2022

Financial Stability

Annual Comprehensive Financial Report
for the year ended December 31, 2022

OPERS

Ohio Public Employees Retirement System
Prepared by OPERS Finance Division Staff

The Annual Comprehensive Financial Report 2022

Table of Contents

Employer composition and membership information

For actuarial purposes, participating employers are divided into State, Local, Law Enforcement and Public Safety divisions. A complete description of the OPERS membership is contained in the Plan Statement Section of this document, beginning on page 215.

Annual report organization

This annual report is divided into six sections, listed as each appears in this document:

1. **Introductory Section**—with the Letter of Transmittal, organizational chart, and recognition awards garnered in 2022
2. **Financial Section**—with the Independent Auditor's Report, Management's Discussion and Analysis, the financial statements of the System, Required Supplementary Information and Additional Information
3. **Investment Section**—with the Chief Investment Officer's report on investment activity, Independent Investment Consultant's Report, investment policies, investment results, and various investment schedules
4. **Actuarial Section**—with the Actuary's Certification Letter and the most recent results of the annual actuarial valuations for pension and health care
5. **Statistical Section**—with significant data pertaining to the System
6. **Plan Statement**—with membership information and details about the retirement plans offered through OPERS

Financial Stability requires: *Dedicated organizational leadership*

Experts define great organizational leadership quite simply—it's the ability of management, working with a dedicated Board, to lead an organization to attaining its stated mission.

The definition is easy, but the skills required to achieve that definition are not. Leaders must:

- Fully understand the organization, its stakeholders, and the world in which the organization operates.
- Establish a strategic plan designed to ensure the organization can attain stated goals in a timely fashion.
- Anticipate change and structure sustainable solutions to meet challenges.
- Engage with and communicate to stakeholders—especially during times of change and/or uncertainty.

For almost 90 years, the OPERS management, staff and Board displayed those qualities and capabilities. The result? OPERS is a strong organization with a reputation of listening to members and stakeholders. This organization works to provide financial security for members by evolving—anticipating and meeting change—so that members are confident about financial stability in retirement.

What members should look for in this section: Every OPERS member—past, present and future—has a dedicated representative on the Board of Trustees. These representatives work closely with OPERS management to ensure the concerns of members are fully vetted. Review this information to know who represents you—generally, members vote for their designated representative every four years, and even more frequently for retirees. (See page 4 for listing of Board members.)

What all stakeholders should know: OPERS is not part of the state of Ohio financial-reporting entity, nor is OPERS a component unit of the state of Ohio. This organization is run by dedicated management working with an 11-member Board of Trustees, the governing body of OPERS. No member of the Board receives compensation for Board activities.

Members by employer type

employers (top number)

240	240	244	513	253	1,307	653	239
State	County	Municipalities	Miscellaneous	Libraries	Townships	Villages	Law Enforcement/ Public Safety
107,076	83,764	47,687	19,513	11,431	9,950	10,389	8,017
employees	employees	employees	employees	employees	employees	employees	employees

Board of Trustees as of January 2023

Left to Right: James Tilling, General Assembly Appointed Investment Expert; Chris Mabe, Representative for State Employees and Board Chair; James Kunk, Governor-Appointed Investment Expert; Steve Toth, Representative for Retirees; Stewart Smith, Representative for Miscellaneous Employees and Board Vice Chair as of January 2023; Kathleen Madden, Director—Department of Administrative Services (Statutory Member); Scott Richter, Treasurer-Appointed Investment Expert; Ken Thomas, Representative for Municipal Employees and Board Vice Chair in 2022; Randy Desposito, Representative for Non-teaching College/University Employees; Julie Albers, Representative for County Employees; Tim Steitz, Representative for Retirees

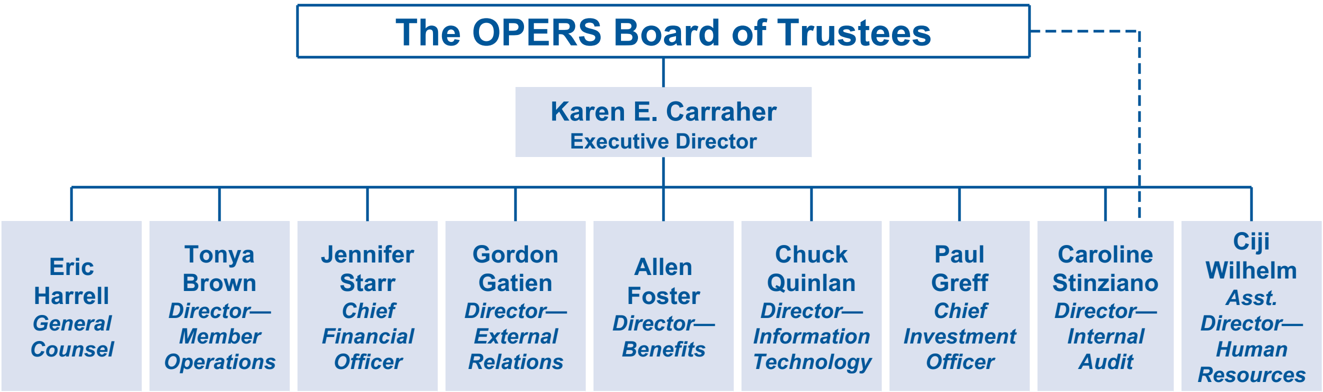
The 11-member Board of Trustees is the governing body of the Ohio Public Employees Retirement System (referred to as OPERS, System or Fund). The Board is ultimately responsible for the administration and management of all OPERS activities including oversight of investment activities.

The Board is comprised of seven individuals who are elected by the specific stakeholder group each represents: college/university employees, state employees, miscellaneous employees, county employees, municipal employees, and two retiree elected representatives. Three individuals with investment expertise are appointed by Ohio's Governor, Treasurer and jointly by the Ohio Legislature. The Board is completed by the Director of the Ohio Department of Administrative Services who serves on the Board by virtue of office.

The Board appoints the Executive Director, an actuary, and other advisors necessary for the transaction of business. By law, the Treasurer of the state of Ohio is custodian of the OPERS funds.

The Board meets periodically throughout the year and receives no compensation, but is reimbursed for necessary expenses.

OPERS Leadership Team



Left to Right: Tonya Brown, Director—Member Operations; Gordon Gatien, Director—External Relations; Jennifer Starr, Chief Financial Officer; Karen Carraher, Executive Director; Allen Foster, Director—Benefits; Ciji Wilhelm, Assistant Director—Human Resources; Eric Harrell, General Counsel; Chuck Quinlan, Director—Information Technology; Paul Greff, Chief Investment Officer; Caroline Stinziano, Director—Internal Audit

Advisors to the Board of Trustees

Investment Policy

NEPC, LLC
Cambridge, Massachusetts

Actuary

Gabriel, Roeder, Smith & Company
Southfield, Michigan

Auditor

Plante & Moran, PLLC
Cleveland, Ohio
(under contract with the Auditor of State)

See pages 104-107 for a list of investment commissions, fees and external asset managers.

OPERS Ohio Public Employees Retirement System

277 East Town Street Columbus, Ohio 43215-4642 1-800-222-7377 www.opers.org

May 4, 2023

Dear Chairman and Members of the Board of Trustees:

On behalf of all management and staff, it's our pleasure to present you with the *2022 Annual Comprehensive Financial Report* (annual report). This document reflects the results of activities undertaken by the Ohio Public Employees Retirement System (OPERS or System) for the fiscal year ended December 31, 2022.

Our theme—*Financial Stability*—reflects that OPERS remains strong and adequately funded despite the down investment market in 2022. We take our responsibility for providing pension benefits for our members and maintaining access to affordable health care seriously and we reflect that through our actions. Past changes we have made to the pension plans and the health care program, coupled with our long-term investment performance, have positioned OPERS to weather this down market. OPERS members and retirees can be assured we will continue to meet our obligation to fund the pensions earned by those currently retired and for those working toward their future retirement.

OPERS has been fortunate to benefit from the positive investment markets for the last several years. As we have reported in our annual reports, the investment markets for the last three years have exceeded our expectations. However, the 2022 investment markets performed poorly and OPERS was impacted. The total fund return for 2022 was a loss of 12.49%, or net investment loss of $16.0 billion.

This was a challenging year. Usually in down markets most asset classes will produce negative results, however there are usually still some asset classes that produce positive returns. This is one of the reasons institutional investors maintain a diversified portfolio. However, 2022 was a unique year in which almost all investment classes were down. With our long-term focus, we expect investment markets to have years of negative returns as well as years of strong positive returns. Our long-term investment outlook is developed by working with investment experts, constantly re-evaluating the current market opportunities. As a financially stable system, our goal is to manage effectively in both the positive and negative markets.

As we monitor the investment markets in 2023 and work to address our challenges, we remain grounded by five overarching plan goals that guide our actions. Specifically, the goals are:

- Provide a stable pension for all OPERS retirees
- Continue to provide a meaningful retiree health care program
- Minimize drastic plan design changes by making incremental changes
- Ensure OPERS is financially positioned to react to market volatility
- Maintain intergenerational equity

The activities reported here for 2022 illustrate our focus and progress on the path to move OPERS forward in continuing to provide a secure retirement for our members—present and future.

Overview of OPERS—Established Financial Stability

OPERS was established and exists solely for the purpose of providing retirement, disability and survivor benefits to Ohio's public employees. Created by legislation in 1933, OPERS began operations January 1, 1935, prior to the Social Security Administration. In 1974, OPERS added access to health care—an element of significant importance to retirees yet is neither mandated nor guaranteed. In 2003, OPERS increased the pension plan options offered to three distinct plans. In 2022, OPERS closed one plan thus reducing the options for new members to two plans. More information on current benefits can be found in the Plan Statement starting on page 215.

As of year-end 2022, OPERS served approximately 1,248,000 members, including 220,000 retirees and beneficiaries. In addition, the System works with approximately 3,700 public employers. With a net asset base of $106.8 billion, OPERS is the largest public pension system in Ohio and the 14th largest public pension system in the nation. These numbers clearly demonstrate OPERS' importance as an established economic driver for the state of Ohio.

Summary of Key Activities in 2022

Investments

Investment results are an important focus for us since investment returns provide approximately two-thirds of the funding for a retiree's ultimate pension. The key components of investment management of a portfolio such as OPERS' is asset allocation and diversification, both of which are regularly reviewed.

OPERS' total portfolio is made up of underlying portfolios that fund pension benefits and the health care program. These underlying portfolios have different asset allocations based on their funding and liquidity needs, thus their investment returns will vary. Investment returns presented are based on year-to-date, time-weighted returns.

As noted above, fiscal year 2022 was a down year for the investment markets largely driven by inflation. Inflation reached 40-year highs and led to an unprecedented series of interest rate increases, sending equities falling and causing historic losses in the bond market. Overall, the total OPERS portfolio for 2022 returned a loss of 12.49%. This negative return reflects a stark comparison to the strong investment markets in the preceding few years which reflected a positive return of 15.20%, 11.95% and 17.59% for the last three years. This clearly demonstrates the volatility of the investment market and our need for thoughtful planning to maintain financial stability through the market highs and lows.

The underlying investment portfolios include: the Defined Benefit portfolio, the Defined Contribution portfolio, and the Health Care portfolio. By portfolio, the 2022 returns were:

- Defined Benefit portfolio returned a loss of 12.03%, compared to the benchmark return loss of 11.44% and the anticipated actuarial funding plan rate of 6.90%.
- The Defined Contribution portfolio returned a loss of 16.00%, compared to the benchmark return loss of 15.81%.
- The Health Care portfolio returned a loss of 15.51%, compared to the benchmark return loss of 15.56% and the anticipated actuarial funding plan rate of 6.00%.

A complete discussion of investment returns, activities, asset allocation strategy, safeguards, and policies governing those activities can be found in the Investment Section, beginning on page 89. Additionally, information on investment fees and commissions can be found beginning on page 104.

Pension Funding

To achieve the required funding necessary to provide the pension benefits, funds and access to health care, OPERS collects member and employer contributions and invests those assets. The investment assets are expected to earn a targeted investment return over the long-term which is currently 6.9%. As the System has matured, the investment earnings have become the largest source of funding for the benefits.

The December 31, 2022 actuarial valuation reflected that OPERS remained 84% funded for both 2022 and 2021. The stable funding position results from actuarial smoothing, in which market gains and losses are recognized over a four-year period in order to reduce the effects of market volatility. As a result, the market value (or fair value) of assets may differ from the funding value of assets. At the end of 2021, the market value of assets was higher than the funding value by $10.5 billion. A portion of these deferred gains was recognized during 2022, offsetting the 2022 investment losses. At the end of 2022, the market value of assets was lower than the funding value by $9.7 billion. This accumulated net loss will be phased in over the next three years and will have a substantial impact on our funded ratio if not offset with future market gains.

The funded ratio is a key measure of the System as it reflects OPERS has accumulated 84.0% of the assets necessary to fund the liability for both active and retired members. By law, OPERS is obligated to pay the benefits that have commenced with retirees. To make these payments each year, OPERS transfers funds from the active member funding (the Employers' Accumulation Fund) to the retired member funding (the Annuity and Pension Reserve Fund and the Survivors' Benefit Fund). Thus, the Traditional Pension Plan active member funding is 55% as of December 31, 2022, after this annual transfer. The amortization period reflects how long it will take to fund remaining liabilities based on the current actuarial assumptions. The OPERS amortization period remained at 16 years for both 2022 and 2021 and is within the statutorily required 30-year amortization period.

The Actuarial Section, beginning on page 135, provides complete schedules of funding progress for pension and health care.

Health Care

Although health care is neither mandated nor guaranteed, the Board, management and staff, recognize the importance to our members of providing access to meaningful health care as it is a significant component of a secure retirement. This dedication to maintaining health care has become increasingly challenging as health care overall becomes more expensive.

We anticipate that health care costs will continue to increase based on the combination of the growing number of retirees, increasing life expectancies and overall increases in the cost of health care due to medical advances especially in the prescription drug component. We also do not anticipate funding health care until the pension funding status improves.

As a result of these challenges, OPERS adopted changes to the health care program over the past several years, with the most recent changes effective in January 2022. The 2022 changes included the elimination of the group health care plan for non-Medicare retirees. Similar to the changes made in 2015 for the Medicare retirees, OPERS no longer offers a group plan but provides eligible non-Medicare retirees with funding in a health reimbursement arrangement (HRA) account. OPERS provides non-Medicare retirees with an OPERS vendor to help members select their own plan on the open market or through the federal subsidy program. The amount of HRA varies based on the member's age and years of service. A high-level summary of the key elements to the health care program are described in the Plan Statement on page 215.

As of December 31, 2021, the date of the most recent health care valuation, the health care assets accumulated to fund the liabilities exceeded the liabilities by $1.7 billion, resulting in a funded ratio of 115.2%, an improvement over the prior year's funded ratio of 110.4%. Based on the combination of the level of health care expenditures, the investment gains from 2021, and that OPERS is currently unable to fund the health care trust for all members, the current trust fund is expected to last approximately 29 years, an improvement over the prior year's solvency period of 25 years. The improvement over these measurements is a direct result of the strong investment market in 2021. Since the health care valuation is one year in arrears, this is not reflective of the poor market returns of 2022.

The long-term investment return assumption for health care remained unchanged at 6.0%. The health care portfolio long-term investment earnings assumption is lower than the pension portfolio as the health care portfolio has a shorter duration and thus, in comparison, has more liquid assets and excludes the illiquid assets that generally provide relatively higher returns for the pension portfolio.

Key Activities in 2022

Combined Plan Changes

Beginning January 1, 2022, new members may no longer select the Combined Plan, and current members may no longer make a plan change to the Combined Plan. For those participating in the plan prior to the closure, the plan retains all plan design features so that participants in the plan will experience no changes.

Mainframe Replacement

OPERS staff continued to work on a multi-year project to replace the mainframe computer system and migrate the various applications to a new system. This project, expected to continue throughout 2023, involves transferring the coding language to a new language and migrating the applications to the new platform with appropriate testing.

Outreach and Education

Customer service is always a high priority and education is critical. We work to ensure all stakeholders—especially current retirees and our members, the retirees of tomorrow—understand the challenges, can provide feedback on options and ultimately understand the outcome of changes made and the benefits they will receive. Over the past couple of years, we have adapted to the needs of our members and continue to offer a hybrid approach in our counseling and educational efforts—both virtual and in-person.

Report Contents and Structure

This annual report is designed to comply with the reporting requirements of the Governmental Accounting Standards Board (GASB) and in accordance with the Governmental Accounting Standards Best Practices. The responsibility for the accuracy of the data presented here, as well as the completeness and fairness of the presentation, rests with OPERS management.

The management of OPERS is responsible for internal accounting controls designed to provide reasonable assurance for the safeguarding of assets and the reliability of financial records. The concept of reasonable assurance recognizes the relationship between the cost of a control and the benefit likely to be derived, based on the judgment of management. We believe the established internal accounting controls are adequate to meet the purpose for which they were intended.

The financial statements presented in this report, supporting schedules, and statistical tables are presented fairly in all material aspects. These assertions can be made because OPERS has established a comprehensive internal control framework designed to protect assets from loss and to compile sufficient reliable information for the preparation of the OPERS financial statements in conformity with generally accepted accounting principles. Even effective internal controls may not prevent or detect misstatements and can provide only a reasonable assurance with respect to financial statement preparation.

The System’s external auditors, Plante & Moran, PLLC, conducted an independent audit of the financial statements in accordance with U.S. generally accepted government auditing standards. This audit and the financial statements are described in the Financial Section, beginning on page 15.

Additionally, readers are encouraged to refer to the Investment Section for information on investment policies and strategies, safeguards on investments, and yield.

2022 Financial Highlights

Retirement Contributions: Employee contributions, employer contributions, and income from investments provide the funds necessary to finance retirement benefits. Approximately two-thirds of OPERS revenue from which benefits are paid is generated from investment returns. The remaining funding comes from employee and employer contributions. The System reports a total of $1.7 billion in member and $2.3 billion in employer contributions for the year ended December 31, 2022. Total net position is $106.8 billion as of December 31, 2022.

Expenses: Expenses (including pension benefit payments, health care payments and account refunds) for fiscal year 2022 were $8.2 billion. In 2022, OPERS paid $7.0 billion in pension benefits and $0.6 billion in health care to more than 220,000 OPERS retirees and their beneficiaries. Because approximately 90% of all OPERS retirees remain in Ohio, this represents a significant driver for Ohio's economy.

Administrative Costs: OPERS management remains diligent in monitoring and, where possible, reducing or containing expenses. Administrative costs are paid through investment returns generated; our goal is always to be responsible stewards of public funds. Administrative costs in 2022 were $118.7 million, including investment expenses.

Complete details of all administrative expenses are included in the Financial Section, on page 88. In addition, the Management's Discussion and Analysis, beginning on page 19, has a more detailed discussion of the OPERS funded status and provides a complete analysis of the additions and deductions to Plan Net Position.

Professional Services

Professional services are provided to OPERS by consultants appointed by the Board. Actuarial services are provided by Gabriel, Roeder, Smith & Company, Southfield, Michigan. The investment advisor to the Board for all the plans is NEPC, LLC, Cambridge, Massachusetts. The financial records of the System are audited by Plante & Moran, PLLC, Certified Public Accountants, Cleveland, Ohio under contract with the Ohio Auditor of State.

Acknowledgments

This annual report is the result of the combined teamwork of the System’s staff under the direction of the Board. Our sincere appreciation is extended to all who assisted in and contributed toward the completion of this document.

This annual report is designed to provide complete and reliable information for transparent communication and to serve as a resource. We take our fiscal responsibility very seriously. We are effective and diligent managers of the assets held in trust for members of this System.

As stewards of the trust funds, we must take actions and make the responsible decisions that will promote financial stability. This organization is led by a dedicated and diligent Board that works tirelessly with OPERS management and staff to meet each challenge and each opportunity with professionalism, innovation, and dedication. We all have a fiduciary responsibility to make decisions in the best interest of all one million members. We have a responsibility to be prudent stewards and to look forward and prepare for the challenges we see, not wait for them to occur. We will continue to take actions to position OPERS to remain a strong, financially stable pension system. We will always plan to do this working in conjunction with members, retirees and stakeholders. We are honored to be associated with, and appreciate and acknowledge the efforts of all involved as we continue to prepare for the future.

Respectfully Submitted,

Karen E Carraher

Karen E. Carraher, CPA
Executive Director

Jennifer H. Starr

Jennifer H. Starr, CPA
Chief Financial Officer

Left to Right: Jennifer Starr and Karen Carraher

Fiduciary Responsibilities

The Board and executive management of OPERS are fiduciaries of the pension and health care trust funds. Fiduciaries are charged with the responsibility of assuring that the assets of OPERS are used exclusively for the benefit of plan participants and their beneficiaries.

Request for Information

This financial report is designed to provide the Board, our membership, taxpayers, investment managers, and creditors with an overview of OPERS finances and accountability for the money received. Questions concerning any of the information provided in this report or requests for additional information should be addressed to:

Ohio Public Employees Retirement System
Chief Financial Officer
277 East Town Street
Columbus, Ohio 43215-4642

Awards and Recognition

OPERS has been recognized by national financial experts and organizations for commitment to the highest possible fiscal standards. We are honored to have been recognized with the following awards:

- ***2021 Certificate of Achievement for Excellence in Financial Reporting***—For the 39th consecutive year, the Government Finance Officers Association of the United States and Canada (GFOA) awarded OPERS a Certificate of Achievement for Excellence in Financial Reporting for its annual comprehensive financial report for the fiscal year ended December 31, 2021. In order to be awarded a certificate of achievement, a government organization must publish an easily readable and efficiently organized annual comprehensive financial report that satisfies both generally accepted accounting principles and applicable legal requirements.

2012
2013
2014
2015
2016

GOVERNMENT FINANCE OFFICERS ASSOCIATION

Certificate of Achievement
for Excellence
in Financial Reporting

Presented to

Ohio Public Employees
Retirement System

Executive Director / CEO

2017
2018
2019
2020
2021

- ***2021 Award for Outstanding Achievement in Popular Annual Financial Reporting***—For the 12th consecutive year, OPERS has received the GFOA Award for Outstanding Achievement in Popular Annual Financial Reporting for its popular annual financial report for the fiscal year ended December 31, 2021. 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. OPERS has received this award for each year we have produced a popular annual financial report.

2012
2013
2014
2015
2016

GOVERNMENT FINANCE OFFICERS ASSOCIATION

Award for
Outstanding
Achievement in
Popular Annual
Financial Reporting

Presented to

Ohio Public Employees
Retirement System

Executive Director / CEO

2017
2018
2019
2020
2021

- ***2022 Public Pension Standards Award***—Issued by the Public Pension Coordinating Council, this award recognizes OPERS for demonstrating a high level of plan design, funding, member communications and administrative practices. The standards serve as a benchmark by which all public defined benefit plans are managed.

PPCC

Public Pension Coordinating Council

Public Pension Standards Award
For Funding and Administration
2022

Presented to

Ohio Public Employees Retirement System

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

Presented by the Public Pension Coordinating Council, a confederation of

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

Alan H. Winkle

Alan H. Winkle
Program Administrator

Financial Stability depends on: *Careful management*

Careful management is an essential element of financial stability. Why? Because financial stability can only be attained and maintained if sufficient funds are available to pay liabilities—which is accomplished by saving, investing and allocating current funds, while also anticipating and managing current-and-future needs.

The year 2022 provides examples of that definition of careful management:

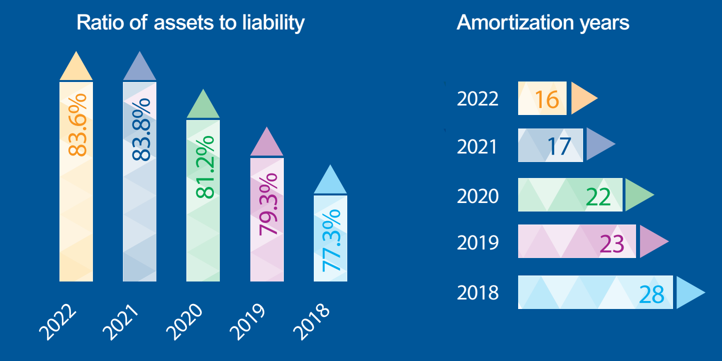
- For many years, across the nation, health care expenses have been a concern. Yet, ensuring members have access to meaningful, affordable health care has always been a goal (health care is neither mandated nor guaranteed).

  OPERS management anticipated the impact of the Health Care fund running out and managed the potential crisis. The results are clear: The recent modifications to the health care plan and use of funds resulted in a positive impact to the Health Care fund—a 31% expense reduction in 2022.
- Similarly, although 2022 was a very poor year in terms of investment results due to the global volatile market, the pension fund remains stable with a funding level of 84%. (See a full definition of the funding ratio and why a stable funding level is important in the Letter of Transmittal, pages 6-12.)

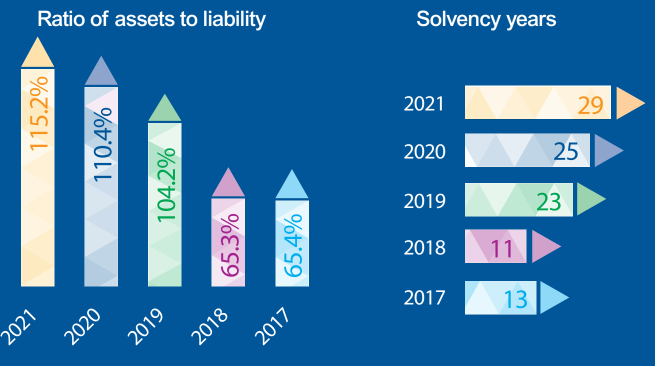
What members should look for in this section: Controlling costs while anticipating member needs is an important element of financial stability. OPERS delivers. In fact, OPERS has been recognized as “a low-to median cost administrator providing members with high service” in comparison to our peers according to the 2021 CEM Benchmarking Service (most current year available).

What all stakeholders should know: Transparency in financial management and reporting is critical to an organization’s financial stability. OPERS maintains the highest possible standards for transparency and accuracy in financial reporting. See page 14 for information on awards received from industry agencies. (Additional oversight is provided by internal and external auditors).

Schedule of funding progress Traditional Pension Plan



Schedule of funding progress Health Care



Plante & Moran, PLLC
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1111 Superior Ave.
Cleveland, OH 44114
Tel: 216.523.1010
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plantemoran.com

Independent Auditor's Report

To the Board of Trustees
Ohio Public Employees Retirement System
and the Honorable Keith Faber, Auditor of State

Report on the Audit of the Financial Statements

Opinions

We have audited the financial statements of Ohio Public Employees Retirement System (OPERS) as of and for the year ended December 31, 2022 and the related notes to the financial statements, which collectively comprise OPERS' basic financial statements, as listed in the table of contents. We have also audited the Traditional Pension Plan, the Combined Plan, the Member-Directed Plan, and the 115 Health Care Trust of Ohio Public Employees Retirement System as of and for the year ended December 31, 2022, as displayed in OPERS' basic financial statements.

In our opinion, the accompanying financial statements referred to above present fairly, in all material respects, the fiduciary net position of Ohio Public Employees Retirement System, as well as the Traditional Pension Plan, the Combined Plan, the Member-Directed Plan, and the 115 Health Care Trust of OPERS, as of December 31, 2022 and the respective changes in fiduciary net position for the year then ended in accordance with accounting principles generally accepted in the United States of America.

Basis for Opinions

We conducted our audit in accordance with auditing standards generally accepted in the United States of America (GAAS) and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States. Our responsibilities under those standards are further described in the *Auditor's Responsibilities for the Audit of the Financial Statements* section of our report. We are required to be independent of OPERS and to meet our other ethical responsibilities in accordance with the relevant ethical requirements relating to our audit. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinions.

Responsibilities of Management for the Financial Statements

Management is responsible for the preparation and fair presentation of the financial statements in accordance with accounting principles generally accepted in the United States of America and for 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.

In preparing the financial statements, management is required to evaluate whether there are conditions or events, considered in the aggregate, that raise substantial doubt about OPERS' ability to continue as a going concern for 12 months beyond the financial statement date, including any currently known information that may raise substantial doubt shortly thereafter.

To the Board of Trustees
Ohio Public Employees Retirement System
and the Honorable Keith Faber, Auditor of State

Auditor's Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinions. Reasonable assurance is a high level of assurance but is not absolute assurance and, therefore, is not a guarantee that an audit conducted in accordance with GAAS and *Government Auditing Standards* will always detect a material misstatement when it exists. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control. Misstatements are considered material if there is a substantial likelihood that, individually or in the aggregate, they would influence the judgment made by a reasonable user based on the financial statements.

In performing an audit in accordance with GAAS and *Government Auditing Standards*, we:

- Exercise professional judgment and maintain professional skepticism throughout the audit.
- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, and design and perform audit procedures responsive to those risks. Such procedures include examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements.
- Obtain an understanding of internal control relevant to the audit 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 OPERS' internal control. Accordingly, no such opinion is expressed.
- Evaluate the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluate the overall presentation of the financial statements.
- Conclude whether, in our judgment, there are conditions or events, considered in the aggregate, that raise substantial doubt about OPERS' ability to continue as a going concern for a reasonable period of time.

We are required to communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit, significant audit findings, and certain internal control-related matters that we identified during the audit.

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the management's discussion and analysis and other required supplementary information, as identified in the table of contents, be presented to supplement the basic financial statements. Such information is the responsibility of management and, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board, which 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 supplemental 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.

To the Board of Trustees
Ohio Public Employees Retirement System
and the Honorable Keith Faber, Auditor of State

Supplementary Information

Our audit was conducted for the purpose of forming opinions on the financial statements that collectively comprise Ohio Public Employees Retirement System's basic financial statements. The administrative expenses and schedule of investment expenses are presented for the purpose of additional analysis and are not a required part of the basic financial statements. Such information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the basic financial statements. The information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the administrative expenses and schedule of investment expenses are fairly stated in all material respects in relation to the basic financial statements as a whole.

Other Information

Management is responsible for the other information included in the Annual Comprehensive Financial Report. The other information comprises the introductory, investment, actuarial, statistical, and plan statement sections, as listed in the table of contents, but does not include the basic financial statements and our auditor's report thereon. Our opinions on the basic financial statements do not cover the other information, and we do not express an opinion or any form of assurance thereon.

In connection with our audit of the basic financial statements, our responsibility is to read the other information and consider whether a material inconsistency exists between the other information and the basic financial statements or whether the other information otherwise appears to be materially misstated. If, based on the work performed, we conclude that an uncorrected material misstatement of the other information exists, we are required to describe it in our report.

Other Reporting Required by *Government Auditing Standards*

In accordance with *Government Auditing Standards*, we have also issued our report dated May 4, 2023 on our consideration of Ohio Public Employees Retirement System's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, 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 Public Employees Retirement System'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 Public Employees Retirement System's internal control over financial reporting and compliance.

Plante & Moran, PLLC

May 4, 2023

The management of the Ohio Public Employees Retirement System (OPERS or System) offers readers of the System's financial statements this narrative overview of the financial activities of OPERS for the year ended December 31, 2022. This narrative is intended to supplement the System's financial statements. Readers are encouraged to consider the information presented here in conjunction with the financial statements that begin on page 32.

The *OPERS Annual Comprehensive Financial Report* (annual report) presents financial statements for the most recent year end. Users of this annual report can refer to the Statistical Section, beginning on page 159, for historical financial information.

Overview of the Financial Statements

The following discussion and analysis are intended to serve as an introduction to the OPERS financial statements. The basic financial statements include:

1. Combining Statement of Fiduciary Net Position
2. Combining Statement of Changes in Fiduciary Net Position
3. Notes to Combining Financial Statements

As required, this annual report also contains the following schedules, referred to as Required Supplementary Information:

1. Schedules of Changes in Net Pension Liability/(Asset) and Related Ratios—Traditional Pension Plan, Combined Plan and Member-Directed Plan
2. Schedules of Employer Contributions—Traditional Pension Plan, Combined Plan and Member-Directed Plan
3. Schedule of Investment Returns—Defined Benefit Portfolio
4. Schedule of Changes in Net OPEB Liability/(Asset) and Related Ratios—Health Care
5. Schedule of Employer Contributions—Health Care
6. Schedule of Investment Returns—Health Care Portfolio
7. Notes to Required Supplementary Information

Expenses associated with administering the System are presented immediately following the Notes to Required Supplementary Information in the following Additional Information schedules:

1. Administrative Expenses
2. Schedule of Investment Expenses

The financial statements contained in this annual report disclose financial data for each of the benefit plans and the health care trust described below. Please refer to the Plan Statement, beginning on page 215, for a summary description of the plan structures and benefits. These plans are established as separate legal entities in accordance with Internal Revenue Service (IRS) regulations and Ohio law and are summarized below.

- **The Traditional Pension Plan**

  The Traditional Pension Plan is a defined benefit plan in which a member's retirement benefits are calculated using a formula that considers years of service and final average salary (FAS). The pension benefits are funded by both member and employer contributions, and investment gains or losses on those contributions.

- **The Combined Plan**

  The Combined Plan is a hybrid defined benefit/defined contribution plan. Under the Combined Plan, members earn a formula benefit similar to, but at a factor less than, the Traditional Pension Plan benefit. This defined benefit is funded by employer contributions and associated investment earnings. Additionally, member contributions are deposited into a defined contribution account in which the member self-directs the investment. Upon retirement or termination, the member may choose a defined contribution retirement distribution that is equal in amount to the member's contributions to the plan and investment gains or losses on those contributions. Members may also elect to annuitize their defined contribution account balances. Effective January 1, 2022, new members may no longer select this plan, and current members may no longer make a plan change to this plan.

- **The Member-Directed Plan**

  The Member-Directed Plan is a defined contribution plan in which members self-direct the investment of both member and employer contributions. The retirement distribution under this plan is equal to the sum of member and vested employer contributions, plus investment gains or losses on those contributions. Employer contributions and associated investment gains or losses vest over a five-year period at a rate of 20% per year.

  Upon retirement or termination, the member may choose a defined contribution retirement distribution, including annuitization.

- **115 Health Care Trust**

  The 115 Health Care Trust (115 Trust or Health Care Trust) was established in 2014, under Section 115 of the Internal Revenue Code (IRC). The purpose of the 115 Trust is to fund health care for the Traditional Pension, Combined and Member-Directed plans. Medicare-enrolled retirees in the Traditional Pension and Combined plans may have an allowance deposited into a health reimbursement arrangement (HRA) account to be used toward the health care program of their choice selected with the assistance of an OPERS vendor. Through December 31, 2021, non-Medicare retirees in the Traditional Pension and Combined plans received an allowance to offset the premium of OPERS-sponsored health care coverage. Effective January 1, 2022, non-Medicare retirees converted to a Connector arrangement similar to the Medicare-enrolled retirees, and are no longer participating in OPERS provided self-insured group plans.

  Upon separation or retirement of Member-Directed Plan participants, participants may use the vested funds in their retiree medical account for qualified health care expenses. Vesting requirements for Member-Directed health care have changed over the life of the plan. Members with an account prior to July 1, 2015 become vested in the account at a rate of 20% for each year of participation until the member is fully vested at the end of five years. Effective July 1, 2015, new participants to the plan are required to participate for 15 years to become fully vested. Additional details on the OPERS health care program and the Member-Directed Plan health care vesting schedule can be found in the Plan Statement beginning on page 215.

Financial activity for each of the pension plans and the health care trust is reported in the basic combining financial statements described below.

- **Combining Statement of Fiduciary Net Position**

  The Combining Statement of Fiduciary Net Position is a point-in-time snapshot of fund balances at fiscal year-end for pension and health care. It reflects assets available to pay future benefits to retirees, and any liabilities owed as of the statement date. The resulting Net Position (equal to Assets less Liabilities and Deferred Inflows) represents the value of assets restricted for pension benefits and health care. (See Combining Statement of Fiduciary Net Position as of December 31, 2022 on page 32 of this report.)

- **Combining Statement of Changes in Fiduciary Net Position**

  The Combining Statement of Changes in Fiduciary Net Position displays the effect of financial transactions that occurred during the fiscal year, where Additions less Deductions equal Net Increase (or Net Decrease) in net position. This Net Increase or Decrease in net position reflects the change in the value of fiduciary net position that occurred between the current and prior year. (See Combining Statement of Changes in Fiduciary Net Position for the year ended December 31, 2022 on page 33 of this report.)

- **Notes to Combining Financial Statements**

  The Notes to Combining Financial Statements provide additional information that is essential for a comprehensive understanding of the data provided in the financial statements and is an integral part of the financial statements. These notes describe the accounting and administrative policies under which OPERS operates, and provide additional levels of detail for selected financial statement items. (See Notes to Combining Financial Statements, December 31, 2022 on pages 34-69 of this report.)

The financial statements described are prepared in accordance with Governmental Accounting Standards Board (GASB) pronouncements. Information on the significant accounting policies and recent GASB standards reviewed and adopted in the preparation of the financial statements can be found in Note 2 in the Notes to Combining Financial Statements beginning on page 42.

Because of the long-term nature of most pension plans, financial statements alone cannot provide sufficient information to properly reflect the ongoing plan perspective. Therefore, in addition to the financial statements, this annual report includes additional Required Supplementary Information (RSI) schedules and required notes. The RSI includes schedules of changes in net pension liability/(asset) and net other post-employment benefit (OPEB), or health care, liability/(asset), investment returns for the defined benefit portion of the pension plans and for the health care trust, and schedules of employer contributions for both defined benefit pension plans and health care. The schedules of funding progress for defined benefit pension plans and health care have been included in the Actuarial Section of this document. Each of the schedules includes historical-trend information when required by standards, except when historical information is unavailable prior to the implementation of GASB Statement No. 67 (GASB 67), *Financial Reporting for Pension Plans*, and GASB Statement No. 74 (GASB 74), *Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans.*

- **Schedules of Changes in Net Pension Liability/(Asset) and Related Ratios—Traditional Pension Plan, Combined Plan and Member-Directed Plan**

  The Schedules of Changes in Net Pension Liability/(Asset) and Related Ratios (pages 70-77) include actuarial information regarding the increase (or decrease) of each element of the net pension liability/(asset) between the beginning and end of the year for the OPERS defined benefit pension plans. The information reported in these schedules was calculated using the assumptions and requirements defined in GASB 67 (also referred to as the Accounting Basis throughout this document). The calculation method defined in GASB 67 requires different assumptions from those used to calculate the funded status of a plan (also referred to as the Funding Basis throughout this document). The key difference is the Accounting Basis schedule uses the fair value of assets rather than the smoothed value of assets used for the Funding Basis (refer to page 25 for additional information on actuarial smoothing techniques). Therefore, the GASB 67 Accounting Basis net pension liability/(asset) results differ from the Funding Basis unfunded actuarial accrued liability results provided in the Schedule of Funding Progress included on page 25 of this section and in the Actuarial Section of this document beginning on page 151. Although these changes affect the accounting information disclosed in the Notes to Combining Financial Statements and RSI, they do not have an effect on the actuarial methods and assumptions used by OPERS to determine the employer contributions needed to fund the plans.

  Historical information is not available prior to the GASB 67 implementation in 2014. The schedules will be expanded each subsequent year until they contain the required 10-year presentation.

- **Schedules of Employer Contributions—Traditional Pension Plan, Combined Plan and Member-Directed Plan**

  The Schedules of Employer Contributions (pages 78-79) provide historical-trend information regarding the value of total annual contributions required to be paid by employers for the employees participating in each plan, and the actual amounts remitted. The information contained in these schedules also reflects the required contributions based on the contribution rates approved by the OPERS Board of Trustees. The Member-Directed Plan is a defined contribution plan with the option for retirees to annuitize their benefit, which converts the retiree's benefit to a defined benefit. The employer contributions deposited to the defined benefit portion of the Member-Directed Plan are included in these schedules.

- **Schedule of Investment Returns—Defined Benefit Portfolio**

  The Schedule of Investment Returns (page 80) provides information regarding the annual money-weighted rates of return on pension plan investments in the Defined Benefit portfolio, as required by GASB 67. Historical information is not available prior to the GASB 67 implementation in 2014. The schedule will be expanded each subsequent year until it contains the required 10-year presentation.

- **Schedule of Changes in Net OPEB Liability/(Asset) and Related Ratios—Health Care**

  The Schedule of Changes in Net OPEB Liability/(Asset) and Related Ratios (page 82) includes actuarial information regarding the increase (or decrease) of each element of the net OPEB liability/(asset) between the beginning and end of the year for OPERS defined benefit health care plans. The values included in this schedule were calculated using the assumptions and requirements defined in GASB 74 (also referred to as the Accounting Basis throughout this document, similar to GASB 67). The calculation method defined in GASB 74 requires different assumptions from those used to calculate the funded status of a plan (also referred to as the Funding Basis throughout this document). Similar to GASB 67, the Accounting Basis requires the use of fair value of assets versus the smoothed value of assets used for the Funding Basis (refer to page 25 for additional information on actuarial smoothing techniques). Therefore, the GASB 74 Accounting Basis net OPEB liability/(asset) results differ from the Funding Basis unfunded actuarial accrued health care liability results provided in the Schedule of Funding Progress included on page 26 of this section and in the Actuarial Section of this document on page 153. Also similar to GASB 67, GASB 74 breaks the link between accounting and funding. While these changes will affect the accounting information disclosed in the Notes to Combining Financial Statements and RSI, they do not have an effect on the actuarial methods and assumptions used by OPERS to determine the employer contributions needed to fund the plans.

Historical information is not available prior to the GASB 74 implementation in 2017. The schedule will be expanded each subsequent year until it contains the required 10-year presentation.

- **Schedule of Employer Contributions—Health Care**

  The Schedule of Employer Contributions (page 84) presents historical-trend information regarding the value of actuarially determined health care contributions, and the actual amounts remitted. The information contained in this schedule also reflects the required contributions based on the contribution rates approved by the Board. Based on the provisions of GASB 74, all OPERS health care plans are considered to be defined benefit other post-employment plans. Therefore, the information contained in this schedule includes health care funding for the Traditional Pension Plan, the Combined Plan and the Member-Directed Plan.

- **Schedule of Investment Returns—Health Care Portfolio**

  The Schedule of Investment Returns (page 84) provides information regarding the annual money-weighted rates of return on investments in the Health Care portfolio, calculated and presented as required by GASB 74. Historical information is not available prior to the GASB 74 implementation in 2017. The schedule will be expanded each subsequent year until it contains the required 10-year presentation.

- **Notes to Required Supplementary Information**

  The Notes to Required Supplementary Information (pages 85-87) provides background information, a summary of the actuarial assumptions used in determining contribution rates for valuation of the pension plans and health care, and explanatory detail to help in understanding the required supplementary schedules.

The following schedules are provided as Additional Information regarding the expenses associated with administering the System:

- **Administrative Expenses**

  The Administrative Expenses schedule reflects the total operating costs of managing the System, by major expense category (page 88).

- **Schedule of Investment Expenses**

  The Schedule of Investment Expenses summarizes the costs incurred in managing the investment assets of the System (page 88). These costs are reported as Investment Administrative Expenses in the Combining Statement of Changes in Fiduciary Net Position, and are reflected as a reduction in net investment income or loss.

Financial Highlights

- OPERS net loss from investing activity for the year ended December 31, 2022 totaled $16.0 billion, a loss of 12.49%, compared to a gain of 15.20% in 2021. The total portfolio is divided into three sub-portfolios: the Defined Benefit portfolio, the Health Care portfolio, and the Defined Contribution portfolio. Investment returns presented for each portfolio within this Management's Discussion and Analysis are based on year-to-date, time-weighted returns. Net loss from investing activity for the Defined Benefit portfolio comprised $13.4 billion of this total, or a loss of 12.03% in 2022, compared to a gain of 15.34% in 2021. The Health Care portfolio had a net loss from investing activity of $2.2 billion, or a loss of 15.51% in 2022, compared to a gain of 14.34% in 2021. The Defined Contribution portfolio had a net loss from investing activity of $0.4 billion, or a loss of 16.00% in 2022, compared to a gain of 13.99% in 2021.
- Net position decreased by $20.2 billion to $106.8 billion as of December 31, 2022, compared to $127.0 billion in 2021. Table 1 presents a two-year comparative history of Changes in Fiduciary Net Position.

Changes in Fiduciary Net Position (for the years ended December 31, 2022 and 2021) **Table 1**

	2022	2021	Amount Increase/ (Decrease) from 2021 to 2022	Percent Increase/ (Decrease) from 2021 to 2022
Member and Employer Contributions	$4,006,145,035	$3,754,477,128	$251,667,907	6.7%
Contract Receipts and Other Income	122,730,911	131,986,381	(9,255,470)	(7.0)
Net Income/(Loss) from Investing Activity	(15,950,779,683)	17,131,577,656	(33,082,357,339)	(>100.0)
Total Additions	**(11,821,903,737)**	**21,018,041,165**	**(32,839,944,902)**	**(>100.0)**
Benefits, Health Care and Account Refunds	8,242,792,642	8,217,201,683	25,590,959	0.3
Administrative and Other Expenses	114,985,953	113,191,600	1,794,353	1.6
Total Deductions	**8,357,778,595**	**8,330,393,283**	**27,385,312**	**0.3**
Net Increase/(Decrease) in Fiduciary Net Position	**(20,179,682,332)**	**12,687,647,882**	**(32,867,330,214)**	**(>100.0)**
Net Position, Beginning of Year	126,956,802,811	114,269,154,929	12,687,647,882	11.1
Net Position, End of Year	**$106,777,120,479**	**$126,956,802,811**	**($20,179,682,332)**	**(15.9%)**

- OPERS continues its goal of ensuring financial stability of both the pension and health care funds. In 2021, the Board adopted changes to the pension and health care actuarial assumptions based on the results of an experience study for the period 2016 through 2020. The experience study incorporates both a historical review and forward-looking projections to determine the appropriate assumptions to maintain the pension plan on a path toward full funding. As reported in 2021, the most notable change was a reduction in the actuarial assumed rate of return for pension from 7.2% to 6.9%. Refer to the Actuarial Section, beginning on page 135, for more information on actuarial assumptions.
- Table 2 provides the current pension funding as of December 31, 2022. The health care funding presented in Table 3 is a year in arrears as the most recent health care funding information is as of December 31, 2021.

- To fully understand the funding status of a retirement system, it is advisable to view actuarial data in conjunction with financial data. Both Tables 2 and 3 are presented on the Funding Basis. Under the Funding Basis, value of assets is based on the actuarial value of assets which smooths market gains and losses over a rolling four-year period, subject to a 12% market corridor. This differs from the Accounting Basis (or GASB 67 and GASB 74 basis), which calculates the funding status using the market value of assets.

Schedule of Funding Progress—Funding Basis ($ in millions) **Defined Benefit Plans[1]—Table 2**

Valuation Year	Actuarial Accrued Liabilities (AAL)	Valuation Assets	Unfunded Actuarial Accrued Liabilities (UAAL)	Ratio of Assets to AAL	Funding Years
2022	$122,463	$102,852	$19,611	84.0%	16
2021	118,517	99,710	18,807	84.1	16
2020[a]	115,242	93,970	21,272	81.5	21
2020[b]	113,372	93,970	19,402	82.9	18
2019	111,371	88,572	22,799	79.5	23
2018	108,705	84,287	24,418	77.5	27
2017[c]	106,090	83,292	22,798	78.5	25
2017	102,656	83,292	19,364	81.1	18
2016	100,167	80,280	19,887	80.1	19
2015[a]	97,177	78,061	19,116	80.3	20
2015[b]	91,832	78,061	13,771	85.0	19
2014	89,285	74,865	14,420	83.8	21
2013	86,645	71,411	15,234	82.4	24

[a] Revised actuarial assumptions based on experience study.

[b] Results from original valuation prior to restatement after completion of experience study.

[c] Results after change in discount rate from 7.5% to 7.2%.

[1] Defined Benefit Plans include the Traditional Pension Plan, the defined benefit portion of the Combined Plan and purchased annuities in the Member-Directed Plan.

- As a result of actuarial smoothing techniques, the fair value of assets may be significantly different from the funding value (actuarial value) of assets at a given point in time. This means that in periods of extended market decline the fair value of assets will usually be less than the funding, or actuarial value, of assets. Conversely, during periods of extended market gains, the fair value of assets will usually be greater than the funding, or actuarial value, of assets.

- To ensure the funding value of assets and the market value of assets remain within reasonable proximity of each other, OPERS uses a 12% market corridor in conjunction with its four-year smoothing. This policy ensures that the funding value of assets is within 88% to 112% of the market value of the assets. At the end of 2021, the market value of assets was higher than the funding value by $10.5 billion. At the end of 2022, the market value of assets was lower than the funding value by $9.7 billion.

- By law, OPERS is obligated to pay certain benefits that have commenced with retirees. To make these payments each year, and to account for benefits that have commenced with retirees, OPERS transfers funds from the active member (the Employers' Accumulation Fund) to the retiree funds (the Annuity and Pension Reserve Fund and the Survivors' Benefit Fund). Thus, the Traditional Pension Plan active member funding is 55.3% and 55.2% as of December 31, 2022 and 2021, respectively, after this annual transfer.

- As of December 31, 2022, the date of the latest actuarial valuation, the funded ratio for defined benefit pensions was 84%. In general, this means that for each dollar of future pension liability, OPERS has accumulated approximately $0.84 to meet that obligation. The funded ratio remained the same in 2022 as in 2021, due primarily to the $10.5 billion in unrealized investment gains from prior years smoothed into the 2022 valuation offsetting all of the portion of the investment loss recognized in 2022. If current assumptions are met, OPERS would accumulate sufficient assets to pay all pension liabilities for active members and retirees within 16 years on a Funding Basis, which was consistent with 2021.

Schedule of Funding Progress—Funding Basis ($ in millions) **Health Care—Table 3**

Valuation Year	Actuarial Accrued Liabilities (AAL)	Valuation Assets	Unfunded Actuarial Accrued Liabilities (UAAL)	Ratio of Assets to AAL	Solvency Years[1]
2021	$11,037	$12,713	($1,676)	115.2%	29
2020[a]	11,215	12,385	(1,170)	110.4	25
2020[b]	11,414	12,385	(971)	108.5	25
2019[c]	11,462	11,943	(481)	104.2	23
2018	17,849	11,647	6,202	65.3	11
2017[d]	18,393	12,021	6,372	65.4	13
2017	17,389	12,021	5,368	69.1	13
2016	19,924	12,098	7,826	60.7	12
2015[a]	19,224	11,933	7,291	62.1	Indefinite
2015[b]	18,515	11,933	6,582	64.5	Indefinite
2014	19,405	12,062	7,343	62.2	Indefinite
2013	19,784	12,031	7,753	60.8	Indefinite
2012	19,182	12,193	6,989	63.6	Indefinite

[a] Revised actuarial assumptions based on experience study.

[b] Results from original valuation prior to restatement after completion of experience study.

[c] Results reflect health care program changes effective January 2022, approved by the Board in January 2020.

[d] Results after change in discount rate from 6.5% to 6.0%.

[1] Solvency Years represents an estimate of the number of years the fund will be able to provide health care under the intermediate actuarial assumptions. Indefinite indicates funds are expected to be sufficient to fund future health care needs.

- The funding objective is to meet long-term pension benefit obligations and, to the extent possible, fund post-employment health care. As of December 31, 2021, the date of the latest health care actuarial valuation, under the Funding Basis, the actuarial liability for health care was $11.0 billion and the System had accumulated assets of $12.7 billion for that obligation, an excess of $1.7 billion. This compares to the 2020 excess assets of $1.2 billion, post-experience study. The funded ratio increased from 110.4% at the end of 2020, post-experience study, to 115.2% in 2021 due primarily to investment gains from 2021.
- Health care coverage is not statutorily guaranteed and is subordinate to pension funding. Beginning in 2018, OPERS allocated all of the 14% employer contribution rate to funding pension for both the Traditional Pension and Combined plans with no funding to health care. Effective July 1, 2022, OPERS began allocating 2% of the 14% employer contribution rate to health care funding for the Combined Plan. The portion of the 14% employer contribution rate allocated to health care for the Member-Directed Plan remains at 4%.

- The funding progress of health care is measured in terms of solvency years, or the number of years funds are projected to be available to pay health care expenses under the current plan design before health care would be reduced to a pay-as-you-go basis. As of December 31, 2021, the date of the latest health care actuarial valuation under the Funding Basis, health care funding is expected to remain solvent for 29 years, compared to 25 years in 2020, an improvement due primarily to the investment gains of 2021. Refer to Table 3 for a comparative history of actuarial liabilities and solvency years for health care.

Analysis of Financial Activities

The OPERS funding objective is to meet long-term benefit obligations with investment income and contributions. The following discussion provides an analysis of the current-year financial activities. Comparative data is presented, where appropriate.

Additions to Fiduciary Net Position (Revenues)

The reserves needed to finance retirement benefits are accumulated primarily through the collection of member and employer contributions and investment income (net of investment expense). Revenues (Additions to Fiduciary Net Position) for the year 2022 represented a net loss of $11.8 billion, and include net loss from investment activities of almost $16.0 billion, offset by member and employer contributions of $4.0 billion and other income totaling approximately $0.1 billion. Other income consists of purchased service agreements, employer interest and penalty charges, vendor performance guarantees, interplan activities, and miscellaneous other income. Interplan Activity in Table 4 represents transactions between plans that are additions to plan assets. Additions to plan net position for the year 2021 were $21.0 billion, comprised of $3.8 billion in contribution revenues, $17.1 billion in net income from investment activities, and other income totaling approximately $0.1 billion. Refer to Table 4 for a comparative history of Additions to Fiduciary Net Position.

Additions to Fiduciary Net Position (Revenues) (for the years ended December 31, 2022 and 2021) **Table 4**

	2022	2021	Amount Increase/ (Decrease) from 2021 to 2022	Percent Increase/ (Decrease) from 2021 to 2022
Member Contributions	$1,669,552,482	$1,564,633,333	$104,919,149	6.7%
Employer Contributions	2,336,592,553	2,189,843,795	146,748,758	6.7
Contract and Other Receipts	78,897,024	91,249,363	(12,352,339)	(13.5)
Other Income, net	583,828	490,886	92,942	18.9
Interplan Activity	43,250,059	40,246,132	3,003,927	7.5
Net Income/(Loss) from Investing Activity	(15,950,779,683)	17,131,577,656	(33,082,357,339)	(>100.0)
Total Additions	**($11,821,903,737)**	**$21,018,041,165**	**($32,839,944,902)**	**(>100.0%)**

Member and employer contributions for 2022 increased by $251.7 million, or 6.7%, compared to 2021. Member and employer contributions include amounts paid by active members and their employers for future retirement benefits. In general, as wages rise, the retirement contributions from active members, and their employers, also increase. These contributions can also be influenced by the number of active members that retire, as retirees are often replaced with less-tenured or entry-level staff. The 2022 increase in contributions primarily reflects the impact of wage inflation, and is greater than the 2021 increase in contributions of 3.1%. Another factor contributing to the increase in 2022 activity over 2021 was a 13.7% decline in new retirements and an increase in the actively contributing member population of 2.6%.

Contract and Other Receipts represents funds received for member purchase of service contracts, employer early retirement incentive programs, and funds received from other Ohio retirement systems for members with service credit at more than one retirement system. These receipts totaled $78.9 million in 2022, compared to $91.2 million received in 2021. This net decrease of $12.4 million occurred due to a decrease in retirement transfers from other Ohio retirement systems for members selecting a joint retirement option of $12.0 million.

Other Income, net, is comprised of miscellaneous proceeds, gains or losses on the disposal of capital assets and litigation settlements activity. Other income for 2022 was $0.6 million, compared to $0.5 million in 2021. This activity typically fluctuates from year-to-year. In 2022, other income was primarily comprised of rental income of $0.5 million, which remained flat compared to 2021.

Interplan Activity represents transfers to record activity occurring between the plans. This activity includes members changing from one plan to another. Interplan Activity in 2022 resulted in a net inflow of $43.3 million, compared to $40.2 million in 2021. Since this activity represents payments between plans, there is a corresponding interplan expense activity of the same amount in each year. (Refer also to the Deductions from Fiduciary Net Position discussion beginning below.)

Net Income/(Loss) from Investing Activity represents total investment income or loss, net of external management fees and investment administrative expenses. Investment income or loss includes dividends, interest, gains or losses on the sale of investments, and change in fair value of investments. OPERS reflects both income or loss and management fees from external managers in this category.

Investment Administrative Expenses includes investment-specific expenses such as staff wages, professional services contracted by the Board, legal services and a share of the OPERS facility and operational costs. For a discussion on current-year activity within Net Loss from Investing Activity, refer to the Financial Highlights section beginning on page 24.

Deductions from Fiduciary Net Position (Expenses)

OPERS was created to provide retirement, survivor, and disability benefits to qualified members and their beneficiaries. The cost of such programs includes recurring benefit payments, elective refunds of contributions to members who terminate employment with a participating employer, and the cost of administering the System.

Expenses (Deductions from Fiduciary Net Position) for 2022 were $8.4 billion, an increase of less than $0.1 billion, or 0.3%, compared to 2021. Total pension benefits and health care expenses combined remained flat at $7.6 billion from 2021 to 2022. Included within health care costs were $64.5 million and $221.1 million in 2022 and 2021, respectively, in health care-related receipts netted against health care expenses. Pension benefits and health care expenses paid on behalf of current retirees and their beneficiaries comprised approximately 91.3% of the total expenses reported. Refunds of member contributions, including interest and additional payments on withdrawal where required by statute, fluctuate each year, and were $613.7 million in 2022, or 3.8% higher than 2021. Non-investment related administrative expenses decreased slightly to $71.7 million, or 1.7%, and represented 0.9% of the total expenses. The remaining expenses were comprised of interplan activity transactions representing the expenses associated with members changing from one plan to another. Refer to Table 5 for a comparative history of Deductions from Fiduciary Net Position.

Deductions from Fiduciary Net Position (Expenses) (for the years ended December 31, 2022 and 2021) **Table 5**

	2022	2021	Amount Increase/ (Decrease) from 2021 to 2022	Percent Increase/ (Decrease) from 2021 to 2022
Benefits—Pension	$7,037,982,598	$6,772,996,281	$264,986,317	3.9%
Benefits—Health Care Expenses	591,090,699	853,113,419	(262,022,720)	(30.7)
Refunds	613,719,345	591,091,983	22,627,362	3.8
Administrative Expenses	71,735,894	72,945,468	(1,209,574)	(1.7)
Interplan Activity	43,250,059	40,246,132	3,003,927	7.5
Total Deductions	**$8,357,778,595**	**$8,330,393,283**	**$27,385,312**	**0.3%**

Pension benefits totaled $7.0 billion in 2022, an increase of $0.3 billion, or 3.9%, over 2021 benefits. The increase in 2022 reflects the combination of a net growth of 1% in the total number of retirees and beneficiaries receiving benefits, an annual simple cost-of-living adjustment granted on the retiree's benefit anniversary, and demographic changes in the retiree population. Total pension benefits will continue to increase as the retiree population increases and wage growth and price inflation increase pension benefit amounts. The cumulative increase associated with the cost-of-living adjustments was $1.6 billion at the end of 2022. Refer to the Schedules of Average Benefits on page 203 of the Statistical Section for details related to the new retiree populations by year. Refer to the Plan Statement beginning on page 215 for details on pension benefits.

Total health care expenses decreased in 2022 by $262.0 million, or 30.7%, to $591.1 million, compared to 2021. Health care receipts, or payments, from retirees and health care vendors to OPERS, including retiree-paid health care premiums (for dental and vision plans) and prescription rebates, offset the related health care expenses incurred by OPERS during the year by $64.5 million, compared to $221.1 million in 2021. The significant decrease in health care expenses is a result of the changes to the health care program effective January 1, 2022. The most significant of these changes was the termination of the OPERS sponsored group health plans for non-Medicare retirees. Instead, eligible non-Medicare retirees received a monthly HRA allowance for reimbursement of health care coverage premiums and other qualified medical expenses. In addition, changes were made to the base allowance and eligibility criteria for Medicare retirees receiving an HRA allowance. Upon termination of the group health plans, the only remaining retiree-paid health care premiums are for the OPERS sponsored dental and vision plans. Retirees are responsible for their full insurance premiums, which OPERS remits to the plan providers on their behalf. Therefore, dental and vision expenses closely approximate the related health care receipts.

Refunds of member accounts are at the discretion of the member and vary from year-to-year. Members may refund their account if they have been separated from OPERS-covered employment for at least two months, representing disbursements of inactive member accounts. In 2022, member-elected refunds totaled $613.7 million, compared to $591.1 million in 2021. The number of refunded accounts increased by 5.2% in 2022 compared to 2021, while the average member balance refunded in 2022 decreased to approximately $24,800 from approximately $25,100 in 2021.

OPERS has consistently managed its administrative expense budget with no material variances in either 2022 or 2021. Administrative Expenses shown in Table 5 do not include investment administrative expenses. Administrative Expenses totaled $71.7 million in 2022, compared to $72.9 million in 2021. Administrative Expenses primarily declined as a result of a decrease in personnel expenses, partially due to lower headcount throughout 2022 and capitalizing more labor costs in 2022 compared to 2021. This capitalized labor is associated with strategic information technology projects involving current system and infrastructure enhancements and replacements.

Net Position Summary

Net position may serve over time as a useful indicator of OPERS' financial status. At the close of calendar years 2022 and 2021, the net positions of OPERS totaled $106.8 billion and $127.0 billion, respectively. Net position is available to meet OPERS ongoing obligations to plan participants and their beneficiaries, and to the extent possible, OPERS post-employment health care.

Net Position (as of December 31, 2022 and 2021) **Table 6**

	2022	2021	Amount Increase/ (Decrease) from 2021 to 2022	Percent Increase/ (Decrease) from 2021 to 2022
Current and Other Assets	$857,560,613	$892,178,613	($34,618,000)	(3.9%)
Cash and Investments at Fair Value	116,965,534,407	134,470,493,844	(17,504,959,437)	(13.0)
Net Capital Assets	133,924,583	132,058,024	1,866,559	1.4
Total Assets	**117,957,019,603**	**135,494,730,481**	**(17,537,710,878)**	**(12.9)**
Total Liabilities	**11,177,769,205**	**8,535,313,575**	**2,642,455,630**	**31.0**
Total Deferred Inflows	**2,129,919**	**2,614,095**	**(484,176)**	**(18.5)**
Net Position, End of Year	**106,777,120,479**	**126,956,802,811**	**(20,179,682,332)**	**(15.9)**
Net Position, Beginning of Year	126,956,802,811	114,269,154,929	12,687,647,882	11.1
Net Increase/(Decrease) in Net Position	**($20,179,682,332)**	**$12,687,647,882**	**($32,867,330,214)**	**(>100.0%)**

Summary

OPERS remains dedicated to keeping this System strong today and well into the future. OPERS continues to manage the System in a manner that proactively addresses issues and trends; thus contributing to the strength of the System. The funding levels and 2022 results are found, in detail, and by category, in this annual report.

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Combining Statement of Fiduciary Net Position (as of December 31, 2022)

	Pension				
	Traditional Pension Plan	Combined Plan	Member-Directed Plan	115 Health Care Trust	Total Pension and Health Care
Assets					
Cash and Cash Equivalents	**$3,700,954,820**	**$55,984,832**	**$423,749**	**$599,117,458**	**$4,356,480,859**
Receivables					
Members and Employers	420,473,269	11,358,353	16,348,630	3,648,553	451,828,805
Vendor and Other	5,035,612	—	—	760,750	5,796,362
Investment Sales Proceeds	70,074,717	810,006	359,050	5,777,133	77,020,906
Accrued Interest and Dividends	267,469,868	2,440,873	108,823	51,436,232	321,455,796
Total Receivables	**763,053,466**	**14,609,232**	**16,816,503**	**61,622,668**	**856,101,869**
Investments					
Fixed Income	21,277,531,735	273,281,495	156,798,067	4,489,603,482	26,197,214,779
Domestic Equities	19,620,261,714	423,706,486	482,231,110	3,505,476,720	24,031,676,030
Real Estate	11,717,790,461	106,989,399	4,874,738	—	11,829,654,598
Private Equity	13,247,591,512	120,957,262	5,511,153	—	13,374,059,927
International Equities	19,074,850,422	205,225,844	68,148,257	2,755,333,550	22,103,558,073
Risk Parity	2,929,074,589	26,743,944	1,218,529	208,064,227	3,165,101,289
Collective Trust Funds	—	374,420,846	725,788,037	—	1,100,208,883
Other Investments	61,555,664	562,035	25,608	4,307,527	66,450,834
Total Investments	**87,928,656,097**	**1,531,887,311**	**1,444,595,499**	**10,962,785,506**	**101,867,924,413**
Collateral on Loaned Securities	**8,773,919,816**	**80,366,522**	**3,661,742**	**1,883,181,055**	**10,741,129,135**
Capital Assets					
Land	2,626,888	82,647	82,550	942,728	3,734,813
Building and Building Improvements	77,564,107	2,440,315	2,437,459	27,835,927	110,277,808
Furniture and Equipment	115,254,462	4,646,495	3,271,593	43,454,909	166,627,459
Intangible Right-to-use Assets	20,791,324	427,045	400,582	3,277,868	24,896,819
Total Capital Assets	216,236,781	7,596,502	6,192,184	75,511,432	305,536,899
Accumulated Depreciation and Amortization	(121,050,969)	(3,644,738)	(3,369,096)	(43,547,513)	(171,612,316)
Net Capital Assets	**95,185,812**	**3,951,764**	**2,823,088**	**31,963,919**	**133,924,583**
Prepaid Expenses and Other Assets	**1,458,744**	**—**	**—**	**—**	**1,458,744**
TOTAL ASSETS	**101,263,228,755**	**1,686,799,661**	**1,468,320,581**	**13,538,670,606**	**117,957,019,603**
Liabilities and Deferred Inflows					
Liabilities					
Benefits Payable	3,070,596	—	—	146,568,144	149,638,740
Investment Commitments Payable	198,814,771	2,197,041	822,725	43,428,618	245,263,155
Accounts Payable and Other Liabilities	40,927,964	—	—	13,947	40,941,911
Obligations Under Securities Lending	8,774,571,215	80,371,517	3,662,008	1,883,320,659	10,741,925,399
Total Liabilities	**9,017,384,546**	**82,568,558**	**4,484,733**	**2,073,331,368**	**11,177,769,205**
Deferred Inflows—Lessor Obligations	**2,129,919**	**—**	**—**	**—**	**2,129,919**
TOTAL LIABILITIES AND DEFERRED INFLOWS	**9,019,514,465**	**82,568,558**	**4,484,733**	**2,073,331,368**	**11,179,899,124**
Net Positions Restricted for Pensions and OPEB	**$92,243,714,290**	**$1,604,231,103**	**$1,463,835,848**	**$11,465,339,238**	**$106,777,120,479**

See Notes to Combining Financial Statements, beginning on page 34.

Combining Statement of Changes in Fiduciary Net Position (for the year ended December 31, 2022)

	Pension				
	Traditional Pension Plan	Combined Plan	Member-Directed Plan	115 Health Care Trust	Total Pension and Health Care
Additions					
Member Contributions	$1,553,362,013	$46,703,853	$69,486,616		$1,669,552,482
Employer Contributions	2,174,135,884	60,507,524	72,049,664	$29,899,481	2,336,592,553
Contract and Other Receipts	75,474,137	252,357	1,514,799	1,655,731	78,897,024
Other Income, net	583,828	—	—	—	583,828
Interplan Activity	43,250,059	—	—	—	43,250,059
Total Non-investment Additions	**3,846,805,921**	**107,463,734**	**143,051,079**	**31,555,212**	**4,128,875,946**
Income/(Loss) from Investing Activities					
Net Decrease in the Fair Value of Investments	(16,228,767,544)	(291,992,504)	(279,742,979)	(2,486,728,932)	(19,287,231,959)
Bond Interest	758,880,210	7,843,925	2,017,059	137,805,771	906,546,965
Dividends	888,283,852	8,205,460	502,386	159,983,217	1,056,974,915
Real Estate Operating Income, net	701,612,044	6,426,479	292,809	—	708,331,332
Private Equity Income, net	1,210,219,816	11,085,117	505,069	—	1,221,810,002
Other Investment Income/(Loss)	(6,513,171)	(1,397,287)	(2,549,983)	13,897,764	3,437,323
External Asset Management Fees	(522,604,542)	(5,017,214)	(695,973)	(11,791,604)	(540,109,333)
Net Investment Loss	**(13,198,889,335)**	**(264,846,024)**	**(279,671,612)**	**(2,186,833,784)**	**(15,930,240,755)**
From Securities Lending Activity					
Securities Lending Income	150,959,708	1,382,730	63,002	28,913,059	181,318,499
Securities Lending Expenses	(129,780,496)	(1,188,737)	(54,163)	(24,856,640)	(155,880,036)
Net Securities Lending Income	21,179,212	193,993	8,839	4,056,419	25,438,463
Unrealized Gain	778,796	7,079	323	175,778	961,976
Net Income from Securities Lending	**21,958,008**	**201,072**	**9,162**	**4,232,197**	**26,400,439**
Investment Administrative Expenses	(40,067,137)	(592,298)	(589,855)	(5,690,077)	(46,939,367)
Net Loss from Investing Activity	**(13,216,998,464)**	**(265,237,250)**	**(280,252,305)**	**(2,188,291,664)**	**(15,950,779,683)**
TOTAL ADDITIONS	**(9,370,192,543)**	**(157,773,516)**	**(137,201,226)**	**(2,156,736,452)**	**(11,821,903,737)**
Deductions					
Benefits	7,020,851,312	12,311,032	4,820,254	591,090,699	7,629,073,297
Refunds of Contributions	520,523,234	24,246,717	68,949,394	—	613,719,345
Administrative Expenses	54,378,489	2,835,387	2,349,103	12,172,915	71,735,894
Interplan Activity	—	18,208,157	25,041,902	—	43,250,059
TOTAL DEDUCTIONS	**7,595,753,035**	**57,601,293**	**101,160,653**	**603,263,614**	**8,357,778,595**
Net Decrease in Fiduciary Net Position	(16,965,945,578)	(215,374,809)	(238,361,879)	(2,760,000,066)	(20,179,682,332)
Net Positions Restricted for Pensions and OPEB					
Balance, Beginning of Year	109,209,659,868	1,819,605,912	1,702,197,727	14,225,339,304	126,956,802,811
Balance, End of Year	**$92,243,714,290**	**$1,604,231,103**	**$1,463,835,848**	**$11,465,339,238**	**$106,777,120,479**

See Notes to Combining Financial Statements, beginning on page 34.

1. Description of OPERS

a. **Organization**—The Ohio Public Employees Retirement System (OPERS or System) 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 hybrid defined benefit/defined contribution plan; and the Member-Directed Plan, a defined contribution plan. Effective January 1, 2022 the Combined Plan is no longer available for member selection. OPERS is a qualified governmental plan under Section 401(a) of the Internal Revenue Code (IRC). OPERS is administered in accordance with Chapter 145 of the Ohio Revised Code (ORC). 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 January 1, 2003) have 180 days from the commencement of employment to select membership in one of the 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.

The OPERS health care plans are reported as cost-sharing, multiple-employer 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. At inception of the health care plan in 1976, five or more years of service were required to qualify for health care coverage. In 1986, the years of service requirement changed to 10 or more years. Beginning January 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 for Medicare retirees enrolled in Medicare A and B, and beginning 2022 for non-Medicare retirees, eligible Traditional Pension Plan and Combined Plan retirees were able to participate in the OPERS Connector (Connector). The Connector, a vendor selected by OPERS, assists eligible retirees in the evaluation, selection and purchase of a health care plan on the open market. Eligible retirees may receive a monthly allowance in their health reimbursement arrangement (HRA) account that can be used to reimburse eligible health care expenses.

Member-Directed Plan members also have access to the Connector vendor. 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. Please see the Plan Statement beginning on page 215 for additional details.

OPERS maintains one health care trust, the 115 Health Care Trust (115 Trust), which was established in 2014 to fund health care for the Traditional Pension, Combined and Member-Directed plans.

The accompanying financial statements comply with the provisions of GASB Statement No. 14, *The Financial Reporting Entity*, and with the provisions of GASB Statement No. 39, *Determining Whether Certain Organizations Are Component Units—an amendment of GASB Statement No. 14*. These statements require that financial statements of the reporting entity include all the organizations, activities, functions and component units for which the reporting entity is financially accountable. Financial accountability is defined as the appointment of a voting majority of the component unit's board of directors and either (1) the reporting entity's ability to impose its will over the component unit, or (2) the possibility that the component unit will provide a financial benefit to, or impose a financial burden on, the reporting entity. OPERS does not have financial accountability over any entities.

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 Board is the governing body of OPERS, with responsibility for administration and management. Of the Board, 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 an investment expert Board member. The Director of the Ohio Department of Administrative Services completes the Board.

The Board appoints the Executive Director, an actuary, investment consultants and other consultants necessary for the transaction of business. The Board typically meets monthly and receives no compensation, but is reimbursed for necessary expenses.

Plan membership—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 (five years) are entitled to a future retirement benefit from OPERS. Employer, member and retiree data as of December 31, 2022 is found below.

Plan Membership

				115 Health Care Trust[2]		
As of December 31, 2022	Traditional Pension Plan	Combined Plan[1]	Member-Directed Plan	Traditional Pension and Combined Plans Retiree-Sponsored Programs	Member-Directed Plan Retiree-Sponsored Program	2022 Total
Employer Units						**3,689**
State Division						240
Local Division						3,210
Law Enforcement and Public Safety Divisions						239
Retirees and Inactive Members—Defined Benefit Pension						**948,585**
Retirees and Primary Beneficiaries currently receiving benefits	219,625	620	422			220,667
Dependents and Other Beneficiaries currently receiving benefits	4,165	12	3			4,180
Inactive Members eligible for, but not yet receiving, benefits[3]	11,515	160				11,675
Inactive Members not yet age-eligible for benefits[3]	30,455	904				31,359
Inactive Members eligible for refund value of account only[3]	679,152	1,552				680,704
Retirees and Inactive Members—Defined Contribution Accounts						**6,405**
Retirees currently receiving benefits		2	2			4
Inactive Members			6,401			6,401
Retirees and Inactive Members—Health Care						**145,504**
Retirees and Primary Beneficiaries currently receiving benefits				134,711	7,432	142,143
Dependents and Other Beneficiaries currently receiving benefits				181		181
Inactive Members eligible for, but not yet receiving, benefits				3,180		3,180
Active Members						**297,827**
State Division	100,875	2,464	3,668			107,007
Local Division	172,373	4,128	6,418			182,919
Law Enforcement Division	7,857					7,857
Public Safety Division	44					44

[1] Combined Plan members receiving a defined formula benefit may also be receiving a distribution of their defined contribution account, therefore may be counted more than once in this table.

[2] All health care coverage is funded through the 115 Health Care Trust. This table reflects the breakout of health care programs between those supporting members in the Traditional Pension Plan and Combined Plan, and a separate column for the Member-Directed Plan.

[3] Inactive members in transition Groups A and B with at least five years of service are eligible for a retirement benefit at the age of 60. Inactive members in transition Group C with at least five years of service are eligible for a retirement benefit at the age of 62. Inactive members with less than five years of service are eligible for a refund of account. Inactive members with five or more years of service are displayed based on their age eligibility for a retirement benefit as of the end of the year.

b. **Benefits**—All benefits of the System, and any benefit increases, are established by the legislature pursuant to ORC Chapter 145. The Board, 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 Board.

- ***Age-and-Service Defined Benefits***—Effective January 7, 2013, Senate Bill (SB) 343 modified components of the Traditional Pension Plan and Combined Plan. Members were impacted (to varying degrees) by the changes based on their transition group. Three transition groups (A, B and C) were designed to ease the transition for key components of the pension plan changes. Members who were eligible to retire under law in effect prior to SB 343, or were eligible to retire no later than five years after January 7, 2013, comprise transition Group A. Members who had at least 20 years of service credit prior to January 7, 2013, or will be eligible to retire no later than 10 years after January 7, 2013, are included in transition Group B. Group C included those members who are not in either of the other groups and members who were hired on or after January 7, 2013. Please see the Plan Statement for additional details.

  Benefits in the Traditional Pension Plan for State and Local members are calculated on the basis of age, final average salary (FAS), and service credit. State and Local members in transition Groups A and B are eligible for retirement benefits at age 60 with five years of service credit or at age 55 with 25 or more years of service credit. Group C for State and Local is eligible for retirement benefits at age 57 with 25 years of service or at age 62 with five years of service. For Groups A and B, the annual benefit is based on 2.2% of FAS multiplied by the actual years of service for the first 30 years of service credit and 2.5% for years of service in excess of 30 years. For Group C, the annual benefit applies a factor of 2.2% for the first 35 years and a factor of 2.5% for the years of service in excess of 35. FAS represents the average of the three highest years of earnings over a member's career for Groups A and B. Group C is based on the average of the five highest years of earnings over a member's career. Refer to the age-and-service tables located in the Plan Statement beginning on page 215 for additional information regarding the requirements for reduced and unreduced benefits. Members who retire before meeting the age-and-years of service credit requirement for unreduced benefits receive a percentage reduction in the benefit amount. The amount of a member's pension benefit vests upon receipt of the initial benefit payment.

  Effective January 1, 2001, House Bill 416 divided the OPERS Law Enforcement Program into two separate divisions: Law Enforcement and Public Safety. Both groups of members, as defined in ORC Chapter 145, and updated in House Bill 520, are eligible for special retirement options under the Traditional Pension Plan and are not eligible to participate in the Member-Directed Plan or Combined Plan. Public Safety members may file an application for full retirement benefits at age 48 or older with 25 or more years of credited service or 52 or older with 15 or more years of credited service for Groups A and B. Public Safety Group C is eligible for benefits at age 52 or older with 25 years or at age 56 or older with 15 years. Those members classified as Law Enforcement officers are eligible for full retirement at age 52 or older with 15 or more years of credited service for Group A. Law Enforcement Group B is eligible at age 48 or older with 25 years or at age 52 or older with 15 years of service. Law Enforcement Group C is eligible at age 48 or older with 25 years of service or at age 56 with 15 years of service. Annual benefits under both divisions are calculated by multiplying 2.5% of FAS by the actual years of service for the first 25 years of service credit, and 2.1% of FAS for each year of service over 25 years. These options also permit early retirement under qualifying circumstances as early as age 48 with a reduced benefit.

Prior to 2000, payments to OPERS benefit recipients were limited under Section 415(b) of the IRC. OPERS entered into a Qualified Excess Benefit Arrangement (QEBA) with the IRS to allow OPERS benefit recipients to receive their full statutory benefit even when the benefit exceeds IRC 415(b) limitations. Monthly QEBA payments start when the total amount of benefits received by the recipients exceeds the IRC limit each year. The portion of the benefit in excess of the IRC 415(b) limit is paid out of the QEBA and taxed as employee payroll in accordance with IRS regulations.

Benefits in the Combined Plan consist of both an age-and-service formula benefit (defined benefit) and a defined contribution element. The defined benefit element is calculated on the basis of age, FAS, and years of service. Eligibility regarding age and years of service in the Combined Plan is the same as the Traditional Pension Plan. The benefit formula for the defined benefit component of the plan for State and Local members in transition Groups 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 transition 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. Persons retiring before age 65 with less than 30 years of service credit receive a percentage reduction in benefit.

- ***Defined Contribution Benefits***—Defined contribution plan benefits are established in the plan documents, which may be amended by the Board. Member-Directed Plan and Combined Plan members who have met the retirement eligibility requirements may apply for retirement benefits. The amount available for defined contribution benefits in the Combined Plan consists of the member's contributions plus or minus the investment gains or losses resulting from the member's investment selections. Combined Plan members wishing to receive benefits must meet the requirements for both the defined benefit and defined contribution plans. Member-Directed participants must have attained the age of 55, have money on deposit in the defined contribution plan and have terminated public service to apply for retirement benefits. The amount available for defined contribution benefits in the Member-Directed Plan consists of the members' contributions, vested employer contributions and investment gains or losses resulting from the members' investment selections. Employer contributions and associated investment earnings vest over a five-year period, at a rate of 20% each year. At retirement, members may select one of several distribution options for payment of the vested balance in their individual accounts. Options include the annuitization of their benefit account (which includes joint and survivor options and will continue to be administered by OPERS), partial lump-sum payments (subject to limitations), a rollover of the vested account balance to another financial institution, receipt of entire account balance (net of taxes withheld), or a combination of these options. When members choose to annuitize their defined contribution benefit, the annuitized portion of the benefit is reclassified to a defined benefit.
- ***Early Retirement Incentive Plan (ERIP)***—Employers under OPERS may establish an early retirement incentive plan by purchasing service credit for eligible employees. To be eligible, employees must be able to retire under existing plan provisions after the purchase of the additional credit. Electing employers must contribute all such additional costs as are actuarially determined to fund the benefit. Such a plan, if adopted by an employer, must be offered to a minimum of 5% of covered employees, and may provide for the purchase of up to five years of service credit, limited to a maximum of 20% of the member's total service credit. Members electing to participate in the employer's plan must retire within 90 days of receiving notice of the purchased service or the service is withdrawn and refunded to the employer. Employers offering an ERIP pay the full cost of the additional benefits at the time the plan is adopted and the required contributions are recognized in full by OPERS.

- ***Disability Benefits***—OPERS administers two disability plans for participants in either the Traditional Pension Plan or Combined Plan. Members in the plan as of July 29, 1992, could elect, by April 7, 1993, coverage under either the original plan or the revised plan. All members who entered the System after July 29, 1992 are automatically covered under the revised plan. Under the original plan, a member who becomes disabled before age 60 and has completed five years of total service is eligible for a disability benefit. Benefits are funded by the member and employer contributions and terminate if the member is able to return to work. The revised plan differs in that a member who becomes disabled at any age with five years of total service will be eligible for disability benefits until a determined age. The benefit is funded by reserves accumulated from employer contributions. After the disability benefit ends, the member may apply for a service retirement benefit or a refund of contributions, which are not reduced by the amount of disability benefits received. Law Enforcement officers are immediately eligible for disability benefits if disabled by an on-duty illness or injury. Members participating in the Member-Directed Plan are not eligible for disability benefits.
- ***Survivor Benefits***—Dependents of deceased members who participated in either the Traditional Pension Plan or the Combined Plan may qualify for survivor benefits if the deceased member had at least one and a half years of service credit with the plan, and at least one quarter year of credit within the two and one-half years prior to the date of death. ORC Chapter 145, updated by House Bill 520, and the corresponding Combined Plan document specify the dependents and the conditions under which they qualify for survivor benefits. Qualified survivors of Law Enforcement and Public Safety officers are eligible for survivor benefits immediately upon employment.
- ***Health Care Coverage***—The ORC permits, but does not require, OPERS to offer post-employment health care coverage. The ORC allows a portion of the employers’ contributions to be used to fund health care coverage.

  At the inception of the health care plan in 1976, the System provided comprehensive health care coverage to retirees with five or more years of qualifying service credit. In 1986, the years of service requirement changed to 10 or more years. Beginning January 1, 2015, the service eligibility criteria for health care coverage increased from 10 years to 20 years with a minimum age of 60, or, generally, 30 years of qualifying service at any age. Beginning with January 2016 premiums, eligible Medicare-enrolled 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. Effective January 1, 2022, eligible non-Medicare retirees are part of a Connector program and may be eligible for monthly allowances deposited to an HRA, similar to Medicare-enrolled retirees. Additional details on health care coverage can be found in the Plan Statement beginning on page 215.

  Participants in the Member-Directed Plan have a separate health care funding mechanism. A portion of employer contributions for these participants is allocated to an RMA. Upon separation or retirement, participants may be reimbursed for qualified medical expenses from these accounts.

  An additional wellness RMA program was established in 2007 when three health care coverage levels were available to retirees. Enrollment in this program was discontinued December 2016. For retirees with a wellness RMA balance and an HRA, the RMA balances were transferred to the HRA. OPERS initiated an automatic claims payment process for reimbursements for retiree health care costs paid through pension deduction. Following the termination of this program, effective December 31, 2022, remaining balances in member accounts were either transferred to the retiree's HRA account or forfeited in 2023.

- ***Other Benefits***—Once a benefit recipient retiring under the Traditional Pension Plan has received benefits for 12 months, the member is eligible for an annual cost-of-living adjustment. This cost-of-living adjustment is calculated on the member's original base retirement benefit at the date of retirement and is not compounded. Members retiring under the Combined Plan receive a cost-of-living adjustment on the defined benefit portion of their retirement benefit. For those who retired prior to January 7, 2013, the cost-of-living adjustment is 3%. For those retiring on or after January 7, 2013, beginning in 2019, the adjustment is based on the average percentage increase in the Consumer Price Index (CPI), capped at 3%. A death benefit of $500-$2,500, determined by the number of years of service credit of the retiree, is paid to the beneficiary of a deceased retiree or disability benefit recipient under the Traditional Pension Plan and Combined Plan. Death benefits are not available to beneficiaries of Member-Directed Plan participants.

- ***Money Purchase Annuity***—Age-and-service retirees from any of the three pension plans who become re-employed in an OPERS-covered position must contribute the regular contribution rates, which are applied towards a money purchase annuity. The money purchase annuity calculation is based on the accumulated contributions of the retiree for the period of re-employment, and an amount of the employer contributions determined by the Board. Upon termination of service, members over the age of 65 can elect to receive a lump-sum payout or a monthly annuity. Members under age 65 may leave the funds on deposit with OPERS to receive an annuity benefit at age 65, or may elect to receive a refund of their member contributions made during the period of re-employment, plus interest.

- ***Refunds***—Members who have terminated service in OPERS-covered employment may file an application for refund of their account. The ORC and applicable plan documents require a two-month waiting period after service termination before the refund may be paid. The acceptance of a refund payment cancels the individual's rights and benefits in OPERS.

  Refunds processed for Traditional Pension Plan members include the member's accumulated contributions, interest, and any qualifying employer funds, as determined by the Board. A Combined Plan member's refund may consist of member contributions for the purchase of service plus interest, qualifying employer funds, as determined by the Board, and the value of the account in the defined contribution plan consisting of member contributions adjusted by the gains or losses incurred based on their investment selections. Refunds paid to participants in the Member-Directed Plan include member contributions and vested employer contributions adjusted by the gains or losses incurred based on their investment selections.

c. **Contributions**—The OPERS funding policy provides for periodic member and employer contributions to all three pension plans at rates established by the Board, subject to limits set in statute. The rates established for member and employer contributions were approved based upon the recommendations of the System's 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 December 31, 2022, compared to the prior year. 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 used to fund the defined contribution benefits and 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 2022 were $2,174,135,884. Employer contributions for the Combined Plan for 2022 were $60,507,524. Employers satisfied 100% of the contribution requirements.

The following table displays the member and employer contribution rates as a percent of covered payroll for each division for 2022. With the assistance of the System's actuary and Board approval, a portion of each employer contribution to OPERS may be set aside for the funding of post-employment health care coverage. For 2022, no portion of the employer contribution rate was allocated to health care for the Traditional Pension Plan. Effective July 1, 2022, OPERS increased the portion of the 14% employer contribution rate allocated to health care funding from 0.0% to 2.0% for the Combined Plan. The employer contribution as a percent of covered payroll deposited for Member-Directed Plan health care accounts for 2022 was 4.0%.

Board of Trustees—Approved Contribution Rates—All Plans

	2022 Member Rate	2022 Employer Rate
State Division	10.0%	14.0%
Local Division	10.0	14.0
Law Enforcement Division	13.0	18.1
Public Safety Division	12.0	18.1

The member and employer contribution rates for the State and Local divisions are currently set at the maximums authorized by the ORC of 10.0% and 14.0%, respectively. The Public Safety and Law Enforcement employer rates are also set at the maximum authorized rate of 18.1%. The member rate for Public Safety is determined by the Board and has no maximum rate established by the ORC. The member rate for Law Enforcement is also determined by the Board, but is limited by the ORC to not more than 2.0% greater than the Public Safety rate.

ORC Chapter 145 assigns authority to the Board to amend the funding policy. As of December 31, 2022, the Board adopted the contribution rates that were recommended by the actuary. The contribution rates were included in a funding policy adopted by the Board in October 2013, and are certified periodically by the Board as required by the ORC.

As of December 31, 2022, the date of the last pension actuarial study, the funding period for all defined benefits of the System was 16 years.

d. **Commitments and Contingencies**—OPERS has committed to fund various private equity and real estate investments totaling approximately $12.3 billion as of December 31, 2022. The expected funding dates for these commitments extend through 2028. OPERS is a party in various lawsuits relating to plan benefits and investments. While the final outcome cannot be determined at this time, management is of the opinion that the liability, if any, for these legal actions will not have a material adverse effect on OPERS' financial position.

2. Summary of Significant Accounting Policies

The following are the significant accounting policies followed by OPERS for all pension and health care plans:

a. **Basis of Accounting**—The financial statements are prepared using the economic resources measurement focus and accrual basis of accounting under which deductions are recorded when the expense is incurred and revenues are recognized when earned. Pension benefit payments are due the first day of the month following the retirement of a member, and the first of each month thereafter. Health care payments are considered an expense and recognized as a liability in the Combining Statement of Fiduciary Net Position when a present obligation exists and a condition that requires the event creating the liability has taken place. Therefore, OPEB plan expenses are recognized when the benefits are currently due and payable in accordance with the benefit terms. Health care expenses are reported net of certain health care receipts. Retiree-paid health care premiums and rebates are included in health care expenses in Benefits under Deductions in the Combining Statement of Changes in Fiduciary Net Position. Health care liabilities contain estimates on incurred but not reported amounts for the current year.

OPERS notionally funds and tracks member balances in the HRA, Member-Directed health care accounts and wellness RMAs. As of December 31, 2022, the notional member balances in the HRAs and Member-Directed health care accounts were $372.4 million and $328.6 million, respectively. The amounts recognized as currently due for 2022 claims based on estimates were $142.9 million and $1.5 million, respectively. As of December 31, 2022, the notional member balances in the Wellness RMA program were $0.6 million. The Wellness RMA program was terminated effective December 31, 2022, and, during the first quarter of 2023, eligible member balances were transferred to the member's HRA or forfeited and transferred to the 115 Trust if the member did not have an HRA. Although all health care activity is reflected in the 115 Trust, OPERS internally accounts for health care activity separately. Total net position reported for the 115 Trust as of December 31, 2022 was $11.5 billion, which includes a net position of $397.3 million related to funds accumulated for the Member-Directed health care plan.

Refunds, for any member who makes a written application to withdraw their contributions, are payable two months after termination of the member’s OPERS-covered employment. Benefits and refunds are recognized when due and payable in accordance with the terms of the plan. Additions to the plans consist of contributions (member and employer), contracts and other receipts, interplan activities, net investment income/loss, and other miscellaneous income. Contributions are recorded in the period the related salaries are earned and become measurable pursuant to formal commitments, statutory or contractual requirements. Accordingly, both member and employer contributions for the year ended December 31, 2022 include year-end accruals based upon estimates derived from subsequent payment activity and historical payment patterns. Member and employer contributions are due 30 days after the month in which salaries are earned based on pay period end date. Health care reimbursements are recognized when they become measurable and due to OPERS based on contractual requirements. Therefore, health care reimbursements contain estimates based on information received from health care vendors and other sources. Plan changes, or interplan activity, are recorded as an addition or deduction based on the nature of the transaction, when the transaction occurs. Investment purchases and sales are recorded as of their trade date.

The accounting and reporting policies of OPERS conform to accounting principles generally accepted in the United States (referred to as GAAP) as applicable to government organizations. The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, and to disclose contingent assets and liabilities at the date of the financial statements, as well as the reported amounts of revenue and expenses during the reporting period. Actual results could differ from those estimates.

OPERS reviews the requirements of all new GASB pronouncements and their impact on the financial statements. For the fiscal year ended December 31, 2022, there was no material impact to the OPERS financial statements resulting from the implementation of new accounting pronouncements.

In April 2022, GASB issued Statement No. 99, *Omnibus 2022.* This statement addresses practice issues that have been identified during implementation and application of certain GASB Statements. The objectives of this statement have no impact on OPERS.

In June 2022, GASB issued Statement No. 100, *Accounting Changes and Error Corrections—an amendment of GASB Statement No. 62.* The primary objective of this statement is to enhance accounting and financial reporting requirements for accounting changes and error corrections. The requirements of this statement are effective for accounting changes and error corrections made in fiscal years beginning after June 15, 2023. OPERS will apply these new requirements at the time when an accounting change or error correction is deemed necessary.

In June 2022, GASB issued Statement No. 101, *Compensated Absences.* The objective of this statement is to align the recognition and measurement guidance for compensated absences under a unified model and amend required disclosures. The requirements of this statement are effective for fiscal years beginning after December 15, 2023. OPERS is currently evaluating the impact of these requirements.

b. **Investments**—OPERS is authorized by ORC Section 145.11 to invest under a prudent person standard and does so through an investment policy established by the Board. ORC 145.11 states:

> The Board and other fiduciaries shall discharge their duties with respect to the funds 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 the public employees retirement system; with care, skill, prudence, and diligence under the circumstances then prevailing that a prudent person acting in a like capacity and familiar with these matters would use in the conduct of an enterprise of a like character and with like aims; and by diversifying the investments of the system so as to minimize the risk of large losses, unless under the circumstances it is clearly prudent not to do so.

Member-Directed Plan participants self-direct the investment of both member and employer contributions. Contributions must be invested with an investment manager approved by the Board. Similarly, participants in the Combined Plan self-direct the investment of member contributions. The investment assets for all other plans and the health care trust are invested under the direction of the OPERS Investment staff in conformance with policies approved by the Board.

Investments are generally reported at fair value. Fair value is the amount that a plan can reasonably expect to receive for an investment in a current sale between a willing buyer and a willing seller, that is, other than in a forced or liquidation sale. All investments, with the exception of real estate, private equity, risk parity and hedge funds, are valued based on closing market prices or broker quotes. Securities not having a quoted market price have been valued based on yields currently available on comparable securities of issuers with similar credit ratings. The fair value of some real estate investments, private equity, risk parity and hedge funds is based on a net asset value, which is established by the fund or by the fund's third-party administrator. Refer to Note 3i for additional information on valuation of investments.

Net increase/(decrease) in the fair value of investments 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 purchases of investments at cost, plus sales of investments at fair value. Interest income is recorded on the accrual basis and dividends are recorded on the ex-dividend date. Commissions paid to brokers are considered a part of the investment asset cost and are, therefore, not reported as expenses of the System. Brokerage commissions for 2022 were $8,343,385. Investment administrative expenses consist of custodial banking fees and those expenses directly related to OPERS internal investment operations, and include a proportional amount of allocated overhead.

c. **Capital Assets**—OPERS maintains two categories of capital assets: tangible capital assets and intangible right-to-use assets.

- ***Tangible Capital Assets***—Tangible capital assets are recorded at cost and do not meet the definition of an investment under GASB Statement No. 72, *Fair Value Measurement and Application*. OPERS has adopted a capitalization threshold used to identify whether assets purchased by the System are classified as capital assets or operating expenses. Building enhancements, furniture and equipment with a cost equal to or greater than $5,000 and computer software purchases of $25,000 or more are recorded as tangible capital assets and depreciated based on the useful life of the asset.

  Depreciation for tangible capital assets is computed using the straight-line method over the estimated useful lives of the related assets according to the following schedule:

Useful Lives of Tangible Capital Assets

	Years
Buildings and Building Improvements	50
Furniture and Equipment	3-10
Computer Software	3-10

- ***Intangible Right-to-use Assets***—Intangible right-to-use assets are recorded under GASB Statement No. 87 (GASB 87), *Leases,* and GASB Statement No. 96, *Subscription-Based Information Technology Arrangements* (SBITA). The intangible right-to-use assets and the related liabilities are recorded at the commencement date of the related contract. The lease or subscription liabilities, included within Accounts Payable and Other Liabilities on the Combining Statement of Fiduciary Net Position, are measured at the present value of expected payments over the contract term. The intangible right-to-use assets are based on the initial measurement of the liability, plus any payments made to the vendor at or before the commencement of the contract term. OPERS has adopted a capitalization threshold of $250,000 for lease assets and subscriptions assets. Intangible right-to-use assets are amortized over the shorter of the term of the contract or the useful life of the underlying asset. Interest expense is recognized ratably over the contract term.

The table below is a schedule of the capital asset account balances as of December 31, 2021 and 2022, with changes to those account balances during the year ended December 31, 2022:

Capital Asset Account Balances

	Land	Building and Building Improvements	Furniture and Equipment	Intangible Right-to-use Assets	Total Capital Assets
Cost					
Balances December 31, 2021	$3,734,813	$110,442,318	$160,131,091	$19,468,002	$293,776,224
Additions	—	—	12,446,755	7,696,505	20,143,260
Disposals	—	(164,510)	(5,950,387)	(2,267,688)	(8,382,585)
Balances December 31, 2022	3,734,813	110,277,808	166,627,459	24,896,819	305,536,899
Accumulated Depreciation and Amortization					
Balances December 31, 2021	—	45,549,882	109,679,769	6,488,549	161,718,200
Depreciation and Amortization Expense	—	2,311,657	9,879,359	5,971,133	18,162,149
Disposals	—	(61,159)	(5,939,289)	(2,267,585)	(8,268,033)
Balances December 31, 2022	—	47,800,380	113,619,839	10,192,097	171,612,316
Net Capital Assets December 31, 2022	**$3,734,813**	**$62,477,428**	**$53,007,620**	**$14,704,722**	**$133,924,583**

d. **Lessor Obligations**—OPERS recognizes a lease receivable and a deferred inflow of resources (lessor obligation) at the commencement of the lease term. The lease receivable and lessor obligation are measured at the present value of lease payments expected to be received during the lease term, as defined by GASB 87. The lease receivable is recognized as additions to net position over the term of the lease.

e. **Vacation and Sick Leave**—Employees who resign or retire are entitled to full compensation for all earned but unused vacation balances up to three times their annual accrual rate at the time of separation. Unused sick leave is forfeited upon termination. However, employees who retire with more than 10 years of service with OPERS are entitled to receive payment for 50% of unused sick leave up to a maximum of 2,000 hours, or payment of 1,000 hours. As of December 31, 2022, $10,385,006 is accrued within Accounts Payable and Other Liabilities for unused vacation and sick leave for employees.

f. **Federal Income Tax Status**—OPERS is a qualified plan under Section 401(a) of the IRC and is exempt from federal income taxes under Section 501(a).

g. **Funds**—In accordance with the ORC and IRS regulations, various funds have been established to account for the reserves held for future and current payments. Statutory and IRS-mandated funds within each of the three pension plans are described below:

Traditional Pension Plan

- ***The Employees' Savings Fund***—represents member contributions held in trust pending refund or transfer to a benefit disbursement fund. Upon a member's refund or retirement, such member's account is credited with an amount of interest (statutory interest) on the member's contributions based on a Board-approved rate, which currently ranges from 1% to 4%. Members eligible for a refund also receive additional funds from the Employers' Accumulation Fund, if qualified. ORC Chapter 145 requires statutory interest to be compounded annually.

- ***The Employers' Accumulation Fund***—accumulates employer contributions to provide the reserves required for transfer to the Annuity and Pension Reserve Fund as members retire or become eligible for disability benefits, and to the Survivors' Benefit Fund for benefits due to dependents of deceased members.
- ***The Annuity and Pension Reserve Fund***—is the fund from which retirement benefits that do not exceed the IRC 415(b) limitations and health care costs are paid. By law, OPERS is obligated to pay certain benefits that have commenced with retirees. In order to make these payments each year and hold sufficient assets in this fund to pay the vested benefits of all retirees and beneficiaries as of the actuarial valuation date, OPERS transfers funds from the active member employer fund (the Employers' Accumulation Fund) to the pension funds (the Annuity and Pension Reserve Fund and the Survivors' Benefit Fund). Thus, the active member funding was 55% as of December 31, 2022.
- ***The Survivors' Benefit Fund***—is the fund from which benefits due to beneficiaries of deceased members of the System that do not exceed the IRC 415(b) limitations are paid. Refer to the description under the Annuity and Pension Reserve Fund for additional information.
- ***Qualified Excess Benefit Arrangement (QEBA) Fund***—is the fund from which annuity, disability and survivors' benefits are paid when the recipient exceeds the IRC 415(b) limits. This reserve is funded by employer contributions.
- ***The Income Fund***—is the fund credited with all investment gains or losses and miscellaneous income. Annually, the balance in this fund is transferred to other funds to aid in the funding of future benefit payments and administrative expenses.
- ***The Expense Fund***—provides for the payment of administrative expenses with the necessary monies allocated to it from the Income Fund.

Member-Directed Plan

- ***The Defined Contribution Fund***—represents member and employer contributions held in trust pending refund or commencement of benefit payments. Members self-direct the investment of these funds. The member vests in employer contributions over a five-year period at a rate of 20% per year.
- ***The Annuity and Pension Reserve Fund***—is the fund from which purchased annuity benefits are paid. Upon retirement, Member-Directed participants may elect to liquidate their defined contribution accounts to purchase a defined benefit annuity. The value of the annuity is based on the value of the defined contribution account at the time of liquidation.
- ***The Income Fund***—is the fund credited with all investment gains or losses, account fees, and miscellaneous income. The balance in this fund is used to fund the gains or losses incurred by participants and to fund the administrative expenses of the Member-Directed Plan.
- ***The Expense Fund***—provides for the payment of administrative expenses with the necessary monies allocated to it from the Income Fund.
- ***The Employers' Accumulation Fund***—is related to the annuitization of defined contribution accounts and death refunds.

Combined Plan

- ***The Defined Contribution Fund***—represents member contributions held in trust pending refund or commencement of benefit payments. Members self-direct the investment of these funds.

- ***The Employees' Savings Fund***—represents member deposits for the purchase of service credit held in trust pending refund or transfer to the plan Annuity and Pension Reserve Fund. Upon a member's refund or retirement, accounts are credited with an amount of interest (statutory interest) on the member's deposits based on a Board-approved rate. The interest rate has been 1% since January 1, 2003.
- ***The Employers' Accumulation Fund***—accumulates employer contributions to provide the reserves required for transfer to the Annuity and Pension Reserve Fund as members retire. Disability and survivor benefits are funded by transfers to Traditional Pension Plan funds, which pay such benefits.
- ***The Annuity and Pension Reserve Fund***—is the fund from which retirement benefits and health care costs are paid.
- ***The Income Fund***—is the fund credited with all investment gains or losses, account fees and miscellaneous income. The balance in this fund is transferred to other funds, to credit member accounts and to aid in the funding of future benefit payments and administrative expenses.
- ***The Expense Fund***—provides for the payment of administrative expenses with the necessary monies allocated to it from the Income Fund.

115 Health Care Trust

- ***The Employers' Accumulation Health Care Fund (IRC 115)***—accumulates Traditional Pension Plan and Combined Plan employer contributions to provide the reserves required for transfer to the Annuity and Pension Reserve and Survivors' Benefit funds. These funds are for monthly deposits to an HRA for eligible retirees and eligible dependents of deceased members. The Employers' Accumulation Health Care Fund is also used to accumulate a portion of employers contributions into an RMA for Member-Directed Plan members.

The statutory funds defined by ORC Chapter 145 and the IRC-required funds are not mutually exclusive. The Combining Statement of Fiduciary Net Position and the Combining Statement of Changes in Fiduciary Net Position are presented based on IRC requirements. The following schedule provides the values of the statutory funds and how they are distributed among the various retirement plans and the health care trust administered by the System. In total, these funds will equal the net position of the System. To support the net position for each plan and trust included in the statements, the schedule has been expanded to include the value of the statutory funds as they relate to each plan and trust.

Statutory and IRC Fund Balances as of December 31, 2022 were as follows:

Statutory and IRC Fund Balances (as of December 31, 2022)

	Traditional Pension Plan	Combined Plan	Member-Directed Plan	115 Health Care Trust	Total
Employees' Savings Fund	$16,158,860,937	$5,247,564	$301,955		$16,164,410,456
Employers' Accumulation Fund	4,166,055,585	798,881,207	5,309,992	$11,465,339,238	16,435,586,022
Annuity and Pension Reserve Fund	69,775,131,588	66,212,398	31,448,596		69,872,792,582
Survivors' Benefit Fund	2,014,442,180				2,014,442,180
Defined Contribution Fund		733,889,934	1,426,775,305		2,160,665,239
Income Fund	124,113,261				124,113,261
Expense Fund	5,110,739				5,110,739
Total	**$92,243,714,290**	**$1,604,231,103**	**$1,463,835,848**	**$11,465,339,238**	**$106,777,120,479**

h. Risk Management—OPERS is exposed to various risks of loss related to theft of, damage to, or destruction of assets; injuries to employees; and court challenges to fiduciary decisions. To cover these risks, OPERS maintains commercial insurance and holds fidelity bonds on employees. There were no reductions in coverage nor have there been any settlements exceeding insurance coverage. As required by state law, OPERS is registered and insured through the state of Ohio Bureau of Workers' Compensation for injuries to employees. OPERS is self-insured for employee health care coverage. The only outstanding liabilities as of December 31, 2022 were $0.7 million accrued within Accounts Payable and Other Liabilities related to the employee health care coverage.

3. Cash and Investments

A summary of cash, cash equivalents and investments held as of December 31, 2022 was as follows:

Summary of Cash, Cash Equivalents and Investments (as of December 31, 2022)

	Fair Value
Cash and Cash Equivalents	
Cash	$177,430,598
Cash Equivalents	
Commercial Paper	1,405,781,251
U.S. Treasury Obligations	720,915,152
Repurchase Agreements	260,000,000
Interest-Bearing Short-Term Certificates	200,000,000
Short-Term Investment Funds (STIF)	1,592,353,858
Subtotal Cash Equivalents	4,179,050,261
Total Cash and Cash Equivalents	**$4,356,480,859**

Investments	
Fixed Income	
U.S. Corporate Bonds	$6,299,531,806
Non-U.S. Notes and Bonds	5,111,227,814
U.S. Government and Agencies	10,052,382,420
U.S. Mortgage Backed	4,734,072,739
Subtotal Fixed Income	26,197,214,779
Domestic Equities	24,031,676,030
Real Estate	11,829,654,598
Private Equity	13,374,059,927
International Equities	22,103,558,073
Risk Parity	3,165,101,289
Collective Trust Funds	1,100,208,883
Other Investments	66,450,834
Total Investments Before Collateral on Loaned Securities	**101,867,924,413**
Collateral on Loaned Securities	
Securities and Reinvested Cash Collateral for Loaned Securities	10,741,129,135
Total Collateral on Loaned Securities	**10,741,129,135**
Total Investments Including Collateral on Loaned Securities	**$112,609,053,548**

Total Cash, Cash Equivalents and Investments	**$116,965,534,407**

a. **Custodial Credit Risk, Deposits**—Custodial credit risk for deposits is risk that, in the event of the failure of a depository financial institution, OPERS will not be able to recover its deposits or will not be able to recover collateral securities that are in the possession of an outside party. The total amount of cash balances reported was $177,430,598 at December 31, 2022. Balances on deposit are insured by the Federal Deposit Insurance Corporation (FDIC) up to $250,000. The remaining bank deposits are covered by collateral held in the name of OPERS' pledging financial institution, as required by the ORC. OPERS has not experienced any losses in accounts and the System is not exposed to significant credit risk on its cash. OPERS has no formal policy specific to custodial credit risk. These assets are under the custody of the Treasurer of the state of Ohio.

b. **Custodial Credit Risk, Investments**—Custodial credit risk for investments is the risk that, in the event of the failure of the custodian, OPERS will not be able to recover the value of its investment or collateral securities that are in the possession of the custodian. The Treasurer of the state of Ohio, as custodian, selects the custodian in the name of OPERS or its nominee; thus, OPERS investments are not exposed to custodial credit risk.

c. **Credit Risk**—Generally, credit risk is the risk that an issuer of an investment will not fulfill its obligation to the holder of the investment. This risk is measured by ratings assigned by a nationally recognized statistical rating organization.

   The OPERS Fixed Income Policy limits non-investment grade securities to within 15% of the market value percentage of non-investment grade securities in the Fixed Income Aggregate Benchmark within the Defined Benefit portfolio and the Health Care portfolio. Limitations on holdings of non-investment grade securities are included in portfolio guidelines.

d. **Interest Rate Risk**—Interest rate risk is the risk that changes in market interest rates will adversely affect the fair value of an investment. Generally, the longer the maturity of an investment, the greater the sensitivity of its fair value to changes in market interest rates. OPERS monitors the interest rate risk inherent in its portfolio by measuring the weighted-average duration of its portfolio. Duration is a measure of a debt investment’s exposure to fair value changes arising from changing interest rates. It uses the present value of cash flows, weighted for those cash flows as a percentage of the investment’s full price. The effective duration measures the sensitivity of the market price to parallel shifts in the yield curve. The OPERS Fixed Income Policy limits the average option-adjusted duration of the defined benefit and health care fixed income assets to within 20% of the option-adjusted duration of the benchmark.

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The following table presents the credit quality ratings and effective durations of OPERS fixed income assets, including short-term investments, as of December 31, 2022:

2022 Average Credit Quality and Exposure Levels of Guaranteed Investments

Fixed Income Security Type	Fair Value	Percent of All Fixed Income Assets	Weighted Average Duration to Maturity (years)	AAA	AA
Commercial Paper	$1,405,781,251	4.63%	0.05		$259,593,278
Short-Term Investment Funds (STIF)	1,592,353,858	5.24	0.08	$1,592,353,858	
Repurchase Agreements	260,000,000	0.86	0.01		
Interest-Bearing Short-Term Certificates	200,000,000	0.66	0.37		200,000,000
Corporate Bonds	4,999,398,446	16.46	4.83	205,873,357	269,913,692
Municipal Bonds	55,426,390	0.18	2.46	45,736,712	3,003,514
Asset-Backed Securities	1,052,427,522	3.46	3.14	295,854,241	19,920,272
Mortgages	1,678,987,452	5.53	3.88	511,932,262	351,357,017
Agency Mortgages	3,055,085,287	10.06	6.64		3,055,085,287
Non-U.S. Corporate Bonds	2,012,248,726	6.62	3.65	21,076,310	371,004,861
Non-U.S. Mortgage & Asset-Backed Securities	574,538,645	1.89	0.74	216,241,114	194,556,709
Non-U.S. Government	2,524,440,443	8.31	5.28	82,339,493	219,510,619
Agency Bonds	254,723,939	0.84	2.88		254,723,939
Commingled Long-Term Global Funds	247,705,838	0.82	4.92	185,601,117	9,553,778
Total Non-Government Guaranteed	**19,913,117,797**	**65.56**		**3,157,008,464**	**5,208,222,966**
U.S. Treasury Notes	4,748,426,207	15.63	3.46		4,748,426,207
U.S. Treasury Bonds	1,402,587,519	4.62	16.24		1,402,587,519
U.S. Treasury Inflation Protected	3,591,218,365	11.82	6.59		3,591,218,365
U.S. Treasury Discount Notes	720,915,152	2.37	0.21		720,915,152
Total Fixed Income and Cash Equivalents	**$30,376,265,040**	**100.00%**		**$3,157,008,464**	**$15,671,370,209**

2022 Average Credit Quality and Exposure Levels of Guaranteed Investments (continued from previous page)

A	BBB	BB	B	CCC	CC	C	D	Not Rated
$1,146,187,973								
	$200,000,000							$60,000,000
647,526,058	1,388,712,497	$1,604,025,097	$613,456,760	$128,907,635	$1,695,390	$5,129		139,282,831
6,686,164								
57,375,947	84,078,564	61,980,838	7,282,118	1,733,650	20,773,866		$11,251	503,416,775
30,512,414	259,808,039	123,476,404	92,664,268	3,334,998	7,260,102			298,641,948
195,130,156	508,419,021	471,482,061	235,970,700	46,599,960	3,065,195	1,402,415	4,930,314	153,167,733
7,319,386	37,651,735	52,226,678	11,089,093	4,208,183	288,104			50,957,643
247,170,830	539,725,088	577,423,604	256,957,957	177,565,326	30,678,916		44,786,382	348,282,228
27,955,176	24,595,767							
2,365,864,104	**3,042,990,711**	**2,890,614,682**	**1,217,420,896**	**362,349,752**	**63,761,573**	**1,407,544**	**49,727,947**	**1,553,749,158**
$2,365,864,104	**$3,042,990,711**	**$2,890,614,682**	**$1,217,420,896**	**$362,349,752**	**$63,761,573**	**$1,407,544**	**$49,727,947**	**$1,553,749,158**

e. **Concentration of Credit Risk**—Concentration of credit risk is the risk of loss that may be attributed to the magnitude of an investment in a single issuer. As of December 31, 2022, the portfolio has no single-issuer exposure that comprises 5% or more of the overall portfolio, excluding investments issued or explicitly guaranteed by the U.S. government and investments in mutual funds, external investment pools, and other pooled investments. Therefore, no concentration of credit risk exists.

f. **Foreign Currency Risk**—Foreign currency risk is the risk that changes in exchange rates will adversely impact the local currency value of an investment. The OPERS foreign currency exposures primarily reside within non-U.S. investment holdings. The OPERS investment policy allows external managers to decide what action to take within approved portfolio guidelines for their respective portfolios' foreign currency exposures using forward-currency contracts. See table on the next page for foreign currency detail.

Exposure to Foreign Currency Risk in U.S. Dollars (as of December 31, 2022)

Currency	Cash	Futures	Forwards	Fixed Income	International Equities	Real Estate	Private Equity
Australian Dollar	$3,735,806				$735,746,882		
Brazilian Real	2,475,319			$161,044,367	338,758,382		
Canadian Dollar	2,177,107				734,308,333		
Chilean Peso	2,500			28,020,103	7,731,310		
Chinese Yuan Renminbi	13,472,727		$103,972	86,696,375	393,111,068		
Colombian Peso	64,183			81,752,063	1,323,974		
Czech Koruna	88,260		304,027	54,178,745	5,822,312		
Danish Krone	2,892,807				498,681,910		
Dominican Peso				15,219,518			
Egyptian Pound	93,858				3,292,727		
Euro Currency	5,991,049	$121,331	254	45,173,328	3,772,767,649	$5,158,535	$1,562,588,722
Georgian Lari				11,486,696			
Hong Kong Dollar	2,671,787				1,429,337,194		
Hungarian Forint	(2,916)		90,976	32,652,122	24,595,880		
Indian Rupee	2,899,400			5,670,520	582,300,463		
Indonesian Rupiah	1,409,084			127,480,534	155,616,080		
Israeli New Shekel	132,828			2,020,942	75,172,092		
Japanese Yen	7,129,678	195,842		756,167	2,517,920,007		
Kazakhstani Tenge				25,438,223			
Kenyan Shilling				4,787,699			
Kuwaiti Dinar					19,271,771		
Malaysian Ringgit	968,323		(6,437)	112,915,625	47,354,911		
Mexican Peso	1,509,301		300,803	173,497,817	102,730,603		
New Taiwan Dollar	1,241,915				536,823,962		
New Zealand Dollar	177,390				23,606,752		
Nigerian Naira	1,305,211			23			
Norwegian Krone	147,418				144,762,559		
Peruvian Nuevo Sol	617,431			37,774,891	449,757		
Philippine Peso	216,304			181,011	30,212,913		
Polish Zloty	17,494		284,760	73,539,490	86,099,249		
Pound Sterling	655,474				2,025,303,757		668,466,369
Qatari Rial	23,721				32,737,686		
Romanian Leu	(606,815)			28,328,255			
Russian Ruble	195,311			27			
Saudi Riyal	513,605				141,220,365		
Singapore Dollar	1,235,184				135,051,479		
South African Rand	402,818		165,638	140,549,978	136,611,568		
South Korean Won	36,171			1,839,389	701,814,123		
Swedish Krona	4,092,977				339,191,130		
Swiss Franc	4,553,571				1,057,773,659		
Thailand Baht	200,614		199,775	90,802,200	131,639,155		
Turkish Lira	87,712				170,800,931		
UAE Dirham	2,102,550				51,903,174		
Ukrainian Hryvnia	919,661			9,665,557			
Uruguayan Peso				42,439,963			
Uzbekistani So‘m				14,778,893			
Total	**$65,846,818**	**$317,173**	**$1,443,768**	**$1,408,690,521**	**$17,191,845,767**	**$5,158,535**	**$2,231,055,091**

g. **Securities Lending**—ORC and Board policy permits OPERS to maintain a securities lending program. OPERS uses its discretion to determine the type and amount of securities lent under the program. Under this program, securities are loaned to brokers through a third-party securities lending agent and OPERS global custodian. In return, OPERS receives cash collateral or collateral securities considered liquid and agrees to return the collateral for the same securities in the future. Securities loaned are collateralized at a minimum of 102% of the fair value of loaned U.S. securities and 105% of the fair value of loaned international securities. Collateral is marked-to-market daily. These collateral requirements minimize OPERS' credit risk exposure to borrowers.

Cash collateral from securities loaned is, simultaneous to the loan, reinvested in repurchase agreements and other highly liquid short-term securities. OPERS does not have the ability to pledge or sell reinvested collateral securities during the term of a loan absent a broker default. OPERS has the ability to pledge or sell collateral securities from securities loaned. If the fair value of the collateral held falls below the required levels, additional collateral is provided. Since loans are terminable at will, their duration does not generally match the duration of the reinvested collateral securities. As of December 31, 2022, the weighted average maturity of the reinvested collateral securities is 69 days.

As of December 31, 2022, the fair value of securities on loan was $10,484,921,877 . Associated collateral totaling $10,741,925,399 was received, of which $10,514,402,779 was reinvested cash collateral and $227,522,620 was securities collateral. The fair market value of reinvested collateral was $10,741,129,135 as of December 31, 2022, which includes net unrealized gains on securities lending activity totaling $961,976.

Net securities lending income/(loss) is composed of four components: gross income, broker rebates, agent fees and unrealized gains/(losses) on collateral. Gross income is equal to earnings on cash collateral received in a securities lending transaction. A broker rebate is the cost of using that cash collateral. Agent fees represent the fees paid to the agent for administering the lending program. Unrealized gains/(losses) result from the change in fair value of the reinvested cash collateral. Net securities lending income/(loss) is equal to gross income less broker rebates, agent fees, and unrealized gains/(losses) on collateral. Securities lending income for 2022 was recorded on an accrual basis.

h. **Derivative Instruments**—Derivative instruments are generally defined as contracts whose values depend on, or are derived from, the value of an underlying asset, reference rate or index. OPERS has classified the following as derivative instruments:

- ***Forward-Currency Contracts***—OPERS enters into various forward-currency contracts to manage exposure to changes in foreign currency exchange rates on its foreign portfolio holdings. The System may also enter into forward-currency exchange contracts to provide a quantity of foreign currency needed at a future time at the current exchange rates, if rates are expected to change dramatically. A forward-exchange contract is a commitment to purchase or sell a foreign currency at a future date at a negotiated forward rate. Risk associated with such contracts includes movement in the value of foreign currency relative to the U.S. dollar and the ability of the counterparty to perform. The contracts are valued at forward-exchange rates, and the changes in value of open contracts are recognized as net increase/decrease in the fair value of investments in the Combining Statement of Changes in Fiduciary Net Position. The forward-currency purchases are recognized in Investment Commitments Payable on the Combining Statement of Fiduciary Net Position and the forward-currency sales are recognized in Investment Sales Proceeds. The realized gains or losses on forward-currency contracts represent the difference between the value of the original contracts and the closing value of such contracts and are included as net increase/decrease in the fair value of investments in the

Combining Statement of Changes in Fiduciary Net Position. The net realized and unrealized loss on forward-currency contracts for the year 2022 was $182,715.

The fair values of forward-currency contracts were as follows:

Forward-Currency Contracts (as of December 31, 2022)

	Fair Value (USD)	Notional (USD)
Forward-currency purchases (pay USD)	($649,464)	$69,620,866
Forward-currency sales (receive USD)	$725,358	$71,989,826

- ***Futures Contracts***—OPERS enters into various futures contracts to manage exposure to changes in equity, fixed income and currency markets and to take advantage of movements on an opportunistic basis. A stock index future is a futures contract that uses a stock index as its base, and which is settled by cash or delivery of the underlying stocks in the index. Financial futures represent an off balance sheet obligation, as there are no balance sheet assets or liabilities associated with those contracts; however, the realized and unrealized gains and losses on futures are recorded in the Combining Statement of Changes in Fiduciary Net Position. Futures contracts differ from forward-currency contracts by their standardization, exchange trading, margin requirements, and daily settlement (marking-to-market). Risk associated with stock index futures contracts includes adverse movements in the underlying stock index. The following table shows the futures positions held by OPERS as of December 31, 2022. The net realized and unrealized loss on futures contracts for the year 2022 was $651,651,802.

Futures Positions Held (as of December 31, 2022)

Futures Contracts	Number of Contracts	Contract Principal
U.S. Equity Index Futures purchased long	39,258	$2,777,888,365
U.S. Treasury Futures purchased long	9,031	$1,029,011,267
U.S. Treasury Futures purchased short	5,316	($672,679,688)
Non-U.S. Equity Index Futures purchased long	1,056	$72,053,905
Non-U.S. Government Bond Futures purchased long	1,790	$352,315,947
Commodities Futures purchased long	2,492	$214,072,177

- ***Total Return Swaps***—OPERS may manage market exposure through the use of total return swaps. A total return swap is an agreement in which one party commits to pay a fee in exchange for a return linked to the market performance of an underlying security, group of securities, index or other asset (reference obligation). Risks may arise if the value of the swap acquired decreases because of an unfavorable change in the price of the reference obligation or in the counterparty's ability to meet the terms of the contract. OPERS held total return swaps with a notional value of $3,011,513,861 as of December 31, 2022. There was no unrealized gain or loss as of December 31, 2022. The net realized gain in total return swaps for the year 2022 was $319,756,232.

- ***Credit Default Swaps***—OPERS may manage credit exposure through the use of credit default swaps or credit default swap indices. A credit default swap is a contract whereby the credit risk associated with an investment is transferred by entering into an agreement with another party, who, in exchange for periodic fees, agrees to make payments in the event of a default or other predetermined credit event. A credit default swap allows for exposure to credit risk while limiting exposure to other risks, such as interest rate and currency risk. OPERS held credit default swaps with a notional value of $900,000,000 as of December 31, 2022. The net realized and unrealized loss in credit default swaps for the year 2022 was $14,934,967.

- ***Options***—Options give buyers the right, but not the obligation, to buy or sell an asset at a predetermined strike price over a specified period. The option premium is usually a small percentage of the underlying asset value. When writing an option, OPERS receives a premium initially and bears the risk of an unfavorable change in the price of the underlying asset during the option life. When OPERS purchases an option, it pays a premium to a counterparty that bears the risk of an unfavorable change in the price of the underlying asset during the option life. OPERS did not hold any option positions as of December 31, 2022. The net realized and unrealized loss in options contracts for the year 2022 was $10,821,899.

i. Fair Value Leveling—Generally accepted accounting principles specify a hierarchy of valuation classifications based on whether the inputs to the valuation techniques used in each valuation classification are observable or unobservable. These classifications are summarized in the three broad levels listed below:

- Level 1—Unadjusted quoted prices for identical instruments in active markets.
- Level 2—Quoted prices for similar instruments in active markets; quoted prices for identical or similar instruments in markets that are not active; and, model-derived valuations in which all significant inputs and significant value drivers are observable.
- Level 3—Valuations derived from valuation techniques in which significant inputs or significant value drivers are unobservable.

Inputs used to measure fair value might fall in different levels of the fair value hierarchy; in which case OPERS defaults to the lowest level input that is significant to the fair value measurement in its entirety. These levels are not necessarily an indication of the risk or liquidity associated with the investments.

The following tables present fair value as of December 31, 2022:

Investments and Short-Term Holdings Measured At Fair Value (as of December 31, 2022)

		Fair Value Measurements Using		
	Fair Value	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				
Fixed Income				
U.S. Corporate Bonds	$6,051,825,968		$5,816,231,266	$235,594,702
Non-U.S. Notes and Bonds	5,111,227,814		4,884,578,680	226,649,134
U.S. Government and Agencies	10,052,382,420		10,008,382,420	44,000,000
U.S. Mortgage Backed	4,734,072,739		4,469,101,712	264,971,027
Total Fixed Income	25,949,508,941		25,178,294,078	771,214,863
Equities				
Domestic Equities	23,313,043,681	$23,287,396,012		25,647,669
International Equities	19,046,471,390	19,043,538,566		2,932,824
Total Equities	42,359,515,071	42,330,934,578		28,580,493
Real Estate				
Direct-owned Real Estate	7,044,426,040			7,044,426,040
Total Investments by Fair Value Level	**$75,353,450,052**	**$42,330,934,578**	**$25,178,294,078**	**$7,844,221,396**
Investments Measured at the Net Asset Value (NAV)				
Real Estate	$4,785,228,558			
Private Equity	13,374,059,927			
Risk Parity	3,165,101,289			
Other Investments	88,548,768			
Commingled Mutual Funds				
U.S. Corporate Bonds	161,328,369			
International Equities	2,965,811,049			
Defined Contribution Funds				
Collective Trust Funds	1,100,208,883			
Domestic Equities	718,632,349			
U.S. Corporate Bonds	70,822,296			
International Equities	91,275,634			
Total Investments Measured at the NAV	**$26,521,017,122**			
Investment Derivative Instruments				
Foreign Exchange Contracts	$75,894		$75,894	
Swaps (Total Return and Credit Default)	13,906,798		13,906,798	
Futures	(36,080,626)	($36,080,626)		
Total Investment Derivative Instruments	**($22,097,934)**	**($36,080,626)**	**$13,982,692**	
Investments Not Subject to Fair Value Leveling (at cost or amortized cost)				
Cash	$177,430,598			
Commercial Paper	1,405,781,251			
Interest-Bearing Short-Term Certificates	200,000,000			
Repurchase Agreements	260,000,000			
Short-Term Investment Funds (STIF)	1,592,353,858			
U.S. Treasury Obligations	720,915,152			
Stable Value Funds[1]	15,555,173			
Total Investments Not Subject to Fair Value Leveling	**$4,372,036,032**			
Total Cash and Investments Before Collateral on Loaned Securities	**$106,224,405,272**			

[1] Valued at contract value, which approximates fair value.

Securities and Reinvested Cash Collateral for Loaned Securities (as of December 31, 2022)

		Fair Value Measurements Using		
	Fair Value	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				
Fixed Income				
U.S. Government and Agencies	$199,984,708		$199,984,708	
U.S. Corporate Bonds	2,057,850,223		2,057,850,223	
Non-U.S. Government and Agencies	140,000,000		140,000,000	
Non-U.S. Corporate Notes and Bonds	277,768,864		277,768,864	
Total Investments by Fair Value Level	**2,675,603,795**		**2,675,603,795**	
Investments Measured at the Net Asset Value (NAV)				
Commingled Funds	430,383,782			
Total Investments Measured at the NAV	**430,383,782**			
Investments Not Subject to Fair Value Leveling (at cost or amortized cost)				
Certificates of Deposit	968,514,901			
Commercial Paper	1,325,000,000			
Commingled Funds	2,601,534,000			
Receivables/Payables	(114,137,388)			
Repurchase Agreements	1,252,468,192			
Short-Term Debt				
Short-Term Investment Funds	1,016,761,853			
U.S. Treasury Obligations Less than One Year	585,000,000			
Total Securities and Reinvested Cash Collateral for Loaned Securities	**$10,741,129,135**		**$2,675,603,795**	

Investments classified as Level 1 in the previous tables are comprised of common stock, international equity and exchange-traded funds.

Investments classified as Level 2 are primarily comprised of investments in U.S. corporate notes and bonds, international debt, U.S. mortgage-backed securities and U.S. government and agency securities, including Federal Home Loan Mortgage Corporation (Freddie Mac) securities, Federal National Mortgage Association (Fannie Mae) securities, Government National Mortgage Association (Ginnie Mae) securities, U.S. Treasury notes and bonds, U.S. Treasury floating rate notes, U.S. and commercial mortgage trusts, and derivative instruments, including foreign exchange contracts and swaps.

Investments classified as Level 3 are comprised of common stock, U.S. corporate notes and bonds, U.S. mortgage-backed securities, international equity, international debt and direct-owned real estate.

Changes in the significant unobservable inputs may result in a materially higher or lower fair value measurement.

In certain instances, debt and equity securities are valued on the basis of prices from an orderly transaction between market participants provided by brokers/dealers or pricing services (Level 1 in the tables). In determining the value of a particular investment, pricing services may use information with respect to transactions in such investments, including broker quotes, pricing matrices, market transactions in comparable investments and various relationships between investments. As part of its independent price verification process, OPERS selectively performs detailed reviews of valuations provided by brokers/dealers or pricing services.

Foreign exchange contracts are valued by interpolating a value using the spot foreign exchange rate and forward points (based on the spot rate and currency interest rate differentials), which are all inputs that are observable in active markets (Level 2 in the tables).

In the absence of observable market prices, OPERS values its investments using valuation methodologies applied on a consistent basis (Levels 2 or 3 in the tables). For some investments, little market activity may exist; management's determination of fair value is then based on the best information available in the circumstances, and may incorporate management's own assumptions and involves a significant degree of judgement, taking into consideration a combination of internal and external factors. Such investments are evaluated on a quarterly basis, taking into consideration any changes in key inputs and changes in economic and other relevant conditions, and valuation models are updated accordingly. The valuation process also includes a review by the OPERS internal valuation committee, comprised of senior members from various departments within OPERS. The valuation committee provides independent oversight of the valuation policies and procedures.

The fair values in certain investments are based on the net asset value (NAV) per share (or its equivalent) provided by the investee or third-party administrator, as applicable. Investments categorized according to NAV include risk parity funds, collective trust funds, mutual funds, some real estate, private equity limited partnership interests, and remaining hedge funds.

Unlike more traditional investments, private equity and private real estate investments generally do not have readily obtainable market values and take the form of limited partnerships. OPERS values these investments based on the partnerships' audited financial statements, typically as of calendar year-end. If December 31 statements are available, those values are used for these statements. However, some partnerships have fiscal years ending on dates other than December 31. If December 31 valuations are not available, the value is progressed from the most recently available valuation on the financial statements, taking into account subsequent calls and distributions.

Commingled mutual funds and collective trust funds are managed externally on OPERS' behalf, subject to an investment management agreement. These assets are not available for purchase by the general public, and thus no public prices are available. As stated above, OPERS considers the NAV reported by the investment manager a fair approximation of fair value for these assets.

Risk parity and hedge funds are most often established as private investment limited partnerships open to a limited number of accredited investors. Investments in these funds may be illiquid as investors in certain funds may be required to keep their investment in the fund for a year or longer, and withdrawals may be limited to intervals such as monthly, quarterly, annually or bi-annually. OPERS monitors liquidity provisions of each individual fund investment and reports characteristics of the asset classes.

Real estate investments typically do not trade on organized exchanges, but rather through privately negotiated transactions between a buyer and a seller, and transactions are predicated on the availability of capital, and a willing buyer and seller. Investments in direct-owned real estate assets are classified as Level 3 and other real estate assets are categorized under NAV in the tables.

The nature of the private equity investments is that distributions are received through the liquidation of the underlying assets of the fund, rather than through redemptions, and these assets are not sold in the secondary market.

The expected liquidation period for applicable investments is as follows:

Private Equity	10 to 12 years
Closed-End Real Estate	10 to 12 years
Open-End Real Estate	Quarterly
Direct-owned Real Estate	3 to 10 years
Hedge Funds	In Liquidation
Risk Parity Funds	Monthly

As of December 31, 2022, the investments mentioned above are not expected to be sold at an amount different from the NAV per share (or its equivalent) of the System's ownership interest in partners' capital.

The following table presents the unfunded commitments, redemption frequency (if currently eligible), and the redemption notice period for OPERS investments measured at the NAV as of December 31, 2022:

Investments Measured at the Net Asset Value (NAV) (as of December 31, 2022)

	Net Asset Value	Unfunded Commitments	Redemption Frequency (If Currently Eligible)	Redemption Notice Period
Real Estate				
Closed-End Private Real Estate[1]	$1,400,537,140	$1,772,935,210	N/A	N/A
Open-End Private Real Estate[2]	3,384,691,418	105,409,331	Quarterly	90 Days
Private Equity[3]	13,374,059,927	9,023,158,337	N/A	N/A
Risk Parity[4]	3,165,101,289	N/A	Monthly	3-5 Days
Other Investments[5]				
Event-driven[6]	56,723,717	N/A	Monthly, Quarterly, Annual	30-90 Days
Multi-strategy[7]	31,825,051	N/A	Monthly	3-5 Days
Commingled Mutual Funds[8]				
U.S. Corporate Bonds	161,328,369	N/A	Monthly	10 Days
International Equities	2,965,811,049	N/A	Daily, Monthly	1-7 Days
Defined Contribution Funds[9]				
Domestic Equities	718,632,349	N/A	Daily	Daily
U.S. Corporate Bonds	70,822,296	N/A	Daily	Daily
Collective Trust Funds	1,100,208,883	N/A	Daily	Daily
International Equities	91,275,634	N/A	Daily	Daily
Total Investments Measured at the NAV	**$26,521,017,122**			

[1] **Closed-End Private Real Estate**—Closed-end private real estate includes finite-life, commingled or fund of one, private-market investment vehicles that are typically structured as limited partnerships, where the investors are limited partners (LPs) and the fund sponsor/manager is the general partner (GP). The LPs have limited control and limited liability. Real estate closed-end funds typically invest in value add and opportunistic private market real estate assets. The valuations are based on manager-provided net asset values, located in quarterly capital account statements, that are cash flow adjusted to the end of the reporting period.

(footnotes continued on next page)

[2] **Open-End Private Real Estate**—Open-end private real estate holds infinite-life, commingled, private-market investment vehicles that typically invest in stabilized properties in major metropolitan areas. Open-end commingled funds provide liquidity to investors quarterly, subject to each fund's ability to honor investment and redemption requests. The valuations are based on manager-provided net asset values, located in quarterly capital account statements, that are cash flow adjusted to the end of the reporting period.

[3] **Private Equity**—Private equity invests through closed-end, finite-life, commingled funds or fund of one that are typically structured as limited partnerships, where the investors are LPs and the fund sponsor/manager is the GP. The LPs have limited control and limited liability. Private equity closed-end funds typically invest in corporate finance, venture capital and special situations (secondary fund-of-funds and distressed debt strategies). The valuations are based on manager-provided net asset values, located in quarterly capital account statements, that are cash flow adjusted to the end of the reporting period.

[4] **Risk Parity**—Risk parity strategies invest in multiple asset types and leverage exposures to global markets in order to obtain the desired risk-aware mix. The risk parity allocation is structured to achieve roughly balanced risk exposure across equities, nominal fixed income, and inflation sensitive assets, targeting a total volatility level. The valuations are based on manager-provided net asset values, located in monthly capital account statements, that are adjusted for estimated performance.

[5] **Other Investments**—Includes remaining hedge funds.

[6] **Event-driven**—Event-driven managers maintain positions in companies currently or prospectively involved in various corporate transactions including, but not limited to, mergers, restructurings, financial distress, tender offers, shareholder buybacks, debt exchanges, security issuance or other capital structure adjustments. Security types can range from most senior in the capital structure to most junior or subordinated, and frequently involve additional derivative instrument securities. Event-driven exposure includes a combination of sensitivities to equity markets, credit markets and company-specific developments. The valuations are based on manager-provided net asset values located in the monthly capital account statements, that are adjusted for estimated performance.

[7] **Multi-strategy**—Multi-strategy managers combine several strategies within the same fund to provide diversification benefits to reduce return volatility and decrease asset-class and single-strategy risks. These funds typically add incremental returns through active allocation adjustments based on market opportunities. Risk is managed through a combination of quantitative and qualitative constraints including, but not limited to, active risk, liquidity risk, currency risk, manager risk, derivative instruments risk, and leverage risk. The valuations are based on manager-provided net asset values located in the monthly capital account statements, that are adjusted for estimated performance.

[8] **Commingled Mutual Funds**—The commingled mutual funds seek to outperform the Bloomberg U.S. Aggregate Bond Index, MSCI All Country World ex USA Net Dividend Return Index, and MSCI Emerging Markets Small Cap Index. The valuations are based on manager-provided net asset values located in the monthly capital account statements.

[9] **Defined Contribution Funds**— The assets within the Domestic Equity, U.S. Corporate Bonds, and International Equity defined contribution funds lines in the NAV table are index-managed, meaning they seek to mirror investment results of broadly based and publicly quoted market indices. They are not intended to outperform such indices. The assets within the Collective Trust Funds line are managed portfolios that link a defined contribution member's investment portfolio to a particular time horizon, typically an expected retirement date. The valuations for all the Defined Contribution Funds are based on manager-provided net asset values located in the monthly capital account statements. The stable value fund is considered to be a cash equivalent asset and therefore not measured at fair value.

4. Deferred Compensation Plan

OPERS does not sponsor a deferred compensation program. OPERS employees are eligible to participate in the deferred compensation plan sponsored by the state of Ohio (Ohio Public Employees Deferred Compensation Program, or ODC). The state-sponsored plan was created in accordance with IRC Section 457. The plan is available to all OPERS 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.

There are no employer contributions paid by OPERS, therefore ODC does not qualify as a pension plan for OPERS in accordance with 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 Statements No. 14 and No. 84, and a supersession of GASB Statement No. 32*.

IRC 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 IRC Section 457 benefits from the claims of an employer's general creditors. ODC does not qualify as a fiduciary activity of OPERS under GASB Statement No. 84, *Fiduciary Activities*. Accordingly, OPERS does not include the deferred compensation assets or liabilities of this program in its financial statements.

5. Schedule of Required Contributions

All employees of OPERS are eligible for membership in the benefit plans of the System. The employer contributions paid on behalf of these employees are funded by revenues in the Income Fund, arising from investment activity and other income. The annual required pension and health care contributions for employees for the year ended December 31, 2022 are as follows:

Annual Required Pension and Health Care Contributions

	Pension		Health Care	
Year Ended	Annual Required Contributions	Percent Contributed	Annual Required Contributions	Percent Contributed
2022	$6,055,788	100%	$590,220	100%

In accordance with accounting rules, internal payroll related to the implementation of capital projects and SBITA is capitalized as part of the capital asset cost. The capitalized cost includes salary and wages, as well as the corresponding employer-paid Medicare and retirement contribution expenses. The portion of the 2022 Annual Required Contributions included in capital assets for capital projects and SBITA was $581,903 for pension and $56,703 for health care.

6. Net Pension Liability

The components of the net pension liability of the defined benefit portion of the pension plans as of December 31, 2022 are as follows:

Net Pension Liability/(Asset) ($ in millions)

As of December 31, 2022	All Plans	Traditional Pension Plan	Combined Plan[1]	Member-Directed Plan[1]
Total Pension Liability	$122,448	$121,784	$635	$29
Plan Fiduciary Net Position	93,151	92,244	870	37
Net Pension Liability/(Asset)	$29,297	$29,540	($235)	($8)
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	76.07%	75.74%	137.14%	126.74%

[1] The Combined Plan and Member-Directed Plan information in the Net Pension Liability/(Asset) includes only the defined benefit portion of these plans to comply with GASB-reporting standards and does not include the defined contribution portion. The Combining Statements of Fiduciary Net Position and Changes in Fiduciary Net Position present the combined defined benefit and defined contribution portions of the Combined Plan and Member-Directed Plan.

Actuarial valuations of an ongoing plan involve estimates of the value of reported amounts and assumptions about the probability of occurrence of events far into the future. Examples include assumptions about future employment, mortality, and cost trends. Actuarially determined amounts are subject to continual review or modification 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. The total pension liability was determined by an actuarial valuation as of December 31, 2022, using the following key actuarial assumptions and methods applied to all prior periods included in the measurement in accordance with the requirements of GASB 67.

Key Methods and Assumptions Used in Valuation of Total Pension Liability

Actuarial Information	Traditional Pension Plan	Combined Plan	Member-Directed Plan
Measurement and Valuation Date	December 31, 2022	December 31, 2022	December 31, 2022
Experience Study	5-Year Period Ended December 31, 2020	5-Year Period Ended December 31, 2020	5-Year Period Ended December 31, 2020
Actuarial Cost Method	Individual entry age	Individual entry age	Individual entry age
Actuarial Assumptions			
Investment Rate of Return	6.90%	6.90%	6.90%
Wage Inflation	2.75%	2.75%	2.75%
Projected Salary Increases	2.75%-10.75% (includes wage inflation at 2.75%)	2.75%-8.25% (includes wage inflation at 2.75%)	2.75%-8.25% (includes wage inflation at 2.75%)
Cost-of-living Adjustments	Pre-1/7/2013 Retirees: 3.00% Simple Post-1/7/2013 Retirees: 3.00% Simple through 2023, then 2.05% Simple	Pre-1/7/2013 Retirees: 3.00% Simple Post-1/7/2013 Retirees: 3.00% Simple through 2023, then 2.05% Simple	Pre-1/7/2013 Retirees: 3.00% Simple Post-1/7/2013 Retirees: 3.00% Simple through 2023, then 2.05% Simple

Pre-retirement mortality rates are based on 130% of the Pub-2010 General Employee Mortality tables (males and females) for State and Local Government divisions and 170% of the Pub-2010 Safety Employee Mortality tables (males and females) for the Public Safety and Law Enforcement divisions. Post-retirement mortality rates are based on 115% of the PubG-2010 Retiree Mortality Tables (males and females) for all divisions. Post-retirement mortality rates for disabled retirees are based on the PubNS-2010 Disabled Retiree Mortality Tables (males and females) for all divisions. For all of the previously described tables, the base year is 2010 and mortality rates for a particular calendar year are determined by applying the MP-2020 mortality improvement scales (males and females) to all of these tables.

The discount rate used to measure the total pension liability was 6.9% 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 rate 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.

The allocation of investment assets within the Defined Benefit portfolio is approved by the Board as outlined in the annual investment plan. Plan assets are managed on a total return basis with a long-term objective of achieving and maintaining a fully funded status for the benefits provided through the defined benefit pension plans. 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. Best estimates of geometric real rates of return were provided by the Board’s investment consultant. For each major asset class that is included in the Defined Benefit portfolio’s target asset allocation as of December 31, 2022, these best estimates are summarized in the following table:

Asset Class	Target Allocation as of December 31, 2022	Weighted Average Long-Term Expected Real Rate of Return (Geometric)
Fixed Income	22.00%	2.62%
Domestic Equities	22.00	4.60
Real Estate	13.00	3.27
Private Equity	15.00	7.53
International Equities	21.00	5.51
Risk Parity	2.00	4.37
Other Investments	5.00	3.27
TOTAL	**100.00%**	

During 2022, OPERS managed investments in three investment portfolios: the Defined Benefit portfolio, the Health Care portfolio and the Defined Contribution portfolio. The Defined Benefit portfolio contains the investment assets of the Traditional Pension Plan, the defined benefit component of the Combined Plan and the annuitized accounts of the Member-Directed Plan. Within the Defined Benefit 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 Defined Benefit portfolio was a loss of 12.1% for 2022.

The following table presents the net pension liability or asset calculated using the discount rate of 6.9%, and the expected net pension liability or asset if it were calculated using a discount rate that is 1.0% lower or 1.0% higher than the current rate.

Sensitivity of Net Pension Liability/(Asset) to Changes in the Discount Rate ($ in millions)

Net Pension Liability/(Asset) As of December 31, 2022	1% Decrease 5.9%	Current Discount Rate 6.9%	1% Increase 7.9%
All Plans	$44,122	$29,297	$16,969
Traditional Pension Plan	$44,250	$29,540	$17,304
Combined Plan	($123)	($235)	($325)
Member-Directed Plan	($5)	($8)	($10)

The funding status of the three pension plans and their Schedules of Funding Progress may be found in the Actuarial Section of this document on pages 151-152. The Member-Directed Plan is a defined contribution pension plan allowing members at retirement to have the option to convert their defined contribution account to a defined benefit annuity. The defined contribution annuitized balances under this plan were included in this annual report from a GASB 67 perspective.

7. Net OPEB Liability—Health Care

The components of the net OPEB liability of the defined benefit health care plans as of December 31, 2022 are as follows:

Net OPEB Liability ($ in millions)

As of December 31, 2022	
Total OPEB Liability	$12,096
Plan Fiduciary Net Position	11,465
Net OPEB Liability	$631
Plan Fiduciary Net Position as a Percentage of Total OPEB Liability	94.79%

The total OPEB liability was determined by an actuarial valuation as of December 31, 2021, rolled forward to the measurement date of December 31, 2022, by incorporating the expected value of health care cost accruals, the actual health care payments, and interest accruals during the year for the defined benefit health care plans. In accordance with GASB Statement No. 75 (GASB 75), *Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions*, the Member-Directed Plan health care is a defined benefit health care plan, although the pension plan is defined contribution. Interest is credited to member accounts based on the investment performance of the stable value fund, not to exceed 4.0%.

Actuarial valuations of an ongoing plan involve estimates of the value of reported amounts and assumptions about the probability of occurrence of events far into the future. Examples include assumptions about future employment, mortality, and cost trends. Actuarially determined amounts are subject to continual review or modification as actual results are compared with past expectations and new estimates are made about the future.

Projections of health care costs 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 coverage provided at the time of each valuation and the historical pattern of sharing of costs between the System and plan members.

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 (GASB 74), *Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans*:

Key Methods and Assumptions Used in Valuation of Total OPEB Liability	
Actuarial Information	
Actuarial Valuation Date	December 31, 2021
Rolled-Forward Measurement Date	December 31, 2022
Experience Study	5-Year Period Ended December 31, 2020
Actuarial Cost Method	Individual entry age
Actuarial Assumptions	
Single Discount Rate	5.22%
Investment Rate of Return	6.00%
Municipal Bond Rate	4.05%
Wage Inflation	2.75%
Projected Salary Increases	2.75%-10.75% (includes wage inflation at 2.75%)
Health Care Cost Trend Rate	5.50% initial, 3.50% ultimate in 2036

Pre-retirement mortality rates are based on 130% of the Pub-2010 General Employee Mortality tables (males and females) for State and Local Government divisions and 170% of the Pub-2010 Safety Employee Mortality tables (males and females) for the Public Safety and Law Enforcement divisions. Post-retirement mortality rates are based on 115% of the PubG-2010 Retiree Mortality Tables (males and females) for all divisions. Post-retirement mortality rates for disabled retirees are based on the PubNS-2010 Disabled Retiree Mortality Tables (males and females) for all divisions. For all of the previously described tables, the base year is 2010 and mortality rates for a particular calendar year are determined by applying the MP-2020 mortality improvement scales (males and females) to all of these tables.

A single discount rate of 5.22% was used to measure the total OPEB liability on the measurement date of December 31, 2022; however, the single discount rate used at the beginning of the year was 6.00%. 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 assumed rate of return on the health care investment portfolio of 6.00% and a municipal bond rate of 4.05%. 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 the year 2054. As a result, the actuarial assumed long-term expected rate of return on health care investments was applied to projected costs through the year 2054, and the municipal bond rate was applied to all health care costs after that date.

The allocation of investment assets within the Health Care portfolio is approved by the Board as outlined in the annual investment plan. Assets are managed on a total return basis with a long-term objective of continuing to offer a sustainable health care program for current and future retirees. The System's primary goal is to achieve and maintain a fully funded status for benefits provided through the defined benefit pension plans. Health care is a discretionary benefit. 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 rate of return by weighting the expected future real rates of return by the target asset allocation percentage, adjusted for inflation. Best estimates of geometric real rates of return were provided by the Board's investment consultant. For each major asset class that is included in the Health Care portfolio's target asset allocation as of December 31, 2022, these best estimates are summarized in the following table:

Asset Class	Target Allocation as of December 31, 2022	Weighted Average Long-Term Expected Real Rate of Return (Geometric)
Fixed Income	34.00%	2.56%
Domestic Equities	26.00	4.60
REITs	7.00	4.70
International Equities	25.00	5.51
Risk Parity	2.00	4.37
Other Investments	6.00	1.84
TOTAL	**100.00%**	

During 2022, 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 a loss of 15.6% for 2022.

The following table presents the net OPEB liability calculated using the single discount rate of 5.22%, and the expected net OPEB liability or asset if it were calculated using a discount rate that is 1.0% lower or 1.0% higher than the current rate.

Sensitivity of Net OPEB Liability to Changes in the Discount Rate ($ in millions)

As of December 31, 2022	1% Decrease 4.22%	Single Discount Rate 5.22%	1% Increase 6.22%
Net OPEB Liability/(Asset)	$2,146	$631	($620)

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 or 1.0% higher than the current rate.

Sensitivity of Net OPEB Liability to Changes in the Health Care Cost Trend Rate ($ in millions)

As of December 31, 2022	1% Decrease	Current Health Care Cost Trend Rate Assumption	1% Increase
Net OPEB Liability	$591	$631	$675

Retiree health care valuations use a health care cost trend assumption with changes over several years built into that assumption. The near-term rates reflect increases in the current cost of health care; the trend starting in 2023 is 5.50%. If this trend continues for future years, the projection indicates that years from now virtually all expenditures will be for health care. A more reasonable alternative is the health care 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 3.50% in the most recent valuation.

The funding status of health care and the Schedule of Funding Progress are found in the Actuarial Section of this document on page 153.

Defined Benefit Pension Plans

The Schedules of Changes in Net Pension Liability/(Asset) and Related Ratios display the components of the total pension liability and plan fiduciary net position for each pension plan with a defined benefit component, calculated in conformity with the requirements of GASB 67. Covered Payroll represents the collective total of the OPERS eligible wages of all OPERS employers within each plan. GASB 67 requires that data be reported for 10 years; however, data prior to 2014 is not available.

Schedule of Changes in Net Pension Liability and Related Ratios ($ in millions)

(continued on next page)

All Plans[1]	2022	2021	2020	2019
Net Change in Total Pension Liability				
Service Cost	$2,066.7	$2,002.6	$2,038.1	$1,988.6
Interest on Total Pension Liability	7,987.0	7,768.8	7,842.1	7,655.8
Changes of Benefit Terms	—	—	—	—
Difference Between Expected and Actual Experience	1,454.2	770.7	(956.7)	(249.2)
Changes in Assumptions	—	1,870.1	—	—
Benefit Payments, Including Refunds of Member Contributions	(7,559.4)	(7,266.8)	(6,937.7)	(6,728.5)
Net Change in Total Pension Liability	**3,948.5**	**5,145.4**	**1,985.8**	**2,666.7**
Total Pension Liability—Beginning	118,499.1	113,353.7	111,367.9	108,701.2
Total Pension Liability—Ending	**$122,447.6**	**$118,499.1**	**$113,353.7**	**$111,367.9**
Net Change in Plan Fiduciary Net Position				
Employer Contributions	$2,235.9	$2,100.4	$2,038.6	$2,037.3
Member Contributions	1,553.4	1,454.6	1,411.9	1,410.5
Net Investment Income/(Loss)	(13,343.2)	14,999.1	10,455.1	13,630.5
Benefit Payments, Including Refunds of Member Contributions	(7,559.4)	(7,266.8)	(6,937.7)	(6,728.5)
Non-Investment Administrative Expenses	(54.4)	(52.4)	(51.3)	(51.9)
Other[2]	108.0	123.2	121.7	89.3
Net Change in Plan Fiduciary Net Position	**(17,059.7)**	**11,358.1**	**7,038.3**	**10,387.2**
Plan Fiduciary Net Position—Beginning	110,210.9	98,852.8	91,814.5	81,427.3
Plan Fiduciary Net Position—Ending	**$93,151.2**	**$110,210.9**	**$98,852.8**	**$91,814.5**
Net Pension Liability/(Asset)	**$29,296.4**	**$8,288.2**	**$14,500.9**	**$19,553.4**
Plan Fiduciary Net Position as a Percentage of the Total Pension Liability	76.07%	93.01%	87.21%	82.44%
Covered Payroll	$16,500.8	$15,463.7	$14,998.1	$14,987.6
Net Pension Liability/(Asset) as a Percentage of Covered Payroll	177.55%	53.60%	96.69%	130.46%

[1] Includes Traditional Pension Plan and defined benefit portions of Combined Plan and Member-Directed Plan. Does not tie exactly to the combined total of the following three schedules for the Traditional Pension Plan, Combined Plan and Member-Directed Plan due to rounding.

[2] Other includes Contract and Other Receipts, Other Income/(Expense) and Interplan Activity.

All Plans[1]				
2018	2017	2016	2015	2014
$1,976.7	$1,823.3	$1,763.4	$1,710.7	$1,685.3
7,475.5	7,347.3	7,131.5	6,978.9	6,778.9
—	—	—	—	—
(339.8)	(456.1)	37.5	(334.0)	(321.4)
3,433.9	—	5,344.6	—	—
(6,498.4)	(6,227.6)	(5,942.8)	(5,808.6)	(5,502.2)
6,047.9	**2,486.9**	**8,334.2**	**2,547.0**	**2,640.6**
102,653.3	100,166.4	91,832.2	89,285.2	86,644.6
$108,701.2	**$102,653.3**	**$100,166.4**	**$91,832.2**	**$89,285.2**
$1,958.6	$1,779.6	$1,606.0	$1,564.7	$1,520.3
1,354.2	1,324.5	1,294.8	1,246.7	1,228.1
(2,541.1)	12,657.6	5,976.9	276.3	5,074.7
(6,498.4)	(6,227.6)	(5,942.8)	(5,808.6)	(5,502.2)
(51.8)	(52.2)	(51.9)	(49.1)	(49.8)
100.9	108.8	71.1	66.9	125.5
(5,677.6)	**9,590.7**	**2,954.1**	**(2,703.1)**	**2,396.6**
87,104.9	77,514.2	74,560.1	77,263.2	74,866.6
$81,427.3	**$87,104.9**	**$77,514.2**	**$74,560.1**	**$77,263.2**
$27,273.9	**$15,548.4**	**$22,652.2**	**$17,272.1**	**$12,022.0**
74.91%	84.85%	77.39%	81.19%	86.54%
$14,391.1	$14,058.0	$13,717.6	$13,177.0	$12,932.5
189.52%	110.60%	165.13%	131.08%	92.96%

Schedule of Changes in Net Pension Liability/(Asset) and Related Ratios ($ in millions)

(continued on next page)

Traditional Pension Plan[1]	2022	2021	2020	2019
Net Change in Total Pension Liability				
Service Cost	$2,037.0	$1,973.7	$2,008.5	$1,959.5
Interest on Total Pension Liability	7,945.9	7,731.9	7,806.8	7,623.7
Changes of Benefit Terms	—	—	—	—
Difference Between Expected and Actual Experience	1,432.2	759.8	(942.7)	(242.3)
Changes in Assumptions	—	1,863.9	—	—
Benefit Payments, Including Refunds of Member Contributions	(7,541.4)	(7,251.8)	(6,927.4)	(6,718.2)
Net Change in Total Pension Liability	**3,873.7**	**5,077.5**	**1,945.2**	**2,622.7**
Total Pension Liability—Beginning	117,910.0	112,832.5	110,887.3	108,264.6
Total Pension Liability—Ending	**$121,783.7**	**$117,910.0**	**$112,832.5**	**$110,887.3**
Net Change in Plan Fiduciary Net Position				
Employer Contributions	$2,174.1	$2,035.8	$1,976.1	$1,974.2
Member Contributions	1,553.4	1,454.6	1,411.9	1,410.5
Net Investment Income/(Loss)	(13,217.0)	14,867.9	10,371.7	13,532.5
Benefit Payments, Including Refunds of Member Contributions	(7,541.4)	(7,251.8)	(6,927.4)	(6,718.2)
Non-Investment Administrative Expenses	(54.4)	(52.4)	(51.3)	(51.9)
Other[2]	119.4	130.8	122.1	98.0
Net Change in Plan Fiduciary Net Position	**(16,965.9)**	**11,184.9**	**6,903.1**	**10,245.1**
Plan Fiduciary Net Position—Beginning	109,209.6	98,024.7	91,121.6	80,876.5
Plan Fiduciary Net Position—Ending	**$92,243.7**	**$109,209.6**	**$98,024.7**	**$91,121.6**
Net Pension Liability/(Asset)	**$29,540.0**	**$8,700.4**	**$14,807.8**	**$19,765.7**
Plan Fiduciary Net Position as a Percentage of the Total Pension Liability	75.74%	92.62%	86.88%	82.17%
Covered Payroll	$15,338.9	$14,363.5	$13,939.9	$13,931.9
Net Pension Liability/(Asset) as a Percentage of Covered Payroll	192.58%	60.57%	106.23%	141.87%

[1] Includes money purchase annuities for re-employed retirees and additional annuities.
[2] Other includes Contract and Other Receipts, Other Income and Interplan Activity.

Traditional Pension Plan[1]				
2018	2017	2016	2015	2014
$1,948.6	$1,796.9	$1,738.6	$1,687.0	$1,659.6
7,446.3	7,320.5	7,107.3	6,956.7	6,759.0
—	—	—	—	—
(331.5)	(441.6)	45.5	(322.3)	(309.7)
3,417.0	—	5,328.8	—	—
(6,489.7)	(6,219.8)	(5,936.9)	(5,804.1)	(5,498.8)
5,990.7	**2,456.0**	**8,283.3**	**2,517.3**	**2,610.1**
102,273.9	99,817.9	91,534.6	89,017.3	86,407.2
$108,264.6	**$102,273.9**	**$99,817.9**	**$91,534.6**	**$89,017.3**
$1,895.5	$1,722.9	$1,556.5	$1,498.7	$1,476.1
1,354.2	1,324.5	1,294.8	1,246.7	1,228.1
(2,524.6)	12,586.4	5,947.2	274.9	5,056.3
(6,489.7)	(6,219.8)	(5,936.9)	(5,804.1)	(5,498.8)
(51.8)	(52.2)	(51.9)	(49.1)	(49.8)
107.1	114.4	86.6	90.0	125.8
(5,709.3)	**9,476.2**	**2,896.3**	**(2,742.9)**	**2,337.7**
86,585.8	77,109.6	74,213.3	76,956.2	74,618.5
$80,876.5	**$86,585.8**	**$77,109.6**	**$74,213.3**	**$76,956.2**
$27,388.1	**$15,688.1**	**$22,708.3**	**$17,321.3**	**$12,061.1**
74.70%	84.66%	77.25%	81.08%	86.45%
$13,375.7	$13,085.0	$12,794.0	$12,321.2	$12,139.7
204.76%	119.89%	177.49%	140.58%	99.35%

Schedule of Changes in Net Pension Liability/(Asset) and Related Ratios ($ in millions)

(continued on next page)

Combined Plan[1]	2022	2021	2020	2019
Net Change in Total Pension Liability				
Service Cost	$29.7	$28.9	$29.6	$29.0
Interest on Total Pension Liability	39.6	35.6	33.9	31.0
Changes of Benefit Terms	—	—	—	—
Difference Between Expected and Actual Experience	14.1	2.8	(15.9)	(11.8)
Changes in Assumptions	—	6.0	—	—
Benefit Payments, Including Refunds of Member Contributions	(12.5)	(9.9)	(7.6)	(7.3)
Net Change in Total Pension Liability	**70.9**	**63.4**	**40.0**	**40.9**
Total Pension Liability—Beginning	563.9	500.5	460.5	419.6
Total Pension Liability—Ending	**$634.8**	**$563.9**	**$500.5**	**$460.5**
Net Change in Plan Fiduciary Net Position				
Employer Contributions	$60.5	$64.2	$62.1	$62.7
Member Contributions	—	—	—	—
Net Investment Income/(Loss)	(120.7)	125.1	79.8	94.4
Benefit Payments, Including Refunds of Member Contributions	(12.5)	(9.9)	(7.6)	(7.3)
Non-Investment Administrative Expenses	—	—	—	—
Other[2]	(14.9)	(10.7)	(14.1)	(12.2)
Net Change in Plan Fiduciary Net Position	**(87.6)**	**168.7**	**120.2**	**137.6**
Plan Fiduciary Net Position—Beginning	957.9	789.2	669.0	531.4
Plan Fiduciary Net Position—Ending	**$870.3**	**$957.9**	**$789.2**	**$669.0**
Net Pension Liability/(Asset)	**($235.5)**	**($394.0)**	**($288.7)**	**($208.5)**
Plan Fiduciary Net Position as a Percentage of the Total Pension Liability	137.14%	169.88%	157.67%	145.28%
Covered Payroll	$467.0	$458.5	$443.2	$447.9
Net Pension Liability/(Asset) as a Percentage of Covered Payroll	(50.46%)	(85.94%)	(65.13%)	(46.56%)

[1] Includes annuitized defined contribution accounts. The Combined Plan information in the Net Pension Asset includes only the defined benefit portion of this plan to comply with GASB-reporting standards and does not include the defined contribution portion. The Combining Statements of Fiduciary Net Position and Changes in Fiduciary Net Position present the combined defined benefit and defined contribution portions of the Combined Plan.

[2] Other includes Contract and Other Receipts, Other Income and Interplan Activity.

Combined Plan[1]				
2018	2017	2016	2015	2014
$28.1	$26.4	$24.8	$23.7	$25.7
28.3	26.0	23.5	21.6	19.4
—	—	—	—	—
(12.3)	(17.9)	(10.2)	(13.3)	(13.2)
16.5	—	15.2	—	—
(6.1)	(5.6)	(5.0)	(3.7)	(2.8)
54.5	**28.9**	**48.3**	**28.3**	**29.1**
365.1	336.2	287.9	259.6	230.5
$419.6	**$365.1**	**$336.2**	**$287.9**	**$259.6**
$60.2	$53.6	$47.1	$44.0	$44.2
—	—	—	—	—
(15.9)	68.6	28.8	1.3	17.9
(6.1)	(5.6)	(5.0)	(3.7)	(2.8)
—	—	—	—	—
(8.0)	(7.3)	(15.6)	(3.1)	(2.2)
30.2	**109.3**	**55.3**	**38.5**	**57.1**
501.2	391.9	336.6	298.1	241.0
$531.4	**$501.2**	**$391.9**	**$336.6**	**$298.1**
($111.8)	**($136.1)**	**($55.7)**	**($48.7)**	**($38.5)**
126.64%	137.28%	116.55%	116.90%	114.83%
$430.5	$412.7	$392.3	$366.9	$346.0
(25.97%)	(32.99%)	(14.19%)	(13.26%)	(11.13%)

Schedule of Changes in Net Pension Liability/(Asset) and Related Ratios ($ in millions)

(continued on next page)

Member-Directed Plan[1]	2022	2021	2020	2019
Net Change in Total Pension Liability				
Service Cost	$—	$—	$—	$—
Interest on Total Pension Liability	1.6	1.3	1.4	1.1
Changes of Benefit Terms	—	—	—	—
Difference Between Expected and Actual Experience	7.9	8.1	1.9	4.9
Changes in Assumptions	—	0.2	—	—
Benefit Payments, Including Refunds of Member Contributions	(5.5)	(5.1)	(2.7)	(2.9)
Net Change in Total Pension Liability	**4.0**	**4.5**	**0.6**	**3.1**
Total Pension Liability—Beginning	25.2	20.7	20.1	17.0
Total Pension Liability—Ending	**$29.2**	**$25.2**	**$20.7**	**$20.1**
Net Change in Plan Fiduciary Net Position				
Employer Contributions	$1.2	$0.4	$0.4	$0.4
Member Contributions	—	—	—	—
Net Investment Income/(Loss)	(5.5)	6.1	3.6	3.6
Benefit Payments, Including Refunds of Member Contributions	(5.5)	(5.1)	(2.7)	(2.9)
Non-Investment Administrative Expenses	—	—	—	—
Other[2]	3.5	3.1	13.7	3.5
Net Change in Plan Fiduciary Net Position	**(6.3)**	**4.5**	**15.0**	**4.6**
Plan Fiduciary Net Position—Beginning	43.4	38.9	23.9	19.3
Plan Fiduciary Net Position—Ending	**$37.1**	**$43.4**	**$38.9**	**$23.9**
Net Pension Liability/(Asset)	**($7.9)**	**($18.2)**	**($18.2)**	**($3.8)**
Plan Fiduciary Net Position as a Percentage of the Total Pension Liability	126.74%	171.84%	188.21%	118.84%
Covered Payroll	$694.9	$641.7	$615.0	$607.9
Net Pension Liability/(Asset) as a Percentage of Covered Payroll	(1.13%)	(2.83%)	(2.96%)	(0.62%)

[1] Includes annuitized defined contribution accounts. The Member-Directed Plan information in the Net Pension Asset includes only the defined benefit annuities purchased in this plan to comply with GASB-reporting standards and does not include the defined contribution portion. The Combining Statements of Fiduciary Net Position and Changes in Fiduciary Net Position present the combined defined benefit and defined contribution portions of the Member-Directed Plan.

[2] Other includes Contract and Other Receipts, Other Income/(Expense) and Interplan Activity.

Member-Directed Plan[1]				
2018	2017	2016	2015	2014
$—	$—	$—	$—	$—
0.9	0.8	0.7	0.6	0.5
—	—	—	—	—
4.0	3.4	2.2	1.6	1.5
0.4	—	0.6	—	—
(2.6)	(2.2)	(0.9)	(0.8)	(0.6)
2.7	**2.0**	**2.6**	**1.4**	**1.4**
14.3	12.3	9.7	8.3	6.9
$17.0	**$14.3**	**$12.3**	**$9.7**	**$8.3**
$2.9	$3.1	$2.4	$22.0	$—
—	—	—	—	—
(0.6)	2.5	0.9	0.1	0.5
(2.6)	(2.2)	(0.9)	(0.8)	(0.6)
—	—	—	—	—
1.8	1.7	0.1	(20.0)	1.9
1.5	**5.1**	**2.5**	**1.3**	**1.8**
17.8	12.7	10.2	8.9	7.1
$19.3	**$17.8**	**$12.7**	**$10.2**	**$8.9**
($2.3)	**($3.5)**	**($0.4)**	**($0.5)**	**($0.6)**
113.42%	124.46%	103.40%	103.91%	107.10%
$584.8	$560.3	$531.3	$488.9	$446.8
(0.39%)	(0.62%)	(0.08%)	(0.08%)	(0.13%)

The Combined Plan defined benefit pension is funded only from the employer contributions, with the member contributions deposited to a defined contribution account. The Member-Directed Plan is a defined contribution plan with the option for retirees to annuitize their benefit, which converts the retiree's benefit to a defined benefit. The employer contributions deposited to the defined benefit portion of the Member-Directed Plan are included in these schedules. Employer contributions are used to determine the proportionate share for employers of this actuarial liability and related activity. The following tables display the actuarially determined contributions for employers of the defined benefit pension plans based on the actuarially determined rate, and the amount of these contributions paid by the employers each year.

Schedule of Employer Contributions[1]

All Plans

Year Ended December 31	Actuarially Determined Contributions	Contributions Paid	Contribution Deficiency/ (Excess)	Covered Payroll[2]	Contributions as a Percent of Covered Payroll
2022	$2,234,643,408	$2,235,762,676	($1,119,268)	$16,500,847,449	13.6%
2021	2,100,037,841	2,100,421,859	(384,018)	15,463,730,018	13.6
2020	2,038,189,896	2,038,559,407	(369,511)	14,998,065,952	13.6
2019	2,036,871,335	2,037,257,023	(385,688)	14,987,616,732	13.6
2018	1,955,712,112	1,958,636,247	(2,924,135)	14,391,093,640	13.6
2017	1,776,493,275	1,779,584,006	(3,090,731)	14,058,005,653	12.7
2016	1,603,613,936	1,605,967,479	(2,353,543)	13,717,592,219	11.7
2015	1,542,715,978	1,564,703,133	(21,987,155)	13,177,006,156	11.9
2014	1,520,271,796	1,520,270,127	1,669	12,932,540,544	11.8
2013	1,617,190,012	1,617,185,670	4,342	12,753,739,485	12.7

Schedule of Employer Contributions[1]

Traditional Pension Plan

Year Ended December 31	Actuarially Determined Contributions	Contributions Paid	Contribution Deficiency/ (Excess)	Covered Payroll[2]	Contributions as a Percent of Covered Payroll
2022	$2,174,135,884	$2,174,135,884	—	$15,338,942,757	14.2%
2021	2,035,845,218	2,035,845,218	—	14,363,528,064	14.2
2020	1,976,105,188	1,976,105,188	—	13,939,862,740	14.2
2019	1,974,172,176	1,974,172,176	—	13,931,857,036	14.2
2018	1,895,462,837	1,895,462,837	—	13,375,730,324	14.2
2017	1,722,856,378	1,722,856,378	—	13,085,037,696	13.2
2016	1,556,529,162	1,556,529,162	—	12,793,976,661	12.2
2015	1,498,679,737	1,498,679,737	—	12,321,236,358	12.2
2014	1,476,074,083	1,476,074,083	—	12,139,692,990	12.2
2013	1,571,758,150	1,571,758,150	—	11,999,928,351	13.1

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[1] The Board has approved all contribution rates recommended by the actuary. Actuarially determined contributions exclude funds deposited for purchase of service, employer-paid retirement incentive programs, interest and penalties. These deposits are included in Contract and Other Receipts in the Combining Statement of Changes in Fiduciary Net Position.

[2] Covered Payroll was calculated based on actual information obtained from OPERS-contributing employers during the fiscal year.

Schedule of Employer Contributions[1] — Combined Plan

Year Ended December 31	Actuarially Determined Contributions	Contributions Paid	Contribution Deficiency/ (Excess)	Covered Payroll[2]	Contributions as a Percent of Covered Payroll
2022	$60,507,524	$60,507,524	—	$467,038,533	13.0%
2021	64,192,623	64,192,623	—	458,460,774	14.0
2020	62,084,708	62,084,708	—	443,208,542	14.0
2019	62,699,159	62,699,159	—	447,866,875	14.0
2018	60,249,275	60,249,275	—	430,541,632	14.0
2017	53,636,897	53,636,897	—	412,658,782	13.0
2016	47,079,023	47,079,023	—	392,326,896	12.0
2015	44,022,120	44,022,120	—	366,851,607	12.0
2014	44,196,044	44,196,044	—	346,043,977	12.8
2013	45,427,520	45,427,520	—	331,233,703	13.7

Schedule of Employer Contributions[1] — Member-Directed Plan

Year Ended December 31	Actuarially Determined Contributions	Contributions Paid	Contribution Deficiency/ (Excess)	Covered Payroll[2]	Contributions as a Percent of Covered Payroll
2022		$1,119,268	($1,119,268)	$694,866,159	0.16%
2021	—	384,018	(384,018)	641,741,180	0.06
2020	—	369,511	(369,511)	614,994,671	0.06
2019	—	385,688	(385,688)	607,892,821	0.06
2018	—	2,924,135	(2,924,135)	584,821,684	0.50
2017	—	3,090,731	(3,090,731)	560,309,175	0.55
2016	$5,751	2,359,294	(2,353,543)	531,288,662	0.44
2015	14,121	22,001,276	(21,987,155)	488,918,191	4.50
2014	1,669	—	1,669	446,803,577	—
2013	4,342	—	4,342	422,577,431	—

[1] The Board has approved all contribution rates recommended by the actuary. Actuarially determined contributions exclude funds deposited for purchase of service, employer-paid retirement incentive programs, interest and penalties. These deposits are included in Contract and Other Receipts in the Combining Statement of Changes in Fiduciary Net Position.

[2] Covered Payroll was calculated based on actual information obtained from OPERS-contributing employers during the fiscal year. Beginning in 2014 in conjunction with the implementation of GASB 67, the calculation methodology was modified. Restated information not available for 2013.

During 2022, OPERS managed its investments in three investment portfolios: the Defined Benefit portfolio, the Health Care portfolio and the Defined Contribution portfolio. The Defined Benefit portfolio contains the investment assets of the Traditional Pension Plan, the defined benefit component of the Combined Plan, and the annuitized accounts of the Member-Directed Plan. Within the Defined Benefit portfolio, with the exception of Member-Directed annuitized accounts, 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 the same for all plans within the portfolio. GASB 67 requires that data be reported for 10 years; however, data prior to 2014 is not available.

Schedule of Investment Returns	**Defined Benefit Portfolio**
Year	Annual Money-Weighted Rate of Return Net of Investment Expenses
2022	(12.1%)
2021	15.3%
2020	11.7%
2019	17.2%
2018	(2.9%)
2017	16.8%
2016	8.3%
2015	0.4%
2014	7.0%

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Post-employment Health Care Coverage or OPEB

The Schedule of Changes in Net OPEB Liability/(Asset) and Related Ratios displays the components of the total OPEB liability and plan fiduciary net position for the defined benefit health care plans, calculated in conformity with the requirements of GASB 74. Covered Payroll represents the collective total of the OPERS eligible wages of all OPERS employers within each pension plan. GASB 74 requires that data be reported for 10 years; however, data prior to 2017 is not available.

Schedule of Changes in Net OPEB Liability/(Asset) and Related Ratios ($ in millions) **Health Care**

	2022	2021	2020
Net Change in Total OPEB Liability			
Service Cost	$168.5	$158.3	$715.3
Interest on Total OPEB Liability	653.0	665.9	836.0
Changes of Health Care Terms[1]	—	—	(9,414.6)
Difference Between Expected and Actual Experience	(228.3)	(79.9)	(1,772.4)
Changes in Assumptions	999.3	(243.9)	(4,652.8)
Health Care Payments, Including Refunds of Member Contributions	(589.8)	(853.1)	(725.3)
Net Change in Total OPEB Liability	**1,002.7**	**(352.7)**	**(15,013.8)**
Total OPEB Liability—Beginning	11,093.1	11,445.8	26,459.6
Total OPEB Liability—Ending	**$12,095.8**	**$11,093.1**	**$11,445.8**
Net Change in Plan Fiduciary Net Position			
Employer Contributions	$29.9	$25.6	$24.5
Contributions—Non-employer Contributing Entities	—	—	—
Member Contributions	—	—	—
Net Investment Income/(Loss)	(2,188.3)	1,840.6	1,296.4
Health Care Payments, Including Refunds of Member Contributions	(589.8)	(853.1)	(725.3)
Non-Investment Administrative Expenses	(12.2)	(15.5)	(16.2)
Other[2]	0.4	0.3	0.9
Net Change in Plan Fiduciary Net Position	**(2,760.0)**	**997.9**	**580.3**
Plan Fiduciary Net Position—Beginning	14,225.3	13,227.4	12,647.1
Plan Fiduciary Net Position—Ending	**$11,465.3**	**$14,225.3**	**$13,227.4**
Net OPEB Liability/(Asset)	**$630.5**	**($3,132.2)**	**($1,781.6)**
Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	94.79%	128.23%	115.57%
Covered Payroll	$16,500.8	$15,463.7	$14,998.1
Net OPEB Liability/(Asset) as a Percentage of Covered Payroll	3.82%	(20.25%)	(11.88%)

[1] Refer to the Notes to Required Supplementary Information, Factors Significantly Affecting Trends in Reported Amounts, for additional information.
[2] Other includes Contract and Other Receipts and Other Income.

With the assistance of the System’s actuary, the Board may approve a portion of each employer contribution to OPERS to be set aside for the funding of post-employment health care coverage. No employer contributions were allocated to health care in 2022 for the Traditional Pension Plan. Effective July 1, 2022, OPERS increased the portion of the employer contribution rate allocated to health care funding from 0.0% to 2.0% for the Combined Plan. The employer contribution as a percent of covered payroll deposited for the Member-Directed Plan participants’ health care accounts for 2022 was 4.0%. Interest is credited to member accounts based on the investment performance of the stable value fund, not to exceed 4.0%.

(continued from previous page)		**Health Care**
2019	2018	2017
$542.3	$617.4	$546.9
957.4	906.7	921.2
—	—	—
(1,982.8)	(52.8)	12.5
3,420.0	11.5	1,168.7
(767.9)	(870.3)	(952.0)
2,169.0	**612.5**	**1,697.3**
24,290.6	23,678.1	21,980.8
$26,459.6	**$24,290.6**	**$23,678.1**
$24.3	$23.4	$157.4
—	—	—
—	—	—
2,155.1	(700.4)	1,756.8
(767.9)	(870.3)	(952.0)
(18.0)	(19.6)	(24.9)
0.7	1.0	1.0
1,394.2	**(1,565.9)**	**938.3**
11,252.9	12,818.8	11,880.5
$12,647.1	**$11,252.9**	**$12,818.8**
$13,812.6	**$13,037.7**	**$10,859.3**
47.80%	46.33%	54.14%
$14,987.6	$14,391.1	$14,058.0
92.16%	90.60%	77.25%

The table below displays the actuarially determined contributions for employers allocated to health care based on the actuarially determined rate, and the amount of these contributions paid by the employers each year based on the allocations determined by the Board. Due to the discretionary nature of health care funding and the potential for frequent changes in allocations, including not having funding available to allocate to health care for some plans, the calculation of proportionate shares of employers is based on total employer contributions, as disclosed in the Schedules of Employer Contributions within the Defined Benefit Pension Plans section of the Required Supplementary Information.

Schedule of Employer Contributions **Health Care**

Year Ended December 31	Actuarially Determined Contributions	Contributions Paid	Contribution Deficiency/ (Excess)	Covered Payroll[1]	Contributions as a Percent of Covered Payroll
2022	$229,408,392	$29,899,481	$199,508,911	$16,500,847,449	0.2%
2021	212,713,761	25,631,727	187,082,034	15,463,730,018	0.2
2020	987,819,505	24,489,938	963,329,567	14,998,065,952	0.2
2019	855,315,505	24,318,141	830,997,364	14,987,616,732	0.2
2018	850,929,552	23,441,668	827,487,884	14,391,093,640	0.2
2017	739,451,097	157,417,888	582,033,209	14,058,005,653	1.1
2016[a]	762,698,127	284,903,259	477,794,868	13,717,592,219	2.1
2015	731,847,564	253,673,333	478,174,231	13,177,006,156	1.9
2014	684,421,764	247,083,670	437,338,094	12,932,540,544	2.0
2013	1,555,931,467	120,056,440	1,435,875,027	12,331,162,054	1.1

[a] In 2016, IRS guidance allowed OPERS to consolidate all health care funding into the 115 Trust. Based on criteria in GASB 74, all OPERS health care plans are reported as defined benefit OPEB. Therefore, beginning in 2016, the total employer contributions presented includes the contributions for all health care plans.

[1] Covered Payroll was calculated based on actual information obtained from OPERS-contributing employers during the fiscal year, which differs from the Covered Payroll in the funding valuation. Covered Payroll used in the funding valuation is based on the annualized pay rate of all pension plan active members as of the valuation date.

During 2022, 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 plan are assumed to be received continuously through 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. GASB 74 requires that data be reported for 10 years; however, data prior to 2017 is not available.

Schedule of Investment Returns **Health Care Portfolio**

Year	Annual Money-Weighted Rate of Return Net of Investment Expenses
2022	(15.6%)
2021	14.3%
2020	10.5%
2019	19.7%
2018	(5.6%)
2017	15.3%

See Notes to Required Supplementary Information, beginning on page 85.

Defined Benefit Pension Plans

Actuarial Assumptions and Methods Used in Determining Contribution Rates

Actuarially determined contributions are constrained by contribution limits established by statute. The actuarial assumptions and methods used to determine contribution rates for the year ended December 31, 2022 are based on the December 31, 2019 pension actuarial valuation and are described below.

- ***Valuation Method***—Individual entry age actuarial cost method of valuation is used in determining benefit liabilities and normal cost. Differences between assumed and actual experience (the actuarial gains and losses) become part of the actuarial accrued liability.
- ***Asset Valuation Method***—For actuarial purposes, assets are valued utilizing a method that recognizes assumed total investment returns each year. Differences between actual and assumed investment returns are phased in over a closed four-year period. This funding value is not permitted to deviate from fair value by a corridor of plus or minus 12.00%.
- ***Amortization Method***—Level percent of payroll, closed amortization period, for the Traditional Pension and Combined plans; Level dollar, closed amortization period, for the Member-Directed Plan.
- ***Investment Return***—An investment rate of return of 7.20% compounded annually (net after investment administrative expenses) was assumed.
- ***Wage Inflation***—The active member payroll was assumed to increase 3.25% annually, which is the portion of the individual pay increase assumption attributable to inflation and overall productivity.
- ***Salary Scale***—Wage inflation plus additional projected salary increases ranged up to 7.50% per year depending on age, attributable to seniority and merit, or 3.25% to 10.75%, including inflation.
- ***Cost-of-living Adjustments***—Pre-January 7, 2013 retirees: 3.0% simple; post-January 7, 2013 retirees: 1.4% for calendar year 2020, then 2.15% simple.
- ***Multiple Decrement Tables–Mortality***—Pre-retirement mortality rates were 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 were based on the RP-2014 Healthy 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 were based on the RP-2014 Disabled mortality table for males and females, adjusted for mortality improvement back to the observation base year of 2006. The base year for males and females was then established to be 2015 and 2010, respectively. Mortality rates for a particular calendar year were determined by applying the MP-2015 mortality improvement scale to all of the above described tables.

Post-employment Health Care Coverage or OPEB

Actuarial Assumptions and Methods Used in Determining Contribution Rates

The Actuarial Determined Employer Contribution for the year ended December 31, 2022 is based on the December 31, 2020 health care actuarial valuation. The actuarial assumptions and methods used to determine contribution rates are described below.

- ***Valuation Method***—Individual entry age actuarial cost method of valuation is used in determining health care liabilities and normal cost. Differences between assumed and actual experience (the actuarial gains and losses) become part of the total actuarial accrued liability.
- ***Asset Valuation Method***—For actuarial purposes, assets are valued utilizing a method that recognizes assumed total investment returns each year. Differences between actual and assumed investment returns are phased in over a closed four-year period. This funding value is not permitted to deviate from fair value by a corridor of plus or minus 12.00%.
- ***Amortization Method***—Level percent of payroll, open 15 year amortization period.
- ***Investment Return***—An investment rate of return of 6.00% compounded annually (net after investment administrative expenses) was assumed.
- ***Wage Inflation***—The active member payroll was assumed to increase 2.75% annually, which is the portion of the individual pay increase assumption attributable to inflation and overall productivity.
- ***Salary Scale***—Wage inflation plus additional projected salary increases ranged up to 7.50% per year depending on age, attributable to seniority and merit, or 2.75% to 10.75%, including inflation.
- ***Multiple Decrement Tables–Mortality***—Pre-retirement mortality rates are based on 130% of the Pub-2010 General Employee Mortality tables (males and females) for State and Local Government divisions and 170% of the Pub-2010 Safety Employee Mortality tables (males and females) for the Public Safety and Law Enforcement divisions. Post-retirement mortality rates are based on 115% of the PubG-2010 Retiree Mortality Tables (males and females) for all divisions. Post-retirement mortality rates for disabled retirees are based on the PubNS-2010 Disabled Retiree Mortality Tables (males and females) for all divisions. For all of the previously described tables, the base year is 2010 and mortality rates for a particular calendar year are determined by applying the MP-2020 mortality improvement scales (males and females) to all of these tables.

Factors Significantly Affecting Trends in Reported Amounts

Listed below is a summary of the key changes during the time period presented:

In 2021, a five-year experience study was completed for the period January 1, 2016 through December 31, 2020. The Board adopted changes to the demographic and economic assumptions for pension and health care as a result of the study. One key trend in the demographic portion of the study is the continued reduction in disability rates resulting from the changes in the disability program that encourage disabled participants to seek rehabilitation and return to work. The most notable changes in economic assumptions were a reduction in the long-term pension investment return assumption from 7.2% to 6.9%, a reduction in the long-term expected wage inflation from 3.25% to 2.75%, and a reduction in long-term expected price inflation from 2.50% to 2.35%. These assumptions included in the 2022 actuarial valuation are disclosed in the Actuarial Section beginning on page 135.

On January 15, 2020, the Board approved several changes to the health care plan offered to Medicare and non-Medicare retirees in efforts to decrease costs and increase the solvency of the health care plan. These changes were effective January 1, 2022 and included changes to base allowances and eligibility for Medicare retirees, as well as replacing the OPERS-sponsored self-insured medical plans for non-Medicare retirees with monthly allowances, similar to the program for Medicare retirees. These changes are reflected beginning in the current year financial statements; however, they were already reflected beginning in the December 31, 2020 measurement date health care valuation. These changes significantly decreased the total OPEB liability beginning with the measurement date December 31, 2020. For more information on the health care program, see the Plan Statement beginning on page 215.

Dynamic or strategic asset allocation reviews for the Defined Benefit and Health Care portfolios are completed annually. Generally, these reviews do not result in significant changes to the asset allocation. However, in 2020, the Board approved the elimination of the allocation to the Hedge Fund asset class in both portfolios. To reduce the Hedge Funds allocation, transitional allocation targets were approved for both portfolios that resulted in several changes in both portfolios.

There was also a change in the investment rate of returns for pension and health care in a non-experience study year. Conditions are monitored and assumptions are reviewed annually to ensure that the assumptions remain reasonable until the next scheduled experience study. If conditions change materially, it may become necessary to review and update assumptions in advance of the next scheduled experience study. In 2018, the Board adopted changes to further reduce the long-term pension investment return assumption from 7.5% to 7.2% and the long-term health care investment return assumption from 6.5% to 6.0%.

In 2016, a five-year experience study was completed on the period January 1, 2011 through December 31, 2015. The Board adopted changes to the demographic and economic assumptions for pension and health care as a result of the study. The most notable change in demographic assumptions was an increased life expectancy for members. The most notable change in economic assumptions was a reduction in the long-term pension investment return assumption from 8.0% to 7.5%.

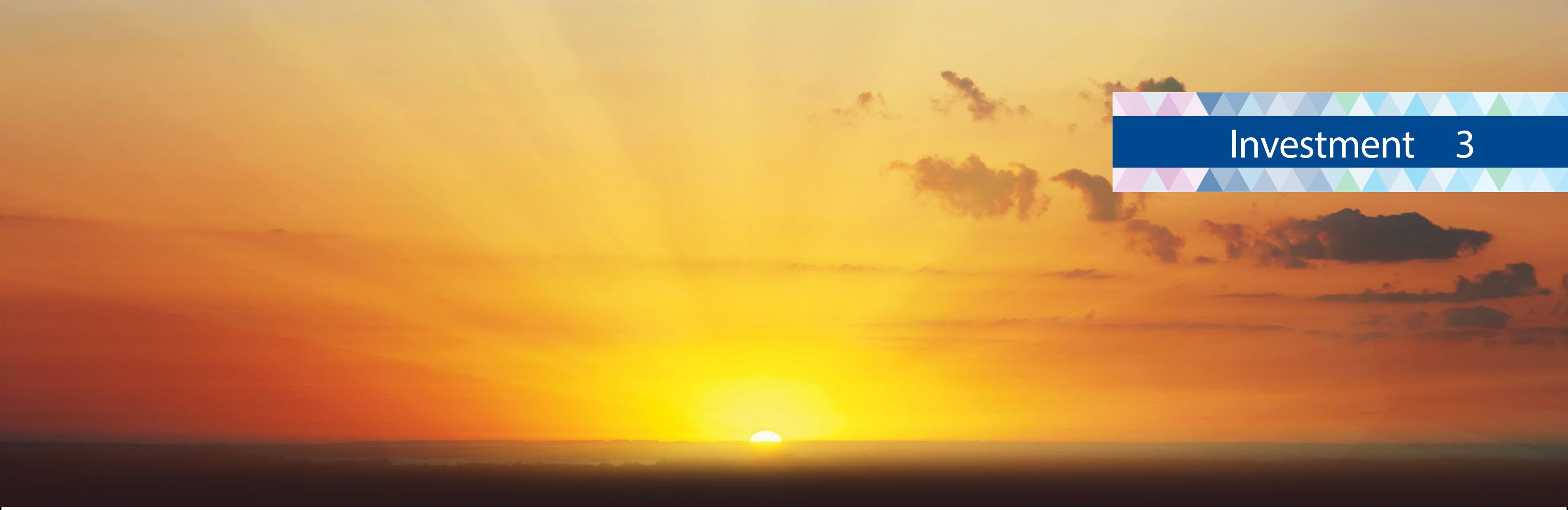
In 2016, OPERS, in conjunction with the Board's investment consultants, also completed an asset liability study for pension and health care. Periodically, the System engages in a more comprehensive study that examines the nature of the pension liabilities we will ultimately pay and the characteristics of the asset allocation projections and the associated level of risk. As a result of this study, OPERS modified the asset allocation slightly, but not substantively.

Annually, the single discount rate used to measure the total OPEB liability is determined based upon several factors, including the long-term health care investment return assumption and a tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating. Additionally, the total OPEB liability is impacted by the assumed health care cost trend rate. The changes in these rates, in particular the decreases in the single discount rate noted within the Investment Rates by Portfolio table found on page 132 in the Investment Section, had significant impacts to the calculation of the total OPEB liability in 2017, 2019 and 2022.

Administrative Expenses (for the year ended December 31, 2022)	
Personnel Expenses	
Wages and Salaries	$46,794,632
Retirement Contributions—OPERS	6,007,402
Retirement Contributions—Medicare	651,322
Employee Insurance	9,103,076
Other Personnel Expense	121,029
Purchased Services and Supplies	
Professional Expenses	
Audit Services	582,740
Actuarial Services	532,769
Consulting Services	761,059
Investment and Financial Services	14,378,728
Legal and Investigation Services	1,399,812
Medical Examinations	559,490
Retirement Study Council	292,050
Custodial and Banking Fees	5,214,155
Information Technology	10,126,634
Communications	2,143,240
Office Supplies, Equipment and Other Miscellaneous	574,892
Education—Member and Staff	765,308
Facility Expenses	4,954,177
Subtotal Operating Expenses	**104,962,515**
Depreciation and Amortization Expense	
Building	2,311,657
Furniture and Equipment	9,879,359
Intangible Right-to-use Assets	1,521,730
Subtotal Depreciation and Amortization Expense	**13,712,746**
Total Administrative Expenses	**118,675,261**
Investment Expenses	(46,939,367)
Net Administrative Expenses	**$71,735,894**

Schedule of Investment Expenses[1] (for the year ended December 31, 2022)	
Investment Staff Expense	$21,263,585
Investment Services	21,160,888
Investment Legal Services	963,140
Allocation of Administrative Expenses (See Note 2b to Financial Statements)	3,551,754
Total Investment Expenses	**$46,939,367**

[1] Excludes fees and commissions, please see Schedules of Brokerage Commissions Paid beginning on page 104.



Financial Stability maintains: *Strength in volatile and growth markets*

Stock market volatility can be unnerving. However, OPERS is an institutional investor with a long-term outlook—meaning market downturns are expected and anticipated. Therefore, unlike smaller investors, this organization can move to help minimize risk. Simply put, a market downturn is not as risky for this institution as it might be for a smaller investor with a shorter horizon.

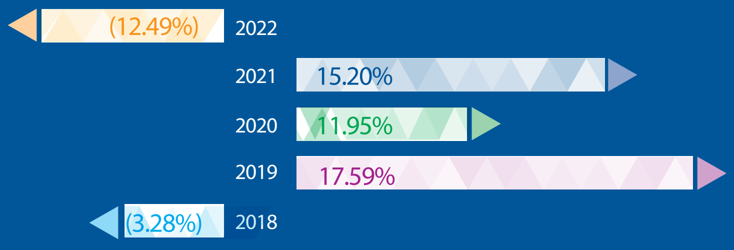
Strong returns are important because, in the long term, accumulated investment returns pay for approximately 80% of a retiree's annual pension. The market, and the economic forces that move the market, are beyond the control of investors, even institutional investors such as OPERS. The year 2022 was unusual in that the market experienced more down days than up and most sectors finished down.

Through systematic, diversified investing, the OPERS investment team has focus on finding small pockets of opportunities in negative markets to mitigate losses. This ability to both maximize the benefits of strong markets and find opportunities in volatile markets has helped create a strong financial foundation.

What members should look for in this section: An often overlooked benefit of the defined benefit structure (Traditional Pension Plan) is that OPERS absorbs market losses so that a Traditional Pension Plan retiree always has a secure retirement. OPERS is always evaluating the asset allocation and makes adjustments to maximize market return. As an organization, OPERS is large enough to absorb loss so that retirees do not feel the immediate impact of a negative market.

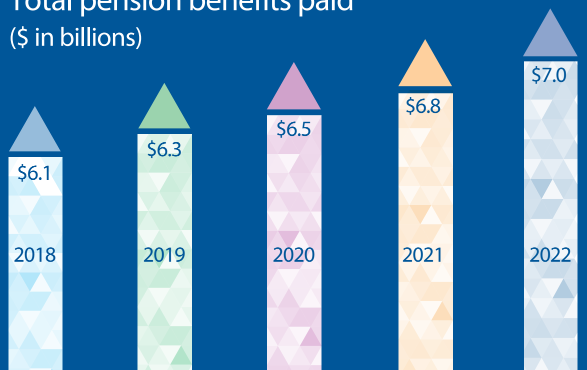
What all stakeholders should know: OPERS is good for Ohio. As an institutional investor, OPERS regularly invests in companies headquartered in Ohio AND in companies who employ a large number of Ohioans (see page 124 for top Ohio holdings).

Investment returns



Total pension benefits paid

($ in billions)



OPERS

Ohio Public Employees Retirement System

277 East Town Street Columbus, Ohio 43215-4642 1-800-222-7377 www.opers.org

To My Fellow Members:

At the end of 2021, the Defined Benefit and Health Care portfolios had just completed the best three-year period since the early 2000's posting returns of 15.20%, 11.95%, and 17.59% for 2021, 2020, and 2019, respectively. The total market value of the combined funds had grown from $94.0 billion at the end of 2018 to $126.3 billion at the end of 2021. Then came 2022. What a difference one year makes. Last year the natural market correlations were non-existent, which was demonstrated by both equities and fixed income being down, as well as almost every other asset class. The year finished with widespread negative returns across the majority of asset classes and few positive macro headlines along the way. As a result, the OPERS Defined Benefit portfolio returned a loss of 12.03%, which was below the actuarial target of 6.9%. The Health Care portfolio returned a loss of 15.51%, which was also below the actuarial target of 6.0%.

A Review of 2022

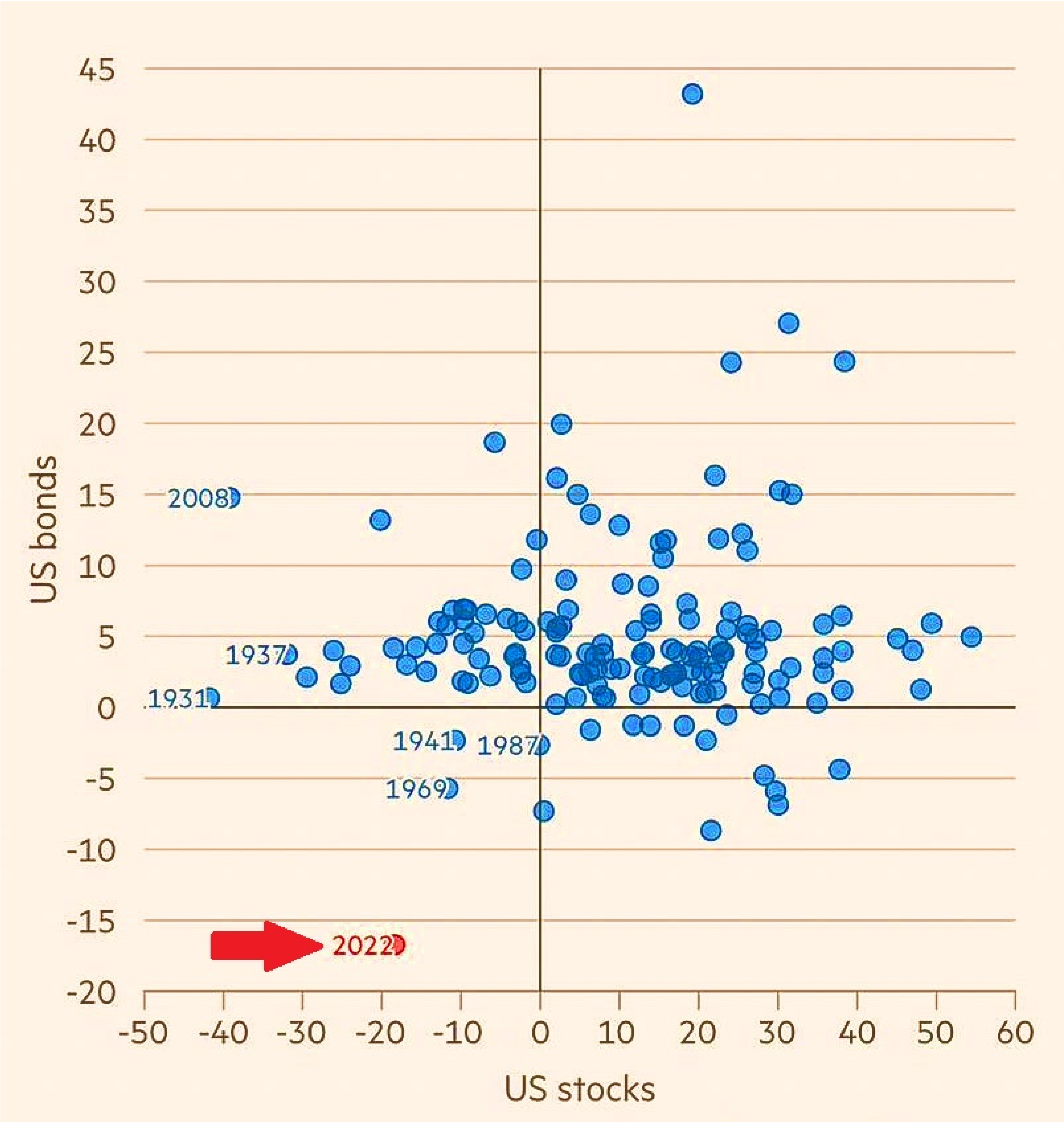
Three major themes dominated the headlines and markets in 2022: 1) elevated geopolitical tensions, 2) persistently high inflation and 3) rapidly rising interest rates engineered by the Federal Reserve to combat inflationary pressures. First, the Russian invasion of Ukraine created a global energy shock and together with rising U.S.-China tensions accelerated the multi-year trend of deglobalization and international decoupling. These forces hastened the ascent of global inflation, which had been supported by the unprecedented combination of monetary and fiscal stimulus implemented since the COVID pandemic in 2020. Here in the U.S., the headline Consumer Price Index reached a high of 9.1%: a level not seen since the 1980's. It was clear the Federal Reserve had misjudged the “transitory” nature of inflation and began a historic rate hiking campaign to bring down inflation. In only nine months, the Fed raised rates from 0.25% to 4.50% marking one of the swiftest and largest increases in history.

The resulting damage to financial assets was broad based. In the equity world, the S&P 500 and Nasdaq sold off (19.4%) and (33%), respectively, for their worst yearly performances since the Great Financial Recession of 2008. It was only the second time ever that the S&P 500 underperformed international equities in a negative year. And unlike in 1929 and 2008, there was no crash. Instead, stocks had a series of double-digit selloffs followed by failed market rallies only to see the S&P 500 end its seventh worst year since 1926. Many short term investors compounded their losses chasing these bear market rallies and getting whipsawed in the process. The devastation was even greater in the fixed income markets which posted their worst year on record. Furthermore, instead of providing offsetting performance to their equity counterparts, bonds moved in sync with equities shedding their role as a portfolio diversifier. In 2008, for example, bonds posted positive returns offsetting the dramatic negative equity returns, which dampened the drawdown in most well diversified portfolios. Not so in 2022. The Barclays U.S. Aggregate Index, a widely used proxy for the overall bond market, lost 13.1% which was the worst year in the history of the index stretching back to the 1970's. Both lower quality corporate bonds and emerging market debt were down more than 15% and U.S Treasury 10-year notes returned a loss of 16%. This was unprecedented.

One of the key questions for 2023 is whether bonds will continue to move in tandem with stocks or revert to their diversifying nature and demonstrate a negative correlation to stocks.

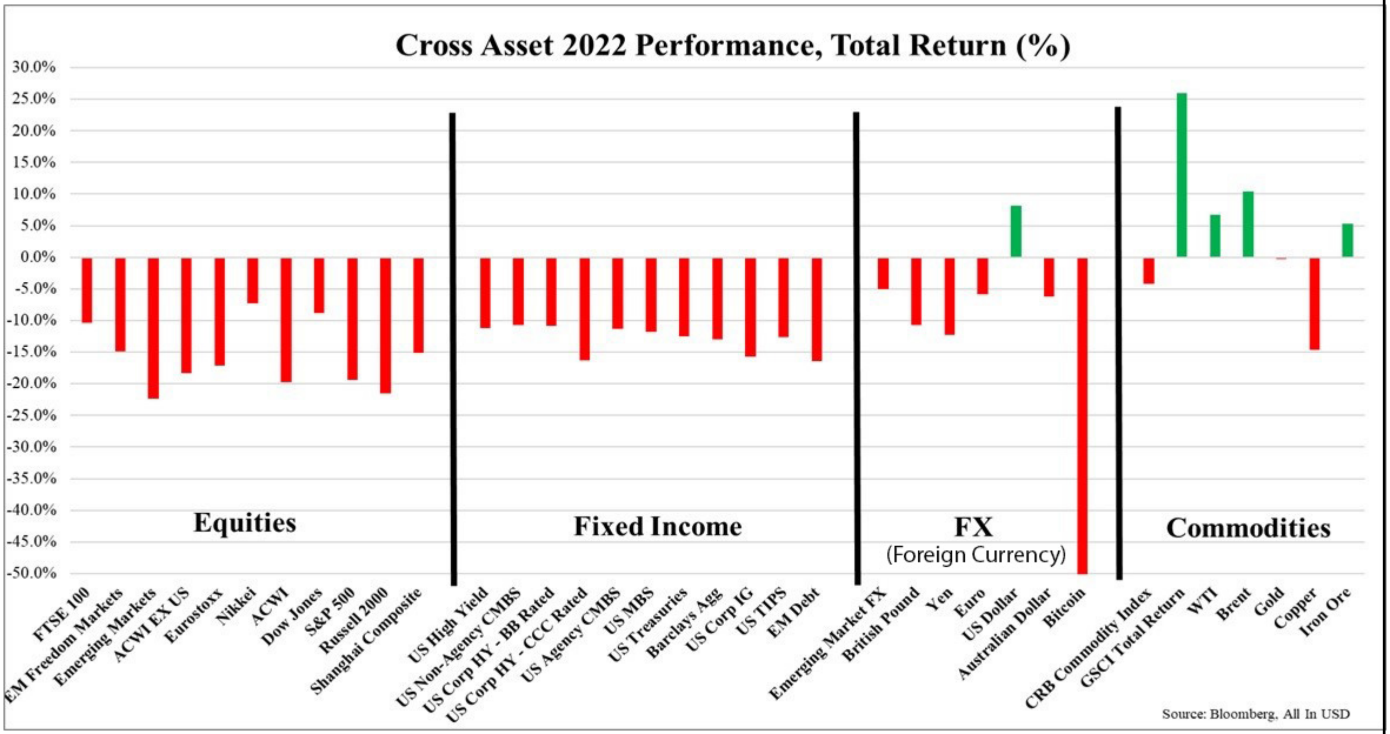
In the end, there was simply nowhere to hide. Diversification was almost non-existent as U.S. stocks and bonds combined had their poorest performing year since 1871. Chart 1, below, shows the magnitude of last year's performance relative to the last 150 years. Chart 2 shows the performance for various equity, fixed income, foreign currency and commodity markets around the world. The only positive returning asset classes in 2022 were the U.S. Dollar, select commodities and cash (not shown). All in all, 2022 was definitely a year to forget.

Chart 1 - Total Nominal Return in US Stocks & Bonds, 1871-2022 (%)



Source: Robert J Shiller; TS Lombard; Financial Times calculations

Chart 2



Source: Bloomberg, All In USD

2022 Initiatives

Each year, the Investments Division undertakes significant initiatives to enhance the capabilities and performance of our program. The following strategic initiatives were completed in 2022:

- Successfully installed a new investments portfolio and risk system replacing multiple systems across the division with one common platform and reducing annual expenditures.
- Completed a review of the stable value benchmark in the Defined Contribution portfolio resulting in changing the custom benchmark to one that is more commonly used in the industry.
- Added two new portfolios in the Opportunistic Fund allocation. One provides exposure to Gold as an inflation hedge and the other is an active currency strategy to provide further diversification to both the Defined Benefit and Health Care portfolios.

2023 Initiatives

The key initiatives for 2023 include:

- Upgrading the portfolio and risk system for the Private Alternatives teams.
- Adding a standalone investment grade credit portfolio to both the Defined Benefit and Health Care portfolios.
- Building out the internal Risk Parity strategy to complement our external manager exposure to this strategy.
- Research additional investment options for the Defined Contribution Plan.

Looking Ahead

The major themes from 2022 will continue to play out in 2023, but hopefully without the same dramatic impact on the markets. There will be continued geopolitical tensions (Ukraine, China), high inflation (though trending down) and a Federal Reserve still intent on raising rates (though smaller increments expected). The major concern at the start of the year is whether the rapid rise in rates will produce a recession here and abroad and whether China's re-opening of their economy will mitigate those effects. One thing is clear, the investment strategies that worked over the last ten years may likely not work the next ten years.

Here at OPERS, we have worked hard over the past five years to reduce fees paid to external managers by managing more assets internally. Internal staff manages approximately 55% of the total plan assets now from a low of 35%. The result is that the Defined Benefit and Health Care portfolios are more liquid, transparent, less complex and have a lower hurdle to generate positive returns due to their industry-wide low-cost structure. Liquidity is paramount as the plan's liabilities are expected to increase over the next ten years. Benefit payments to members currently stands at roughly $7.6 billion annually and will be increasing steadily. Our top priority is to meet these obligations each month.

As always, the OPERS Board of Trustees is recognized and thanked. This governing body carefully evaluates investment strategies, reviews the allocations and monitors the ongoing performance. Although it was a difficult year from a total return perspective, staff worked closely with OPERS leadership, the Board of Trustees and its independent advisor to execute key initiatives efficiently and cost effectively which will benefit OPERS over the long term. With guidance and support from these key partners, Investments staff will diligently strive to deliver long term results for our current and future members.

Paul Greff
Chief Investment Officer
March 21, 2023

Note: The returns presented throughout the Investment Section are the result of the returns generated by Defined Benefit, Health Care and Defined Contribution portfolio investments, based on a combination of time-weighted and market value-weighted calculations. The returns presented are net of external manager fees, overdraft charges, debit interest, registration expenses, stamp duties and taxes spent on foreign securities. In addition, securities lending money market returns are net of custodial fees, transfer agent expenses and professional fees.

Board Investment and Fiduciary Duties

(A) The members of the public employees retirement board shall be the trustees of the funds created by section 145.23 of the Revised Code. The board shall have full power to invest the funds. The board and other fiduciaries shall discharge their duties with respect to the funds 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 the public employees retirement system; with care, skill, prudence, and diligence under the circumstances then prevailing that a prudent person acting in a like capacity and familiar with these matters would use in the conduct of an enterprise of a like character and with like aims; and by diversifying the investments of the system so as to minimize the risk of large losses, unless under the circumstances it is clearly prudent not to do so.

(B) In exercising its fiduciary responsibility with respect to the investment of the funds, it shall be the intent of the board to give consideration to investments that enhance the general welfare of the state and its citizens where the investments offer quality, return, and safety comparable to other investments currently available to the board. In fulfilling this intent, equal consideration shall also be given to investments otherwise qualifying under this section that involve minority owned and controlled firms and firms owned and controlled by women either alone or in joint venture with other firms.

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Craig Svendsen, CFA
Partner

255 State Street

Boston, MA 02109

April 13, 2023

Board of Trustees
Ohio Public Employees Retirement System
277 East Town Street
Columbus, OH 43215-4642

As an independent investment advisor to the Ohio Public Employees Retirement System ('OPERS') and the Board of Trustees (the 'Board'), NEPC, LLC is providing an opinion on the reporting of OPERS investment results, investment policies, internal compliance procedures and the Board's oversight of the Retirement System's investments.

Investment Results

To the best of NEPC's knowledge and belief, OPERS investment results, as presented in this Annual Comprehensive Financial Report (ACFR), accurately represent the performance of the Retirement System's Defined Benefit, Health Care and Defined Contribution assets. All measurements shown have been calculated using standard performance evaluation methods and are presented in a manner that is consistent with investment industry standards.

Investment Policies

OPERS investment policies can be accessed online at https://www.opers.org/investments/inv-plans.shtml and are organized as follows: Part I: Investment Objectives and Asset Allocation Policies; Part II: Asset Class and Sub-Asset Class Policies; Part III: Investment-Wide Policies; and Part IV: Corporate Governance and Proxy Voting Policies.

In NEPC's opinion, OPERS assets are managed under a set of transparent investment policies and guidelines. These policies and guidelines adequately highlight the strategic performance objectives of the Ohio Public Employees Retirement System and emphasize the dual importance of maintaining robust risk controls and program diversification.

Internal Compliance

The constant testing of Fund portfolios and the continuous review of the compliance function itself is considered to be best practice within the investment industry. While serving as OPERS generalist investment consultant, NEPC has witnessed Staff’s consistent and ongoing efforts to improve the effectiveness of their internal compliance procedures. NEPC also believes that the Investment Division's support of the CFA® Institute's Code of Ethics and Standards of Professional Conduct, as well as the guidelines and procedures that are set forth in the OPERS Code of Ethics and OPERS Personal Trading Policies, are consistent with industry best practice for investment professionals.

Prudent Oversight

The daily management of the OPERS assets has been clearly delegated to the Retirement System's investment Staff. In NEPC's opinion, this clear delegation of accountability helps the Board maintain effective oversight of the OPERS Defined Benefit, Health Care and Defined Contribution Funds through quarterly performance reviews, regular oversight of Staff's activities and monthly meetings with Staff, the investment consultants and other independent service providers.

Best Regards,

Craig Svendsen

Craig Svendsen, CFA
Partner

Introduction

The total OPERS investment portfolio, as reflected in the Combining Statement of Fiduciary Net Position, page 32, is comprised of Defined Benefit, Health Care, and Defined Contribution portfolio assets. The Defined Benefit portfolio assets originate from Traditional Pension Plan member and employer contributions, employer contributions to the Combined Plan, and funds from defined contribution accounts for annuities. The investment of these assets is the responsibility of the Investment staff, adhering to the policies approved by the OPERS Board of Trustees.

The Health Care portfolio assets are segregated from the pension portfolio and invested with a more conservative, and shorter term, asset-allocation strategy. The Health Care portfolio is comprised of assets set aside to pay post-employment health care expenses for the retirees of the Traditional Pension Plan, Combined Plan and Member-Directed Plan. The investment of these assets is the responsibility of the Investment staff, adhering to the policies approved by the Board. Prior to 2017, heath care assets were included in two trusts established under Internal Revenue Code Sections 115 and 401(h). Accordingly, historical information reported in this section reflects both the 401(h) Health Care Trust portfolio and the more recent 115 Health Care Trust portfolio. The 401(h) Health Care Trust portfolio was transferred to the 115 Health Care Trust portfolio on July 1, 2016, resulting in one health care portfolio. Historical information in this section reflects the different health care portfolios in place for the time periods reported.

Defined Contribution portfolio assets originate from member contributions to the Combined Plan and both member and employer contributions to the Member-Directed Plan. The investment of Defined Contribution portfolio assets is self-directed by members of the Combined and Member-Directed plans, but is limited to investment options approved by the Board and the self-directed brokerage account window.

Investment Summary

The Total Investment Summary (beginning on the next page) relates to System-wide investments and includes the assets of all three portfolios as of December 31, 2022. The balance of information in this Investment Section is organized as follows: Defined Benefit portfolio investments (pages 109-113) relating exclusively to defined benefit assets; Health Care portfolio investments (pages 115-119) relating exclusively to health care assets; and Defined Contribution portfolio investments (pages 121-123) relating exclusively to defined contribution assets. The Investment Objectives and Policies and Asset Class Policies (pages 125-131) provide information on the System investment policies and performance objectives.

The returns presented throughout the Investment Section are the result of the returns generated by Defined Benefit, Health Care and Defined Contribution portfolio investments, based on a combination of time-weighted and market value-weighted calculations. The returns presented throughout this Investment Section are net of external manager fees, overdraft charges, debit interest, registration expenses, stamp duties, and taxes spent on foreign securities. In addition, securities lending money market returns are net of custodial fees, transfer-agent expenses, and professional fees.

A list of assets held as of December 31, 2022 is available upon request.

Total Investment Summary

The table below reflects the total investment portfolio, which includes three component portfolios, as of December 31, 2022: the Defined Benefit portfolio, the Health Care portfolio and the Defined Contribution portfolio.

Investments are generally reported at fair value. Short-term investments are reported at cost, which approximates fair value. Securities traded on a national or international exchange are valued at the last-reported sales price at current exchange rates. Performance results and fair values for the real estate and private equity asset classes are typically reported on a quarter lag basis, adjusted for cash flow activity during the fourth quarter. The investment results reported for these asset classes in the Investment Section reflect this practice. If any significant market gains or losses occur in the fourth quarter, these asset classes are adjusted for financial reporting purposes to reflect the estimated fair value at year end. The table below displays the fair values of investment assets consistent with the presentation in the financial statements on page 32.

Summary of Cash, Cash Equivalents and Investments (as of December 31, 2022)

	Fair Value	Percent of Total Fair Value
Cash and Cash Equivalents		
Cash	$177,430,598	0.17%
Cash Equivalents		
Commercial Paper	1,405,781,251	1.32
U.S. Treasury Obligations	720,915,152	0.68
Repurchase Agreements	260,000,000	0.24
Interest-Bearing Short-Term Certificates	200,000,000	0.19
Short-Term Investment Funds (STIF)	1,592,353,858	1.50
Total Cash and Cash Equivalents	**4,356,480,859**	**4.10**
Investments		
Fixed Income		
U.S. Corporate Bonds	6,299,531,806	5.93
Non-U.S. Notes and Bonds	5,111,227,814	4.81
U.S. Government and Agencies	10,052,382,420	9.46
U.S. Mortgage Backed	4,734,072,739	4.46
Subtotal Fixed Income	26,197,214,779	24.66
Domestic Equities	24,031,676,030	22.62
Real Estate	11,829,654,598	11.14
Private Equity	13,374,059,927	12.59
International Equities	22,103,558,073	20.81
Risk Parity	3,165,101,289	2.98
Collective Trust Funds	1,100,208,883	1.04
Other Investments	66,450,834	0.06
Total Long-Term Investments	**101,867,924,413**	**95.90**
Total Cash, Cash Equivalents and Investments[1]	**$106,224,405,272**	**100.00%**

[1] Excludes collateral on loaned securities.

Total Investment Summary

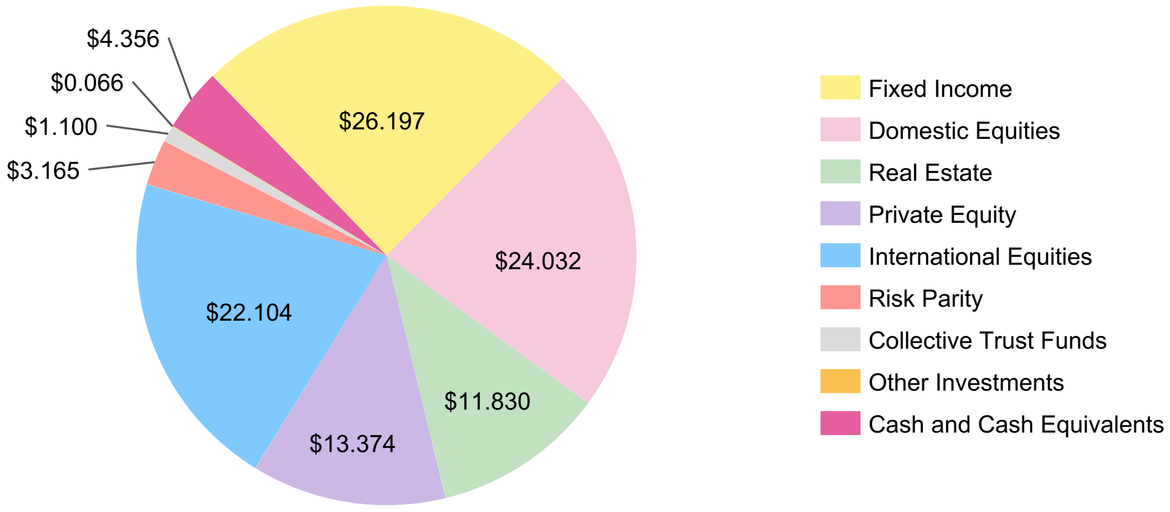
The table below reflects the breakdown of the total investment portfolio into the three component portfolios—the Defined Benefit, the Health Care and the Defined Contribution portfolios.

Total Summary of Cash, Cash Equivalents and Investments by Portfolio[1] (as of December 31, 2022)

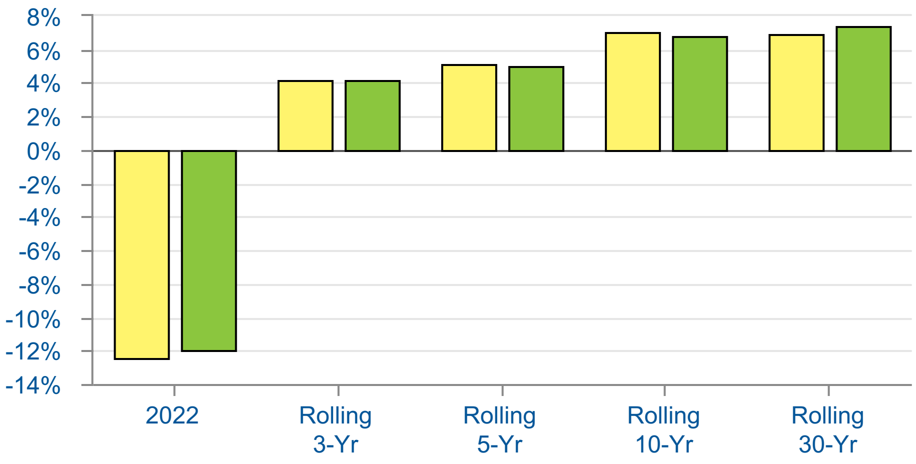
	Defined Benefit	Health Care	Defined Contribution	Total
Fixed Income	$21,480,658,147	$4,489,603,482	$226,953,150	$26,197,214,779
Domestic Equities	19,807,566,961	3,505,476,720	718,632,349	24,031,676,030
Real Estate	11,829,654,598	—	—	11,829,654,598
Private Equity	13,374,059,927	—	—	13,374,059,927
International Equities	19,256,948,889	2,755,333,550	91,275,634	22,103,558,073
Risk Parity	2,957,037,062	208,064,227	—	3,165,101,289
Collective Trust Funds	—	—	1,100,208,883	1,100,208,883
Other Investments	62,143,307	4,307,527	—	66,450,834
Cash and Cash Equivalents	3,757,363,401	599,117,458	—	4,356,480,859
Total	**$92,525,432,292**	**$11,561,902,964**	**$2,137,070,016**	**$106,224,405,272**

[1] Assets summarized on performance basis.

Total Investment Summary (as of December 31, 2022, $ in billions)



Total Investment Returns—Annual Rates of Return[1]



	2022	Rolling 3-Yr	Rolling 5-Yr	Rolling 10-Yr	Rolling 30-Yr
🟨 Total Investment Returns	(12.49%)	4.12%	5.10%	7.01%	6.98%
🟩 Policy Benchmark Returns	(11.98%)	4.15%	5.06%	6.75%	7.36%[a]

[a] The benchmark returns for 1996 and prior years were estimated.

[1] Annual Rates of Return—The returns are the result of the returns generated by Defined Benefit, Health Care and Defined Contribution portfolio investments, based on a combination of time-weighted calculations and market value-weighted calculations. The policy benchmark is derived by a market value-weighted calculation of the Defined Benefit, Health Care, and Defined Contribution investment policy benchmarks while all other returns throughout the remainder of this section are derived from a time-weighted calculation. All returns presented throughout the Investment Section are net of external manager fees, overdraft charges, debit interest, registration expenses, stamp duties, and taxes spent on foreign securities. In addition, the securities lending money market returns are net of custodial fees, transfer-agent expenses, and professional fees.

Historical Investment Returns

Year	Total Portfolio Return	Total Defined Benefit Return[1]	Total 401(h) Health Care Trust Return[1]	Total 115 Health Care Trust Return (Health Care Portfolio)	Total Defined Contribution Return[2]
2022	(12.49%)	(12.03%)		(15.51%)	(16.00%)
2021	15.20	15.34		14.34	13.99
2020	11.95	12.02		10.96	14.96
2019	17.59	17.23		19.59	21.74
2018	(3.38)	(2.99)		(5.76)	(6.65)
2017	16.62	16.82		15.25	17.39
2016	8.23	8.31[a]	4.73%[a]	5.11[a]	9.51
2015	(0.03)	0.33	(2.18)	(3.23)	(1.71)
2014	6.70	6.96	5.28	(0.03)[b]	4.83
2013	14.00	14.38	11.36		20.45
2012	14.40	14.54	13.72		13.37
2011	0.20	0.36	(0.38)		(2.59)
2010	13.90	13.98	13.93		13.74
2009	20.06	19.09	24.80		26.44
2008	(26.92)	(27.15)	(25.77)		(28.00)
2007	8.52	8.89	6.87		5.80
2006	14.66	15.05	12.78		12.96
2005	9.03	9.25	8.00		6.88
2004	12.49	12.50			9.73
2003	25.39	25.39			
2002	(10.73)	(10.73)			
2001	(4.58)	(4.58)			
2000	(0.71)	(0.71)			
1999	12.10	12.10			
1998	14.45	14.45			
1997	13.37	13.37			
1996	7.85	7.85			
1995	20.47	20.47			
1994	(0.02)	(0.02)			
1993	9.72	9.72			

[a] Returns are six-month cumulative returns as of June 30, 2016 in the 401(h) Health Care Trust. The 401(h) Health Care Trust and the Voluntary Employees' Beneficiary Association (VEBA) Trust were closed as of June 30, 2016. Prior to July 1, 2016, the VEBA Trust assets were included in the Defined Benefit portfolio. On July 1, 2016, the 401(h) Health Care Trust and VEBA Trust assets were transferred to the 115 Health Care Trust portfolio. The combined return on the total health care assets for the year ended December 31, 2016 was 7.55%. The number disclosed in the 115 Health Care Trust column, 5.11%, represents the return for the 115 Health Care Trust portfolio assets.

[b] The 115 Health Care Trust was established September 2014. Returns are two-month cumulative returns in 2014 since funding of the 115 Health Care Trust portfolio began November 2014.

[1] Prior to 2005, the 401(h) Health Care Trust assets were included in the Defined Benefit portfolio. In 2005, the 401(h) Health Care Trust assets were segregated from the Defined Benefit portfolio into a separate portfolio with portfolio-specific asset allocation and investment policies. Accordingly, Defined Benefit returns for 2004 and prior represent a composite of the Defined Benefit and 401(h) Health Care Trust assets.

[2] Defined Contribution plans commenced January 1, 2003, with a separate portfolio established in 2004.

Largest Equity Holdings (by fair value)[1] (as of December 31, 2022)

Description	Shares	Fair Value
Apple Inc.	9,979,008	$1,296,572,510
Microsoft Corp.	4,913,360	1,178,321,995
Alphabet Inc.	6,981,883	617,641,306
Amazon.com, Inc.	5,623,713	472,391,892
Taiwan Semiconductor Manufacturing Company, Ltd.	14,731,072	362,571,280
Berkshire Hathaway Inc. Class B	1,147,496	354,461,514
UnitedHealth Group Inc.	573,934	304,288,328
Johnson & Johnson	1,648,099	291,136,688
Exxon Mobil Corp.	2,611,681	288,068,414
JPMorgan Chase & Co.	2,045,195	274,260,650
Total	**50,255,441**	**$5,439,714,577**

Largest Bond Holdings (by fair value)[1] (as of December 31, 2022)

Description	Coupon	Maturity	Rating	Par Value	Fair Value
U.S. Treasury Bond	2.500%	2/15/2045	AAA	$278,143,000	$210,954,081
U.S. Treasury Note	3.250	8/31/2024	AAA	169,827,000	166,357,487
U.S. Treasury Note	2.875	5/15/2032	AAA	145,499,100	134,677,604
U.S. Treasury Note	0.625	1/15/2024	AAA	136,020,362	133,249,991
U.S. Treasury Note	0.625	7/15/2032	AAA	144,029,554	132,475,993
U.S. Treasury Note	2.500	5/15/2024	AAA	127,179,000	123,423,245
U.S. Treasury Note	0.125	1/15/2032	AAA	138,781,281	121,805,772
U.S. Treasury Note	1.625	10/15/2027	AAA	120,024,615	120,134,607
U.S. Treasury Note	0.125	7/15/2024	AAA	123,499,714	119,674,680
U.S. Treasury Note	2.750	8/15/2032	AAA	130,370,000	119,145,958
Total				**$1,513,373,626**	**$1,381,899,418**

[1] A complete list of assets held as of December 31, 2022 is available upon request.

Schedules of Brokerage Commissions Paid

U.S. Equity Commissions (for the year ended December 31, 2022)

Brokerage Firm	U.S. Equity Commissions Paid	Shares Traded	Average Commission Per Share
UBS Securities LLC	$187,666	133,654,260	$0.001
Northern Trust Securities, Inc.	170,428	6,991,408	0.024
J.P. Morgan Securities LLC	110,124	16,823,407	0.007
Merrill Lynch & Co. Inc.	101,217	18,556,220	0.005
Cowen Inc.	74,517	5,590,121	0.013
Goldman Sachs & Co.	55,590	47,180,116	0.001
Virtu Americas LLC	47,747	19,857,747	0.002
CF Secured LLC	36,833	2,451,266	0.015
Morgan Stanley & Co.	32,391	8,388,062	0.004
WallachBeth Capital LLC	32,088	2,139,168	0.015
HSBC Securities (USA) Inc.	30,858	2,745,110	0.011
Liquidnet, Inc.	30,436	2,031,452	0.015
RBC Capital Markets LLC	27,913	3,185,555	0.009
Jefferies LLC	27,120	6,029,021	0.004
Credit Suisse Securities (USA) LLC	24,643	3,482,157	0.007
Other Commissions less than $20,000	248,973	105,763,851	0.002
Total U.S. Equity Commissions	**$1,238,544**	**384,868,921**	**$0.003**

Non-U.S. Equity Commissions (for the year ended December 31, 2022)

Brokerage Firm	Non-U.S. Equity Commissions Paid	Shares Traded	Average Commission Per Share
UBS AG	$712,535	1,037,144,071	$0.001
J.P. Morgan Securities LLC	659,451	534,820,748	0.001
Goldman Sachs & Co.	503,645	330,114,929	0.002
Morgan Stanley & Co.	411,718	363,996,743	0.001
Credit Suisse Securities LLC	357,942	139,826,612	0.003
Citigroup Global Markets Inc.	302,870	151,678,527	0.002
Merrill Lynch International	245,209	126,140,109	0.002
Jefferies LLC	242,474	81,119,189	0.003
Instinet LLC	240,926	302,296,535	0.001
Credit Lyonnais Bank	178,974	381,025,803	<0.001
HSBC Bank PLC	169,570	56,338,858	0.003
CLSA Global Markets Pte. Ltd.	156,172	50,228,918	0.003
Pershing Securities Ltd.	118,611	45,960,774	0.003
Barclays Capital Inc.	104,597	35,960,387	0.003
Macquarie Bank Ltd.	100,165	85,520,266	0.001
BNP Paribas	97,857	65,185,547	0.002
HSBC Securities (USA) Inc.	88,985	196,142,673	<0.001
Sanford C. Bernstein & Co., LLC	81,691	97,994,451	0.001
Royal Bank of Canada	81,666	9,031,125	0.009
Daiwa Capital Markets Inc.	74,152	30,916,959	0.002
Berenberg Gossler & CIE	65,899	10,598,701	0.006
Parel S.A.	53,918	2,282,442	0.024
Liquidnet, Inc.	50,340	8,859,725	0.006
Banco Itaú Unibanco S.A.	49,693	12,684,386	0.004
Exane	45,153	8,944,071	0.005
Virtu Americas LLC	44,756	15,099,849	0.003
Maybank Kim Eng Securities Pte. Ltd.	40,354	1,905,076	0.021
BofA Securities, Inc.	38,817	12,808,346	0.003
S.G. Securities	33,369	20,457,940	0.002
Banco BTG Pactual S.A.	31,678	8,742,548	0.004
Mizuho Securities	29,738	2,678,600	0.011
Numis Securities Inc.	28,919	5,727,378	0.005
Edelweiss Securities Private Ltd.	24,910	417,315	0.060
XP Investimentos CCTVM S.A.	24,569	7,751,711	0.003
Societe Generale Securities Services	23,258	9,974,044	0.002
Kotak Securities Ltd.	23,119	471,412	0.049
Banco Bradesco S.A.	23,052	7,502,251	0.003
Peel Hunt LLP	21,410	4,598,510	0.005
Other Commissions less than $20,000	365,576	81,374,112	0.004
Total Non-U.S. Equity Commissions	**$5,947,738**	**4,344,321,641**	**$0.001**

Schedules of Brokerage Commissions Paid

Futures Commissions (for the year ended December 31, 2022)

Brokerage Firm	Futures Commissions Paid	Contracts Traded	Average Commission Per Contract
Goldman Sachs & Co.	$752,731	400,513	$1.88
Wells Fargo Securities LLC	282,627	146,063	1.93
Credit Suisse Securities LLC	121,745	61,370	1.98
Total Futures Commissions	**$1,157,103**	**607,946**	**$1.90**
Total U.S. Equity, Non-U.S. Equity and Futures Commissions	**$8,343,385**	**N/A**	**N/A**

Brokerage commissions do not include commissions paid by external investment managers using commingled fund structures. OPERS maintains a commission recapture program with several of its non-U.S. Equity managers. Capital Institutional Services Inc. and Frank Russell Securities Inc. perform record-keeping services for the commission recapture program.

The total commissions schedule includes $72,552 in commissions paid that were part of a commission sharing agreement (CSA). CSA funds are held by the participating brokers and may be used to purchase qualifying investment research services. During 2022, $220,000 of investment research services were purchased using CSA funds.

Schedule of Fees to External Asset Managers by Portfolio (for the year ended December 31, 2022)

	Defined Benefit	Health Care	Defined Contribution	Total
Fixed Income	$15,017,590	$1,812,544	$84,064	$16,914,198
Domestic Equities	5,429,590	825,243	123,015	6,377,848
International Equities	55,030,666	7,861,815	66,946	62,959,427
Private Equity[1]	277,499,978			277,499,978
Real Estate[1]	152,808,674			152,808,674
Risk Parity	18,817,962	1,127,928		19,945,890
Collective Trust Funds			453,115	453,115
Other Investments[1]	2,986,129	164,074		3,150,203
Total Fees	**$527,590,589**	**$11,791,604**	**$727,140**	**$540,109,333**

Schedule of Fees to External Asset Managers by Category (for the year ended December 31, 2022)

	Net Management Fees	Fund Expenses	Subtotal	Performance Fees	Total
Fixed Income	$16,914,198		$16,914,198		$16,914,198
Domestic Equities	6,377,848		6,377,848		6,377,848
International Equities	62,959,427		62,959,427		62,959,427
Private Equity[1]	111,011,230	$46,578,447	157,589,677	$119,910,301	277,499,978
Real Estate[1]	60,288,686	55,528,492	115,817,178	36,991,496	152,808,674
Risk Parity	16,290,752	3,655,138	19,945,890		19,945,890
Collective Trust Funds	453,115		453,115		453,115
Other Investments[1]	2,285,338	863,087	3,148,425	1,778	3,150,203
Total Fees	**$276,580,594**	**$106,625,164**	**$383,205,758**	**$156,903,575**	**$540,109,333**

[1] All investment manager fees reported to OPERS, whether directly invoiced or subtracted from the fund on a net basis, are reported as External Asset Management Fees in the Combining Statement of Changes in Fiduciary Net Position. OPERS makes a good faith attempt to account for fees that are not readily separable. Net Management Fees are net of management fee offsets. Performance Fees represent the investment managers' share of the profits realized by the fund during the period.

Schedule of External Asset Managers (for the year ended December 31, 2022)

U.S. Equity Managers

Atlanta Capital Management Company LLC	NewSouth Capital Management Inc.	Westwood Management Corp.
Jacobs Levy Equity Management Inc.	Wasatch Advisors Inc.	

Non-U.S. Equity Managers

Acadian Asset Management LLC	Fisher Investments	Strategic Global Advisors
ARGA Investment Management LP	J.P. Morgan Investment Management	T. Rowe Price International Ltd.
Ariel Investments LLC	J O Hambro Capital Management Ltd.	Victory Capital Management Inc.
Arrowstreet Capital LP	Kayne Anderson Rudnick Investment Management, LLC	Vontobel Asset Management
Baillie Gifford Overseas Ltd.	Lazard Asset Management LLC	Walter Scott & Partners
BlackRock Financial Management Inc.	Leading Edge Investment Advisors LLC	Wasatch Advisors Inc.
Connor Clark & Lunn Investment Management	LSV Asset Management	
Dimensional Fund Advisors	Schroder Investment Management NA Inc.	

Bond Managers

Aberdeen Asset Management	DoubleLine Capital LP	Nomura Group
AFL-CIO Housing Investment Trust	Fort Washington Investment Advisors Inc.	Payden & Rygel
Ashmore Investment Management Ltd.	Franklin Templeton Institutional LLC	Post Advisory Group
Capital Guardian Trust Company	Lazard Asset Management LLC	
CIFC	Neuberger Berman Investment Advisors LLC	

Hedge Fund[1] / Risk Parity / Opportunistic Managers

AQR Capital Management LLC	BlackRock Financial Management Inc.	Panagora Asset Management
Arrowgrass Partnership	Bridgewater Associates	P/E Global LLC
Beach Point Capital Management	Oceanwood Capital Management LLP	

[1] Hedge fund allocations eliminated in 2020 were liquidated through 2022.

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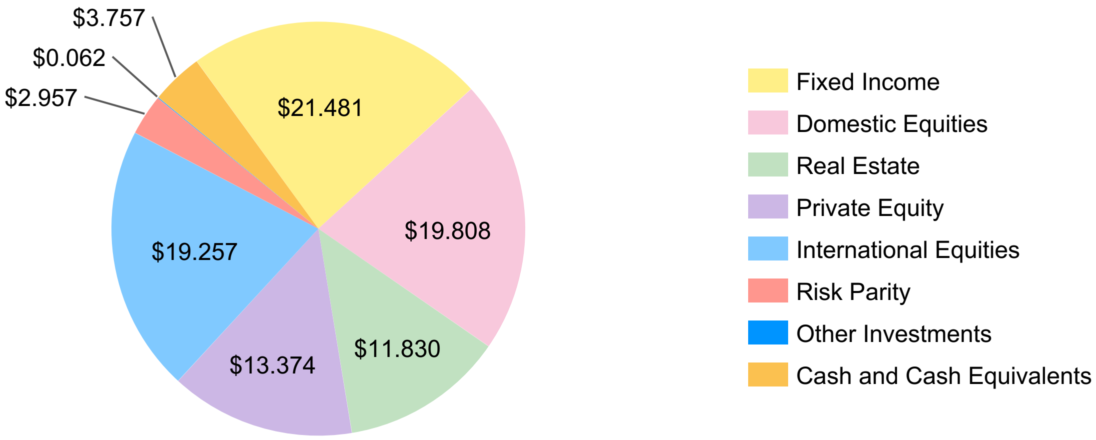
As noted previously, the Investment Division manages the total investment portfolio by dividing it into three sub-portfolios. These portfolios are: the Defined Benefit portfolio, the Health Care portfolio, and the Defined Contribution portfolio. All information prior to this point has been reported on the OPERS total investment portfolio; however, all following information will be presented at the specific portfolio level.

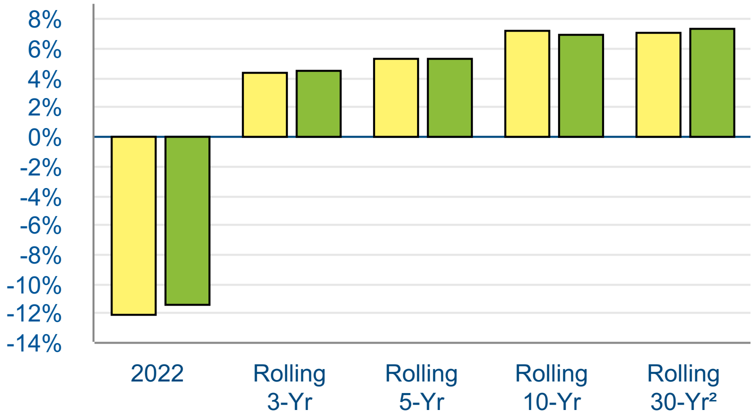
Defined Benefit Portfolio Asset Allocation (as of December 31, 2022, $ in billions)



Investment Returns

The Defined Benefit portfolio reported an investment loss of 12.03% in 2022. The overall portfolio return is compared to a composite benchmark return that could be achieved by a portfolio that is passively invested in the broad market, with percentage weights allocated to each asset class as specified in the *OPERS Statement of Investment Objectives and Policies*. The return of the policy benchmark for 2022 was a loss of 11.44%.

Investment Returns—Annual Rates of Return[1] Defined Benefit Portfolio



🟨	Defined Benefit Portfolio Returns[3]	(12.03%)	4.36%	5.27%	7.22%	7.05%
🟩	Policy Benchmark Returns[3]	(11.44%)	4.46%	5.28%	6.97%	7.42%[a]

[a] The benchmark returns for 1996 and prior years were estimated.

[1] Annual Rates of Return—The Defined Benefit portfolio return is based on a time-weighted calculation. The policy benchmark is derived by a market value-weighted calculation of the Defined Benefit investment policy benchmarks. All returns are net of external manager fees, overdraft charges, debit interest, registration expenses, stamp duties, and taxes spent on foreign securities.

[2] The 401(h) Health Care Trust portfolio was segregated from the Defined Benefit portfolio in 2005; thus, the 30-year rolling return information reflects both the Defined Benefit and 401(h) Health Care Trust portfolios.

[3] Performance was reduced by 0.94% in 2022, 0.37% in the Rolling 3-Yr, 0.22% in the Rolling 5-Yr and 0.11% in the Rolling 10-Yr because of a change in the methodology used for cash distributions from private equity and real estate funds.

Defined Benefit Portfolio

Investment returns for the Defined Benefit portfolio underlying asset class composites and the respective benchmarks are shown below:

Schedule of Investment Results (for the year ended December 31, 2022) **Defined Benefit Portfolio**

	2022	Rolling 3-Year	Rolling 5-Year
Total Defined Benefit Portfolio[1]	**(12.03%)**	**4.36%**	**5.27%**
Total Defined Benefit Portfolio Benchmark[2]	**(11.44)**	**4.46**	**5.28**
U.S. Equity Composite	(18.99)	6.96	8.71
U.S. Equity Composite Benchmark	(19.21)	7.07	8.79
Non-U.S. Equity Composite	(17.74)	0.80	1.49
Non-U.S. Equity Composite Benchmark	(16.85)	0.13	0.72
Core Fixed Composite	(12.94)	(2.03)	0.43
Core Fixed Composite Benchmark	(13.01)	(2.71)	0.02
TIPS Composite	(11.82)	1.19	2.09
TIPS Composite Benchmark	(11.85)	1.21	2.11
High Yield Composite	(10.56)	0.23	2.43
High Yield Composite Benchmark	(11.19)	0.05	2.31
Emerging Markets Debt Composite	(13.81)	(4.89)	(1.75)
Emerging Markets Debt Composite Benchmark	(14.07)	(5.27)	(1.71)
Securitized Debt Composite	(13.23)	(0.66)	2.48
Securitized Debt Composite Benchmark	(13.17)	(2.81)	0.88
Private Equity Composite[3]	(4.79)	17.08	15.39
Private Equity Composite Benchmark	(1.25)	18.80	15.80
Real Estate Composite[4]	14.94	11.25	9.06
Real Estate Composite Benchmark	21.81	12.23	10.12
Commodities Composite	15.88	7.40	4.70
Commodities Composite Benchmark	16.09	6.25	3.99
Cash Composite[5]	1.91	1.01	1.53
Cash Composite Benchmark[5]	1.47	0.73	1.27
Additional Annuity Composite	1.63	1.69	2.00
Additional Annuity Composite Benchmark	1.47	0.73	1.27
Risk Parity Composite	(29.78)	(5.91)	(0.45)
Risk Parity Composite Benchmark	(30.25)	(6.44)	(0.88)
U.S. Treasury Composite	(12.47)	(2.58)	(0.08)
U.S. Treasury Composite Benchmark	(12.46)	(2.62)	(0.10)
Opportunistic Composite[6]	(14.38)	N/A	N/A
Opportunistic Composite Benchmark[6]	(15.14)	N/A	N/A
REITs Composite[7]	(22.97)	N/A	N/A
REITs Composite Benchmark[7]	(23.18)	N/A	N/A

[1] **Defined Benefit Portfolio Results**—Performance was reduced by 0.94% in 2022, 0.37% in the Rolling 3-Yr, and 0.22% in the Rolling 5-Yr because of a change in the methodology used for cash distributions from private equity and real estate funds.

[2] **Defined Benefit Portfolio Benchmark**—The returns for this benchmark are derived from the asset class composite benchmark returns summarized in the table above, the historical asset class target allocations listed on the next page, and the asset class composite benchmark indices listed in the table on page 112.

[3] Private Equity Composite Results—Performance was reduced by 5.86% in 2022, 2.35% in the Rolling 3-Yr, and 1.39% in the Rolling 5-Yr because of a change in the methodology used for cash distributions from private equity funds.

[4] Real Estate Composite Results—Performance was reduced by 3.94% in 2022, 1.26% in the Rolling 3-Yr, and 0.74% in the Rolling 5-Yr because of a change in the methodology used for cash distributions from real estate funds.

[5] Cash Composites have a zero allocation but can hold residual cash balances of the Defined Benefit portfolio. This can result in residual performance that does not affect the overall Defined Benefit portfolio.

[6] Opportunistic allocations began in November 2020.

[7] REITs allocations began in April 2022. Returns are nine-month cumulative returns (April 2022-December 2022).

Historical Asset Class Target Allocations — Defined Benefit Portfolio

Asset Class	2022	2021	2020	2019	2018
U.S. Equity	21.0%	21.0%	20.5%	20.0%	20.9%
Opportunistic	3.0	3.0	2.0	2.0	0.1
Core Fixed	11.0	11.0	11.0	11.0	10.9
Floating Rate Debt	N/A	N/A	N/A	N/A	0.1
Securitized Debt	1.0	1.0	1.0	1.0	1.0
Non-U.S. Equity	23.0	23.0	22.5	20.0	20.0
Real Estate	10.0	10.0	10.0	10.0	10.0
Private Equity	12.0	12.0	12.0	12.0	10.0
High Yield	2.0	2.0	2.0	2.0	2.0
Emerging Markets Debt	4.0	5.0	6.0	6.0	6.0
REITs	1.0	N/A	N/A	N/A	N/A
Hedge Funds	N/A	N/A	N/A	5.0	8.0
Commodities	1.0	1.0	1.0	1.0	1.0
Risk Parity	5.0	5.0	5.0	5.0	5.0
GTAA	N/A	N/A	N/A	N/A	2.0
TIPS	3.0	3.0	2.0	2.0	2.0
U.S. Treasury	3.0	3.0	5.0	3.0	1.0
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

To arrive at customized benchmark performance, the asset allocation targets are multiplied by the performance of the corresponding asset class reference indices. The asset class reference indices are specified by the Investment Policy, and are displayed below:

Historical Asset Class Composite Benchmark Indices — Defined Benefit Portfolio

Asset Class Composite Benchmarks	As of December 31				
	2022	2021	2020	2019	2018
U.S. Equity	Russell 3000 Index[1]	Russell 3000 Index	Russell 3000 Index	Russell 3000 Index	Russell 3000 Index
Opportunistic	Custom Opportunistic Benchmark[2]	Custom Opportunistic Benchmark	Custom Opportunistic Benchmark	Custom Opportunistic Benchmark	Custom Opportunistic Benchmark
Core Fixed	Bloomberg U.S. Aggregate Bond Index[3]	Bloomberg U.S. Aggregate Bond Index	Bloomberg Barclays U.S. Aggregate Bond Index	Bloomberg Barclays U.S. Aggregate Bond Index	Bloomberg Barclays U.S. Aggregate Bond Index
Floating Rate Debt	N/A	N/A	N/A	N/A	Credit Suisse Leveraged Loan Index
Securitized Debt	Custom Securitized Debt Benchmark[4]	Custom Securitized Debt Benchmark	Custom Securitized Debt Benchmark	Custom Securitized Debt Benchmark	Custom Securitized Debt Benchmark
Non-U.S. Equity	Custom Non-U.S. Equity Benchmark[5]	Custom Non-U.S. Equity Benchmark	Custom Non-U.S. Equity Benchmark	Custom Non-U.S. Equity Benchmark	Custom Non-U.S. Equity Benchmark
Real Estate	Net NFI-ODCE plus 85 bps[6]	Custom Real Estate Benchmark	Custom Real Estate Benchmark	Custom Real Estate Benchmark	Custom Real Estate Benchmark
Private Equity	State Street Private Equity Index (SSPEI)[7]	State Street Private Equity Index (SSPEI)	State Street Private Equity Index (SSPEI)	State Street Private Equity Index (SSPEI)	State Street Private Equity Index (SSPEI)
Cash Equivalents	ICE BofAML U.S. 3-Month Treasury Bill Index[8]	ICE BofAML U.S. 3-Month Treasury Bill Index	ICE BofAML U.S. 3-Month Treasury Bill Index	ICE BofAML U.S. 3-Month Treasury Bill Index	ICE BofAML U.S. 3-Month Treasury Bill Index
High Yield	Bloomberg U.S. Corporate High Yield Total Return Index[9]	Bloomberg U.S. Corporate High Yield Total Return Index	Bloomberg Barclays U.S. Corporate High Yield Bond Index	Bloomberg Barclays U.S. Corporate High Yield Bond Index	Bloomberg Barclays U.S. Corporate High Yield Bond Index
Emerging Markets Debt	Custom Emerging Markets Debt Benchmark[10]	Custom Emerging Markets Debt Benchmark	Custom Emerging Markets Debt Benchmark	Custom Emerging Markets Debt Benchmark	Custom Emerging Markets Debt Benchmark
REITs	Dow Jones U.S. Select Real Estate Securities Index (RESI)[11]	N/A	N/A	N/A	N/A
Hedge Funds	N/A	N/A	N/A	Custom Hedge Funds Benchmark	Custom Hedge Funds Benchmark
Commodities	Bloomberg Commodity Index Total Return[12]	Bloomberg Commodity Index Total Return	S&P Goldman Sachs Commodity Total Return Index	S&P Goldman Sachs Commodity Total Return Index	S&P Goldman Sachs Commodity Total Return Index
Risk Parity	HFR Risk Parity Institutional Custom Index[13]	HFR Risk Parity Institutional Custom Index	HFR Risk Parity Vol 15 Institutional Index	HFR Risk Parity Vol 15 Institutional Index	HFR Risk Parity Vol 15 Institutional Index
GTAA	N/A	N/A	N/A	Custom GTAA Benchmark	Custom GTAA Benchmark
TIPS	Bloomberg U.S. TIPS Index[14]	Bloomberg U.S. TIPS Index	Bloomberg Barclays U.S. TIPS Index	Bloomberg Barclays U.S. TIPS Index	Bloomberg Barclays U.S. TIPS Index
U.S. Treasury	Bloomberg U.S. Treasury Index[15]	Bloomberg U.S. Treasury Index	Bloomberg Barclays U.S. Treasury Index	Bloomberg Barclays U.S. Treasury Index	Bloomberg Barclays U.S. Treasury Index

Footnotes found on next page.

Footnotes for Schedule of Investment Results—Defined Benefit Portfolio

The footnotes below provide definitions for the asset class composite benchmark indices as of December 31, 2022:

[1] **Russell 3000 Index**—A market capitalization-weighted stock index consisting of the 3,000 largest publicly traded U.S. stocks by capitalization. This index is a broad measure of the performance of the aggregate domestic equity market.

[2] **Custom Opportunistic Benchmark**—A market value-weighted index of the underlying portfolio benchmarks, which as of December 31, 2022 included the Russell 2000 Index, Bloomberg Gold Subindex Total Return, and S&P Risk Parity Index - 8% Target Volatility.

[3] **Bloomberg U.S. Aggregate Bond Index**—A market capitalization-weighted bond index consisting of Bloomberg corporate, government, mortgage-backed, and asset-backed securities. This index is the broadest available measure of the aggregate U.S. fixed income market.

[4] **Custom Securitized Debt Benchmark**—As of December 31, 2022, blend was 50% Bloomberg Non-Agency Investment Grade CMBS: BBB Total Return Index Unhedged USD, 50% Bloomberg Non-Agency CMBS Agg Eligible Total Return Index Value Unhedged USD.

[5] **Custom Non-U.S. Equity Benchmark**—As of December 31, 2022, blend was 55% MSCI World Index ex U.S. Standard, 31% MSCI Emerging Markets Standard Index, 10% MSCI World Index ex U.S. Small Cap, and 4% MSCI Emerging Markets Small Cap Index.

[6] **Net NFI-ODCE plus 85 bps**—NCREIF Fund Index - Open End Diversified Core Equity (NFI-ODCE) net of fees plus an annual premium of 85 bps is a capitalization-weighted index consisting of 26 open-end commingled funds pursuing a core investment strategy.

[7] **State Street Private Equity Index (SSPEI)**—Evaluates the performance of actively managed private equity portfolios. SSPEI includes venture capital, buyout, and distressed debt funds within the U.S.

[8] **ICE Bank of America Merrill Lynch (BofAML) U.S. 3-Month Treasury Bill Index**—The three-month Treasury Bill return as measured by Bank of America Merrill Lynch.

[9] **Bloomberg U.S. Corporate High Yield Total Return Index**—Covers the universe of USD-denominated, high yield, fixed-rate corporate bond market. Securities are classified as high yield if the middle rating of Moody's, Fitch and S&P is Ba1/BB+/BB+ or below.

[10] **Custom Emerging Markets Debt Benchmark**—As of December 31, 2022, blend was 50% J.P. Morgan Emerging Markets Bond Index (EMBI) Global, and 50% J.P. Morgan Government Bond Index (GBI-EM)-Emerging Markets Global Diversified.

[11] **Dow Jones U.S. Select Real Estate Securities Index (RESI)**—The Dow Jones U.S. Select RESI Total Return Index represents equity real estate investment trusts (REITs) and real estate operating companies (REOCs) traded in the U.S.

[12] **Bloomberg Commodity Index Total Return** —Consists of futures contracts and reflects the returns on a fully collateralized investment in Bloomberg Commodity Index (BCOM). BCOM Index provides broad-based exposure to commodities. Combines the returns of BCOM with the returns on cash collateral invested in three-month U.S. Treasury Bills.

[13] **HFR Risk Parity Institutional Custom Index**—Includes funds in which OPERS is currently invested, with a volatility target of 15% or greater and are classified as Volatility Target: 15%. Funds must have assets under management of USD $500 million or greater in order to be considered for inclusion in an HFR Risk Parity Institutional Index.

[14] **Bloomberg U.S. TIPS Index**—Consists of inflation-protected securities issued by the U.S. Treasury.

[15] **Bloomberg U.S. Treasury Index**—Measures U.S. dollar-denominated, fixed-rate, nominal debt issued by the U.S. Treasury. Treasury bills are excluded, but are part of a separate Short Treasury bond index. Separate Trading of Registered Interest and Principal of Securities (STRIPS) are excluded from the index because their inclusion would result in double-counting.

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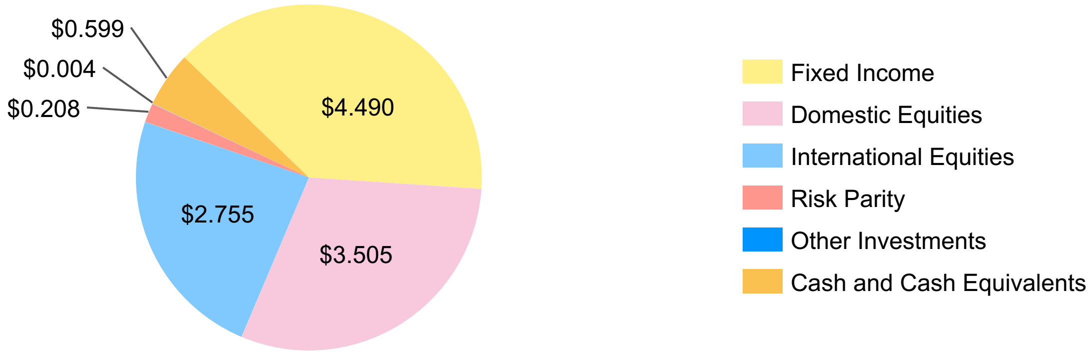
Health Care Portfolio Asset Allocation (as of December 31, 2022, $ in billions)

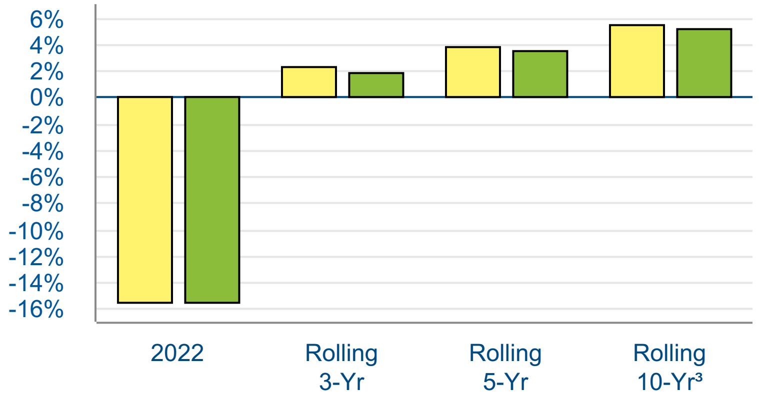


Investment Returns

The Health Care portfolio reported an investment loss of 15.51% in 2022. The overall returns are compared to a composite benchmark return that could be achieved by a portfolio that is passively invested in the broad market, with percentage weights allocated to each asset class as specified in the *OPERS Statement of Investment Objectives and Policies*. The return of the policy benchmark for 2022 was a loss of 15.56%.

Prior to 2017, health care assets were included in two trusts established under Internal Revenue Code Sections 115 and 401(h). Accordingly, historical information reported in this section reflects both the 401(h) Health Care Trust portfolio and the more recent 115 Health Care Trust portfolio. The 401(h) Health Care Trust portfolio was transferred to the 115 Health Care Trust portfolio on July 1, 2016 resulting in one health care portfolio. Historical information in this section reflects the different health care portfolios in place for the time periods reported.

Investment Returns—Annual Rates of Return[1] Health Care Portfolio



🟨 Health Care Portfolio Returns[2]	(15.51%)	2.34%	3.85%	5.55%
🟩 Policy Benchmark Returns[2]	(15.56%)	1.89%	3.47%	5.23%

[1] Annual Rates of Return—The Health Care portfolio return is based on a time-weighted calculation. The policy benchmark is derived by a market value-weighted calculation of the Health Care investment policy benchmarks. All returns are net of external manager fees, overdraft charges, debit interest, registration expenses, stamp duties, and taxes spent on foreign securities.

[2] The Health Care portfolio (previously known as the 401(h) Health Care Trust portfolio) was segregated from the Defined Benefit portfolio in 2005; thus, the 30-year rolling return information does not exist.

[3] The 115 Health Care Trust portfolio was established in September 2014, and the 401(h) Health Care Trust portfolio was closed on June 30, 2016 with the assets transferring to the 115 Health Care Trust portfolio on July 1, 2016. Beginning 2017, one health care trust exists, referred to as the Health Care portfolio. The Rolling 10-Year returns are the combined returns of the former 401(h) Health Care Trust portfolio and the current 115 Health Care Trust portfolio for all years prior to 2017.

Investment returns for the Health Care portfolio underlying asset class composites and the respective benchmarks are shown below:

Schedule of Investment Results (for the year ended December 31, 2022) **Health Care Portfolio**

	2022	Rolling 3-Year	Rolling 5-Year
Total Health Care Portfolio	**(15.51%)**	**2.34%**	**3.85%**
Total Health Care Portfolio Benchmark[1]	**(15.56)**	**1.89**	**3.47**
U.S. Equity Composite	(18.99)	6.96	8.71
U.S. Equity Composite Benchmark	(19.21)	7.07	8.79
Non-U.S. Equity Composite	(17.74)	0.80	1.49
Non-U.S. Equity Composite Benchmark	(16.85)	0.13	0.72
Core Fixed Composite	(12.94)	(2.03)	0.43
Core Fixed Composite Benchmark	(13.01)	(2.71)	0.02
TIPS Composite	(11.82)	1.19	2.09
TIPS Composite Benchmark	(11.85)	1.21	2.11
High Yield Composite	(10.56)	0.23	2.43
High Yield Composite Benchmark	(11.19)	0.05	2.31
Emerging Markets Debt Composite	(13.81)	(4.89)	(1.75)
Emerging Markets Debt Composite Benchmark	(14.07)	(5.27)	(1.71)
Securitized Debt Composite	(13.23)	(0.66)	2.48
Securitized Debt Composite Benchmark	(13.17)	(2.81)	0.88
REITs Composite	(25.86)	(1.38)	2.54
REITs Composite Benchmark	(26.03)	(1.41)	2.48
Commodities Composite	15.88	7.40	4.70
Commodities Composite Benchmark	16.09	6.25	3.99
Cash Composite[2]	1.89	1.01	1.54
Cash Composite Benchmark[2]	1.47	0.73	1.27
Risk Parity Composite	(29.78)	(5.91)	(0.45)
Risk Parity Composite Benchmark	(30.25)	(6.44)	(0.88)
U.S. Treasury Composite	(12.47)	(2.58)	(0.08)
U.S. Treasury Composite Benchmark	(12.46)	(2.62)	(0.10)
Opportunistic Composite[3]	(14.38)	N/A	N/A
Opportunistic Composite Benchmark[3]	(15.14)	N/A	N/A

[1] **Health Care Portfolio Benchmark**—The returns for this benchmark are derived from the asset class composite benchmark returns summarized in the table above, the historical asset class target allocations listed on the next page, and the asset class composite benchmark indices listed in the table on page 118.

[2] Cash Composites have a zero allocation but can hold residual cash balances of the Health Care portfolio. This can result in residual performance that does not affect the overall Health Care portfolio.

[3] Opportunistic allocations began in November 2020.

Historical Asset Class Target Allocations					Health Care Portfolio
Asset Class	2022	2021	2020	2019	2018
U.S. Equity	25.0%	25.0%	25.0%	22.0%	22.9%
Commodities	4.0	4.0	4.0	2.0	2.0
Opportunistic	3.0	3.0	3.0	2.0	0.1
Core Fixed	17.0	17.0	17.0	18.0	17.9
Floating Rate Debt	N/A	N/A	N/A	N/A	0.1
Securitized Debt	2.0	2.0	2.0	1.0	1.0
TIPS	7.0	7.0	7.0	6.0	6.0
High Yield	4.0	4.0	4.0	2.0	2.0
Non-U.S. Equity	25.0	25.0	25.0	22.0	22.0
Emerging Markets Debt	2.0	2.0	2.0	6.0	6.0
REITs	7.0	7.0	7.0	6.0	6.0
Hedge Funds	N/A	N/A	N/A	5.0	6.0
Risk Parity	2.0	2.0	2.0	5.0	5.0
GTAA	N/A	N/A	N/A	N/A	2.0
U.S. Treasury	2.0	2.0	2.0	3.0	1.0
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

To arrive at customized benchmark performance, the asset allocation targets are multiplied by the performance of the corresponding asset class reference indices. The asset class reference indices are specified by the Investment Policy, and are displayed below:

Historical Asset Class Composite Benchmark Indices — Health Care Portfolio

Asset Class Composite Benchmarks	As of December 31				
	2022	2021	2020	2019	2018
U.S. Equity	Russell 3000 Index[1]	Russell 3000 Index	Russell 3000 Index	Russell 3000 Index	Russell 3000 Index
Commodities	Bloomberg Commodity Index Total Return[2]	Bloomberg Commodity Index Total Return	S&P Goldman Sachs Commodity Total Return Index	S&P Goldman Sachs Commodity Total Return Index	S&P Goldman Sachs Commodity Total Return Index
Opportunistic	Custom Opportunistic Benchmark[3]	Custom Opportunistic Benchmark	Custom Opportunistic Benchmark	Custom Opportunistic Benchmark	Custom Opportunistic Benchmark
Core Fixed	Bloomberg U.S. Aggregate Bond Index[4]	Bloomberg U.S. Aggregate Bond Index	Bloomberg Barclays U.S. Aggregate Bond Index	Bloomberg Barclays U.S. Aggregate Bond Index	Bloomberg Barclays U.S. Aggregate Bond Index
Floating Rate Debt	N/A	N/A	N/A	N/A	Credit Suisse Leveraged Loan Index
Securitized Debt	Custom Securitized Debt Benchmark[5]	Custom Securitized Debt Benchmark	Custom Securitized Debt Benchmark	Custom Securitized Debt Benchmark	Custom Securitized Debt Benchmark
TIPS	Bloomberg U.S. TIPS Index[6]	Bloomberg U.S. TIPS Index	Bloomberg Barclays U.S. TIPS Index	Bloomberg Barclays U.S. TIPS Index	Bloomberg Barclays U.S. TIPS Index
High Yield	Bloomberg U.S. Corporate High Yield Total Return Index[7]	Bloomberg U.S. Corporate High Yield Total Return Index	Bloomberg Barclays U.S. Corporate High Yield Index	Bloomberg Barclays U.S. Corporate High Yield Index	Bloomberg Barclays U.S. Corporate High Yield Index
Non-U.S. Equity	Custom Non-U.S. Equity Benchmark[8]	Custom Non-U.S. Equity Benchmark	Custom Non-U.S. Equity Benchmark	Custom Non-U.S. Equity Benchmark	Custom Non-U.S. Equity Benchmark
Emerging Markets Debt	Custom Emerging Markets Debt Benchmark[9]	Custom Emerging Markets Debt Benchmark	Custom Emerging Markets Debt Benchmark	Custom Emerging Markets Debt Benchmark	Custom Emerging Markets Debt Benchmark
REITs	Dow Jones U.S. Select Real Estate Securities Index (RESI)[10]	Dow Jones U.S. Select Real Estate Securities Index (RESI)	Dow Jones U.S. Select Real Estate Securities Index (RESI)	Dow Jones U.S. Select Real Estate Securities Index (RESI)	Dow Jones U.S. Select Real Estate Securities Index (RESI)
Cash Equivalents	ICE BofAML U.S. 3-Month Treasury Bill Index[11]	ICE BofAML U.S. 3-Month Treasury Bill Index	ICE BofAML U.S. 3-Month Treasury Bill Index	ICE BofAML U.S. 3-Month Treasury Bill Index	ICE BofAML U.S. 3-Month Treasury Bill Index
Hedge Funds	N/A	N/A	N/A	Custom Hedge Funds Benchmark	Custom Hedge Funds Benchmark
Risk Parity	HFR Risk Parity Institutional Custom Index[12]	HFR Risk Parity Institutional Custom Index	HFR Risk Parity Vol 15 Institutional Index	HFR Risk Parity Vol 15 Institutional Index	HFR Risk Parity Vol 15 Institutional Index
GTAA	N/A	N/A	N/A	Custom GTAA Benchmark	Custom GTAA Benchmark
U.S. Treasury	Bloomberg U.S. Treasury Index[13]	Bloomberg U.S. Treasury Index	Bloomberg Barclays U.S. Treasury Index	Bloomberg Barclays U.S. Treasury Index	Bloomberg Barclays U.S. Treasury Index

Footnotes found on next page.

Footnotes for Schedule of Investment Results—Health Care Portfolio

The footnotes below provide definitions for the asset class composite benchmark indices as of December 31, 2022:

[1] **Russell 3000 Index**—A market capitalization-weighted stock index consisting of the 3,000 largest publicly traded U.S. stocks by capitalization. This index is a broad measure of the performance of the aggregate domestic equity market.

[2] **Bloomberg Commodity Index Total Return**—Consists of futures contracts and reflects the returns on a fully collateralized investment in Bloomberg Commodity Index (BCOM). BCOM Index provides broad-based exposure to commodities. Combines the returns of BCOM with the returns on cash collateral invested in three-month U.S. Treasury Bills.

[3] **Custom Opportunistic Benchmark**—A market value-weighted index of the underlying portfolio benchmarks, which as of December 31, 2022 included the Russell 2000 Index, Bloomberg Gold Subindex Total Return, and S&P Risk Parity Index - 8% Target Volatility.

[4] **Bloomberg U.S. Aggregate Bond Index**—A market capitalization-weighted bond index consisting of Bloomberg corporate, government, mortgage-backed, and asset-backed securities. This index is the broadest available measure of the aggregate U.S. fixed income market.

[5] **Custom Securitized Debt Benchmark**—As of December 31, 2022, blend was 50% Bloomberg Non-Agency Investment Grade CMBS: BBB Total Return Index Unhedged USD, 50% Bloomberg Non-Agency CMBS Agg Eligible Total Return Index Value Unhedged USD.

[6] **Bloomberg U.S. TIPS Index**—Consists of inflation-protected securities issued by the U.S. Treasury.

[7] **Bloomberg U.S. Corporate High Yield Total Return Index**—Covers the universe of USD-denominated, high yield, fixed-rate corporate bond market. Securities are classified as high yield if the middle rating of Moody's, Fitch and S&P is Ba1/BB+/BB+ or below.

[8] **Custom Non-U.S. Equity Benchmark**—As of December 31, 2022, blend was 55% MSCI World Index ex U.S. Standard, 31% MSCI Emerging Markets Standard Index, 10% MSCI World Index ex U.S. Small Cap, and 4% MSCI Emerging Markets Small Cap Index.

[9] **Custom Emerging Markets Debt Benchmark**—As of December 31, 2022, blend was 50% J.P. Morgan Emerging Markets Bond Index (EMBI) Global, and 50% J.P. Morgan Government Bond Index (GBI-EM)-Emerging Markets Global Diversified.

[10] **Dow Jones U.S. Select Real Estate Securities Index (RESI)**—The Dow Jones U.S. Select RESI Total Return Index represents equity real estate investment trusts (REITs) and real estate operating companies (REOCs) traded in the U.S.

[11] **ICE Bank of America Merrill Lynch (BofAML) U.S. 3-Month Treasury Bill Index**—The three-month Treasury Bill return as measured by Bank of America Merrill Lynch.

[12] **HFR Risk Parity Institutional Custom Index**—Includes funds in which OPERS is currently invested, with a volatility target of 15% or greater and are classified as Volatility Target: 15%. Funds must have assets under management of USD $500 million or greater in order to be considered for inclusion in an HFR Risk Parity Institutional Index.

[13] **Bloomberg U.S. Treasury Index**—Measures U.S. dollar-denominated, fixed-rate, nominal debt issued by the U.S. Treasury. Treasury bills are excluded, but are part of a separate Short Treasury bond index. Separate Trading of Registered Interest and Principal of Securities (STRIPS) are excluded from the index because their inclusion would result in double-counting.

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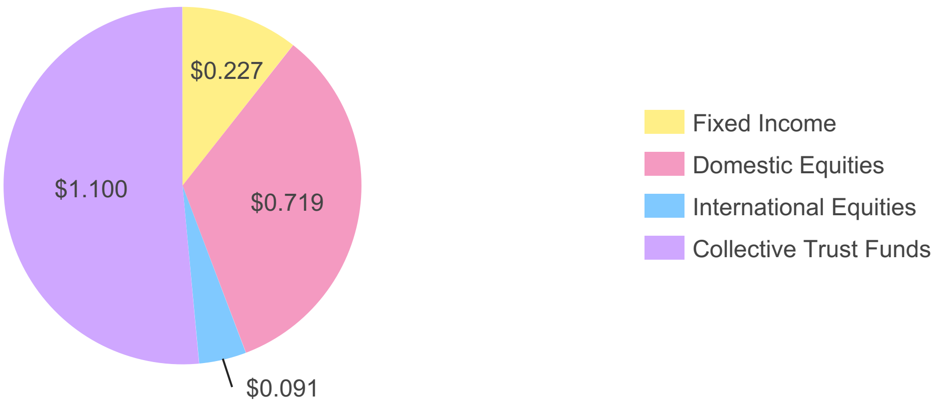
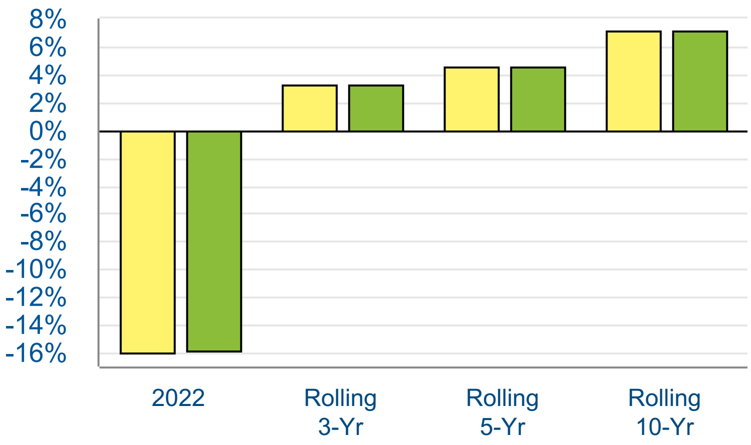
Defined Contribution Portfolio Asset Allocation (as of December 31, 2022, $ in billions)



Investment Returns

The Defined Contribution portfolio reported an investment loss of 16.00% in 2022. The portfolio composite is derived from the individual investment option returns and their actual year-end market values. Members may not invest in this portfolio composite, but choose to invest in the individual investment options provided. The returns for the investment options, and their respective indices, are shown on the next page.

Investment Returns—Annual Rates of Return[1] Defined Contribution Portfolio



🟨 Defined Contribution Portfolio Returns[2]	(16.00%)	3.25%	4.58%	7.15%
🟩 Policy Benchmark Returns[2]	(15.81%)	3.33%	4.62%	7.16%

[1] Annual Rates of Return—The Defined Contribution portfolio return is the result of the returns generated by defined contribution investments based on a combination of time-weighted and market value-weighted calculations. The defined contribution plans began in 2003; thus, 30-year return information does not exist.

[2] The Defined Contribution portfolio transitioned to new investment funds and share classes in 2022; thus, the 2022, Rolling 3-Yr, Rolling 5-Yr, and Rolling 10-Yr return information reflects a time-weighted, blended return of current and historical fund performance.

Investment returns for the Defined Contribution portfolio underlying asset class composites and the respective benchmarks are shown below:

Schedule of Investment Results[1] (for the year ended December 31, 2022)	**Defined Contribution Portfolio**		
Provider Funds	2022	Rolling 3-Year	Rolling 5-Year
LifePath Index Retirement Fund N	(13.73%)	(0.75%)	1.28%
LifePath Retirement Custom Benchmark[2]	(13.73)	(0.26)	1.62
LifePath Index 2025 Fund N	(15.23)	0.31	2.16
LifePath 2025 Custom Benchmark[2]	(15.02)	0.57	2.36
LifePath Index 2030 Fund N	(16.80)	1.36	2.90
LifePath 2030 Custom Benchmark[2]	(16.09)	1.13	2.82
LifePath Index 2035 Fund N	(17.74)	1.41	3.00
LifePath 2035 Custom Benchmark[2]	(16.94)	1.78	3.27
LifePath Index 2040 Fund N	(17.67)	2.09	3.43
LifePath 2040 Custom Benchmark[2]	(17.33)	1.89	3.33
LifePath Index 2045 Fund N	(17.57)	2.08	3.48
LifePath 2045 Custom Benchmark[2]	(17.58)	1.94	3.42
LifePath Index 2050 Fund N	(17.63)	2.33	3.64
LifePath 2050 Custom Benchmark[2]	(17.77)	2.09	3.49
LifePath Index 2055 Fund N	(17.84)	2.44	3.72
LifePath 2055 Custom Benchmark[2]	(17.86)	2.22	3.58
LifePath Index 2060 Fund N	(17.77)	2.56	3.79
LifePath 2060 Custom Benchmark[2]	(17.85)	2.22	3.58
LifePath Index 2065 Fund N	(17.84)	N/A	N/A
LifePath 2065 Custom Benchmark[2]	(17.85)	N/A	N/A
Invesco Stable Value Trust - Class B1	1.63	1.69	1.99
ICE BofAML U.S. 3-Month Treasury Bill Index[3]	1.98	3.31	2.60
U.S. Debt Index Fund M	(13.06)	(2.75)	(0.01)
Bloomberg U.S. Aggregate Bond Index[4]	(13.02)	(2.72)	0.02
Russell 3000 Index Fund J	(19.20)	7.04	8.78
Russell 3000 Index[5]	(19.20)	7.07	8.79
Russell 1000 Index Fund J	(19.15)	7.39	9.14
Russell 1000 Index[6]	(19.12)	7.35	9.13
Russell 2000 Index Fund J	(20.38)	3.09	4.12
Russell 2000 Index[7]	(20.43)	3.10	4.13
MSCI ACWI ex-US Index Fund J	(15.68)	0.36	1.17
MSCI ACWI ex USA Net Dividend Return Index[8]	(16.01)	0.07	0.88

Footnotes found on next page.

Footnotes for Schedule of Investment Results—Defined Contribution Portfolio

The footnotes below provide definitions for the asset class composite benchmark indices as of December 31, 2022:

[1] **Schedule of Investment Results**—The Defined Contribution portfolio transitioned to new investment funds and share classes through a different provider in March 2022; thus, the 2022, Rolling 3-Year, and Rolling 5-Year return information reflects a time-weighted, blended return of current provider fund performance from March 2022 through December 2022 and historical fund performance in similar funds prior to March 2022.

[2] **LifePath Index Custom Benchmark**—The LifePath Index Funds' Custom Benchmarks are comparison benchmarks for the performance of the Funds. The Custom Benchmarks are calculated using blended returns of third-party indices that proportionally reflect the respective weightings of the Funds' asset classes. The third-party index proportions of the Custom Benchmarks are adjusted quarterly to reflect the Funds' changing asset allocations over time. As the Funds' asset classes have been re-defined or added over time, the indices used to calculate the Custom Benchmarks have changed accordingly. As of May 11, 2022, the indices used to calculate the Custom Benchmarks are: Russell 1000 Index, Russell 2000 Index, MSCI ACWI ex-US IMI Net Dividend Return Index, Bloomberg U.S. Long Credit Bond Index, Bloomberg U.S. Intermediate Credit Bond Index, Bloomberg U.S. Long Government Bond Index, Bloomberg U.S. Intermediate Government Bond Index, Bloomberg U.S. Securitized: MBS, ABS and CMBS Index, Bloomberg U.S. Treasury Inflation Protected Securities (TIPS) Index (Series-L), FTSE EPRA Nareit Developed Index, and the Bloomberg Commodity Index Total Return.

[3] **ICE Bank of America Merrill Lynch (BofAML) U.S. 3-Month Treasury Bill Index**—The three-month Treasury Bill return as measured by Bank of America Merrill Lynch.

[4] **Bloomberg U.S. Aggregate Bond Index**—A market capitalization-weighted bond index consisting of Bloomberg corporate, government, mortgage-backed, and asset-backed securities. This index is the broadest available measure of the aggregate U.S. fixed income market.

[5] **Russell 3000 Index**—A market capitalization-weighted stock index consisting of the 3,000 largest publicly traded U.S. stocks by capitalization. This index is a broad measure of the performance of the aggregate domestic equity market.

[6] **Russell 1000 Index**—A market capitalization-weighted stock index consisting of the 1,000 largest companies in the Russell 3000 Index, which represents approximately 92% of the total market capitalization of the Russell 3000 Index.

[7] **Russell 2000 Index**—A market capitalization-weighted stock index consisting of the 2,000 smallest companies in the Russell 3000 Index, which represents approximately 8% of the total market capitalization of the Russell 3000 Index.

[8] **MSCI All Country World ex USA Net Dividend Return Index**—A market capitalization-weighted stock index representing 45 developed and emerging country markets, excluding the U.S. market.

Top Ohio Companies

The largest direct investments in the state of Ohio, measured at the fair value of OPERS' investment in the securities of firms headquartered in Ohio, totaled approximately $0.5 billion at the end of the year.

The largest indirect investments, measured at the fair value of OPERS' investment in the securities of companies with the largest employment presence in the state, totaled approximately $1.4 billion. Employment presence is measured by the number of employees at a business located in Ohio, as defined by the Office of Strategic Research, Ohio Department of Development. Firms with the largest employment presence in Ohio in which OPERS held investments at the end of 2022 employed more than 249,000 people.

Top Ohio Holdings (as of December 31, 2022)

Direct		Indirect		
Largest Firms Headquartered In Ohio	Fair Value	Firms with Largest Employment Presence	Ohio Employment Estimated Headcount	Fair Value
Procter & Gamble Co.	$215,389,797	Wal-Mart Stores Inc.	55,262	$131,163,407
Welltower Inc.	52,850,802	Amazon.com, Inc.	45,000	472,391,892
Progressive Corp.	46,886,014	Kroger Co.	44,077	18,304,147
Sherwin-Williams Co.	33,859,159	JPMorgan Chase & Co.	20,228	328,561,081
Marathon Petroleum Corp.	33,359,934	FedEx Corporation	15,250	24,913,088
American Electric Power Co., Inc.	29,409,338	United Parcel Service, Inc.	15,236	79,413,241
Cintas Corp.	23,093,589	Honda Motor Co., Ltd.	14,400	21,297,410
TransDigm Group Inc.	19,415,258	Lowe's Companies, Inc.	14,400	76,369,091
Parker-Hannifin Corp.	19,322,400	Progressive Corp.	13,236	46,886,014
Kroger Co.	18,304,147	The Home Depot, Inc.	12,600	199,345,563
Total	**$491,890,438**	**Total**	**249,689**	**$1,398,644,934**

Investment Objectives and Policies

The investment and fiduciary responsibilities of the Board are governed by Ohio Revised Code (ORC) 145.11, the requirements of the *OPERS Code of Ethics and Personal Trading Policy* and applicable state statutes. The Board discharges its duties solely in the interest of participants and beneficiaries, for the exclusive purpose of providing benefits and defraying reasonable administrative expenses. Prudent Person standards apply.

The Board reviews all policies and approves changes or additions as appropriate. The Investment staff fulfills the mandates and obligations described in the policies and recommends changes to the Board, as appropriate. The following policies reflect those in place for the 2022 fiscal year.

The OPERS Board manages the assets in a fashion that reflects OPERS' unique liabilities, funding resources and portfolio size, by incorporating accepted investment theory and reliable, empirical evidence. The Board ensures adequate risk control of the portfolios through diversification, adhering to portfolio guidelines, providing risk budgeting, adhering to compliance and ongoing monitoring.

The purpose of the OPERS policies is to provide a broad strategic framework for managing portfolios. Approved Board asset class policies are summarized beginning on page 129 and are posted on the OPERS website, OPERS.org, where they can be viewed in their entirety.

Note: Policies have been adapted to meet plain-language standards of the OPERS Annual Comprehensive Financial Report *and provide an overview. Complete policy information, with exact verbiage approved by the Board, is available on OPERS.org.*

Rebalancing

Markets are dynamic and portfolios must be reviewed regularly to ensure holdings remain within their strategic asset allocations. To ensure conformance with the asset allocation policies, the portfolios are reviewed daily for compliance within the target asset allocation percentages, specified by portfolio, reasonable costs, and best interest of OPERS.

The Board establishes and reviews asset allocation targets, ranges and investment policies against capital market expectations, the investment landscape, and an annual actuarial assessment by the actuarial consultant. A comprehensive strategic asset allocation review is completed approximately every three-to-five years or if market conditions change substantially. This review helps to assess the continuing appropriateness of the asset allocation policy. Additionally, the review may also include a study of portfolio design and comparisons with peers.

Defined Benefit Investment Policies

Investment Objective

The primary objective of the Defined Benefit portfolio is to secure statutory benefits provided by OPERS and to keep OPERS costs reasonable for employees and employers.

Asset Allocation and Performance Objectives

The Board's asset allocation policy establishes a framework designed to achieve the OPERS long-term investment objectives. The Defined Benefit portfolio performance objectives are to exceed the OPERS performance benchmark, net of investment expenses over five-year periods, and exceed the actuarial interest rate, currently 6.9%, over the long term.

The Board sets target allocations to various asset classes designed to meet the OPERS long-term investment objectives. Allocations for the Public Equity and Fixed Income asset classes are 44% and 24%, respectively, with the remaining 27% and 5% allocated to Alternatives (Private Equity, Real Estate, REITs, Commodities, and Opportunistic) and Risk Parity, respectively. The Board also establishes a band of minimum and maximum allowable allocations, or ranges, surrounding each asset class target. The purpose of ranges is to appropriately and cost-effectively balance the Board's investment policy with the investment strategies pursued over shorter time-periods. The following table lists the Defined Benefit portfolio target allocations, ranges and performance benchmarks for each asset class:

Defined Benefit Asset Allocation

Asset Class	Target Allocation	Range	Benchmark Index
Public Equity	**44.0%**	**35 to 53%**	
U.S. Equity	Custom Allocation[1]	+/- 5%	Russell 3000 Index
Non-U.S. Equity	Custom Allocation[1]	+/- 5%	Custom benchmark of the following indices: 55% MSCI World Index ex U.S. Standard 10% MSCI World Index ex U.S. Small Cap 31% MSCI Emerging Markets Standard Index 4% MSCI Emerging Markets Small Cap Index
Fixed Income	**24.0%**	**17 to 31%**	
Core Fixed	11.0	8 to 14	Bloomberg U.S. Aggregate Bond Index
Emerging Markets Debt	4.0	3 to 5	Custom benchmark of the following indices: 50% J.P. Morgan Emerging Markets Bond Index (EMBI) Global 50% J.P. Morgan Government Bond Index (GBI)—Emerging Markets Global Diversified USD Index
Floating Rate Debt	0.0	0 to 1	N/A
Securitized Debt	1.0	0 to 2	Custom benchmark of the following indices: 50% Bloomberg Non-Agency Investment Grade CMBS: BBB Total Return Index Unhedged USD 50% Bloomberg Non-Agency CMBS Agg Eligible Total Return Index Value Unhedged USD
TIPS	3.0	0 to 5	Bloomberg U.S. TIPS Index
High Yield	2.0	1 to 3	Bloomberg U.S. Corporate High Yield Total Return Index
U.S. Treasury	3.0	0 to 5	Bloomberg U.S. Treasury Index
Alternatives	**27.0%**	**19 to 35%**	
Private Equity	12.0	7 to 17	State Street Private Equity Index (SSPEI)
Real Estate	10.0	5 to 15	Net NFI-ODCE plus 85 bps
REITs	1.0	0 to 4	Dow Jones U.S. Select Real Estate Securities Index (RESI)
Hedge Funds	0.0	0 to 1	N/A
Opportunistic	3.0	0 to 4	Market value weight of underlying portfolio benchmarks
Commodities	1.0	0 to 4	Bloomberg Commodity Index Total Return
Risk Parity	**5.0%**	**2 to 8%**	HFR Risk Parity Institutional Custom Index
Operating Cash	**0.0%**	**0 to 5%**	N/A
Total	**100.0%**		

[1] The custom allocation is set to the fixed U.S. Equity and Non-U.S. Equity target weights.

Health Care Investment Policies

Investment Objective

The primary objective of the Health Care portfolio is to provide funding for discretionary health care for eligible members. The assets of the Health Care portfolio are invested with the objectives of: a) preservation of capital, b) earning a reasonable return, and c) liquidity.

Asset Allocation and Performance Objectives

The approved asset allocation policy establishes a framework designed to achieve the long-term investment objective. The Health Care portfolio performance objective is to exceed the performance benchmark net of investment expenses. The table on the next page sets forth targets, ranges and performance benchmarks for each asset class.

Health Care Asset Allocation

Asset Class	Target Allocation	Range	Benchmark Index
Public Equity	**50.0%**	**40 to 60%**	
U.S. Equity	Custom Allocation[1]	+/- 5%	Russell 3000 Index
Non-U.S. Equity	Custom Allocation[1]	+/- 5%	Custom benchmark of the following indices: 55% MSCI World Index ex U.S. Standard 10% MSCI World Index ex U.S. Small Cap 31% MSCI Emerging Markets Standard Index 4% MSCI Emerging Markets Small Cap Index
Fixed Income	**34.0%**	**24 to 44%**	
Core Fixed	17.0	12 to 22	Bloomberg U.S. Aggregate Bond Index
Emerging Markets Debt	2.0	1 to 3	Custom benchmark of the following indices: 50% J.P. Morgan Emerging Markets Bond Index (EMBI) Global 50% J.P. Morgan Government Bond Index (GBI)—Emerging Markets Global Diversified USD Index
Floating Rate Debt	0.0	0 to 1	N/A
Securitized Debt	2.0	1 to 3	Custom benchmark of the following indices: 50% Bloomberg Non-Agency Investment Grade CMBS: BBB Total Return Index Unhedged USD 50% Bloomberg Non-Agency CMBS Agg Eligible Total Return Index Value Unhedged USD
TIPS	7.0	3 to 9	Bloomberg U.S. TIPS Index
High Yield	4.0	2 to 6	Bloomberg U.S. Corporate High Yield Total Return Index
U.S. Treasury	2.0	0 to 4	Bloomberg U.S. Treasury Index
Alternatives	**14.0%**	**7 to 21%**	
REITs	7.0	4 to 11	Dow Jones U.S. Select Real Estate Securities Index (RESI)
Hedge Funds	0.0	0 to 1	N/A
Opportunistic	3.0	0 to 5	Market value weight of underlying portfolio benchmarks
Commodities	4.0	2 to 8	Bloomberg Commodity Index Total Return
Risk Parity	**2.0%**	**1 to 4%**	HFR Risk Parity Institutional Custom Index
Operating Cash	**0.0%**	**0 to 5%**	N/A
Total	**100.0%**		

[1] The custom allocation is set to the fixed U.S. Equity and Non-U.S. Equity target weights.

Defined Contribution Investment Policies

Investment Objective

The Defined Contribution portfolio investment options are intended to be primary retirement savings vehicles for members. The long-term objectives of the Defined Contribution portfolio are to support defined contribution plan members in having independent control over their OPERS retirement assets, while providing a suitable framework to invest their assets over the long-term.

Asset Allocation

The asset allocation and diversification objective is based on three components: target date funds, standalone funds and the self-directed brokerage account that offers members in the defined contribution plans (the Member-Directed Plan and the Combined Plan) diversified investment options. The default investment option for defined contribution plan members who fail to make a selection is the target date fund that most closely corresponds to the member's current age, assuming a payout at age 65.

- **Target Date Funds**

  Target Date Funds is a passive program that links a defined contribution member's investment portfolio to a particular time horizon, typically an expected retirement date. A target date fund with a corresponding target date in the distant future will have an allocation tilted more toward equities and other higher risk/higher reward asset classes to enhance the opportunity to accumulate capital. As target date funds move toward their target payout dates, allocations to such assets are reduced to better preserve accumulated capital, while simultaneously increasing allocation to fixed income and cash. These transitions, called glide paths, are accomplished by assigning each target date fund an asset class investment allocation and an asset class range surrounding such targets. On March 11, 2022, OPERS transitioned these funds to a different provider with similar investment time horizons.

- **Standalone Funds**

  Standalone Funds offer members in the defined contribution plans low cost, primarily passive, asset class specific investment funds. Those funds, and their respective indices, are as follows:

Standalone Fund	Market Index
Invesco Stable Value Trust - Class B1	ICE BofAML U.S. 3-Month Treasury Bill Index[1]
U.S. Debt Index Fund M	Bloomberg U.S. Aggregate Bond Index
Russell 3000 Index Fund J	Russell 3000 Index
Russell 1000 Index Fund J	Russell 1000 Index
Russell 2000 Index Fund J	Russell 2000 Index
MSCI ACWI ex-US Index Fund J	MSCI ACWI ex USA Net Dividend Return Index

[1] The stable value fund is managed actively. Its primary objective is to preserve the value of principal. Its secondary objective is to exceed the long-term return of the ICE Bank of America Merrill Lynch 3-Month U.S. Treasury Bill Index. A typical stable value fund return fluctuates less than 1% a year; therefore, neither the short-term returns nor volatility of the stable value fund is consistent with market value instruments such as those in the custom index.

- **Self-Directed Brokerage Account**

  The self-directed brokerage account option provides defined contribution members more flexibility in choosing their own retirement savings investments by allowing them to invest in a variety of active and passive mutual funds. The program parameters are the following:

  - Only designated mutual funds can be purchased through the window.
  - Maximum of 90% of a member’s portfolio is allowed to be invested through the brokerage window. (The plan will not rebalance the brokerage investments should they grow to exceed 90% of participant’s assets.)
  - Account minimum of $5,000 is required before a participant can use the window.
  - The annual cost of the window is borne by the participant using the window.

Performance Objectives and Risk Management

The performance objective for the target date funds is to meet the return of the respective performance benchmarks. The performance benchmarks are a custom index comprised of market indices for the component funds weighted in accordance with the target date fund target allocations as calculated by the external manager of the fund. The performance objective for the standalone funds is to meet the return of respective performance benchmarks, gross of external investment manager fees. There is no plan-level performance objective for the self-directed brokerage account because the mutual funds purchased through it are selected by members.

Defined contribution fund investment options offer diversification to minimize the impact of loss from individual positions. In addition to diversification, the program is passively managed for the target date funds and standalone funds. The self-directed brokerage account offers participants a broad range of mutual fund choices that are self-selected and subject to the program parameters.

Cash

Cash management seeks to preserve principal, provide liquidity and exceed its target benchmark, net of fees. This program actively invests cash and lending cash collateral relative to the target benchmarks for each portfolio. Interest rate, credit and liquidity risk are managed with quantitative and qualitative constraints.

Commodities

Commodity investments provide exposure to global commodities and achieve returns comparable to or in excess of the benchmark return, net of fees. Commodity portfolios are governed by guidelines that establish management parameters to achieve competitive commodity-based returns. Commodity investments may include commodities not specified in the Standard and Poor’s Goldman Sachs Commodity Index and/or the Bloomberg Commodity Index Total Return at the time of purchase.

Derivatives

Derivative instruments are used periodically to mitigate risk and to smooth trading efficiencies so that the risk/return profile of individual securities or portfolios are better managed. Derivative instruments may be used to enhance returns and reduce risk by managing or hedging exposure including, but not limited to stock markets, commodities and currencies.

Derivative instruments are grouped into three categories:

- **Category I:** Securities-based and traded either via an exchange or over-the-counter transactions.
- **Category II:** Non-securities-based, exchange-traded such as futures, options on futures or options.
- **Category III:** Non-securities-based, over-the-counter transactions.

To manage overall fund liquidity and to balance the use of derivative instruments and physical securities, limits have been established:

- Use of Category III derivative instruments are limited to 10% of the total net asset value of public market assets held in separate accounts, excluding foreign exchange derivative instruments used for hedging. (Additional portfolio-level restrictions may apply.)
- The combined gross notional exposure of Category II and Category III derivative instruments will not exceed 25% of total net asset value, excluding foreign exchange derivative instruments used for hedging. (Additional portfolio-level restrictions may apply.)
- Currency forwards are one year or less to maturity, unless approved by the chief investment officer.

Fixed Income

A broad exposure to fixed-income asset classes to ensure diversification and provide a competitive return is the overriding goal. In doing so, OPERS is better positioned to provide for the known liabilities associated with the defined benefit plan and the health care trust. Diversification is established via activity in a variety of sub-asset classes including market debt, floating rate debt, securities debt, Treasury inflation-protected securities (TIPS), high yield and U.S. Treasuries.

Both active and passive management strategies are used by internal and external portfolio managers. Internal managers position the majority of the fixed income portfolio with risk-controlled active strategies, focusing on investment-grade securities and managing the TIPS and U.S. Treasury allocations as indices. External managers, with special expertise, manage the high yield, emerging debt and floating rate debt investments.

Opportunistic

Investments in the Opportunistic sub-asset class include investment strategies or assets not currently used or employed to the level desired in the respective Defined Benefit or Health Care portfolios, but which have the potential to improve investment results over time. Assets and strategies used must have the potential to be mainstreamed into the investment program over time, or be opportunistic-based on either valuation or circumstances.

Every strategy within the Opportunistic sub-asset class has a specific performance benchmark. The overall benchmark is the market value weight of the underlying benchmarks. Long-term returns should match or exceed the OPERS Total Fund benchmark, which is a measure of the cost of investing in this category.

The primary risk control mechanisms are the limited size of the opportunistic allocation and the limits on the size of single assets and strategies. No single investment strategy or portfolio assigned to the same benchmark within the Opportunistic sub-asset class may exceed 1% of the sum of the Defined Benefit or Health Care portfolio assets at the time of funding.

Private Equity

Private equity seeks competitive returns plus a liquidity premium by investing with managers who have a consistent record of producing superior returns. Not publicly traded, this sub-asset class provides access to opportunities that may be long term.

Exclusively using external managers who employ active management strategies, private equity adds diversification to the Defined Benefit portfolio. Risk is managed by limiting the commitment amount to single, closed-end commingled funds to $600 million for primary funds and to $800 million for fund of funds, including secondary fund of funds. Additionally, specific quantitative and qualitative constraints govern the fund.

Performance is benchmarked against the State Street Private Equity Index (SSPEI).

Public Equities (domestic and international stocks)

With both active (active trades) and passive (indexed funds) components, this program provides broad exposure to global, publicly traded, stock markets. The active management of the program is structured to allow managers to identify and capture opportunities.

Both active and passive components are designed to produce risk-adjusted return, net of fees, that exceeds benchmarks over a complete market cycle—at all times conducting business within pre-established risk constraints.

This program is monitored using a tracking error range—tracking error is a statistical variance measurement that shows the degree to which OPERS returns differ from industry returns:

Asset Class	Benchmark	Tracking Error Range
U.S. Equity	Russell 3000 Index	0-100 basis points
Non-U.S. Equity	Custom benchmark of the following indices: 55% MSCI World Index ex U.S. Standard 10% MSCI World Index ex U.S. Small Cap 31% MSCI Emerging Markets Standard Index 4% MSCI Emerging Markets Small Cap Index	0-300 basis points

Real Estate

The global real estate program encompasses both private and public markets.

The private market real estate program uses active management strategies implemented through external managers. Single managers are limited to no more than 20% of the program. A summary of the long-term guidelines are as follows:

- Holdings outside the U.S. are limited to no more than 25% of the real estate portfolio net asset value.
- Single property investments are limited to $500 million.
- Single closed-end commingled funds are limited to $500 million.
- Single open-end commingled funds are limited to $750 million.

The public market real estate portfolio may engage in active and index management strategies through internal and external managers.

The OPERS private market real estate program performance is monitored, or benchmarked, using the National Council of Real Estate Investment Fiduciaries (NCREIF) Fund Index - Open End Diversified Core Equity (ODCE). This asset class is expected to meet or exceed the net ODCE plus 85 basis points, over rolling five-year periods. The public market real estate investment trusts (REITs) are benchmarked against the Dow Jones U.S. Select Real Estate Securities Index (RESI).

Risk Parity

Risk Parity is an alternative allocation of assets designed to achieve a better balance of economic outcomes in growth and inflation environments. This requires investing in multiple asset types and leveraging exposures to global markets in order to obtain the desired risk exposure. The Risk Parity allocation is structured to achieve roughly balanced risk exposure across equities, nominal fixed income, and inflation-sensitive assets, targeting a total volatility level comparable to that of the Defined Benefit and Health Care portfolios.

The overall benchmark is the market value weight of the underlying managers’ benchmarks. The Board sets performance expectations through approval of the *Annual Investment Plan*. By allocating to multiple Risk Parity managers, concentration to any one manager is limited.

Securities Lending

The Securities Lending program actively lends securities through various programs to qualified borrowers to provide incremental income to the respective asset classes. Performance of the securities lending program is assessed annually.

Cash reinvestment risk and counterparty risk are managed through a combination of quantitative and qualitative constraints. Excess collateral, marked-to-market daily, is held for each loan in the amount of 102% for domestic securities and 105% for international securities. The maximum percentage of assets that may be on loan is 50% of the eligible assets while the maximum amount that may be on loan with any one borrower is 15% of the eligible assets.

Investment Rates by Portfolio—Defined Benefit and Health Care

OPERS uses several rates to evaluate the results of the investment portfolios. Actual and benchmark returns for the years listed can be found in this section. The expected rate of return is based on the asset allocation in place during the year presented and the actuarial assumed rate of return is the assumption used for the annual actuarial valuations, described further in the Actuarial Section. Finally, the single discount and long-term municipal bond rates reflect the requirements of Governmental Accounting Standards Board Statement No. 74. These rates are used in the Accounting Basis valuations for health care and are not available prior to 2016.

Rates are presented for ten years in the following table:

Investment Rates by Portfolio

	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
Defined Benefit Portfolio										
Actual Rate of Return	(12.03%)[a]	15.34%	12.02%	17.23%	(2.99%)	16.82%	8.31%	0.33%	6.96%	14.38%
Benchmark Return	(11.44)	15.28	11.65	17.06	(3.07)	15.19	8.64	0.25	5.81	14.24
Long-Term Expected Rate of Return	7.87	6.81	6.90	8.00	8.00	8.00	8.00	8.00	8.00	8.00
Actuarial Assumed Rate of Return	6.90	6.90	7.20	7.20	7.20	7.50	7.50	8.00	8.00	8.00
Health Care Portfolio[1]										
Actual Rate of Return	(15.51%)	14.34%	10.96%	19.59%	(5.76%)	15.25%	7.55%	(2.18%)	5.28%	11.36%
Benchmark Return	(15.56)	13.76	10.13	19.20	(5.96)	14.31	7.75	(1.88)	5.01	10.70
Long-Term Expected Rate of Return	7.27	6.05	6.31	6.50	6.50	6.50	6.50	6.50	6.50	6.50
Actuarial Assumed Rate of Return	6.00	6.00	6.00	6.00	6.00	6.50	5.00	5.00	5.00	5.00
Single Discount Rate (GASB 74)[2]	5.22	6.00	6.00	3.16	3.96	3.85	4.23	N/A	N/A	N/A
Long-Term Municipal Bond Rate[2]	4.05	1.84	2.00	2.75	3.71	3.31	3.78	N/A	N/A	N/A

[a] Performance was reduced by 0.94% in 2022 because of a change in the methodology used for cash distributions from private equity and real estate funds.

[1] In 2016, the 401(h) Health Care Trust closed and assets were transferred to the 115 Health Care Trust. The 2016 partial year results for both portfolios can be found in this section, reflecting six month returns for the 401(h) Health Care Trust. For 2016, this chart displays the combined health care rates as disclosed in this section. For previous years, the rates represent the 401(h) Health Care Trust, as the majority of the health care assets resided in this trust until transferred to the 115 Health Care Trust.

[2] 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 other post-employment benefits (OPEB) plan investments (to the extent that the plan's 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 of return are not met). Additional information on the Single Discount Rate can be found in Note 7 of the Notes to Combining Financial Statements found in the Financial Section.

Structure and Relationship of Investment Policies

The following exhibit illustrates the structure and relationship of the 26 investment policies within the total System and its three investment portfolios in 2022.

OPERS FUNDS

POLICIES

Pension

Defined Benefit Portfolio Statement of Investment Objectives & Policies

Defined Contribution Portfolio Statement of Investment Objectives & Policies

Health Care

Health Care Portfolio Statement of Investment Objectives & Policies

ASSET/SUB-ASSET CLASS POLICIES

Cash Policy
Commodities Policy
Fixed Income Policy
Opportunistic Policy
Private Equity Policy
Public Equity Policy
Real Estate Policy
Risk Parity Policy

INVESTMENT-WIDE POLICIES

Broker-Dealer Policy
Corporate Governance Policy and Proxy Voting Guidelines
Derivatives Policy
External Investment Managers' Insurance Policy
Iran and Sudan Divestment Policy
Leverage Policy
Liquidity Policy
Material Nonpublic Information Policy
Office of Foreign Assets Control Compliance Policy
Ohio-Qualified and Minority-Owned Manager Policy
Personal Trading Policy
Responsible Contractor Policy
Securities Lending Policy
Soft Dollar Policy
Russia Divestment Policy

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Financial Stability relies: *On anticipating change*

The business of pensions has changed and will continue to change. OPERS is and has been forward-looking and diligent in structuring solutions to meet anticipated changes—such as members living longer in retirement than first anticipated.

Only by anticipating the need for change and seeking the professional analysis necessary to interpret data can change be thoughtful, impactful and sustainable. OPERS has a long history of anticipating future needs and thoughtfully structuring incremental changes such that the organization remains financially stable.

At OPERS, the forecasting and analysis necessary to anticipate future needs is completed only with extensive expert input. The OPERS independent actuaries analyze OPERS-specific data to help manage (and mitigate) risk. These professionals evaluate the likelihood of future events and the potential impact of anticipated events on the financial stability of the System.

This strategy has worked. With actuarial insights, OPERS has navigated complex data on marketplace volatility, demographic changes, health care expectations and investment projections to assist management and the Board of Trustees to make informed, sustainable decisions. These decisions have helped protect this organization and its members from negative financial outcomes.

What members should look for in this section: OPERS continues to be financially stable through changes. See page 151 to review the Schedules of Funding Progress—clearly showing that OPERS' ability to proactively address change has helped keep the organization well within the legally mandated window of 30 years. A significant sign of financial stability.

What all stakeholders should know: OPERS is a forward-looking economic engine for Ohio and the nation. Employers recognize a financially stable pension system as a powerful recruiting tool. Members recognize the importance of knowing financial stability in retirement can be earned through working years. OPERS retirees can enjoy financial stability in retirement and have a comfortable life in retirement years (all of them).

For some, years in retirement exceeds working years (Traditional Pension Plan).

58.1	23.7	37.6
Average age at retirement	Average years of service at retirement	Average number of years in retirement

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April 28, 2023

Retirement Board
Ohio Public Employees Retirement System
277 East Town Street
Columbus, Ohio 43215

Dear Board Members:

The basic financial objective of the defined benefit pension portion of the Ohio Public Employees Retirement System (OPERS) is to establish and receive contributions which:

- When expressed in terms of percents of active member payroll will remain approximately level from generation to generation, and
- When combined with present assets and future investment return will be sufficient to meet the financial obligations of OPERS to present and future retirees and beneficiaries.

This financial objective is addressed within the annual actuarial funding valuation of the defined benefit pension portion of OPERS. The purposes of the funding valuation are as follows:

- Measure the financial position of OPERS;
- Assist the Board in establishing employer and employee contribution rates subject to statutory limits;
- Assist the Board in establishing the employer contribution rate allocation between pension and retiree health;
- Determine the number of years required to amortize the unfunded actuarial accrued liabilities, given the contribution rates;
- Provide disclosure information for financial reporting; and
- Analyze experience over the last year.

The most recent funding valuation was completed based upon population data, asset data, and plan provisions as of December 31, 2022. A report containing the results of the funding valuation is produced annually, in some cases due to timing issues after the publication of the Annual Comprehensive Financial Report.

In addition to the funding valuation report for the defined benefit pension plan, separate reports are issued to provide financial reporting information for OPERS in accordance with Governmental Accounting Standards Board (GASB) Statement Nos. 67 and 68 (pension benefits) and Nos. 74 and 75 (retiree health benefits, or OPEB). Reports containing the actuarial results of the financial reporting valuations are produced annually, in some cases after the publication of the Annual Comprehensive Financial Report. Financial reporting information has been produced based upon a measurement date of December 31, 2022 for GASB Statement Nos. 67 and 68 and December 31, 2022 for GASB Statement Nos. 74 and 75.

Retirement Board
Ohio Public Employees Retirement System
April 28, 2023
Page 2

The following schedules in the Financial Section and Actuarial Section of the Annual Comprehensive Financial Report were prepared based upon certain information presented in the previously mentioned funding and financial reporting valuation reports:

Financial Section

- Net Pension Liability/(Asset)
- Key Methods and Assumptions Used in Valuation of Total Pension Liability/(Asset)
- Sensitivity of Net Pension Liability/(Asset) to Changes in the Discount Rate
- Net OPEB Liability/(Asset) – Health Care
- Key Methods and Assumptions Used in Valuation of Total OPEB Liability/(Asset)
- Sensitivity of Net OPEB Liability/(Asset) to Changes in the Discount Rate
- Sensitivity of Net OPEB Liability/(Asset) to Changes in the Health Care Cost Trend Rate
- Schedule of Changes in Net Pension Liability/(Asset) and Related Ratios
- Schedules of Member and Employer Contributions
- Schedule of Changes in Net OPEB Liability/(Asset) and Related Ratios

Actuarial Section

- Summary of Assumptions
- Schedules of Average Defined Benefits Paid
- Actuarial Valuation Data – Pension
- Schedules of Funding Progress
- Short-Term Solvency Test
- Analysis of Financial Experience

The individual member statistical data required for the valuations was furnished by OPERS, together with pertinent data on financial operations. The cooperation of OPERS in furnishing these materials is acknowledged with appreciation. We checked for internal and year-to-year consistency, but did not audit the data. We are not responsible for the accuracy or completeness of the data. Assets are valued on a market related basis that recognizes each year’s difference between actual and assumed investment return over a closed four-year period. For determining the Net Pension Liability/(Asset) under GASB Statement No. 67, assets are valued on a market basis. The long-term assumed rate of investment return on pension fund assets is 6.90%. Based upon the results of a projection performed in accordance with GASB Statement No. 67 parameters, the Single Discount Rate for purposes of discounting pension liabilities for pension financial reporting purposes is also 6.90%. For determining the Net OPEB Liability/(Asset) under GASB Statement No. 74, assets are valued on a market basis. The long-term assumed rate of investment return on Health Care fund assets is 6.00%. Based upon the results of a projection performed in accordance with GASB Statement No. 74 parameters, the Single Discount Rate for purposes of discounting Health Care liabilities for OPEB financial reporting purposes is 5.22%.

Actuarial valuations are based upon assumptions regarding future activity in specific risk areas including the rates of investment return and payroll growth, eligibility for the various classes of benefits, and longevity among retired lives. The Board adopted the actuarial assumptions after considering the advice of the actuary and other professionals. The assumptions and methods used for funding and financial reporting purposes are in conformity with the Actuarial Standards of Practice issued by the Actuarial Standards Board. They are also in conformity with the Board's funding policy. The December 31, 2022 valuations were based upon assumptions that were recommended in connection with an Experience Study covering the 2016-2020 period.

The computed pension amortization period as of the December 31, 2022 annual valuation is 16 years and the System is 84% funded with respect to pension benefits, based upon the actuarial accrued liability and the funding value of assets.

Based upon the results of the December 31, 2022 valuations, we are pleased to report to the Board that the Public Employees Retirement System of Ohio is meeting its basic financial objective and continues to operate in accordance with the actuarial principles of level percent of payroll financing.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law.

Readers desiring a more complete understanding of the actuarial condition of OPERS are encouraged to obtain and read the complete valuation reports. The Actuarial and Financial Sections of this Annual Comprehensive Financial Report contain some, but not all of, the information in the valuation reports.

Brian B. Murphy and Mita D. Drazilov are Members of the American Academy of Actuaries (MAAA), are independent of the plan sponsor and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

Respectfully submitted,
Gabriel, Roeder, Smith & Company

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Summary of Assumptions

The defined benefit pension and health care actuarial information presented in this *2022 Annual Comprehensive Financial Report* (annual report) is based on the most current actuarial valuations for the System. This section presents actuarial information for pension and health care on a Funding Basis. The pension funding valuation results are valued and presented as of December 31, 2022; the health care funding valuation results are valued and presented as of December 31, 2021, based on the most recent data available. The pension actuarial assumptions are applicable to 2022. The health care actuarial assumptions are applicable to 2021, unless otherwise noted. In conjunction with Governmental Accounting Standards Board (GASB) Statement No. 67 (GASB 67), *Financial Reporting for Pension Plans—an amendment of GASB Statement No. 25*, OPERS is reporting actuarial results of pensions as of the December 31, 2022 valuation date in the Financial Section of the annual report on a financial reporting basis, or Accounting Basis. Also, in conjunction with GASB Statement No. 74 (GASB 74), *Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans* (or OPEB), OPERS is reporting actuarial results of health care as of the December 31, 2021 valuation date, rolled forward to the measurement date of December 31, 2022, in the Financial Section of the annual report on a financial reporting basis, or Accounting Basis.

The Accounting Basis calculation methodologies defined by GASB 67 and 74 require different methods and may require different assumptions than are used to calculate the funded status of a plan. For example, both GASB 67 and 74 require the use of the fair value of assets, instead of the smoothed value of assets used for the Funding Basis. Both GASB 67 and 74 require that the actuarial information presented under the Accounting Basis represent the most current year-end or measurement period. Therefore, the GASB 67 net pension liability/(asset) and the GASB 74 net OPEB, or health care, liability/(asset) results will differ from the unfunded actuarial accrued liability results provided in the Schedules of Funding Progress included in this section, beginning on page 151. GASB 67 and 74 break the link between accounting and funding. These changes affect the accounting information disclosed in the Notes to Combining Financial Statements and Required Supplementary Information, both included in the Financial Section. However, the changes do not impact the actuarial methods and assumptions used by OPERS to determine the contributions needed to fund the plans. The assumptions disclosed in this section were used for both funding and financial reporting valuations, unless otherwise noted.

OPERS is administered in accordance with Chapter 145 of the Ohio Revised Code (ORC), which assigns authority to the OPERS Board of Trustees to amend the funding policy. OPERS conducts an experience study every five years in accordance with ORC Section 145.22 with the most recent experience study performed in 2021 for the period 2016-2020. In addition to the experience studies, conditions are monitored and assumptions are reviewed annually to ensure the assumptions remain reasonable until the next scheduled experience study. If conditions change materially, it may become necessary to review and update assumptions in advance of the next scheduled experience study. In consultation with the actuary, in 2021, the Board adopted changes to reduce the long-term pension investment return assumption from 7.2% to 6.9%. In 2018, the long-term health care investment return assumption was reduced from 6.5% to 6.0%.

These methods and assumptions apply to the pension plans (Traditional Pension Plan, Combined Plan, and Member-Directed Plan), as well as health care.

Pension plan and health care details can be found in the Plan Statement beginning on page 215.

Valuation Data

The demographic and financial data used in the actuarial valuations were provided to the actuary by OPERS. The actuary examined the data for general reasonableness and year-to-year consistency, but did not audit the information.

Summary of Assumptions

Funding Method

The individual entry-age actuarial-cost method of valuation was used in determining pension and health care liabilities and normal costs under both of the funding valuations included in this section, as well as the financial reporting valuations done under GASB 67 and 74 included in the Financial Section. Differences between assumed and actual experience (actuarial gains and losses) become part of actuarial accrued liabilities. For funding valuation purposes, unfunded actuarial accrued liabilities are amortized to produce payments (principal and interest), which are a level percent of payroll contributions.

Asset Valuation Method

For actuarial purposes, and under the Funding Basis, the funding value of defined benefit pension and health care assets recognizes total assumed investment returns each year. Differences between actual and assumed investment returns are phased in over a closed four-year period. The funding value is not permitted to deviate from market value by more than 12%.

Economic Assumptions

The following economic assumptions were used by the actuary in the pension and healthcare valuations, as noted:

- ***Investment Return***—For pension, 6.90% compounded annually, net of administrative expenses. For health care, 6.00% compounded annually, net of administrative expenses.
- ***Wage Inflation Rate***—Calculated at 2.75% per year. Wage inflation is defined to be the portion of total pay increases for an individual due to macroeconomic forces including productivity, price inflation, and labor market conditions. The wage-inflation rate does not include the effects of pay changes related to individual merit and seniority.
- ***Price Inflation***—Of the investment return rate and wage inflation rate, 2.35% is assumed to be price inflation.
- ***Assumed Real Rate of Return Over Wage Inflation***—For pension, 4.15% per year. For health care, 3.25% per year. The assumed real rate of return for the Funding Basis is defined as the portion of the pension and the health care investment return, 6.90% and 6.00%, respectively, that is more than the assumed total wage growth rate of 2.75%. Refer to the Notes to Combining Financial Statements, Note 7, in the Financial Section for more information on the Single Discount Rate used for the Accounting Basis calculations of the health care liability.
- ***Active Member Population***—For pension, the sum of the active members in the Traditional Pension Plan and Combined Plan is assumed to remain constant. For purposes of financing the unfunded actuarial accrued liabilities, total payroll is assumed to grow at the wage-inflation rate of 2.75% per year.
- ***Heath Care Payments***—The health reimbursement arrangement (HRA) account allowances for eligible retirees were assumed to remain level through 2025, then increase by 3.00% annually thereafter. For projection and valuation purposes, HRA and retiree medical accounts (RMA), including Member-Directed Plan health care and wellness RMA accounts, are assumed to be allocated to the members and cannot be used in the future to fund other retiree health care expenses.
- ***Individual Member Pay Increases***—An active member's pay is assumed to increase each year, in accordance with an age-based table. Part of the assumed increase was for merit and/or seniority increases, and the balance recognizes the wage inflation rate. The following table on the next page describes annual increase percentages for sample ages.

Individual Member Pay Increases

Age	Merit and Seniority				Wage Inflation	Total Increase Next Year			
	State	Local	Public Safety	Law		State	Local	Public Safety	Law
30	3.88%	3.88%	4.20%	4.20%	2.75%	6.63%	6.63%	6.95%	6.95%
40	2.34	2.14	1.46	1.46	2.75	5.09	4.89	4.21	4.21
50	1.10	1.10	0.74	0.74	2.75	3.85	3.85	3.49	3.49
60	0.42	0.42	0.40	0.40	2.75	3.17	3.17	3.15	3.15

Demographic Assumptions

- ***Turnover***—Represents the probabilities of separation from OPERS-covered employment before age-and-service retirement because of employment termination (withdrawal from service), death, or disability. The separation probabilities are based on historical trends of OPERS actual experience, without consideration of the manner in which the members' accounts are distributed.

Percent Separating Within Next Year—Withdrawal from Employment

Sample Ages	Years of Service	Withdrawal							
		State		Local		Public Safety		Law Enforcement	
		Men	Women	Men	Women	Men	Women	Men	Women
	0	50.00%	50.00%	40.00%	40.00%	20.00%	20.00%	16.00%	20.00%
	1	35.00	35.00	27.00	27.00	19.00	19.00	10.00	12.00
	2	20.00	20.00	18.00	18.00	15.00	15.00	8.00	9.00
	3	15.00	15.00	13.00	13.00	15.00	15.00	6.00	6.00
	4	12.00	12.00	11.00	11.00	10.00	10.00	5.00	6.00
30	5 & over	5.80	7.30	5.34	6.94	8.80	8.80	2.66	2.90
40	5 & over	3.14	3.46	2.82	3.52	3.50	3.50	1.48	1.50
50	5 & over	1.84	2.10	2.04	2.50	2.00	2.00	1.20	1.20
60	5 & over	1.80	2.10	2.00	2.50	2.00	2.00	1.20	1.20

Percent Separating Within Next Year—Death or Disability

Sample Ages	Years of Service	Death				Disability					
		State & Local		Public Safety & Law Enforcement		State		Local		Public Safety & Law Enforcement	
		Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
25	5 & over	0.04%	0.01%	0.08%	0.04%	0.07%	0.06%	0.05%	0.04%	0.20%	0.20%
35	5 & over	0.09	0.04	0.12	0.09	0.11	0.10	0.08	0.06	0.23	0.44
45	5 & over	0.14	0.07	0.15	0.11	0.33	0.28	0.24	0.19	0.70	0.76
55	5 & over	0.27	0.16	0.29	0.21	0.74	0.63	0.53	0.42	1.40	2.05
60	5 & over	0.43	0.26	0.46	0.30	0.88	0.75	0.63	0.50	1.80	2.75

The turnover probabilities in the tables on the previous page estimate the number of active members who will separate from employment based on the criteria of age, gender, and years of service. These members may be eligible for a refund of their account or an annuity benefit, depending on the nature of the separation. Members eligible for an annuity benefit may be eligible to participate in one of the OPERS health care plans. The method of distribution and the resulting liabilities are calculated for this population based on the following assumptions:

- ➢ ***Withdrawal from Service***—Assumes that members terminating with less than five years of service and a percentage of all other members will withdraw their contributions and forfeit their entitlement to an employer financed benefit. For State and Local Government members, the percentage withdrawing their contributions is 35% for ages at or below 48 and is reduced for each year of age after 48, becoming 0% at age 55. For Public Safety and Law Enforcement division members, the percentage withdrawing their contributions is 50% for ages at or below 40 and is reduced for each year after age 40, becoming 0% at age 45.

- ➢ ***Death-in-service and Disability Benefits***—Assumes that members with at least five years of service will elect to receive an annuity benefit. It is assumed that Combined Plan members will transfer to, and take a benefit from, the Traditional Pension Plan, unless a lump-sum distribution from the Combined Plan would have a greater value. It is assumed death-in-service members have two qualified survivor beneficiaries. Members eligible for an annuity may be eligible to participate in OPERS health care.

- ***Mortality***—For pension and healthcare, pre-retirement mortality rates are based on 130% of the Pub-2010 General Employee Mortality tables (males and females) for State and Local Government divisions and 170% of the Pub-2010 Safety Employee Mortality tables (males and females) for the Public Safety and Law Enforcement divisions. Post-retirement mortality rates are based on 115% of the PubG-2010 Retiree Mortality Tables (males and females) for all divisions. Post-retirement mortality rates for disabled retirees are based on the PubNS-2010 Disabled Retiree Mortality Tables (males and females) for all divisions. For all of the previously described tables, the base year is 2010 and mortality rates for a particular calendar year are determined by applying the MP-2020 mortality improvement scales (males and females) to all of these tables.

- ***Retirement***—Probabilities of age-and-service retirement applicable to members eligible to retire are as shown in the schedules on pages 143-147.

Senate Bill (SB) 343 was enacted into law with an effective date of January 7, 2013. In the legislation, members were categorized into three pension groups with varying provisions of the law applicable to each group:

- **Transition Group A—**Members eligible to retire under law in effect prior to SB 343, or who were eligible to retire no later than five years after January 7, 2013.

- **Transition Group B—**Members who had earned at least 20 years of service credit prior to January 7, 2013, or who will be eligible to retire no later than 10 years after January 7, 2013.

- **Transition Group C—**Members who are not in either of the other groups, as well as members who were hired on or after January 7, 2013.

See the Plan Statement beginning on page 215 for additional information.

Percent of Eligible Active Members Retiring Within Next Year

With Unreduced Age-and-Service Retirement Benefits

Members may retire with no reduction in benefits if they have attained the following division specific years of service credit and minimum ages:

Transition Group A

- ***State and Local***—30 years of service at any age; five years of service at age 65:
  - A service-based probability is used for members who attain 30 years of service prior to age 65;
  - An age-based probability is used for members who attain 30 years of service on or after age 65.
- ***Public Safety***—25 years of service and attained the age of 52; 15 years of service at age 62.
- ***Law Enforcement***—25 years of service and attained the age of 48; 15 years of service at age 62.

Years of Service	State		Local	
	Men	Women	Men	Women
30	33%	33%	33%	33%
31	27	27	27	27
32-49	21	21	21	21
50 & Over	100	100	100	100

Age	State		Local	
	Men	Women	Men	Women
65-66	22%	25%	24%	25%
67	20	25	22	22
68-70	20	22	22	22
71-74	20	22	18	22
75-78	20	25	18	18
79	20	25	20	22
80-84	25	25	20	22
85 & Over	100	100	100	100

Age	Public Safety	Law Enforcement
48-51	N/A	15%
52-55	18%	18
56-61	20	20
62	30	30
63-65	25	25
66-69	30	30
70 & Over	100	100

Transition Group B

- ***State and Local*****—**31 years of service at age 52; 32 years of service at any age; or five years of service at age 66:
  - ➢ A service-based probability is used for members who attain 32 years of service at any age;
  - ➢ An age-based probability is used for members who attain 32 years of service on or after age 66.
- ***Public Safety*****—**25 years of service and attained the age of 54; 15 years of service and attained the age of 64.
- ***Law Enforcement*****—**25 years of service and attained the age of 50; 15 years of service and attained the age of 64.

Years of Service	State		Local	
	Men	Women	Men	Women
31	33%	33%	33%	33%
32	27	27	27	27
33-50	21	21	21	21
51 & Over	100	100	100	100

Age	State		Local	
	Men	Women	Men	Women
66-67	22%	25%	24%	25%
68	20	25	22	22
69-71	20	22	22	22
72-75	20	22	18	22
76-79	20	25	18	18
80	20	25	20	22
81-84	25	25	20	22
85 & Over	100	100	100	100

Age	Public Safety	Law Enforcement
50-53	N/A	15%
54-55	18%	18
56-57	20	18
58-61	20	20
62	30	20
63	25	20
64	25	30
65	25	25
66-67	30	25
68-69	30	30
70-71	100	30
72 & Over	100	100

Transition Group C

- ***State and Local***—32 years of service at age 55 (55 & 32 Condition); or five years of service at age 67 (67 & 5 Condition):
  - A service-based probability is used for members who attain 32 years of service at or after age 55;
  - An age-based probability is used for members who attain 32 years of service on or after age 67.
- ***Public Safety***—25 years of service and attained the age of 56; or 15 years of service and attained the age of 64.
- ***Law Enforcement***—25 years of service and attained the age of 52; or 15 years of service and attained the age of 64.

55 & 32 Condition Year of Eligibility	State		Local	
	Men	Women	Men	Women
1	33%	33%	33%	33%
2	27	27	27	27
3-20	21	21	21	21
21 & Over	100	100	100	100

67 & 5 Condition Age	State		Local	
	Men	Women	Men	Women
67-68	22%	25%	24%	25%
69	20	25	22	22
70-72	20	22	22	22
73-76	20	22	18	22
77-80	20	25	18	18
81	20	25	20	22
82-84	25	25	20	22
85 & Over	100	100	100	100

Age	Public Safety	Law Enforcement
52-55	N/A	15%
56-59	20%	18
60-61	20	20
62	30	20
63-65	25	20
66	30	30
67-69	30	25
70-73	100	30
74 & Over	100	100

Percent of Eligible Active Members Retiring Within Next Year

With Reduced Age-and-Service Retirement Benefits

Transition Group A

Members in the State and Local divisions who have a minimum of 25 years of total service credit and who have attained age 55, and members with five years of service who have attained age 60 may retire with a reduced benefit. Members in the Public Safety and Law Enforcement divisions who have a minimum of 25 years of service and who have attained age 48, and members with 15 years of service and who have attained age 52 may also retire with a reduced benefit.

	State		Local		Public Safety
Age	Men	Women	Men	Women	
48-51	N/A	N/A	N/A	N/A	4.00%
52-54	N/A	N/A	N/A	N/A	N/A
55-56	3.00%	2.50%	3.00%	3.50%	N/A
57-59	3.00	3.50	3.00	3.50	N/A
60-61	5.00	8.00	5.00	8.00	N/A
62	8.75	8.00	8.75	8.00	N/A
63-64	8.75	10.00	8.75	10.00	N/A

Transition Group B

Members in the State and Local divisions who have a minimum of 25 years of total service credit and who have attained age 55, and members with five years of service who have attained age 60 may retire with a reduced benefit. Members in the Public Safety and Law Enforcement divisions who have a minimum of 25 years of service and who have attained age 48, and members with 15 years of service and who have attained age 52 may also retire with a reduced benefit.

	State		Local		Public Safety	Law Enforcement
Age	Men	Women	Men	Women		
48-49	N/A	N/A	N/A	N/A	4.00%	4.00%
50-53	N/A	N/A	N/A	N/A	4.00	N/A
54	N/A	N/A	N/A	N/A	N/A	N/A
55-56	3.00%	2.50%	3.00%	3.50%	N/A	N/A
57-59	3.00	3.50	3.00	3.50	N/A	N/A
60-61	5.00	8.00	5.00	8.00	N/A	N/A
62	8.75	8.00	8.75	8.00	N/A	N/A
63-64	8.75	10.00	8.75	10.00	N/A	N/A
65	15.00	15.00	12.00	15.00	N/A	N/A

Transition Group C

Members in the State and Local divisions who have a minimum of 25 years of total service credit and who have attained the age of 57, and members with five years of service who have attained age 62 may retire with a reduced benefit. Members in the Public Safety division who have a minimum of 25 years of service and who have attained age 52, and members with 15 years of service who have attained age 56 may retire with a reduced benefit. Members in the Law Enforcement division who have a minimum of 25 years of service and who have attained age 48 and members with 15 years of service who have attained age 56 may also retire with a reduced benefit.

	State		Local		Public Safety	Law Enforcement
Age	Men	Women	Men	Women		
48-51	N/A	N/A	N/A	N/A	N/A	4.00%
52-55	N/A	N/A	N/A	N/A	4.00%	N/A
56	N/A	N/A	N/A	N/A	N/A	N/A
57-58	3.00%	2.50%	3.00%	3.50%	N/A	N/A
59-61	3.00	3.50	3.00	3.50	N/A	N/A
62-63	5.00	8.00	5.00	8.00	N/A	N/A
64	8.75	8.00	8.75	8.00	N/A	N/A
65-66	8.75	10.00	8.75	10.00	N/A	N/A

Schedules of Average Defined Benefits Paid

The following tables display statistical information regarding the average defined pension benefits paid to retirees receiving an age-and-service, disability or survivor benefit. Additional benefits paid through the additional annuity and re-employed retiree programs, and annuities purchased from defined contribution accounts are excluded, as these benefits are not calculated under the defined benefit formula.

Average Defined Benefits Paid - All OPERS Retirees **Traditional Pension Plan**

Year	Average Age at Retirement	Average Service at Retirement	Average Final Average Salary	Average Pension at Retirement	Average Age on Valuation Date	Average Pension on Valuation Date
2022	58.1	23.7	$47,645	$23,640	71.9	$31,242
2021	58.0	23.5	46,575	23,056	71.7	30,294
2020	58.0	23.4	45,386	22,457	71.4	29,553
2019	57.9	23.3	44,368	21,912	71.1	28,784
2018	57.8	23.2	43,386	21,456	70.7	27,981
2017	57.7	23.1	42,479	21,016	70.4	27,192
2016	57.6	23.0	41,519	20,545	70.2	26,396
2015	57.6	22.9	40,600	20,092	69.9	25,600
2014	57.6	22.8	39,749	19,686	69.7	24,849
2013	57.4	22.8	38,760	19,299	69.5	24,220

Schedules of Average Defined Benefits Paid

Average Defined Benefits Paid - New OPERS Retirees **Traditional Pension Plan**

Year	Average Age at Retirement	Average Service at Retirement	Average Final Average Salary	Average Pension at Retirement	Average Age on Valuation Date	Average Pension on Valuation Date
2022	61.3	24.6	$63,427	$32,646	61.8	$32,724
2021	61.3	24.6	62,003	31,111	61.8	31,165
2020	61.9	24.2	59,328	30,131	62.5	30,163
2019	61.6	23.6	58,963	29,038	62.1	29,102
2018	61.4	23.4	55,385	27,293	62.0	27,421
2017	60.2	23.7	55,451	27,572	60.7	27,644
2016	60.0	23.3	53,555	26,545	60.5	26,618
2015	60.1	22.3	50,741	24,711	60.6	24,806
2014	60.8	21.6	49,162	22,586	61.3	22,678
2013	59.9	22.5	49,337	23,927	60.7	24,290

Average Defined Benefits Paid - All OPERS Retirees **Combined Plan**

Year	Average Age at Retirement	Average Service at Retirement	Average Final Average Salary	Average Pension at Retirement	Average Age on Valuation Date	Average Pension on Valuation Date
2022	65.0	12.7	$54,539	$5,684	70.2	$6,173
2021	64.9	12.4	53,230	5,427	69.7	5,814
2020	64.9	11.4	51,079	4,849	69.8	5,294
2019	64.8	11.1	50,618	4,686	69.1	5,107
2018	64.8	10.6	49,007	4,338	68.7	4,697
2017	64.7	10.3	47,455	4,000	68.2	4,304
2016	64.8	10.0	46,614	3,709	67.9	3,956
2015	64.6	9.8	45,141	3,401	67.3	3,596
2014	64.7	9.7	44,349	3,284	66.8	3,421
2013	64.9	8.7	43,403	2,839	67.0	2,962

Average Defined Benefits Paid - New OPERS Retirees **Combined Plan**

Year	Average Age at Retirement	Average Service at Retirement	Average Final Average Salary	Average Pension at Retirement	Average Age on Valuation Date	Average Pension on Valuation Date
2022	65.8	15.4	$63,843	$7,547	66.5	$7,614
2021	65.2	15.7	59,531	7,379	65.9	7,409
2020	65.3	14.3	56,626	6,458	66.2	6,482
2019	65.4	13.9	60,299	6,852	65.9	6,877
2018	65.0	12.5	56,836	6,028	65.6	6,062
2017	64.3	11.8	50,944	5,440	65.0	5,469
2016	65.4	10.7	53,730	5,092	66.0	5,123
2015	64.5	10.3	47,707	3,820	65.2	3,849
2014	64.3	11.4	45,968	4,049	64.8	4,062
2013	65.8	9.0	40,940	2,925	66.6	2,960

Actuarial Valuation Data—Pension

The following tables display the actuarial valuation data for the active and retired members of the Traditional Pension Plan, and the defined benefit component of the Combined Plan:

Actuarial Valuation Data **Traditional Pension Plan**

Valuation Year	Participating Employers[1]	Employer Units[1]	Active Members				Retired Lives		
			Number	Annual Payroll[2] ($ millions)	Average Pay[2]	Percent Increase in Average Pay[2]	Number[3]	Annual Allowance ($ millions)	Average Allowance
2022	3,220	3,689	281,966	$15,075	$53,464	5.32%	227,048	$6,947	$30,597
2021	3,219	3,690	274,449	13,932	50,764	2.04	225,740	6,698	29,670
2020	3,222	3,695	271,345	13,499	49,748	5.12	222,577	6,448	28,972
2019	3,219	3,694	285,843	13,528	47,327	2.56	220,448	6,219	28,209
2018	3,221	3,693	284,808[a]	13,143	46,147	11.95	218,226	5,986	27,431
2017	3,227	3,683	323,318	13,328	41,223	2.12	216,260	5,766	26,663
2016	3,232	3,678	323,179	13,046	40,368	3.17	213,550	5,527	25,882
2015	3,247	3,683	321,383	12,575	39,128	2.53	210,792	5,296	25,124
2014	3,251	3,692	322,318	12,300	38,161	3.41	208,395	5,085	24,401
2013	3,260	3,718	325,181	12,000	36,903	1.29	201,841	4,803	23,796

Actuarial Valuation Data **Combined Plan**

Valuation Year	Participating Employers[1]	Employer Units[1]	Active Members				Retired Lives		
			Number	Annual Payroll[2] ($ millions)	Average Pay[2]	Percent Increase in Average Pay[2]	Number[3]	Annual Allowance ($ millions)	Average Allowance
2022	3,220	3,689	6,582	$458	$69,584	9.88%	619	$4	$6,173
2021	3,219	3,690	7,122	451	63,325	4.78	549	3	5,814
2020	3,222	3,695	7,264	439	60,435	3.92	430	2	5,294
2019	3,219	3,694	7,549	439	58,153	4.91	392	2	5,107
2018	3,221	3,693	7,739	429	55,434	5.15	339	2	4,697
2017	3,227	3,683	7,948	419	52,718	2.84	283	1	4,304
2016	3,232	3,678	7,803	400	51,262	4.25	239	1	3,956
2015	3,247	3,683	7,626	375	49,174	3.56	196	1	3,596
2014	3,251	3,692	7,455	354	47,485	3.85	158	1	3,421
2013	3,260	3,718	7,239	331	45,725	2.82	100	0	2,962

[a] In 2018, the data aggregation methodology was modified for active and inactive member counts after system reconfigurations. No material impact to the actuarial valuations resulted.

[1] The number of employer units exceeds the number of reporting or participating employers as some employers report multiple divisions or agencies. The employer unit count also includes private-sector employers that have assumed privatized functions from public employers for indeterminate periods. The number of participating employers is included to comply with GASB 67 requirements for presentation of a primary government and its component units as one employer.

[2] The Annual Payroll, Average Pay and Percent Increase in Average Pay values in this table, for 2014 through 2016, were restated to reflect the annual covered payroll calculated under the Funding Basis. The annual covered payroll under the Funding Basis represents the annualized pay rate for all active Combined Plan members. The previous amounts reported were calculated under the Accounting Basis, which calculated annual covered payroll based on member contributions submitted within a given calendar year.

[3] The number of Retired Lives represents an individual count of retirees and primary beneficiaries.

Members of the Combined Plan and Member-Directed Plan may purchase a defined benefit annuity with the funds available in their defined contribution accounts. The following table displays the actuarial valuation data for these annuitized accounts:

Actuarial Valuation Data **Purchased Annuities**

	Member-Directed Plan[1]			Combined Plan[1]		
Valuation Year	Number[2]	Annual Allowance ($ millions)	Average Allowance	Number[2]	Annual Allowance ($ millions)	Average Allowance
2022	423	$3	$5,928	400	$2	$4,700
2021	382	2	5,584	365	2	4,591
2020	331	2	5,337	314	1	4,314
2019	317	2	5,301	267	1	4,097
2018	280	1	4,948	230	1	3,840
2017	242	1	4,849	193	1	3,623
2016	219	1	4,593	159	1	3,618
2015	185	1	4,480	128	0	3,303
2014	155	1	4,305	101	0	3,257
2013	131	1	4,146	64	0	3,248

[1] Plan inception January 1, 2003.

[2] Number represents an individual count of retirees and beneficiaries.

Schedules of Retirees and Beneficiaries Added to and Removed from Rolls

The following tables display the changes in the retiree population that occurred each year within the Traditional Pension Plan and the Combined Plan. The Annual Allowances in the Rolls at End of Year and the Average Annual Allowances represent the value of pension payments for the retiree population on the rolls at December 31, 2022.

The following statistics represent the number of retired members' accounts under which either the member or the members' beneficiaries are receiving defined formula benefits for age-and-service retirements, disability or survivor benefits. Annual Allowances include annual cost-of-living adjustments, but exclude other annuities such as money purchase or additional annuities.

Schedule of Retirees and Beneficiaries Added to and Removed from Rolls **Traditional Pension Plan**

	Added to Rolls			Removed from Rolls		Rolls at End of Year			
Year Ended	Number	Average Age at Retirement[1]	Annual Allowances	Number	Annual Allowances	Number	Annual Allowances	Percentage Increase in Annual Allowances	Average Annual Allowances
2022	8,498	62.7	$275,120,920	7,024	$156,261,898	218,095	$6,900,990,691	3.8%	$31,642
2021	9,838	62.6	305,302,499	7,406	159,239,321	216,621	6,648,606,412	3.6	30,692
2020	8,586	62.9	259,254,620	7,110	143,422,966	214,189	6,414,934,298	3.4	29,950
2019	8,088	62.8	233,501,735	6,148	121,202,196	212,713	6,201,602,950	3.9	29,155
2018	8,294	62.7	227,073,532	6,326	123,469,913	210,773	5,968,955,234	3.9	28,319
2017	8,610	61.5	236,113,024	6,185	115,031,952	208,805	5,746,885,962	4.3	27,523
2016	8,394		222,425,424	5,724	101,173,388	206,380	5,510,557,484	4.4	26,701
2015	8,235		202,901,884	5,849	101,124,098	203,710	5,277,086,404	4.2	25,905
2014	12,001		270,725,495	5,609	93,114,033	201,324	5,065,543,814	5.9	25,161
2013	10,946		265,957,588	5,371	83,764,472	194,932	4,784,927,394	6.3	24,547

[1] Average age of new age-and-service retirees only, beginning in 2017. Information for prior years is unavailable.

Schedule of Retirees and Beneficiaries Added to and Removed from Rolls Combined Plan—Defined Benefit[2]

Year Ended	Added to Rolls			Removed from Rolls		Rolls at End of Year		Percentage Increase in Annual Allowances	Average Annual Allowances
	Number	Average Age at Retirement[1]	Annual Allowances	Number	Annual Allowances	Number	Annual Allowances		
2022	75	64.7	$571,025	5	$30,138	619	$3,821,205	19.7%	$6,173
2021	89	64.7	651,051	5	15,373	549	3,191,687	25.9	5,814
2020	77	65.0	527,176	3	16,272	465	2,535,201	27.0	5,452
2019	55	64.9	370,742	1	2,601	391	1,996,370	25.7	5,106
2018	54	64.4	334,790	0	0	337	1,587,670	30.4	4,711
2017	49	64.1	279,099	4	16,442	283	1,217,952	31.0	4,304
2016	43		209,341	1	5,304	238	929,456	31.9	3,905
2015	41		162,966	1	3,333	196	704,864	33.4	3,596
2014	56		223,294	0	0	156	528,211	78.3	3,386
2013	45		133,159	0	0	100	296,172	87.2	2,962

[1] Average age of new age-and-service retirees only, beginning in 2017. Information for prior years is unavailable.

[2] Plan inception January 1, 2003.

Schedules of Funding Progress

The following Schedules of Funding Progress include the Traditional Pension Plan, the defined benefit component of the Combined Plan, and the liabilities and assets associated with the annuitized defined contribution accounts for the Combined Plan and Member-Directed Plan. Members in the Combined Plan and Member-Directed Plan have the option of converting their defined contribution accounts to a defined benefit annuity at retirement. This section also includes the Schedules of Funding Progress for health care. Separate schedules are displayed for each pension plan and health care reflecting the funding status of the plans on a valuation, or funding, basis. See pages 192 and 194 in the Statistical Section for the schedules of funding progress on an accounting, or financial, basis, for pension and health care, respectively. Separate schedules are included in the Required Supplementary Information of the Financial Section disclosing the 10-year schedule of actuarially determined contributions and actual contributions paid.

Schedule of Funding Progress—Funding Basis[1] ($ in millions) **All Pension Plans**

Valuation Year	Actuarial Accrued Liabilities (AAL)	Valuation Assets	Unfunded Actuarial Accrued Liabilities (UAAL)	Ratio of Assets to AAL	Active Member Payroll	UAAL as Percent of Active Member Payroll	Amortization Years
2022	$122,463	$102,852	$19,611	84.0%	$15,806	124%	16
2021	118,517	99,710	18,807	84.1	14,822	127	16
2020[a]	115,242	93,970	21,272	81.5	14,383	148	21
2020[b]	113,372	93,970	19,402	82.9	14,383	135	18
2019	111,371	88,572	22,799	79.5	14,380	159	23
2018	108,705	84,287	24,418	77.5	13,807	177	27
2017[c]	106,090	83,292	22,798	78.5	13,498	169	25
2017	102,656	83,292	19,364	81.1	13,498	143	18
2016	100,167	80,280	19,887	80.1	13,186	151	19
2015[a]	97,177	78,061	19,116	80.3	12,688	148	20
2015[b]	91,832	78,061	13,771	85.0	12,688	106	19
2014	89,285	74,865	14,420	83.8	12,486	114	21
2013	86,645	71,411	15,234	82.4	12,331	124	24

See footnotes on page 152

Schedule of Funding Progress—Funding Basis[1] ($ in millions) Traditional Pension Plan

Valuation Year	Actuarial Accrued Liabilities (AAL)	Valuation Assets	Unfunded Actuarial Accrued Liabilities (UAAL)	Ratio of Assets to AAL	Active Member Payroll	UAAL as Percent of Active Member Payroll	Amortization Years
2022	$121,784	$101,848	$19,936	83.6%	$15,339	130%	16
2021	117,910	98,796	19,114	83.8	14,364	133	17
2020[a]	114,697	93,181	21,516	81.2	13,940	154	22
2020[b]	112,833	93,181	19,652	82.6	13,940	141	18
2019	110,887	87,903	22,984	79.3	13,932	165	23
2018	108,265	83,715	24,550	77.3	13,376	184	28
2017[c]	105,691	82,797	22,894	78.3	13,085	175	26
2017	102,274	82,797	19,477	81.0	13,085	149	19
2016	99,818	79,865	19,953	80.0	12,794	156	20
2015[a]	96,863	77,700	19,163	80.2	12,321	152	20
2015[b]	91,535	77,700	13,835	84.9	12,321	110	19
2014	89,017	74,567	14,450	83.8	12,140	117	21
2013	86,407	71,175	15,232	82.4	12,000	127	25

The Combined Plan is a retirement plan with both a defined benefit and a defined contribution component. At retirement, members have the option to convert their defined contribution account to a defined benefit annuity. The schedule below includes the funding status for both defined formula benefits and the purchased annuities, when applicable.

Schedule of Funding Progress—Funding Basis[1] ($ in millions) Combined Plan

Valuation Year	Actuarial Accrued Liabilities (AAL)	Valuation Assets	Unfunded Actuarial Accrued Liabilities/(Assets) (UAAL)	Ratio of Assets to AAL	Active Member Payroll	UAAL as Percent of Active Member Payroll	Amortization Years
2022	$638	$963	($325)	150.9%	$467	0%	0
2021	567	874	(307)	154.2	458	0	0
2020[a]	508	752	(244)	148.1	443	0	0
2020[b]	502	752	(250)	149.8	443	0	0
2019	461	646	(185)	140.1	448	0	0
2018	420	552	(132)	131.3	431	0	0
2017[c]	382	479	(97)	125.3	413	0	0
2017	365	479	(114)	131.0	413	0	0
2016	336	402	(66)	119.6	392	0	0
2015[a]	303	350	(47)	115.6	367	0	0
2015[b]	288	350	(62)	121.7	367	0	0
2014	260	289	(29)	111.2	346	0	0
2013	230	229	1	99.5	331	0	0

[a] Revised actuarial assumptions based on experience study.

[b] Results from original valuation prior to restatement after completion of experience study.

[c] Results after change in discount rate from 7.5% to 7.2%.

[1] The amounts reported on this schedule do not include assets or liabilities for health care. For the health care funding progress, refer to the table on the next page.

The Member-Directed Plan is a defined contribution plan. At retirement, members have the option to convert their defined contribution account to a defined benefit annuity. The following schedule on the next page displays the funding status of the purchased defined benefit annuities.

Schedule of Funding Progress—Funding Basis[1] ($ in thousands) **Member-Directed Annuities**

Valuation Year	Actuarial Accrued Liabilities (AAL)	Valuation Assets	Unfunded Actuarial Accrued Liabilities/(Assets) (UAAL)	Ratio of Assets to AAL	Active Member Payroll	UAAL as Percent of Active Member Payroll
2022	$41,020	$41,020	$0	100.0%	N/A	N/A
2021	39,431	39,431	0	100.0	N/A	N/A
2020[a]	37,151	37,151	0	100.0	N/A	N/A
2020[b]	37,151	37,151	0	100.0	N/A	N/A
2019	22,821	22,821	0	100.0	N/A	N/A
2018	19,917	19,917	0	100.0	N/A	N/A
2017[d]	16,770	16,770	0	100.0	N/A	N/A
2016[c]	12,961	12,961	0	100.0	N/A	N/A
2015[a]	10,291	10,622	(331)	103.2	N/A	N/A
2015[b]	9,767	10,622	(855)	108.8	N/A	N/A
2014	8,291	8,772	(481)	105.8	N/A	N/A
2013	6,884	6,826	58	99.2	N/A	N/A

[a] Revised actuarial assumptions based on experience study.

[b] Results from original valuation prior to restatement after completion of experience study.

[c] Restated upon finalization of actuarial valuation subsequent to issuance of the *2016 Comprehensive Annual Financial Report*.

[d] Change in discount rate from 7.5% to 7.2% did not have an impact on the results from original valuation prior to the change in discount rate.

[1] The amounts reported on this schedule do not include assets or liabilities for health care. Participants in the Member-Directed Plan do not have access to health care provided to the members of the Traditional Pension Plan or Combined Plan. Instead, a portion of the employer contributions are deposited in a retiree medical account. The retiree medical account can reimburse qualified medical expenses when a Member-Directed Plan participant terminates service or retires. For the health care funding progress, refer to the table below.

The health care assets provide funding for a group of cost-sharing, multiple-employer health care plans that provide health care coverage for eligible benefit recipients in the Traditional Pension Plan and Combined Plan, as well as the Member-Directed Plan retiree medical accounts. The following schedule displays the estimated solvency years the health care assets will be able to provide health care under the intermediate actuarial assumptions.

Schedule of Funding Progress—Funding Basis ($ in millions) **Health Care**

Valuation Year	Actuarial Accrued Liabilities (AAL)	Valuation Assets	Unfunded Actuarial Accrued Liabilities/(Assets) (UAAL)	Ratio of Assets to AAL	Active Member Payroll	UAAL as Percent of Active Member Payroll	Solvency Years[1]
2021	$11,037	$12,713	($1,676)	115.2%	$14,822	0%	29
2020[a]	11,215	12,385	(1,170)	110.4	14,383	0	25
2020[b]	11,414	12,385	(971)	108.5	14,383	0	25
2019[c]	11,462	11,943	(481)	104.2	14,380	0	23
2018	17,849	11,647	6,202	65.3	13,807	45	11
2017[d]	18,393	12,021	6,372	65.4	13,498	47	13
2017	17,389	12,021	5,368	69.1	13,498	40	13
2016	19,924	12,098	7,826	60.7	13,186	59	12
2015[a]	19,224	11,933	7,291	62.1	12,688	57	Indefinite
2015[b]	18,515	11,933	6,582	64.5	12,688	52	Indefinite
2014	19,405	12,062	7,343	62.2	12,486	59	Indefinite
2013	19,784	12,031	7,753	60.8	12,331	63	Indefinite
2012	19,182	12,193	6,989	63.6	12,193	57	Indefinite

[a] Revised actuarial assumptions based on experience study.

[b] Results from original valuation prior to restatement after completion of experience study.

[c] Results reflect health care program changes effective January 2022, approved by the Board in January 2020.

[d] Results after change in discount rate from 6.5% to 6.0%.

[1] Solvency Years represents an estimate of the number of years the fund will be able to provide health care under the intermediate actuarial assumptions. Indefinite indicates funds are expected to be sufficient to fund future health care needs.

Short-Term Solvency Test

The OPERS funding objective is to pay for retirement benefits through contributions that remain approximately level from year to year as a percent of member payroll. If the contributions to the System are level in concept and soundly executed, the System will pay all promised benefits when due—the ultimate test of financial soundness.

A short-term solvency test is one method of validating the progress of the funding program. In a short-term solvency test, the plan's present assets (cash and investments) are successively compared to: 1) active and inactive member contributions on deposit; 2) liabilities for future benefits payable to present retired lives; and 3) liabilities for service already rendered by active and inactive members.

In a plan following the discipline of level percent of payroll financing, the liabilities for member contributions on deposit (Column (1)) and the liabilities for future benefits payable to present retired lives (Column (2)) will be fully covered by existing assets (except in rare circumstances). In addition, the liabilities for service already rendered by active and inactive members (Column (3)) will be partially or fully covered by the remaining assets.

The following tables display the results of the Short-Term Solvency Test for asset values in the defined benefit Traditional Pension Plan and Combined Plan, based on the actuarial value of assets at year end.

Accrued Pension Liabilities ($ in millions) **Traditional Pension Plan**

	Aggregate Accrued Liabilities for				Portions of Accrued Liabilities Covered by Reported Assets		
Valuation Year	(1) Active Member Contributions	(2) Retirees and Beneficiaries	(3) Active/Inactive Members (Employer-Financed Portion)	Valuation Assets[1]	(1)	(2)[a]	(3)
2022	$16,159	$77,195	$28,430	$101,848	100%	100%	30%
2021	15,806	75,251	26,853	98,796	100	100	29
2020[b]	15,550	72,735	26,412	93,181	100	100	19
2020[c]	15,550	71,737	25,546	93,181	100	100	23
2019	15,209	70,089	25,589	87,903	100	100	10
2018	14,764	68,379	25,122	83,715	100	100	2
2017[d]	14,298	66,546	24,847	82,797	100	100	8
2017	14,298	64,834	23,142	82,797	100	100	16
2016	13,912	62,798	23,108	79,865	100	100	14
2015[b]	13,469	56,376	27,018	77,700	100	100	29
2015[c]	13,469	56,815	21,250	77,700	100	100	35
2014	13,191	55,102	20,724	74,567	100	100	30
2013	12,826	52,404	21,177	71,175	100	100	28

[a] By law, OPERS is obligated to pay certain benefits that have commenced with retirees. In order to make these payments each year and hold sufficient assets in this fund to pay the vested benefits of all retirees and beneficiaries as of the actuarial valuation date, OPERS transfers funds from the active member employer fund (the Employers' Accumulation Fund) to the pension funds (the Annuity and Pension Reserve Fund and the Survivors' Benefit Fund). Thus, the amount available for active member funding is negatively impacted.

[b] Results restated based on experience study.

[c] Results from original valuation prior to completion of experience study.

[d] Results after change in discount rate from 7.5% to 7.2%.

[1] Does not include assets set aside for health care.

Short-Term Solvency Test

Accrued Pension Liabilities ($ in millions) **Combined Plan**

Valuation Year	Aggregate Accrued Liabilities for			Valuation Assets[1]	Portions of Accrued Liabilities Covered by Reported Assets		
	(1) Active Member Contributions	(2) Retirees and Beneficiaries	(3) Active/Inactive Members (Employer-Financed Portion)		(1)	(2)[a]	(3)
2022	$5	$71	$562	$963	100%	100%	158%
2021	4	62	501	874	100	100	161
2020[b]	4	44	460	752	100	100	153
2020[c]	4	44	454	752	100	100	155
2019	3	37	421	646	100	100	144
2018	3	31	386	552	100	100	134
2017[d]	3	24	355	479	100	100	127
2017	3	23	340	479	100	100	133
2016	3	18	315	402	100	100	121
2015[b]	2	14	287	350	100	100	116
2015[c]	3	13	272	350	100	100	123
2014	3	10	246	289	100	100	112
2013	2	6	223	229	100	100	100

[a] By law, OPERS is obligated to pay certain benefits that have commenced with retirees. In order to make these payments each year and hold sufficient assets in this fund to pay the vested benefits of all retirees and beneficiaries as of the actuarial valuation date, OPERS transfers funds from the active member employer fund (the Employers' Accumulation Fund) to the pension funds (the Annuity and Pension Reserve Fund and the Survivors' Benefit Fund). Thus, the amount available for active member funding is negatively impacted.

[b] Results restated based on experience study.

[c] Results from original valuation prior to completion of experience study.

[d] Results after change in discount rate from 7.5% to 7.2%.

[1] Does not include assets set aside for health care.

Actual vs. Recommended Contribution Rates

The Board adopted all contribution rates as recommended by the actuary.

The following tables display the actual financial experience in relation to the actuarially assumed experience for each of the defined benefit pension plans and health care. Actuarial gains and losses in accrued liabilities result from differences between the assumed experience and actual experience.

Analysis of Financial Experience ($ in millions, continued on next page)

	Gains (or Losses) for Year			
Type of Activity	2022	2021	2020	2019
Age-and-Service Retirements When members retire at older ages than assumed, a gain results. If members retire at ages younger than assumed, a loss occurs.	($78.8)	($99.6)	($53.3)	$16.9
Disability Retirements When disability claims are less than assumed, a gain results. If claims are greater than assumed, a loss occurs.	42.0	57.8	96.3	95.2
Death-In-Service Annuities When survivor claims are less than assumed, a gain results. If claims are greater than assumed, a loss occurs.	40.0	34.7	37.4	35.2
Other Separations When liabilities released by other separations are greater than assumed, a gain results. If liabilities released are less than assumed, a loss occurs.	159.5	96.6	41.5	14.1
Pay Increases When pay increases are less than assumed, a gain results. If pay increases are greater than assumed, a loss occurs.	(1,336.5)	(424.6)	476.7	189.7
Investment Return When investment returns are greater than assumed, a gain results. If investment returns are less than assumed, a loss occurs.	113.0	2,996.3	2,541.8	1,565.8
Retiree Mortality[1] When liabilities released due to death of members are greater than assumed, a gain results. If liabilities released are less than assumed, a loss occurs.	218.6	139.9	231.3	12.3
Retiree Cost-of-Living Adjustments When cost-of-living adjustments are less than assumed, a gain results. If cost-of-living adjustments are greater than assumed, a loss occurs.	(202.6)	(178.2)	262.1	108.0
Gains/(Losses) During Year From Financial Experience	**($1,044.8)**	**$2,622.9**	**$3,633.8**	**$2,037.2**

Analysis of Financial Experience ($ in millions, continued on next page)

	Gains (or Losses) for Year			
Type of Activity	2022	2021	2020	2019
Age-and-Service Retirements When members retire at older ages than assumed, a gain results. If members retire at ages younger than assumed, a loss occurs.	($0.21)	($0.08)	($0.58)	($0.07)
Disability Retirements When disability claims are less than assumed, a gain results. If claims are greater than assumed, a loss occurs.	3.72	3.59	5.93	5.89
Death-In-Service Annuities When survivor claims are less than assumed, a gain results. If claims are greater than assumed, a loss occurs.	1.33	1.04	0.46	0.58
Other Separations When liabilities released by other separations are greater than assumed, a gain results. If liabilities released are less than assumed, a loss occurs.	5.30	4.16	(0.14)	0.46
Pay Increases When pay increases are less than assumed, a gain results. If pay increases are greater than assumed, a loss occurs.	(14.59)	(3.00)	7.95	4.64
Investment Return When investment returns are greater than assumed, a gain results. If investment returns are less than assumed, a loss occurs.	(6.40)	26.15	17.45	9.88
Retiree Mortality[1] When liabilities released due to death of members are greater than assumed, a gain results. If liabilities released are less than assumed, a loss occurs.	0.07	0.06	(0.23)	(0.17)
Retiree Cost-of-Living Adjustments When cost-of-living adjustments are less than assumed, a gain results. If cost-of-living adjustments are greater than assumed, a loss occurs.	(0.42)	(0.37)	0.44	0.17
Gains/(Losses) During Year From Financial Experience	**($11.20)**	**$31.55**	**$31.28**	**$21.38**

[1] In 2019, the data aggregation methodology was modified for retiree mortality. Restated data for years prior to 2019 is not available.

Traditional Pension Plan

Gains (or Losses) for Year					
2018	2017	2016	2015	2014	2013
$51.2	$62.2	$55.5	$71.6	($91.9)	($77.2)
79.6	72.8	61.2	83.1	95.0	64.0
45.9	36.0	41.3	41.0	40.4	29.5
31.1	(6.1)	5.2	22.1	4.7	(13.0)
183.0	410.6	(48.1)	367.1	461.8	551.7
(1,743.5)	203.5	(467.8)	261.6	471.3	617.1
121.8	82.4	31.9	74.4	95.8	140.4
(104.6)	—	—	—	—	—
($1,335.5)	**$861.4**	**($320.8)**	**$920.9**	**$1,077.1**	**$1,312.5**

Combined Plan

Gains (or Losses) for Year					
2018	2017	2016	2015	2014	2013
$0.05	$0.21	$0.06	$0.07	($0.16)	($0.09)
4.32	4.30	3.82	3.93	4.66	4.34
0.53	(0.04)	0.94	0.42	1.04	0.66
(0.04)	(1.16)	(0.44)	0.23	(0.74)	(0.09)
3.42	9.89	4.09	5.92	4.92	5.53
(9.22)	3.99	(2.02)	(0.08)	3.05	2.84
0.16	0.02	(0.03)	0.29	0.04	0.10
(0.12)	—	—	—	—	—
($0.90)	**$17.21**	**$6.42**	**$10.78**	**$12.81**	**$13.29**

Analysis of Financial Experience[1] ($ in millions) Health Care

Type of Activity	Gains (or Losses) for Year			
	2021	2020	2019	2018
Premiums Gains/(losses) resulting from actual premiums in valuation year versus that assumed from prior valuation and changes in assumed future premium increases.	($1.7)	$13.6	$1,189.8	$484.7
Investment Return When investment returns are greater than assumed, a gain results. If investment returns are less than assumed, a loss occurs.	451.8	464.3	380.6	(204.4)
Other Sources Difference between assumed and actual experience in other sources, including but not limited to, benefits paid, demographic experience, data adjustments and method changes.	187.2	139.6	390.3	952.0
Gains During Year From Financial Experience	**$637.3**	**$617.5**	**$1,960.7**	**$ 1,232.3**

[1] This schedule was added for the valuation year ended December 31, 2018. Data prior to 2018 is not available.

Financial Stability generates: *Decades of trust*

The Statistical Section displays historical data generated and tracked by OPERS. Here's where the organization demonstrates decades of service to members and retirees.

The staff and management of OPERS take the responsibility of serving as the trusted steward for public employee and employer contributions very seriously. The organization documents actions and activities designed to provide financial stability to members in retirement. For almost 90 years, OPERS has delivered on the public trust of providing financial stability to OPERS retirees—this organization has never missed a payment to retirees building decades of trust for all stakeholders.

What members should look for in this section: Learn more about each pension plan offered by OPERS and understand the difference. Most public employees choose the Traditional Pension Plan—the plan that was established at the time OPERS was established. The Traditional Pension Plan is a defined benefit plan—meaning OPERS absorbs the losses in any given year with poor market returns.

What all stakeholders should know: The scope and reach of OPERS retirees is impressive. Although approximately 89.1% remain in Ohio, the other 10.9% live throughout the world. See the map on page 210 to view where in the world OPERS members choose to live in retirement.

See page 203 showing the past 10 years of increases to the pension benefit for new retirees in the Traditional Pension Plan (even in the years when market volatility produced poor investment returns).

Overview

The Statistical Section provides pertinent information to assist readers when viewing the Financial Statements, Notes to the Financial Statements and Required Supplementary Information to help in understanding and assessing the System's overall financial condition. The information reported here is in compliance with Governmental Accounting Standards Board (GASB) Statement No. 44, *Economic Condition Reporting: The Statistical Section*. This statement establishes standardized reporting requirements for the supplementary information provided in this section.

The schedules and graphs beginning on the next page show financial trend information about the growth of assets for the past 10 years (where available). These schedules provide detailed information about the trends of key sources of additions and deductions to the System's assets and assist in providing a context framing how the OPERS financial position has changed over time. The financial trend schedules presented are:

- Net Position by Plan,
- Statutory Fund Balance by Plan,
- Fiduciary Net Position,
- Changes in Fiduciary Net Position,
- Additions by Source,
- Deductions by Type,
- Benefits by Type,
- Health Care Expenses by Type,
- Refunds by Type, and
- Number of Refund Payments by Plan.

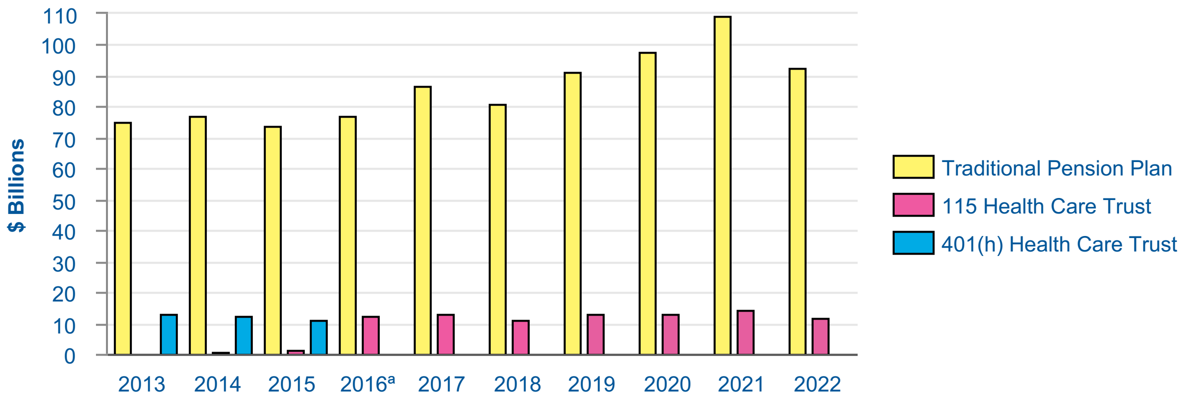
The schedules on pages 192-193 compare the pension assets accumulated to cover the projected pension liabilities that are ultimately due at retirement for each of the defined benefit plans and the corresponding funded ratio under both the accounting basis (GASB Statement No. 67) and the funding basis. Health care coverage is not statutorily guaranteed and may be changed to ensure long-term solvency of the plans and OPERS' ability to provide future coverage for all eligible retirees. The schedules on pages 194-195 display similar information for health care assets and projected liabilities under both the accounting basis (GASB Statement No. 74) and the funding basis. The Health Care Solvency schedule shows the estimated number of years, under the funding basis, for which assets are available to cover the projected liabilities. Refer to the schedules of pension and health care assets vs. liabilities.

The schedules beginning on page 190 show demographic and economic information and operating information. The demographic and economic information is designed to assist in understanding the environment in which OPERS operates. The operating information is intended to provide contextual information about operations to assist in assessing the System's economic condition. The demographic and economic information and the operating information presented include:

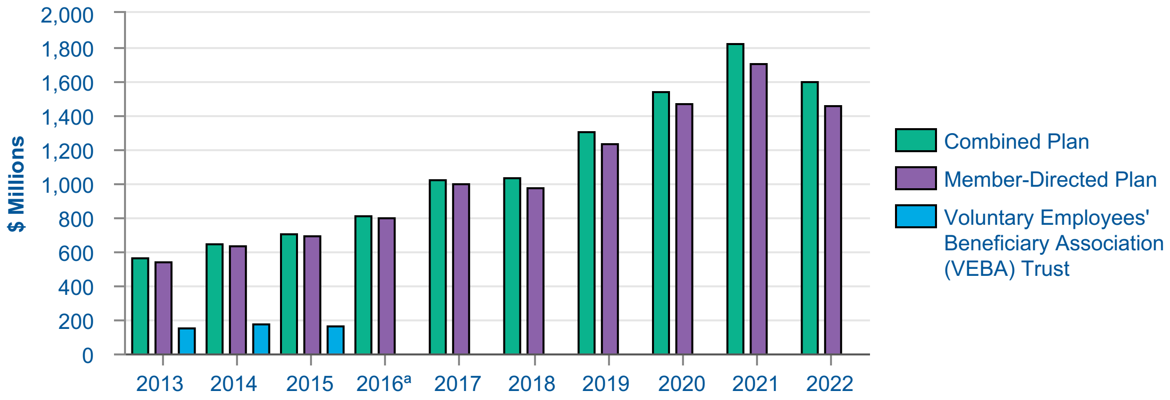
- Funds Restricted for Member Health Care Accounts,
- Pension Assets vs. Pension Liabilities,
- Health Care Assets vs. Health Care Liabilities,
- Contribution Rates (Health Care),
- Health Care Self-Funding Rate,
- Investment Rates by Portfolio,
- Number of Retirees/Benefit Recipients by Category,
- Number of Covered Lives by Category,
- Schedule of Retirees by Benefit Type and Amount,
- Number of New Pension Retirees,
- Schedule of Average Benefits (Traditional Pension Plan and Combined Plan),
- Member Counts by Plan,
- 2022 Pension Benefits and Retirees by Ohio County,
- Retirees by Geographical Location,
- Contribution Rates (Pension Plans),
- Number of Employer Units, and
- Principal Participating Employers.

All non-accounting data is derived from OPERS internal sources.

Net Position by Plan — Traditional Pension Plan, 115 Health Care Trust, 401(h) Health Care Trust



Net Position by Plan — Combined Plan, Member-Directed Plan, VEBA Trust



Net Position by Plan (last 10 fiscal years)

Year	Traditional Pension Plan	Combined Plan	Member-Directed Plan	115 Health Care Trust[1]	401(h) Health Care Trust	Voluntary Employees' Beneficiary Association (VEBA) Trust	Total Net Position
2022	$92,243,714,290	$1,604,231,103	$1,463,835,848	$11,465,339,238			$106,777,120,479
2021	109,209,659,868	1,819,605,912	1,702,197,727	14,225,339,304			126,956,802,811
2020	98,024,718,613	1,542,815,851	1,474,201,365	13,227,419,100			114,269,154,929
2019	91,121,609,718	1,305,673,187	1,240,585,015	12,647,057,751			106,314,925,671
2018	80,876,605,054	1,036,089,962	977,376,894	11,252,985,702			94,143,057,612
2017	86,585,851,024	1,022,418,029	998,717,118	12,818,833,665			101,425,819,836
2016[a]	77,109,633,485	815,852,017	804,850,860	11,880,487,863			90,610,824,225
2015	74,213,320,352	700,914,409	698,540,030	841,112,040	$10,671,068,181	$166,446,806	87,291,401,818
2014	76,956,230,642	650,249,727	635,272,613	386,080,172	12,440,522,790	175,539,164	91,243,895,108
2013	74,618,532,269	559,612,889	547,022,037		13,111,684,807	153,084,296	88,989,936,298

[a] The 401(h) Health Care Trust and the VEBA Trust were terminated as of June 30, 2016 and the net positions of these trusts were consolidated into the 115 Health Care Trust on July 1, 2016.

[1] The 115 Health Care Trust was established in 2014.

Statutory Fund Balance by Plan (last 10 fiscal years)

(continued on next page)

Year	2022	2021	2020	2019
All Plans				
Employees' Savings Fund	$16,164,410,456	$15,810,519,275	$15,554,270,764	$15,212,833,485
Employers' Accumulation Fund—Pension/Health Care	16,435,586,022	39,416,144,558	29,594,909,825	24,428,538,501
Annuity and Pension Reserve Fund	69,872,792,582	67,102,177,624	64,848,415,064	62,844,328,205
Survivors' Benefit Fund	2,014,442,180	1,983,653,527	1,958,351,137	1,846,874,240
Defined Contribution Fund—Retirement/Health Care	2,160,665,239	2,520,521,827	2,188,950,139	1,853,332,241
Income Fund	124,113,261	121,768,141	112,583,998	121,965,749
Expense Fund	5,110,739	2,017,859	11,674,002	7,053,250
Total Fund Balance	**$106,777,120,479**	**$126,956,802,811**	**$114,269,154,929**	**$106,314,925,671**
Traditional Pension Plan				
Employees' Savings Fund	$16,158,860,937	$15,805,938,389	$15,550,154,652	$15,209,312,543
Employers' Accumulation Fund—Pension	4,166,055,585	24,275,334,232	15,608,698,783	11,147,191,027
Annuity and Pension Reserve Fund	69,775,131,588	67,020,947,720	64,783,256,041	62,789,212,909
Survivors' Benefit Fund	2,014,442,180	1,983,653,527	1,958,351,137	1,846,874,240
Income Fund	124,113,261	121,768,141	112,583,998	121,965,749
Expense Fund	5,110,739	2,017,859	11,674,002	7,053,250
Total Fund Balance	**$92,243,714,290**	**$109,209,659,868**	**$98,024,718,613**	**$91,121,609,718**
Combined Plan				
Employees' Savings Fund	$5,247,564	$4,460,844	$4,021,558	$3,426,466
Employers' Accumulation Fund—Pension	798,881,207	898,593,935	740,437,194	630,733,294
Annuity and Pension Reserve Fund	66,212,398	54,798,574	44,713,041	34,924,190
Defined Contribution Fund—Retirement	733,889,934	861,752,559	753,644,058	636,589,237
Total Fund Balance	**$1,604,231,103**	**$1,819,605,912**	**$1,542,815,851**	**$1,305,673,187**
Member-Directed Plan				
Employees' Savings Fund	$301,955	$120,042	$94,554	$94,476
Employers' Accumulation Fund—Pension	5,309,992	16,877,087	18,354,748	3,556,429
Annuity and Pension Reserve Fund	31,448,596	26,431,330	20,445,982	20,191,106
Defined Contribution Fund—Retirement	1,426,775,305	1,658,769,268	1,435,306,081	1,216,743,004
Total Fund Balance	**$1,463,835,848**	**$1,702,197,727**	**$1,474,201,365**	**$1,240,585,015**
115 Health Care Trust[1]				
Employers' Accumulation Fund—Health Care	$11,465,339,238	$14,225,339,304	$13,227,419,100	$12,647,057,751
Total Fund Balance	**$11,465,339,238**	**$14,225,339,304**	**$13,227,419,100**	**$12,647,057,751**
401(h) Health Care Trust[1]				
Employers' Accumulation Fund—Health Care				
Total Fund Balance				
Voluntary Employees' Beneficiary Association (VEBA) Trust[1]				
Defined Contribution Fund—Health Care				
Total Fund Balance				

[1] The 115 Health Care Trust was established in 2014. The 401(h) Health Care Trust and the VEBA Trust were terminated as of June 30, 2016. The net positions of these trusts were consolidated into the 115 Health Care Trust on July 1, 2016.

Statutory Fund Balance by Plan

2018	2017	2016	2015	2014	2013
$14,767,713,107	$14,300,330,700	$13,914,959,537	$13,471,062,846	$13,194,306,671	$12,828,423,536
16,550,272,093	25,650,181,722	19,218,910,213	16,076,648,809	22,768,644,951	22,852,975,720
59,469,119,341	58,106,232,497	54,462,722,183	54,705,647,821	52,331,183,968	50,525,254,541
1,766,560,528	1,742,699,663	1,669,466,891	1,694,085,497	1,675,926,615	1,654,787,855
1,462,705,849	1,502,124,254	1,216,155,401	1,219,165,845	1,154,079,903	1,011,655,646
122,296,958	112,115,080	123,776,306	122,714,098	114,494,235	113,671,739
4,389,736	12,135,920	4,833,694	2,076,902	5,258,765	3,167,261
$94,143,057,612	**$101,425,819,836**	**$90,610,824,225**	**$87,291,401,818**	**$91,243,895,108**	**$88,989,936,298**
$14,764,276,344	$14,297,505,057	$13,912,277,541	$13,468,694,332	$13,191,067,352	$12,826,142,567
4,795,082,942	12,351,857,327	6,965,583,478	4,243,982,790	9,655,043,969	9,507,406,396
59,423,998,546	58,069,537,977	54,433,695,575	54,681,766,733	52,314,439,706	50,513,356,451
1,766,560,528	1,742,699,663	1,669,466,891	1,694,085,497	1,675,926,615	1,654,787,855
122,296,958	112,115,080	123,776,306	122,714,098	114,494,235	113,671,739
4,389,736	12,135,920	4,833,694	2,076,902	5,258,765	3,167,261
$80,876,605,054	**$86,585,851,024**	**$77,109,633,485**	**$74,213,320,352**	**$76,956,230,642**	**$74,618,532,269**
$3,342,013	$2,587,678	$2,629,485	$2,343,149	$2,994,501	$1,894,549
499,982,476	476,864,676	372,135,835	320,876,515	286,747,478	233,588,347
28,176,089	21,799,531	17,116,877	13,366,406	8,359,792	5,481,510
504,589,384	521,166,144	423,969,820	364,328,339	352,147,956	318,648,483
$1,036,089,962	**$1,022,418,029**	**$815,852,017**	**$700,914,409**	**$650,249,727**	**$559,612,889**
$94,750	$237,965	$52,511	$25,365	$244,818	$386,420
2,220,973	2,626,054	703,037	(390,717)	250,542	296,170
16,944,706	14,894,989	11,909,731	10,514,682	8,384,470	6,416,580
958,116,465	980,958,110	792,185,581	688,390,700	626,392,783	539,922,867
$977,376,894	**$998,717,118**	**$804,850,860**	**$698,540,030**	**$635,272,613**	**$547,022,037**
$11,252,985,702	$12,818,833,665	$11,880,487,863	$841,112,040	$386,080,172	
$11,252,985,702	**$12,818,833,665**	**$11,880,487,863**	**$841,112,040**	**$386,080,172**	
			$10,671,068,181	$12,440,522,790	$13,111,684,807
			$10,671,068,181	**$12,440,522,790**	**$13,111,684,807**
			$166,446,806	$175,539,164	$153,084,296
			$166,446,806	**$175,539,164**	**$153,084,296**

Fiduciary Net Position (last 10 fiscal years)

(continued on next page)

Year	2022	2021	2020	2019
All Plans				
Assets				
Cash and Cash Equivalents	$4,356,480,859	$4,601,033,654	$6,797,714,437	$5,153,032,873
Receivables	856,101,869	890,094,917	893,137,367	1,023,900,774
Investments	101,867,924,413	121,654,291,561	106,855,373,465	101,068,997,469
Collateral on Loaned Securities	10,741,129,135	8,215,168,629	10,082,726,257	8,338,502,346
Net Capital Assets	133,924,583	132,058,024	137,151,598	127,717,312
Prepaid Expenses and Other Assets	1,458,744	2,083,696	2,305,525	2,536,831
Total Assets	**117,957,019,603**	**135,494,730,481**	**124,768,408,649**	**115,714,687,605**
Liabilities, Deferred Inflows and Net Position				
Benefits Payable	149,638,740	179,566,492	108,039,892	115,782,241
Investment Commitments Payable	245,263,155	114,333,543	282,169,031	927,267,321
Obligations Under Securities Lending	10,741,925,399	8,216,926,869	10,080,200,147	8,336,228,643
Other Liabilities	40,941,911	24,486,671	25,803,056	20,483,729
Deferred Inflows—Lessor Obligations	2,129,919	2,614,095	3,041,594	—
Net Position (Fund Balance)	106,777,120,479	126,956,802,811	114,269,154,929	106,314,925,671
Total Liabilities, Deferred Inflows and Net Position	**$117,957,019,603**	**$135,494,730,481**	**$124,768,408,649**	**$115,714,687,605**
Traditional Pension Plan				
Assets				
Cash and Cash Equivalents	$3,700,954,820	$3,971,322,425	$5,723,034,710	$4,308,875,497
Receivables	763,053,466	774,576,549	778,127,685	888,425,919
Investments	87,928,656,097	104,492,363,674	91,688,300,257	86,619,951,352
Collateral on Loaned Securities	8,773,919,816	6,682,413,469	9,949,399,797	8,278,711,065
Net Capital Assets	95,185,812	97,811,354	107,130,755	99,046,577
Prepaid Expenses and Other Assets	1,458,744	2,083,696	2,305,525	2,536,831
Total Assets	**101,263,228,755**	**116,020,571,167**	**108,248,298,729**	**100,197,547,241**
Liabilities, Deferred Inflows and Net Position				
Benefits Payable	3,070,596	597,332	739,550	600,465
Investment Commitments Payable	198,814,771	100,928,934	247,111,672	778,596,013
Obligations Under Securities Lending	8,774,571,215	6,683,843,664	9,946,907,092	8,276,453,666
Other Liabilities	40,927,964	22,927,274	25,780,208	20,287,379
Deferred Inflows—Lessor Obligations	2,129,919	2,614,095	3,041,594	—
Net Position (Fund Balance)	92,243,714,290	109,209,659,868	98,024,718,613	91,121,609,718
Total Liabilities, Deferred Inflows and Net Position	**$101,263,228,755**	**$116,020,571,167**	**$108,248,298,729**	**$100,197,547,241**
Combined Plan				
Assets				
Cash and Cash Equivalents	$55,984,832	$26,680,021	$44,975,508	$25,533,095
Receivables	14,609,232	16,780,238	8,473,113	12,995,951
Investments	1,531,887,311	1,773,397,467	1,487,311,196	1,269,150,215
Collateral on Loaned Securities	80,366,522	56,415,041	76,605,925	57,596,103
Net Capital Assets	3,951,764	3,880,931	4,166,692	3,938,747
Total Assets	**1,686,799,661**	**1,877,153,698**	**1,621,532,434**	**1,369,214,111**
Liabilities and Net Position				
Investment Commitments Payable	2,197,041	995,282	2,129,852	5,960,527
Obligations Under Securities Lending	80,371,517	56,427,115	76,586,731	57,580,397
Other Liabilities	—	125,389	—	—
Net Position (Fund Balance)	1,604,231,103	1,819,605,912	1,542,815,851	1,305,673,187
Total Liabilities and Net Position	**$1,686,799,661**	**$1,877,153,698**	**$1,621,532,434**	**$1,369,214,111**

[1] The 115 Health Care Trust was established in 2014. The 401(h) Health Care Trust and the Voluntary Employees' Beneficiary Association (VEBA) Trust were terminated as of June 30, 2016. The net positions of these trusts were consolidated into the 115 Health Care Trust on July 1, 2016.

Fiduciary Net Position

2018	2017	2016	2015	2014	2013
$3,986,157,970	$4,625,708,094	$4,586,305,505	$3,064,065,686	$2,882,858,353	$3,333,382,605
888,861,210	1,113,071,247	1,112,083,698	954,980,282	1,088,837,041	1,092,845,990
89,977,800,332	96,357,409,903	85,449,650,603	83,819,475,118	87,891,142,075	85,137,610,781
8,170,412,140	7,935,816,160	8,288,355,523	8,270,812,672	7,854,368,780	6,958,964,420
127,110,017	131,801,306	132,961,073	132,811,651	133,629,210	131,389,851
2,062,788	1,304,949	764,515	1,217,369	2,261,461	2,912,709
103,152,404,457	**110,165,111,659**	**99,570,120,917**	**96,243,362,778**	**99,853,096,920**	**96,657,106,356**
120,372,871	114,904,201	110,396,253	93,550,718	99,844,976	90,115,030
702,901,475	671,584,704	539,826,060	475,568,951	593,164,943	554,398,461
8,167,622,811	7,933,640,759	8,285,285,181	8,271,338,789	7,852,803,699	6,953,717,885
18,449,688	19,162,159	23,789,198	111,502,502	63,388,194	68,938,682
—	—	—	—	—	—
94,143,057,612	101,425,819,836	90,610,824,225	87,291,401,818	91,243,895,108	88,989,936,298
$103,152,404,457	**$110,165,111,659**	**$99,570,120,917**	**$96,243,362,778**	**$99,853,096,920**	**$96,657,106,356**
$3,374,454,554	$3,781,114,065	$3,695,255,724	$2,381,670,021	$2,357,796,670	$2,826,596,339
768,486,959	954,982,358	880,590,006	637,347,978	709,932,322	760,735,070
77,239,220,653	82,334,875,328	72,913,065,131	71,514,345,166	74,279,082,505	71,393,042,048
8,116,371,929	7,891,300,747	8,247,367,947	8,215,428,672	7,809,036,934	6,924,316,299
96,834,232	99,218,172	98,085,389	96,541,605	96,963,543	98,948,820
2,062,788	1,304,949	764,515	1,217,369	2,261,461	2,912,709
89,597,431,115	**95,062,795,619**	**85,835,128,712**	**82,846,550,811**	**85,255,073,435**	**82,006,551,285**
840,787	260,431	1,253,982	255,699	311,575	78,477
588,145,541	568,614,823	456,426,672	393,965,905	475,297,939	451,977,660
8,113,604,843	7,889,137,549	8,244,312,788	8,215,951,266	7,807,480,885	6,919,095,886
18,234,890	18,931,792	23,501,785	23,057,589	15,752,394	16,866,993
—	—	—	—	—	—
80,876,605,054	86,585,851,024	77,109,633,485	74,213,320,352	76,956,230,642	74,618,532,269
$89,597,431,115	**$95,062,795,619**	**$85,835,128,712**	**$82,846,550,811**	**$85,255,073,435**	**$82,006,551,285**
$16,264,772	$18,789,542	$15,750,245	$10,566,328	$8,947,770	$9,425,463
12,076,641	14,429,447	12,005,543	22,378,455	21,472,538	17,071,301
1,008,282,317	988,897,434	787,029,411	674,801,893	623,991,406	534,668,467
52,042,473	42,918,686	39,693,971	34,258,885	27,497,528	20,966,014
3,905,804	3,947,072	3,885,497	3,950,559	3,998,438	3,921,730
1,092,572,007	**1,068,982,181**	**858,364,667**	**745,956,120**	**685,907,680**	**586,052,975**
4,460,993	3,657,231	2,833,383	1,801,004	1,787,256	1,549,789
52,021,052	42,906,921	39,679,267	34,261,065	27,492,049	20,950,208
—	—	—	8,979,642	6,378,648	3,940,089
1,036,089,962	1,022,418,029	815,852,017	700,914,409	650,249,727	559,612,889
$1,092,572,007	**$1,068,982,181**	**$858,364,667**	**$745,956,120**	**$685,907,680**	**$586,052,975**

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Fiduciary Net Position (last 10 fiscal years)

Year	2022	2021	2020	2019
Member-Directed Plan				
Assets				
Cash and Cash Equivalents	$423,749	$1,771,352	$2,412,001	$419,694
Receivables	16,816,503	16,135,070	9,649,027	9,619,158
Investments	1,444,595,499	1,681,962,363	1,459,649,304	1,228,537,895
Collateral on Loaned Securities	3,661,742	2,753,465	3,476,392	2,195,178
Net Capital Assets	2,823,088	2,698,164	2,855,907	2,675,144
Total Assets	**1,468,320,581**	**1,705,320,414**	**1,478,042,631**	**1,243,447,069**
Liabilities and Net Position				
Investment Commitments Payable	822,725	251,317	365,745	667,474
Obligations Under Securities Lending	3,662,008	2,754,054	3,475,521	2,194,580
Other Liabilities	—	117,316	—	—
Net Position (Fund Balance)	1,463,835,848	1,702,197,727	1,474,201,365	1,240,585,015
Total Liabilities and Net Position	**$1,468,320,581**	**$1,705,320,414**	**$1,478,042,631**	**$1,243,447,069**
115 Health Care Trust[1]				
Assets				
Cash and Cash Equivalents	$599,117,458	$601,259,856	$1,027,292,218	$818,204,587
Receivables	61,622,668	82,603,060	96,887,542	112,859,746
Investments	10,962,785,506	13,706,568,057	12,220,112,708	11,951,358,007
Collateral on Loaned Securities	1,883,181,055	1,473,586,654	53,244,143	—
Net Capital Assets	31,963,919	27,667,575	22,998,244	22,056,844
Total Assets	**13,538,670,606**	**15,891,685,202**	**13,420,534,855**	**12,904,479,184**
Liabilities and Net Position				
Benefits Payable	146,568,144	178,969,160	107,300,342	115,181,776
Investment Commitments Payable	43,428,618	12,158,010	32,561,762	142,043,307
Obligations Under Securities Lending	1,883,320,659	1,473,902,036	53,230,803	—
Other Liabilities	13,947	1,316,692	22,848	196,350
Net Position (Fund Balance)	11,465,339,238	14,225,339,304	13,227,419,100	12,647,057,751
Total Liabilities and Net Position	**$13,538,670,606**	**$15,891,685,202**	**$13,420,534,855**	**$12,904,479,184**
401(h) Health Care Trust[1]				
Assets				
Cash and Cash Equivalents				
Receivables				
Investments				
Net Capital Assets				
Total Assets				
Liabilities and Net Position				
Benefits Payable				
Investment Commitments Payable				
Other Liabilities				
Net Position (Fund Balance)				
Total Liabilities and Net Position				
Voluntary Employees' Beneficiary Association Trust[1]				
Assets				
Cash and Cash Equivalents				
Receivables				
Investments				
Collateral on Loaned Securities				
Net Capital Assets				
Total Assets				
Liabilities and Net Position				
Benefits Payable				
Investment Commitments Payable				
Obligations Under Securities Lending				
Other Liabilities				
Net Position (Fund Balance)				
Total Liabilities and Net Position				

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Fiduciary Net Position

2018	2017	2016	2015	2014	2013
$255,302	$1,938,245	$666,696	$334,220	$274,295	$282,346
10,324,579	13,193,710	11,590,244	23,237,455	21,577,499	15,586,438
965,305,936	981,494,690	790,661,959	677,842,112	638,145,075	560,933,809
1,997,738	1,596,727	1,293,605	2,237,421	767,134	482,373
2,757,251	2,891,519	2,962,075	3,025,179	3,150,369	2,856,649
980,640,806	**1,001,114,891**	**807,174,579**	**706,676,387**	**663,914,372**	**580,141,615**
1,266,996	801,484	1,030,593	245,260	137,585	196,803
1,996,916	1,596,289	1,293,126	2,237,563	766,982	482,009
—	—	—	5,653,534	27,737,192	32,440,766
977,376,894	998,717,118	804,850,860	698,540,030	635,272,613	547,022,037
$980,640,806	**$1,001,114,891**	**$807,174,579**	**$706,676,387**	**$663,914,372**	**$580,141,615**
$595,183,342	$823,866,242	$874,632,840	$228,930,728	$7,797,254	
97,973,031	130,465,732	207,897,905	173,883,586	197,641,190	
10,764,991,426	12,052,142,451	10,958,894,102	484,975,264	182,748,955	
—	—	—	—	—	
23,612,730	25,744,543	28,028,112	1,441,984	—	
11,481,760,529	**13,032,218,968**	**12,069,452,959**	**889,231,562**	**388,187,399**	
119,532,084	114,643,770	109,142,271	1,634,811	—	
109,027,945	98,511,166	79,535,412	1,789,658	1,803,774	
—	—	—	—	—	
214,798	230,367	287,413	44,695,053	303,453	
11,252,985,702	12,818,833,665	11,880,487,863	841,112,040	386,080,172	
$11,481,760,529	**$13,032,218,968**	**$12,069,452,959**	**$889,231,562**	**$388,187,399**	
			$437,888,805	$503,893,407	$491,371,340
			83,230,392	125,472,731	290,484,285
			10,314,427,768	12,008,141,647	12,510,470,437
			27,020,679	28,631,421	24,866,659
			10,862,567,644	**12,666,139,206**	**13,317,192,721**
			91,451,759	99,279,185	90,019,865
			76,923,764	113,120,724	99,797,215
			23,123,940	13,216,507	15,690,834
			10,671,068,181	12,440,522,790	13,111,684,807
			$10,862,567,644	**$12,666,139,206**	**$13,317,192,721**
			$4,675,584	$4,148,957	$5,707,117
			14,902,416	12,740,761	8,968,896
			153,082,915	159,032,487	138,496,020
			18,887,694	17,067,184	13,199,734
			831,645	885,439	795,993
			192,380,254	**193,874,828**	**167,167,760**
			208,449	254,216	16,688
			843,360	1,017,665	876,994
			18,888,895	17,063,783	13,189,782
			5,992,744	—	—
			166,446,806	175,539,164	153,084,296
			$192,380,254	**$193,874,828**	**$167,167,760**

Changes in Fiduciary Net Position (last 10 fiscal years)

(continued on next page)

Year	2022	2021	2020	2019
All Plans				
Additions				
Member Contributions	$1,669,552,482	$1,564,633,333	$1,517,737,361	$1,516,077,941
Employer Contributions	2,336,592,553	2,189,843,795	2,124,180,535	2,121,982,398
Contract and Other Receipts[1]	78,897,024	91,249,363	79,934,979	67,502,046
Retiree-Paid Health Care Premiums[1]	—	—	—	—
Federal Subsidy[1]	—	—	—	—
Net Income/(Loss) from Investing Activity	(15,950,779,683)	17,131,577,656	12,030,115,041	16,100,992,982
Other Income/(Expense), net	583,828	490,886	1,336,808	696,586
Interplan Activity	43,250,059	40,246,132	42,849,507	31,219,619
Total Additions	(11,821,903,737)	21,018,041,165	15,796,154,231	19,838,471,572
Deductions				
Pension Benefits	7,037,982,598	6,772,996,281	6,517,424,253	6,318,731,252
Health Care Expenses[1]	591,090,699	853,113,419	725,265,912	767,888,929
Refunds of Contributions	613,719,345	591,091,983	483,428,551	472,604,688
Administrative Expenses	71,735,894	72,945,468	72,956,750	76,159,025
Interplan Activity	43,250,059	40,246,132	42,849,507	31,219,619
Total Deductions	8,357,778,595	8,330,393,283	7,841,924,973	7,666,603,513
Net Increase/(Decrease)	(20,179,682,332)	12,687,647,882	7,954,229,258	12,171,868,059
Net Position Restricted for Pensions and OPEB, Beginning of Year	126,956,802,811	114,269,154,929	106,314,925,671	94,143,057,612
Net Position Restricted for Pensions and OPEB, End of Year	**$106,777,120,479**	**$126,956,802,811**	**$114,269,154,929**	**$106,314,925,671**
Traditional Pension Plan				
Additions				
Member Contributions	$1,553,362,013	$1,454,613,138	$1,411,917,040	$1,410,501,971
Employer Contributions	2,174,135,884	2,035,845,218	1,976,105,188	1,974,172,176
Contract and Other Receipts	75,474,137	90,051,810	78,348,543	66,023,563
Net Income/(Loss) from Investing Activity	(13,216,998,464)	14,867,923,539	10,371,729,419	13,532,537,160
Other Income/(Expense), net	583,828	535,621	906,079	694,862
Interplan Activity	43,250,059	40,246,132	42,849,507	31,219,619
Total Additions	(9,370,192,543)	18,489,215,458	13,881,855,776	17,015,149,351
Deductions				
Pension Benefits	7,020,851,312	6,757,308,526	6,507,132,869	6,310,936,996
Refunds of Contributions	520,523,234	494,540,626	420,286,261	407,308,374
Administrative Expenses	54,378,489	52,425,051	51,327,751	51,899,317
Total Deductions	7,595,753,035	7,304,274,203	6,978,746,881	6,770,144,687
Special Item[2]	—	—	—	—
Net Increase/(Decrease)	(16,965,945,578)	11,184,941,255	6,903,108,895	10,245,004,664
Net Position Restricted for Pensions, Beginning of Year	109,209,659,868	98,024,718,613	91,121,609,718	80,876,605,054
Net Position Restricted for Pensions, End of Year	**$92,243,714,290**	**$109,209,659,868**	**$98,024,718,613**	**$91,121,609,718**

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Changes in Fiduciary Net Position

2018	2017	2016	2015	2014	2013
$1,455,771,629	$1,421,754,296	$1,387,215,220	$1,332,308,994	$1,307,428,830	$1,279,945,223
2,037,635,971	1,989,941,685	1,941,632,324	1,864,823,741	1,829,907,525	1,794,039,132
81,169,718	93,061,535	172,338,832	172,067,637	270,728,202	250,228,379
—	—	184,368,783	248,601,375	238,406,380	178,140,822
—	—	4,065,058	175,930,875	176,619,891	105,965,762
(3,350,345,567)	14,619,914,555	6,926,572,065	9,415,961	5,775,317,835	11,006,164,375
2,844,546	2,641,100	(2,544,366)	(4,887,359)	8,304,360	13,898,739
25,435,260	20,961,756	17,205,339	19,759,373	10,357,663	13,034,171
252,511,557	18,148,274,927	10,630,853,255	3,818,020,597	9,617,070,686	14,641,416,603
6,109,237,279	5,839,789,809	5,588,000,966	5,401,880,992	5,112,123,787	4,931,491,707
870,284,919	952,001,573	1,197,374,344	1,822,571,428	1,740,814,106	1,644,244,641
453,441,020	443,220,698	429,791,141	449,265,410	425,701,829	441,284,204
76,875,303	77,305,480	79,059,058	77,036,684	74,114,491	68,619,091
25,435,260	20,961,756	17,205,339	19,759,373	10,357,663	13,034,171
7,535,273,781	7,333,279,316	7,311,430,848	7,770,513,887	7,363,111,876	7,098,673,814
(7,282,762,224)	10,814,995,611	3,319,422,407	(3,952,493,290)	2,253,958,810	7,542,742,789
101,425,819,836	90,610,824,225	87,291,401,818	91,243,895,108	88,989,936,298	81,447,193,509
$94,143,057,612	**$101,425,819,836**	**$90,610,824,225**	**$87,291,401,818**	**$91,243,895,108**	**$88,989,936,298**

$1,354,235,298	$1,324,457,501	$1,294,853,664	$1,246,732,014	$1,228,144,074	$1,206,808,750
1,895,462,837	1,722,856,378	1,556,529,162	1,498,679,737	1,476,074,083	1,571,758,150
79,562,553	90,937,696	77,862,156	75,209,820	114,830,564	121,818,099
(2,524,213,911)	12,586,432,979	5,947,233,326	274,898,652	5,056,307,357	9,423,847,940
2,112,353	2,516,572	(2,560,081)	(4,887,369)	625,549	414,878
25,435,260	20,961,756	11,168,557	19,759,373	10,357,663	13,034,171
832,594,390	15,748,162,882	8,885,086,784	3,110,392,227	7,886,339,290	12,337,681,988
6,101,603,746	5,835,175,377	5,584,517,896	5,398,844,664	5,109,100,939	4,928,972,847
388,067,394	384,615,309	352,362,641	405,320,800	389,707,612	411,321,700
52,169,220	52,154,657	51,871,700	49,137,053	49,832,366	46,946,971
6,541,840,360	6,271,945,343	5,988,752,237	5,853,302,517	5,548,640,917	5,387,241,518
—	—	(21,414)	—	—	—
(5,709,245,970)	9,476,217,539	2,896,313,133	(2,742,910,290)	2,337,698,373	6,950,440,470
86,585,851,024	77,109,633,485	74,213,320,352	76,956,230,642	74,618,532,269	67,668,091,799
$80,876,605,054	**$86,585,851,024**	**$77,109,633,485**	**$74,213,320,352**	**$76,956,230,642**	**$74,618,532,269**

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Changes in Fiduciary Net Position (last 10 fiscal years)

Year	2022	2021	2020	2019
Combined Plan				
Additions				
Member Contributions	$46,703,853	$45,846,077	$44,320,854	$44,786,688
Employer Contributions	60,507,524	64,192,623	62,084,708	62,699,159
Contract and Other Receipts	252,357	498,616	407,896	291,108
Net Income/(Loss) from Investing Activity	(265,237,250)	221,574,465	175,700,469	202,970,429
Other Income, net	—	—	—	—
Total Additions	(157,773,516)	332,111,781	282,513,927	310,747,384
Deductions				
Pension Benefits	12,311,032	10,283,349	7,843,951	5,310,887
Refunds of Contributions	24,246,717	23,768,695	15,670,706	17,531,723
Administrative Expenses	2,835,387	2,724,018	2,781,210	3,906,211
Interplan Activity	18,208,157	18,545,658	19,075,396	14,415,338
Total Deductions	57,601,293	55,321,720	45,371,263	41,164,159
Net Increase	(215,374,809)	276,790,061	237,142,664	269,583,225
Net Position Restricted for Pensions, Beginning of Year	1,819,605,912	1,542,815,851	1,305,673,187	1,036,089,962
Net Position Restricted for Pensions, End of Year	**$1,604,231,103**	**$1,819,605,912**	**$1,542,815,851**	**$1,305,673,187**

Member-Directed Plan				
Additions				
Member Contributions	$69,486,616	$64,174,118	$61,499,467	$60,789,282
Employer Contributions	72,049,664	64,174,227	61,500,701	60,792,922
Contract and Other Receipts	1,514,799	463,575	665,031	646,566
Net Income/(Loss) from Investing Activity	(280,252,305)	201,488,600	186,297,248	210,427,422
Other Income/(Expense), net	—	(80,689)	—	—
Total Additions	(137,201,226)	330,219,831	309,962,447	332,656,192
Deductions				
Pension Benefits	4,820,254	5,404,406	2,447,433	2,483,369
Refunds of Contributions	68,949,394	72,782,662	47,471,584	47,764,591
Administrative Expenses	2,349,103	2,335,927	2,652,969	2,395,830
Interplan Activity	25,041,902	21,700,474	23,774,111	16,804,281
Total Deductions	101,160,653	102,223,469	76,346,097	69,448,071
Net Increase/(Decrease)	(238,361,879)	227,996,362	233,616,350	263,208,121
Net Position Restricted for Pensions, Beginning of Year	1,702,197,727	1,474,201,365	1,240,585,015	977,376,894
Net Position Restricted for Pensions, End of Year	**$1,463,835,848**	**$1,702,197,727**	**$1,474,201,365**	**$1,240,585,015**

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Changes in Fiduciary Net Position

2018	2017	2016	2015	2014	2013
$43,054,163	$41,265,878	$39,232,690	$36,685,161	$34,604,398	$32,535,565
60,249,275	53,636,897	47,079,023	44,022,120	44,196,044	45,427,520
515,564	688,384	620,078	492,260	412,808	680,258
(54,622,602)	142,733,244	63,694,711	(6,501,919)	32,379,863	78,379,140
—	2,135	—	—	—	—
49,196,400	238,326,538	150,626,502	74,697,622	111,593,113	157,022,483
4,489,811	3,089,538	1,981,664	1,791,115	2,230,987	1,526,005
16,808,080	16,220,141	21,857,512	12,577,944	10,974,442	7,731,155
2,730,700	3,181,465	2,559,387	2,522,610	2,375,278	2,264,293
11,495,876	9,269,382	9,290,331	7,141,271	5,375,568	6,085,687
35,524,467	31,760,526	35,688,894	24,032,940	20,956,275	17,607,140
13,671,933	206,566,012	114,937,608	50,664,682	90,636,838	139,415,343
1,022,418,029	815,852,017	700,914,409	650,249,727	559,612,889	420,197,546
$1,036,089,962	**$1,022,418,029**	**$815,852,017**	**$700,914,409**	**$650,249,727**	**$559,612,889**

$58,482,168	$56,030,917	$53,128,866	$48,891,819	$44,680,358	$40,600,908
58,482,191	56,030,522	53,120,880	68,448,551	47,851,530	38,540,851
812,423	577,914	527,291	495,540	700,770	785,072
(71,099,374)	139,385,790	66,099,386	(13,070,950)	28,212,549	88,633,791
—	4,511	—	—	—	—
46,677,408	252,029,654	172,876,423	104,764,960	121,445,207	168,560,622
3,143,722	1,524,894	1,501,406	1,245,213	791,861	992,855
48,565,546	42,385,248	55,570,988	31,366,666	25,019,775	22,231,349
2,368,980	2,560,880	2,305,383	2,260,306	2,400,900	2,028,864
13,939,384	11,692,374	7,187,816	6,625,358	4,982,095	6,948,484
68,017,632	58,163,396	66,565,593	41,497,543	33,194,631	32,201,552
(21,340,224)	193,866,258	106,310,830	63,267,417	88,250,576	136,359,070
998,717,118	804,850,860	698,540,030	635,272,613	547,022,037	410,662,967
$977,376,894	**$998,717,118**	**$804,850,860**	**$698,540,030**	**$635,272,613**	**$547,022,037**

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Changes in Fiduciary Net Position (last 10 fiscal years)

Year	2022	2021	2020	2019
115 Health Care Trust[2]				
Additions				
Employer Contributions	$29,899,481	$25,631,727	$24,489,938	$24,318,141
Contract and Other Receipts[1]	1,655,731	235,362	513,509	540,809
Retiree-Paid Health Care Premiums[1]	—	—	—	—
Federal Subsidy[1]	—	—	—	—
Net Income/(Loss) from Investing Activity	(2,188,291,664)	1,840,591,052	1,296,387,905	2,155,057,971
Other Income, net	—	35,954	430,729	1,724
Interplan Activity	—	—	—	—
Total Additions	(2,156,736,452)	1,866,494,095	1,321,822,081	2,179,918,645
Deductions				
Health Care Expenses[1]	591,090,699	853,113,419	725,265,912	767,888,929
Administrative Expenses	12,172,915	15,460,472	16,194,820	17,957,667
Total Deductions	603,263,614	868,573,891	741,460,732	785,846,596
Special Item[2]	—	—	—	—
Net Increase/(Decrease)	(2,760,000,066)	997,920,204	580,361,349	1,394,072,049
Net Position Restricted for OPEB, Beginning of Year	14,225,339,304	13,227,419,100	12,647,057,751	11,252,985,702
Net Position Restricted for OPEB, End of Year	**$11,465,339,238**	**$14,225,339,304**	**$13,227,419,100**	**$12,647,057,751**

401(h) Health Care Trust				
Additions				
Employer Contributions				
Contract and Other Receipts				
Retiree-Paid Health Care Premiums				
Federal Subsidy				
Net Income/(Loss) from Investing Activity				
Other Income, net				
Total Additions				
Deductions				
Health Care Expenses				
Administrative Expenses				
Total Deductions				
Special Item[2]				
Net Increase/(Decrease)				
Net Position Restricted for OPEB, Beginning of Year				
Net Position Restricted for OPEB, End of Year				

See footnotes on page 174

Changes in Fiduciary Net Position

2018	2017	2016	2015	2014	2013
$23,441,668	$157,417,888	$274,419,455	$253,673,333	$111,561,319	
279,178	857,541	93,306,585	95,860,582	143,813,190	
—	—	184,368,783	—	—	
—	—	4,065,058	175,930,875	131,904,250	
(700,409,680)	1,751,362,542	352,629,538	(23,073,355)	(1,193,356)	
732,193	117,882	15,715	10	76,970	
—	—	6,036,782	—	—	
(675,956,641)	1,909,755,853	914,841,916	502,391,445	386,162,373	
870,284,919	952,001,573	1,195,956,899	45,184,620	—	
19,606,403	19,408,478	21,693,387	2,174,957	82,201	
889,891,322	971,410,051	1,217,650,286	47,359,577	82,201	
—	—	11,342,184,193	—	—	
(1,565,847,963)	938,345,802	11,039,375,823	455,031,868	386,080,172	
12,818,833,665	11,880,487,863	841,112,040	386,080,172	—	
$11,252,985,702	**$12,818,833,665**	**$11,880,487,863**	**$841,112,040**	**$386,080,172**	

		$—	$—	$135,522,351	$120,056,440
		—	9,435	10,950,386	126,941,889
		—	248,601,375	238,406,380	178,140,822
		—	—	44,715,641	105,965,762
		490,208,570	(223,464,384)	648,566,894	1,397,348,823
		—	—	7,601,841	13,483,861
		490,208,570	25,146,426	1,085,763,493	1,941,937,597
		—	1,774,989,836	1,738,596,173	1,642,525,598
		—	19,611,199	18,329,337	16,352,514
		—	1,794,601,035	1,756,925,510	1,658,878,112
		(11,161,276,751)	—	—	—
		(10,671,068,181)	(1,769,454,609)	(671,162,017)	283,059,485
		10,671,068,181	12,440,522,790	13,111,684,807	12,828,625,322
		$—	**$10,671,068,181**	**$12,440,522,790**	**$13,111,684,807**

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Changes in Fiduciary Net Position (last 10 fiscal years)

Year	2022	2021	2020	2019
Voluntary Employees' Beneficiary Association (VEBA) Trust				
Additions				
Employer Contributions[3]				
Contract and Other Receipts				
Net Income/(Loss) from Investing Activity				
Interplan Activity				
Total Additions				
Deductions				
Health Care Expenses				
Administrative Expenses				
Interplan Activity				
Total Deductions				
Special Item[2]				
Net Increase/(Decrease)				
Net Position Restricted for OPEB, Beginning of Year				
Net Position Restricted for OPEB, End of Year				

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[1] GASB Statement No. 74 requires health care expenses be reported net of certain health care receipts. The presentation of Retiree-Paid Health Care Premiums, Federal Subsidy and formulary rebates included in Contract and Other Receipts has been revised and is now included in Health Care Expenses, starting in 2017 upon implementation of this standard.

[2] The 115 Health Care Trust was established in 2014. The 401(h) Health Care Trust and the VEBA Trust were terminated as of June 30, 2016. The net positions of these trusts were consolidated into the 115 Health Care Trust on July 1, 2016. The Special Item represents this interplan activity and nets to zero in consolidation.

[3] Beginning October 2014, the Board approved the funding of the VEBA Trust participant accounts using the reserves in the VEBA Trust rather than the allocation of employer contributions. Instead, employer contributions were allocated to the Member-Directed Plan to repay the original plan start-up and administrative costs. Contributions to the VEBA Trust resumed January 1, 2016.

Changes in Fiduciary Net Position

2018	2017	2016	2015	2014	2013
		$10,483,804	$—	$14,702,198	$18,256,171
		22,722	—	20,484	3,061
		6,706,534	627,917	11,044,528	17,954,681
		—	—	—	—
		17,213,060	627,917	25,767,210	36,213,913
		1,417,445	2,396,972	2,217,933	1,719,043
		629,201	1,330,559	1,094,409	1,026,449
		727,192	5,992,744	—	—
		2,773,838	9,720,275	3,312,342	2,745,492
		(180,886,028)	—	—	—
		(166,446,806)	(9,092,358)	22,454,868	33,468,421
		166,446,806	175,539,164	153,084,296	119,615,875
		$—	**$166,446,806**	**$175,539,164**	**$153,084,296**

Additions by Source (last 10 fiscal years)

(continued on next page)

Year	2022	2021	2020	2019
All Plans				
Member Contributions	$1,669,552,482	$1,564,633,333	$1,517,737,361	$1,516,077,941
Employer Contributions	2,336,592,553	2,189,843,795	2,124,180,535	2,121,982,398
Purchase of Service	9,424,184	11,376,647	12,378,372	13,773,612
Retiree-Paid Health Care Premiums[1]	—	—	—	—
Early Retirement Incentive Payments	75,228	1,136,646	3,735,825	1,843,828
Transfers from Other Retirement Systems	49,387,424	61,774,148	45,301,454	32,689,498
Vendor Rebates and Other Receipts[1]	269,017	30,000	150,000	210,056
Additional Annuity/Voluntary Contributions	2,615,092	1,505,818	2,356,214	1,908,125
Other Employer Payments	15,841,348	15,426,104	16,013,114	17,076,927
Federal Subsidy[1]	1,284,731	—	—	—
Net Income/(Loss) from Investing Activity	(15,950,779,683)	17,131,577,656	12,030,115,041	16,100,992,982
Other Income/(Expense), net	583,828	490,886	1,336,808	696,586
Interplan Activity	43,250,059	40,246,132	42,849,507	31,219,619
Total Additions	**($11,821,903,737)**	**$21,018,041,165**	**$15,796,154,231**	**$19,838,471,572**
Traditional Pension Plan				
Member Contributions	$1,553,362,013	$1,454,613,138	$1,411,917,040	$1,410,501,971
Employer Contributions	2,174,135,884	2,035,845,218	1,976,105,188	1,974,172,176
Purchase of Service	9,185,403	10,989,861	12,268,618	13,635,133
Early Retirement Incentive Payments	70,339	1,043,419	3,523,959	1,712,584
Transfers from Other Retirement Systems	49,387,424	61,774,148	45,301,454	32,689,498
Additional Annuity Contributions	1,118,170	950,240	1,479,131	1,244,462
Other Employer Payments	15,712,801	15,294,142	15,775,381	16,741,886
Net Income/(Loss) from Investing Activity	(13,216,998,464)	14,867,923,539	10,371,729,419	13,532,537,160
Other Income/(Expense), net	583,828	535,621	906,079	694,862
Interplan Activity	43,250,059	40,246,132	42,849,507	31,219,619
Total Additions	**($9,370,192,543)**	**$18,489,215,458**	**$13,881,855,776**	**$17,015,149,351**
Combined Plan				
Member Contributions	$46,703,853	$45,846,077	$44,320,854	$44,786,688
Employer Contributions	60,507,524	64,192,623	62,084,708	62,699,159
Purchase of Service	238,781	386,786	109,754	138,210
Voluntary Contributions	—	102,311	282,768	149,940
Other Employer Payments	13,576	9,519	15,374	2,958
Net Income/(Loss) from Investing Activity	(265,237,250)	221,574,465	175,700,469	202,970,429
Other Income, net	—	—	—	—
Total Additions	**($157,773,516)**	**$332,111,781**	**$282,513,927**	**$310,747,384**
Member-Directed Plan				
Member Contributions	$69,486,616	$64,174,118	$61,499,467	$60,789,282
Employer Contributions	72,049,664	64,174,227	61,500,701	60,792,922
Purchase of Service	—	—	—	269
Voluntary Contributions	1,496,922	453,267	594,315	513,723
Other Employer Payments	17,877	10,308	70,716	132,574
Net Income/(Loss) from Investing Activity	(280,252,305)	201,488,600	186,297,248	210,427,422
Other Income/(Expense), net	—	(80,689)	—	—
Total Additions	**($137,201,226)**	**$330,219,831**	**$309,962,447**	**$332,656,192**

See footnotes on page 178

Additions by Source

2018	2017	2016	2015	2014	2013
$1,455,771,629	$1,421,754,296	$1,387,215,220	$1,332,308,994	$1,307,428,830	$1,279,945,223
2,037,635,971	1,989,941,685	1,941,632,324	1,864,823,741	1,829,907,525	1,794,039,132
19,608,589	22,466,320	18,073,121	22,850,005	26,521,581	60,100,714
—	—	184,368,783	248,601,375	238,406,380	178,140,822
2,082,248	5,537,160	—	2,636,885	15,180,991	7,294,662
43,166,016	51,563,749	44,266,370	47,270,349	69,328,737	46,370,923
30,000	117,285	91,735,221	91,372,473	150,377,554	121,660,735
2,128,309	2,136,358	2,074,383	1,668,697	1,693,612	5,786,692
14,154,556	11,240,663	16,189,737	6,269,228	7,625,727	9,014,653
—	—	4,065,058	175,930,875	176,619,891	105,965,762
(3,350,345,567)	14,619,914,555	6,926,572,065	9,415,961	5,775,317,835	11,006,164,375
2,844,546	2,641,100	(2,544,366)	(4,887,359)	8,304,360	13,898,739
25,435,260	20,961,756	17,205,339	19,759,373	10,357,663	13,034,171
$252,511,557	**$18,148,274,927**	**$10,630,853,255**	**$3,818,020,597**	**$9,617,070,686**	**$14,641,416,603**

$1,354,235,298	$1,324,457,501	$1,294,853,664	$1,246,732,014	$1,228,144,074	$1,206,808,750
1,895,462,837	1,722,856,378	1,556,529,162	1,498,679,737	1,476,074,083	1,571,758,150
19,435,537	22,321,608	17,926,008	22,718,488	26,297,267	59,756,708
1,950,680	5,227,186	—	2,649,968	14,427,760	6,943,575
43,166,016	51,563,749	44,199,326	43,081,440	66,309,930	42,242,610
1,014,664	1,182,500	1,235,194	830,196	945,803	4,744,751
13,995,656	10,642,653	14,501,628	5,929,728	6,849,804	8,130,455
(2,524,213,911)	12,586,432,979	5,947,233,326	274,898,652	5,056,307,357	9,423,847,940
2,112,353	2,516,572	(2,560,081)	(4,887,369)	625,549	414,878
25,435,260	20,961,756	11,168,557	19,759,373	10,357,663	13,034,171
$832,594,390	**$15,748,162,882**	**$8,885,086,784**	**$3,110,392,227**	**$7,886,339,290**	**$12,337,681,988**

$43,054,163	$41,265,878	$39,232,690	$36,685,161	$34,604,398	$32,535,565
60,249,275	53,636,897	47,079,023	44,022,120	44,196,044	45,427,520
171,324	141,951	136,029	131,373	218,582	343,752
326,985	398,332	336,536	353,335	153,014	270,861
17,255	148,101	147,513	7,552	41,212	65,645
(54,622,602)	142,733,244	63,694,711	(6,501,919)	32,379,863	78,379,140
—	2,135	—	—	—	—
$49,196,400	**$238,326,538**	**$150,626,502**	**$74,697,622**	**$111,593,113**	**$157,022,483**

$58,482,168	$56,030,917	$53,128,866	$48,891,819	$44,680,358	$40,600,908
58,482,191	56,030,522	53,120,880	68,448,551	47,851,530	38,540,851
1,728	2,761	11,084	144	5,732	254
786,660	555,526	502,653	485,166	594,795	771,080
24,035	19,627	13,554	10,230	100,243	13,738
(71,099,374)	139,385,790	66,099,386	(13,070,950)	28,212,549	88,633,791
—	4,511	—	—	—	—
$46,677,408	**$252,029,654**	**$172,876,423**	**$104,764,960**	**$121,445,207**	**$168,560,622**

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Additions by Source (last 10 fiscal years)

Year	2022	2021	2020	2019
115 Health Care Trust[2]				
Employer Contributions	$29,899,481	$25,631,727	$24,489,938	$24,318,141
Retiree-Paid Health Care Premiums[1]	—	—	—	—
Early Retirement Incentive Payments	4,889	93,227	211,866	131,244
Transfers from Other Retirement Systems	—	—	—	—
Vendor Rebates and Other Receipts[1]	269,017	30,000	150,000	210,056
Other Employer Payments	97,094	112,135	151,643	199,509
Federal Subsidy—Medicare Part D[1]	1,284,731	—	—	—
Federal Subsidy—Medicare PDP[1]	—	—	—	—
Net Income/(Loss) from Investing Activity	(2,188,291,664)	1,840,591,052	1,296,387,905	2,155,057,971
Other Income, net	—	35,954	430,729	1,724
Interplan Activity	—	—	—	—
Total Additions	**($2,156,736,452)**	**$1,866,494,095**	**$1,321,822,081**	**$2,179,918,645**

401(h) Health Care Trust[2]				
Employer Contributions				
Retiree-Paid Health Care Premiums				
Early Retirement Incentive Payments				
Transfers from Other Retirement Systems				
Vendor Rebates and Other Receipts				
Other Employer Payments				
Federal Subsidy—Medicare Part D				
Federal Subsidy—Medicare PDP				
Net Income/(Loss) from Investing Activity				
Other Income, net				
Total Additions				

Voluntary Employees' Beneficiary Association (VEBA) Trust[2]				
Employer Contributions[3]				
Other Employer Payments				
Net Income/(Loss) from Investing Activity				
Total Additions				

[1] GASB Statement No. 74 requires health care expenses be reported net of certain health care receipts. The presentation of Retiree-Paid Health Care Premiums, Federal Subsidy and formulary rebates included in Vendor Rebates and Other Receipts has been revised and is now included in Health Care Expenses, starting in 2017 upon implementation of this standard.

[2] The 115 Health Care Trust was established in 2014. The 401(h) Health Care Trust and the VEBA Trust were terminated as of June 30, 2016. The net positions of these trusts were consolidated into the 115 Health Care Trust on July 1, 2016.

[3] Beginning October 2014, the Board approved the funding of the VEBA Trust participant accounts using the reserves in the VEBA Trust rather than the allocation of employer contributions. Instead, employer contributions were allocated to the Member-Directed Plan to repay the original plan start-up and administrative costs. Contributions to the VEBA Trust resumed January 1, 2016.

Additions by Source

2018	2017	2016	2015	2014	2013
$23,441,668	$157,417,888	$274,419,455	$253,673,333	$111,561,319	
—	—	184,368,783	—	—	
131,568	309,974	—	(13,083)	—	
—	—	67,044	4,188,909	2,742,476	
30,000	117,285	91,735,221	91,362,132	140,981,424	
117,610	430,282	1,504,320	322,624	89,290	
—	—	122,044	743,345	223,579	
—	—	3,943,014	175,187,530	131,680,671	
(700,409,680)	1,751,362,542	352,629,538	(23,073,355)	(1,193,356)	
732,193	117,882	15,715	10	76,970	
—	—	6,036,782	—	—	
($675,956,641)	**$1,909,755,853**	**$914,841,916**	**$502,391,445**	**$386,162,373**	
		$—	$—	$135,522,351	$120,056,440
		—	248,601,375	238,406,380	178,140,822
		—	—	753,231	351,087
		—	—	276,331	4,128,313
		—	10,341	9,396,130	121,660,735
		—	(906)	524,694	801,754
		—	—	170,515	246,139
		—	—	44,545,126	105,719,623
		490,208,570	(223,464,384)	648,566,894	1,397,348,823
		—	—	7,601,841	13,483,861
		$490,208,570	**$25,146,426**	**$1,085,763,493**	**$1,941,937,597**
		$10,483,804	$—	$14,702,198	$18,256,171
		22,722	—	20,484	3,061
		6,706,534	627,917	11,044,528	17,954,681
		$17,213,060	**$627,917**	**$25,767,210**	**$36,213,913**

Deductions by Type (last 10 fiscal years)

(continued on next page)

Year	2022	2021	2020	2019
All Plans[1]				
Pension—Annuities	$7,016,360,538	$6,750,984,639	$6,504,001,839	$6,304,870,000
Pension—Installment Payments	8,372,362	8,494,397	4,588,357	3,020,894
Pension—Other	10,800,440	11,266,098	6,514,288	8,768,755
Disability Case Management and Exams	2,449,258	2,251,147	2,319,769	2,071,603
Refunds	613,719,345	591,091,983	483,428,551	472,604,688
Medicare Parts A and B	33,482,291	30,238,970	29,510,216	27,592,178
Medical[3]	(2,013,368)	195,971,859	159,540,651	190,799,426
Prescription Drug[3]	(2,809,207)	99,526,233	102,466,609	113,576,636
Dental	136,506	31,425,118	27,326,103	27,990,391
Vision	24,149	5,198,149	4,490,993	4,803,238
Disease Management	26,785	233,980	125,086	3,060
Wellness Retiree Medical Account Plan Claims	118,597	108,026	100,665	152,950
Health Reimbursement Account Plan Claims	556,131,287	486,074,597	397,883,558	398,266,249
Member-Directed Retiree Medical Account Plan Claims	5,993,659	4,336,487	3,822,031	4,704,801
Administrative Expenses	71,735,894	72,945,468	72,956,750	76,159,025
Interplan Activity	43,250,059	40,246,132	42,849,507	31,219,619
Total Deductions	**$8,357,778,595**	**$8,330,393,283**	**$7,841,924,973**	**$7,666,603,513**

Traditional Pension Plan				
Pension—Annuities	$7,007,608,114	$6,743,798,781	$6,498,298,812	$6,300,103,138
Pension—Other	10,793,940	11,258,598	6,514,288	8,762,255
Disability Case Management and Exams	2,449,258	2,251,147	2,319,769	2,071,603
Refunds	520,523,234	494,540,626	420,286,261	407,308,374
Administrative Expenses	54,378,489	52,425,051	51,327,751	51,899,317
Total Deductions	**$7,595,753,035**	**$7,304,274,203**	**$6,978,746,881**	**$6,770,144,687**

Combined Plan				
Pension—Annuities	$6,233,788	$4,954,743	$3,915,351	$3,178,430
Pension—Installment Payments	6,070,744	5,321,106	3,928,600	2,125,957
Pension—Other	6,500	7,500	—	6,500
Refunds	24,246,717	23,768,695	15,670,706	17,531,723
Administrative Expenses	2,835,387	2,724,018	2,781,210	3,906,211
Interplan Activity	18,208,157	18,545,658	19,075,396	14,415,338
Total Deductions	**$57,601,293**	**$55,321,720**	**$45,371,263**	**$41,164,159**

Member-Directed Plan				
Pension—Annuities	$2,518,636	$2,231,115	$1,787,676	$1,588,432
Pension—Installment Payments	2,301,618	3,173,291	659,757	894,937
Refunds	68,949,394	72,782,662	47,471,584	47,764,591
Administrative Expenses	2,349,103	2,335,927	2,652,969	2,395,830
Interplan Activity	25,041,902	21,700,474	23,774,111	16,804,281
Total Deductions	**$101,160,653**	**$102,223,469**	**$76,346,097**	**$69,448,071**

See footnotes on page 182

Deductions by Type

2018	2017	2016	2015	2014	2013
$6,093,820,180	$5,828,340,070	$5,577,629,182	$5,390,859,219	$5,101,735,902	$4,920,408,972
3,939,145	1,618,270	1,112,846	1,003,891	1,628,513	1,549,139
9,578,847	7,893,619	7,857,337	8,647,208	7,482,091	7,913,434
1,899,107	1,937,850	1,401,601	1,370,674	1,277,281	1,620,162
453,441,020	443,220,698	429,791,141	449,265,410	425,701,829	441,284,204
25,719,123	23,597,598	50,445,768	77,867,474	113,967,145	112,820,822
266,028,377	296,063,521	588,576,618	940,420,011	921,172,088	912,071,417
136,584,728	148,293,992	170,627,591	672,710,524	634,474,812	551,391,403
31,626,966	30,321,168	55,456,293	53,818,027	50,907,491	48,106,058
5,238,871	5,518,194	9,902,183	9,847,918	9,564,606	9,038,035
79,224	3,304,104	2,090,646	3,865,654	3,840,401	4,535,512
1,607,726	15,038,205	6,990,116	16,460,228	4,669,630	4,562,351
399,291,867	423,371,301	310,233,492	45,184,620	—	—
4,108,037	6,493,490	3,051,637	2,396,972	2,217,933	1,719,043
76,875,303	77,305,480	79,059,058	77,036,684	74,114,491	68,619,091
25,435,260	20,961,756	17,205,339	19,759,373	10,357,663	13,034,171
$7,535,273,781	**$7,333,279,316**	**$7,311,430,848**	**$7,770,513,887**	**$7,363,111,876**	**$7,098,673,814**

$6,090,125,792	$5,825,344,908	$5,575,258,958	$5,388,827,561	$5,100,341,567	$4,919,439,251
9,578,847	7,892,619	7,857,337	8,646,429	7,482,091	7,913,434
1,899,107	1,937,850	1,401,601	1,370,674	1,277,281	1,620,162
388,067,394	384,615,309	352,362,641	405,320,800	389,707,612	411,321,700
52,169,220	52,154,657	51,871,700	49,137,053	49,832,366	46,946,971
$6,541,840,360	**$6,271,945,343**	**$5,988,752,237**	**$5,853,302,517**	**$5,548,640,917**	**$5,387,241,518**

$2,362,506	$1,863,005	$1,443,631	$1,255,978	$773,394	$533,920
2,127,305	1,225,533	538,033	534,358	1,457,593	992,085
—	1,000	—	779	—	—
16,808,080	16,220,141	21,857,512	12,577,944	10,974,442	7,731,155
2,730,700	3,181,465	2,559,387	2,522,610	2,375,278	2,264,293
11,495,876	9,269,382	9,290,331	7,141,271	5,375,568	6,085,687
$35,524,467	**$31,760,526**	**$35,688,894**	**$24,032,940**	**$20,956,275**	**$17,607,140**

$1,331,882	$1,132,157	$926,593	$775,680	$620,941	$435,801
1,811,840	392,737	574,813	469,533	170,920	557,054
48,565,546	42,385,248	55,570,988	31,366,666	25,019,775	22,231,349
2,368,980	2,560,880	2,305,383	2,260,306	2,400,900	2,028,864
13,939,384	11,692,374	7,187,816	6,625,358	4,982,095	6,948,484
$68,017,632	**$58,163,396**	**$66,565,593**	**$41,497,543**	**$33,194,631**	**$32,201,552**

continued on next page

continued from previous page

Deductions by Type (last 10 fiscal years)

Year	2022	2021	2020	2019
115 Health Care Trust[1, 2]				
Medicare Parts A and B	$33,482,291	$30,238,970	$29,510,216	$27,592,178
Medical[3]	(1,956,972)	382,241,737	370,800,164	405,183,547
Medical—Health Care Receipts	(56,396)	(186,269,878)	(211,259,513)	(214,384,121)
Prescription Drug[3]	(2,809,207)	99,526,233	102,466,609	113,576,636
Dental	52,138,040	61,294,472	63,510,605	59,440,671
Dental—Health Care Receipts	(52,001,534)	(29,869,354)	(36,184,502)	(31,450,280)
Vision	10,135,619	10,138,954	10,437,845	10,200,203
Vision—Health Care Receipts	(10,111,470)	(4,940,805)	(5,946,852)	(5,396,965)
Disease Management	26,785	233,980	125,086	3,060
Wellness Retiree Medical Account Plan Claims	118,597	108,026	100,665	152,950
Health Reimbursement Account Plan Claims	556,131,287	486,074,597	397,883,558	398,266,249
Member-Directed Retiree Medical Account Plan Claims	5,993,659	4,336,487	3,822,031	4,704,801
Administrative Expenses	12,172,915	15,460,472	16,194,820	17,957,667
Total Deductions	**$603,263,614**	**$868,573,891**	**$741,460,732**	**$785,846,596**

401(h) Health Care Trust[2]				
Medicare Parts A and B				
Medical				
Prescription Drug				
Dental				
Vision				
Disease Management				
Wellness Retiree Medical Account Plan Claims				
Administrative Expenses				
Total Deductions				

Voluntary Employees' Beneficiary Association (VEBA) Trust[2]				
Member-Directed Retiree Medical Account Plan Claims				
Administrative Expenses				
Interplan Activity				
Total Deductions				

[1] GASB Statement No. 74 requires health care expenses be reported net of certain health care receipts. The presentation of Retiree-Paid Health Care Premiums, Federal Subsidy and formulary rebates included in Vendor Rebates and Other Receipts (beginning on page 176) has been revised. Starting in 2017, upon implementation of GASB 74, these line items are included in Health Care Expenses. In this schedule, the receipts are included with Medical, Dental and Vision line items beginning in 2017.

[2] The 115 Health Care Trust was established in 2014. The 401(h) Health Care Trust and the VEBA Trust were terminated as of June 30, 2016. The net positions of these trusts were consolidated into the 115 Health Care Trust on July 1, 2016.

[3] Effective January 1, 2022, OPERS no longer offered group medical and prescription drug plans to non-Medicare retirees. Instead, eligible non-Medicare retirees received a monthly HRA allowance. In 2022, residual adjustments and claim credits were received resulting in negative deductions (or income) being reported for both the Medical and Prescription Drug line items.

Deductions by Type

2018	2017	2016	2015	2014	2013
$25,719,123	$23,597,598	$50,445,768	$—	$—	
485,597,781	512,594,568	588,576,618	—	—	
(219,569,404)	(216,531,047)	—	—	—	
136,584,728	148,293,992	170,627,591	—	—	
57,730,622	52,497,066	55,456,293	—	—	
(26,103,656)	(22,175,898)	—	—	—	
9,562,830	9,554,018	9,902,183	—	—	
(4,323,959)	(4,035,824)	—	—	—	
79,224	3,304,104	2,090,646	—	—	
1,607,726	15,038,205	6,990,116	—	—	
399,291,867	423,371,301	310,233,492	45,184,620	—	
4,108,037	6,493,490	1,634,192	—	—	
19,606,403	19,408,478	21,693,387	2,174,957	82,201	
$889,891,322	**$971,410,051**	**$1,217,650,286**	**$47,359,577**	**$82,201**	
			$77,867,474	$113,967,145	$112,820,822
			940,420,011	921,172,088	912,071,417
			672,710,524	634,474,812	551,391,403
			53,818,027	50,907,491	48,106,058
			9,847,918	9,564,606	9,038,035
			3,865,654	3,840,401	4,535,512
			16,460,228	4,669,630	4,562,351
			19,611,199	18,329,337	16,352,514
			$1,794,601,035	**$1,756,925,510**	**$1,658,878,112**
		$1,417,445	$2,396,972	$2,217,933	$1,719,043
		629,201	1,330,559	1,094,409	1,026,449
		727,192	5,992,744	—	—
		$2,773,838	**$9,720,275**	**$3,312,342**	**$2,745,492**

Benefits by Type (last 10 fiscal years)

(continued on next page)

Year	2022	2021	2020	2019
All Plans				
Annuities and Installment Payments[1]	$6,202,970,135	$6,139,001,676	$5,860,550,198	$5,678,160,071
Disabilities	626,610,205	762,099,785	762,711,599	782,933,551
Other Systems/Death/QEBA[2]	15,493,112	16,491,535	11,129,956	13,085,244
Survivors	221,756,302	217,997,594	206,492,158	209,317,315
Wellness Retiree Medical Account Plan Claims	118,597	108,026	100,665	152,950
Health Reimbursement Account Plan Claims	556,131,287	486,074,597	397,883,558	398,266,249
Member-Directed Retiree Medical Account Plan Claims[1]	5,993,659	4,336,487	3,822,031	4,704,801
Total Pension Benefits and Health Care	**$7,629,073,297**	**$7,626,109,700**	**$7,242,690,165**	**$7,086,620,181**
Traditional Pension Plan—Pension Benefits				
Age-and-Service Annuities	$6,130,266,380	$5,862,443,016	$5,616,491,442	$5,371,860,284
Disabilities	623,830,022	632,633,887	645,191,523	651,557,547
Other Systems	—	—	3,259	67,171
Survivors	221,269,290	216,281,727	204,927,439	207,496,643
Additional Annuities	6,235,521	6,184,160	6,148,527	5,961,467
Money Purchase Annuities	23,763,487	23,281,701	23,243,982	60,982,311
Death	10,793,940	11,258,598	6,514,288	8,762,255
QEBA[2]	4,692,672	5,225,437	4,612,409	4,249,318
Total Pension Benefits	**$7,020,851,312**	**$6,757,308,526**	**$6,507,132,869**	**$6,310,936,996**
Combined Plan—Pension Benefits				
Annuities	$6,233,788	$4,954,743	$3,915,351	$3,178,430
Installment Payments	6,070,744	5,321,106	3,928,600	2,125,957
Death	6,500	7,500	—	6,500
Total Pension Benefits	**$12,311,032**	**$10,283,349**	**$7,843,951**	**$5,310,887**
Member-Directed Plan—Pension Benefits				
Annuities	$2,518,636	$2,231,115	$1,787,676	$1,588,432
Installment Payments	2,301,618	3,173,291	659,757	894,937
Total Pension Benefits	**$4,820,254**	**$5,404,406**	**$2,447,433**	**$2,483,369**
115 Health Care Trust[3]—Health Care				
Annuities[4]	$82,795,423	$372,508,785	$364,477,356	$391,064,476
Annuities—Health Care Receipts[4]	(57,215,462)	(141,096,241)	(160,102,493)	(159,496,223)
Disabilities[4]	8,998,701	208,403,501	209,582,685	221,863,263
Disabilities—Health Care Receipts[4]	(6,218,518)	(78,937,603)	(92,062,609)	(90,487,259)
Survivors[4]	1,576,326	2,762,060	2,790,484	3,068,556
Survivors—Health Care Receipts[4]	(1,089,314)	(1,046,193)	(1,225,765)	(1,247,884)
Wellness Retiree Medical Account Plan Claims	118,597	108,026	100,665	152,950
Health Reimbursement Account Plan Claims	556,131,287	486,074,597	397,883,558	398,266,249
Member-Directed Retiree Medical Account Plan Claims[1]	5,993,659	4,336,487	3,822,031	4,704,801
Total Health Care	**$591,090,699**	**$853,113,419**	**$725,265,912**	**$767,888,929**
401(h) Health Care Trust[3]—Health Care				
Annuities				
Disabilities				
Survivors				
Wellness Retiree Medical Account Plan Claims				
Total Health Care				
Voluntary Employees' Beneficiary Association (VEBA) Trust[3]—Health Care				
Member-Directed Retiree Medical Account Plan Claims[1]				
Total Health Care				

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[1] Prior to 2016, the Member-Directed Retiree Medical Account Plan Claims were categorized with Annuities and Installment Payments. In order to consistently report all health care activity, the Member-Directed Retiree Medical Account Plan Claims are included on a separate line, similar to Wellness Retiree Medical Account Plan Claims and Health Reimbursement Account Plan Claims. The line item for Annuities and Installment Payments has been reduced for the Retiree Medical Account Plan Claims for all previous years presented.

[2] QEBA represents Qualified Excess Benefit Arrangements.

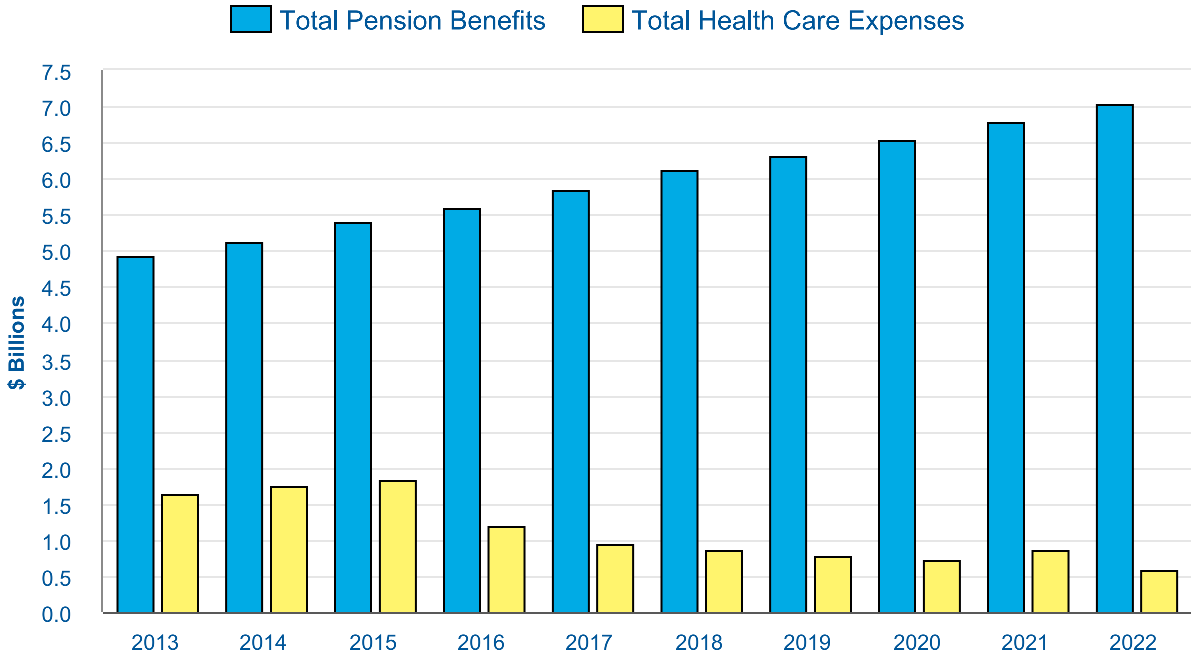
Benefits by Type

2018	2017	2016	2015	2014	2013
$5,534,199,818	$5,288,583,786	$5,272,086,225	$5,833,988,140	$5,534,152,991	$5,277,262,585
825,032,060	847,508,744	974,782,897	1,070,397,368	1,057,979,091	1,040,711,575
13,561,339	11,737,599	11,682,188	12,010,912	10,646,707	13,550,680
201,721,351	199,058,257	206,548,755	244,014,180	243,271,541	237,930,114
1,607,726	15,038,205	6,990,116	16,460,228	4,669,630	4,562,351
399,291,867	423,371,301	310,233,492	45,184,620	—	—
4,108,037	6,493,490	3,051,637	2,396,972	2,217,933	1,719,043
$6,979,522,198	**$6,791,791,382**	**$6,785,375,310**	**$7,224,452,420**	**$6,852,937,893**	**$6,575,736,348**
$5,169,969,144	$4,916,944,682	$4,676,894,918	$4,500,470,313	$4,228,575,327	$4,044,320,992
651,168,863	649,478,101	648,136,068	642,937,688	634,409,874	624,038,549
90,762	113,934	291,376	503,683	987,644	3,534,484
198,522,383	192,915,530	187,233,171	182,549,547	178,633,434	174,766,735
5,864,866	5,698,454	5,653,264	5,491,671	5,421,653	26,011,745
62,517,151	58,402,011	54,918,287	55,385,312	51,413,944	46,284,146
9,578,847	7,892,618	7,857,337	8,646,429	7,482,091	7,913,434
3,891,730	3,730,047	3,533,475	2,860,021	2,176,972	2,102,762
$6,101,603,746	**$5,835,175,377**	**$5,584,517,896**	**$5,398,844,664**	**$5,109,100,939**	**$4,928,972,847**
$2,362,506	$1,863,005	$1,443,631	$1,255,978	$773,394	$533,920
2,127,305	1,225,533	538,033	534,358	1,457,593	992,085
—	1,000	—	779	—	—
$4,489,811	**$3,089,538**	**$1,981,664**	**$1,791,115**	**$2,230,987**	**$1,526,005**
$1,331,882	$1,132,157	$926,593	$775,680	$620,941	$435,801
1,811,840	392,737	574,813	469,533	170,920	557,054
$3,143,722	**$1,524,894**	**$1,501,406**	**$1,245,213**	**$791,861**	**$992,855**
$443,342,537	$454,218,561	$531,136,686	$—		
(155,127,413)	(151,293,354)	—	—		
267,018,801	286,728,726	326,646,829	—		
(93,155,604)	(88,698,083)	—	—		
4,912,970	8,894,059	19,315,584	—		
(1,714,002)	(2,751,332)	—	—		
1,607,726	15,038,205	6,990,116	—		
399,291,867	423,371,301	310,233,492	45,184,620		
4,108,037	6,493,490	1,634,192	—		
$870,284,919	**$952,001,573**	**$1,195,956,899**	**$45,184,620**		
			$1,269,605,295	$1,245,719,219	$1,158,126,842
			427,459,680	423,569,217	416,673,026
			61,464,633	64,638,107	63,163,379
			16,460,228	4,669,630	4,562,351
			$1,774,989,836	**$1,738,596,173**	**$1,642,525,598**
		$1,417,445	$2,396,972	$2,217,933	$1,719,043
		$1,417,445	**$2,396,972**	**$2,217,933**	**$1,719,043**

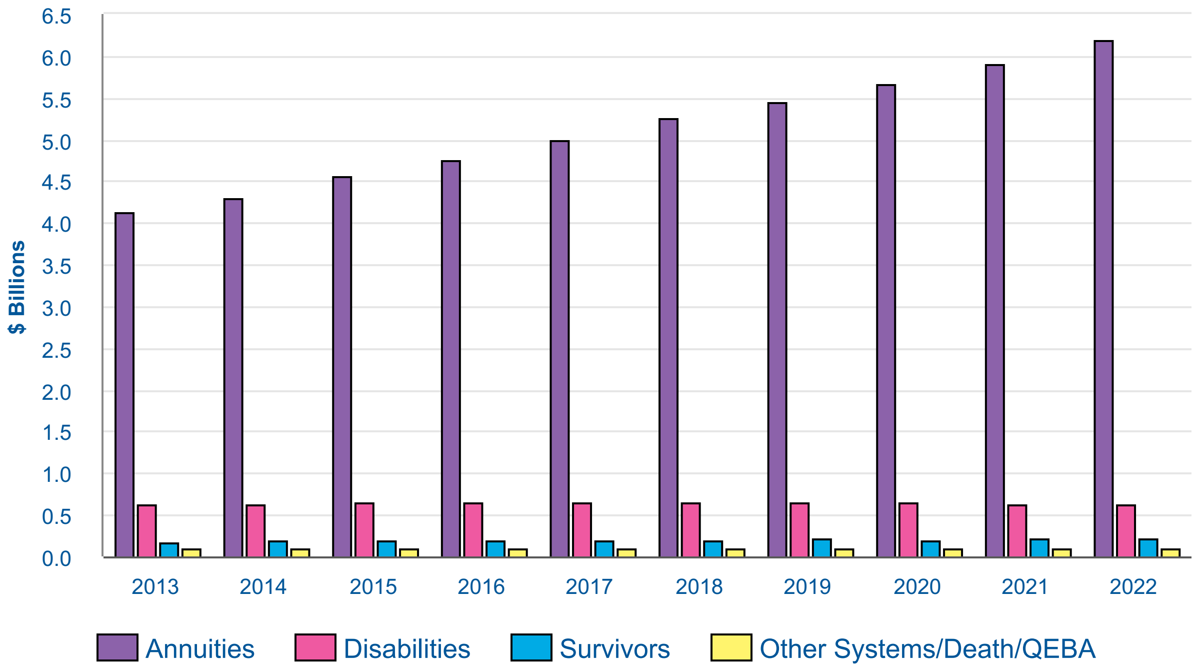
[3] The 115 Health Care Trust was established and funding began in 2014. Notional deposits to retiree accounts and initial health care disbursements began in October 2015, during the initial open enrollment period, for January 2016 premium reimbursements. The 401(h) Health Care Trust and the VEBA Trust were terminated as of June 30, 2016. The net positions of these trusts consolidated into the 115 Health Care Trust on July 1, 2016.

[4] GASB Statement No. 74 requires health care expenses be reported net of certain health care receipts. The presentation of Retiree-Paid Health Care Premiums, Federal Subsidy and formulary rebates included in Vendor Rebates and Other Receipts (beginning on page 176) has been revised and is now included in health care deductions, starting in 2017 upon implementation of this standard. These health care receipts are broken out by Annuities, Disabilities and Survivors on this schedule.

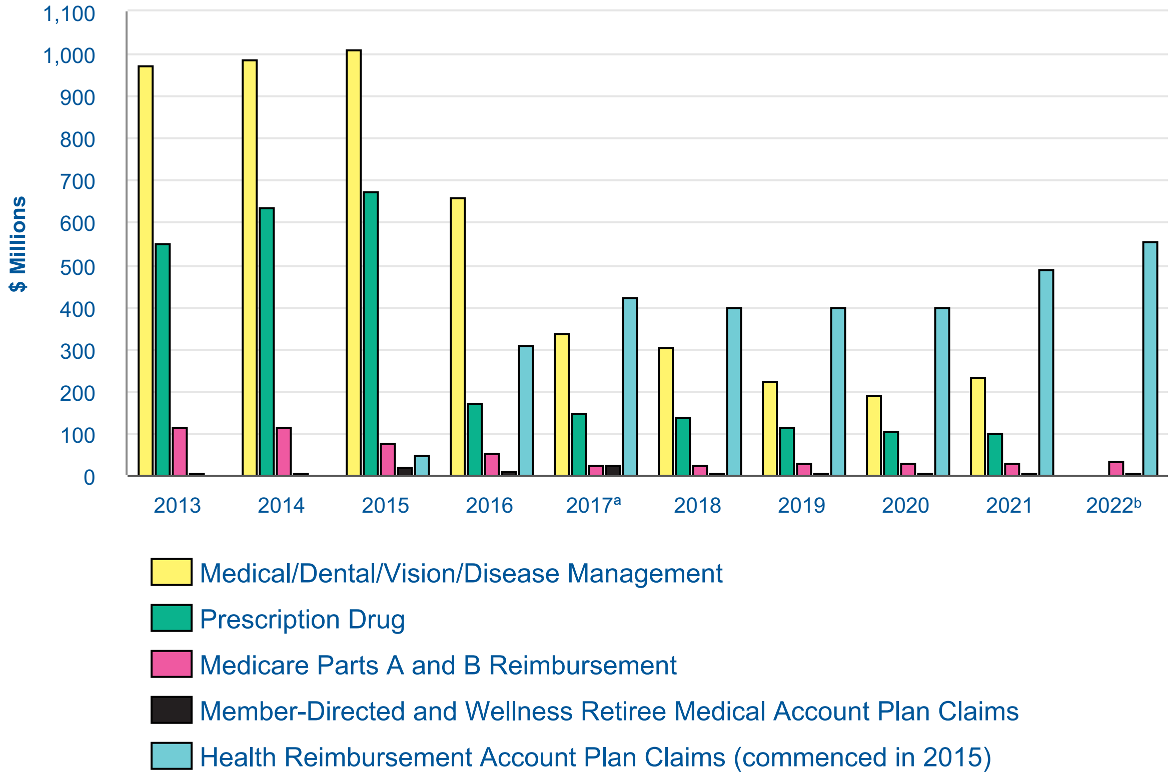
Benefits by Type



Pension Benefits by Type



Health Care Expenses by Type



[a] Beginning in 2017, GASB Statement No. 74 requires health care expenses to be reported net of certain health care receipts. The presentation of Retiree-Paid Health Care Premiums, Federal Subsidy and formulary rebates included in Vendor Rebates and Other Receipts (beginning on page 176) has been revised and is now included in health care deductions. In this table, the receipts are netted against the Medical/Dental/Vision/Disease Management category.

[b] Effective January 1, 2022, OPERS no longer offered group medical and prescription drug plans to non-Medicare retirees. Instead, eligible non-Medicare retirees received a monthly HRA allowance. In 2022, residual adjustments and claim credits were received resulting in negative expenses (or income) being reported for both Medical and Prescription Drug.

Refunds by Type (last 10 fiscal years)

(continued on next page)

Year	2022	2021	2020	2019
All Plans				
Separation	$489,042,289	$466,451,055	$387,423,694	$380,168,028
Beneficiaries	46,302,738	43,563,733	32,196,052	31,696,726
Other	78,374,318	81,077,195	63,808,805	60,739,934
Total Refunds	**$613,719,345**	**$591,091,983**	**$483,428,551**	**$472,604,688**
Traditional Pension Plan				
Separation	$399,630,758	$373,168,832	$325,576,051	$316,621,469
Beneficiaries	42,518,158	40,294,599	30,901,405	29,946,971
Other	78,374,318	81,077,195	63,808,805	60,739,934
Total Refunds	**$520,523,234**	**$494,540,626**	**$420,286,261**	**$407,308,374**
Combined Plan				
Separation	$23,465,780	$23,277,674	$15,167,096	$17,137,391
Beneficiaries	780,937	491,021	503,610	394,332
Total Refunds	**$24,246,717**	**$23,768,695**	**$15,670,706**	**$17,531,723**
Member-Directed Plan				
Separation	$65,945,751	$70,004,549	$46,680,547	$46,409,168
Beneficiaries	3,003,643	2,778,113	791,037	1,355,423
Total Refunds	**$68,949,394**	**$72,782,662**	**$47,471,584**	**$47,764,591**

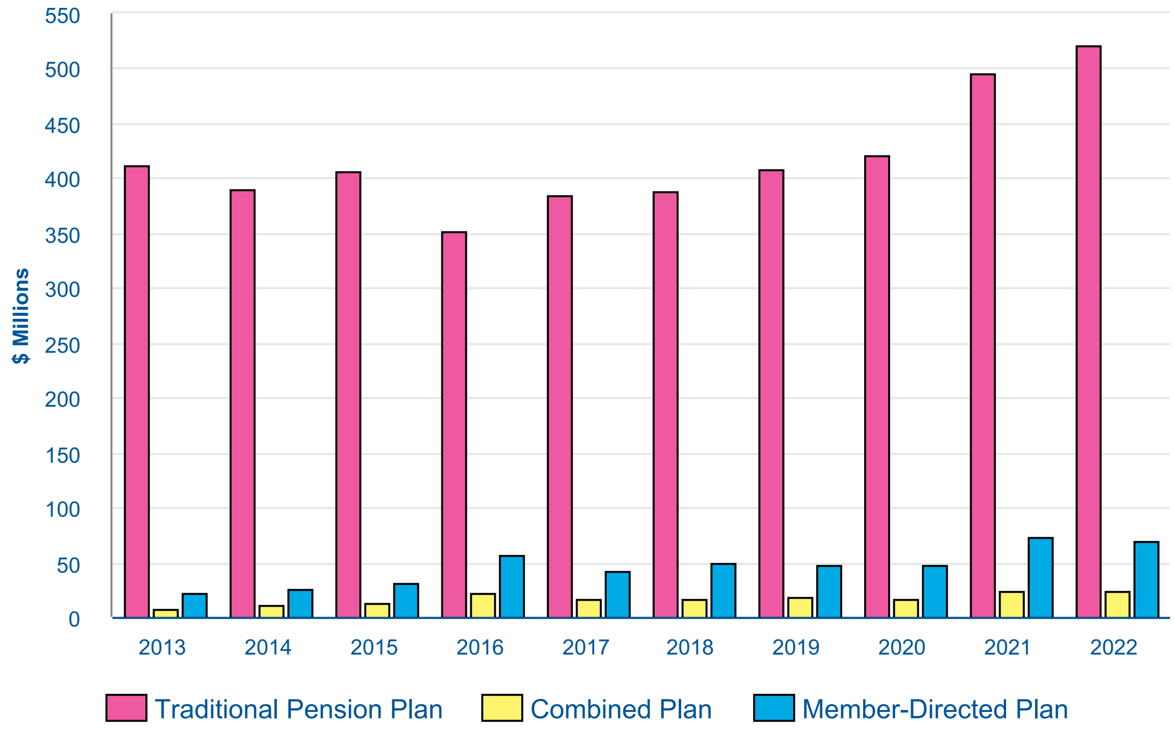
Number of Refund Payments by Plan (last 10 fiscal years)

Year	Traditional Pension Plan	Combined Plan	Member-Directed Plan	Total
2022	23,267	444	1,059	24,770
2021	22,010	447	1,083	23,540
2020	23,248	409	1,183	24,840
2019	22,108	487	1,351	23,946
2018	22,317	573	1,539	24,429
2017	23,409	544	1,401	25,354
2016	22,024	935	2,462	25,421
2015	29,454	412	998	30,864
2014	29,014	387	878	30,279
2013	25,670	378	1,071	27,119

Refunds by Type

2018	2017	2016	2015	2014	2013
$365,839,603	$348,274,709	$342,642,457	$322,526,720	$313,034,142	$299,488,361
32,354,667	30,944,474	31,834,420	25,357,397	22,186,469	17,577,111
55,246,750	64,001,515	55,314,264	101,381,293	90,481,218	124,218,732
$453,441,020	**$443,220,698**	**$429,791,141**	**$449,265,410**	**$425,701,829**	**$441,284,204**
$302,012,833	$291,311,871	$266,436,121	$279,546,170	$277,494,212	$270,224,068
30,807,811	29,301,923	30,612,256	24,393,337	21,732,182	16,878,900
55,246,750	64,001,515	55,314,264	101,381,293	90,481,218	124,218,732
$388,067,394	**$384,615,309**	**$352,362,641**	**$405,320,800**	**$389,707,612**	**$411,321,700**
$16,540,234	$15,716,660	$21,752,826	$12,254,484	$10,789,116	$7,605,803
267,846	503,481	104,686	323,460	185,326	125,352
$16,808,080	**$16,220,141**	**$21,857,512**	**$12,577,944**	**$10,974,442**	**$7,731,155**
$47,286,536	$41,246,178	$54,453,510	$30,726,066	$24,750,814	$21,658,490
1,279,010	1,139,070	1,117,478	640,600	268,961	572,859
$48,565,546	**$42,385,248**	**$55,570,988**	**$31,366,666**	**$25,019,775**	**$22,231,349**

Refunds by Plan



OPERS notionally funds and tracks member balances in the health reimbursement arrangement (HRA) accounts, Member-Directed Plan retiree medical accounts (RMA), and wellness retiree medical accounts. The Combining Statement of Fiduciary Net Position recognizes health care payments as liabilities when a present obligation exists and a condition requires that the event creating the liability has taken place. Therefore, health care liabilities are recognized when the benefits are currently due and payable in accordance with benefit terms, as clarified in GASB 74. Health care liabilities recorded in the combining financial statements also contain estimates on incurred but not reported amounts for the current year.

Funds Restricted for Member Health Care Accounts

(last seven years, $ in millions)

(continued on next page)

Year	2022	2021	2020	2019
Health Reimbursement Arrangement (HRA) Accounts				
Notional Deposits into Member Accounts	$557.0	$475.9	$427.4	$417.7
Transferred In—Wellness RMA	—	—	0.1	0.1
Health Care Claims Paid	(413.2)	(378.5)	(349.0)	(354.7)
Health Care Claims Accrued	(142.9)	(107.6)	(48.9)	(43.6)
Transfer to 115 Trust—Forfeitures[1]	(18.9)	(32.8)	—	(5.5)
Net Increase/(Decrease) in Member Accounts	(18.0)	(43.0)	29.6	14.0
Balance, Beginning of Year	390.4	433.4	403.8	389.8
Balance, End of Year	**$372.4**	**$390.4**	**$433.4**	**$403.8**
Wellness Retiree Medical Accounts (RMA)[2]				
Notional Deposits into Member Accounts				
Transferred Out—HRA	$—	$—	($0.1)	($0.1)
Health Care Claims Paid	(0.1)	(0.1)	—	—
Health Care Claims Accrued	—	—	(0.1)	(0.2)
Transfer to 115 Trust - Forfeitures[3]	(0.1)	—	(0.1)	—
Net Decrease in Member Accounts	(0.2)	(0.1)	(0.3)	(0.3)
Balance, Beginning of Year	0.8	0.9	1.2	1.5
Balance, End of Year	**$0.6**	**$0.8**	**$0.9**	**$1.2**
Member-Directed RMAs				
Notional Deposits into Member Accounts	$31.8	$31.6	$30.9	$24.3
Health Care Claims Paid	(4.5)	(3.3)	(2.9)	(3.5)
Health Care Claims Accrued	(1.5)	(1.0)	(0.9)	(1.2)
Transfer to MD RMA Reserve—Forfeitures[3]	(4.0)	(2.9)	(2.8)	(2.5)
Net Increase in Member Accounts	21.8	24.4	24.3	17.1
Balance, Beginning of Year	306.8	282.4	258.1	241.0
Balance, End of Year	**$328.6**	**$306.8**	**$282.4**	**$258.1**
Net Position, End of Year, Member-Directed Health Care	**$397.3**	**$450.7**	**$374.5**	**$319.3**
Total Funds Restricted for Member Health Care Accounts	**$701.6**	**$698.0**	**$716.7**	**$663.1**

[1] Upon the death of an HRA participant, the participant's coverage terminates. Any unused amount in the deceased participant's HRA is forfeited 24 months after the date of death. Prior to September 3, 2019, forfeitures occurred 24 months following the later of the date of death or the date the last claim was submitted on a rolling basis.

[2] Enrollment in wellness incentive programs was discontinued December 2016 and deposits to the wellness RMA ceased. If wellness RMA account holders also had an HRA, the balance in the wellness RMA was transferred to the HRA. Effective December 31, 2022, the Wellness RMA program was terminated. Eligible member balances were transferred to the HRA in 2023 and remaining account balances were forfeited and transferred to the 115 Health Care Trust.

[3] Upon the death of an RMA participant, the participant's coverage terminates. Any unused amount in the deceased participant's RMA is forfeited 12 months after the later of the date of death or the date the last claim was submitted on a rolling basis. Prior to March 25, 2015, forfeitures occurred 24 months following the later of the date of death or the date the last claim was submitted on a rolling basis.

As a result, unspent balances remaining in the member health care accounts are not recorded as liabilities in the combining financial statements beyond what is described here as clarified in GASB 74. Total funds restricted for health care costs of all OPERS health care plans are $11.5 billion as of December 31, 2022. While OPERS is not required to disclose the funds restricted for health care by individual plans, funds set aside in member health care accounts are tracked. The table beginning on the previous page shows these balances and a summary of activity for the year for the member HRA accounts, Member-Directed Plan, and wellness RMAs, starting with the year 2016 as that was the year of implementation for the HRA and the consolidation of all health care assets into one trust.

		(continued from previous page)
2018	2017	2016
$441.2	$529.1	$546.8
0.5	8.5	—
(360.4)	(388.1)	(292.8)
(38.9)	(35.3)	(17.4)
(3.4)	—	—
39.0	114.2	236.6
350.8	236.6	—
$389.8	**$350.8**	**$236.6**
		$2.5
($0.5)	($8.5)	—
(0.6)	(4.6)	(5.4)
(0.5)	(2.0)	(1.8)
—	—	—
(1.6)	(15.1)	(4.7)
3.1	18.2	22.9
$1.5	**$3.1**	**$18.2**
$34.8	$30.0	$23.5
(3.0)	(6.4)	(2.7)
(1.1)	(0.1)	(0.4)
—	—	—
30.7	23.5	20.4
210.3	186.8	166.4
$241.0	**$210.3**	**$186.8**
$248.9	**$242.0**	**$195.3**
$632.3	**$564.2**	**$441.6**

The calculation method defined in GASB 67 (Accounting Basis) requires different assumptions than are used to calculate the funded status of a plan (Funding Basis). The following table identifies the two key differences between the two methods. Additional details on the Accounting Basis actuarial assumptions can be found in the Financial Section (see Note 6 beginning on page 64). Funding Basis assumptions can be found in the Actuarial Section beginning on page 135.

Pension Assumptions—Key Differences Between Accounting and Funding Valuations

Valuation Basis	Accounting	Funding
Measurement and Valuation Date	December 31, 2022	December 31, 2022
Assets Valuation Method	Fair Value	4-year, smoothed market-12% corridor
Investment Rate of Return Used to Calculate Liability	Single Discount Rate[1] 6.90%	Actuarial Assumed 6.90%

[1] As required in GASB 67, a Single Discount Rate may be required to measure the pension liability if existing assets are not projected to be available to make all projected future benefit payments of current plan members. The GASB 67 pension calculation determined that a blended rate for the year ended December 31, 2022 was not needed. Therefore, the long-term expected rate of return on pension plan investments, 6.90%, was applied to all periods of projected benefit payments to determine the Total Pension Liability.

Pension Assets vs Pension Liabilities—Accounting Basis (last nine fiscal years, $ in millions) All Plans

Year	2022	2021	2020	2019	2018	2017	2016	2015	2014
Plan Fiduciary Net Position	$93,151	$110,211	$98,853	$91,815	$81,427	$87,105	$77,514	$74,560	$77,263
Total Pension Liability	$122,448	$118,499	$113,354	$111,368	$108,701	$102,653	$100,166	$91,832	$89,285
Net Pension Liability/(Asset)	$29,297	$8,288	$14,501	$19,553	$27,274	$15,548	$22,652	$17,272	$12,022
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	76.07%	93.01%	87.21%	82.44%	74.91%	84.85%	77.39%	81.19%	86.54%

Pension Assets vs Pension Liabilities—Accounting Basis (last nine fiscal years, $ in millions) Traditional Pension Plan

Year	2022	2021	2020	2019	2018	2017	2016	2015	2014
Plan Fiduciary Net Position	$92,244	$109,210	$98,025	$91,122	$80,876	$86,586	$77,110	$74,213	$76,956
Total Pension Liability	$121,784	$117,910	$112,833	$110,887	$108,264	$102,274	$99,818	$91,534	$89,017
Net Pension Liability/(Asset)	$29,540	$8,700	$14,808	$19,765	$27,388	$15,688	$22,708	$17,321	$12,061
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	75.74%	92.62%	86.88%	82.17%	74.70%	84.66%	77.25%	81.08%	86.45%

Pension Assets vs Pension Liabilities—Accounting Basis (last nine fiscal years, $ in millions) Combined Plan

Year	2022	2021	2020	2019	2018	2017	2016	2015	2014
Plan Fiduciary Net Position	$870	$958	$789	$669	$532	$501	$392	$337	$298
Total Pension Liability	$635	$564	$500	$461	$420	$365	$336	$288	$260
Net Pension Liability/(Asset)	($235)	($394)	($289)	($208)	($112)	($136)	($56)	($49)	($38)
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	137.14%	169.88%	157.67%	145.28%	126.64%	137.28%	116.55%	116.90%	114.83%

Pension Assets vs Pension Liabilities—Accounting Basis (last nine fiscal years, $ in millions) Member-Directed Plan

Year	2022	2021	2020	2019	2018	2017	2016	2015	2014
Plan Fiduciary Net Position	$37	$43	$39	$24	$19	$18	$12	$10	$9
Total Pension Liability	$29	$25	$21	$20	$17	$14	$12	$10	$8
Net Pension Liability/(Asset)	($8)	($18)	($18)	($4)	($2)	($4)	$0	$0	($1)
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	126.74%	171.84%	188.21%	118.84%	113.42%	124.46%	103.40%	103.91%	107.10%

Pension Assets vs Pension Liabilities—Funding Basis (last 10 fiscal years, $ in millions) All Plans

Year	2022	2021	2020[a]	2020[b]	2019	2018	2017[c]	2017	2016	2015[a]	2015[b]	2014	2013
Pension Assets	$102,852	$99,710	$93,970	$93,970	$88,572	$84,287	$83,292	$83,292	$80,280	$78,061	$78,061	$74,865	$71,411
Accrued Liabilities	$122,463	$118,517	$115,242	$113,372	$111,371	$108,705	$106,090	$102,656	$100,167	$97,177	$91,832	$89,285	$86,645
Unfunded Liabilities	$19,611	$18,807	$21,272	$19,402	$22,799	$24,418	$22,798	$19,364	$19,887	$19,116	$13,771	$14,420	$15,234
Funded Ratio	83.99%	84.13%	81.54%	82.89%	79.53%	77.54%	78.51%	81.14%	80.15%	80.33%	85.00%	83.85%	82.42%
Amortization Years	16	16	21	18	23	27	25	18	19	20	19	21	24
Net Unrealized Gains/(Losses)	($9,701)	$10,501	$4,884	$4,884	$3,243	($2,860)	$3,813	$3,813	($2,766)	($3,501)	($3,501)	$2,398	$3,455

Pension Assets vs Pension Liabilities—Funding Basis (last 10 fiscal years, $ in millions) Traditional Pension Plan

Year	2022	2021	2020[a]	2020[b]	2019	2018	2017[c]	2017	2016	2015[a]	2015[b]	2014	2013
Pension Assets	$101,848	$98,796	$93,181	$93,181	$87,903	$83,715	$82,797	$82,797	$79,865	$77,700	$77,700	$74,567	$71,175
Accrued Liabilities	$121,784	$117,910	$114,697	$112,833	$110,887	$108,265	$105,691	$102,274	$99,818	$96,863	$91,535	$89,017	$86,407
Unfunded Liabilities	$19,936	$19,114	$21,516	$19,652	$22,984	$24,550	$22,894	$19,477	$19,953	$19,163	$13,835	$14,450	$15,232
Funded Ratio	83.63%	83.79%	81.24%	82.58%	79.27%	77.32%	78.34%	80.96%	80.01%	80.22%	84.89%	83.77%	82.37%
Amortization Years	16	17	22	18	23	28	26	19	20	20	19	21	25
Net Unrealized Gains/(Losses)	($9,604)	$10,414	$4,845	$4,845	$3,219	($2,839)	$3,789	$3,789	($2,755)	($3,487)	($3,487)	$2,389	$3,443

Pension Assets vs Pension Liabilities—Funding Basis (last 10 fiscal years, $ in millions) Combined Plan

Year	2022	2021	2020[a]	2020[b]	2019	2018	2017[c]	2017	2016	2015[a]	2015[b]	2014	2013
Pension Assets	$963	$874	$752	$752	$646	$552	$479	$479	$402	$350	$350	$289	$229
Accrued Liabilities	$638	$567	$508	$502	$461	$420	$382	$365	$336	$303	$288	$260	$230
Unfunded Liabilities	($325)	($307)	($244)	($250)	($185)	($132)	($97)	($114)	($66)	($47)	($62)	($29)	$1
Funded Ratio	150.91%	154.20%	148.10%	149.80%	140.08%	131.43%	125.39%	130.97%	119.62%	115.59%	121.71%	111.15%	99.57%
Amortization Years	0	0	0	0	0	0	0	0	0	0	0	0	0
Net Unrealized Gains/(Losses)	($93)	$83	$37	$37	$23	($20)	$23	$23	($10)	($14)	($14)	$9	$12

Pension Assets vs Pension Liabilities—Funding Basis (last 10 fiscal years, $ in millions) Member-Directed Annuities

Year	2022	2021	2020[a]	2020[b]	2019	2018	2017[c]	2017	2016[d]	2015[a]	2015[b]	2014	2013
Pension Assets	$41.020	$39.431	$37.151	$37.151	$22.821	$19.917	$16.770	$16.770	$12.961	$10.622	$10.622	$8.772	$6.826
Accrued Liabilities	$41.020	$39.431	$37.151	$37.151	$22.821	$19.917	$16.770	$16.770	$12.961	$10.291	$9.767	$8.291	$6.884
Unfunded Liabilities	$0	$0	$0	$0	$0	$0	$0	$0	$0	($0.331)	($0.855)	($0.481)	$0.058
Funded Ratio	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	103.22%	108.75%	105.80%	99.16%
Net Unrealized Gains/(Losses)	($3.960)	$3.998	$1.745	$1.745	$1.021	($0.656)	$0.989	$0.989	($0.296)	($0.473)	($0.473)	$0.108	$0.273

[a] Information after completion of the experience study.

[b] Information prior to completion of the experience study.

[c] Information after change in discount rate from 7.5% to 7.2%.

[d] Restated upon finalization of actuarial valuation subsequent to issuance of *2016 Comprehensive Annual Financial Report*.

The calculation method defined in GASB 74 (Accounting Basis) requires different assumptions than are used to calculate the funded status of the program (Funding Basis). The following table identifies the key differences between the two methods. Additional details on the Accounting Basis actuarial assumptions can be found in the Financial Section (see Note 7 on page 66). Funding Basis assumptions can be found in the Actuarial Section starting on page 135.

Health Care Assumptions—Key Differences Between Accounting and Funding Valuations

Valuation Basis	Accounting	Funding
Actuarial Valuation Date	December 31, 2021	December 31, 2021
Rolled-Forward Measurement Date	December 31, 2022	N/A
Asset Valuation Method	Fair Value	4-year, smoothed market—12% corridor
Investment Rate of Return Used to Calculate Liability	Single Discount Rate[1] 5.22%	Actuarial Assumed 6.00%

[1] 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 plan's 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 rolled-forward measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met). For the purpose of this rolled-forward measurement date valuation, the expected rate of return on OPEB plan investments is 6.00%; the municipal bond rate is 4.05% (based on the daily rate closest to but not later than the measurement date of the Fidelity 20-year Municipal GO AA Index). The resulting Single Discount Rate is 5.22%.

Health Care Assets vs Health Care Liabilities—Accounting Basis (last six years, $ in millions)

Year	2022	2021	2020	2019	2018	2017
Plan Fiduciary Net Position	$11,465	$14,225	$13,227	$12,647	$11,253	$12,819
Total OPEB Liability	$12,096	$11,093	$11,446	$26,460	$24,291	$23,678
Net OPEB Liability/(Asset)	$631	($3,132)	($1,781)	$13,813	$13,038	$10,859
Plan Fiduciary Net Position as a Percentage of Total OPEB Liability	94.79%	128.23%	115.57%	47.80%	46.33%	54.14%
Single Discount Rate	5.22%	6.00%	6.00%	3.16%	3.96%	3.85%

Health Care Assets vs Health Care Liabilities—Funding Basis

(last 10 fiscal years, $ in millions)

Total Health Care Fund

Year	2021	2020[a]	2020[b]	2019[d]	2018	2017[c]	2017	2016	2015[a]	2015[b]	2014	2013	2012
Health Care Assets	$12,713	$12,385	$12,385	$11,943	$11,647	$12,021	$12,021	$12,098	$11,933	$11,933	$12,062	$12,031	$12,193
Accrued Liabilities	$11,037	$11,215	$11,414	$11,462	$17,849	$18,393	$17,389	$19,924	$19,224	$18,515	$19,405	$19,784	$19,182
Unfunded Liabilities	($1,676)	($1,170)	($971)	($481)	$6,202	$6,372	$5,368	$7,826	$7,291	$6,582	$7,343	$7,753	$6,989
Funded Ratio	115.19%	110.43%	108.51%	104.20%	65.25%	65.36%	69.13%	60.72%	62.10%	64.45%	62.16%	60.81%	63.56%
Solvency Period	29	25	25	23	11	13	13	12	Indefinite	Indefinite	Indefinite	Indefinite	Indefinite
Net Unrealized Gains/(Losses)	$1,512	$842	$842	$705	($394)	$797	$797	($218)	($421)	($421)	$764	$1,080	$635

[a] Information after completion of the experience study.

[b] Information prior to completion of the experience study.

[c] Information after change in discount rate from 6.5% to 6.0%.

[d] Results reflect health care program changes effective January 2022, approved by the Board in January 2020.

The Board approved changes to the OPERS health care plans in 2012. The ultimate goal of the health care changes was to fund the health care expenditures from the health care income. Additionally, the Board established a health care stabilization fund to hold excess income if income exceeds expenditures. The balance of the stabilization fund will supplement income to the health care core (operating) fund when employer contributions, investment income or disbursements do not meet targets. The stabilization fund is an accounting function only and not listed separately in the combining financial statements. Health care valuations disclosed previously (both on a Funding and Accounting basis) are prepared using total health care fund assets. The table below displays the valuation results for the health care plans using only the core fund assets and no stabilization fund assets.

Health Care Assets vs Health Care Liabilities (last 10 fiscal years, $ in millions)

Health Care—Core Fund

Year	2021	2020[a]	2020[b]	2019[c]	2018	2017[d]	2017	2016[e]	2015[a]	2015[b]	2014	2013	2012
Health Care Assets	$10,747	$10,591	$10,591	$10,350	$10,162	$10,113	$10,113	$10,143	$10,109	$10,109	$10,622	$11,110	$11,759
Accrued Liabilities	$11,037	$11,215	$11,414	$11,462	$17,849	$18,393	$17,389	$19,924	$19,224	$18,515	$19,405	$19,784	$19,182
Unfunded Liabilities	$290	$624	$823	$1,112	$7,687	$8,280	$7,276	$9,781	$9,115	$8,406	$8,783	$8,674	$7,423
Funded Ratio	97.37%	94.44%	92.79%	90.30%	56.94%	54.98%	58.16%	50.91%	52.59%	54.60%	54.74%	56.16%	61.30%
Solvency Period	20	19	19	18	10	10	10	10	Indefinite[1]	Indefinite[1]	Indefinite[1]	Indefinite[1]	Indefinite[1]

[a] Information after completion of the experience study.

[b] Information prior to completion of the experience study.

[c] Results reflect health care program changes effective January 2022, approved by the Board in January 2020.

[d] Information after change in discount rate from 6.5% to 6.0%.

[e] Assets recalculated after issuance of 2017 report.

[1] Funds expected to be sufficient to fund future health care needs.

Contribution Rates

	Actuarially Determined Contribution Rate	Employer Contribution Rate Funding Health Care	
Year	All Plans	Traditional Pension Plan	Combined Plan
2022[a]	1.34%	0.00%	2.00%
2021[b]	1.30	0.00	0.00
2020	6.68	0.00	0.00
2019	5.93	0.00	0.00
2018	5.75	0.00	0.00
2017	5.26	1.00	1.00
2016	5.56	2.00	2.00
2015	5.77	2.00	2.00
2014	5.54	2.00	2.00
2013[c]	12.96	1.00	1.00

Health Care Self-Funding Rate[1]

Year	Rate
2021	2.1%
2020[d]	2.2
2020[e]	2.1
2019	2.1
2018	5.1
2017[f]	4.8
2017	4.8
2016	4.6
2015[d]	4.7
2015[e]	4.0
2014	4.1
2013	4.1
2012	3.8

[a] Effective July 1, 2022, 2.00% of the employer contribution into the Combined Plan was allocated to fund Health Care.

[b] The significant decrease in contribution rate is a result of health care program changes effective January 1, 2022.

[c] From 2008 through 2010, the employer contribution rate allocated to health care by the Combined Plan was less than the Traditional Pension Plan. Payment of the impact of the rate difference commenced in 2011 and continued in 2012. The total repaid to the 401(h) Health Care Trust exceeded the required amount. As a result, the amount contributed to the 401(h) Health Care Trust by the Combined Plan in 2013 was less than the actual contribution rate listed above.

[d] Information after completion of the experience study.

[e] Information prior to completion of the experience study.

[f] Information after change in discount rate from 6.5% to 6.0%.

[1] The self-funding rate is the percentage of contribution required to fund health care indefinitely without regard to repayment of the liability within 30 years.

Investment Rates by Portfolio—Defined Benefit and Health Care

OPERS uses several rates to evaluate the results of the investment portfolios. Actual and benchmark returns for the years listed can be found in the Investment Section. The expected rate of return is based on the asset allocation in place during the year presented and the actuarial assumed rate of return is the assumption used for the annual actuarial valuations, described further in the Actuarial Section. Finally, the single discount and long-term municipal bond rates reflect the requirements of GASB 74. These rates are used in the Accounting Basis valuations for health care and not available prior to 2016.

Rates are presented for ten years in the following table:

Investment Rates by Portfolio

	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
Defined Benefit Portfolio										
Actual Rate of Return	(12.03%)[a]	15.34%	12.02%	17.23%	(2.99%)	16.82%	8.31%	0.33%	6.96%	14.38%
Benchmark Return	(11.44)	15.28	11.65	17.06	(3.07)	15.19	8.64	0.25	5.81	14.24
Long-Term Expected Rate of Return	7.87	6.81	6.90	8.00	8.00	8.00	8.00	8.00	8.00	8.00
Actuarial Assumed Rate of Return	6.90	6.90	7.20	7.20	7.20	7.50	7.50	8.00	8.00	8.00
Health Care Portfolio[1]										
Actual Rate of Return	(15.51%)	14.34%	10.96%	19.59%	(5.76%)	15.25%	7.55%	(2.18%)	5.28%	11.36%
Benchmark Return	(15.56)	13.76	10.13	19.20	(5.96)	14.31	7.75	(1.88)	5.01	10.70
Long-Term Expected Rate of Return	7.27	6.05	6.31	6.50	6.50	6.50	6.50	6.50	6.50	6.50
Actuarial Assumed Rate of Return	6.00	6.00	6.00	6.00	6.00	6.50	5.00	5.00	5.00	5.00
Single Discount Rate (GASB 74)[2]	5.22	6.00	6.00	3.16	3.96	3.85	4.23	N/A	N/A	N/A
Long-Term Municipal Bond Rate[2]	4.05	1.84	2.00	2.75	3.71	3.31	3.78	N/A	N/A	N/A

[a] Performance was reduced by 0.94% in 2022 because of a change in the methodology used for cash distributions from private equity and real estate funds.

[1] In 2016, the 401(h) Health Care Trust closed and assets were transferred to the 115 Health Care Trust. The 2016 partial year results for both portfolios can be found in the Investment Section, reflecting six month returns for the 401(h) Health Care Trust. For 2016, this chart displays the combined health care rates as disclosed in the Investment Section. For previous years, the rates represent the 401(h) Health Care Trust, as the majority of the health care assets resided in this trust until transferred to the 115 Health Care Trust.

[2] 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 plan's 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 of return are not met). Additional information on the Single Discount Rate can be found in Note 7 of the Notes to Combining Financial Statements found in the Financial Section.

Number of Retirees/Benefit Recipients by Category

The values included in the following tables represent the number of individuals receiving benefit payments. The counts represent retired member accounts only, regardless of the number of recipients designated by the retiree's plan of payment. These statistics are representative of the OPERS contributing membership.

Traditional Pension Plan

Year End	Annuities	Disabilities	Survivors	Total
2022	189,413	17,764	12,448	219,625
2021	187,238	18,373	12,546	218,157
2020	183,950	19,287	12,491	215,728
2019	181,623	20,090	12,565	214,278
2018	179,113	20,684	12,541	212,338
2017	176,445	21,322	12,590	210,357
2016	173,500	21,848	12,569	207,917
2015	170,411	22,230	12,570	205,211
2014	167,608	22,532	12,649	202,789
2013	160,815	22,791	12,743	196,349

Annuities are comprised of a defined formula benefit paid to contributing members retiring with an age-and-service benefit, as well as, benefit annuities paid through the Additional Annuity and Money Purchase plans (refer to Plan Statement beginning on page 215). Members who retired from other Ohio retirement systems may return to OPERS-covered employment under the OPERS Money Purchase plan. These members receive an annuity in accordance with that program, based on the contributions paid during the re-employment period.

The table below displays the composition of the Traditional Pension Plan Annuities by type for 2013 through 2022. The Other Annuities column represents Money Purchase and Additional Annuity plan benefits. These benefits may accrue to members whose primary retirement is with OPERS or through another Ohio retirement system (ORS retirees).

Traditional Pension Plan Annuities

Year End	Age-and-Service Annuities	Age-and-Service Receiving Other Annuities	Subtotal Age-and-Service Annuities	Other Annuities (ORS retirees)	Total
2022	184,518	3,365	187,883	1,530	189,413
2021	182,347	3,355	185,702	1,536	187,238
2020	179,090	3,321	182,411	1,539	183,950
2019	176,792	3,266	180,058	1,565	181,623
2018	174,382	3,166	177,548	1,565	179,113
2017	171,766	3,127	174,893	1,552	176,445
2016	168,924	3,039	171,963	1,537	173,500
2015	165,997	2,913	168,910	1,501	170,411
2014	163,313	2,830	166,143	1,465	167,608
2013	156,755	2,643	159,398	1,417	160,815

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Number of Retirees/Benefit Recipients by Category (continued)

The values included in the table below represent the number of retirees receiving benefit payments. Members in the Combined Plan receive an age-and-service defined formula benefit annuity from their employer contribution account, and may not elect a retirement distribution from their defined contribution (DC) account until they qualify for a defined benefit retirement. Prior to 2012, members in both the Combined Plan and Member-Directed Plan had the option to defer all or a portion of their defined contribution account, annuitize, or elect to receive installment payments from the defined contribution account. Effective April 1, 2012, the installment payment options were eliminated and new retirees may elect to annuitize, transfer their defined contribution account to another financial institution, or refund their account (refer to the Plan Statement beginning on page 215).

Combined Plan

Year End	Age-and-Service Annuities	Annuitized DC Accounts	Installment Payments	Liquidated or Deferred DC Accounts[1]	Number of Retirees
2022	619	399	2		620
2021	549	365	2		549
2020	465	311	4		465
2019	391	266	4		391
2018	337	229	4		337
2017	283	193	6		283
2016	238	158	6		238
2015	196	128	7		196
2014	156	99	7		156
2013	100	64	7	1	100

[1] The number of members receiving a defined benefit age-and-service benefit does not equal the number of members receiving a defined contribution benefit. The defined contribution options of transferring the defined contribution account to another financial institution or refunding the account are recorded in OPERS systems as refund transactions. These specific types of refunds cannot be segregated from withdrawal from service refunds.

Member-Directed Plan

Year End	Annuities	Installment Payments	Total
2022	422	2	424
2021	382	2	384
2020	330	3	333
2019	316	4	320
2018	278	5	283
2017	242	5	247
2016	219	7	226
2015	185	9	194
2014	154	13	167
2013	131	14	145

Number of Covered Lives by Category

The values included in the tables below represent the number of lives covered by OPERS health care plans. The counts for the Health Care Plans table reflect the number of retirees and primary beneficiaries receiving coverage through the group health care plans or enrolled in the HRA program, and the number of additional dependents and other beneficiaries receiving coverage through the group health care plans. In addition to a retiree, a primary benefit recipient could be a survivor of a deceased retiree continuing to receive coverage on the member's account. The values in the retirees and primary beneficiaries column represent OPERS contributing membership, while dependents and other beneficiaries represent other family members receiving primarily dental and vision coverage through a retiree's account. These counts represent all Traditional Pension Plan and Combined Plan retirees, dependents, and beneficiaries receiving access to post-employment health care coverage.

Health Care Plans

Year End	Number of Retirees and Primary Beneficiaries	Number of Dependents and Other Beneficiaries	Total Covered Lives
2022	134,711	181	134,892
2021[a]	134,453	—	134,453
2020	138,906	25,130	164,036
2019	142,369	28,141	170,510
2018	146,410	31,670	178,080
2017[b]	150,363	36,362	186,725
2016[b]	153,272	42,230	195,502
2015	170,688	52,109	222,797
2014	167,327	58,692	226,019
2013	165,967	61,041	227,008

[a] Effective December 31, 2021, OPERS no longer provided self-insured group health care or prescription drug plans for non-Medicare retirees or their eligible dependents. Eligible non-Medicare retirees can select an individual health care plan on the open market and receive an HRA allowance. Number of Retirees and Primary Beneficiaries in the table above includes Medicare retirees as of December 31, 2021 and 29,697 retirees newly enrolled in the Connector program as of January 1, 2022.

[b] Restated amounts for Health Care Connector.

The Member-Directed Plan Retiree Medical Account is an account in the member's name that can be used to reimburse qualified medical expenses for Member-Directed Plan retirees and eligible family members.

Member-Directed Plan Retiree Health Care

Year End	Total Covered Lives
2022	7,432
2021	7,464
2020	7,171
2019	6,940
2018	6,660
2017	6,203
2016	5,605
2015	4,063
2014	3,509
2013	3,112

Schedule of Retirees by Benefit Type and Amount

The values included in the following tables represent the number of retired members receiving benefits. Other Annuities represents Money Purchase and Additional Annuity plan benefits. These benefits may accrue to members whose primary retirement is with OPERS or with another Ohio retirement system (ORS retirees).

Traditional Pension Plan (as of December 2022)

Amount of Monthly Benefit	Age-and-Service Annuities	Age-and-Service Receiving Other Annuities	Subtotal Age-and-Service Annuities	Disabilities	Survivors	Other Annuities (ORS retirees)	Total Retirees
$1-299	9,108	1,863	10,971	27	532	617	12,147
$300-499	7,837	543	8,380	56	1,393	288	10,117
$500-999	20,429	607	21,036	394	3,343	354	25,127
$1,000-1,499	20,258	180	20,438	1,454	2,956	153	25,001
$1,500-1,999	18,749	80	18,829	2,745	1,532	74	23,180
$2,000 & Over	108,137	92	108,229	13,088	2,692	44	124,053
Totals	**184,518**	**3,365**	**187,883**	**17,764**	**12,448**	**1,530**	**219,625**

Effective April 1, 2012, members electing to retire in the Combined Plan and Member-Directed Plan have the option to use their defined contribution account to annuitize, to transfer their defined contribution account to another financial institution, or to receive a refund of their defined contribution account. Prior to April 1, 2012, these members also had the option to draw on their defined contribution account under an installment payment plan. The installment payment option is still effective for members who retired prior to April 1, 2012.

Combined Plan members are also eligible for a defined formula benefit from their employer contributions. The Employer Age-and-Service Annuities column represents members receiving a formula benefit. Members may receive payments of their defined contribution accounts under the methods described above. For those members who retired prior to April 1, 2012, only installment payments with a remaining account balance are counted.

Combined Plan (as of December 2022)

Amount of Monthly Benefit	Employer Age-and-Service Annuities	Annuitized DC Accounts	DC Installment Payments
$1-299	174	169	
$300-499	173	131	
$500-999	226	86	
$1,000-1,499	35	10	
$1,500-1,999	8	2	
$2,000 & Over	3	1	
Various			2
Totals	**619**	**399**	**2**

The Member-Directed Plan table displays the distribution of members electing either a defined benefit annuity or an installment payment option. For those members who retired prior to April 1, 2012, only installment payments with a remaining account balance are counted.

Member-Directed Plan (as of December 2022)

Amount of Monthly Benefit	Annuitized DC Accounts	DC Installment Payments	Total Retirees
$1-299	174		174
$300-499	84		84
$500-999	120		120
$1,000-1,499	27		27
$1,500-1,999	10		10
$2,000 & Over	7		7
Various		2	2
Totals	**422**	**2**	**424**

Number of New Pension Retirees

The values included in the following tables represent the number of new benefit recipients each year. The counts represent retired members only, regardless of the number of recipients designated by the retiree's plan of payment. These statistics are representative of contributing membership.

Traditional Pension Plan

Year	Annuities	Disabilities	Survivors	Total
2022	7,594	584	360	8,538
2021	8,995	456	440	9,891
2020	7,823	465	345	8,633
2019	7,204	527	404	8,135
2018	7,475	513	364	8,352
2017	7,668	550	446	8,664
2016	7,388	641	430	8,459
2015	7,209	737	355	8,301
2014	11,011	702	368	12,081
2013	9,831	971	446	11,248

Annuities are comprised of a defined formula benefit paid to contributing members retiring with an age-and-service benefit, as well as benefit annuities paid through the Additional Annuity and Money Purchase plans (refer to the Plan Statement beginning on page 215). Members who retired from another Ohio retirement system may return to OPERS-covered employment under the OPERS Money Purchase plan. These members receive an annuity in accordance with that program based on the contributions paid during the re-employed period.

The table below displays the composition of the 2013 through 2022 Traditional Pension Plan Annuities by type for new benefit recipients. The Other Annuities column represents the Additional Annuity and Money Purchase plan benefits. These benefits may accrue to members whose primary retirement is with OPERS or through another Ohio retirement system (ORS retirees).

Traditional Pension Plan Annuities

Year	Age-and-Service Annuities	Age-and-Service Receiving Other Annuities	Subtotal Age-and-Service Annuities	Other Annuities (ORS retirees)	Total
2022	7,550	4	7,554	40	7,594
2021	8,934	8	8,942	53	8,995
2020	7,762	14	7,776	47	7,823
2019	7,147	10	7,157	47	7,204
2018	7,402	15	7,417	58	7,475
2017	7,601	13	7,614	54	7,668
2016	7,316	7	7,323	65	7,388
2015	7,127	16	7,143	66	7,209
2014	10,915	16	10,931	80	11,011
2013	9,476	53	9,529	302	9,831

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Number of New Pension Retirees (continued)

Members electing to retire in the Combined Plan and Member-Directed Plan have the option to use their defined contribution account to annuitize, to transfer their defined contribution account to another financial institution, or to receive a refund of their defined contribution account.

Combined Plan members are also eligible for a defined formula benefit from their employer contributions. The Employer Age-and-Service Annuities column represents members receiving a formula benefit. Members may receive payments of their defined contribution accounts under the methods described above.

Combined Plan

Year	Employer Age-and-Service Annuities	Member Annuitized Defined Contribution Accounts
2022	75	39
2021	89	58
2020	77	48
2019	55	38
2018	54	36
2017	49	38
2016	43	30
2015	41	30
2014	56	35
2013	45	27

The Member-Directed Plan table displays the distribution of members electing a defined benefit annuity.

Member-Directed Plan

Year	Annuities
2022	48
2021	57
2020	20
2019	42
2018	38
2017	25
2016	34
2015	31
2014	24
2013	69

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, representing the member's three (or five) highest years of earnings (refer to the Plan Statement beginning on page 215 for benefit eligibility requirements). The Average Final Average Salary represents a composite for each group.

Schedule of Average Benefits (last 10 fiscal years) **Traditional Pension Plan**

		Years Credited Service							
Retirement Effective Dates		0-4	5-9	10-14	15-19	20-24	25-30	30+	Total New Retirees
2022	Average Monthly Benefit	$790	$685	$1,096	$1,510	$1,976	$2,739	$4,138	$2,698
	Average Final Average Salary	$24,601	$40,038	$48,770	$52,734	$56,846	$63,760	$74,613	$62,016
	Number of Active Recipients	75	735	890	897	1,227	1,240	3,434	8,498
2021	Average Monthly Benefit	$682	$613	$971	$1,508	$1,919	$2,683	$3,949	$2,586
	Average Final Average Salary	$21,452	$37,967	$44,521	$54,013	$57,376	$64,409	$72,116	$60,814
	Number of Active Recipients	100	783	893	960	1,713	1,572	3,817	9,838
2020	Average Monthly Benefit	$642	$610	$976	$1,413	$1,885	$2,721	$3,857	$2,516
	Average Final Average Salary	$21,198	$38,020	$44,675	$49,326	$54,499	$62,758	$70,403	$58,701
	Number of Active Recipients	71	694	934	913	1,350	1,277	3,347	8,586
2019	Average Monthly Benefit	$678	$629	$996	$1,437	$1,949	$2,679	$3,826	$2,406
	Average Final Average Salary	$21,882	$38,395	$46,178	$50,300	$55,634	$61,597	$69,902	$57,847
	Number of Active Recipients	74	751	974	945	1,271	1,267	2,806	8,088
2018	Average Monthly Benefit	$670	$579	$945	$1,323	$1,828	$2,586	$3,690	$2,281
	Average Final Average Salary	$24,425	$35,398	$43,003	$45,656	$52,019	$58,989	$67,673	$54,739
	Number of Active Recipients	77	788	1,004	968	1,301	1,389	2,767	8,294
2017	Average Monthly Benefit	$625	$627	$940	$1,335	$1,866	$2,499	$3,509	$2,285
	Average Final Average Salary	$19,913	$36,979	$43,150	$46,261	$52,750	$57,846	$65,276	$54,640
	Number of Active Recipients	89	743	989	945	1,272	1,444	3,128	8,610
2016	Average Monthly Benefit	$480	$607	$924	$1,275	$1,817	$2,464	$3,476	$2,208
	Average Final Average Salary	$14,983	$34,240	$40,609	$45,105	$51,292	$57,163	$64,642	$52,969
	Number of Active Recipients	96	768	1,011	925	1,238	1,467	2,889	8,394
2015	Average Monthly Benefit	$301	$573	$865	$1,248	$1,816	$2,413	$3,464	$2,053
	Average Final Average Salary	$9,347	$33,258	$37,596	$42,780	$50,311	$56,473	$64,158	$50,136
	Number of Active Recipients	180	907	1,165	967	1,183	1,247	2,586	8,235
2014	Average Monthly Benefit	$289	$560	$832	$1,218	$1,787	$2,370	$3,282	$1,880
	Average Final Average Salary	$9,637	$31,679	$39,122	$43,897	$49,666	$55,301	$61,233	$48,693
	Number of Active Recipients	163	926	2,341	1,964	1,451	2,044	3,112	12,001
2013	Average Monthly Benefit	$310	$555	$879	$1,271	$1,823	$2,362	$3,402	$2,021
	Average Final Average Salary	$9,762	$30,394	$38,438	$43,362	$48,627	$54,957	$61,752	$48,997
	Number of Active Recipients	167	1,030	1,747	1,413	1,495	1,810	3,284	10,946

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Schedule of Average Benefits (continued)

Schedule of Average Benefits (last 10 fiscal years) **Combined Plan**

		Years Credited Service					
	Retirement Effective Dates	0-4	5-9	10-14	15-19	20-24	Total New Retirees
2022	Average Monthly Benefit		$297	$666	$727	$460	$634
	Average Final Average Salary		$62,576	$72,712	$60,695	$56,058	$63,843
	Number of Active Recipients		13	18	43	1	75
2021	Average Monthly Benefit		$159	$544	$725	$567	$610
	Average Final Average Salary		$38,749	$63,836	$60,609	$45,713	$58,839
	Number of Active Recipients		9	26	51	3	89
2020	Average Monthly Benefit		$273	$494	$660	$880	$571
	Average Final Average Salary		$63,836	$56,067	$57,950	$69,331	$57,970
	Number of Active Recipients		6	30	39	2	77
2019	Average Monthly Benefit		$288	$568	$600	$994	$562
	Average Final Average Salary		$52,173	$65,659	$52,662	$77,770	$59,573
	Number of Active Recipients		11	20	19	5	55
2018	Average Monthly Benefit		$261	$527	$659	$1,429	$517
	Average Final Average Salary		$51,411	$58,150	$58,940	$122,395	$57,937
	Number of Active Recipients		13	25	15	1	54
2017	Average Monthly Benefit		$303	$507	$627	$1,097	$475
	Average Final Average Salary		$47,088	$54,249	$51,388	$62,070	$52,275
	Number of Active Recipients		13	31	4	1	49
2016	Average Monthly Benefit		$285	$471	$588		$406
	Average Final Average Salary		$49,655	$54,075	$53,375		$52,279
	Number of Active Recipients		17	23	3		43
2015	Average Monthly Benefit	$5	$272	$382	$370		$331
	Average Final Average Salary	$1,933	$54,371	$48,705	$35,431		$48,342
	Number of Active Recipients	1	15	21	4		41
2014	Average Monthly Benefit		$274	$346	$363	$270	$332
	Average Final Average Salary		$45,794	$45,889	$48,167	$15,897	$45,458
	Number of Active Recipients		10	42	3	1	56
2013	Average Monthly Benefit		$211	$300			$247
	Average Final Average Salary		$41,043	$41,121			$41,074
	Number of Active Recipients		27	18			45

Member Counts by Plan

The tables below represent the number of retired members in each retirement plan based on their status in the plan, regardless of the number of recipients designated by the retiree's plan of payment. These statistics are representative of OPERS contributing membership. Eligible members have the ability to change plans during their career, and leave their contribution accounts behind with the plan under which the contribution was made. Accordingly, a member may be active in one plan and inactive in another. See the table at the bottom of the next page for a composite total count of active, inactive, and retired members regardless of plan.

Member Count—Pension Plans				**Total All Pension Plans**
Year End	Active	Inactive	Retirees	Total
2022	297,827	730,139	220,667	1,248,633
2021	290,321	700,884	219,088	1,210,293
2020	289,435	677,873	216,523	1,183,831
2019	304,446	653,659	214,985	1,173,090
2018[a]	303,920	628,091	212,953	1,144,964
2017	347,730	559,587	210,882	1,118,199
2016	346,959	537,309	208,381	1,092,649
2015	345,622	516,049	205,601	1,067,272
2014	346,509	498,610	203,112	1,048,231
2013	347,727	483,521	196,594	1,027,842

Member Count—Pension Plans				**Traditional Pension Plan**
Year End	Active	Inactive	Retirees	Total
2022	281,149	721,122	219,625	1,221,896
2021	273,388	692,281	218,157	1,183,826
2020	272,243	669,682	215,728	1,157,653
2019	286,496	645,866	214,278	1,146,640
2018[a]	285,487	620,572	212,338	1,118,397
2017	328,207	553,393	210,357	1,091,957
2016	327,705	531,533	207,917	1,067,155
2015	326,795	509,194	205,211	1,041,200
2014	328,341	492,548	202,789	1,023,678
2013	330,595	478,291	196,349	1,005,235

[a] In 2018, the data aggregation methodology was modified for Active and Inactive counts after system reconfigurations. Restated data for years prior to 2018 is not available.

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Member Counts by Plan (continued)

Member Count—Pension Plans				Combined Plan
Year End	Active	Inactive	Retirees	Total
2022	6,592	2,616	620	9,828
2021	7,102	2,595	549	10,246
2020	7,242	2,417	465	10,124
2019	7,519	2,289	391	10,199
2018[a]	7,692	2,143	337	10,172
2017	7,905	1,825	283	10,013
2016	7,777	1,754	238	9,769
2015	7,587	2,031	196	9,814
2014	7,413	1,818	156	9,387
2013	7,175	1,637	100	8,912

Member Count—Pension Plans				Member-Directed Plan
Year End	Active	Inactive	Retirees	Total
2022	10,086	6,401	422	16,909
2021	9,831	6,008	382	16,221
2020	9,950	5,774	330	16,054
2019	10,431	5,504	316	16,251
2018[a]	10,741	5,376	278	16,395
2017	11,618	4,369	242	16,229
2016	11,477	4,022	226	15,725
2015	11,240	4,824	194	16,258
2014	10,755	4,244	167	15,166
2013	9,957	3,593	145	13,695

The table below represents a System-level member count regardless of the plan of participation selected by the member. Only OPERS members are included in this table and each member is counted only once. Actively contributing retired OPERS members who return to OPERS-covered employment under the Money Purchase Plan are reported as retirees.

Member Count—Pension Plans				All Plans
Year End	Active	Inactive	Retirees	Total
2022	297,827	728,692	220,637	1,247,156
2021	290,320	699,457	219,062	1,208,839
2020	289,435	676,436	216,500	1,182,371
2019	304,446	652,237	214,963	1,171,646
2018[a]	303,920	626,684	212,937	1,143,541
2017	347,729	558,205	210,868	1,116,802
2016	346,959	535,941	208,361	1,091,261
2015	345,621	514,607	205,581	1,065,809
2014	346,508	497,212	203,091	1,046,811
2013	347,727	482,156	196,575	1,026,458

[a] In 2018, the data aggregation methodology was modified for Active and Inactive counts after system reconfigurations. Restated data for years prior to 2018 is not available.

Member Counts by Plan (continued)

The values included in the tables below represent the number of individuals covered by the OPERS health care plans. Members include active and inactive employees, retirees, primary beneficiaries, dependents and other beneficiaries. In addition to a retiree, a primary benefit recipient could be a survivor of a deceased retiree. The survivor is continuing to receive coverage on the retiree's account, which is representative of the OPERS contributing membership. Dependents and Other Beneficiaries primarily receive dental and vision coverage.

Member Count—Health Care Plans — Total All Health Care Plans

Year End	Active	Inactive	Retirees & Primary Beneficiaries	Dependents & Other Beneficiaries	Total
2022	10,276	6,121	142,143	181	158,721
2021[a]	9,948	5,810	141,917	—	157,675
2020	10,112	5,514	146,077	25,130	186,833
2019	10,534	5,317	149,309	28,141	193,301
2018	10,976	5,081	153,070	31,670	200,797
2017[b]	11,613	4,309	156,566	36,362	208,850
2016[b]	11,469	3,976	158,877	42,230	216,552
2015	11,235	4,764	174,751	52,109	242,859
2014	10,745	4,194	170,836	58,692	244,467
2013	9,962	3,543	169,079	61,041	243,625

Member Count—Health Care Plans — Traditional Pension Plan and Combined Plan

Year End	Active	Inactive	Retirees & Primary Beneficiaries	Dependents & Other Beneficiaries	Total
2022	N/A	N/A	134,711	181	134,892
2021[a]	N/A	N/A	134,453	—	134,453
2020	N/A	N/A	138,906	25,130	164,036
2019	N/A	N/A	142,369	28,141	170,510
2018	N/A	N/A	146,410	31,670	178,080
2017[b]	N/A	N/A	150,363	36,362	186,725
2016[b]	N/A	N/A	153,272	42,230	195,502
2015	N/A	N/A	170,688	52,109	222,797
2014	N/A	N/A	167,327	58,692	226,019
2013	N/A	N/A	165,967	61,041	227,008

[a] Effective December 31, 2021, OPERS no longer provided self-insured group health care or prescription drug plans for non-Medicare retirees or their eligible dependents. Retirees and Primary Beneficiaries in the tables above includes Medicare retirees as of December 31, 2021 and 29,697 retirees newly enrolled in the Connector program as of January 1, 2022. Refer to the Plan Statement beginning on page 215 for more information.

[b] Restated amounts for Health Care Connector.

continued on next page

Member Counts by Plan (continued)

The Member-Directed Health Care Plan table represents participant counts in this plan for members in the Member-Directed Plan. Contributions are paid into the account during the member's career for use after retirement. The account is in the member's name and can only be used by the member to pay qualified medical expenses for the retiree and eligible family members. (Refer to the Plan Statement beginning on page 215.)

Member Count—Health Care Plans

Member-Directed Health Care Plan

Year End	Active	Inactive	Retiree Recipients	Total
2022	10,276	6,121	7,432	23,829
2021	9,948	5,810	7,464	23,222
2020	10,112	5,514	7,171	22,797
2019	10,534	5,317	6,940	22,791
2018	10,976	5,081	6,660	22,717
2017	11,613	4,309	6,203	22,125
2016	11,469	3,976	5,605	21,050
2015	11,235	4,764	4,063	20,062
2014	10,745	4,194	3,509	18,448
2013	9,962	3,543	3,112	16,617

2022 Pension Benefits and Retirees by Ohio County

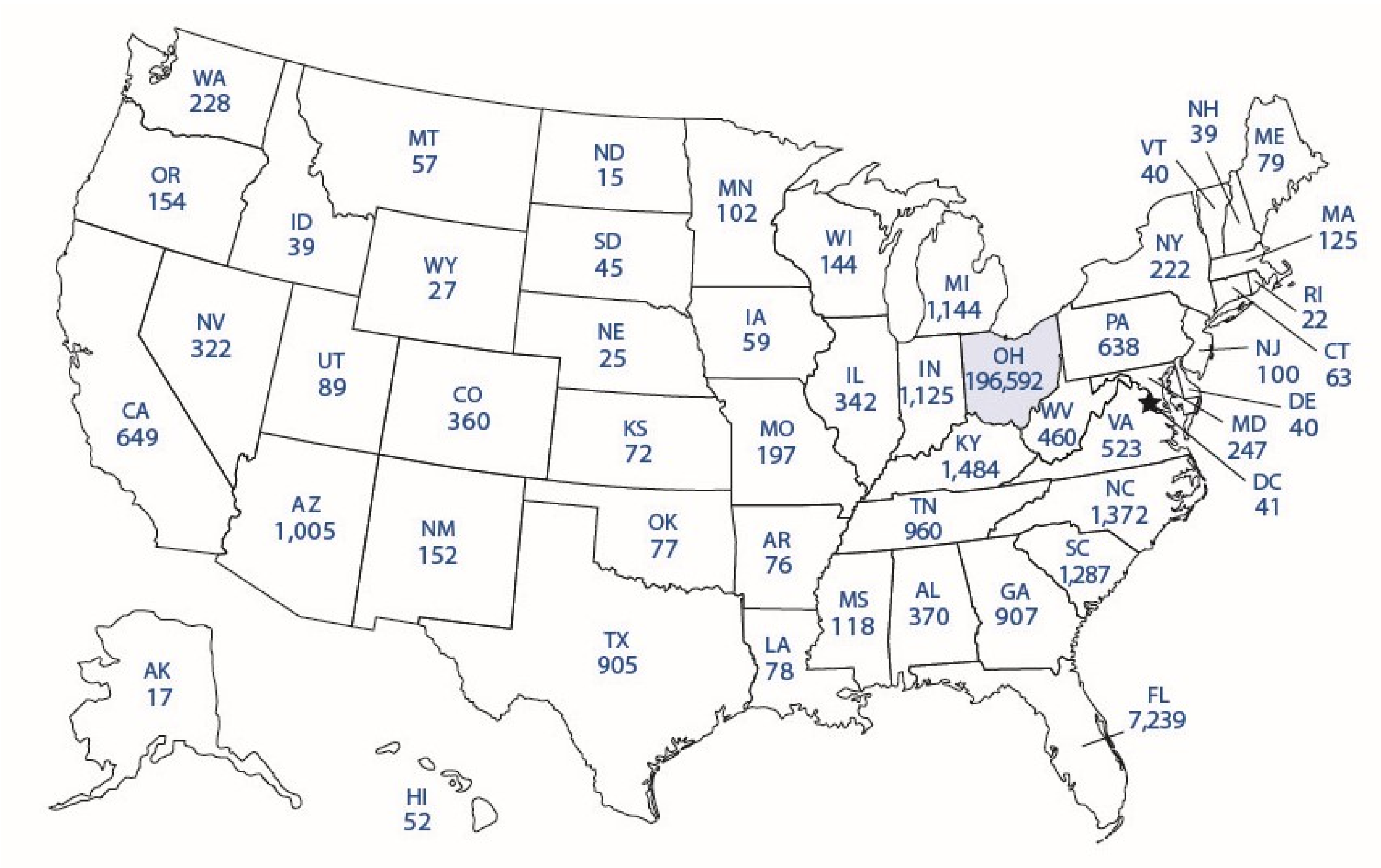
Color Key

$0 - $10 million	🟨
$10 - $15 million	🟩
$15 - $25 million	🟥
$25 - $50 million	🟦
$50 - $100 million	🟪
$100 million +	⬜

- Of the 220,637 OPERS retirees, 196,592, or 89.1%, remained Ohio residents as of December 31, 2022.
- Pension benefit payments of more than $6.3 billion were distributed throughout Ohio to retirees and their beneficiaries, representing the OPERS impact on the state’s economy.

Retirees by Geographical Location (as of December 31, 2022)

Retirees by State



Retirees Outside United States

Armed Forces—Europe	2	Hungary	1	Philippines	2
Armed Forces—Pacific	1	India	2	Poland	2
Australia	1	Ireland, Republic Of	1	Puerto Rico	19
Bulgaria	1	Israel	3	Scotland	1
Canada	29	Italy	5	Serbia	1
China	1	Japan	2	Slovakia	2
Czech Republic	1	Jordan	1	Spain	1
England	4	Latvia	1	Switzerland	1
Ethiopia	1	Lebanon	1	Thailand	3
France	5	Lithuania	1	Turkey	2
Germany	3	New Zealand	2	United Kingdom	3
Greece	1	Northern Ireland	2	Virgin Islands	3

Contribution Rates at December 31 — Traditional Pension Plan

			Employer Rates			Total Employer Rates	Total Employer and Member Rates
	Year	Member Rates	Normal Cost	Unfunded Liability	Health Care		
State	2022	10.00%	4.59%	9.41%	0.00%	14.00%	24.00%
	2021	10.00	4.63	9.37	0.00	14.00	24.00
	2020	10.00	3.90	10.10	0.00	14.00	24.00
	2019	10.00	3.87	10.13	0.00	14.00	24.00
	2018	10.00	3.15	10.85	0.00	14.00	24.00
	2017	10.00	3.21	9.79	1.00	14.00	24.00
	2016	10.00	3.32	8.68	2.00	14.00	24.00
	2015	10.00	3.31	8.69	2.00	14.00	24.00
	2014	10.00	5.28	6.72	2.00	14.00	24.00
	2013	10.00	5.39	7.61	1.00	14.00	24.00
Local	2022	10.00%	4.44%	9.56%	0.00%	14.00%	24.00%
	2021	10.00	4.50	9.50	0.00	14.00	24.00
	2020	10.00	3.73	10.27	0.00	14.00	24.00
	2019	10.00	3.71	10.29	0.00	14.00	24.00
	2018	10.00	2.82	11.18	0.00	14.00	24.00
	2017	10.00	2.89	10.11	1.00	14.00	24.00
	2016	10.00	2.98	9.02	2.00	14.00	24.00
	2015	10.00	2.98	9.02	2.00	14.00	24.00
	2014	10.00	5.05	6.95	2.00	14.00	24.00
	2013	10.00	5.05	7.95	1.00	14.00	24.00
Law Enforcement	2022	13.00%	8.05%	10.05%	0.00%	18.10%	31.10%
	2021	13.00	8.09	10.01	0.00	18.10	31.10
	2020	13.00	6.79	11.31	0.00	18.10	31.10
	2019	13.00	6.75	11.35	0.00	18.10	31.10
	2018	13.00	5.23	12.87	0.00	18.10	31.10
	2017	13.00	5.34	11.76	1.00	18.10	31.10
	2016	13.00	5.45	10.65	2.00	18.10	31.10
	2015	13.00	5.44	10.66	2.00	18.10	31.10
	2014	13.00	7.18	8.92	2.00	18.10	31.10
	2013	12.60	7.90	9.20	1.00	18.10	30.70
Public Safety	2022	12.00%	6.58%	11.52%	0.00%	18.10%	30.10%
	2021	12.00	6.51	11.59	0.00	18.10	30.10
	2020	12.00	5.42	12.68	0.00	18.10	30.10
	2019	12.00	5.45	12.65	0.00	18.10	30.10
	2018	12.00	4.07	14.03	0.00	18.10	30.10
	2017	12.00	4.16	12.94	1.00	18.10	30.10
	2016	12.00	4.12	11.98	2.00	18.10	30.10
	2015	12.00	3.96	12.14	2.00	18.10	30.10
	2014	12.00	6.12	9.98	2.00	18.10	30.10
	2013	12.00	7.62	9.48	1.00	18.10	30.10

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Contribution Rates at December 31 — Combined Plan

			Employer Rates						
	Year	Member Rates	Normal Cost	Unfunded Liability[1]	Administrative Fee	Mitigating Rate	Health Care	Total Employer Rates	Total Employer and Member Rates
State	2022	10.00%	7.21%	1.03%	0.26%	3.50%	2.00%	14.00%	24.00%
	2021	10.00	7.49	3.01	0.00	3.50	0.00	14.00	24.00
	2020	10.00	7.13	3.37	0.00	3.50	0.00	14.00	24.00
	2019	10.00	7.29	4.27	0.00	2.44	0.00	14.00	24.00
	2018	10.00	7.52	4.48	0.00	2.00	0.00	14.00	24.00
	2017	10.00	7.52	3.98	0.00	1.50	1.00	14.00	24.00
	2016	10.00	7.56	3.44	0.00	1.00	2.00	14.00	24.00
	2015	10.00	7.54	3.69	0.00	0.77	2.00	14.00	24.00
	2014	10.00	6.99	4.24	0.00	0.77	2.00	14.00	24.00
	2013	10.00	7.20	5.03	0.00	0.77	1.00	14.00	24.00
Local	2022	10.00%	7.32%	0.92%	0.26%	3.50%	2.00%	14.00%	24.00%
	2021	10.00	7.61	2.89	0.00	3.50	0.00	14.00	24.00
	2020	10.00	7.27	3.23	0.00	3.50	0.00	14.00	24.00
	2019	10.00	7.46	4.10	0.00	2.44	0.00	14.00	24.00
	2018	10.00	7.38	4.62	0.00	2.00	0.00	14.00	24.00
	2017	10.00	7.40	4.10	0.00	1.50	1.00	14.00	24.00
	2016	10.00	7.42	3.58	0.00	1.00	2.00	14.00	24.00
	2015	10.00	7.41	3.82	0.00	0.77	2.00	14.00	24.00
	2014	10.00	6.83	4.40	0.00	0.77	2.00	14.00	24.00
	2013	10.00	6.87	5.36	0.00	0.77	1.00	14.00	24.00

[1] Unfunded Liability includes the impact of defined contribution account purchases of defined benefit annuities.

Contribution Rates at December 31 — Member-Directed Plan

			Employer Rates						
	Year	Member Rates	Normal Cost	Unfunded Liability	Administrative Fee	Mitigating Rate[1]	Health Care[2]	Total Employer Rates	Total Employer and Member Rates
State	2022	10.00%	6.24%	N/A	0.26%	3.50%	4.00%	14.00%	24.00%
	2021	10.00	6.44	N/A	0.06	3.50	4.00	14.00	24.00
	2020	10.00	6.44	N/A	0.06	3.50	4.00	14.00	24.00
	2019	10.00	7.50	N/A	0.06	2.44	4.00	14.00	24.00
	2018	10.00	7.50	N/A	0.50	2.00	4.00	14.00	24.00
	2017	10.00	8.00	N/A	0.50	1.50	4.00	14.00	24.00
	2016	10.00	8.50	N/A	0.50	1.00	4.00	14.00	24.00
	2015	10.00	8.73	N/A	0.00	0.77	4.50	14.00	24.00
	2014	10.00	8.73	N/A	0.00	0.77	4.50	14.00	24.00
	2013	10.00	8.73	N/A	0.00	0.77	4.50	14.00	24.00
Local	2022	10.00%	6.24%	N/A	0.26%	3.50%	4.00%	14.00%	24.00%
	2021	10.00	6.44	N/A	0.06	3.50	4.00	14.00	24.00
	2020	10.00	6.44	N/A	0.06	3.50	4.00	14.00	24.00
	2019	10.00	7.50	N/A	0.06	2.44	4.00	14.00	24.00
	2018	10.00	7.50	N/A	0.50	2.00	4.00	14.00	24.00
	2017	10.00	8.00	N/A	0.50	1.50	4.00	14.00	24.00
	2016	10.00	8.50	N/A	0.50	1.00	4.00	14.00	24.00
	2015	10.00	8.73	N/A	0.00	0.77	4.50	14.00	24.00
	2014	10.00	8.73	N/A	0.00	0.77	4.50	14.00	24.00
	2013	10.00	8.73	N/A	0.00	0.77	4.50	14.00	24.00

[1] Beginning 2020, a portion of the mitigating rate is funded with reserves.

[2] From October 2014 through December 2015, and again beginning July 2022, a portion of the health care rate is funded with reserves.

Number of Employer Units — All Plans[1]

Year	State	County	Law Enforcement/ Public Safety	Municipalities	Villages	Miscellaneous	Libraries	Townships	Totals
2022	240	240	239	244	653	513	253	1,307	3,689
2021	241	245	236	244	654	510	253	1,307	3,690
2020	241	250	235	244	656	508	253	1,308	3,695
2019	246	251	236	243	654	503	253	1,308	3,694
2018	247	248	236	242	656	503	253	1,308	3,693
2017	248	233	236	242	658	505	253	1,308	3,683
2016	250	221	235	244	660	507	253	1,308	3,678
2015	260	215	239	244	665	498	253	1,309	3,683
2014	264	217	241	245	667	496	253	1,309	3,692
2013	282	219	244	245	673	494	253	1,308	3,718

[1] The number of employer units exceeds the number of reporting employers as some employers report multiple divisions or agencies. This count also includes private-sector employers that have assumed privatized functions from public employers for indeterminate periods. The number of employers reporting at December 31, 2022 was 3,220.

Employer Units

Employers by Employer Unit Ranking	2022			2013		
	Covered Employees	Rank	Percentage of Total System	Covered Employees	Rank	Percentage of Total System
The Ohio State University	33,105	1	11.12%	34,607	1	9.96%
MetroHealth Medical Center	7,794	2	2.62	6,295	4	1.81
Cuyahoga County	6,726	3	2.26	7,748	2	2.23
Franklin County	5,717	4	1.92	6,050	5	1.74
University of Cincinnati	5,603	5	1.88	6,477	3	1.86
City of Columbus	5,017	6	1.68	5,139	9	1.48
Ohio Department of Transportation	4,882	7	1.64	5,515	7	1.59
City of Cleveland	4,862	8	1.63	5,781	6	1.66
Ohio University	4,792	9	1.61	4,880	10	1.41
Hamilton County	3,704	10	1.24	N/A	N/A	N/A
Kent State University	N/A	N/A	N/A	5,241	8	1.51
All Others (see table on next page)	215,625	N/A	72.40	259,769	N/A	74.75
Total	**297,827**	**N/A**	**100.00%**	**347,502**	**N/A**	**100.00%**

Principal Participating Employers

Employers by Participating Employer Ranking	2022			2013[a]		
	Covered Employees	Rank	Percentage of Total System	Covered Employees	Rank	Percentage of Total System
The Ohio State University	33,181	1	11.14%	34,607	1	9.96%
MetroHealth Medical Center	7,794	2	2.62	6,295	4	1.81
Cuyahoga County	6,934	3	2.33	7,748	2	2.23
Franklin County	6,422	4	2.16	6,050	5	1.74
City of Columbus	5,652	5	1.90	5,139	9	1.48
University of Cincinnati	5,533	6	1.86	6,477	3	1.86
City of Cleveland	4,882	7	1.64	5,781	6	1.66
Ohio Department of Transportation	4,862	8	1.63	5,515	7	1.59
Ohio University	4,809	9	1.61	4,880	10	1.41
Hamilton County	4,180	10	1.40	N/A	N/A	N/A
Kent State University	N/A	N/A	N/A	5,241	8	1.51
All Others (see table below)	213,578	N/A	71.71	259,769	N/A	74.75
Total	**297,827**	**N/A**	**100.00%**	**347,502**	**N/A**	**100.00%**

Employers—All Other Categories[1]

Employer Type	2022				2013[a]			
	Employer Units		Participating Employers		Employer Units		Participating Employers	
	Number	Employees	Number	Employees	Number	Employees	Number	Employees
State	236	58,694	147	59,422	277	65,728	277	65,728
County	236	59,823	111	64,197	216	75,579	216	75,579
Municipalities	242	37,808	233	37,403	243	49,210	243	49,210
Miscellaneous	513	19,513	506	19,412	494	21,359	494	21,359
Libraries	253	11,431	252	11,422	253	12,810	253	12,810
Townships	1,307	9,950	1,307	11,306	1,308	12,269	1,308	12,269
Villages	653	10,389	654	10,416	673	15,072	673	15,072
Law Enforcement/Public Safety	239	8,017	N/A	N/A	244	7,742	244	7,742
Total	**3,679**	**215,625**	**3,210**	**213,578**	**3,708**	**259,769**	**3,708**	**259,769**

[a] The implementation of GASB 67 in 2014 modified the requirements of this schedule. Prior to GASB 67, OPERS reported number of employer units only. Beginning 2014, OPERS changed the presentation to reflect the number of participating employers, which is most associated with the reporting entities. A reporting entity can include multiple employer units. For example, a single reporting entity (a county) may report as three employer units (a county, hospital and law enforcement). The OPERS employer system is dynamic and historical reports based on participating employers by employer type, or reporting entities by employer type, do not exist. As a result, the values for 2013 in this table reflect the number of employers based on employer units.

[1] This table displays additional information on the All Others category in the table above and the table on the previous page presenting the 10 largest employers. To get the total number of employers reported in the table and related footnote on the previous page, combine the numbers in this table with those on the previous page for the employer units (10 plus 3,679 = 3,689 for 2022) and participating employers (10 plus 3,210 = 3,220 for 2022). GASB requires a 10 year look-back to the year being presented. Therefore, information for 2014 through 2021 is not relevant.

Financial Stability is: Essential for members

Most of us want to live a long and healthy life. Studies show that financial stability is one of the most important elements to attaining that goal. Additionally, an important element to financial security in retirement is access to meaningful health care. Note that health care is neither mandated nor guaranteed. However, this organization works to ensure all retirees will have access to meaningful, affordable health care.

To accommodate past changes to member demographics, such as increased longevity in retirement, OPERS has sought to implement incremental changes to ensure the financial integrity of the institution—which translates into ensuring financial stability for members. Although change is a constant, OPERS is not anticipating any major changes in the immediate future. However, when change does become necessary, this organization remains committed to providing members and retirees with the time needed and information necessary to absorb change with minimal disruption to lifestyle and/or financial stability.

What members should look for in this section: Review this information for an overview of the pension benefits and health care program. Unfortunately, many members pay no attention to changes that may have occurred during their working years (typically 30 years). ALL members are encouraged to review the Plan Statement for information about their pension plan choice (pages 216-223) AND their individualized annual statement *every year*. Only by fully understanding pension benefits can members make the correct retirement decision for their particular situation.

What all stakeholders should know: OPERS is an economic driver. Here's how: Financial stability and access to meaningful, affordable health care means that 89% of all OPERS retirees choose to live their retirement years within the state.

Why is this important? Those retirees help positively drive the retail, health care, housing, entertainment and transportation sectors within the state by being active consumers. In fact, for each tax dollar invested with OPERS, approximately $3.27 is returned to the economy.

Investing in Ohio

For every $1 contributed by public employers approximately

is funneled back into the Ohio economy.

The Ohio Public Employees Retirement System (OPERS or System) was created in 1935 by the Ohio General Assembly to provide retirement, disability, and survivor benefit programs to state and local employees. This summary outlines the key plan features.

All public employees in Ohio, except those covered by another state retirement system in Ohio or by the Cincinnati Retirement System, are required to become contributing members of OPERS when beginning public employment unless specifically exempted or excluded.

The law provides for optional membership for elected public officials who did not contribute on prior elective service. Students, not already members, working for the public school, college, or university that they are attending may be exempt from contributing to OPERS by filing a request for exemption within the first month of employment.

OPERS provides special retirement coverage for certain Law Enforcement officers whose primary duties are to preserve the peace, to protect life and property, and to enforce the laws of Ohio. The Law Enforcement division has its own retirement, disability, and survivor benefit eligibility provisions.

Plan Types

For more than 85 years, OPERS has provided members with retirement benefits under a defined benefit plan, known as the Traditional Pension Plan.

In 2000, legislation required OPERS to establish one or more defined contribution plans to be offered to members in addition to the existing Traditional Pension Plan. OPERS began offering three retirement plans to members on January 1, 2003. The plans include the Traditional Pension Plan, the Member-Directed Plan, and the Combined Plan. A brief overview of each plan is provided below.

- **The Traditional Pension Plan**

  The Traditional Pension Plan is a defined benefit plan under which a member's retirement benefit is based on a formula. The formula is determined by the years of service credit multiplied by 2.2% and the average of the three or five (based on retirement group) highest years of eligible salary, referred to as final average salary (FAS). OPERS investment professionals manage the investment of member and employer contributions to ensure that funds are available to pay the formula benefit.

- **The Member-Directed Plan**

  The Member-Directed Plan is a defined contribution plan under which member and a portion of the employer contributions are deposited into a member's individual account and the member directs the investment by selecting from professionally managed investment options. Members become vested in the employer contributions at a rate of 20% for each year of participation until the member is fully vested at the end of five years. The account value available at retirement is based on member and vested employer contributions and the investment gains or losses on those contributions.

- **The Combined Plan**

  The Combined Plan is a retirement plan with both a defined benefit and a defined contribution component. The employer contributions fund the defined benefit portion of the Combined Plan. The member's defined benefit retirement component is determined by a formula similar to, but lower than, the Traditional Pension Plan formula. OPERS investment professionals manage the investment of the employer contributions to ensure that funds are available to pay the formula benefit. Under the defined contribution component of the Combined Plan, member contributions are deposited into the member's individual account and the member directs the investment by selecting from professionally managed investment options. The defined contribution account value available at retirement is based on member contributions and the investment gains or losses on those contributions. The Combined Plan is no longer available for new members after December 31, 2021.

Contributions

Employers are required to make contributions to the System on the basis of a percent of eligible salary and at a rate based upon the recommendations of the OPERS actuary, subject to the statutory limitations. Penalties and interest are assessed for late payments. The contribution rate for State and Local employers in 2022 was 14.0%. Employers in the Law Enforcement and Public Safety divisions contributed 18.1%.

The 2022 member contribution rate for State and Local members was 10.0% of eligible salary. Members in the Public Safety division contributed 12.0% of eligible salary, while members in the Law Enforcement division contributed 13.0%. Funds contributed by members of the Traditional Pension Plan are fully refundable at termination or death. The refund value of contributions made by members of the Combined Plan and the Member-Directed Plan are subject to the investment results (gains or losses) of the member's selected investment options.

Benefits under the Traditional Pension Plan or the Combined Plan

Age-and-Service Retirement

In 2012, the Ohio General Assembly enacted into law a number of significant plan design changes that became effective on January 7, 2013. In the legislation, members were categorized into three groups with varying provisions of the new law applicable to each group. Members who were eligible to retire under the law in effect prior to the legislation or who were eligible to retire no later than five years after January 7, 2013, comprise retirement Group A. Members who had 20 years of service credit prior to January 7, 2013, or who will be eligible to retire under the law in effect prior to the legislation no later than 10 years after January 7, 2013, are included in retirement Group B. Retirement Group C includes those members who are not in either of the other groups and members who were hired on or after January 7, 2013.

Retirement benefits are specific to each plan and members must meet the eligibility requirements based on their age and years of service within the plan. Retirement eligibility also varies by division and retirement group. The charts below show the retirement eligibility requirements for all divisions and retirement groups. The requirements for the State and Local divisions apply to members who participate in either the Traditional Pension Plan or the Combined Plan. The Law Enforcement and Public Safety divisions are only applicable to the Traditional Pension Plan.

Unreduced	Group A		Group B		Group C	
	Age	Service	Age	Service	Age	Service
State/Local	Any	30	52	31	55	32
			Any	32		
	65	5	66	5	67	5
Law Enforcement	48	25	50	25	52	25
	62	15	64	15	64	15
Public Safety	52	25	54	25	56	25
	62	15	64	15	64	15
Law and Public Safety (public safety benefit)	52	25	54	25	56	25

Reduced	Group A		Group B		Group C	
	Age	Service	Age	Service	Age	Service
State/Local	55	25	55	25	57	25
	60	5	60	5	62	5
Law Enforcement	52	15	52	15	56	15
			48	25	48	25
Public Safety	52	15	52	15	56	15
	48	25	48	25	52	25
Law and Public Safety (public safety benefit)	48	25	48	25	52	25

Benefit payments vary in amount depending on years of service credit, FAS, age, and plan of payment selection. FAS is the average of the three highest years of eligible salary for Groups A and B; and the average of the five highest years of eligible salary for members in Group C. The age-and-service formula benefit cannot exceed 100% of FAS (Law Enforcement is 90%), or the limits under Internal Revenue Code 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 they reach the age-and-service requirements for an unreduced benefit.

Disability Benefits

OPERS members are eligible for one of two disability programs: the original plan or the revised plan. Members who had contributions on deposit with OPERS on July 29, 1992, had a one-time opportunity to select coverage under one of these programs. Employees hired after July 29, 1992, are covered only under the revised plan. A number of features are common to both plans.

A member who has at least five years of service credit in either the Traditional Pension Plan or the Combined Plan and who becomes permanently mentally or physically disabled from the performance of their last public position may apply to OPERS for monthly disability benefits. Members in the Law Enforcement or Public Safety divisions may apply for disability at any time if the disabling condition was the result of an on-duty illness or injury. Coverage is limited to illness or injury that occurs before the member’s contributing service terminates or, in the case of illness or injury that results from the member’s employment, becomes evident no later than two years after the date the contributing service ends. The coverage does not extend to disability resulting from elective cosmetic surgery other than reconstructive surgery.

Survivor Benefits

A member's beneficiary is determined by statutory automatic succession unless a specific designation is made in writing on a form provided by OPERS.

Qualified beneficiaries will be eligible to receive monthly survivor benefits if, at the time of the member's death, certain qualifications were met.

If those qualifications were not met, a refund of the member's OPERS account value as defined by the Ohio Revised Code may be made.

Additional Benefits

Cost-of-Living Adjustment

When a benefit recipient has received benefits for 12 months, current law provides for an annual cost-of-living adjustment. This cost-of-living adjustment is calculated on the base retirement benefit at the date of retirement and is not compounded. For those who retired prior to January 7, 2013, the cost-of-living adjustment is 3%. For those retiring subsequent to January 7, 2013, beginning in calendar year 2019, the cost-of-living adjustment is based on the increase in the Consumer Price Index, capped at 3%.

Death Benefit

Upon the death of an age-and-service or disability benefit recipient, a lump-sum death benefit is paid to the qualified beneficiary. The benefit ranges from $500 to $2,500 based on the recipient's years of service credit.

Qualified Excess Benefit Arrangement

Total benefit payments to an individual are subject to the limitations identified in Section 415(b) of the Internal Revenue Code. In 2003, OPERS implemented a Qualified Excess Benefit Arrangement (QEBA) that allows OPERS recipients to receive the amount of their benefit that is subject to the IRS limits.

Refunds

A refund may be issued after two months have elapsed since the member terminated public service. For members of the Traditional Pension Plan, the refund value is equal to their member contributions plus interest. Members of the Combined Plan may refund their defined contribution account balance comprised of member contributions and investment gains or losses on those contributions, and any member contributions plus interest in the defined benefit portion of the plan arising from the purchase of eligible service. Members of the Traditional Pension Plan and the Combined Plan may also qualify for an additional amount calculated on their eligible contributions. Under the Traditional Pension Plan, full recovery of all member contributions to OPERS is guaranteed.

Refunded service credit may be restored in the Traditional Pension Plan and the Combined Plan if the member returns to OPERS-covered employment for at least 18 months in the plan from which the refund was issued. The amount refunded, including interest and the additional amount (if applicable), must be repaid for service credit to be restored. The member must also pay interest (compounded annually) at a rate determined by the Board for the period from the date of refund to the date the refunded amount is repaid.

Benefits under the Member-Directed Plan

Retirement

Members participating in the Member-Directed Plan are eligible to retire after they reach age 55. The current vested value of the individual account is available at retirement. All or a portion of the balance can be converted to a lifetime annuity through OPERS and the remainder can be rolled over to another eligible retirement plan or made payable to the member with taxes withheld.

Disability and Survivor Benefits

Participants in the Member-Directed Plan are not eligible for disability or survivor benefits. In the event of disability or death, the vested portion of the member's individual account is available for refund to the member or qualified beneficiaries.

Refunds

A refund may be issued after two months have elapsed since the member terminated public employment. Members participating in the Member-Directed Plan may receive member contributions and investment gains or losses on those contributions. Depending on length of participation in the Member-Directed Plan, a member may also receive a portion of the employer contributions, plus any investment gains or losses on those contributions, based on the schedule below.

Years of Participation	Percent Vested
Less than 1 year	0%
1 year	20%
2 years	40%
3 years	60%
4 years	80%
5 or more years	100%

Benefits for Re-employed Retirees

After a member retires, re-employment in an OPERS-covered job, including service in an elected position, is permitted but may affect continuing receipt of an age-and-service retirement benefit. Contributions must begin from the first day of re-employment. However, members who are re-employed anytime within the first two months after their effective retirement benefit date will forfeit their retirement benefit during this two-month period. This prohibition applies even if salary is waived for the two-month forfeiture period. OPERS health care coverage is also not available during any period of pension benefit forfeiture, and contributions remitted during the two-month forfeiture period will not be included in the calculation of a Money Purchase Plan benefit.

During re-employment, the retiree participates in the Money Purchase Plan. Upon termination of re-employment, retirees under age 65 may receive a refund of their Money Purchase account consisting of their member contributions made during the period of re-employment, plus interest. Retirees age 65 and older may receive an annuity benefit or lump sum payment that is based on the amount of their member contributions during the period of re-employment plus interest, and an amount from the employer's contributions established by the Board.

Health Care Program for Traditional Pension Plan and Combined Plan

With one exception, OPERS-provided health care coverage is neither guaranteed nor statutorily required. Ohio law currently requires Medicare Part A equivalent coverage or Medicare Part A premium reimbursement for eligible retirees and their eligible dependents.

OPERS offers a health reimbursement arrangement (HRA) allowance to benefit recipients meeting certain age and service credit requirements. The HRA is an account funded by OPERS that provides tax-free reimbursement for qualified medical expenses such as monthly post-tax insurance premiums, deductibles, co-insurance, and co-pays incurred by eligible benefit recipients and their dependents.

Eligibility

OPERS members enrolled in the Traditional Pension Plan or Combined Plan retiring with an effective date of January 1, 2022 or after must meet the following health care eligibility requirements to receive an HRA allowance:

1) **Medicare Retirees**—Medicare-eligible with a minimum of 20 years of qualifying service credit.

2) **Non-Medicare Retirees**—Non-Medicare retirees qualify based on the following age-and-service criteria:

   a) Group A—30 years of qualifying service credit at any age;

   b) Group B—32 years of qualifying service credit at any age or 31 years of qualifying service credit and minimum age 52;

   c) Group C—32 years of qualifying service credit and minimum age 55; or,

   d) A retiree from groups A, B or C who qualifies for an unreduced pension, but a portion of their service credit is not health care qualifying service, can still qualify for health care at age 60 if they have at least 20 years of qualifying health care service credit.

Retirees who don’t meet the requirement for coverage as a non-Medicare participant can become eligible for coverage at age 65 if they have at least 20 years of qualifying service.

Members with a retirement date prior to January 1, 2022 who were eligible to participate in the OPERS health care program will continue to be eligible after January 1, 2022, as summarized in the following table.

Retirement Date	Group A		Group B		Group C	
	Age	Service	Age	Service	Age	Service
December 1, 2014 or Prior	Any	10	Any	10	Any	10
January 1, 2015 through December 31, 2021	60	20	52 60	31 20	55	32
	Any	30	Any	32	60	20

See the Age-and-Service Retirement section beginning on page 217 for a description of Groups A, B and C.

Beginning January 1, 2014, qualifying contributing service credit for health care will be accumulated only if the member’s eligible salary is at least $1,000 per month. Partial health care credit will not be granted for months in which eligible salary is less than $1,000. Credit earned prior to January 2014 will not be affected by this requirement.

Recipients of disability benefits prior to January 1, 2014, have continued access to the health care program while the disability benefit continues and will not be subject to the five-year rule described below. The allowance will be determined in the same manner as an age-and-service retiree. If the recipient does not meet minimum age-and-service requirements, the minimum allowance will be used. Recipients with an initial disability effective date on or after January 1, 2014, will have coverage during the first five years of disability benefits. After five years, the recipient must meet minimum age-and-service health care eligibility requirements or be enrolled in Medicare (due to disability status) to remain enrolled in the OPERS health care program. If enrolled, the allowance will be determined in the same way as an age-and-service retiree.

HRA Allowances and Program Options

Eligible retirees may receive a monthly HRA allowance for reimbursement of health care coverage premiums and other qualified medical expenses. Monthly allowances, based on years of service and the age at which the retiree first enrolled in OPERS coverage, are provided to eligible retirees, and are deposited into their HRA account.

The base allowance is determined by OPERS and is currently $1,200 per month for non-Medicare retirees and $350 per month for Medicare retirees. The retiree receives a percentage of the base allowance, calculated based on years of qualifying service credit and age when the retiree first enrolled in OPERS health care. Monthly allowances range between 51% and 90% of the base allowance for both non-Medicare and Medicare retirees.

Retirees will have access to the OPERS Connector, which is a relationship with a vendor selected by OPERS to assist retirees participating in the health care program. The OPERS Connector may assist retirees in selecting and enrolling in the appropriate health care plan.

Medicare Parts A and B

When members become Medicare-eligible, recipients enrolled in OPERS health care programs must enroll in Medicare Part A (hospitalization) and Medicare Part B (medical).

OPERS reimburses retirees who are not eligible for premium-free Medicare Part A (hospitalization) for their Part A premiums as well as any applicable surcharges (late-enrollment fees). Retirees within this group must enroll in Medicare Part A and select medical coverage, and may select prescription coverage, through the OPERS Connector. OPERS also will reimburse 50% of the Medicare Part A premium and any applicable surcharges for eligible spouses. Proof of enrollment in Medicare Part A and confirmation that the retiree is not receiving reimbursement or payment from another source must be submitted. The premium reimbursement is added to the monthly pension benefit.

Health Care for Member-Directed Plan Participants

Members participating in the Member-Directed Plan have a portion of the employer contribution credited to an individual retiree medical account. Since January 1, 2017, interest on the accounts accrued only if the defined benefit investment portfolio earned a return greater than zero in the prior year. Beginning January 1, 2020, interest will accrue based on the investment performance of the stable value fund, not to exceed 4%. Members with an account prior to July 1, 2015, become vested in the account at a rate of 20% for each year of participation until the member is fully vested at the end of five years. For members establishing accounts on or after July 1, 2015, the vesting schedule is below. Upon a refund or retirement, distribution of the vested balance in the member's account may be used for the reimbursement of qualified medical expenses.

Years of Participation	Percent Vested
0-5 years	0%
6 years	10%
7 years	20%
8 years	30%
9 years	40%
10 years	50%
11 years	60%
12 years	70%
13 years	80%
14 years	90%
15 years	100%

Note: The information contained in this section is intended to be a summary only. Complete pension and health care details can be obtained through OPERS. This document reflects approved information as of the date listed. All plans are subject to change. Health care is not a statutorily guaranteed benefit. As such, the Board has the discretion to review, rescind or modify the health care plans at any time. There is no promise, guarantee, contract, or vested right to health care coverage or an allowance.