-90 Days
Closed-End [11]	537,837	333,517	Not Eligible	Not Eligible
Real Assets Funds				
Open-End [12]	217,798	32,367	Quarterly	90 Days
Closed-End [13]	262,179	195,648	Not Eligible	Not Eligible
TOTAL INVESTMENTS MEASURED AT THE NAV	**$9,657,474**			

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

(2) Days = Business or Calendar Days.

(3) **Bond/Credit Funds:** Consisting of three credit/bond funds and ten private debt 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 from five to eight 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:** Consisting of one Global Macro commingled fund held in two separate accounts. This fund can be redeemed monthly with five days' notice.

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

(8) **International Equity Funds:** Consisting of three 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 nine days' notice.

(9) **Private Equity/Venture Capital Funds:** Consisting of 105 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 13 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 two of the investments as footnoted, Ohio Police & Fire Pension Fund is currently subject to certain lock-up periods.

(11) **Closed-End Real Estate Funds:** Consisting of 37 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 two commingled funds, one of which invests primarily in a diversified portfolio of infrastructure assets on a global basis while the other invests primarily in a diversified portfolio of infrastructure assets 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. One fund is eligible for redemption on a quarterly basis subject to available liquidity with ninety days' notice. The other fund is eligible for redemption on an annual basis subject to a maximum of 20% of the net asset value of the fund per year along with available liquidity. In addition, limited partners are subject to a redemption step-down discount on net asset value within the first five years (7.5% in Year 1, with a 1.5% reduction in each subsequent year). Limited partners can submit redemption notices between April 1 and June 30 each year.

(13) **Closed-End Real Assets Funds:** Consisting of eight commingled funds which invest either in 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.

5. CASH AND INVESTMENTS

A summary of cash and short-term securities and investments held at Dec. 31, 2020 is as follows:

Category	2020 Fair Value
Cash and Cash Equivalent*	$1,534,684,415
Corporate Bonds and Obligations	2,053,017,853
Domestic and International Derivatives	(932,869)
Domestic Commingled Bonds	1,028,844,854
Domestic Equities	2,142,397,346
Domestic Pooled Equities	1,402,648,962
International Bonds	46,409
International Equities	3,177,882,718
Master Limited Partnerships	357,184,278
Municipal Bond Obligations	4,296,064
Non-Agency Mortgage and Asset-Backed Securities	473,839,224
Private Debt	443,483,800
Private Equity	1,817,267,535
Real Assets	572,167,693
Real Estate	1,685,215,840
U.S. Agency Mortgage and Asset-Backed Securities	273,184,496
U.S. Government Treasury Obligations	339,681,423
U.S. Government Treasury STRIPS**	10,296,507
GRAND TOTAL	**$17,315,206,548**

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.
** Separate Trading of Registered Interest and Principal Securities (STRIPS).

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, 2020, the annual money weighted rate of return on investments, net of investment expense was 9.212%.

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 and securities lending 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, 2020

	2020
Uninsured deposits collateralized with securities held by the pledging financial institution	$1,451,420
Uninsured and uncollateralized deposits	$1,851,656

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 organization. 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 three 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, 2020:

RATINGS BY ASSET CLASS – 2020

S&P Ratings	Corporate Bonds and Obligations	Domestic Commingled Bonds	Municipal Bond Obligations	International Bonds	U.S. Government Treasury Obligations	U.S. Government Treasury STRIPS	U.S. Agency Mortgage and Asset-Backed Securities	Non-Agency Mortgage and Asset-Backed Securities	GRAND TOTAL
AAA	$3,086,401	$-	$-	$-	$-	$-	$9,368,855	$370,963,841	$383,419,097
AA+	6,270,989	1,028,844,854	111,693	-	-	-	260,458,452	2,407,907	1,298,093,895
AA	9,604,100	-	1,677,494	-	-	-	-	33,387,939	44,669,533
AA-	28,914,271	-	529,380	-	-	-	-	15,034,217	44,477,868
A+	50,342,664	-	1,214,762	-	-	-	-	3,096,344	54,653,770
A	66,274,322	-	-	-	-	-	614	21,193,900	87,468,836
A-	142,839,587	-	234,840	-	-	-	-	67,295	143,141,722
BBB+	141,653,201	-	-	-	-	-	-	1,359,104	143,012,305
BBB	143,056,532	-	-	-	-	-	-	2,021,096	145,077,628
BBB–	199,257,205	-	527,895	-	-	-	288,641	2,855,947	202,929,688
BB+	147,363,108	-	-	-	-	-	471,496	1,072,095	148,906,699
BB	242,368,257	-	-	-	-	-	-	698,757	243,067,014
BB–	274,182,037	-	-	-	-	-	2,596,438	736,777	277,515,252
B+	163,834,345	-	-	-	-	-	-	-	163,834,345
B	131,172,208	-	-	-	-	-	-	152,096	131,324,304
B–	114,878,285	-	-	-	-	-	-	2,020,948	116,899,233
CCC+	121,265,143	-	-	-	-	-	-	-	121,265,143
CCC	33,441,629	-	-	-	-	-	-	-	33,441,629
CCC–	1,510,418	-	-	-	-	-	-	55,850	1,566,268
CC	919,288	-	-	-	-	-	-	-	919,288
D	1,563,319	-	-	46,409	-	-	-	-	1,609,728
NR*	29,220,545	-	-	-	-	-	-	16,715,110	45,935,655
FF&C**	-	-	-	-	339,681,423	10,296,507	-	-	349,977,930
GRAND TOTAL	**$2,053,017,854**	**$1,028,844,854**	**$4,296,064**	**$46,409**	**$339,681,423**	**$10,296,507**	**$273,184,496**	**$473,839,223**	**$4,183,206,830**

* Not Rated (NR).
** Full Faith and Credit (FF&C).

HIGH YIELD FIXED INCOME

As of Dec. 31 2020, OP&F had three 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 2020, OP&F had eleven private credit strategies with nine 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, 2020:

S&P/Moody's Rating	Fair Value 2020	Percent 2020
A1/P1	$202,189,437	78.01%
A1/P2	19,999,708	7.72%
A2/P1	36,999,336	14.27%
GRAND TOTAL	**$259,188,481**	**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 2020, the permissible ranges for the three core fixed income portfolio managers were:

Portfolio Benchmark	2020 Benchmark Duration (years)	Portfolio Manager	Portfolio Permissible Range
Bloomberg Barclays Aggregate Bond Index	6.20	PIMCO Total Return Bond*	Benchmark +/- 2 years
3 Month LIBOR***	0.25	PIMCO Dynamic Bond*	3 years to + 8 years (Absolute)
Barclays U.S. Government Inflation-Linked Bond Index	15.87	Bridgewater Associates**	Replicate benchmark
Bloomberg Barclays Aggregate Bond Index	6.20	PGIM Core Bond	Benchmark +/- 2 years
Bloomberg Barclays Aggregate Bond Index	6.20	Loomis Core Bond	Benchmark +/- 2 years

* Pacific Investment Management Company (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.

*** London Interbank Offered Rate (LIBOR).

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, 2020:

Investment Type	Fair Value 2020	Effective Duration (years)
U.S. Government Treasury Obligations	$339,681,423	11.68
U.S. Government Treasury STRIPS	10,296,507	16.65
U.S. Agency Mortgage and Asset-Backed Securities	273,184,496	2.62
Non-Agency Mortgage and Asset-Backed Securities	473,839,223	2.80
Municipal Bond Obligations	4,296,064	13.13
Corporate Bond Obligations	2,053,017,854	4.71
International Bonds	46,409	0.03
Domestic Commingled Bonds	1,028,844,854	15.87
TOTAL FIXED INCOME EFFECTIVE DURATION	**$4,183,206,830**	**7.71**

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, 2020, 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 5.0% 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, 2020, OP&F did not hold investments in any one issuer that represented 5.0% 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.

As of Dec. 31, 2020, 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, 2020:

SECURITIES LENT AS OF DEC. 31, 2020

Securities Lent	Underlying Security	Collateral Received	Collateral Fair Value	Type of Collateral
Domestic Corporate Fixed Income	$154,458,737	$158,952,519	$158,952,519	Cash
Domestic Equities	89,980,645	93,008,059	93,008,059	Cash
U.S. Government and Treasuries	148,271,922	151,281,602	151,281,602	Cash
International Bonds	18,609,616	19,025,968	19,025,968	Cash
International Equities	103,951,994	106,981,164	106,981,164	Cash
TOTAL SECURITIES LENT	**$515,272,914**	**$529,249,312**	**$529,249,312**	

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. While the interim target allocation for international equity holdings was 17% as of Dec. 31, 2020, OP&F is working towards a long- term target allocation of 14%. OP&F has no specific policy regarding the international custodial credit risk; however, the five international equity managers are allowed to hold 5.0% to 10% of their holdings in cash and cash equivalents. 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, 2020, OP&F's exposure to foreign currency risk is as follows:

2020 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)
Australian Dollar	$139,923	$-	$(95,870)	$21,883,763	$-	$22,543	$21,950,359
Brazilian Real	5,169	-	-	11,100,028	6,744,748	-	17,849,945
British Pound	196,634	-	(75,939)	158,956,632	-	97,476	159,174,803
Canadian Dollar	4,169	-	(26,906)	34,606,325	-	62,259	34,645,847
China Offshore Yuan	-	-	-	5,742,774	-	-	5,742,774
Chinese Yuan	-	-	-	3,908,745	-	-	3,908,745
Denmark Kroner	702	-	-	10,578,444	-	-	10,579,146
Euro	780,226	46,409	(152,547)	490,710,016	220,284,438	(696,779)	710,971,763
Hong Kong Dollar	104,791	-	96	97,129,009	-	(111,201)	97,122,695
Indonesian Rupiah	-	-	-	767,543	-	-	767,543
Israeli New Shekel	2,617	-	-	2,580,371	-	-	2,582,988
Japanese Yen	907,080	-	(70,955)	232,552,730	-	(560,969)	232,827,886
Malaysian Ringgit	-	-	-	3,855,291	-	-	3,855,291
Mexican Peso	67	-	-	2,557,746	-	-	2,557,813
New Turkish Lira	1	-	-	1,477,660	-	-	1,477,661
New Zealand Dollar	2,912	-	-	674,639	-	-	677,551
Norwegian Kroner	54,166	-	-	7,573,144	-	-	7,627,310
Polish Zloty	-	-	-	1,126,182	-	-	1,126,182
Singapore Dollar	-	-	-	13,276,521	-	-	13,276,521
South African Rand	3	-	-	6,189,649	-	-	6,189,652
South Korean Won	-	-	-	48,934,949	-	-	48,934,949
Swedish Kroner	280,113	-	(75,974)	70,496,278	-	12,712	70,713,129
Swiss Franc	11,138	-	-	134,183,532	-	-	134,194,670
Taiwanese New Dollar	-	-	-	23,649,395	-	-	23,649,395
Thai Baht	-	-	-	5,085,989	-	-	5,085,989
GRAND TOTAL	**$2,489,711**	**$46,409**	**$(498,095)**	**$1,389,597,355**	**$227,029,186**	**$(1,173,959)**	**$1,617,490,607**

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 eight external managers constituting $4.02 billion of notional value as of Dec. 31, 2020. This amount represented 23.25% 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, 2020. 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, 2020:

OPEN CURRENCY CONTRACTS AS OF DEC. 31, 2020

Purpose	Fair Value (Outstanding Purchases)	Fair Value (Outstanding Sales)	Unrealized Appreciation/ (Depreciation)
Trade Settlement	$(11)	$1,329	$1,318
Position Hedging	(404,527)	(505,605)	(910,132)
GRAND TOTAL	**$(404,538)**	**$(504,276)**	**$(908,814)**

On delivered/closed currency contracts OP&F had a realized loss of $1,683,622 in 2020.

- 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 invests in options and the exposure represented less than 1.0% 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, 2020 was:

SWAP HOLDINGS AS OF DEC. 31, 2020

Type of Swap	Fair Value (Receive Side)	Fair Value (Pay Side)	Fair Value (Total Swap Position)
Credit Default Swap	$(4,187)	$(19,742)	$(23,929)
Interest Rate Swap	(135)	-	(135)
Total Swap Position	**$(4,322)**	**$(19,742)**	**$(24,064)**

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.

6. 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.

7. COMPENSATED ABSENCES

As of Dec. 31, 2020, $2.9 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.

8. 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.

9 - 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, 2020.

OP&F is committed to making additional capital contributions to the following investment types as of Dec. 31, 2020:

Asset Class	Unfunded Commitments	Fair Value At Dec. 31, 2020
Private Equity*	$459,548,203	$1,817,267,535
Private Debt	120,302,025	443,483,800
Real Estate	383,516,598	1,685,215,840
Real Assets	230,626,229	572,167,693
TOTAL	**$1,193,993,055**	**$4,518,134,868**

* Included in the Private Equity are five Euro based unfunded commitments totaling as of Dec. 31, 2020: €9,396,980 (€ = Euro) ($11,497,675 U.S.D.).

Unfunded Commitments do not include distributions subject to recall.

10. 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, and the assets and related liabilities for unpaid benefits of $1,291,245 are included in the accompanying financial statements as of Dec. 31, 2020.

11. EMPLOYERS' NET PENSION LIABILITY (ASSET)

The components of the net pension liability of employers as of Dec. 31, 2020:

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
2020	$23,228,215,004	$16,411,125,257	$6,817,089,747	70.65%	$2,475,784,283	275.35%

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, 2020, is based on the results of an actuarial valuation date of Jan. 1, 2020 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, 2020
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	Simple COLA of 2.2% per year
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, 2020 are summarized below:

TARGET ALLOCATIONS (SOURCE: WILSHIRE)

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return**
Domestic Equity	21.0%	5.4%
International Equity	14.0%	5.8%
Private Markets	8.0%	8.0%
Core Fixed Income *	23.0%	2.7%
High Yield Fixed Income	7.0%	4.7%
Private Credit	5.0%	5.5%
U.S. Inflation Linked Bonds *	17.0%	2.5%
Midstream Energy Infrastructure	5.0%	6.6%
Real Assets	8.0%	7.4%
Gold	5.0%	1.9%
Private Real Estate	12.0%	6.4%
TOTAL	**125.0%**	

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 and its overall asset allocation. Risk parity has a 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 1.25 times due to the application of leverage in certain fixed income asset classes in core fixed income and U.S. inflation linked bonds and the implementation approach for gold.

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, 2020

	1.0% Decrease	Current Discount Rate	1.0% Increase
Discount Rate	7.00%	8.00%	9.00%
Total Pension Liability	$25,901,387,457	$23,228,215,004	$20,991,039,635
Plan Fiduciary Net Position	16,411,125,257	16,411,125,257	16,411,125,257
NET PENSION LIABILITY (ASSET)	**$9,490,262,200**	**$6,817,089,747**	**$4,579,914,378**

12. NET OTHER POST-EMPLOYMENT BENEFITS (OPEB) LIABILITY AND ACTUARIAL INFORMATION

PLAN ADMINISTRATION

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

PLAN MEMBERSHIP

As of Jan. 1, 2020, OP&F's health care plan membership consisted of the following:

PARTICIPANTS BY STATUS

Status	Number
Active Members*	29,340
Inactive Members Eligible for Allowances	234
Retiree Members or their Beneficiaries Currently Receiving Benefits	24,096
TOTAL	**53,670**

* Excludes Rehired Retirees.

BENEFITS PROVIDED

On Jan. 1, 2019, a stipend-based health care model has 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 the solvency of the Health Care Stabilization Fund (HCSF) will be extended allowing OP&F to provide stipends to eligible participants.

CONTRIBUTIONS

OP&F's health care plan is financed through a combination of employer contributions and investment returns. A portion of OP&F's investment gain/loss is allocated to the HCSF. In 2020, OP&F's investment portfolio had a favorable gross return of 9.21%. During 2020, the Board of Trustees allocated employer contributions equal to 0.5% of annual covered payroll to the HCSF.

INVESTMENT POLICY

The health care stipend program 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, 2020 and rolled forward to Dec. 31, 2020 was 2.96% (using Dec. 31, 2020's S&P Municipal Bond 20 Year High Grade Rate Index of 2.12%). The discount rate used to measure the total OPEB liability as of Jan. 1, 2019 and rolled forward to Dec. 31, 2019 was 3.56% (using Dec. 31, 2019's S&P Municipal Bond 20 Year High Grade Rate Index of 2.75%). 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 2037. 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 2119.

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)

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return**
Domestic Equity	21.0%	5.4%
International Equity	14.0%	5.8%
Private Markets	8.0%	8.0%
Core Fixed Income *	23.0%	2.7%
High Yield Fixed Income	7.0%	4.7%
Private Credit	5.0%	5.5%
U.S. Inflation Linked Bonds *	17.0%	2.5%
Midstream Energy Infrastructure	5.0%	6.6%
Real Assets	8.0%	7.4%
Gold	5.0%	1.9%
Private Real Estate	12.0%	6.4%
TOTAL	**125.0%**	

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 and its overall asset allocation. Risk parity has a 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 1.25 times due to the application of leverage in certain fixed income asset classes in core fixed income and U.S. inflation linked bonds and the implementation approach for gold.

NET OPEB LIABILITY OF OP&F

The total OPEB liability as of Dec. 31, 2020 was determined based on a no gain (loss) roll-forward of the Jan. 1, 2020 valuation. The components of the net OPEB liability of OP&F at Dec. 31, 2020, were as follows:

Net OPEB Liability of OP&F	
Total OPEB Liability	$1,941,100,749
Plan Fiduciary Net Position	881,584,417
OP&F'S NET OPEB LIABILITY	**$1,059,516,332**
Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	45.42%
Net OPEB Liability as a Percentage of Covered Payroll	42.80%

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, 2020, is based on the results of an actuarial valuation dated Jan. 1, 2020 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, 2020
Long-Term Return on Plan Assets	8.00%
Dec. 31, 2020 Discount Rate	2.96%
Dec. 31, 2020 Municipal Bond Index	2.12%
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	2037 (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.

* Not Applicable (N/A).

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, 2020, calculated using the discount rate of 2.96%, 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, 1.96%, or 1.0% higher, 3.96%, than the current discount rate:

SENSITIVITY OF THE NET OPEB LIABILITY TO CHANGES IN THE DISCOUNT RATE AT DEC. 31, 2020

	1.0% Decrease	Current Discount Rate	1.0% Increase
Discount Rate	1.96%	2.96%	3.96%
Net OPEB Liability	$1,321,156,304	$1,059,516,332	$843,693,997

13. 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 were eligible to retire no later than five years after Jan. 7, 2013 comprise transition Group A. Members who had 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 Internal Revenue Code (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 1.0% 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 1.0% to the member's FAS for 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 3.0% 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 3.0%.

A DB or Combined Plan member with five or more years of service credit 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 $2,879,660 for year end Dec. 31, 2020. Of this amount $1,679,801 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, 2019 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	$-	$312,234	$9,296	$321,530
Proportionate Share of the Net Pension Liability	$(12,222,305)	$-	$-	$(12,222,305)
Proportion of the Net Pension Asset/Liability	0.061836%	0.149735%	0.245927%	
Pension Expense	$552,293	$(100,805)	$(13,842)	$437,646

At Dec. 31, 2020, 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	$71,744	$-	$25,316	$97,060
Changes of Assumptions	269,785	25,848	1,463	297,096
Changes in proportion and differences	69,554	7,324	347	77,225
Contributions subsequent to the measurement date	1,403,810	107,507	168,484	1,679,801
TOTAL DEFERRED OUTFLOWS OF RESOURCES	**$1,814,893**	**$140,679**	**$195,610**	**$2,151,182**
Deferred Inflows of Resources				
Differences between expected and actual experience	$(64,818)	$(43,364)	$-	$(108,182)
Net difference between projected and actual earnings on pension plan investments	(2,988,236)	(47,110)	(2,612)	(3,037,958)
Changes of Assumptions	(1,162,829)	(6,890)	(341)	(1,170,060)
Changes in proportion and differences	(129,532)	(26,615)	(179)	(156,326)
TOTAL DEFERRED INFLOWS OF RESOURCES	**$(4,345,415)**	**$(123,979)**	**$(3,132)**	**$(4,472,526)**

Deferred outflows of resources related to pensions resulting from OP&F's contributions subsequent to the measurement date were $1,679,801 and will be recognized as a reduction of the net pension liability in the year ending Dec. 31, 2021. 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 2.5555 years of average remaining service life. The Combined Plan has 8.8010 years of average remaining service life and the Member Directed Plan has 10.2456 years of average remaining service life.

OPERS Fiscal Year Ending Dec. 31	Traditional Pension Plan	Combined Plan	Member Directed Plan	TOTAL
2021	$(1,621,421)	$(21,205)	$2,409	$(1,640,217)
2022	(1,141,504)	(19,356)	2,532	(1,158,328)
2023	(224,065)	(10,318)	3,220	(231,163)
2024	(947,342)	(21,699)	2,319	(966,722)
2025	-	(5,539)	3,265	(2,274)
2026	-	(4,351)	3,007	(1,344)
2027	-	(4,483)	2,423	(2,060)
2028	-	(3,119)	2,137	(982)
2029	-	(737)	1,652	915
2030	-	-	849	849
2031	-	-	181	181
TOTAL	**$(3,934,332)**	**$(90,807)**	**$23,994**	**$(4,001,145)**

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, 2019, 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, 2019	Dec. 31, 2019
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	7.20%	7.20%
Wage Inflation	3.25%	3.25%
Projected Salary Increases	3.25%-10.75%	3.25%-8.25%
	(includes wage inflation at 3.25%)	(includes wage inflation at 3.25%)
Cost-of-living Adjustments	Pre Jan. 7, 2013 Retirees: 3.00% Simple Post Jan. 7, 2013 Retirees: 1.40% Simple Through 2020, then 2.15% Simple	Pre Jan. 7, 2013 Retirees: 3.00% Simple Post Jan. 7, 2013 Retirees: 1.40% Simple Through 2020, 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 7.2%, 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 7.2% 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, 6.2%, or 1.0% higher, 8.2%, than the current rate.

OP&F's proportionate share of the Net Pension Liability (Asset)	1.0% Decrease	Current Discount Rate	1.0% Increase
Discount Rate	6.2%	7.2%	8.2 %
Traditional Pension Plan	$20,158,536	$12,222,305	$5,087,866
Combined Plan	$(188,666)	$(312,234)	$(401,290)
Member Directed Plan	$(4,919)	$(9,296)	$(12,296)

Asset Class	Target Allocation for 2019	Weighted Average Long-Term Expected Real Rate of Return (Arithmetic)
Fixed Income	25.00%	1.83%
Domestic Equities	19.00%	5.75%
Real Estate	10.00%	5.20%
Private Equity	12.00%	10.70%
International Equities	21.00%	7.66%
Other Investments	13.00%	4.98%
TOTAL	**100.00%**	**5.61%**

The table above displays OPERS' Board-approved asset allocation policy of the Defined Benefit portfolio for 2019 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 2019, 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 was 17.2% for 2019.

14. 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 who 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 termination or retirement, Member-Directed Plan participants can use vested Retiree Medical Account (RMA) funds for reimbursement of qualified medical expenses. Members who elect the Member-Directed Plan after July 1, 2015 will vest in the RMA 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 the RMA 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 typically 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, 2019, can be found in the OPERS 2019 Comprehensive Annual Financial Report.

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.

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 RMA. Upon separation or retirement, participants may be reimbursed for qualified medical expenses from these accounts.

An additional RMA was also established several years ago when three health care coverage levels were available to retirees. 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, 2019. 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 2019 were $1,974.2 million. Employer contributions for the Combined Plan for 2019 were $62.7 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. ORC Chapter 145 assigns authority to the OPERS Board to amend the funding policy. As of Dec. 31, 2019, the OPERS Board adopted the contribution rates that were recommended by the actuary. The contribution rates were included in a funding policy adopted by the OPERS' Board in October 2013, and are certified periodically by the OPERS' Board as required by the ORC.

As of Dec. 31, 2019, the date of the last pension actuarial study, the funding period for all defined benefits of OPERS was 23 years.

OPERS employer contribution as a percent of covered payroll deposited for the Member-Directed Plan participants' health care accounts for 2019 was 4.0%. No employer contributions were allocated to health care in 2019 for the Traditional Pension Plan and Combined Plan, and is expected to remain at that level.

OPEB INVESTMENT POLICY

The allocation of investment assets within the Health Care portfolio as approved by the OPERS Board of Trustees is 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 following table displays the OPERS Board of Trustees' approved asset allocation policy for 2019 and the long-term expected real rate of return.

Asset Class	Target Allocation for 2019	Weighted Average Long-Term Expected Real Rate of Return (Arithmetic)
Fixed Income	36.00%	1.53%
Domestic Equities	21.00%	5.75%
REITs*	6.00%	5.69%
International Equities	23.00%	7.66%
Other Investments	14.00%	4.90%
TOTAL	**100.00%**	**4.55%**

* Real Estate Investment Trusts (REITs).

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 2019, 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 was 19.7% for 2019.

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, 2019, 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. 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	$(9,900,318)
OP&F's Proportion of the Net OPEB Liability	0.07168%
OP&F's OPEB Expense	$1,151,674

OPERS	TOTAL
Deferred Outflows of Resources	
Differences between expected and actual experience	$2,112
Changes of Assumptions	1,463,253
Changes in proportion and differences	57,545
TOTAL DEFERRED OUTFLOWS OF RESOURCES	**$1,522,910**
Deferred Inflows of Resources	
Differences between expected and actual experience	$(902,042)
Net difference between projected and actual earnings on pension plan investments	(365,633)
Changes of Assumptions	(179,144)
Changes in proportion and differences	(42,905)
TOTAL DEFERRED INFLOWS OF RESOURCES	**$(1,489,724)**

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

OPERS Fiscal Year Ending Dec. 31	TOTAL
2021	$160,296
2022	(52,137)
2023	111,676
2024	(186,649)
TOTAL	**$33,186**

OPEB DISCOUNT RATE – OPERS

A single discount rate of 3.16% was used to measure the OPEB liability on the measurement date of Dec. 31, 2019. Projected benefit payments are required to be discounted to their actuarial present value using a single discount rate that reflects (1) a 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) a 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 the actuarial rate of return on the health care investment portfolio of 6.0% and a municipal bond rate of 2.75%. 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 actuarial assumed 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 3.16%, and the expected net OPEB liability if it were calculated using a discount rate that is 1.0% lower, 2.16%, or 1.0% higher, 4.16%, than the current rate:

Sensitivity of OP&F's proportionate share of the Net OPEB Liability to changes in the discount rate	1.0% Decrease	Single Discount Rate	1.0% Increase
Discount Rate as of Dec. 31, 2019	2.16%	3.16%	4.16%
OPEB Plan	$12,956,877	$9,900,318	$7,454,003

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 2020 is 10.5%. 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 3.5% 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 1.0% lower, 9.5%, or 1.0% higher, 11.5%, 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	1.0% Decrease	Current Health Care Cost Trend Rate Assumption	1.0% Increase
As of Dec. 31, 2019			
OPEB Plan	$9,608,704	$9,900,318	$10,189,312

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, 2019, the average of the expected remaining service lives of all employees calculated by OPERS' external actuaries was 2.6884 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, 2018, rolled forward to the measurement date of Dec. 31, 2019.

The actuarial valuation used the following key actuarial assumptions and methods 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, 2018
Rolled-Forward Measurement Date	Dec. 31, 2019
Experience Study	5-Year Period Ended Dec. 31, 2015
Actuarial Cost Method	Individual entry age normal
Actuarial Assumptions:	
Single Discount Rate	3.16%
Investment Rate of Return	6.00%
Municipal Bond Rate	2.75%
Wage Inflation	3.25%
Projected Salary Increases	3.25%-10.75% (includes wage inflation at 3.25%)
Health Care Cost Trend Rates	10.5% initial, 3.50% ultimate in 2030

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)

SCHEDULE OF CHANGES IN THE EMPLOYERS' NET PENSION LIABILITY*

Total Pension Liability	Year Ending Dec. 31, 2020	Year Ending Dec. 31, 2019	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	$357,200,509	$343,991,701	$331,600,261	$289,911,106	$273,592,476	$267,624,727	$262,846,976
Interest	1,763,487,122	1,741,126,879	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	134,816,300	(421,664,871)	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	(1,400,413,884)	(1,394,027,927)	(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	855,090,047	269,425,782	1,002,633,625	1,084,776,662	659,275,556	595,451,870	609,471,118
TOTAL PENSION LIABILITY - BEGINNING	22,373,124,957	22,103,699,175	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)	**$23,228,215,004**	**$22,373,124,957**	**$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	$518,430,203	$502,303,770	$478,595,785	$462,394,203	$455,143,532	$428,972,949	$418,493,468
Contributions - Member	312,628,926	303,413,682	295,472,374	282,006,793	268,594,295	245,834,623	223,989,055
Net Investment Income (Loss)	1,362,818,981	2,305,254,776	(458,734,784)	1,812,565,572	1,240,580,488	(11,259,198)	786,522,451
Benefit Payments, Including Refunds of Member Contributions	(1,400,413,884)	(1,394,027,927)	(1,314,608,496)	(1,256,254,446)	(1,187,020,466)	(1,170,476,866)	(1,126,154,321)
Administrative Expense	(18,929,776)	(21,410,301)	(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	774,534,450	1,695,534,000	(1,022,557,197)	1,281,224,764	758,446,084	(529,504,680)	287,369,966
PLAN FIDUCIARY NET POSITION - BEGINNING	15,636,590,807	13,941,056,807	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)	**$16,411,125,257**	**$15,636,590,807**	**$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)	**$6,817,089,747**	**$6,736,534,150**	**$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	70.65%	69.89%	63.07%	70.91%	68.36%	66.77%	71.71%
Covered Payroll	$2,475,784,283	$2,373,429,623	$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	275.35%	283.83%	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
2020	$23,228,215,004	$16,411,125,257	$6,817,089,747	70.65%	$2,475,784,283	275.35%
2019	22,373,124,957	15,636,590,807	6,736,534,150	69.89%	2,373,429,623	283.83%
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
2020	$518,204,527	$518,204,527	$-	$2,313,631,090	22.40%
2019	502,043,282	502,043,282	-	2,218,017,387	22.63%
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%

* Actuarial Estimate

SCHEDULE OF INVESTMENT RETURNS*

	2020	2019	2018	2017	2016	2015	2014
Annual Money Weighted Rate of Return, Net of Investment Expenses	9.212%	17.279%	(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, LLC. 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, 2020
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	Simple COLA of 2.2% per year

REQUIRED SUPPLEMENTARY OPEB INFORMATION (UNAUDITED)
SCHEDULE OF CHANGES IN NET OTHER POST-EMPLOYMENT BENEFIT (OPEB) LIABILITY AND RELATED RATIOS*

Total OPEB Liability	**Year Ending Dec. 31, 2020**	**Year Ending Dec. 31, 2019**	**Year Ending Dec. 31, 2018**	**Year Ending Dec. 31, 2017**
Service Cost	$56,072,373	$43,042,991	$269,913,915	$230,753,065
Interest	66,955,703	79,675,059	220,193,164	220,886,126
Changes of Benefit Terms	-	-	(4,945,194,650)	-
Differences Between Expected and Actual Experience	(98,438,400)	(99,155,482)	-	(32,754,010)
Changes in Assumptions	134,298,234	214,763,191	(293,714,580)	633,696,010
Net Benefit Payments	(84,249,181)	(76,303,134)	(144,706,189)	(103,062,283)
NET CHANGE IN TOTAL OPEB LIABILITY	74,638,729	162,022,625	(4,893,508,340)	949,518,908
TOTAL OPEB LIABILITY - BEGINNING	1,866,462,020	1,704,439,395	6,597,947,735	5,648,428,827
TOTAL OPEB LIABILITY - ENDING (a)	**$1,941,100,749**	**$1,866,462,020**	**$1,704,439,395**	**$6,597,947,735**
Plan Fiduciary Net Position				
Contributions - Employer	$12,166,558	$11,973,144	$11,337,852	$18,894,974
Net Investment Income (Loss)	75,292,783	149,595,598	(4,191,504)	115,417,360
Benefit Payments	(84,249,181)	(76,303,134)	(144,706,189)	(103,062,283)
Administrative Expenses	(314,740)	(362,607)	(741,952)	(815,977)
NET CHANGE IN PLAN FIDUCIARY NET POSITION	2,895,420	84,903,001	(138,301,793)	30,434,074
PLAN FIDUCIARY NET POSITION - BEGINNING	878,688,997	793,785,996	932,087,789	901,653,715
PLAN FIDUCIARY NET POSITION - ENDING (b)	**$881,584,417**	**$878,688,997**	**$793,785,996**	**$932,087,789**
NET OPEB LIABILITY (SURPLUS) - ENDING (a)-(b)	**$1,059,516,332**	**$987,773,023**	**$910,653,399**	**$5,665,859,946**
Plan Fiduciary Net Position as a Percentage of the total OPEB Liability	45.42%	47.08%	46.57%	14.13%
Covered Payroll	$2,475,784,283	$2,373,429,623	$2,302,436,015	$2,180,910,604
Net OPEB Liability as a Percentage of Covered Payroll	42.80%	41.62%	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)*

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**
2020	$1,941,100,749	$881,584,417	$1,059,516,332	45.42%	$2,475,784,283	42.80%
2019	1,866,462,020	878,688,997	987,773,023	47.08%	2,373,429,623	41.62%
2018	1,704,439,395	793,785,996	910,653,399	46.57%	2,302,436,015	39.55%
2017	6,597,947,735	932,087,789	5,665,859,946	14.13%	2,180,910,604	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
2020	$12,166,558	$12,166,558	$-	$2,313,631,090	0.53%
2019	11,973,144	11,973,144	-	2,218,017,387	0.54%
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%

* Actuarial Estimate.

SCHEDULE OF INVESTMENT RETURNS*

	2020	2019	2018	2017	2016	2015	2014
Annual Money Weighted Rate of Return, Net of Investment Expenses	9.212%	17.279%	(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, LLC. 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, 2020
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 OHIO POLICE & FIRE PENSION FUND'S (OP&F) PROPORTIONATE SHARE OF THE NET PENSION LIABILITY OHIO PUBLIC EMPLOYEES RETIREMENT PLAN

TRADITIONAL PENSION PLAN
LAST 10 FISCAL YEARS*

	2020	2019	2018	2017	2016	2015
OP&F's proportion of the net pension liability (asset)	$12,222,305	$17,148,431	$9,597,642	$13,874,911	$10,779,540	$7,534,305
OP&F's proportionate share of the net pension liability (asset)	0.062%	0.063%	0.061%	0.061%	0.062%	0.062%
OP&F's covered payroll	$8,700,257	$8,457,043	$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	140.48%	202.77%	127.84%	190.30%	139.17%	98.49%
Plan fiduciary net position as a percentage of the total pension liability	82.17%	74.70%	84.66%	77.25%	81.08%	86.45%

COMBINED PENSION PLAN
LAST 10 FISCAL YEARS*

	2020	2019	2018	2017	2016	2015
OP&F's proportion of the net pension liability (asset)	$(312,234)	$(139,322)	$(175,453)	$(69,235)	$(63,275)	$(52,363)
OP&F's proportionate share of the net pension liability (asset)	0.150%	0.125%	0.129%	0.124%	0.130%	0.136%
OP&F's covered payroll	$666,550	$532,871	$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	(46.84)%	(26.15)%	(35.80)%	(15.49)%	(13.37)%	(10.95)%
Plan fiduciary net position as a percentage of the total pension liability	145.28%	126.64%	137.28%	116.55%	116.90%	114.83%

MEMBER DIRECTED PLAN
LAST 10 FISCAL YEARS*

	2020	2019	2018	2017	2016	2015
OP&F's proportion of the net pension liability (asset)	$(9,296)	$(5,909)	$(8,942)	$(1,011)	$(837)	$(1,441)
OP&F's proportionate share of the net pension liability (asset)	0.246%	0.259%	0.256%	0.243%	0.219%	0.245%
OP&F's covered payroll	$1,044,186	$1,058,871	$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)%	(0.56)%	(0.89)%	(0.11)%	(0.08)%	(0.13)%
Plan fiduciary net position as a percentage of the total pension liability	118.84%	113.42%	124.46%	103.40%	103.91%	N/A

* The amounts presented were determined as of Dec. 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*

	2020	2019	2018	2017	2016	2015
Contractually required contributions	$1,218,036	$1,183,986	$1,051,022	$947,822	$929,461	$917,996
Contributions in relation to the contractually required contributions	$1,218,036	$1,183,986	$1,051,022	$947,822	$929,461	$917,996
Contribution deficiency (excess)	$-	$-	$-	$-	$-	$-
OP&F's covered payroll	$8,700,257	$8,457,043	$7,507,300	$7,290,938	$7,745,508	$7,649,967
Contributions as a percentage of covered payroll	14%	14%	14%	13%	12%	12%

COMBINED PENSION PLAN
LAST 10 FISCAL YEARS*

	2020	2019	2018	2017	2016	2015
Contractually required contributions	$93,317	$74,602	$68,620	$58,106	$56,785	$57,393
Contributions in relation to the contractually required contributions	$93,317	$74,602	$68,620	$58,106	$56,785	$57,393
Contribution deficiency (excess)	$-	$-	$-	$-	$-	$-
OP&F's covered payroll	$666,550	$532,871	$490,143	$446,969	$473,208	$478,275
Contributions as a percentage of covered payroll	14%	14%	14%	13%	12%	12%

MEMBER DIRECTED PLAN
LAST 10 FISCAL YEARS*

	2020	2019	2018	2017	2016	2015
Contractually required contributions	$146,186	$148,242	$140,418	$126,013	$146,300	$150,761
Contributions in relation to the contractually required contributions	$146,186	$148,242	$140,418	$126,013	$146,300	$150,761
Contribution deficiency (excess)	$-	$-	$-	$-	$-	$-
OP&F's covered payroll	$1,044,186	$1,058,871	$1,002,986	$900,093	$1,045,000	$1,076,864
Contributions as a percentage of covered payroll	14%	14%	14%	14%	14%	14%

* The amounts presented were determined as of Dec. 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*

	2020	2019	2018	2017
OP&F's proportion of the net OPEB liability (asset)	$9,900,318	$9,413,176	$7,679,441	$7,047,680
OP&F's proportionate share of the net OPEB liability (asset)	0.072%	0.072%	0.071%	0.070%
OP&F's covered payroll**	$9,366,807	$8,989,914	$7,997,443	$7,737,907
OP&F's proportionate share of the net OPEB liability (asset) as a percentage of its covered payroll**	105.70%	104.71%	96.02%	91.08%
Plan fiduciary net position as a percentage of the total OPEB liability	47.80%	46.33%	54.14%	54.05%

SCHEDULE OF OPEB CONTRIBUTIONS OHIO PUBLIC EMPLOYEES RETIREMENT PLAN

LAST 10 FISCAL YEARS*

	2020	2019	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**	$9,366,807	$8,989,914	$7,997,443	$7,737,907
Contributions as a percentage of covered payroll	-%	-%	-%	1.00%

* 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, 2020
Personnel Services	Salaries and Wages	$11,318,466
	OPERS Contributions	3,123,667
	Insurance	3,024,149
	Fringe Benefits/Employee Recognition	835
	Tuition Reimbursement	21,995
	TOTAL PERSONNEL SERVICES	**17,489,112**
Professional Services	Actuarial	272,118
	Audit	140,975
	Custodial Banking Fees	599,635
	Investment Fees and Consulting	45,834,698
	Other Consulting (Disability, Software, Legal and Health Care)	1,026,644
	Banking Expense	78,506
	TOTAL PROFESSIONAL SERVICES	**47,952,576**
Communications Expense	Printing and Postage	313,932
	Telephone	59,874
	Member/Employer Education	-
	Other Communications	87,000
	TOTAL COMMUNICATIONS EXPENSE	**460,806**
Other Operating Expense	Conferences and Education	32,789
	Travel	18,425
	Computer Technology	1,076,858
	Other Operating	539,291
	Warrant Clearing	318
	ORSC Expense	46,147
	Depreciation Expense - Capital	1,103,419
	TOTAL OTHER OPERATING EXPENSES	**2,817,247**
NET BUILDING EXPENSES (includes rent)		**1,215,276**
TOTAL OPERATING EXPENSES		**69,935,017**
INVESTMENT EXPENSES		**(50,716,982)**
NET ADMINISTRATIVE EXPENSES		**$19,218,035**

* Includes investment related administrative expenses.

SCHEDULE OF INVESTMENT EXPENSES**

Category	2020
Investment Manager Services	$44,155,480
Custodial Banking Fees	599,635
Other Professional Services	1,679,218
Other Direct Investment Expenses	2,389,138
Allocation of Other Administrative Expenses	1,893,511
INVESTMENT EXPENSES	**$50,716,982**

** 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, 2020

	Balance Dec. 31, 2019	Additions	Subtractions	Balance Dec. 31, 2020
Assets:				
Cash and Short-term Investments	$1,178,907	$34,575,000	$34,462,662	$1,291,245
TOTAL ASSETS	**1,178,907**	**34,575,000**	**34,462,662**	**1,291,245**
Liabilities:				
Due to State of Ohio	1,178,907	34,575,000	34,462,662	1,291,245
TOTAL LIABILITIES	**$1,178,907**	**$34,575,000**	**$34,462,662**	**$1,291,245**

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INVESTMENTS

2020 COMPREHENSIVE ANNUAL FINANCIAL REPORT

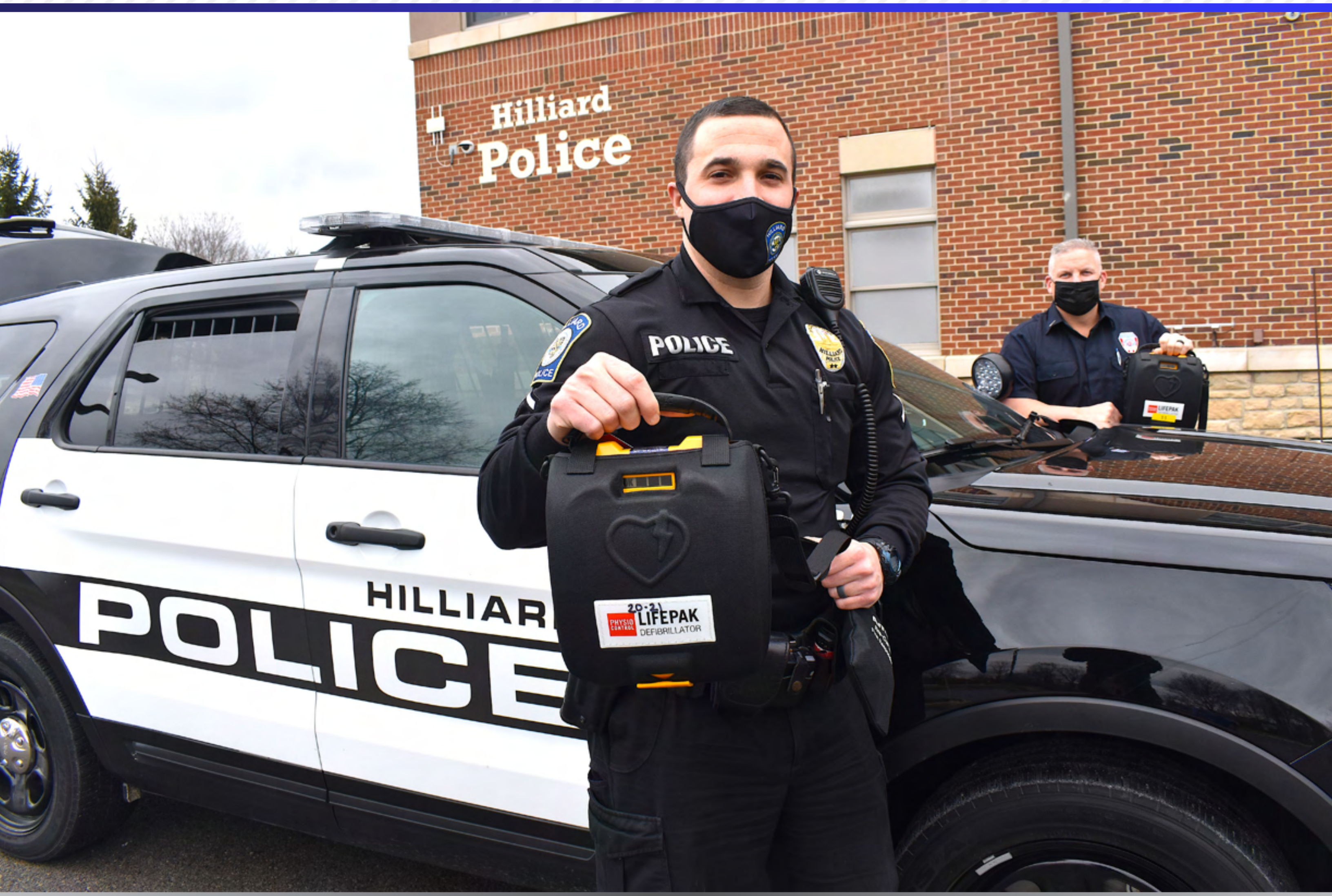

PHOTO PROVIDED BY CITY OF HILLIARD | DIVISION OF POLICE

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. 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 2020

OP&F made the decision to review asset allocation in 2020 given the economic and capital market environment as well as to address key considerations. Key considerations included: (1) addressing the challenges of a low forward-looking return environment, (2) retaining balance among factor exposures (i.e. risk parity), (3) managing expected Total Fund returns, and (4) reducing the allocation to Midstream Energy Infrastructure. Asset allocation is the most important decision institutional investors make, accounting for 90% or more of a portfolio's variation in return. OP&F feels it is important to revisit asset allocation periodically to ensure that OP&F's policy is still appropriate for its long-term objectives. Prior to 2020, OP&F's last asset allocation review was in 2017, which was a comprehensive asset liability study. In 2020, OP&F conducted an asset-only allocation study in which liability projections were not included. After much discussion and analysis, OP&F adopted an asset allocation that contained several changes from the previous allocation. Among them, the allocation to Non-U.S. Equity decreased from 16% to 14%, the allocation to Midstream Energy Infrastructure dropped from 8% to 5%, a new allocation to Gold was introduced at 5%, the allocation to Domestic Equity increased from 16% to 21%, and Total Fund leverage increased from 120% to 125%. The allocation to Midstream Energy Infrastructure decreased to address qualitative concerns (ongoing industrial consolidation, heavy retail base, etc.) with the asset class while the new mix between Domestic Equity and Non-U.S. Equity is now closer to market neutrality. The increase use of Total Fund leverage from 120% to 125% with the introduction of a 5% allocation to Gold further improves risk and economic factor balance and was found to be most efficient given the challenges for Core Fixed Income given the low interest rate environment. In conjunction with adoption of a new asset allocation, OP&F also adopted an updated asset allocation implementation plan and policy along with asset class rebalancing ranges. Other significant noteworthy investment endeavors and issues addressed last year include the following:

- Amended OP&F's Investment Policy and Guidelines statement.
- Amended OP&F's Proxy Voting Policy.
- Reviewed and amended OP&F's Private Markets Investment Policy.
- Reviewed the Midstream Energy Infrastructure investment structure.
- Terminated a small capitalization Non-U.S. Equity manager.
- Continued redistribution of assets from a terminated Core Fixed Income mandate.
- Completed fee verification for OP&F's private credit investments.
- Amended investment manager guidelines for Russell Portable Alpha Overlay and Policy Implementation Overlay mandates.
- Approved the 2020 private markets investment plan.
- Began implementation of TorreyCove's co-investment proposal through a commitment to PSOO LP.
- Implemented the 2020 private markets investment plan:
    - Made commitments to Altaris V, Francisco VI, GTCR XIII, MBK V and PSOO LP.
- Reviewed OP&F's Private Credit Investment Policy for possible revisions.
- Approved the 2020-2021 private credit investment plan.
- Continued to work toward target allocation to private credit:
    - Made commitments to Crayhill Principal Strategies Fund II and Raven Capital.
- Approved the 2020 real assets investment plan.
- Continued to work toward target allocation to real assets:
    - Made a commitment to iCon Infrastructure Fund V.
- Reviewed OP&F's Real Assets Investment Policy for possible revisions.
- Reviewed OP&F's Real Estate Investment Policy for possible revisions.
- Approved the 2020 real estate investment plan.
- Continued to work toward target allocation in real estate:
    - Made commitments to AEW Partners IX, Oaktree Real Estate Opportunities Fund VIII and Waterton XIV.

- Approved the 2020 real estate open-end fund rebalancing review:
    - Approved partial redemptions for JP Morgan Strategic Property Fund and Heitman America Real Estate Trust.
    - Approved a full redemption for Jamestown Premier Property Fund.
    - Turned on the dividend reinvestment plan for Lion Industrial Trust.
- Approved the 2021 private markets investment plan.

ECONOMIC ENVIRONMENT

The year 2020 will long be remembered but, for many, not too soon forgotten. The year was defined by the novel coronavirus (COVID-19) global pandemic and its impact on almost all aspects life. This was no more apparent than its economic and financial implications on a global basis. The United States economy actually entered 2020 on solid footing given very little was known of COVID-19 at the start of the year. By early-to-mid March, as the novel coronavirus began to spread in the U.S. and elsewhere, officials across the country and abroad began to impose mandatory restrictions and social distancing protocols.

These measures had a profound impact on global economic activity. In the U.S., the Gross Domestic Product (GDP) declined a cumulative 10% over the first half of the year. Payroll employment plunged by 22 million jobs in March and April and the unemployment rate rose to as high as 14.8%, the highest since the Great Depression. Job losses were concentrated in lower wage consumer services industries led by leisure and hospitality given the inability for these workers to work remotely and the impact of social distancing measures. On the other hand, industries such as information technology and online retail thrived throughout the pandemic. Similar to the job loss story, consumer spending was also bifurcated in 2020. In all, household consumption was down 2.6% in 2020 however spending on durable and nondurable goods rose above their pre-pandemic levels by the end of 2020 while spending on services continued to remain well below levels seen before the pandemic. For all of 2020, U.S. Real GDP declined by 3.5%. The bounce back in economic activity post the second quarter was in large part due to the response by the federal government and The Federal Open Market Committee (FOMC) as well as to the lifting of earlier mandatory restrictions as the year progressed.

In early March, the FOMC made an emergency cut of the federal funds rate by 50 basis points (bps) to a range of 1.00% to 1.25% and followed that up later in the month by returning federal funds rate to the zero bound, i.e., 0% to 0.25%. The FOMC also implemented a number of measures to keep credit flowing through the financial system. Since March of 2020, The Federal Reserve has expanded its holdings of Treasury securities by $80 billion per month and its holdings of agency mortgage-backed securities by $40 billion per month. The FOMC also bought commercial paper, including municipal debt. In early April 2020, the FOMC announced a $2.3 trillion lending program that extended credit to banks that issued Paycheck Protection Program loans, purchased up to $600 billion in loans issued through the Main Street program to medium-sized firms. The moves also allowed the Federal Reserve (Fed) to buy corporate bonds from "fallen angels" that were downgraded into the upper tier of junk bond status, and a $500 billion program to buy bonds from state and municipal governments. For its part, the federal government enacted the Coronavirus Aid, Relief, and Economic Security Act or CARES Act in April 2020, a $2 trillion bill that kept businesses and individuals afloat during an unprecedented freeze on the majority of American life. The bill impacted: individuals, small businesses, large corporations, hospitals and public health, federal safety net, state and local governments, and education. The annual rate of U.S. inflation as measured by the Consumer Price Index (CPI) plunged during the second quarter of the year before nudging higher to end 2020 with a year-over-year increase of 1.4%. The Fed's preferred inflation measure, personal consumption expenditures, rose by only 1.3% last year, which was well below the FOMC's longer-run target of 2%. Consumer sentiment began 2020 at very high levels before nose-diving in the spring only to rebound slightly by year-end.

Eurozone Real GDP in 2020 was negative 6.60% despite third quarter GDP hitting a record of 13%. Similar to the U.S., the European Central Bank (ECB) and national governments in Europe responded with significant measures against COVID-19. The ECB is spending over €1.9 trillion to buy government and corporate bonds. Interest rates remain low. A €750 billion fund was agreed to in 2020 to support recovery efforts associated with COVID-19. The fund was financed by the issuance of common European Union (EU) debt to be used by national governments for domestic spending with around €390 billion distributed as grants. Despite these efforts, the economic crisis in Europe remains and will likely continue; however, not all countries will face the same level of economic activity. Those countries with favorable domestic savings levels and an industrialized economy will likely fare better than those dependent upon services such as tourism. In addition, countries with lower debt levels should prevail over countries with high debt levels.

Similar to the U.S. and Eurozone, the Asia-Pacific region was not able to escape the economic collapse brought on by COVID-19. Like the Eurozone, some countries fared better than others. For instance, Australia's and South Koreas' economies contracted by 1.1% and 1%, respectively, in 2020, whereas Hong Kong's GDP shrank by 6.1%, marking their first consecutive yearly decline since the figure was tracked in 1961. Similar to Hong Kong, Singapore experienced a 5.4% contraction in GDP for full year 2020. By the end of 2020, however, countries across the Asia-Pacific region had started to experience a positive recovery in their economies despite several headwinds beyond COVID-19, including the ongoing trade war between China and the U.S.

As 2021 began and has progressed to date, the economic recovery in the U.S. continues to take hold bolstered by the extraordinary amount of stimulus that has been passed to date including The American Rescue Plan Act of 2021, which was a $1.9 trillion package approved in March. Real GDP grew at a 6.4% annualized rate in first quarter 2021. Additional huge stimulus measures may be in the works as well including the American Jobs Plan, which is a proposed $2.25 trillion infrastructure bill, as well as the American Families Plan, a proposed $1.8 trillion spending plan for child-care, education and paid leave. Given the degree of the stimulus packages passed to date as well as continued progress of administering COVID-19 vaccinations and business re-openings occurring in the U.S., the unemployment rate continues to decline, reaching 6.0% in April. Retail sales posted a strong number in April as well, rising 9.8% month over month. A consequence to this amount of stimulus, while the economy continues to heal on its own, is the potential for higher inflation. CPI measured 2.6% year-over-year in March 2021. It remains to be seen whether this rise in inflation is due to transitory factors or is more enduring in nature.

TOTAL FUND

The total portfolio, on a trade date basis, was valued at $17.27 billion at the end of 2020, up from $16.48 billion at the end of 2019. Within OP&F's portfolio, very strong absolute returns in U.S. equity, U.S. TIPS and private markets along with solid returns from non-U.S. equity, core fixed income and high yield were offset by weak returns in private credit, real estate and real assets and most significantly were dragged down by a very poor result for midstream energy. This broad range of returns combined to deliver a disappointing total portfolio return in 2020. For calendar year 2020, the total portfolio's investment return was 9.21% gross of fees, 8.64% net of fees, compared to a policy index return of 9.84%. This represents an under performance of the total portfolio's policy index by 63 bps gross and 120 bps net. OP&F's investments in U.S. and non-U.S. equity and high yield were the only asset class composites to outperform their respective asset class benchmarks over the course of 2020. Also, in its second year, the derivatives overlay strategy managed by Russell Investments added 5 bps to the total fund performance.

Last year's disappointing performance not surprisingly also translated into weak relative peer group performance. Most importantly, OP&F's exposure to midstream energy during that class's disastrous first quarter plunge of nearly 47% and its relatively lighter exposure to public equity pulled down the peer group ranking to the 85th percentile of Wilshire's All Public Plans – Total Fund Universe. With 2020's result, OP&F's three-year annualized gross of fees return now stands at 8.23%, and 7.62% net, while the five-year annualized gross of fees return is 9.95%, and 9.33% net. OP&F's 10-year gross of fees return is 9.10%, and 8.55% net. The 2020 results versus the policy index still kept OP&F's three-year relative return above the policy index return of 7.58% for the same period, while OP&F's five-year return also beat the policy return of 9.18%. The 10-year return also bested the policy return of 8.11%. As mentioned earlier, the total portfolio's 2020 results ranked in the 85th percentile of Wilshire's All Public Plans – Total Fund Universe, while the three-year, five-year and 10-year results ranked in the 58th, 37th and 19th percentiles, respectively, of that same peer universe.

Through the first quarter of 2021, as the economy roared back from the sudden economic collapse caused by the global pandemic, OP&F's investments in all asset classes, except core fixed income, U.S. TIPS and gold have posted positive absolute returns and the total portfolio value grew to nearly $17.4 billion. OP&F's U.S. and international equity manager composites have risen nearly 6.5% and 6.0%, respectively. The strong rebound in the midstream energy allocation has carried over from the final three quarters of 2020 and left it up 18.5% for 2021's first quarter. To round out the public markets composites, OP&F's high yield managers' composite return is up just over 1.0%, the TIPS manager is down roughly 3.9% and the core fixed income managers are down 3.6% collectively for the quarter. While short term, time-weighted performance is not the best measure for private asset classes, to be consistent in this context, real estate is up 3.1%, while real assets is up about 1.0%, private equity is up over 13.1% while private credit is up 4.6%. The new gold allocation continued its tumble dropping almost 9.9% for the quarter. Thankfully, OP&F's gold investment is only at about half its target weight. Lastly, the derivatives overlay strategy has added 3 bps to the total fund performance through March, primarily due to its U.S. equity exposure. Overall, OP&F's unaudited year-to-date return through March 31, 2021 of 3.48% is ahead of its benchmark's return of 2.60%. After an encouraging start to the year, OP&F's 2021 full year results, like so many others, will be linked to the ongoing reopening of economies both here and abroad and what happens with the FOMC's apparent determination to rekindle moderate inflation for a sustained period. Finally, to be as current as possible, for the month of April 2021, all public markets classes turned in positive results as the Alerian Midstream Energy Index led the way by adding another 6.2%, the S&P 500 bouncing another 5.3% and the Morgan Stanley Capital International All Country World Index excluding the U.S. (MSCI ACWI ex-U.S.) Index tacking on an additional 3.0%.

As mentioned earlier, in late 2020, OP&F adopted several changes to its asset allocation. The allocation to U.S. Equity increased from 16% to 21%, Non-U.S. Equity dropped from 16% to 14%, the Midstream Energy Infrastructure target was cut from 8% to 5%, a new allocation to gold was added at 5%, and Total Fund leverage increased from 120% to 125%. The added Total Fund leverage and the introduction of gold further improves risk and economic factor balance and was found to be most efficient given the challenges for Core Fixed Income in the low interest rate environment. In conjunction with adoption of a new asset allocation, OP&F also adopted an updated asset allocation implementation plan along with asset class rebalancing ranges. The implementation of core fixed income leverage had been converted to calendar based triggers with 0.25x added at the start of each quarter beginning with second quarter 2020. On Jan. 1, 2021, the full 2.0x leverage target became effective and was implemented by Russell Investments via Treasury futures.

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. The low interest rate environment and recent rise in rates has proved challenging for the risk parity structure. Staff and consultants are constantly evaluating the environment and different approaches to maintain a risk-balanced portfolio within the risk parity construct. As in the past, 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.

Equity returns in 2020 were strong across the globe. U.S. stock returns for the calendar year were 20.82% as measured by the Wilshire 5000 and 18.40% for the S&P 500. The Russell 2000 Index, an index that tracks smaller capitalization companies, rose 19.96%. As has been the case for a number of years, growth stocks outperformed value (for both large and small cap) and in 2020 the out-performance of growth versus value was 20-30%. This spread was driven by outperformance in growth-oriented sectors like technology, communication services and consumer discretionary companies while value-oriented sectors such as energy, consumer staples and, financials lagged.

Non-U.S. equities' returns were strong as well though they lagged those of domestic stocks. The MSCI ACWI ex-U.S. Index, which includes both developed and emerging market companies, rose 10.65% (in U.S. dollar terms), lagging the S&P 500 by 7.75%. Emerging markets, as measured by the MSCI Emerging Markets Index, were up a respectable 18.70%. The tailwind generated by higher growth companies and sectors was also present outside of the U.S. The MSCI ACWI ex-U.S. Growth Index outperformed the Value Index by approximately 22%. For calendar 2020, major developed country currencies advanced against the U.S. dollar, which was a modest positive factor for U.S. based investors in overseas markets, depending on the region or country.

Following strong equity market returns in 2019, the U.S. stock market fell by approximately 35% in the first quarter of 2020, then rallied to record levels through the end of 2020 and into early 2021. The sell-off in early 2020 was driven by the global COVID-19 pandemic and fears of a prolonged economic recession. The "V" bottom in the stock market coming out of early 2020 was the result of the combined Federal Reserve interest rate reductions, quantitative easing measures and U.S. government stimulus programs.

As mentioned previously, growth stocks continued to drive markets both domestically and abroad. Value-oriented indices and managers tended to lag in 2020 as they are often more heavily weighted in energy, financials and materials, and have less exposure to growth-focused areas like some consumer and technology companies. The primary drivers of this continuing value underperformance trend were two-fold: (1) relative softness in some cyclical companies like energy and financials and (2) fundamental strength in secular, organic growth companies combined with a willingness of investors to place ever-increasing valuations on such companies.

In calendar year 2020, OP&F's U.S. Equity Composite rose 22.21% (net of fees). This compared favorably to the Wilshire 5000, which returned 20.82% and the S&P 500 which rose 18.40%.

The OP&F Total International Equity Composite in 2020 rose 11.99% (net of fees) which outperformed the benchmark MSCI ACWI ex-U.S. Iran and Sudan Free Policy Index, which was up 11.12%, by 0.87%.

MIDSTREAM ENERGY INFRASTRUCTURE

Midstream Energy/Master Limited Partnerships (MLPs) massively lagged the broad equity markets in 2020. The Midstream Energy Infrastructure asset class policy index declined 23.36% in 2020. The Midstream energy sector declined significantly in early 2020 due to an oil price war between Russia and Saudi Arabia, and the economic slowdown caused by the COVID-19 pandemic. However, Midstream Energy Infrastructure gained 21.51% in the final quarter of the year, beating the S&P 500 by about 9%.

The publicly traded midstream pipeline industry has gone through some structural changes in the last several years. The MLP structure, which benefits from favorable tax treatment, was made less attractive after the tax code changes and corporate tax cuts of a couple years ago. The cost of capital for MLPs also rose and became less attractive due to the partnership structure. This created headwinds for MLPs to raise capital at a reasonable cost. This gradually became more problematic as MLPs were not able to fund their growth internally via cash flow but had to increasingly rely on relatively high cost debt.

Ultimately, management teams decided to reduce their growth plans in order to fund their businesses with internally generated free cash flow because externally raised debt or equity had become too expensive. Consequently, over the last couple of years, midstream management teams have taken several actions to increase shareholder value including (1) buying in partnerships (MLPs) in order to reduce corporate and financial complexity, (2) slowing pipeline expansion and build-outs leading to reduced capital spending to improve free cash flow generation and (3) reducing distributions to unit holders to preserve cash and improve free cash flow.

From a market structure standpoint, the gradual reduction in the number of publicly traded MLPs due to the previously mentioned buy-in of many MLPs by their parent corporations caused an undesirable level of concentration in various MLP Indices, including that of OP&F's benchmark, the Alerian MLP Index. As a result of analysis by our consultant, Wilshire, OP&F Staff and our managers, in early 2019 the investment guidelines for our midstream managers were amended to change the benchmark to the Alerian Midstream Energy Index as well as open up allowable investments to securities traded in North America rather than just the United States. This had the effect of improving the diversity, both geographically and by corporate structure, of the benchmark index and consequently the midstream portfolios within this asset class.

As stated in prior OP&F Annual Reports, midstream energy company securities' prices should not be particularly correlated with crude oil/natural gas prices in normal commodity environments because midstream operations (including pipeline transmission, distribution, storage and related businesses) tend to have relatively stable business models and should not be particularly dependent on changes in oil or natural gas prices. This business model stability is because midstream 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. However, Midstream stock prices and commodity price correlations can rise if energy prices fall too far causing investors to begin to fear a major dislocation in the production of and demand for oil and the financial viability of the oil and gas producers.

During the second half of 2020, the allocation to Midstream Energy Infrastructure was lowered from 8% to 5% following an asset allocation review by Wilshire.

FIXED INCOME – CORE AND INFLATION PROTECTED BONDS

The Economy contracted sharply in 2020 due to the global COVID-19 pandemic. This provided downward pressure on the ten-year U.S. Treasury yield during 2020. The ten-year Treasury yield started 2020 at 1.92% then fell to approximately 0.54% in March during the COVID-19 led market decline. The yield then climbed to 0.92% by year-end 2020 and increased to 1.74% by March 31, 2021 as the bond market's focus turned to the prospects for an economic recovery.

The Yield Curve, as displayed by the difference between ten-year U.S. Treasury yields and two-year U.S. Treasury yields, steepened by 1.15% from March, 31, 2020 to March 31, 2021 as the Federal Reserve held short-term interest rates near zero while long-term interest rates increased.

Inflation expectations also increased in 2020, as the inflation rate required to outperform nominal ten-year U.S. Treasury yields increased from 0.90% at March 31, 2020 to approximately 2.35% at March 31, 2021.

The OP&F Core Fixed Income Composite returned 7.10% (net of fees) for the year, underperforming by 1.81% the Bloomberg Barclay's Aggregate Bond Index return of 8.91%.

The OP&F U.S. Treasury Inflation Protected Securities (U.S. TIPS) Composite rose nicely in 2020, up 18.94% (net of fees) but trailed the TIPS Policy benchmark of 23.25%.

HIGH YIELD

After a strong year of performance in 2019, the U.S. high yield bond market rallied to return more than 6% (net of fees) in 2020. High yield spreads versus the ten-year U.S. Treasury yield spiked during the COVID-19 market debacle then narrowed over the course of the year, falling from roughly 8.0% in March to under 4.0% by the end of December. The U.S. Treasury's bond-buying program and lower interest rates led to a rally in high yield bonds through the rest of the year and into 2021.

Interestingly, in spite of good absolute returns in high yield, the lower quality end of the credit spectrum underperformed higher quality bonds. Previously, when high yield returns were strong, bonds of lower quality, more leveraged company bonds such as CCCs outperformed higher quality ones such as BBs. However, in 2020 BBs rose 10.2% while CCCs were up just 2.3%. During the COVID market downturn, approximately $200 billion in investment grade bonds were downgraded to BB status, then recovered and were among some of the biggest gainers in the High Yield sector in 2020. In addition, bonds of some Energy companies in the CCC rating sector were sharply lower in early 2020 and were slow to recover.

The OP&F High Yield Composite rose 6.35% (net of fees) in 2020 out-performing the 6.07% return of the Merrill Lynch U.S. High Yield Constrained Index by 0.28%.

REAL ESTATE

For the year ended Dec. 31, 2020, OP&F's total real estate portfolio delivered a 0.44% return net of fees. OP&F's net return exceeded the Open-End Diversified Core Equity (ODCE) index net of fees by nine bps during the year. Some figures are preliminary due to reporting lag that exists in private markets.

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 154 bps per year net of fees.

OP&F's real estate program is divided into a lower-risk, lower-return strategic portfolio and a higher-risk, higher-return tactical portfolio. At Sept. 30, 2020 (the most recent date for which complete values are available), OP&F's exposure to the strategic portfolio stood at 52.1% of the total real estate program, which was well within the permitted range. The lower-risk strategic portfolio is designed to deliver performance similar to the ODCE index. During the year, the strategic portfolio delivered a net return of negative 0.86%.

In contrast, the tactical portfolio provides OP&F greater flexibility to deviate from the benchmark and to take calculated risk in pursuit of higher returns. The tactical portfolio is expected to deliver long-term performance that exceeds the ODCE, while also introducing higher risk levels and short-term volatility. Within the higher-risk tactical portfolio, OP&F has sought to temper its overall level of downside exposure by blending in some moderate-risk core plus funds, by seeking funds with more durable capital structures, and through strategy and manager selection. During the year, the tactical portfolio delivered a net return of 2.07%.

Past Annual Reports have discussed a divergence among property types, with industrial (warehouse) performing well and with retail lagging. COVID-19 has amplified these trends, while also introducing headwinds for office assets, for hospitality assets, for high-rise assets in general (regardless of property type), and for many major urban centers regardless of property-type.

Within OP&F's real estate portfolio, the largest property-type deviations from the benchmark are a significant underweight to office and a significant overweight to industrial. These deviations are viewed favorably. OP&F's real estate portfolio is U.S.-focused (approximately 92%), with select investments in other parts of the world.

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 expected ability to advance these other goals.

During the nine months ended Sept. 30, 2020 (the most recent date for which complete valuation information is available), OP&F's market exposure to real estate decreased from 11.1% to 10.7%. Exposure was below the 12% target allocation, but well within the targeted range for real estate. OP&F is maintaining its philosophy of investing patiently and prioritizing attractive risk-adjusted returns.

REAL ASSETS

OP&F established an allocation to real assets in 2016. The allocation currently covers timberland, agriculture, and infrastructure, and is distinct from the separate allocations that OP&F has established for real estate and for midstream energy infrastructure (formerly the MLP portfolio). 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.

For the year ended Dec. 31, 2020, the portfolio delivered a negative 0.89% time-weighted return net of fees. For the trailing five-year period, the net return was 3.85% per year.

The real assets portfolio is designed to deliver a return that exceeds a custom benchmark, which is constructed by blending a private-market timberland index, a private-market farmland index, and a public market infrastructure index. 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 212 bps. Part of this measurement period predates OP&F's first infrastructure and agriculture investments. As the portfolio continues to mature, 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 3.3% of OP&F's total portfolio relative to a long-term target of 8.0%. Unfunded commitments represented another 1.2% of OP&F's total portfolio. Portfolio development is progressing, with all three sub-asset classes now within targeted ranges for relative exposure. The portfolio is tilted toward lower risk (and lower expected return) strategic investments, and away from higher risk (and higher expected return) tactical investments.

Ongoing portfolio construction objectives include: building total exposure gradually; building diversification across the program's three main sectors; calibrating the appropriate 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 Dec. 31, 2020 (private market returns are lagged by one quarter), OP&F's private markets portfolio provided a net return, on a time-weighted basis, of 22.30%. To note, evaluating private markets performance over short-time periods can be misleading. With that said, for the ten-year period ending Dec. 31, 2020, the portfolio provided an annualized net return of 15.04%.

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 Internal Rate of Return (IRR) calculation of all historical cash flows 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 Refinitiv Thompson ONE Private Equity Pooled Horizon IRR: Net to Limited Partners peer universe, or equivalent. The peer universe data allows OP&F to compare the private markets program to other private markets programs and managers over specified time periods. For the ten-year period ending Sept. 30, 2020, OP&F's private markets program provided a net IRR of 14.7%, outperforming the Wilshire 5000 PME by 1.1% annualized. In addition, OP&F's private markets program has outperformed the Wilshire 5000 PME on a net of fee basis since inception. Relative to the Refinitiv Thompson ONE Private Equity Pooled Horizon IRR: Net to Limited Partners peer universe, as of Sept. 30, 2020, OP&F's private markets program's net of fee IRR ranks first quartile on a one-year, three-year, and five-year basis and second quartile on a 10-year and since inception basis.

As with all other facets of life, private markets faced headwinds at the beginning of 2020 due to the COVID-19 pandemic, but as the year progressed, were able to rebound and finished the year on a strong note across several dimensions. Although fundraising declined year-over-year, it was in-line with the last couple of years. On a whole, valuation multiples (i.e. pricing) remained flat in 2020; however, lower first half multiples led to higher multiples during the second half of the year. Although the number of deals declined in 2020, overall deal value rose due to increased deal sizes. Exit activity was quite strong post the early part of the year led by a strong initial public offering (IPO) market. The exit environment also got a boost by the rise of special purpose acquisition companies (SPACs). These shell or blank check companies that trade publicly have become increasingly popular over the past year and offer private markets firms another exit avenue for their portfolio companies. The strong exit environment albeit via IPOs, SPACs or the sale to another private equity firm led to strong returns for the industry.

In 2020, OP&F began implementation of a co-investment strategy that allows OP&F to opportunistically pursue co-investments alongside private markets funds. The strategy will allow OP&F to average down overall program costs, provide greater control over vintage year, geographical, and industry exposure and enhance program returns through proper deal selection.

On an invested basis, private markets comprised approximately 9.65% 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 annual private markets investment plans that allow 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 plans will seek to maintain appropriate vintage year diversification for the private markets portfolio. OP&F will mainly target commitments to primary partnerships, and on an opportunistic basis, co-investments and secondary partnerships. As always, OP&F and its dedicated private markets investment consultant will prudently recommend commitments that seek for the private markets portfolio to remain compliant with applicable policies and guidelines.

PRIVATE CREDIT

Since the inception of the commitment to the private credit asset class, OP&F has focused on senior secured lending in the corporate middle market space, also known as direct lending. As has been the case for the prior couple of years, the private credit allocation will increase going forward as OP&F reduces its high yield bond allocation. 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 bond market. Private lending became more aggressive in recent years so it will be interesting to see if these dynamics unfold similarly to past recessions during the next economic slowdown.

As public high yield bond spreads are correlated to direct lending spreads, the narrowing of spreads in 2020 creates some challenges for direct lending managers given their typically higher yields than the public markets. As mentioned, some private credit managers have relaxed covenant requirements and other terms to stay competitive. OP&F works to reduce some of these risks by committing to strategies that are mostly senior secured, first lien loans and by investing with experienced managers with a history of operating in difficult environments while generating good overall returns through the cycle.

As described above in the Private Markets section, OP&F has also adopted a Public Markets Equivalent (PME) approach to evaluating the performance of its private credit portfolio. Since the initial investment in April of 2014 through Sept. 30, 2020, the net IRR for OP&F's private credit program was 9.3%. This compares very favorably to its benchmark's PME annualized return of 3.3%. As of the end of 2020, the program had twelve different funds managed by eleven distinct private credit managers. In addition, in the first quarter of 2021, one fund was added with a new manager.

2021 DEVELOPMENTS AND CHALLENGES AHEAD

In early 2021, OP&F conducted a Non-U.S. Equity Investment Structure Review designed to address levels of active risk and active return suitable for OP&F's Non-U.S. Equity portfolio. In conjunction, OP&F initiated a manager search process to replace a previously terminated small capitalization manager. An investment structure analysis is the second most important decision an institutional investor makes, accounting for 5-7% of a portfolio's return variation. In addition to being the secondary driver of return variation, an investment structure provides a platform for diversifying risk exposures within asset classes, addressing factors related to style and size, addressing active versus passive investment management issues, and establishes structural targets for controlling risk and capturing market opportunity. Results of the Non-U.S. Equity investment structure review were that OP&F remains 100% active management within its Non-U.S. Equity allocation but will reduce its target allocation to small capitalization stocks from 25% to 15% and shift the 10% to one of OP&F's existing large and mid-capitalization managers. The new structure improves portfolio efficiency and is expected to modestly decrease investment management fees for the Non-U.S. Equity portfolio. Below are some of the other items already addressed in 2021 and a number that still lie ahead:

- Completed the Non-U.S. Equity small capitalization manager search by hiring Barings International Small Cap Equity Strategy.
- Amended OP&F's Investment Policy & Guidelines statement.
- Amended OP&F's Proxy Voting Policy.
- Fully implemented the Core Fixed Income leverage target according to the Core Fixed Income investment structure adopted in 2019.
- Completed fee verification for OP&F's private markets investments.
- Approved the 2021 real assets investment plan.
- Began implementation of the 2021 real assets investment plan:
    - Made a commitment to KKR Core Diversified Infrastructure Fund.
- Approved the 2021 real estate investment plan.
- Began implementation of the 2021 real estate investment plan:
    - Made a commitment to Cortland Enhanced Value Fund V.
- Implement Barings International Small Cap Equity Strategy.
- Implement the 2021 private markets investment plan:
    - Made commitments to Veritas Capital Vantage Fund and TA XIV.
- Complete implementation of the 2020-2021 private credit investment plan:
    - Increased an existing commitment to Annaly Capital Opportunities Fund.
- Approve the 2021-2022 private credit investment plan.
- Approve the 2021 real estate investment plan mid-year update.
- Approve the 2021 real estate open-end fund rebalancing review.
- Approve the 2021 real assets investment plan mid-year update.
- Approve the 2022 private markets investment plan.
- Review OP&F's Real Estate Investment Policy for possible revisions.
- Review OP&F's Real Assets Investment Policy for possible revisions.
- Review OP&F's Private Credit Investment Policy for possible revisions.
- Review OP&F's Private Markets Investment Policy for possible revisions.

Another item of interest for the remainder of 2021 will be for OP&F to review the results of the 2020 asset-only allocation study with a focus on the allocation to midstream energy infrastructure and its current 5% target. Due to the near-term and potential long-term economic impacts of COVID-19, the merits of conducting a study may have heightened as the impacts on capital markets assumptions become evident. Beyond the already mentioned initiatives, OP&F will continue to look for ways to reduce the costs of OP&F's 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, 2020

Investment Type	Percent of Net Investment Value	Fair Value
Cash and Cash Equivalents*	8.89%	$1,534,684,415
Corporate Bond and Obligations	11.89%	2,053,017,854
Domestic and International Derivatives	(0.01)%	(932,869)
Domestic Commingled Bonds	5.96%	1,028,844,854
Domestic Equities	12.40%	2,142,397,346
Domestic Pooled Equities	8.12%	1,402,648,962
International Bonds	0.00%	46,409
International Equities	18.40%	3,177,882,718
Master Limited Partnerships	2.07%	357,184,278
Municipal Bond Obligations	0.02%	4,296,064
Non-Agency Mortgage and Asset-Backed Securities	2.74%	473,839,223
Private Debt	2.57%	443,483,800
Private Equity	10.52%	1,817,267,535
Real Assets	3.31%	572,167,693
Real Estate	9.76%	1,685,215,840
U.S. Agency Mortgage and Asset-Backed Securities	1.58%	273,184,496
U.S. Government Treasury Obligations	1.97%	339,681,423
U.S. Government Treasury STRIPS	0.06%	10,296,507
TOTAL FAIR VALUE - CASH AND SECURITIES	**100.25%**	**$17,315,206,548**
Accrued Income	0.25%	43,526,761
Sales Receivable	0.20%	33,892,149
Purchases Payable	(0.70)%	(120,735,154)
NET INVESTMENT VALUE (TRADE DATE BASIS)	**100.00%**	**$17,271,890,304**

* Cash and cash equivalents are included in cash and short-term investments on the Statement of Fiduciary Net Position.

TEN LARGEST COMMON STOCKS
(BY FAIR VALUE)

Stocks	Shares	Fair Value
Cheniere Energy Inc.	1,240,803	$74,485,404
Enbridge Inc.	2,044,614	65,407,202
Owl Rock Capital Corp	4,891,679	61,928,656
Williams Cos.	3,052,261	61,197,833
Taiwan Semiconductor-SP ADR	441,102	48,097,762
Oneok Inc.	1,239,794	47,583,294
Targa Resources Corp	1,653,424	43,617,325
TC Energy Corp	1,036,280	42,197,322
Kinder Morgan Inc.	2,891,565	39,527,694
Pembina Pipeline Corporation	1,635,622	38,698,817

TEN LARGEST BONDS AND OBLIGATIONS
(BY FAIR VALUE)

Description	Coupon	Maturity Date	Par Value	Fair Value
U.S. Treasury Note	3.125	Nov. 15, 2028	$40,345,000	$47,767,850
U.S. Treasury Bond	1.125	May 15, 2040	32,310,000	30,674,306
U.S. Treasury Note	1.375	Jan. 31, 2025	24,080,000	25,163,600
U.S. Treasury Note	1.750	Dec. 31, 2024	18,885,000	20,005,559
U.S. Treasury Bond	1.375	Nov. 15, 2040	16,495,000	16,309,431
U.S. Treasury Bond	1.625	Nov. 15, 2050	16,320,000	16,258,800
U.S. Treasury Bond	4.250	Nov. 15, 2040	9,750,000	14,645,186
U.S. Treasury Bond	3.750	Nov. 15, 2043	10,150,000	14,609,656
U.S. Treasury Note	0.625	May 15, 2030	14,340,000	14,019,591
U.S. Treasury Bond	2.375	Nov. 15, 2049	11,685,000	13,726,680

TEN LARGEST REAL ESTATE HOLDINGS
(BY FAIR VALUE)

Description	Fair Value
Prudential PRISA	$217,568,686
JP Morgan Strategic Property	175,196,268
Heitman Core Property Fund	112,783,573
Morgan Stanley Prime Property	100,464,544
Lion Industrial Trust	94,201,268
LaSalle Property Fund, LP	85,731,488
UBS Trumbull Property Fund	82,589,714
Jamestown Premier Property Fund	80,220,974
PW Real Estate Fund III LP	66,112,025
Exeter Industrial Value Fund IV	62,440,328

A complete listing of portfolio holdings is available upon request.

SCHEDULE OF INVESTMENT RESULTS

(FOR THE YEAR ENDED DEC. 31, 2020)

	Annualized Rates of Return		
	1-Year	3-Year	5-Year
U.S. Equity			
OP&F	**22.80%**	**16.09%**	**17.22%**
Wilshire 5000	20.82%	14.46%	15.52%
International Equity			
OP&F	**12.42%**	**4.66%**	**8.75%**
International Equity Policy Benchmark	11.12%	4.83%	8.98%
Private Markets**			
OP&F	**22.30%**	**18.53%**	**16.43%**
Actual Private Markets Composite (NOF)	22.30%	18.53%	16.43%
High Yield			
OP&F	**6.71%**	**6.42%**	**7.79%**
Merrill Lynch U.S. High Yield Constrained Index*	6.07%	5.86%	8.50%
Private Credit**			
OP&F	**3.10%**	**7.35%**	**7.10%**
S&P LSTA Levered Loan Index + 2%	3.08%	5.17%	6.09%
Treasury Inflation Protected Securities (TIPS)			
OP&F	**20.11%**	**11.49%**	**11.11%**
Bloomberg Barclays U.S. Gov't Inflation Linked Bond Index	23.25%	10.45%	9.90%
Real Estate**			
OP&F	**0.11%**	**7.37%**	**9.09%**
NCREIF ODCE Index	0.52%	4.25%	5.69%
Real Assets**			
OP&F	**1.15%**	**6.59%**	**5.47%**
Custom Index*	(0.11)%	4.03%	5.94%
Midstream Energy Infrastructure			
OP&F	**(26.09)%**	**(10.00)%**	**(3.38)%**
Alerian Midstream Energy Index*	(23.36)%	(7.68)%	(2.75)%
Fixed Income			
OP&F - Core	**7.35%**	**5.53%**	**4.99%**
Bloomberg Barclays Aggregate	8.91%	5.80%	4.71%
Total Portfolio			
OP&F	**9.21%**	**8.23%**	**9.95%**
Policy Index***	9.84%	7.58%	9.18%

* a) 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. b) Midstream Energy Infrastructure benchmark is a blend of the Alerian MLP Index from July 1, 2013 thru June 30, 2019, and the Alerian Midstream Energy Index from July 1, 2019 forward. c) Real Assets benchmark updated in 2020 and made retroactive - blend of 45% FTSE Dev Core 50/50 Infrastructure Index, 35% NCREIF Timberland Index, and 20% NCREIF Farmland Index.

** One quarter in arrears.

*** Interim Policy Index: 20.4% Wilshire 5000, 17% MSCI ACWI ex-U.S. Iran/Sudan Free IMI Index, 20.13% Bloomberg Barclays Aggregate 1.75x (-) Cost of Financing, 9% Merrill Lynch U.S. High Yield Constrained Index, 3% S&P LSTA Levered Loan Index + 2% Lagged, 17% Bloomberg Barclays U.S. Gov't Inflation Linked Bond Index X2 (-) LIBOR, 12% NCREIF ODCE Index (Net) Lagged, 8% Actual Private Markets Composite (NOF) Lagged, 4% Blend of 45% FTSE Dev Core 50/50 Infrastructure Index, 35% NCREIF Timberland Index, and 20% NCREIF Farmland Index Lagged, 5% Alerian Midstream Energy Index, 4.6% S&P GSCI Gold Index (-) Cost of Financing.

Long-Term Policy: 21% Wilshire 5000, 14% MSCI ACWI ex-U.S. Iran/Sudan Free IMI Index, 23% Bloomberg Barclays Aggregate X2 (-) Cost of Financing, 7% Merrill Lynch U.S. High Yield Constrained Index, 5% S&P LSTA Levered Loan Index + 2% Lagged, 17% Bloomberg Barclays U.S. Gov't Inflation Linked Bond Index X2 (-) LIBOR, 12% NCREIF ODCE Index (Net) Lagged, 8% Actual Private Markets Composite (NOF) Lagged, 8% Blend of 45% FTSE Dev Core 50/50 Infrastructure Index, 35% NCREIF Timberland Index, and 20% NCREIF Farmland Index Lagged, 5% Alerian Midstream Energy Index, 5% S&P GSCI Gold Index (-) Cost of Financing. (adds to 125% 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.

Acronyms and abbreviations used in this chart are explained at the end of the Statistical Section, in the List of Professional Acronyms, Symbols and Abbreviations.

INVESTMENT CONSULTANTS AND MONEY MANAGERS
(FOR THE YEAR ENDED DEC. 31, 2020)

INVESTMENT CONSULTANTS
TorreyCove Capital Partners
(The) Townsend Group
Wilshire

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
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
Black Creek Group
(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
(The) Gerrity Group
Greystar Investment Group, LLC
Hancock Capital Investment Management, LLC
Heitman Capital Management, LLC
Jamestown Premier GP, LP
JP Morgan Investment Management, Inc.
LaSalle Investment Management
Lone Star Funds
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
Waterton Associates, LP
Westbrook Partners, LLC

INVESTMENT MANAGERS – MIDSTREAM ENERGY INFRASTRUCTURE
Harvest Fund Advisors, LLC
Salient Capital Advisors, LLC
Tortoise Capital Advisors, LLC

INVESTMENT MANAGERS – REAL ASSETS
ACM Management Company, LLC
Axium Infrastructure Inc.
Brookfield Asset Management, Inc.
Brookfield Timberlands Management
Forest Investment Associates
Global Forest Partners
Hancock Timber Resources Group
iCon Infrastructure Inc, LLP
IFM Investors
Meridiam Infrastructure North America Corporation
Russell Investments Implementation Services, LLC

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

INVESTMENT MANAGERS – PRIVATE CREDIT
Annaly Capital Management Inc.
ArrowMark Partners
BlackRock, Inc.
CapitalSpring Direct Lending Partners
Crayhill Capital Management, LLC
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
Aksia TorreyCove
Altaris Capital Partners, LLC
Apollo Management, LP
Blackstone Capital Partners
Blue Chip Venture Partners, LP
Blue Point Capital Partners, LP
Cinven
Coller Capital
Cortec
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
Littlejohn & Co LLC
Marlin Equity Partners
MBK Partners
Montauk TriGuard Management, Inc.
Morgenthaler Venture Partners
NGP Energy Capital Management
Northgate Capital Group
Odyssey Investment Partners
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, 2020)

Broker Name	Fees Paid	Units Traded	Average Cost Per Unit
Goldman Sachs	$588,260	8,149,313	$0.0722
Russell Implementation Services	321,287	777,017,277	0.0004
B. Riley & Co., LLC	204,350	6,895,571	0.0296
HSBC Securities Inc.	130,500	75,936,661	0.0017
Citigroup	127,688	10,017,299	0.0127
UBS	114,234	21,699,831	0.0053
Morgan Stanley	111,072	12,406,665	0.0090
Merrill Lynch	108,348	17,732,354	0.0061
Credit Suisse First Boston	99,917	14,178,522	0.0070
JP Morgan	88,532	20,212,240	0.0044
Jefferies & Co., Inc.	88,397	8,248,132	0.0107
Sanford C. Bernstein	70,603	10,619,386	0.0066
RBC Capital Markets	67,946	9,735,424	0.0070
Barclays Securities, Inc.	61,132	5,059,435	0.0121
Instinet	46,265	9,362,032	0.0049
Liquidnet Inc.	43,309	5,394,315	0.0080
Wells Fargo Securities	41,553	5,710,016	0.0073
Cantor Fitzgerald & Co., Inc.	39,848	2,355,054	0.0169
Tudor, Pickering, Holt & Co.	33,886	1,784,360	0.0190
Virtu ITG	32,196	4,644,887	0.0069
Macquarie	29,527	9,168,973	0.0032
Mizuho Securities	26,322	1,041,660	0.0253
USCA Securities LLC	25,361	1,641,134	0.0155
BTIG LLC	22,911	1,265,052	0.0181
Nomura Securities Int'l Co.	20,870	7,180,230	0.0029
Brokers Less than $20,000	271,831	31,115,647	0.0087
TOTAL	**$2,816,145**	**1,078,571,470**	**$0.0026**

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 Comprehensive Annual Financial Report.

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 III 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. BOARD OF TRUSTEES/INVESTMENT COMMITTEE

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. 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 and OP&F's Investment Manager Monitoring and Evaluation 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. On an interim basis, an asset-only allocation study may be conducted.

Based on an asset liability valuation study or asset-only allocation study, which analyzed the expected returns, risk and correlations of various asset classes, projected liabilities (only in the case of an asset liability valuation study), 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-oriented) 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 - Notional Exposure	Range
Domestic Equity	21.0%	± 6.3%
Non-U.S. Equity	14.0%	± 4.2%
Private Markets	8.0%	± 2.4%
High Yield	7.0%	± 2.1%
Private Credit	5.0%	± 1.5%
TOTAL GROWTH ASSETS	**55.0%**	**± 9.5%**
Core Fixed Income	23.0%	± 4.6%
Cash	-%	+ 3.0%
TOTAL SAFETY-ORIENTED ASSETS	**23.0%**	**- 4.6% / + 7.6%**
U.S. Inflation Linked Bonds	17.0%	± 3.4%
Real Estate	12.0%	± 3.6%
Real Assets	8.0%	± 2.4%
Midstream Energy Infrastructure	5.0%	± 1.5%
Gold	5.0%	± 1.5%
TOTAL INFLATION-ORIENTED ASSETS	**47.0%**	**± 9.4%**
TOTAL	**125.0%**	**± 5.0%**

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 allocation with the goal of balancing economic factor risk exposures. The Total Portfolio has long-term target allocations that total 125% due to the application of leverage in core fixed income and U.S. inflation linked bonds and the implementation approach for gold.

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 actual 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. Similarly, resulting deviations to those public market asset classes shall not be considered in violation of the Asset Allocation Policy. However, broad economic factor bucket ranges of Growth, Safety-Oriented, and Inflation-Oriented Assets shall remain within their targeted ranges.

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 or asset-only allocation 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 implementation of this portable alpha component will not be considered leverage in relation to the long-term target allocations for the Total 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. Large and Mid Capitalization Exposure
The Active ACWI-ex U.S. Large and Mid Capitalization component has a target allocation of 85% 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 15% 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, including a range around the target allocation to allow flexibility as the underlying private markets investments are funded over time. In order to meet this allocation target, the Board of Trustees/Investment Committee approves a private markets investment plan setting forth the proposed investment activity for a specified period of time. The private markets investment plan shall be reviewed at least annually, and more frequently if necessary or appropriate, to reflect market conditions.

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, including a range around the target allocation to allow flexibility as the underlying private credit investments are funded over time. In order to meet this allocation target, the Board of Trustees/Investment Committee approves a private credit investment plan setting forth the proposed investment activity for a specified period of time. The private credit investment plan shall be reviewed at least annually, and more frequently if necessary or appropriate, to reflect market conditions.

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 minus the cost of financing 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 fixed income securities. The core fixed income composite portfolio shall have similar portfolio characteristics as that of the Bloomberg Barclays U.S. Aggregate Index.

Investment Structure

Given the core fixed income allocation target set forth in the Asset Allocation Policy above, the core fixed income composite portfolio will be levered approximately 2.0x. The structure of the core fixed income composite portfolio shall be diversified among active investment strategies and synthetic overlays as follows:

a. Active Core Fixed Income Exposure

The active core fixed income component has a target allocation of 50% of the core fixed income composite portfolio on a notional basis. The overall objective is to provide risk-adjusted returns greater than the return of the Bloomberg Barclays U.S. Aggregate Index.

b. Synthetic Core Fixed Income Exposure

The synthetic core fixed income component has a target allocation of 50% of the core fixed income composite portfolio on a notional basis. The synthetic core fixed income component shall be implemented to provide either U.S. Treasury exposure or Bloomberg Barclays U.S. Aggregate exposure or some combination of both.

2. 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, investment guidelines including 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 Investment Guidelines. In addition, certain specifications including the frequency of credit reviews of approved issuers of commercial paper will be set forth in OP&F's Short-Term Cash Management Investment Guidelines.

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 Investment Guidelines for internally managed cash, or individual Investment Manager'(s') guidelines for externally managed cash.

C. INFLATION-ORIENTED 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. The implementation of this portable alpha component will not be considered leverage in relation to the long-term target allocations for the Total Portfolio.

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, excluding the portable alpha component. 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, including a range around the target allocation to allow flexibility as the underlying private real estate investments are funded over time. In order to meet this allocation target, the Board of Trustees/Investment Committee approves a real estate investment plan setting forth the proposed investment activity for a specified period of time. The real estate investment plan shall be reviewed at least annually, and more frequently if necessary or appropriate, to reflect market conditions.

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, including a range around the target allocation to allow flexibility as the underlying real assets investments are funded over time. In order to meet this allocation target, the Board of Trustees/Investment Committee approves a real assets investment plan setting forth the proposed investment activity for a specified period of time. The real assets investment plan shall be reviewed at least annually, and more frequently if necessary or appropriate, to reflect market conditions.

4. MIDSTREAM ENERGY INFRASTRUCTURE

Investment Objectives

Total return of the midstream energy infrastructure 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 midstream energy infrastructure opportunities. Investments may consist of master limited partnerships (MLPs) and securities of energy related C-corporations. The midstream energy infrastructure composite portfolio as well as each Investment Manager'(s') portfolio shall have similar portfolio characteristics as that of the Alerian Midstream Energy Index.

Investment Structure

Midstream energy infrastructure assets will be managed solely on an active basis in order to exploit the perceived inefficiencies in the publicly traded midstream energy infrastructure markets.

5. GOLD

Investment Objectives

Total return of the gold composite portfolio should match the return of the S&P GSCI Gold Index Total Return minus the cost of financing over a full market cycle on an annualized basis.

Investment Characteristics

The gold allocation will be implemented through the derivatives markets and will be unfunded with the exception of necessary cash collateral and where gold is used to address deviations in certain private market asset classes with similar risk/return characteristics. Gold has been indentified as one of the asset classes to hold an underweight for the asset class of real assets. In these cases, the gold allocation will be fully funded with cash collateral so as not to increase the Total Portfolio leverage from this purpose.

Investment Structure

The gold allocation will be managed on a passive basis. Given the gold allocation target set forth in the Asset Allocation Policy above, the gold composite portfolio should be considered as leverage, except where gold is used to address deviations in certain private market asset classes with similar risk/return characteristics. Implementation of the gold 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.

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% for domestic, and 105% 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, procedures, etc., 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.

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ACTUARIAL

2020 COMPREHENSIVE ANNUAL FINANCIAL REPORT

PHOTO PROVIDED BY CITY OF HILLIARD | DIVISION OF POLICE

REPORT OF ACTUARY

Cavanaugh Macdonald
CONSULTING, LLC
The experience and dedication you deserve

October 2020

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

Members of the Board:

Cavanaugh Macdonald (CMC) 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, 2020, 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. CMC will not accept any liability for any statement made about the report without prior review by CMC.

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.

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This report does not include accounting disclosure information under Governmental Accounting Standards Board (GASB) Statement Nos. 67 and 68. CMC will provide disclosure information under Statement Nos. 67 and 68 in a separate report after OP&F's 2020 year-end. CMC also 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 CMC to account for salary adjustments reported by employers assumed to occur after the census information has been provided to CMC 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 from 47 years as of January 1, 2013 to 29 years as of January 1, 2019. As of January 1, 2020, the funding period decreased to 28 years.

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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, 2019 actuarial valuation, and 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, 2022 actuarial valuation.

The funded ratio (i.e., the ratio of actuarial assets to the AAL) determined as of January 1, 2020 is 69.7 percent, compared to 69.4 percent determined as of January 1, 2019. If measured using the market value of assets, the funded ratio would be higher at 70.9 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 68.9 percent using the actuarial assets and 70.1 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, 2020 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, CMC performed no analysis of the potential range of such future differences.

During 2018 OP&F retained Cavanaugh Macdonald as their actuary. The January 1, 2019 valuation was the first valuation completed by Cavanaugh Macdonald. All results presented in this report for years prior to the December 31, 2018 were performed by the prior actuary(s).

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The consultants who worked on this assignment are pension actuaries. CMC's advice is not intended to be a substitute for qualified legal or accounting counsel.

This is to certify that the independent consulting actuaries are members of the American Academy of Actuaries, have experience in performing valuations for public retirement plans, and meet the qualification standards of the American Academy of Actuaries to render the actuarial opinion contained herein. The valuation was prepared in accordance with principles of practice prescribed by the Actuarial Standards Board and the actuarial calculations were performed by qualified actuaries in accordance with accepted actuarial procedures, based on the current provisions of the retirement plan and on actuarial assumptions that are internally consistent and reasonable based on the actual experience of the Fund and future expectations. However, the Board of Trustees has the final decision regarding the selection of the assumptions and adopted them as indicated in Appendix C.

Respectfully submitted,

Larry Langer, ASA, EA, FCA, MAAA
Principal and Consulting Actuary

Wendy T. Ludbrook, FSA, EA, FCA, MAAA
Senior Actuary

Ryan Gunderson
Senior Consultant

DESCRIPTION OF ACTUARIAL ASSUMPTIONS AND METHODS

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% 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

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

DROP INTEREST CREDITING RATE

4.0% per annum, compounded annually.

CPI-BASED COLA

2.2% simple for increases based on the lesser of the increase in CPI and 3.0%.

WITHDRAWAL RATES

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

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%	1.71%	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%

RATES OF DISABILITY

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

Age	Police		Fire	
	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%	0.002%	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	Firefighter
48	-%	-%
48-50	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%

DEFERRED RETIREMENT OPTION PLAN ELECTIONS

90% 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%	5%							
49	4%	5%							
50	4%	5%	4%						
51	4%	5%	4%	10%					
52	3%	5%	4%	9%	9%				
53	3%	5%	4%	9%	8%	12%			
54	4%	5%	5%	10%	9%	13%	13%		
55	5%	5%	5%	16%	16%	14%	18%	44%	
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%	6%	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%

FIREFIGHTER

	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%	17%	46%	100%
59	6%	3%	4%	17%	15%	16%	18%	46%	100%
60	6%	3%	4%	18%	16%	16%	19%	48%	100%
61	6%	3%	4%	17%	15%	15%	19%	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.

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%

FIREFIGHTER

	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.

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% 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.

LATE REPORTED SALARIES

A 1.170% load is added to the 2019 reported salaries to account for salaries accrued but not reported for the valuation. This adjustment is based on an average of plan experience from the prior three years. The raw adjustment rates for each year are as follows:

Pay for Calendar Year	Raw Adjustment
2019	1.335%
2018	1.256%
2017	0.919%

This adjustment will be reviewed annually for future late reported salaries.

PERCENT MARRIED

75% 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% of service retirees and 10% of disability retirees are assumed to elect the 40% 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% Joint and Survivor pension is assumed to be 14.36% for disability retirees and 10.50% 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% receiving lump sums, 30% receiving installments over two years, and 45% 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 2020) provided the retiree is not eligible for reimbursement from any other sources.

88% 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.

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. Prior to January 1, 2015, to be consistent with the asset methodology employed by OP&F, DROP balances were netted out of the liabilities.

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%, 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% or more than 120% 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 MAIN BENEFIT 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% of salary; employers of firefighters pay 24.0% of salary. The members contribution rate equals 12.25% in 2020.

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%

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% for each of the first 20 years of service, 2.0% for each of the next five years of service, and 1.5% for each year of service in excess of 25 years. The maximum pension of 72% 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.

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 for 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.

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 required for any of the service retirement pensions 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. Acceptance of a refund of employee contributions cancels the member's rights, benefits and total service with OP&F. 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.

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 (U.S.) Treasury Note Business Day Series, as published by the U.S. Department of the Treasury, with a cap of 5.0% and a floor of 2.5%. 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 3.0% 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% of member's contributions
Years 4-5	75% of member's contribution
Years 6-8	100% 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% of member's contributions
Year 3	75% of member's contribution
Years 4-8	100% 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 their date of retirement when eligible. These members will also receive the DROP account balance as a lump sum or monthly distribution.

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% 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% 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% 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% of the allowable average annual salary. Service over 25 years cannot be used in calculating an off-duty disability award.

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% 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 3.0% of the original base benefit, paid each July 1, beginning July 1, 2000. The benefit is paid to the surviving spouse for life.

Surviving Child's Benefit

An annual amount equal to $1,800 ($150 monthly), payable until such child attains age 22 or marries, whichever occurs first. 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 3.0% 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 3.0% of the original base is payable each July 1.

STATE OF OHIO PUBLIC SAFETY OFFICERS DEATH BENEFIT FUND (DBF)

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 received by the public safety officer prior to his or her death in the line of duty, plus any increases in salary that would have been granted to the deceased public safety officer. The benefit is paid to the public safety officer's eligible survivors as a group until the public safety officer's maximum pension eligibility date. This is the date on which the deceased public safety officer would have become eligible for the maximum annual retirement allowance or pension that may be paid to a member from the member's retirement system (OP&F, OPERS, State Highway Patrol Retirement System (SHPRS) or the Cincinnati Retirement System) had the member continued to accrue service credit from that system, which will be reduced at the member's maximum pension eligibility date. These death benefit payments are in addition to the statutory survivor benefit and any optional payment plan benefits elected by the member.

Survivors	Monthly Pension	Causes of Termination
Widow / Widower	current amount + future COLA	* Death
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, 2019	Monthly Increases Effective July 1, 2020
Spouse	$550	$875.60*	$16.50
Child	150	238.80**	4.50
One Parent	200	318.40***	6.00
Two Parents	100	159.20	3.00

* 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 3.0%. Every year after 2000, the monthly increase was $16.50 or 3.0% 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 3.0%. Every year after 2000, the monthly increase was $4.50 or 3.0% 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 3.0%. Every year after 2000, the monthly increase was $6.00 or 3.0% of base benefit.

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

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. 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.

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 1.0% and 100% 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% 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% 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. Also, this plan may be canceled upon divorce or dissolution of marriage 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. An 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 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% JSA payable to the spouse.

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% of the member's reduced pension continues to the beneficiary for the guarantee period selected. An 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% 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 3.0% 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 3.0% 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 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.

HEALTH CARE STIPEND AND MEDICARE

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.

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 the solvency of the HCSF will be extended allowing OP&F to provide stipends to eligible participants.

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

GAIN/(LOSS) AS OF JAN. 1, 2020

Type of Activity	Experience Gain (Loss)
Plan experience:	
Turnover	**$(10,222,710)**
If more liabilities are released by withdrawal separations from active membership than assumed, there is a gain. If smaller releases, there is a loss.	
Retirement	**(61,852,611)**
If members retire at older ages than assumed, there is a gain. If younger, there is a loss.	
Death among retired members and beneficiaries	**(32,634,935)**
If more deaths occur than assumed, there is a gain. If fewer deaths than assumed, there is a loss.	
Disability Retirements	**3,232,986**
If disability claims are less than assumed, there is a gain. If more claims, there is a loss.	
Salary increase/decrease	**11,532,085**
If there are smaller pay increases than assumed, there is a gain. If greater increases, there is a loss.	
Return to work	**(1,089,645)**
If participants return to work with previous service restored, there is a loss.	
New Entrants	**(8,132,872)**
If new entrants join OP&F, there is a loss.	
Deaths among actives	**(539,065)**
If claim costs are less than assumed, there is a gain. If more claim costs, there is a loss.	
Other Experience and Payroll Growth	**(68,637,374)**
If other experience, including less than expected payroll growth, increases the unfunded liability, there is a loss. Otherwise, there is a gain.	
Adjustment for Late Reported Pays	**(11,745,499)**
Change in liability due to the pay being loaded to reflect late reported pay.	
Investment	**60,651,790**
If there is a greater investment return than assumed, there is a gain. If less return, there is a loss.	
NET GAIN (OR LOSS) DURING THE YEAR DUE TO PLAN EXPERIENCE	**$(119,437,850)**

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 liability for future benefits to present retired lived; (3) The liability for service already rendered by active members. In a system that has been following the discipline of level percent of payroll financing, the liability 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 the 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	2020	$1,650,362	$7,361,618	$3,077,379	$8,423,682	100%	92%	-%
Fire	2020	1,489,023	5,589,542	2,876,359	6,936,441	100%	97%	-%
Police	2019	1,584,057	7,107,922	2,987,107	8,102,788	100%	92%	-%
Fire	2019	1,423,619	5,373,749	2,788,255	6,650,372	100%	97%	-%
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%

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	
2020	525	419	15,840	13,711	$79,568	$81,845	2.6%	2.8%	$2,313.6
2019	526	408	15,630	13,457	77,544	79,579	1.5%	2.2%	2,218.0
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

* 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
2019	1,552	$73,909	1,127	$29,045	29,991	$1,150,725	4.06%	$38.37	1.44%
2018	1,292	66,129	1,087	28,036	29,566	1,105,862	3.57%	37.40	0.70%
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%

CALCULATION OF ACTUARIAL VALUE OF ASSETS - PENSION TRUST FUND

Item	Amount
1. Market Value of Assets as of Dec. 31, 2019	$15,636,590,807
2. Determination of Deferred Gain (Loss)	

Year	Return on Market Value of Assets: Actual	Expected	Gain/(Loss)	Percentage Deferred	Deferred Amount	
2019	$2,304,356,918	$1,090,925,194	$1,213,431,724	75%	$910,073,793	
2018	(460,216,086)	1,174,313,569	(1,634,529,655)	50%	(817,264,828)	
2017	1,808,150,698	1,073,514,102	734,636,596	25%	183,659,149	
2016	1,232,569,108	1,046,667,736	185,901,372	-%	-	
	Total Deferred Gain (Loss)				276,468,114	
	Total Deferred Gain					276,468,114

3. Adjustment for 20% corridor	-
4. Actuarial Value of Assets available for benefits (1) - (2) + (3)	$15,360,122,693

SCHEDULE OF FUNDING PROGRESS - PENSION TRUST FUND

FOR THE VALUATION YEAR ENDING JAN. 1, 2020
(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
2020	$15,360.1	$22,044.3	$6,684.2	69.7%	$2,313.6	288.9%
2019	14,753.2	21,264.7	6,511.5	69.4%	2,218.0	293.6%
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%

* 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

2020 COMPREHENSIVE ANNUAL FINANCIAL REPORT

PHOTO PROVIDED BY TOLEDO FIRE & RESCUE

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 122 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 Annual Report, 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)

	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Additions										
Employer Contributions	$530.6	$514.3	$489.9	$473.2	$465.4	$438.7	$427.8	$418.2	$417.0	$407.5
Member Contributions and Purchases	312.6	303.4	295.5	282.0	268.6	245.8	224.0	211.4	177.5	176.8
Investment Income	1,436.7	2,434.3	(487.9)	1,923.5	1,317.4	(10.0)	860.7	2,053.0	1,657.9	229.6
Health Care Contributions	-	0.5	73.2	74.5	73.2	71.2	70.0	66.6	65.1	62.5
Other Revenues	1.4	20.5	24.9	28.6	36.3	29.2	25.2	28.5	30.7	40.5
TOTAL ADDITIONS	**2,281.3**	**3,273.0**	**395.6**	**2,781.8**	**2,160.9**	**774.9**	**1,607.7**	**2,777.7**	**2,348.2**	**916.9**
Deductions										
Benefit Payments	1,467.2	1,457.1	1,514.1	1,429.2	1,396.4	1,369.9	1,310.5	1,302.5	1,236.4	1,204.2
Refund of Member Contributions	17.5	13.7	18.3	20.6	14.2	13.8	15.2	16.0	26.5	22.0
Administrative Expenses	19.2	21.8	17.0	20.3	19.6	16.3	16.2	15.9	15.4	15.4
TOTAL DEDUCTIONS	**1,503.9**	**1,492.6**	**1,549.4**	**1,470.1**	**1,430.2**	**1,400.0**	**1,341.9**	**1,334.4**	**1,278.3**	**1,241.6**
CHANGES IN FIDUCIARY NET POSITION	**777.4**	**1,780.4**	**(1,153.8)**	**1,311.7**	**730.7**	**(625.1)**	**265.8**	**1,443.3**	**1,069.9**	**(324.7)**
FIDUCIARY NET POSITION - BEGINNING OF YEAR	**$16,515.3**	**$14,734.9**	**$15,888.7**	**$14,577.0***	**$13,853.3**	**$14,478.4****	**$14,219.6**	**$12,776.3*****	**$10,468.5**	**$10,793.2**
FIDUCIARY NET POSITION - END OF YEAR	**$17,292.7**	**$16,515.3**	**$14,734.9**	**$15,888.7**	**$14,584.0**	**$13,853.3**	**$14,485.4**	**$14,219.6**	**$11,538.4**	**$10,468.5**
Reserve Fund Balances:										
Employers' Contribution Reserves	$1,030.8	$883.3	$(291.5)	$1,535.3	$1,155.8	$1,058.3	$2,701.1	$2,907.9	$873.8	$901.6
Members' Contribution Reserves	3,310.7	3,150.3	3,005.9	2,861.2	2,728.1	2,600.0	2,491.3	2,393.7	2,122.8	2,065.8
Health Care Contribution Reserves	881.6	878.7	793.8	932.1	901.6	929.4	1,031.9	1,053.5	935.6	780.1
Pension Reserves	12,069.6	11,603.0	11,226.7	10,560.1	9,798.5	9,265.6	8,261.1	7,864.5	7,606.2	6,721.0
TOTAL FIDUCIARY NET POSITION	**$17,292.7**	**$16,515.3**	**$14,734.9**	**$15,888.7**	**$14,584.0**	**$13,853.3**	**$14,485.4**	**$14,219.6**	**$11,538.4**	**$10,468.5**

* 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)

	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Additions										
Employer Contributions	$518.4	$502.3	$478.6	$462.3	$454.7	$428.5	$418.0	$349.5	$286.7	$278.2
Member Contributions and Purchases	312.6	303.4	295.5	282.0	268.6	245.8	224.0	211.4	177.5	176.8
Investment Income	1,362.0	2,304.3	(460.3)	1,808.1	1,232.6	(16.7)	779.8	1,893.9	1,531.0	210.6
Health Care Contributions	-	-	-	-	-	-	-	-	-	-
Other Revenues	0.8	0.9	1.5	4.5	8.4	5.9	7.2	12.9	9.5	11.9
TOTAL ADDITIONS	**2,193.8**	**3,110.9**	**315.3**	**2,556.9**	**1,964.3**	**663.5**	**1,429.0**	**2,467.7**	**2,004.7**	**677.5**
Deductions										
Benefit Payments	1,382.9	1,380.3	1,296.2	1,235.6	1,172.8	1,156.7	1,110.9	1,111.2	1,049.0	1,027.9
Refund of Member Contributions	17.5	13.7	18.3	20.6	14.2	13.8	15.2	16.0	26.5	22.0
Administrative Expenses	18.9	21.4	16.3	19.5	18.8	15.6	15.5	15.1	14.8	14.7
TOTAL DEDUCTIONS	**1,419.3**	**1,415.4**	**1,330.8**	**1,275.7**	**1,205.8**	**1,186.1**	**1,141.6**	**1,142.3**	**1,090.3**	**1,064.6**
CHANGES IN FIDUCIARY NET POSITION	**774.5**	**1,695.5**	**(1,015.5)**	**1,281.2**	**758.5**	**(522.6)**	**287.4**	**1,325.4**	**914.4**	**(387.1)**
FIDUCIARY NET POSITION - BEGINNING OF YEAR	**$15,636.6**	**$13,941.1**	**$14,956.6**	**$13,675.4***	**$12,923.9**	**$13,446.5****	**$13,166.1**	**$11,840.7*****	**$9,688.4**	**$10,075.5**
FIDUCIARY NET POSITION - END OF YEAR	**$16,411.1**	**$15,636.6**	**$13,941.1**	**$14,956.6**	**$13,682.4**	**$12,923.9**	**$13,453.5**	**$13,166.1**	**$10,602.8**	**$9,688.4**
Reserve Fund Balances:										
Employers' Contribution Reserves	$1,030.8	$883.3	$(291.5)	$1,535.3	$1,155.8	$1,058.3	$2,701.1	$2,907.9	$873.8	$901.6
Members' Contribution Reserves	3,310.7	3,150.3	3,005.9	2,861.2	2,728.1	2,600.0	2,491.3	2,393.7	2,122.8	2,065.8
Pension Reserves	12,069.6	11,603.0	11,226.7	10,560.1	9,798.5	9,265.6	8,261.1	7,864.5	7,606.2	6,721.0
TOTAL FIDUCIARY NET POSITION	**$16,411.1**	**$15,636.6**	**$13,941.1**	**$14,956.6**	**$13,682.4**	**$12,923.9**	**$13,453.5**	**$13,166.1**	**$10,602.8**	**$9,688.4**

* 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)

	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Additions										
Employer Contributions	$12.2	$12.0	$11.3	$10.9	$10.7	$10.2	$9.8	$68.7	$130.3	$129.3
Member Contributions and Purchases	-	-	-	-	-	-	-	-	-	-
Investment Income	74.7	130.0	(27.6)	115.4	84.8	6.7	80.9	159.1	126.9	19.0
Health Care Contributions	-	0.5	73.2	74.5	73.2	71.2	70.0	66.6	65.1	62.5
Other Revenues	0.6	19.6	23.4	24.1	27.9	23.3	18.0	15.6	21.2	28.6
TOTAL ADDITIONS	**87.5**	**162.1**	**80.3**	**224.9**	**196.6**	**111.4**	**178.7**	**310.0**	**343.5**	**239.4**
Deductions										
Benefit Payments	84.3	76.8	217.9	193.6	223.6	213.2	199.6	191.3	187.4	176.3
Refund of Member Contributions	-	-	-	-	-	-	-	-	-	-
Administrative Expenses	0.3	0.4	0.7	0.8	0.8	0.7	0.7	0.8	0.6	0.7
TOTAL DEDUCTIONS	**84.6**	**77.2**	**218.6**	**194.4**	**224.4**	**213.9**	**200.3**	**192.1**	**188.0**	**177.0**
CHANGES IN FIDUCIARY NET POSITION	**2.9**	**84.9**	**(138.3)**	**30.5**	**(27.8)**	**(102.5)**	**(21.6)**	**117.9**	**155.5**	**62.4**
FIDUCIARY NET POSITION - BEGINNING OF YEAR	**$878.7**	**$793.8**	**$932.1**	**$901.6**	**$929.4**	**$1,031.9**	**$1,053.5**	**$935.6**	**$780.1**	**$717.7**
FIDUCIARY NET POSITION - END OF YEAR	**$881.6**	**$878.7**	**$793.8**	**$932.1**	**$901.6**	**$929.4**	**$1,031.9**	**$1,053.5**	**$935.6**	**$780.1**
Reserve Fund Balances:										
Health Care Contribution Reserves	$881.6	$878.7	$793.8	$932.1	$901.6	$929.4	$1,031.9	$1,053.5	$935.6	$780.1
TOTAL FIDUCIARY NET POSITION	**$881.6**	**$878.7**	**$793.8**	**$932.1**	**$901.6**	**$929.4**	**$1,031.9**	**$1,053.5**	**$935.6**	**$780.1**

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
2020	$530.6	$312.6	22.9%	$1,436.7	$-	$1.4	$2,281.3
2019	514.3	303.4	23.2%	2,434.3	0.5	20.5	3,273.0
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

EXPENSES BY TYPE
(DOLLARS IN MILLIONS)

Year	Benefit Payments	Refund of Member Contributions	Administrative Expenses	Total Expenses
2020	$1,467.2	$17.5	$19.2	$1,503.9
2019	1,457.1	13.7	21.8	1,492.6
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

BENEFIT EXPENSES BY TYPE
(DOLLARS IN MILLIONS)

Year	Service	Disability	Health Care	Survivor	DROP	Total Benefits
2020	$828.6	$258.8	$84.3	$94.8	$200.7	$1,467.2
2019	789.1	257.4	76.8	92.5	241.3	1,457.1
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

DEFERRED RETIREMENT OPTION PLAN (DROP) PROGRAM BALANCES
(DOLLARS IN MILLIONS)

	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Police										
DROP Program Beginning Balance	$921.6	$880.2	$819.3	$770.6	$721.9	$687.8	$661.0	$666.5	$694.7	$650.8
Accrued Pension and COLA	131.7	123.7	117.4	111.3	108.2	103.0	97.6	95.4	90.7	92.3
Accrued Member Share Contributions	19.1	18.1	17.3	16.8	18.7	15.2	12.3	11.9	11.3	11.7
Accrued Interest	22.5	18.8	22.4	18.2	13.8	14.6	15.1	14.2	17.8	32.2
Withdrawals	(103.4)	(119.2)	(96.2)	(97.6)	(92.0)	(98.7)	(98.2)	(127.0)	(148.0)	(92.3)
DROP PROGRAM ENDING BALANCE - POLICE	**991.5**	**921.6**	**880.2**	**819.3**	**770.6**	**721.9**	**687.8**	**661.0**	**666.5**	**694.7**
Fire										
DROP Program Beginning Balance	793.4	776.3	739.9	692.2	641.0	616.4	584.6	571.4	593.1	536.2
Accrued Pension and COLA	114.8	111.0	108.3	104.1	101.3	101.3	97.8	94.0	88.4	89.3
Accrued Member Share Contributions	17.3	16.4	16.2	15.9	17.2	14.9	12.9	12.0	11.0	11.2
Accrued Interest	19.2	16.5	20.2	16.5	12.2	13.1	13.3	12.4	15.2	27.3
Withdrawals	(97.8)	(126.8)	(108.3)	(88.8)	(79.5)	(104.7)	(92.2)	(105.2)	(136.3)	(70.9)
DROP PROGRAM ENDING BALANCE - FIRE	**846.9**	**793.4**	**776.3**	**739.9**	**692.2**	**641.0**	**616.4**	**584.6**	**571.4**	**593.1**
Combined Police and Fire										
DROP Program Beginning Balance	1,715.0	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
Accrued Pension and COLA	246.5	234.7	225.7	215.4	209.5	204.3	195.4	189.4	179.1	181.6
Accrued Member Share Contributions	36.4	34.5	33.5	32.7	35.9	30.1	25.2	23.9	22.3	22.9
Accrued Interest	41.7	35.3	42.6	34.7	26.0	27.7	28.4	26.6	33.0	59.5
Withdrawals	(201.2)	(246.0)	(204.5)	(186.4)	(171.5)	(203.4)	(190.4)	(232.2)	(284.3)	(163.2)
DROP PROGRAM ENDING BALANCE - COMBINED	**$1,838.4**	**$1,715.0**	**$1,656.5**	**$1,559.2**	**$1,462.8**	**$1,362.9**	**$1,304.2**	**$1,245.6**	**$1,237.9**	**$1,287.8**

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
2020	$2,313.6	$312.6	29,551	4.3%	3.0%	1.6%
2019	2,218.0	303.4	29,087	0.4%	2.7%	2.4%
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)%

* Includes rehired retirees.

ACTIVE MEMBERSHIP DATA

NUMBER AND ALLOWABLE AVERAGE ANNUAL SALARY AS OF JAN. 1, 2020*

	Years of Service									
Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	TOTAL
Under 25	1,165	2								**1,167**
	$54,111	$77,127								**$54,151**
25-29	3,047	481								**3,528**
	$61,025	$76,489								**$63,134**
30-34	2,041	1,865	358	2						**4,266**
	$63,806	$78,614	$84,847	$90,542						**$72,058**
35-39	857	1,299	1,520	435	2					**4,113**
	$63,459	$78,732	$85,334	$89,745	$88,120					**$79,159**
40-44	305	503	909	1,562	637	5				**3,921**
	$59,694	$77,736	$82,858	$89,510	$93,780	$94,004				**$84,837**
45-49	126	185	428	1,186	2,429	577	6			**4,937**
	$58,222	$76,211	$80,969	$85,535	$92,660	$98,502	$132,985			**$89,171**
50-54	47	65	152	498	1,611	1,632	437	1		**4,443**
	$58,994	$77,729	$78,590	$83,521	$90,603	$95,023	$102,364	$91,375		**$91,656**
55-59	24	25	58	142	553	828	638	23	1	**2,292**
	$60,521	$72,874	$73,814	$81,714	$87,776	$91,523	$97,070	$109,993	$175,581	**$90,801**
60-64	2	10	17	47	121	186	167	17	4	**571**
	$50,044	$70,070	$74,088	$77,174	$85,668	$86,277	$92,945	$94,052	$111,439	**$86,983**
Over 64	-	3	7	8	19	37	16	3	9	**102**
	$-	$61,940	$63,592	$85,850	$85,283	$85,850	$89,203	$85,827	$111,860	**$86,334**
TOTAL	**7,614**	**4,438**	**3,449**	**3,880**	**5,372**	**3,265**	**1,264**	**44**	**14**	**29,340**
	$60,870	**$78,142**	**$83,499**	**$87,111**	**$91,488**	**$94,146**	**$98,426**	**$101,763**	**$116,291**	**$80,628**

* Excludes rehired retirees.

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

AS OF JAN. 1, 2020

	Service		Survivors		Disability		
Year	Police	Fire	Police	Fire	Police	Fire	Total Beneficiaries
2020	8,995	6,948	4,592	3,394	3,582	2,480	29,991
2019	8,729	6,759	4,560	3,398	3,634	2,486	29,566
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

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
2020	$1,382.9	$17.5	$1,400.4	30,014	0.7%	0.5%
2019	1,380.3	13.7	1,394.0	29,792	0.3%	6.0%
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%

* 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
2020	$3,931	$1,520	$-	$2,773
2019	3,948	1,688	-	3,166
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

DISABILITY RETIREMENT*

Year	Permanent and Total	Permanent and Total Presumptive	Partial	Partial Presumptive	Off Duty
2020	$4,422	$4,767	$3,321	$4,229	$3,508
2019	4,614	4,313	3,100	5,172	2,368
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

* 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
2020	$-	(100)%	24,096	$84.3	-%	$0.003
2019	0.5	(99)%	24,969	76.8	1%	0.003
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

* In 2012 OP&F restated the number of covered lives column using actuarially certified number of covered lives.

STATE OF OHIO SUBSIDY PAYMENTS

Year	Subsidy Amount	Percentage Change
2020	$225,676	(13)%
2019	260,488	(13)%
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)%

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, 2020 thru Oct. 31, 2021	1.50%	3.00%	3.00%	3.00%	3.00%	3.00%
Nov. 1, 2019 thru Oct. 31, 2020	1.50%	3.00%	3.00%	3.00%	3.00%	3.00%
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						

* Effective Date of Retirement (EDOR).

Additional Notes:
1) First COLAs were paid July 1, 1988 through June 30, 1989
2) July 1, 2002 COLAs were a flat 3.0% (regardless of the Consumer Price Index (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 .

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%
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%

C) Members with less than 15 years of service credit on July 1, 2013, will receive a COLA equal to either 3.0% or the percent increase, if any, in the CPI over the 12-month period ending on Sept. 30 of the immediately preceding year, whichever is less.

D) The COLA amount for members with at least 15 years of service credit as of July 1, 2013 is equal to 3.0% 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*	DROP	Re-Employed
April 1, 2021 thru June 30, 2021	2.50%	1.74%
Jan. 1, 2021 thru March 31, 2021	2.50%	0.93%
Oct. 1, 2020 thru Dec. 31, 2020	2.50%	0.69%
July 1, 2020 thru Sept. 30, 2020	2.50%	0.66%
April 1, 2020 thru June 30, 2020	2.50%	0.70%
Jan. 1, 2020 thru March 31, 2020	2.50%	1.92%
Oct. 1, 2019 thru Dec. 31, 2019	1.68%	1.68%
July 1, 2019 thru Sept. 30, 2019	2.00%	2.00%
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 5.0%. Effective Jan. 1, 2020 the Board of Trustees approved a floor for the DROP interest rate equal to 2.5%.

DROP MEMBER COUNT ROLL FORWARD
(AS OF DEC. 31)

POLICE		2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Balance Beginning of Year		2,331	2,245	2,158	2,050	2,001	1,918	1,883	1,795	1,801	1,985
Number of members that entered into DROP	Increases	440	435	388	415	369	364	322	384	329	356
Number of members that terminated DROP	Decreases	(501)	(349)	(301)	(307)	(320)	(281)	(287)	(296)	(335)	(540)
SUB-TOTAL AT YEAR END - POLICE		**2,270**	**2,331**	**2,245**	**2,158**	**2,050**	**2,001**	**1,918**	**1,883**	**1,795**	**1,801**
FIRE											
Balance Beginning of Year		2,026	2,028	1,996	1,902	1,887	1,907	1,862	1,741	1,740	1,888
Number of members that entered into DROP	Increases	340	307	328	369	301	290	346	369	283	315
Number of members that terminated DROP	Decreases	(391)	(309)	(296)	(275)	(286)	(310)	(301)	(248)	(282)	(463)
SUB-TOTAL AT YEAR END - FIRE		**1,975**	**2,026**	**2,028**	**1,996**	**1,902**	**1,887**	**1,907**	**1,862**	**1,741**	**1,740**
COMBINED POLICE AND FIRE											
Balance Beginning of Year		4,357	4,273	4,154	3,952	3,888	3,825	3,745	3,536	3,541	3,873
Number of members that entered into DROP	Increases	780	742	716	784	670	654	668	753	612	671
Number of members that terminated DROP	Decreases	(892)	(658)	(597)	(582)	(606)	(591)	(588)	(544)	(617)	(1,003)
TOTAL AT YEAR END - COMBINED		**4,245**	**4,357**	**4,273**	**4,154**	**3,952**	**3,888**	**3,825**	**3,745**	**3,536**	**3,541**

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
2020	$15,360.1	$22,044.3	$6,684.2	69.7%	$2,313.6	288.9%
2019	14,753.2	21,264.7	6,511.5	69.4%	2,218.0	293.6%
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	281.1%
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%

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

HISTORICAL ANNUAL INVESTMENT RESULTS

	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Domestic Equity										
OP&F	22.80%	31.77%	(3.30)%	22.41%	15.60%	0.53%	11.27%	35.53%	15.88%	0.94%
International Equity*										
OP&F	12.42%	23.35%	(17.32)%	29.12%	2.75%	(0.77)%	(5.56)%	21.01%	19.96%	(12.37)%
Private Markets**										
OP&F	22.30%	13.65%	15.65%	21.80%	14.37%	12.06%	18.34%	11.50%	9.58%	17.66%
High Yield*										
OP&F - High Yield	6.71%	13.49%	(0.48)%	7.05%	12.80%	(0.95)%	2.81%	6.15%	15.64%	6.00%
Private Credit**										
OP&F	3.10%	11.62%	7.51%	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Treasury Inflation Protected Securities (TIPS)										
OP&F - TIPS	20.11%	15.70%	(0.26)%	2.89%	18.76%	0.26%	19.43%	(10.62)%	14.93%	35.50%
Real Estate**										
OP&F	0.11%	8.76%	13.69%	10.30%	13.14%	16.83%	18.57%	15.11%	13.06%	18.01%
Real Assets**										
OP&F	1.15%	7.08%	11.81%	4.65%	2.99%	1.03%	8.99%	3.37%	N/A	N/A
Midstream Energy Infrastructure*										
OP&F	(26.09)%	13.46%	(13.06)%	(4.08)%	20.42%	(29.31)%	16.91%	32.25%	N/A	N/A
Fixed Income										
OP&F - Core	7.35%	8.13%	1.24%	4.26%	4.14%	1.45%	4.07%	(1.05)%	6.31%	6.41%
OP&F - Commercial Mortgages**	N/A	6.73%	5.29%	2.87%	5.63%	3.21%	8.56%	6.72%	5.28%	4.99%
Total Portfolio										
OP&F	9.21%	17.89%	(1.78)%	14.30%	11.51%	0.65%	6.79%	16.94%	15.41%	2.57%
Policy Index***	9.84%	16.32%	(2.67)%	12.41%	11.45%	(2.18)%	6.87%	14.61%	14.94%	2.43%

* 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. c) Midstream Energy Infrastructure benchmark is a blend of the Alerian MLP Index from July 1, 2013 thru June 30, 2019, and the Alerian Midstream Energy Index from July 1, 2019 forward. d) Real Assets benchmark updated in 2020 and made retroactive - blend of 45% FTSE Dev Core 50/50 Infrastructure Index, 35% NCREIF Timberland Index, and 20% NCREIF Farmland Index.

** One quarter in arrears.

*** Interim Policy Index: 20.4% Wilshire 5000, 17% MSCI ACWI ex-U.S. Iran/Sudan Free IMI Index, 20.13% Bloomberg Barclays Aggregate 1.75x (-) Cost of Financing, 9% Merrill Lynch U.S. High Yield Constrained Index, 3% S&P LSTA Levered Loan Index + 2% Lagged, 17% Bloomberg Barclays U.S. Gov't Inflation Linked Bond Index X2 (-) LIBOR, 12% NCREIF ODCE Index (Net) Lagged, 8% Actual Private Markets Composite (NOF) Lagged, 4% Blend of 45% FTSE Dev Core 50/50 Infrastructure, 35% NCREIF Timberland Index, and 20% NCREIF Farmland Index Lagged, 5% Alerian Midstream Energy Index, 4.6% S&P GSCI Gold Index (-) Cost of Financing.

Long-Term Policy: 21% Wilshire 5000, 14% MSCI ACWI ex-U.S. Iran/Sudan Free IMI Index, 23% Bloomberg Barclays Aggregate X2 (-) Cost of Financing, 7% Merrill Lynch U.S. High Yield Constrained Index, 5% S&P LSTA Levered Loan Index + 2% Lagged, 17% Bloomberg Barclays U.S. Gov't Inflation Linked Bond Index X2 (-) LIBOR, 12% NCREIF ODCE Index (Net) Lagged, 8% Actual Private Markets Composite (NOF) Lagged, 8% Blend of 45% FTSE Dev Core 50/50 Infrastructure, 35% NCREIF Timberland Index, and 20% NCREIF Farmland Index Lagged, 5% Alerian Midstream Energy Index, 5% S&P GSCI Gold Index (-) Cost of Financing. (adds to 125% 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
2020	248	204	-	178	277	37	525	419	944
2019	248	201	-	170	278	37	526	408	934
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

* 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, 2020

Age Last Birthday	Number	Annual Allowance	Average Annual Allowance
Service Retirees			
Under 60	2,932	$143,815,174	$49,050
60 - 64	3,135	172,180,429	54,922
65 - 69	3,215	174,647,900	54,323
70 - 74	2,812	148,098,627	52,667
75 - 79	1,963	93,345,237	47,552
Over 79	1,886	70,978,270	37,634
TOTAL	**15,943**	**$803,065,637**	**$50,371**
Survivors and Beneficiaries			
Under 60	1,180	$12,537,075	$10,625
60 - 64	571	8,016,341	14,039
65 - 69	823	10,746,512	13,058
70 - 74	1,131	14,018,592	12,395
75 - 79	1,276	14,675,736	11,501
Over 79	3,005	32,109,549	10,685
TOTAL	**7,986**	**$92,103,805**	**$11,533**
Disability Retirees			
Under 60	2,012	$82,227,768	$40,869
60 - 64	891	41,225,033	46,268
65 - 69	1,036	47,103,706	45,467
70 - 74	1,010	43,932,075	43,497
75 - 79	622	24,577,971	39,514
Over 79	491	16,489,267	33,583
TOTAL	**6,062**	**$255,555,820**	**$42,157**

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+	
2020	Average Monthly Benefit	$3,701	$3,227	$2,950	$2,282	$3,380	$4,191	$4,926	$4,112
	Average Final Average Salary	$61,675	$71,464	$65,660	$72,417	$83,497	$81,323	$80,717	$80,942
	Number of Active Recipients	1	5	8	28	36	896	26	1000
2019	Average Monthly Benefit	$1,013	$3,467	$3,351	$2,479	$3,486	$4,170	$5,211	$4,112
	Average Final Average Salary	$51,667	$70,342	$69,191	$71,050	$77,710	$79,431	$81,773	$79,010
	Number of Active Recipients	1	3	11	26	55	777	41	914
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

* All years begin Jan. 1 and end Dec. 31.

PRINCIPAL PARTICIPATING EMPLOYERS
AS OF DEC. 31, 2020

Employer Name	Covered Employees	Rank	Percentage of Total Covered Members
City of Columbus	3,739	1	12.7%
City of Cleveland	2,737	2	9.3%
City of Cincinnati	1,899	3	6.4%
City of Toledo	1,212	4	4.1%
City of Akron	840	5	2.8%
City of Dayton	692	6	2.3%
City of Canton	344	7	1.2%
City of Youngstown	270	8	0.9%
City of Springfield	268	9	0.9%
City of Hamilton	236	10	0.8%
All Others	17,314		58.6%
TOTAL	**29,551**		**100.0%**

PRINCIPAL PARTICIPATING EMPLOYERS
AS OF DEC. 31, 2011

Employer Name	Covered Employees	Rank	Percentage of Total Covered Members
City of Columbus	3,624	1	12.8%
City of Cleveland	2,494	2	8.8%
City of Cincinnati	1,904	3	6.8%
City of Toledo	1,191	4	4.2%
City of Akron	807	5	2.9%
City of Dayton	691	6	2.5%
City of Canton	323	7	1.1%
City of Youngstown	306	8	1.1%
City of Springfield	265	9	0.9%
City of Hamilton	235	10	0.8%
All Others	16,382		58.1%
TOTAL	**28,222**		**100.0%**

OP&F EMPLOYEE BUDGETED POSITION COUNTS

Department*	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Administration	19	19	19	20	19	36	48	47	45	46
Finance	25	25	24	21	21	21	21	22	22	13
Business and Technology Solutions (BTS)	40	41	41	45	44	26	25	24	24	24
Investments	17	17	16	16	15	14	14	14	15	15
Member Services	47	46	46	46	46	46	34	34	38	46
TOTAL FULL-TIME POSITIONS	**148**	**148**	**146**	**148**	**145**	**143**	**142**	**141**	**144**	**144**

* In 2018, Procurement was transitioned to Finance from BTS. In 2015, Customer Service was transitioned to Member Services and Procurement was transitioned to BTS from Administration. In 2012, Employer Services was transitioned to Finance from Member Services.

PERSONNEL SALARIES BY YEAR
(DOLLARS IN THOUSANDS)

	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Salaries and Wages	$11,318.5	$11,227.3	$10,801.4	$10,317.3	$9,971.3	$9,635.1	$9,054.2	$9,248.5	$8,756.9	$8,807.9
Average Salary per Budgeted Staff	$76.5	$75.9	$74.0	$69.7	$68.8	$67.4	$63.8	$65.6	$60.8	$61.2

OP&F BUDGET
(DOLLARS IN MILLIONS)

	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Administrative Expenses (Actual)*	$68.8	$75.9	$67.3	$70.3	$63.6	$59.4	$61.6	$59.4	$52.8	$50.3
Administrative Expenses (Budget)*	$77.3	$77.3	$72.5	$70.2	$66.0	$65.4	$62.6	$62.6	$58.7	$54.5
Percentage of Budget vs. Actual	89%	98%	93%	100%	96%	91%	98%	95%	90%	92%
Capital (Actual)	$0.8	$1.1	$0.5	$0.4	$0.5	$1.3	$2.1	$3.1	$2.9	$1.7
Capital (Budget)	$4.3	$3.1	$2.9	$4.3	$4.6	$3.0	$2.8	$3.4	$3.4	$3.7
Percentage of Budget vs. Actual	19%	35%	17%	9%	11%	43%	75%	91%	85%	46%
Operating Expenses (Actual)*	$18.1	$20.5	$15.8	$18.9	$17.9	$14.6	$14.4	$14.3	$13.6	$13.6
Investment Expenses (Actual)*	$50.7	$55.4	$51.5	$51.4	$45.7	$44.8	$47.2	$45.1	$39.2	$36.7

* Excludes depreciation expense.

OTHER OPERATING STATISTICS

	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Total Staff	148	148	146	148	145	143	142	141	144	144
Investment Staff	17	17	16	16	15	14	14	14	15	15
Investment Actual Expenses	$50.7	$55.4	$51.5	$51.4	$45.7	$44.8	$47.2	$45.1	$39.2	$36.7
Investment Income	$1,436.7	$2,434.3	$(487.9)	$1,923.5	$1,317.4	$(10.0)	$860.7	$2,053.0	$1,657.9	$229.6
Investment Staff to Investment Expense Ratio	$3.0	$3.3	$3.2	$3.2	$3.0	$3.2	$3.4	$3.2	$2.6	$2.4
Total Staff to Investment Income Ratio	$9.7	$16.4	$(3.3)	$13.0	$9.1	$(0.1)	$6.1	$14.6	$11.5	$1.6
Investment Staff to Investment Income Ratio	$84.5	$143.2	$(30.5)	$120.2	$87.8	$(0.7)	$61.5	$146.6	$110.5	$15.3

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, 2020. The following is a schedule of DBF financial activity:

Balance Jan. 1, 2020	**$1,178,907**
Less: Survivor Benefits Paid Jan. 1 thru June 30, 2020	(16,288,447)
Balance Returned to State of Ohio	(2,090,460)
State Funding Received	34,575,000
Less: Survivor Benefits Paid July 1 thru Dec. 31, 2020	(16,083,755)
BALANCE DEC. 31, 2020	**$ 1,291,245**

LIST OF PROFESSIONAL ACRONYMS, SYMBOLS AND ABBREVIATIONS

AAL = Actuarial Accrued Liabilities

ACH = Automated Clearing House

ACWI Ex-U.S. = All Country World Index excluding the U.S.

Annual Report = Comprehensive Annual Financial Report

Board = Board of Trustees

bps = Basis Points

BTS = Business and Technology Solutions

CARES Act = Corona-virus Aid, Relief, Economic Security Act

CMC = Cavanaugh Macdonald

COLA = Cost-of-Living Allowance

Connector = OPERS Medicare Connector

CPI = Consumer Price Index

CS = Credit Suisse

DB = Defined Benefits

DBF = Death Benefit Fund

Dev. = Developed

DROP = Deferred Retirement Option Plan

ECB = European Central Bank

EDOR = Effective Date of Retirement

EMSI = Economic Modeling Specialist International

EU = European Union

€ = Euro

FAS = Final Average Salary

FED = Federal Reserve

FHLMC = Federal Home Loan Mortgage Corporation

FNMA = Federal National Mortgage Association

401(h) Trust = 401(h) Health Care Trust

FOMC = Federal Open Market Committee

FTSE Dev. = Financial Times Stock Exchange and Developed

FF&C = Full Faith and Credit

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

Gov't = Government

GSCI = Goldman Sachs Commodity Index

HCSF = Health Care Stabilization Fund

HRA = Health Reimbursement Arrangement

HY = High Yield

IMI = Investible 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

LSTA = Loan Syndication and Trading Association

MD&A = Management Discussion and Analysis

MLPs = Master Limited Partnerships

MSCI = Morgan Stanley Capital International

N/A = Not Applicable

NAV = Net Asset Value

LIST OF PROFESSIONAL ACRONYMS, SYMBOLS AND ABBREVIATIONS - CONTINUED

NCREIF = National Council of Real Estate Investment Fiduciaries

NOF = Net of Fees

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

Policy or Statement = Investment Policy and Guidelines

PPCC = Public Pension Coordination Council

REITs = Real Estate Investment Trusts

REMICs = Real Estate Mortgage Investment Conduits

RFP = Request for Proposal

RMA = Retiree Medical Account

RSI = Required Supplementary Information

S&P = Standard and Poor's 500

SB = Senate Bill

SHPRS = State Highway Patrol Retirement System

SPACs = Special Purpose Acquisition Company

STIF = Short Term Investment Fund

STRIPS = Separate Trading of Registered Interest and Principal Securities

TIPS = Treasury Inflation Protected Securities

0.25x = Times 1/4

X2 = Times Two

2x = Two Times

TTY = TeletypeWriter

UAAL = Unfunded Actuarial Accrued Liabilities

U.S. = United States of America

U.S.D. = United States Dollar

VEBA Trust = Voluntary Employees' Beneficiary Association Trust

vs. = Verses

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