

2017 Comprehensive Annual Financial Report for
the year ended December 31, 2017

Focused Forward

Every step makes a difference



Ohio Public Employees Retirement System

Prepared by OPERS Finance Division staff



Dave Yost • Auditor of State

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

We have reviewed the *Independent Auditors' Report* of the Ohio Public Employees Retirement System, Franklin County, prepared by CliftonLarsonAllen LLP, for the audit period January 1, 2017 through December 31, 2017. Based upon this review, we have accepted these reports in lieu of the audit required by Section 117.11, Revised Code. The Auditor of State did not audit the accompanying financial statements and, accordingly, we are unable to express, and do not express an opinion on them.

Our review was made in reference to the applicable sections of legislative criteria, as reflected by the Ohio Constitution, and the Revised Code, policies, procedures and guidelines of the Auditor of State, regulations and grant requirements. The Ohio Public Employees Retirement System is responsible for compliance with these laws and regulations.

A handwritten signature in black ink that reads "Dave Yost".

Dave Yost
Auditor of State

July 26, 2018

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Annual Report Organization	2	Actuarial Section (unaudited)	139
Introductory Section (unaudited)	3	Letter from the Actuary	140
The OPERS Board of Trustees	4	Summary of Assumptions.....	143
Organizational Structure.....	5	Schedules of Average Defined Benefits Paid	153
Letter of Transmittal.....	6	Actuarial Valuation Data—Pension.....	154
Awards and Recognition.....	16	Schedule of Retirees and Beneficiaries	
		Added to and Removed from Rolls	156
Financial Section	19	Schedules of Funding Progress	157
Independent Auditors' Report	20	Short-Term Solvency Test.....	160
Management's Discussion and Analysis—Unaudited ...	22	Analysis of Financial Experience.....	162
Financial Statements		Actual vs. Recommended Contribution Rates.....	162
Combining Statement of Fiduciary Net Position.....	38	Statistical Section (unaudited)	165
Combining Statement of Changes in		Overview.....	166
Fiduciary Net Position.....	40	Net Position by Plan	167
Notes to Combining Financial Statements	42	Statutory Fund Balance by Plan.....	168
Required Supplementary Information—Unaudited.....	80	Fiduciary Net Position by Year.....	170
Schedules of Changes in Net Pension Liability and		Changes in Fiduciary Net Position	174
Related Ratios	80	Additions by Source.....	182
Schedules of Member and Employer Contributions—		Deductions by Type	186
Defined Benefits Plans	84	Benefits by Type	190
Schedules of Investment Returns—Defined Benefit		Pension Benefits by Type	192
Percent Portfolio	87	Health Care Expenses by Type	193
Schedule of Changes in Net OPEB Liability and		Refunds by Type.....	194
Related Ratios	88	Number of Refund Payments by Plan	194
Schedule of Employer Contributions—Health Care...	89	Funds Restricted for Member Health Care Accounts....	196
Schedule of Investment Returns—Health Care	89	Pension Assets vs. Pension Liabilities.....	197
Notes to Required Supplementary Information	90	Health Care Assets vs. Health Care Liabilities	199
Additional Information		Investment Rates by Portfolio.....	201
Administrative Expenses	92	Number of Retirees/Benefit Recipients	
Schedule of Investment Expenses	92	by Category.....	202
Investment Section (unaudited)	93	Number of Covered Lives by Category	204
Report from the Chief Investment Officer		Schedule of Retirees by	
on Investment Activities	94	Benefit Type and Amount.....	205
Independent Investment Consultant's Report	98	Number of New Pension Retirees	206
Overview.....	100	Schedules of Average Benefits	
Total Investment Summary	101	(Traditional Pension Plan and Combined Plan).....	208
Total Investment Returns.....	103	Member Counts by Plan	210
Historical Investment Returns.....	104	Pension Benefits and Retirees by Ohio County	214
Lists of Largest Assets Held	105	Retirees by Geographical Location	215
Schedules of Brokerage Commissions Paid	106	Contribution Rates.....	216
Schedule of Fees to External Asset Managers.....	108	Number of Employer Units	218
Schedule of External Asset Managers.....	109	Principal Participating Employers	219
Defined Benefit Portfolio.....	111	Plan Statement	221
Health Care Portfolio	117		
Defined Contribution Portfolio.....	123		
Ohio Investments.....	126		
Investment Objectives and Policies.....	127		
Asset Class Policies	133		
Investment Rates by Portfolio.....	137		
Structure and Relationship of Investment Policies	138		

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 221.

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 2017
- 2 Financial Section**—with the Independent Auditors' Report, Management's Discussion and Analysis, the financial statements of the System, and Required Supplementary 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 valuation
- 5 Statistical Section**—with significant data pertaining to the System
- 6 Plan Statement**—with complete membership information and details about the retirement plans offered through OPERS

Introductory Section



Focused forward

Consider the Wright Brothers of Dayton—aviators, engineers, inventors, and entrepreneurs with a big dream. For years, they worked on the idea of a machine that would take man into air travel. They did it; but success didn't happen overnight. For years the brothers worked in their Ohio-based shop on printing presses, bicycles, motors, and other machinery. They believed that if a bicycle could be controlled and balanced with practice, so could aircraft. They were correct. In 1903, at Kitty Hawk, North Carolina, the years of small steps resulted in the first controlled, sustained flight of a powered aircraft.

The Wright Brothers began their journey with small steps and continued on a path from a back room of a store in Ohio to meeting presidents, kings and other inventors.

OPERS fact: Today, airport employees are OPERS-contributing members. By making small contributions each pay period, these members are taking small steps that will, when matched with employer contributions and carefully invested over the length of their careers, build a foundation toward a secure retirement.



Board of Trustees members as of January 2018

**Front row (left to right):**

Ken Thomas, Representative for Municipal Employees and Board Chair; Julie Albers, Representative for County Employees; Herman Mollmann, Governor-Appointed Investment Expert

Middle row (left to right):

James Tilling, General Assembly Appointed Investment Expert; Steve Toth, Representative for Retirees; Cinthia Sledz, Representative for Miscellaneous Employees

Back Row (left to right):

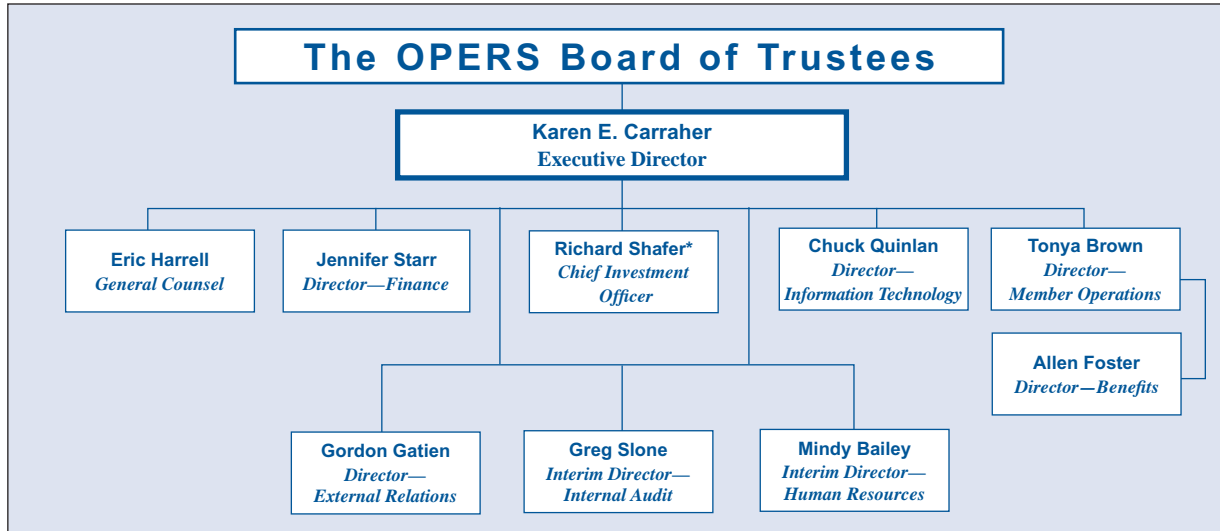
Seth Metcalf, Treasurer-Appointed Investment Expert; Christopher Mabe, Representative for State Employees and Board Vice Chair; Randy Desposito, Representative for Non-teaching College/University Employees; Robert Blair, Director, Department of Administrative Services (Statutory Member)

The 11-member Board of Trustees (Board) 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 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 monthly and receives no compensation, but is reimbursed for necessary expenses.



*Paul Greff, Deputy Chief Investment Officer, takes role upon retirement of Richard Shafer in June 2018.

Leadership Team



Seated (L-R): Greg Slone, Interim Director—Internal Audit; Eric Harrell, General Counsel; Allen Foster, Director—Benefits

Standing (L-R): Jennifer Starr, Director—Finance; Gordon Gatien, Director—External Relations; Richard Shafer, Chief Investment Officer; Tonya Brown, Director—Member Operations; Chuck Quinlan, Director—Information Technology; Karen Carraher, Executive Director

Not shown in photo: Mindy Bailey, Interim Director—Human Resources

Advisors to the Board of Trustees

Investment Policy

NEPC, LLC
Cambridge, Massachusetts

AON Hewitt Investment Consulting, Inc.
Chicago, Illinois

Actuary

Gabriel, Roeder, Smith & Company
Southfield, Michigan

Auditor

CliftonLarsonAllen LLP
Toledo, Ohio
(under contract with the Auditor of State)

See pages 108-109 for a list of investment 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

June 14, 2018

Dear Chair and Members of the Board of Trustees:

On behalf of all management and staff, it's our pleasure to present you with the *2017 Comprehensive Annual Financial Report* (CAFR or annual report). This document reflects the ongoing commitment of all activities undertaken by the Ohio Public Employees Retirement System (OPERS or System) for the fiscal year ended December 31, 2017.

Our theme, *Focused Forward: Every step makes a difference*, conveys the dedication of our efforts throughout 2017—staff, management and Board of Trustee members. We know that each step—seemingly small or impressively large—makes a difference. We know that only with well-planned, well-executed steps can we continue to evolve and change for the future. The steps reported here for 2017 clearly illustrate our forward focus—a focus critical to our continued ability to deliver on our promise of providing a secure retirement for our members—present and future.

Because the future is unknown, we must work every day to ensure this organization can address the needs of current and future retirees. Simply put, OPERS must constantly be focused forward. Each OPERS associate works to ensure each step taken propels this organization closer to attaining our five overarching goals—specifically, those goals are to:

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

Overview of OPERS—a Tradition of Focusing Forward

In reality, OPERS has always focused forward. We know that only by anticipating change and identifying necessary steps to adapt has the System endured. 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. Since then, the ongoing commitment to evolving for the future has guided this System. That strong focus

has meant that OPERS has always been a good financial steward of the funds entrusted to the organization. We have not embarked on changes without careful consideration of all options. The Legislature, Board and members have trusted OPERS to review the pension plans to ensure they are sustainable and to develop solutions to fairly address identified issues. We use reliable information and plan for the future, avoiding the crisis-management situations. We did not achieve our current financial position and maintain the benefits by waiting for a crisis to address OPERS' financial stability.

Where possible and fiscally responsible, the System provided additional options for retirees. 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 from one to three distinct plans. More information on current benefits can be found in the Plan Statement starting on page 221.

As of year-end 2017, OPERS served over 1,116,000 members, including 210,868 retirees and beneficiaries. In addition, the System works with approximately 3,700 public employers. With a net asset base of \$101.4 billion, OPERS is the largest public pension system in Ohio and the 12th largest public pension system in the nation. These numbers clearly demonstrate OPERS' importance as an economic driver for the state of Ohio.

The year 2017 was good for financial markets and the positive results we've garnered reflect that. Good years with strong results enable us to continue progress toward our long-term goals. The OPERS team—staff, management and Board—remains dedicated to keeping this System strong today and well into the future. We know all years will not be as strong—but OPERS is dedicated to a long-term focus.

Reflected here, the 2017 activities clearly demonstrate our ability to focus forward and take steps toward attaining our goals. As with all years, anticipated and unanticipated changes provided opportunities and challenges. We focused on maximizing the opportunities and minimizing the impact of unexpected events. For your review, here are our highlights.

Key Activities in 2017

Investments

The results of our investment efforts are always a focus for every person in this organization. Because investment returns provide approximately two-thirds of a retiree's ultimate pension, the results of each and every year are important. As always, throughout 2017, we remained steadfast to the proven principles of asset allocation and diversification.

The growing retiree base, retirees living longer in retirement than ever, and the escalating costs in health care all create unprecedented drains on the income generated from investments. The OPERS long-term investment goal is to attain targeted results to help provide secure retirement benefits for our members. This sustained performance goal means we focus on the long-term market view—but understand that year-to-year market fluctuations and corrections will occur. When corrections occur, we work to ensure the System can absorb the losses by having the resources and safeguards in place to sustain the foundation.

Globally, the 2017 market delivered strong returns—and OPERS was well-positioned to enjoy the success of the rising markets. The OPERS total portfolio return for 2017 was 16.62 percent, better than the anticipated 7.50 percent long-term actuarial return projected for our funding plan. We also exceeded the benchmark return of 15.11 percent. OPERS' total portfolio is made up of underlying portfolios that fund pension benefits and the health care program.

The underlying investment portfolios are: the Defined Benefit portfolio, the Defined Contribution portfolio, and the Health Care portfolio. By portfolio, the 2017 returns were:

- Defined Benefit portfolio returned 16.82 percent, compared to the benchmark return of 15.19 percent, and the anticipated actuarial funding plan rate of 7.50 percent.
- The Defined Contribution portfolio returned 17.39 percent, compared to the benchmark return of 17.19 percent.
- The Health Care portfolio returned 15.25 percent, compared to the benchmark return of 14.31 percent and the anticipated actuarial funding plan rate of 6.50 percent.

A complete discussion of investment returns, activities, asset allocation strategy, and policies governing those activities can be found in the Investment Section, beginning on page 93. Additionally, information on investment fees and commissions can be found beginning on page 106.

Cost-of-living Adjustment

Because we are forward focused, OPERS works each year to ensure the organization remains financially strong. To provide financial stability for all current and future retirees, the System evaluates the changing environment and prepares for the impact of changes. This forward looking projection of anticipated upcoming changes led the System to evaluate the plan design in 2017.

After extensive evaluation, the System sought to modify the annual cost-of-living adjustment. The cost-of-living adjustment for OPERS retirees was a fixed 3.0 percent simple annual adjustment. The cost-of-living adjustment had already been modified for future retirees, but based on the future projected long-term outlook, OPERS sought a change for all retirees. The proposed changes would modify the cost-of-living adjustment for all retirees and link the annual cost-of-living adjustment percentage increase to the Consumer Price Index capped at 2.5 percent. In addition, the initial cost-of-living adjustment for future retirees would be delayed until their second pension anniversary, rather than their first as is current practice. Additionally, the proposal included ad hoc cost-of-living adjustment increases for retirees that had been retired longer, and automatic cost-of-living adjustment changes in the event of high amortization periods, as well as periods of favorable funding. The changes were proposed to become effective in 2019 and were expected to reduce the System's \$19 billion unfunded liability by \$3.1 billion.

These proposed changes were introduced into legislation and included in House Bill 413. As of the date of this report, this bill was not expected to be approved in this current legislative cycle.

Similar to the pension and health care changes made in 2012, the proposed legislation was undertaken to improve the financial stability of the System with the goal of providing a secure retirement for members and beneficiaries—both present and future. OPERS will continue to pursue this goal.

Focused on the Strength of the System and Future Projections

Each step we take is designed to keep this organization balanced between strengthening our financial position for future retirees and providing for current retirees and their beneficiaries. To do this, we are constantly focused forward. Although recent market returns have been good, we still have a \$19 billion unfunded liability that needs to be addressed.

The overall funded ratio is good, but not great. OPERS funded ratio improved only slightly from 80 percent to 81 percent—especially significant even after the extremely strong investment returns of 2017. This means the System has 81 percent of the assets necessary to fund the liability that will come due in future years for both active and retired members.

By law, OPERS is obligated to pay the benefits that have commenced with retirees. Each year, to make these payments, funds are transferred 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 is 49 percent as of December 31, 2017, compared to 46 percent as of December 31, 2016. The amortization period reflects how much time will be needed to fund remaining liabilities. The current OPERS amortization period of 18 years is within the statutorily required 30-year window.

OPERS consults with independent investment professionals and actuaries to analyze past trends and model future projections. OPERS investment experts and actuarial consultants have indicated that without significant future market improvement, OPERS may need to further decrease the long-term earnings expectations. Currently, all funding is dedicated to fund pension and, thus, there is no funding to health care. As a result, any changes to the long-term earnings assumption would have a direct impact on funding levels.

The Actuarial Section, beginning on page 139, provides complete schedules of funding progress for pension and health care.

Health care—Incremental Changes Working, but Focused Forward

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 an important piece of a secure retirement. This dedication to maintaining access to meaningful health care has become increasingly expensive as OPERS retirees, similar to national trends, have increased in number, have longer life expectancies, and have encountered health care costs increasing significantly faster than inflation. Because we anticipate that health care expenses will continue to grow as the number—and life expectancies—of our retirees continues to grow, we again look to the future to determine how to make incremental changes to ensure adequate funding exists for future retirees.

One recent solution was the implementation of the OPERS Medicare Connector (Connector). In 2016, the Connector was fully deployed and provided more than

143,000 Medicare-eligible OPERS retirees and dependents with access to an individualized Medicare Advantage or Medigap plan and a prescription drug plan from the open market. This solution, along with other changes to the health care program phased in over the past few years, has saved OPERS more than \$12 billion, with more than \$625 million occurring in 2016 and 2017. In conjunction with the Connector, OPERS provides financial assistance to eligible members in the form of a health reimbursement arrangement (HRA) and assistance in selecting health care plans through a vendor. Although the health care program phased out allowances for all spouses in 2018, in 2017 the Board approved a plan to extend the allowance for some low-income surviving spouses. OPERS is committed to strengthening processes to help improve the member experience, including additional education around the use of the HRA. These efforts continue into 2018.

As previously noted, OPERS is no longer funding the retiree health care program. While health care coverage is not required by law, we know the importance of health coverage to our retirees. The \$12 billion health care trust fund has no additional funding and is currently enhanced solely by investment returns. Actuaries have determined the health care trust fund has approximately 12 years of solvency under the current health care program design. The Plan Statement, found on page 221 of this CAFR, includes more information on the current health care program and requirements.

Other key 2017 activities are identified below—each positioning the System for the future:

- **Transparent financial reporting**—OPERS continued assisting OPERS-reporting employers with implementation and compliance to new standards required by the Governmental Accounting Standards Board (GASB). In 2017, OPERS was required to implement extensive financial reporting standards for other post-employment benefits (OPEB), such as health care. The standards require contributing employers to implement the new OPEB-reporting requirements in 2018. OPERS has been working to ensure all affected employers will be in a good position to implement the latest round of GASB standards. As was with the pension standards, the new OPEB standards have no impact on funding and are a reporting requirement only.
- **Internal processes and investment in technology**—The System's goal is to provide excellent service to ever-increasing numbers without the commensurate increase in staff. The internal technology and business process redesign project attained its targeted 2017 milestones that will provide for more responsive features for members. Targeted for completion in 2019, the positive impact both in terms of superior service delivery and personnel savings has been realized. The 2018 budget reflects a decrease of approximately \$2.4 million in personnel expenses with the elimination of 32 vacant positions.
- **Outreach and education**—Customer service is always a high priority. Even as we are focused forward, we work to ensure all stakeholders—especially current retirees and members, the retirees of tomorrow, understand the business of pensions. The System works to provide plain-language information on the OPERS plans, benefit options, as well as, the financial realities of retirement. Here's an overview of the outreach and education for 2017:

- Each active member received personalized account information via an annual account statement to help ensure each understands the status of benefits earned.
- More than 420 educational seminars were conducted throughout the state.
- The OPERS website attracted more than 1,150,000 individual hits, while the Member Services Call Center fielded over 350,000 calls.
- More than 194,000 retiree surveys were mailed garnering a 40 percent return rate.
- Electronic communication via email blasts, social media outlets and external website pages helped the System reach members and retirees attracting almost 40,000 views.

Report Contents and Structure

This CAFR is designed to comply with the reporting requirements of 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 are based on OPERS 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, CliftonLarsonAllen LLP, 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 19.

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

2017 Financial Highlights

Funded Status: Funded status measures the progress of accumulating the funds necessary to meet future obligations. Historically, periods of diminished funded status were made up as market conditions improved. Similarly, years of enhanced funded status are eroded when market conditions are poor. OPERS is dedicated to maintaining and enhancing the stability of this System. As a result, OPERS has remained in compliance within the 30-year funding window required by law.

The December 31, 2017 valuation funded status is 81 percent. The unfunded liability is expected to be funded within 18 years on a funding basis. These results reflect the changes in assumptions from the experience study completed in 2016 which reduced the assumed rate of return or discount rate from 8.0 percent to 7.5 percent. For more information on assumptions, refer to the Actuarial Section beginning on page 139.

OPERS has a tradition of anticipating escalating expenses and proactively working toward funding those expenses. Although not required by statute to provide health care or to pre-fund health care, as responsible administrators, OPERS chose to pre-fund this expense. We recognize that providing meaningful access to health care is an important element of financial security for OPERS retirees. OPERS has established a plan of pre-funding and continuously evaluating the health care plan in an effort to continue health care offerings for current and future generations of retirees.

As of the December 31, 2016 health care actuarial funding valuation (the most recent), OPERS was 60.7 percent funded. In the absence of employer contributions, the health care fund is expected to become insolvent after 12 years.

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 \$1.4 billion in member and \$2.0 billion in employer contributions for the year ended December 31, 2017. Total net position is \$101.4 billion as of December 31, 2017.

Expenses: Expenses (including pension benefit payments, health care coverage payments and account refunds) for fiscal year 2017 were \$7.3 billion. In 2017, OPERS paid \$5.8 billion in pension benefits and \$1.0 billion in health care to more than 210,000 OPERS retirees and their beneficiaries. Because approximately 90 percent 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; the System focuses on being efficient. Administrative costs in 2017 were \$116.5 million, including investment expenses.

Complete details of all administrative expenses are included in the Financial Section, on page 92. In addition, the Management's Discussion and Analysis, beginning on page 22, has a more detailed discussion of the OPERS funded status and also 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 advisors to the Board for all the plans are NEPC, LLC, Cambridge, Massachusetts; and AON Hewett Investment Consulting, Inc., Chicago, Illinois. The financial records of the System are audited by CliftonLarsonAllen, LLP, Certified Public Accountants, Toledo, Ohio, under contract with the Ohio Auditor of State.

Acknowledgments

This CAFR 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.

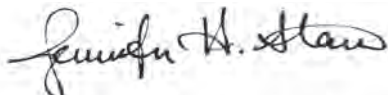
This annual report is designed to provide complete and reliable information for transparent communication, a benchmark for determining legal compliance, and a resource against which we measure current and future decisions. We take our fiscal responsibility very seriously. We are effective and diligent managers of the assets held in trust for members of this System.

As responsible stewards of public assets, we must take the steps and make the decisions that will carry this organization forward so that we can deliver on our part of providing financial security in retirement for all generations of OPERS members. This organization is led by a dedicated and diligent Board that works tirelessly with OPERS management and staff to help position us for the future. We all have a fiduciary responsibility to make decisions in the best interest of each of our 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 are pleased to report that the activities of 2017 added to the overall strength of the System. We will continue to focus forward with the resolve to keep evolving so that OPERS remains a strong pension system. We are honored to be associated with, appreciate and acknowledge the efforts of all involved as, together, we prepare for and step into the future.

Respectfully submitted,



Karen E. Carraher, CPA
Executive Director



Jennifer H. Starr, CPA
Chief Financial Officer



Karen Carragher and Jennifer Starr

Fiduciary Responsibilities

The Board and executive management of OPERS are fiduciaries of the pension 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
Director—Finance
277 East Town Street
Columbus, Ohio 43215-4642

Introductory Section



In memoriam John Maurer

It is with profound sadness we report the loss of a long-term colleague. In November, Board member John Maurer passed away. Maurer served on the OPERS Board representing two distinct groups: from 1991-1994, representing state employees, and then again starting in 2005 as a retiree representative.

Maurer was an industrious member of the Board of Trustees, serving on many Board committees. With degrees in accounting and law, he brought a depth of understanding to the complex world of pensions. His dedication to the retirees he represented was his hallmark—he will be remembered as a passionate advocate. To represent the retiree constituency, Board representatives must also be OPERS retirees—Maurer retired from the state of Ohio in 1996 after a career as an administrative attorney and state tax auditor.

Maurer was a believer in giving back to his community and country. In addition to his service on the OPERS Board of Trustees, Maurer was a veteran of the U.S. military, having served as a paratrooper in the Marine Corps. Additionally, he was involved with Columbus Arts Festival, the board of a local organic food co-op, Grandparents Living Theater Group, and he recorded a radio program for the blind and visually impaired.

In all venues in which he chose to participate, his diligence and expertise will be missed.

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:

- **2016 Certificate of Achievement**—For the 34th 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 *Comprehensive Annual Financial Report* for the fiscal year ended December 31, 2016. In order to be awarded a certificate of achievement, a government must publish an easily readable and efficiently organized comprehensive annual financial report that satisfies both generally accepted accounting principles and applicable legal requirements.



Certificate of Achievement for Excellence in Financial Reporting



- **2016 Award for Outstanding Achievement**—For the seventh consecutive year, OPERS has received the GFOA award for Outstanding Achievement in Popular Annual Financial Reporting for the OPERS *Popular Annual Financial Report* for the fiscal year ended December 31, 2016. 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.

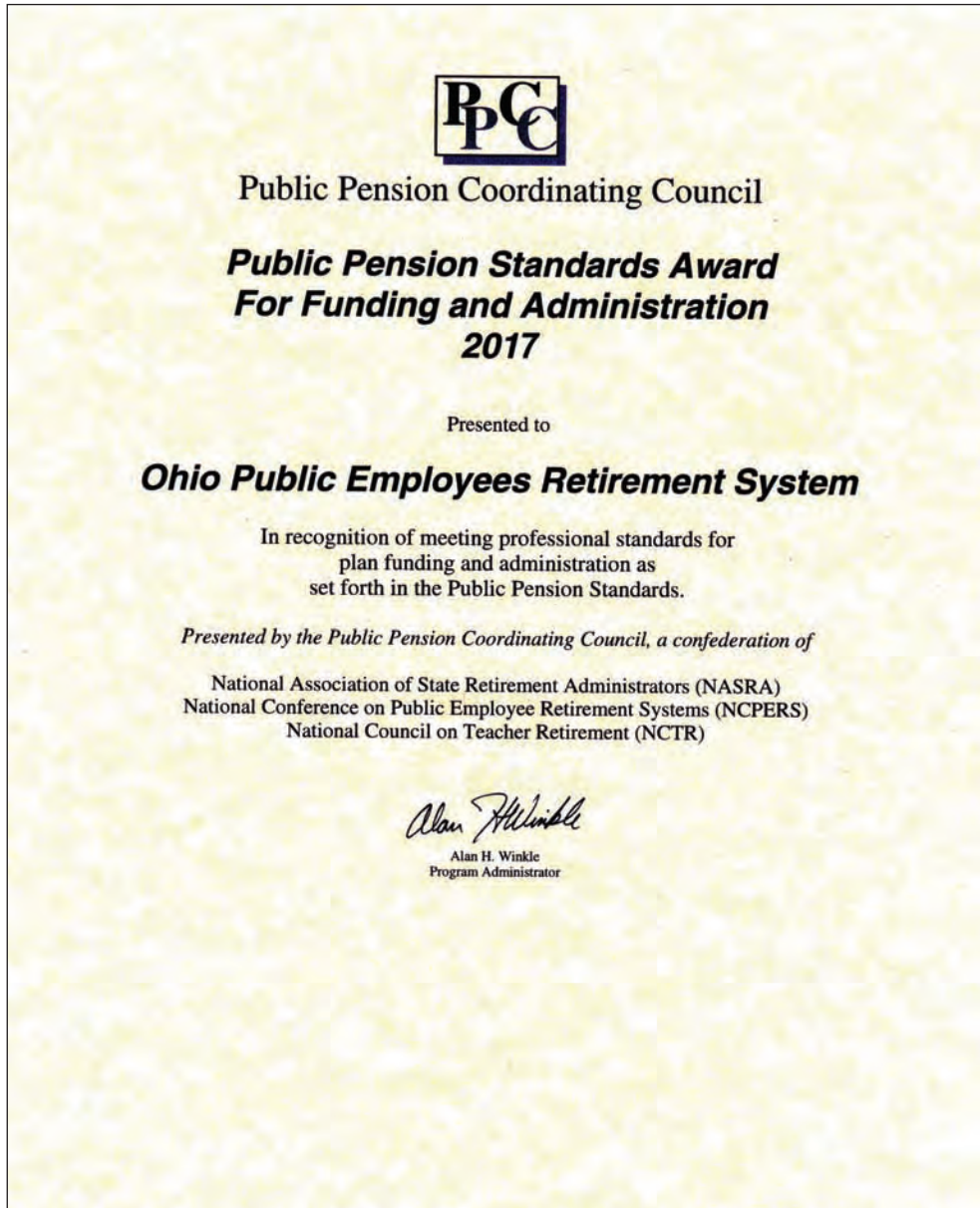
 **Award for Outstanding Achievement in Popular Annual Financial Reporting**



- **2017 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.



2017 Public Pension Standards Award



Financial Section



One step at a time

In school, small experiences create the foundation for higher learning. Few children taking their first steps to their first day of school think about advanced calculus, developing an app, or even graduating from college. Each step creates a strong foundation for additional knowledge—and so it goes every step of the way for academic success.

The same is true of a secure retirement. Few public employees are actually thinking about retirement on the first day of public employment. However, from the first day of employment to the last day, contributions toward retirement for each public employee are gathered. These contributions are matched by the employee's public employer and carefully invested for the length of his/her public career. Each step, each pay period, is a small step that takes each public employee closer to a secure retirement.

OPERS fact: Today, non-teaching state college and university employees are OPERS-contributing members. OPERS provides all active members with an individualized account and annual account information—showing how each step takes our members toward retirement.





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INDEPENDENT AUDITORS' REPORT

Board of Trustees
The Ohio Public Employees Retirement System, and
The Honorable Dave Yost, Auditor of State

Report on the Financial Statements

We have audited the accompanying financial statements of the Ohio Public Employees Retirement System (OPERS), which comprise the combining statement of fiduciary net position as of December 31, 2017, and the related combining statement of changes in fiduciary net position for the year then ended and the related notes to the financial statements, which collectively comprise OPERS' basic financial statements, as listed in the table of contents.

Management's Responsibility for the Financial Statements

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

Auditors' Responsibility

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

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

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

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the fiduciary net position of OPERS as of December 31, 2017, and the respective changes in its fiduciary net position for the year then ended in accordance with accounting principles generally accepted in the United States of America.



Board of Trustees
The Ohio Public Employees Retirement System, and
The Honorable Dave Yost, Auditor of State

Other Matters*Required Supplementary Information*

Accounting principles generally accepted in the United States of America require that the management's discussion and analysis, the schedules of changes in net pension liability and related ratios – traditional pension plan, combined plan and member directed plan, member and employer contributions – traditional plan, employer contributions – traditional plan, combined plan and member-directed plan, investment returns – defined benefit portfolio, changes in net OPEB liability and related ratios – health care, employer contributions – health care, investment returns – health care portfolio, and notes to required supplementary information, as listed in the table of contents, be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Other Information

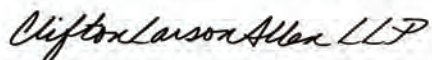
Our audit was conducted for the purpose of forming an opinion on the financial statements that collectively comprise OPERS' basic financial statements. The additional information, including the administrative expenses and schedule of investment expenses, as listed in the table of contents, is presented for purposes of additional analysis and are not a required part of the basic financial statements.

The additional information, as listed in the table of contents, is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the basic financial statements. Such information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the additional information, including the administrative expenses and schedule of investment expenses, as listed in the table of contents, is fairly stated, in all material respects, in relation to the basic financial statements as a whole.

The introductory, investment, actuarial and statistical sections, as listed in the table of contents, have not been subjected to the auditing procedures applied in the audit of the basic financial statements, and accordingly, we do not express an opinion or provide any assurance on it.

Other Reporting Required by Government Auditing Standards

In accordance with *Government Auditing Standards*, we have also issued our report dated June 14, 2018 on our consideration of OPERS' internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is to solely 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 OPERS' 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 OPERS' internal control over financial reporting and compliance.



CliftonLarsonAllen LLP

Toledo, Ohio
June 14, 2018

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, 2017. 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 38.

The *OPERS Comprehensive Annual Financial Report* (CAFR or annual report) presents financial statements for the most recent year end. Users of this CAFR can refer to the Statistical Section, beginning on page 165, 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 mandated, this CAFR also contains the following schedules, referred to as Required Supplementary Information:

1. Schedules of Changes in Net Pension Liability and Related Ratios—Traditional Pension Plan, Combined Plan and Member-Directed Plan
2. Schedule of Member and Employer Contributions—Traditional Pension Plan
3. Schedules of Employer Contributions—Traditional Pension Plan, Combined Plan and Member-Directed Plan
4. Schedule of Investment Returns—Defined Benefit Portfolio
5. Schedule of Changes in Net OPEB Liability and Related Ratios—Health Care
6. Schedule of Employer Contributions—Health Care
7. Schedule of Investment Returns—Health Care
8. 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 beginning below and continuing on the next two pages. Please refer to the Plan Statement, beginning on page 221 for a comprehensive 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 beginning below.

The Traditional Pension Plan

The Traditional Pension Plan is a defined benefit plan in which a member's retirement benefits are calculated on 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 earnings on those contributions.

 **The Combined Plan**

The Combined Plan is a defined benefit plan with elements of a 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 earnings (or losses) on those contributions. Members may also elect to use their defined contribution account balances to purchase a defined benefit annuity administered by OPERS.

 **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 earnings (or losses) on those contributions. Employer contributions and associated investment earnings 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, or may elect to use his/her defined contribution account balance to purchase a defined benefit annuity administered by OPERS.

 **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 initial purpose of the 115 Trust was to fund health reimbursement arrangement (HRA) accounts for Medicare-eligible retirees in conjunction with the implementation of the OPERS Medicare Connector (Connector) in 2016. This type of arrangement was not allowable under OPERS former health care trust structure. In 2016, OPERS received favorable rulings from the IRS allowing OPERS to consolidate all health care assets into the 115 Trust. As a result, the 401(h) Health Care Trust, which held funding for Traditional Pension Plan and Combined Plan health care, and the Voluntary Employees' Beneficiary Association Trust, which held funding for Member-Directed Plan health care, closed on June 30, 2016 and the net positions transferred to the 115 Trust on July 1, 2016.

From 2016 forward, the 115 Trust pre-funds and holds the portion of employer contributions of the Traditional Pension, Combined and Member-Directed plans set aside for funding retiree health care. The health care portion of the employer contribution rate for the Traditional Pension and Combined plans is comparable, as the same coverage options are provided to participants in both plans. Non Medicare-eligible retirees in these plans may receive an allowance to offset the premium of OPERS-sponsored health care coverage. Medicare-eligible retirees in the Traditional Pension and Combined plans may have an allowance deposited into an HRA account to be used toward the health care program of their choice selected with the assistance of an OPERS vendor.

Upon separation or retirement of a Member-Directed Plan participant, the participant may use the vested funds in his/her retiree medical account for qualified health care expenses. Vesting requirements for Member-Directed health care have changed over the life of the plan. The plan originally required 10 years of participation to fully vest in the contributions and interest earned on the account. Effective January 1, 2009, contributions and interest vested with the participant over a five-year period. 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 221.

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 reports the 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) represents the value of assets held in trust for pension benefits and health care. (See Combining Statement of Fiduciary Net Position as of December 31, 2017 on pages 38-39 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. Governmental Accounting Standards Board (GASB) Statement No. 74 (GASB 74), *Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans* (OPEB), implemented in 2017, requires that specific health care receipts be netted with health care expenses displayed in the Benefits line item of the Combining Statement of Changes in Fiduciary Net Position. Therefore, the Additions section of this statement will not include Retiree-Paid Health Care Premiums, Federal Subsidy or prescription drug formulary rebates, rebates previously included in the Contract and Other Receipts line item. Instead, these items will be netted with the health care costs reported in Benefits under the Deductions section. (See Combining Statement of Changes in Fiduciary Net Position for the year ended December 31, 2017 on pages 40-41 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. The most significant changes to this section are in Note 9 and include additional information to comply with GASB 74. The disclosures in this section were expanded to include detailed information on the Net OPEB Liability, and related activity, as defined in GASB 74.

These requirements are similar to the pension requirements disclosed in Note 8. (See Notes to Combining Financial Statements, December 31, 2017 on pages 42-79 of this report.)

The financial statements described are prepared in accordance with 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 50.

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 section includes schedules of changes in net pension liability and net OPEB liability, 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 for the initial year of implementation when historical information is unavailable as with GASB Statement No. 67 (GASB 67), *Financial Reporting for Pension Plans*, and GASB 74:

Schedules of Changes in Net Pension Liability and Related Ratios—Traditional Pension Plan, Combined Plan and Member-Directed Plan

The Schedules of Changes in Net Pension Liability (pages 80-83) include actuarial information regarding the increase (or decrease) of each element of the net pension liability 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 than are 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 30 for additional information on actuarial smoothing techniques). Therefore, the GASB 67 Accounting Basis net pension liability results differ from the Funding Basis unfunded actuarial accrued liability results provided in the Schedule of Funding Progress included on page 29 of this section and in the Actuarial Section of this document beginning on page 157. GASB 67 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 67 implementation in 2014. The schedules will be expanded each subsequent year until they contain the required 10-year presentation.

Schedule of Member and Employer Contributions—Traditional Pension Plan

The Schedule of Member and Employer Contributions (page 84) presents historical trend information regarding the value of total annual contributions required to be paid by the members and employers participating in the Traditional Pension Plan, and the actual amounts remitted. The information contained in this schedule reflects the required contributions based on the contribution rates approved by the OPERS Board of Trustees (Board). This schedule includes both member and employer contributions used to calculate the proportionate share by employer for the Traditional Pension Plan.

GASB Statement No. 68 (GASB 68), *Accounting and Financial Reporting for Pensions*, was issued by GASB in conjunction with GASB 67. GASB 68 applies to employers that participate in OPERS as well as other governmental employers that sponsor or contribute to pension plans. GASB 68 requires employers to recognize a proportionate share of the net pension liability in their financial statements, and includes other reporting changes. GASB 68 specifies that when different contribution rates are assessed for different classes of employees, the determination of the employer's proportionate share should reflect those relationships. The Traditional Pension Plan proportionate share calculation includes both member and employer contributions to recognize the differing benefits of members in the State, Local, Public Safety and Law Enforcement divisions. Members in the Public Safety and Law Enforcement divisions are prohibited from participating in the Combined Plan or Member-Directed Plan. The defined benefit pension portion of the

Combined Plan is funded with employer contributions only. Annuitized defined contribution accounts for Member-Directed Plan retirees are funded with member contributions, vested employer contributions (if applicable) and investment gains/(losses) related to those contributions. Separate schedules showing employer-only contributions for the Traditional Pension Plan, Combined Plan and Member-Directed Plan are also included in RSI and described below.

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

The Schedules of Employer Contributions (pages 85-86) 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 Board. The Member-Directed Plan is a defined contribution plan with the option for retirees to purchase a defined benefit annuity administered through OPERS. Defined benefit annuities purchased by eligible Member-Directed retirees are funded with the accumulated member contributions, vested employer contributions, and gains or losses resulting from the member-selected investment options. All employer contributions deposited to the Member-Directed Plan are included in these schedules.

Schedule of Investment Returns—Defined Benefit Portfolio

The Schedule of Investment Returns (page 87) 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 and Related Ratios—Health Care

The Schedule of Changes in Net OPEB Liability (page 88) includes actuarial information regarding the increase (or decrease) of each element of the net OPEB liability 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 than are 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 30 for additional information on actuarial smoothing techniques). Therefore, the GASB 74 Accounting Basis net OPEB liability results differ from the Funding Basis unfunded actuarial accrued health care liability results provided in the Schedule of Funding Progress included on page 30 of this section and in the Actuarial Section of this document on page 159. 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 this 2017 annual report. 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 89) 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**

The Schedule of Investment Returns (page 89) 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 this 2017 annual report. 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 90-91) 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 92).

 **Schedule of Investment Expenses**

The Schedule of Investment Expenses summarizes the costs incurred in managing the investment assets of the System (page 92). 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.

Financial Highlights

- The investment portfolio reported total returns of 16.62%, for the year ended December 31, 2017, compared to returns of 8.23% in 2016. The total portfolio, as of year end, is divided into three sub-portfolios: the Defined Benefit portfolio, the Health Care portfolio, and the Defined Contribution portfolio. The Defined Benefit portfolio earned an investment return of 16.82% in 2017 compared to a return of 8.31% in 2016. The Health Care portfolio earned an investment return of 15.25% in 2017 compared to the return on total health care assets for the year ended December 31, 2016 of 7.55%. The Defined Contribution portfolio earned an investment return of 17.39% in 2017 compared to a return of 9.51% in 2016.
- Net position increased by \$10.8 billion to \$101.4 billion as of December 31, 2017 compared to \$90.6 billion in 2016. Net income from investing activities totaled \$14.6 billion in 2017 compared to income of \$6.9 billion in 2016. Table 1 presents a two-year comparative history of Changes to Fiduciary Net Position.

 Changes to Fiduciary Net Position (for the years ended December 31, 2017 and 2016)				Table 1
	2017	2016	Amount Increase/ (Decrease) from 2016 to 2017	Percent Increase/ (Decrease) from 2016 to 2017
Member and Employer Contributions	\$3,411,695,981	\$3,328,847,544	\$82,848,437	2.5%
Contract Receipts and Other Income	116,664,391	191,064,863	(74,400,472)	(38.9)
Retiree-Paid Health Care Premiums		184,368,783	(184,368,783)	(100.0)
Net Income from Investing Activity	14,619,914,555	6,926,572,065	7,693,342,490	111.1
Total Additions	18,148,274,927	10,630,853,255	7,517,421,672	70.7
Benefits, Health Care and Account Refunds	7,235,012,080	7,215,166,451	19,845,629	0.3
Administrative and Other Expenses	98,267,236	96,264,397	2,002,839	2.1
Total Deductions	7,333,279,316	7,311,430,848	21,848,468	0.3
Net Increase in Net Position	10,814,995,611	3,319,422,407	7,495,573,204	225.8
Net Position, Beginning of Year	90,610,824,225	87,291,401,818	3,319,422,407	3.8
Net Position, End of Year	\$101,425,819,836	\$90,610,824,225	\$10,814,995,611	11.9%

- OPERS continues its goal of ensuring financial stability of both the pension and health care funds. In 2016, the Board adopted changes to the pension and health care actuarial assumptions based on the results of an experience study for the period 2011 through 2015. The experience study incorporates both a historical review and forward-looking projections to determine the appropriate assumptions to keep the plan on a path toward full funding. As reported in 2016, the most notable changes included a reduction in the expected rate of pension investment return from an 8.0% actuarially assumed rate of return to 7.5% and a change in mortality tables for both pension benefits and health coverage. (Refer to the Actuarial Section, beginning on page 139, for more information on actuarial assumptions.)

- OPERS presents current pension funding information in Table 2, which aligns with the year end of the financial statements presented in this document. As a result, the pension funding discussion includes information updated as of December 31, 2017. The health care funding presented in this document (refer to Table 3 on page 30) remains one year in arrears as the most recent health care funding information is as of December 31, 2016.

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
2017	\$102,656	\$83,292	\$19,364	81.1%	18
2016 ^e	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
2012 ^c	83,878	67,855	16,023	80.9	26
2012 ^d	87,105	67,855	19,250	77.9	30
2011	84,530	65,436	19,094	77.4	30
2010 ^a	80,485	63,649	16,836	79.1	24
2010 ^b	79,630	60,600	19,030	76.1	29
2009	76,555	57,629	18,926	75.3	30
2008	73,466	55,315	18,151	75.3	30

^a Revised actuarial assumptions based on experience study.

^b Results from original valuation prior to re-statement after completion of experience study.

^c Results reflecting the provisions of Senate Bill 343.

^d Results prior to the provisions of Senate Bill 343.

^e Restated upon finalization of actuarial valuation subsequent to issuance of the 2016 CAFR.

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 previously noted, the OPERS net investment income for the year ended December 31, 2017 totaled \$14.6 billion, including an investment return of 16.62% on the total OPERS portfolio. Net investment income for the defined benefit plans comprised \$12.6 billion of this total, with a return of 16.82%. The net investment income for the Health Care portfolio was \$1.8 billion, with an investment return of 15.25%, and the Defined Contribution portfolio increased \$210.9 million in investment income with a return of 17.39%. As with all mature retirement systems, OPERS’ primary means of funding benefit payments in the future will be through investment income.
- To fully understand the funding status of a retirement system, it is often 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, the actuarial value of assets used to calculate funded status is not based on year-end fair value, known as the Accounting Basis (or GASB 67 and GASB 74 basis), as of the valuation date. Under the Funding Basis, market gains and losses for actuarial funding purposes are smoothed over a rolling four-year period, subject to a 12% market corridor.
- 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 under the Funding Basis, OPERS uses a 12% market corridor in conjunction with its four-year smoothing. This policy, instituted by the Board in 2001, ensures that the funding value of assets is neither lower than 88% nor higher than 112% of the market value of the assets. At the end of 2016, the market value of assets was lower than the funding value by \$2.8 billion. At the end of 2017, the market value of assets exceeded the funding value by \$3.8 billion.
- By law, OPERS is obligated to pay the benefits that have commenced with retirees. To make these payments each year and account for benefits that have commenced with retirees, 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 is 49% and 46% as of December 31, 2017 and 2016, respectively, after this annual transfer.
- As of December 31, 2017, the date of the latest actuarial valuation, the funded ratio for defined benefit pensions was 81.1%. In general, this means that for each dollar of future pension liability, OPERS had accumulated approximately \$0.81 to meet that obligation. The funded ratio remained relatively flat between 2017 and 2016, increasing by 1.0%. The December 31, 2017 actuarial report indicates that, if future activity proceeded according to assumptions, OPERS would accumulate sufficient assets to pay all pension liabilities for active members and retirees within 18 years on a Funding Basis. The funding years as of December 31, 2016 were 19 years on a Funding Basis.

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
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
2011	31,020	12,115	18,905	39.1	10
2010 ^a	30,531	12,320	18,211	40.4	11
2010 ^b	26,929	11,267	15,662	41.8	11
2009	31,558	10,936	20,622	34.7	11
2008	29,623	10,748	18,875	36.3	11
2007	29,825	12,801	17,024	42.9	31

^a Revised actuarial assumptions based on experience study.

^b Results from original valuation prior to re-statement after completion of experience study.

¹ Solvency years represent 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, 2016, the date of the latest health care actuarial valuation under the Funding Basis, the actuarial liability for health care was \$19.9 billion and the System had accumulated assets of \$12.1 billion for that obligation. OPERS had an unfunded actuarial accrued liability of \$7.8 billion, which is an increase from the 2015 valuation (post-experience study) of \$7.3 billion. The funded ratio decreased to 60.7% compared to 62.1% (post-experience study) in 2015. The increase in the unfunded liability and decrease in funded ratio are primarily the result of a scheduled reduction in the allocation of employer contributions to health care.
- Health care coverage is not statutorily guaranteed, and is subordinate to pension funding. OPERS reduced the allocation to health care and correspondingly increased the allocation to pension. For 2017, the employer contribution rate allocated to pension was 13% and to health care funding was 1%. Beginning in 2018, the allocation will shift again with 14% allocated to pension funding and 0% allocated to health care funding. The 2018 allocation is expected to continue until the pension funding improves. 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, 2016, the date of the latest health care actuarial valuation under the Funding Basis, health care funding is expected to remain solvent for 12 years. Refer to Table 3, on the previous page, 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. Accordingly, the collection of employer and member contributions and the income generated from investment activities provide the reserves needed to finance future pension benefits and health care. The following discussion provides an analysis of the current-year financial activities. Comparative data is presented, where appropriate.

Additions to Fiduciary Net Position (Revenues)

As previously noted, the reserves needed to finance retirement benefits are accumulated primarily through the collection of member and employer contributions, and through investment income (net of investment expense). Revenues (Additions to Fiduciary Net Position) for the year 2017 were \$18.1 billion, and include member and employer contributions of \$3.4 billion, net income from investment activities of \$14.6 billion, and other income totaling approximately \$0.1 billion. Other income line items are comprised of purchased service agreements, employer interest and penalty charges, vendor performance guarantees, settlements, interplan activities, and miscellaneous other income or expense. Interplan Activity in Table 4 represents transactions between plans that are additions to plan assets. Additions to plan net position for the year 2016 were \$10.6 billion, comprised of \$3.3 billion in contribution revenues, \$6.9 billion in net income from investment activities, and other income totaling approximately \$0.4 billion. In 2016, other income included Retiree-Paid Health Care Premiums of \$184.4 million, rebates of \$48.6 million (included in Contract and Other Receipts line item), and federal subsidies of \$4.1 million. The implementation of GASB 74 in this 2017 annual report requires Health Care Expenses, in the Deductions section (Table 5) of the Statement of Changes in Fiduciary Net Position, be reported net of these health care-related receipts. Refer to Table 4 for a comparative history of Additions to Fiduciary Net Position.

				Table 4
	2017	2016	Amount Increase/ (Decrease) from 2016 to 2017	Percent Increase/ (Decrease) from 2016 to 2017
Member Contributions	\$1,421,754,296	\$1,387,215,220	\$34,539,076	2.5%
Employer Contributions	1,989,941,685	1,941,632,324	48,309,361	2.5
Contract and Other Receipts	93,061,535	172,338,832	(79,277,297)	(46.0)
Retiree-Paid Health Care Premiums		184,368,783	(184,368,783)	(100.0)
Federal Subsidy		4,065,058	(4,065,058)	(100.0)
Other Income/(Expense), net	2,641,100	(2,544,366)	5,185,466	(203.8)
Interplan Activity	20,961,756	17,205,339	3,756,417	21.8
Net Income from Investing Activity	14,619,914,555	6,926,572,065	7,693,342,490	111.1
Total Additions	\$18,148,274,927	\$10,630,853,255	\$7,517,421,672	70.7%

Member and employer contributions for 2017, compared to 2016, increased by \$82.8 million, or 2.5%. Member and employer contributions include amounts paid by active members and their employers for future retirement benefits. In general, as wages start to rise, the retirement contributions from active members, and their employers, also increase. These contributions can also be influenced by the number of active members who move to retirement.

Contracts and Other Receipts represents funds received for member purchase of service contracts, employer early retirement incentive programs, vendor guarantees and refunds, and funds received from other Ohio retirement systems for members with service credit under more than one retirement system. These receipts totaled \$93.1 million in 2017, compared to \$172.3 million received in 2016. This net decrease of \$79.2 million is mainly comprised of a decrease of \$91.6 million in health care receipts, offset by increases of \$5.5 million in early retirement incentive contributions and \$7.4 million in retirement transfers from other Ohio retirement systems for members selecting a joint retirement option. Health care vendor receipts, as well as health care costs, began declining in 2016 when the Medicare Advantage program closed and Medicare-eligible retirees were transitioned to the OPERS Medicare Connector. In 2016, OPERS received approximately \$40 million as final payment of gain-sharing revenue for the Medicare Advantage Plan, resulting in a \$40 million decrease in health care receipts in 2017. Health care receipts in this category in 2016 also included \$48.6 million in prescription drug rebates. GASB 74, implemented in this 2017 annual report, requires that certain health care receipts, including prescription drug rebates, be netted with health care expenses reported in Benefits within the Combining Statement of Changes in Fiduciary Net Position (Table 5), resulting in an additional health care-related decrease of \$48.6 million in this category. In 2017, prescription drug rebates totaled \$27.1 million and is included in health care expenses.

In 2016, Additions to Fiduciary Net Position also included amounts paid by retirees toward the cost of OPERS-provided health care in the Retiree-Paid Health Care Premiums line item. Retirees have historically shared in the cost of providing health care coverage for themselves, spouses and dependents. As previously noted, in 2017, as required by the implementation of GASB 74, these receipts were presented as a reduction of the cost of health care included in Deductions from Fiduciary Net Position (Table 5). In 2017, these contributions totaled \$207.0 million, compared to \$184.4 million in 2016. These receipts were anticipated to increase as spousal and dependent health care allowances were eliminated and retirees submitted additional payments to cover these costs as spouses and dependents had access to health care in 2017.

In 2016, Federal Subsidy revenue was mostly comprised of reimbursements and direct subsidies OPERS received from the federal government for participation in the Medicare Prescription Drug Program (PDP). The PDP was closed in 2016 with the implementation of the Connector. OPERS may still request reimbursement for Medicare-eligible retirees covered in OPERS self-insured plans. However, with the majority of OPERS Medicare-eligible retirees in the Connector, this revenue will decrease significantly. In 2017, Federal Subsidy receipts totaled \$0.8 million, compared to \$4.1 million in 2016. Additionally, the implementation of GASB 74 in this 2017 report requires these subsidies to be reported as a reduction of health care expenses in Deductions from Fiduciary Net Position (Table 5).

Other Income/(Expense), net, is comprised of miscellaneous proceeds, gains or losses on the disposal of fixed assets and litigation settlements activity. Other income/(expense) for 2017 was \$2.6 million of income compared to a net expense of \$2.5 million in 2016. This activity typically fluctuates from year-to-year. In 2016, the net expense balance in this category was comprised of an estimated \$3.5 million litigation settlement related to an investment holding, net of \$1.0 million in miscellaneous receipts. In 2017, a favorable litigation settlement for \$1.2 million is reflected in the other income amount, along with other miscellaneous receipts.

Interplan Activity represents transfers to record activity occurring between the plans. This activity includes members changing from one plan to another. Interplan Activity in 2017 resulted in a net inflow of \$21.0 million, compared to \$17.2 million in 2016. 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 on the next page.)


Net Income from Investing Activity represents total investment income net of external management fees and administrative expenses. Investment income includes dividends, interest, and gains or losses on the sale of investments. OPERS reflects both income 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 Income from Investing Activity, refer to the Financial Highlights section on page 28.

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 2017 were \$7.3 billion, an increase of \$21.8 million, or 0.3%, compared to 2016. Pension benefits and health care expenses comprise \$6.8 billion in both years. While health care costs appeared to decline from 2016 to 2017, there are \$242.7 million in health care-related receipts netted against this expense in 2017, thus, health care expenses were relatively flat in 2017 compared to 2016. Refunds of member contributions, including interest and additional payments on withdrawal where required by statute, fluctuate each year, but were \$443.2 million in 2017, or 3.1% higher than 2016. Non-investment related administrative expenses decreased by \$1.8 million to \$77.3 million and represent 1.1% of the total expenses. Pension benefits and health care expenses paid on behalf of current retirees and their beneficiaries comprise approximately 92.6% of the total expenses reported. The remaining expenses are comprised of interplan activity transactions representing the expense side of members changing from one plan to another. Refer to Table 5 below for a comparative history of Deductions from Fiduciary Net Position.

 Deductions from Fiduciary Net Position (Expenses) (for the years ended December 31, 2017 and 2016) Table 5				
	2017	2016	Amount Increase/ (Decrease) from 2016 to 2017	Percent Increase/ (Decrease) from 2016 to 2017
Benefits—Pension	\$5,839,789,809	\$5,588,000,966	\$251,788,843	4.5%
Benefits—Health Care Expenses	952,001,573	1,197,374,344	(245,372,771)	(20.5)
Refunds	443,220,698	429,791,141	13,429,557	3.1
Administrative Expenses	77,305,480	79,059,058	(1,753,578)	(2.2)
Interplan Activity	20,961,756	17,205,339	3,756,417	21.8
Total Deductions	\$7,333,279,316	\$7,311,430,848	\$21,848,468	0.3%

Pension benefits totaled \$5.8 billion in 2017, an increase of \$251.8 million, or 4.5%, over 2016 benefits. The increase in 2017 reflects the combination of a net growth of 1.2% in the total number of retirees and beneficiaries receiving benefits, an annual simple cost-of-living adjustment granted on the retirees benefit anniversary, and demographic changes in the retiree population. As expected, with the majority of changes to both pension and health care fully implemented, members are opting to work longer and the growth in new retirees is declining. The 8,664 new retirees in 2017 is less than the most recent 10-year average of 10,667. The cost of retirements will continue to increase as newer retirees with higher FAS replace deceased long-time retirees with lower FAS. The cumulative increase associated with the cost-of-living adjustments was \$1.2 billion at the end of 2017. Refer to the Schedule of Average Benefits on page 208 of the Statistical Section for details related to the new retiree populations by year. Also refer to the Plan Statement beginning on page 221 for details on pension benefits.

Total health care expenses decreased by 20.5% to \$1.0 billion in 2017, compared to 2016. This decrease is primarily related to the implementation of GASB 74 in this 2017 report, which requires health care receipts, or payments, from retirees and health care vendors to OPERS offset the related health care expenses incurred by OPERS during the year. In 2017, health care expenses were reduced \$242.7 million, or 20%, by retiree-paid health care premiums, prescription rebates and federal subsidies. The majority of health care expenses are comprised of medical, dental, vision, and

prescription drug costs, as well as reimbursements to retirees for Medicare Part A premiums. Medical, dental, vision and disease-management costs, presented on the same basis as 2016, represent approximately 60% of the total health care expenses for 2017, an increase from 2016, which approximated 56% of total health care expenses. With the implementation of GASB 74 and the \$242.7 million of health care receipts netted against this activity in 2017, medical, dental, vision and disease-management costs represent approximately 36% in total health care expenses. Prescription drug costs comprised 16% of total health care expenses in 2017, an increase from the 14% reported for 2016. Medicare Part A premium reimbursements were approximately 2%, a decrease from the 4% Medicare Parts A and B premium reimbursement in 2016. Retirees who did not contribute to Medicare during their career, and to a lesser extent their spouses, may receive reimbursement of their Medicare Part A premium to qualify for participation in the Connector. Beginning January 1, 2017, Medicare Part B premiums were no longer reimbursed.

The OPERS health care plans for non-Medicare eligible recipients are self-insured. OPERS also self-insures prescription drug coverage for non-Medicare eligible retirees and dependents. Costs in self-insured plans will fluctuate based on the timing of claims processing and the magnitude of catastrophic claims, in addition to overall increases in costs occurring in the market. The overall number of retirees and dependents in health care plans in 2017 decreased by 3.3%. As anticipated with the phase-out of spousal health care allowances, the number of spouses and other dependents enrolled in OPERS coverage decreased by almost 6,000, or 13.7%. In conjunction with the enrollment decline, OPERS realized declines in the cost of providing health care for the year. Medical, dental, vision and disease-management costs for 2017 decreased by 14.5% to \$577.9 million (prior to netting \$242.7 million in health care-related receipts against these costs), compared to \$675.6 million in 2016. Prescription drug costs decreased 13.1% to \$148.3 million in 2017, compared to \$170.6 million in 2016.


Beginning January 1, 2016, Medicare-eligible retirees have the opportunity to select supplemental coverage through the Connector and may receive a deposit into an HRA account to be used for reimbursement of qualified health care expenses. In 2017, reimbursements of qualified medical expenses through the HRA for retirees and their qualified dependents increased by 44.8% to \$423.4 million, compared to 2016. OPERS increased the HRA reimbursement educational seminars for retirees throughout 2017. As a result, claims submitted increased during 2017. Similarly, reimbursements of qualified medical expenses from health care accounts for Member-Directed Plan participants increased by 112.8% to \$6.5 million in 2017, compared to 2016. Claims paid during 2017 and accrued at the end of 2017 also increased, compared to 2016. In addition, OPERS closed the Wellness retiree medical account plan and transferred balances to the HRA for members with accounts in both plans. OPERS also began automatic reimbursements of premiums paid to OPERS through pension deduction. These efforts resulted in an increase in the reimbursement of qualified medical expenses from the Wellness accounts of \$8.0 million in 2017, an increase of 115.1% over 2016.

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. However, upon retirement or termination, Combined Plan and Member-Directed Plan participants may choose to purchase a defined benefit annuity from OPERS, receive a refund of their account balance, with the appropriate tax withholding, or transfer their account balance to another organization. In 2017, member-elected refunds totaled \$443.2 million, compared to \$429.8 million in 2016. Accordingly, refunds represent disbursements of inactive member accounts. The number of refunded accounts of 25,354, in 2017, decreased by less than one percent when compared to 2016. However, the average member balance refunded in 2017 was approximately \$17,500, compared to the 2016 average of approximately \$17,000.

OPERS has consistently managed its administrative expense budget with no material variances in either 2017 or 2016. Administrative Expenses shown in Table 5 on page 34 do not include investment administrative expenses. Administrative Expenses totaled \$77.3 million in 2017 compared to \$79.1 million in 2016. The decrease in 2017 Administrative Expenses mainly includes preliminary staff savings from process automation included in the implementation of new technology.

Net Position Summary


Net position may serve over time as a useful indicator of OPERS’ financial status (please refer to Table 6). At the close of calendar years 2017 and 2016, the net positions of OPERS totaled \$101.4 billion and \$90.6 billion, respectively. These plan net positions are 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, 2017 and 2016)		Table 6		
	2017	2016	Amount Increase/ (Decrease) from 2016 to 2017	Percent Increase/ (Decrease) from 2016 to 2017
Current and Other Assets	\$1,114,376,196	\$1,112,848,213	\$1,527,983	0.1%
Cash and Investments at Fair Value	108,918,934,157	98,324,311,631	10,594,622,526	10.8
Capital Assets	131,801,306	132,961,073	(1,159,767)	(0.9)
Total Assets	110,165,111,659	99,570,120,917	10,594,990,742	10.6
Total Liabilities	8,739,291,823	8,959,296,692	(220,004,869)	(2.5)
Net Position, End of Year	101,425,819,836	90,610,824,225	10,814,995,611	11.9
Net Position, Beginning of Year	90,610,824,225	87,291,401,818	3,319,422,407	3.8
Net Increase/(Decrease) in Net Position	\$10,814,995,611	\$3,319,422,407	\$7,495,573,204	225.8%

Summary

OPERS remains dedicated to keeping this System strong today and well into the future. OPERS continues to proactively manage the System in a manner that addresses issues and trends in a timely manner; thus contributing to the strength of the System. The funding levels and 2017 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, 2017)			
	Pension		
	Traditional Pension Plan	Combined Plan	Member-Directed Plan
Assets			
Cash and Cash Equivalents	\$3,781,114,065	\$18,789,542	\$1,938,245
Receivables			
Members and Employers	332,307,729	10,752,312	12,912,725
Vendor and Other	1,649,618		
Investment Sales Proceeds	387,668,563	2,326,217	233,123
Accrued Interest and Dividends	233,356,448	1,350,918	47,862
Total Receivables	954,982,358	14,429,447	13,193,710
Investments, at fair value			
Fixed Income	19,454,499,059	232,356,680	233,059,741
Domestic Equities	16,680,271,661	353,702,704	485,269,312
Real Estate	7,541,014,996	43,655,502	1,546,685
Private Equity	9,237,933,407	53,479,092	1,894,728
International Equities	16,923,348,287	233,352,705	257,160,887
Other Investments	12,497,807,918	72,350,751	2,563,337
Total Investments	82,334,875,328	988,897,434	981,494,690
Collateral on Loaned Securities	7,891,300,747	42,918,686	1,596,727
Capital Assets			
Land	2,626,888	82,647	82,550
Building and Building Improvements	78,017,594	2,454,582	2,451,710
Furniture and Equipment	111,141,288	4,422,990	3,470,391
Total Capital Assets	191,785,770	6,960,219	6,004,651
Accumulated Depreciation	(92,567,598)	(3,013,147)	(3,113,132)
Net Capital Assets	99,218,172	3,947,072	2,891,519
Prepaid Expenses and Other Assets	1,304,949		
TOTAL ASSETS	95,062,795,619	1,068,982,181	1,001,114,891
Liabilities			
Undistributed Deposits	4,188,866		
Benefits Payable	260,431		
Investment Commitments Payable	568,614,823	3,657,231	801,484
Accounts Payable and Other Liabilities	14,742,926		
Obligations Under Securities Lending	7,889,137,549	42,906,921	1,596,289
TOTAL LIABILITIES	8,476,944,595	46,564,152	2,397,773
Net Positions Held in Trust for Pension Benefits and Post-employment Health Care	\$86,585,851,024	\$1,022,418,029	\$998,717,118

See Notes to Combining Financial Statements, beginning on page 42.

Financial Section

(continued from page 38)	
115 Health Care Trust	Total Pension and Health Care
\$823,866,242	\$4,625,708,094
17,310,993	373,283,759
10,325,432	11,975,050
58,028,023	448,255,926
44,801,284	279,556,512
130,465,732	1,113,071,247
4,348,639,837	24,268,555,317
3,403,242,732	20,922,486,409
	7,586,217,183
	9,293,307,227
2,645,509,612	20,059,371,491
1,654,750,270	14,227,472,276
12,052,142,451	96,357,409,903
	7,935,816,160
942,728	3,734,813
27,998,673	110,922,559
33,676,485	152,711,154
62,617,886	267,368,526
(36,873,343)	(135,567,220)
25,744,543	131,801,306
	1,304,949
13,032,218,968	110,165,111,659
230,367	4,419,233
114,643,770	114,904,201
98,511,166	671,584,704
	14,742,926
	7,933,640,759
213,385,303	8,739,291,823
\$12,818,833,665	\$101,425,819,836

 Combining Statement of Changes in Fiduciary Net Position (for the year ended December 31, 2017)			
	Pension		
	Traditional Pension Plan	Combined Plan	Member-Directed Plan
Additions			
Member Contributions	\$1,324,457,501	\$41,265,878	\$56,030,917
Employer Contributions	1,722,856,378	53,636,897	56,030,522
Contract and Other Receipts	90,937,696	688,384	577,914
Other Income, net	2,516,572	2,135	4,511
Interplan Activity	20,961,756		
Total Non-investment Income	3,161,729,903	95,593,294	112,643,864
Income From Investing Activities			
Net Increase in the Fair Value of Investments	7,936,230,364	117,314,404	138,238,367
Bond Interest	822,522,057	5,096,448	1,314,284
Dividends	2,035,813,328	10,212,467	391,235
Real Estate Operating Income, net	717,926,164	3,445,356	128,183
International Income	1,582,036	8,604	321
Other Investment Income	1,629,736,924	7,721,575	287,275
External Asset Management Fees	(568,360,604)	(952,124)	(635,241)
Net Investment Income	12,575,450,269	142,846,730	139,724,424
From Securities Lending Activity			
Securities Lending Income	129,354,339	703,524	26,174
Securities Lending Expenses	(87,513,904)	(475,965)	(17,708)
Net Securities Lending Income	41,840,435	227,559	8,466
Unrealized Gains	2,163,199	11,765	438
Net Income from Securities Lending	44,003,634	239,324	8,904
Investment Administrative Expenses	(33,020,924)	(352,810)	(347,538)
Net Income from Investing Activity	12,586,432,979	142,733,244	139,385,790
TOTAL ADDITIONS	15,748,162,882	238,326,538	252,029,654
Deductions			
Benefits	5,835,175,377	3,089,538	1,524,894
Refunds of Contributions	384,615,309	16,220,141	42,385,248
Administrative Expenses	52,154,657	3,181,465	2,560,880
Interplan Activity		9,269,382	11,692,374
TOTAL DEDUCTIONS	6,271,945,343	31,760,526	58,163,396
Net Increase	9,476,217,539	206,566,012	193,866,258
Net Positions Held in Trust for Pension Benefits and Post-employment Health Care Balance, Beginning of Year	77,109,633,485	815,852,017	804,850,860
Balance, End of Year	\$86,585,851,024	\$1,022,418,029	\$998,717,118

See Notes to Combining Financial Statements, beginning on page 42.

Financial Section

(continued from page 40)	
115 Health Care Trust	Total Pension and Health Care
\$157,417,888	\$1,421,754,296
857,541	1,989,941,685
117,882	93,061,535
	2,641,100
	20,961,756
158,393,311	3,528,360,372
1,303,745,052	9,495,528,187
162,929,606	991,862,395
325,553,345	2,371,970,375
	721,499,703
248,369	1,839,330
396,299	1,638,142,073
(36,062,800)	(606,010,769)
1,756,809,871	14,614,831,294
	130,084,037
	(88,007,577)
	42,076,460
	2,175,402
	44,251,862
(5,447,329)	(39,168,601)
1,751,362,542	14,619,914,555
1,909,755,853	18,148,274,927
952,001,573	6,791,791,382
	443,220,698
19,408,478	77,305,480
	20,961,756
971,410,051	7,333,279,316
938,345,802	10,814,995,611
11,880,487,863	90,610,824,225
\$12,818,833,665	\$101,425,819,836

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 combination defined benefit/defined contribution plan; and the Member-Directed Plan, a defined contribution plan. 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 three pension plans. Contributions to OPERS are effective with the first day of the member's employment. Contributions made prior to the member's plan selection are maintained in the Traditional Pension Plan and later transferred to the plan elected by the member, as appropriate.

The OPERS health care plans are reported as other post-employment benefit plans (OPEB) based on the criteria established by the Governmental Accounting Standards Board (GASB). Periodically, OPERS modifies the health care program design to improve the ongoing solvency of the plans. Eligibility requirements for access to the OPERS health care options have changed over the history of the program for Traditional Pension Plan and Combined Plan members. Prior to January 1, 2015, 10 or more years of service were required to qualify for health care coverage. 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, Traditional Pension Plan and Combined Plan retirees enrolled in Medicare A and B were eligible to participate in the OPERS Medicare Connector (Connector). The Connector, a vendor selected by OPERS, assists eligible retirees in the selection and purchase of Medicare supplemental coverage through the Medicare market. Retirees that purchase supplemental coverage through the Connector may receive a monthly allowance in their health reimbursement arrangement account (HRA) that can be used to reimburse eligible health care expenses. Upon termination or retirement, Member-Directed Plan participants can use vested retiree medical account funds for reimbursement of qualified medical expenses. Members who elect the Member-Directed Plan after July 1, 2015 will vest in health care over 15 years at a rate of 10% each year starting with the sixth year of participation. Members who elected the Member-Directed Plan prior to July 1, 2015, vest in health care over a five-year period at a rate of 20% per year. Please see the Plan Statement beginning on page 221 for additional details. Health care coverage is neither guaranteed nor statutorily required.

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

Individual audited financial statements, as of and for the year ended December 31, 2017, for each of the following plans and trust as presented in the Combining Statements of Fiduciary Net Position and Changes in Fiduciary Net Position, were issued:

- Combined Plan
- Member-Directed Plan
- 115 Health Care Trust

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 (Board); 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 a representative. 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 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 (60 contributing months) are entitled to a future retirement benefit from OPERS. Employer, employee and retiree data as of December 31, 2017 is found on the next page.

Plan Membership						
	Traditional Pension Plan	Combined Plan ¹	Member-Directed Plan	115 Health Care Trust ²		2017 Total
				Traditional Pension and Combined Plans Retiree-Sponsored Programs	Member-Directed Plan Retiree-Sponsored Program	
As of December 31, 2017						
Employer Units						3,683
State Division						248
Local Division						3,199
Law Enforcement and Public Safety Divisions						236
Retirees and Inactive Members—Defined Benefit Pension						773,727
Retirees and Primary Beneficiaries currently receiving benefits	210,357	283	242			210,882
Dependents and Other Beneficiaries currently receiving benefits	7,433	193	1			7,627
Inactive Members eligible for, but not yet receiving benefits ³	8,085	74				8,159
Inactive Members not yet age-eligible for benefits ³	25,690	610				26,300
Inactive Members eligible for refund value of account only ³	519,618	1,141				520,759
Retirees and Inactive Members—Defined Contribution Accounts						4,380
Retirees currently receiving benefits		6	5			11
Inactive Members			4,369			4,369
Retirees and Inactive Members—Health Care						214,651
Retirees and Primary Beneficiaries currently receiving benefits				169,368	6,203	175,571
Dependent and Other Beneficiaries currently receiving benefits				37,072		37,072
Inactive Members eligible for, but not yet receiving, benefits				2,008		2,008
Active Employees						347,730
State Division	119,410	2,902	4,182			126,494
Local Division	200,681	5,003	7,436			213,120
Law Enforcement Division	8,041					8,041
Public Safety Division	75					75

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 with at least five years of service are eligible for a retirement benefit at the age of 60. 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 will be eligible to retire no later than five years after January 7, 2013, comprise transition Group A. Members who have 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 60 contributing months 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 221 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 base amount of a member's pension benefit is locked in upon receipt of the initial benefit payment for calculation of an annual cost-of-living adjustment.

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. The defined contribution portion of the benefit is based on accumulated member contributions plus or minus any investment gains or losses on those contributions.

- **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 OPERS accounts. Options include the purchase of a monthly defined benefit annuity from OPERS (which includes joint and survivor options), 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.
- **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 may choose to pay the full cost of the additional benefits at the time the plan is adopted, or elect an installment payment plan. The required contributions are recognized in full by OPERS in the year in which the payment plan becomes effective. In addition, interest is charged annually on the unpaid balance.

- **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 60 contributing months is eligible for a disability benefit. Benefits are funded by the employee 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 60 contributing months 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 employee 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, specifies 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. The health care portion of the employer contribution rate for the Traditional Pension Plan and Combined Plan is comparable, as the same coverage options are provided to participants in both plans.

Prior to January 1, 2015, the System provided comprehensive health care coverage to retirees with 10 or more years of qualifying service credit and offered coverage to their dependents on a premium deduction or direct bill basis. Beginning 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 30 years of qualifying service at any age. Beginning with January 2016 premiums, Medicare-eligible retirees could select supplemental coverage through the Connector, and may be eligible for monthly allowances deposited to an HRA to be used for reimbursement of eligible health care expenses. Coverage for non-Medicare retirees includes hospitalization, medical expenses and prescription drugs. The System determines the amount, if any, of the associated health care costs that will be absorbed by the System and attempts to control costs by using managed care, case management and other programs. Additional details on health care coverage can be found in the Plan Statement beginning on page 221.

Participants in the Member-Directed Plan are not eligible for health care coverage offered to benefit recipients in the Traditional Pension Plan and Combined Plan. A portion of employer contributions for these participants is allocated to a retiree medical account. Upon separation or retirement, participants may be reimbursed for qualified medical expenses from these accounts.

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

- **Other Benefits**—Once a benefit recipient retiring under the Traditional Pension Plan 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 member's 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, current law provides for a 3% cost-of-living adjustment. For those retiring subsequent to January 7, 2013, beginning in calendar year 2019, current

law provides that the adjustment will be based on the average percentage increase in the Consumer Price Index, 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 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 employee 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 requires 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. A Combined Plan member's refund may consist of member contributions for the purchase of service plus interest, qualifying employer funds, and the value of their 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 plans (Traditional Pension, Combined and Member-Directed) 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, 2017. Within the Traditional Pension Plan and Combined Plan, member and employer contributions (employer contributions only for the Combined Plan) and an actuarially determined rate of return are adequate to accumulate sufficient assets to pay defined benefits when due. Member contributions within the Combined Plan are not used to fund the defined benefit retirement allowance. Employer contribution rates as a level percent of payroll dollars are determined using the entry age actuarial funding method. This formula determines the amount of contributions necessary to fund: (1) the current service cost, representing the estimated amount necessary to pay for defined benefits earned by the members during the current service year; and (2) the prior service cost for service earned prior to the current year and subsequent benefit increases. These contributions represent the amount necessary to fund accrued liabilities for retirement allowances and survivor benefits over a period of time. The annual employer contributions reported for the Traditional Pension Plan for 2017 were \$1,722,856,378. Employer contributions for the Combined Plan for 2017 were \$53,636,897. 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 2017. 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. The portion of Traditional Pension Plan and Combined Plan employer contributions allocated to health care was 1.0% for 2017. The employer contribution as a percent of covered payroll deposited for Member-Directed Plan health care accounts for 2017 was 4.0%.

 Board of Trustees—Approved Contribution Rates—All Plans		
	2017 Employee Rate	2017 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% and 14%, 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% greater than the Public Safety rate.

ORC Chapter 145 assigns authority to the Board to amend the funding policy. As of December 31, 2017, the Board adopted the contribution rates 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, 2017, the date of the last pension actuarial study, the funding period for all defined benefits of the System was 18 years.

- d. Federal Subsidies**—OPERS participated in several federal programs that subsidized or provided reimbursements to the 115 Trust. Medicare Part D is a voluntary federal program that reimburses 28% of the cost of prescription drugs for Medicare beneficiaries in the United States. During 2011, OPERS also implemented a prescription drug plan (PDP) in which the System received a direct subsidy from the Centers for Medicare & Medicaid Services based on the risk score of each eligible retiree. The implementation of the PDP reduced the number of claims available for submission through the Medicare Part D program. The PDP was terminated December 31, 2015 as OPERS transitioned the Medicare-eligible retirees to the Connector and the program was no longer needed. OPERS no longer participates in the Medicare Part D program as of December 31, 2016. OPERS will receive the final distribution of funds from the Medicare Part D program for calendar year 2016 in 2018.

The following table summarizes the various federal subsidies received by OPERS for the year ended December 31, 2017:

 Federal Subsidy Received (for the year ended December 31, 2017)	
	115 Health Care Trust
Medicare Part D Retiree Drug Subsidy	\$166,627
Medicare Prescription Drug Plan	645,543
Total Federal Subsidy	\$812,170

- e. **Commitments and Contingencies**—OPERS has committed to fund various private equity and closed-end real estate investments totaling approximately \$7.8 billion at December 31, 2017. The expected funding dates for these commitments extend through 2023. 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 accrual basis of accounting under which deductions are recorded when the liability 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 a liability and recognized in the Combining Statement of Fiduciary Net Position when a present obligation exists and a condition that requires that the event creating the liability has taken place. Therefore, OPEB plan liabilities are recognized when the benefits are currently due and payable in accordance with the benefit terms, as clarified in GASB Statement No. 74 (GASB 74), *Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans*. GASB 74 also requires health care expenses be reported net of certain health care receipts. Beginning with the implementation of GASB 74 in this 2017 annual report, the presentation of retiree-paid health care premiums, federal subsidy and rebates, rebates previously included in Contract and Other Receipts, has been revised and these health care receipts are now included in health care expenses running through Benefits under Deductions in the Combining Statement of Changes in Fiduciary Net Position. Previously, these receipts were reflected in the Additions section of the statement. 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, 2017, the notional member balances in the HRAs were \$350.8 million and the amount recognized as currently due for 2017 claims based on estimates was \$35.3 million. As of December 31, 2017, the notional member balances in the Member-Directed health care accounts and wellness RMAs were \$210.3 million and \$3.1 million, respectively. The claim amounts currently due as of December 31, 2017 were estimated at \$0.1 million and \$2.0 million, respectively. As previously noted, the Member-Directed health care accounts were originally funded through the VEBA Trust, prior to the 115 Trust, and the VEBA Trust was historically reported separately in the combining financial statements. Although all health care activity now occurs through the 115 Trust, OPERS internally accounts for health care

activity separately. Total net position reported for the 115 Trust as of December 31, 2017 was \$12.8 billion, this includes a net position of \$242.0 million in the Member-Directed health care plan.

Refunds, for any member who makes a written application to withdraw his/her 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), other contracts and receipts, interplan activities, net investment income, 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, 2017 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, and the reported amounts of revenue and expenses during the reporting period. Actual results could differ from those estimates.

In 2015, GASB issued GASB 74, and in conjunction with GASB 74, the GASB issued Statement No. 75 (GASB 75), *Accounting and Financial Reporting for Postemployment Benefits Other than Pensions*. GASB 74 and 75 result from a comprehensive review of the standards of accounting and financial reporting for all postemployment benefits (pensions and OPEB). While GASB Statement No. 67 (GASB 67), *Financial Reporting for Pension Plans—an amendment of GASB Statement No. 25*, and GASB Statement No. 68 (GASB 68), *Accounting and Financial Reporting for Pensions—an amendment of GASB Statement No. 27*, address fundamental changes to accounting and financial reporting of pensions by both the pension systems and participating employers, GASB 74 and 75 address very similar changes in requirements for these same parties in regard to OPEB, or health care, provided by OPERS to qualifying retirees and beneficiaries. These requirements involve changes in presentation of the financial statements, notes to the financial statements, and required supplementary information of state and local health care plans established as trusts.

GASB 74 replaces GASB Statement No. 43 (GASB 43), *Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans*, and Statement No. 57 (GASB 57), *OPEB Measurements by Agent Employers and Agent Multiple-Employer Plans*. It also includes requirements for defined contribution OPEB plans that replace the requirements for those OPEB plans in GASB Statement No. 25, *Financial Reporting for Defined Benefit Pension Plans and Note Disclosures for Defined Contribution Plans*, GASB 43, and GASB Statement No. 50, *Pension Disclosures—an amendment of GASB Statements No. 25 and No. 27*. GASB 75 replaces Statements No. 45, *Accounting and Financial Reporting by Employers for Postemployment Benefits Other Than Pensions*, as amended, and GASB 57.

GASB 74 is effective for OPEB systems for fiscal years beginning after June 15, 2016, resulting in initial implementation in this 2017 annual report. GASB 75 is effective for OPERS participating employers for fiscal years beginning after June 15, 2017, resulting in initial implementation for employers generally in 2018 annual reports. These new accounting and reporting standards also break the link between accounting and funding, similar to GASB 67 and 68. While these changes will affect the accounting measures, they do not have an effect on the actuarial methods and assumptions used by OPERS to determine the employer contributions needed to fund health care. However, the new standards will impact the financial statement presentation for health care accounting and related disclosures for OPERS and participating employers. OPERS implemented the provisions of GASB 74 in this current year annual report for the year ended December 31, 2017, see Note 9 for additional information.

GASB Statement No. 85, *Omnibus 2017*, was issued in March 2017. This statement addresses practice issues that have been identified during implementation and application of certain GASB statements. Topics include issues related to blending component units, goodwill, fair value measurement and application, and postemployment benefits (pensions and OPEB). The effective date for this standard is reporting periods beginning after June 15, 2017. OPERS is currently evaluating this statement with initial implementation planned for the 2018 annual report.

In May 2017, GASB issued Statement No. 86, *Certain Debt Extinguishment Issues*. The primary objective of this statement is to improve consistency in accounting and financial reporting for in-substance defeasance of debt by providing guidance for transactions involved in the extinguishment of debt including, prepaid insurance and note disclosures for in-substance defeasance of debt. OPERS has no debt obligations, therefore this statement does not apply.

In June 2017, GASB issued Statement No. 87, *Leases*. The primary objective of this statement is to increase the usefulness of financial statements by requiring recognition of certain lease assets and liabilities for leases that previously were classified as operating leases and recognized as inflows of resources or outflows of resources based on the payment provisions of the contract. Under this statement, a lessee is required to recognize a lease liability and an intangible right-to-use leased asset. A lessor is required to recognize a lease receivable and a deferred inflow of resources. The effective date of this standard is reporting periods beginning after December 15, 2019. OPERS is currently evaluating this statement with initial implementation planned for the 2020 annual report.

- 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.

All investments are 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, 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 real estate investments is based on estimated current values and independent appraisals. The fair value of private equity is based on management's valuation of estimates and assumptions from information and representations provided by the respective general partners, in the absence of readily ascertainable market values. The fair value of hedge funds is based on a net asset value, which is established by the fund or by the fund's third-party administrator.


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 2017 were \$8,498,320. 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**—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 capital assets and depreciated based on the useful life of the asset. OPERS implemented GASB Statement No. 51 (GASB 51), *Accounting and Financial Reporting for Intangible Assets*, in 2008 for internally developed software and capitalizes software projects in accordance with this standard.

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

 Useful Lives of Capital Assets	
	Years
Buildings and Building Improvements	50
Furniture and Equipment	3-10
Computer Software	3-8

The table below is a schedule of the capital asset account balances as of December 31, 2016 and 2017, with changes to those account balances during the year ended December 31, 2017:

 Capital Asset Account Balances				
	Land	Building and Building Improvements	Furniture and Equipment	Total Capital Assets
Cost				
Balances December 31, 2016	\$3,734,813	\$110,944,054	\$141,681,646	\$256,360,513
Additions			11,082,264	11,082,264
Write-offs		(21,495)	(52,756)	(74,251)
Balances December 31, 2017	3,734,813	110,922,559	152,711,154	267,368,526
Accumulated Depreciation				
Balances December 31, 2016		34,136,877	89,262,563	123,399,440
Depreciation Expense		2,323,212	9,894,939	12,218,151
Write-offs		(6,707)	(43,664)	(50,371)
Balances December 31, 2017		36,453,382	99,113,838	135,567,220
Net Capital Assets December 31, 2017	\$3,734,813	\$74,469,177	\$53,597,316	\$131,801,306

- d. **Undistributed Deposits**—Cash receipts are recorded as undistributed deposits until they are allocated to employer receivables, member contributions, miscellaneous or investment income.
- e. **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).
- f. **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 starting below:

Traditional Pension Plan

- **The Employees' Savings Fund**—represents member contributions held in trust pending their 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. The ORC Chapter 145 requires statutory interest to be compounded annually.
- **The Employers' Accumulation Fund**—is used to accumulate employer contributions to be used in providing 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 dependents of deceased members.
- **The Employers' Accumulation Health Care Fund (IRC 115)**—is used to accumulate employer contributions to be used in providing the reserves required for transfer to the Annuity and Pension Reserve and Survivors' Benefit funds for health care coverage paid for non-Medicare eligible retirees and eligible dependents of deceased members and monthly deposits to an HRA for Medicare-eligible retirees and eligible dependents of deceased members under the Connector program.
- **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 coverage are paid. By law, OPERS is obligated to pay the 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 49% as of December 31, 2017.

- **The Survivors' Benefit Fund**—is the fund from which benefits due dependents 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 earnings 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 their 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 earnings, 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 Health Care Fund (IRC 115)**—is used to accumulate a portion of employer contributions made on behalf of members electing to participate in the Member-Directed Plan health care accounts.

Combined Plan


- **The Defined Contribution Fund**—represents member contributions held in trust pending their 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 their refund or transfer to the plan's Annuity and Pension Reserve Fund. Upon a member's refund or retirement, such member's 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**—is used to accumulate employer contributions to be used in providing 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 Employers' Accumulation Health Care Fund (IRC 115)**—is used to accumulate employer contributions to be used in providing the reserves required for transfer to the Annuity and Pension Reserve and Survivors' Benefit funds, for health care coverage paid for non-Medicare eligible retirees and eligible dependents of deceased members and monthly deposits to an HRA for Medicare-eligible retirees and eligible dependents of deceased members under the Connector program.
- **The Annuity and Pension Reserve Fund**—is the fund from which retirement benefits and health care coverage are paid.
- **The Income Fund**—is the fund credited with all investment earnings, account fees and miscellaneous income. The balance in this fund is transferred to other funds, to the credit of 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.

The statutory funds defined by ORC 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 (pages 38-41) 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. The rows represent the statutory funds required by the ORC. In total, these funds will equal the fiduciary net position of the System. To support the fiduciary 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 at December 31, 2017 were as follows:

					
	Traditional Pension Plan	Combined Plan	Member-Directed Plan	115 Health Care Trust	Total
Employees' Savings Fund	\$14,297,505,057	\$2,587,678	\$237,965		\$14,300,330,700
Employers' Accumulation Fund	12,351,857,327	476,864,676	2,626,054	\$12,818,833,665	25,650,181,722
Annuity and Pension Reserve Fund	58,069,537,977	21,799,531	14,894,989		58,106,232,497
Survivors' Benefit Fund	1,742,699,663				1,742,699,663
Defined Contribution Fund		521,166,144	980,958,110		1,502,124,254
Income Fund	112,115,080				112,115,080
Expense Fund	12,135,920				12,135,920
Total	\$86,585,851,024	\$1,022,418,029	\$998,717,118	\$12,818,833,665	\$101,425,819,836

- g. Risk Management**—OPERS is exposed to various risks of loss related to theft of, damage to, and 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 for the past three years. 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 at the end of 2017 were related to the employee health care coverage (see Note 7).

3. Cash and Investments

A summary of cash, cash equivalents and investments held at December 31, 2017 is as follows:

 Summary of Cash, Cash Equivalents and Investments (as of December 31, 2017)	
	2017 Fair Value
Cash and Cash Equivalents	
Cash	\$106,392,296
Cash Equivalents	
Commercial Paper	1,405,273,910
U.S. Treasury Obligations	349,201,163
Repurchase Agreements	1,480,000,000
Interest-Bearing Short-Term Certificates	321,655,000
Short-Term Investment Funds (STIF)	963,185,725
Subtotal Cash Equivalents	4,519,315,798
Total Cash and Cash Equivalents	\$4,625,708,094
Investments	
Fixed Income	
U.S. Corporate Bonds	\$5,437,707,468
Non-U.S. Notes and Bonds	8,544,691,603
U.S. Government and Agencies	7,406,947,391
U.S. Mortgage Backed	2,879,208,855
Subtotal Fixed Income	24,268,555,317
Domestic Equities	20,922,486,409
Real Estate	7,586,217,183
Private Equity	9,293,307,227
International Equities	20,059,371,491
Hedge Funds and Derivatives ¹	14,227,472,276
Total Investments Before Collateral on Loaned Securities	96,357,409,903
Collateral on Loaned Securities	
Reinvested Cash Collateral for Loaned Securities	7,935,816,160
Total Collateral on Loaned Securities	7,935,816,160
Total Investments Including Collateral on Loaned Securities	\$104,293,226,063
Total Cash, Cash Equivalents and Investments	\$108,918,934,157

¹ Hedge Funds and Derivatives includes risk parity and global tactical asset allocation.

- 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. Balances on deposit are insured by the Federal Deposit Insurance Corporation (FDIC) up to specified limits. Balances in excess of FDIC limits are uninsured. The total amount of cash and cash equivalent balances held by the bank was \$106,392,296 at December 31, 2017. OPERS has not experienced any losses in its accounts and believes it is not exposed to a 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 Public Fixed Income Policy includes limiting non-investment grade securities to within 15 percentage points of the market value percentage of non-investment grade securities in the Fixed Income Aggregate Benchmark within the Defined Benefit portfolio, the Health Care portfolio, fixed income components of any target date funds and fixed income funds offered directly to OPERS members. 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 states the average effective duration of all defined benefit and health care assets must be within 20% of the average effective 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, 2017:

 2017 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	\$1,405,273,910	4.88%	0.04	\$1,074,285,856	\$290,990,360
Short-Term Investment Funds (STIF)	963,185,725	3.35	0.08	963,185,725	
Repurchase Agreements	1,480,000,000	5.14	0.01	850,000,000	430,000,000
Interest-Bearing Short-Term Certificates & Other	321,655,000	1.12	0.25	321,655,000	
Corporate Bonds	3,677,310,739	12.77	5.86	35,857,972	240,904,112
Municipal Bonds	61,371,566	0.21	17.13	16,800,000	37,502,683
Asset-Backed Securities	724,701,066	2.52	0.99	440,406,936	47,663,652
Mortgages	703,552,379	2.44	5.64	206,621,158	209,462,521
Agency Mortgages	2,074,929,403	7.21	5.46		2,074,929,403
Non-U.S. Corporate Bonds	2,228,508,941	7.74	4.39	53,584,831	168,083,512
Non-U.S. Mortgage & Asset-Backed Securities	441,416,359	1.53	1.10	265,698,850	61,924,850
Non-U.S. Government	5,874,766,303	20.41	5.83	104,567,285	159,413,048
Agency Bonds	403,134,300	1.40	1.07		403,134,300
Commingled Long-Term Global Funds	1,107,205,502	3.85	4.76	32,154,332	399,056,007
Total Non-Government Guaranteed	21,467,011,193	74.57		4,364,817,945	4,523,064,448
U.S. Treasury Notes	3,957,033,182	13.75	3.55		3,957,033,182
U.S. Treasury Bonds	579,095,405	2.01	18.73		579,095,405
U.S. Treasury Inflation Protected	2,435,530,172	8.46	7.60		2,435,530,172
U.S. Treasury Discount Notes	349,201,163	1.21	0.19		349,201,163
Total Fixed Income and Cash Equivalents	\$28,787,871,115	100.00%	4.60	\$4,364,817,945	\$11,843,924,370

 2017 Average Credit Quality and Exposure Levels of Guaranteed Investments (continued from page 60)								
A	BBB	BB	B	CCC	CC	C	D	Not Rated
\$39,997,694								
								\$200,000,000
503,068,497	\$1,142,856,373	\$807,224,729	\$696,474,770	\$191,839,982	\$1,993,157	\$269,913	\$8,403,664	48,417,570
3,995,222	3,073,661							
17,601,057	57,992,938	34,292,430	10,078,009	24,897,633	39,604,922		23,601,160	28,562,329
29,724,675	98,177,862	61,422,993	22,497,101	32,164,849	24,753,842		10,837,110	7,890,268
195,686,338	516,996,807	452,492,792	362,568,130	86,039,432	35,661,315	4,578,415	25,412,944	327,404,425
	3,998,796	77,181,273	8,881,000	17,351,090	6,380,500			
1,144,042,700	1,749,684,848	1,337,430,546	1,139,203,087	94,308,846	6,438,715		19,921,070	119,756,158
35,591,560		480,425,281	102,772,762					57,205,560
1,969,707,743	3,572,781,285	3,250,470,044	2,342,474,859	446,601,832	114,832,451	4,848,328	88,175,948	789,236,310
\$1,969,707,743	\$3,572,781,285	\$3,250,470,044	\$2,342,474,859	\$446,601,832	\$114,832,451	\$4,848,328	\$88,175,948	\$789,236,310

- 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, 2017, 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 implementation policy is to allow external managers to decide what action to take within approved portfolio guidelines for their respective portfolios' foreign currency exposures using forward-currency contracts. See chart on the next page for foreign currency detail.

 Exposure to Foreign Currency Risk in U.S. Dollars (as of December 31, 2017)						
Currency	Cash	Forwards	Fixed Income	International Equities	Real Estate	Private Equity
Argentine Peso	\$217,203	\$4,983,559	\$80,468,712			
Australian Dollar	1,975,042			\$536,881,737		
Brazilian Real	647,281	(7,832,329)	388,682,709	330,775,380		
British Pound Sterling	2,044,328			1,837,080,170		\$530,378,855
Canadian Dollar	1,190,186			627,062,632		
Chilean Peso	457,496	10,136,754	75,364,119	19,358,410		
Chinese Yuan Renminbi	5,673			7		
Colombian Peso	2,220,214	(19,794,756)	234,529,465	4,249,577		
Czech Koruna	661,454	32,634,341	65,131,950	2,715,037		
Danish Krone	146,526			220,173,541		
Dominican Peso			17,331,020			
Egyptian Pound	493,468		67,833,622	4,876,413		
Euro Currency	2,145,745	(62,912,007)	58,455,785	3,226,092,819	\$61,637,009	1,281,594,427
Georgian Lari			10,481,731			
Ghanaian Cedi	18		42,669,806			
Hong Kong Dollar	1,877,083			1,260,283,718		
Hungarian Forint	622,769		80,723,639	6,964,123		
Indian Rupee	330,836		79,709,994	447,845,498		
Indonesian Rupiah	591,048	(26,632,571)	331,807,300	160,429,206		
Israeli Shekel	145,700	(27,899)		46,121,118		
Japanese Yen	3,889,516	1,382,156		2,641,405,697		
Kenyan Shilling			16,029,976			
Malaysian Ringgit	967,882		161,354,606	88,993,500		
Mexican Peso	3,958,106	(30,424,064)	396,598,392	96,968,336		
New Zealand Dollar	230,993			40,726,060		
Nigerian Naira	5,416		27,664,979			
Norwegian Krone	482,140			119,061,100		
Peruvian Nuevo Sol	27,798		69,878,541	963,724		
Philippine Peso	449,630		4,137,484	39,350,063		
Polish Zloty	1,492,208	8,055,834	305,422,419	70,308,674		
Qatari Rial	4,570			12,098,541		
Romanian New Leu	4,398	5,481,056	12,637,866			
Russian Ruble	796,414	(7,739,218)	338,999,297			
Singapore Dollar	612,534	(153,753)		146,156,833		
South African Rand	756,196	(46,236,423)	346,490,503	319,078,747		
South Korean Won	1,077,273			767,256,401		
Sri Lankan Rupee			10,235,710			
Swedish Krona	261,699			231,941,230		
Swiss Franc	526,617			755,512,083		
Taiwan Dollar	931,000			429,382,078		
Thailand Baht	85,602	20,434,060	64,308,110	166,156,323		
Turkish Lira	302,767	(1,351,957)	241,258,946	90,781,263		
UAE Dirham	3,104			33,198,865		
Uganda Shilling			8,902,007			
Uruguay Peso	8,572		80,220,097			
Zambian Kwacha			7,503,754			
Total	\$32,646,505	(\$119,997,217)	\$3,624,832,539	\$14,780,248,904	\$61,637,009	\$1,811,973,282

- g. Securities Lending**—OPERS maintains 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. In return, OPERS receives cash collateral and agrees to return the collateral for the same securities in the future. Cash collateral from securities loaned is, simultaneous to the loan, reinvested in repurchase agreements and short-term securities. 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. OPERS does not have the ability to pledge or sell collateral securities absent a broker default. If the fair value of the collateral held falls below the required levels, additional collateral is provided.


As of December 31, 2017, the fair value of securities on loan was \$7,720,426,023.

Associated collateral totaling \$7,933,640,759 was received. The fair market value of reinvested collateral was \$7,935,816,160 at December 31, 2017, which includes an unrealized gain on securities lending income totaling \$2,175,401.


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 is equal to gross income less broker rebates, agent fees, and unrealized losses on collateral. Securities lending income for 2017 was recorded on an accrual basis.

- h. Derivatives**—Derivatives 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 derivatives:
- **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 is 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 2017 was \$9,205,874, or (\$9,205,874).

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

 Fair Value of Forward-Currency and Hedged Contracts (as of December 31, 2017)	
Forward-currency purchases	\$106,723,114
Forward-currency sales	(\$226,720,330)
Unrealized loss	(\$1,812,789)

- **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, 2017. The net realized and unrealized gain on futures contracts for the year 2017 was \$592,224,523.

 Futures Positions Held (as of December 31, 2017)		
Futures Contracts	Number of Contracts	Contract Principal
U.S. Equity Index Futures purchased long	15,047	\$1,926,511,025
U.S. Treasury Futures purchased long	10,170	\$1,475,351,285
Non-U.S. Equity Index Futures purchased long	8,036	\$715,141,128


- **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 price of the reference obligation or the counterparty's ability to meet the terms of the contract. OPERS held total return swaps with a notional value of \$1,587,978,198 as of December 31, 2017. The unrealized loss at December 31, 2017 was \$5,220,004, or (\$5,220,004). The net realized and unrealized gain in total return swaps for the year 2017 was \$100,506,768.
- **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. While OPERS invested in credit default swap indices during 2017, there were no outstanding credit default swaps as of December 31, 2017. The net realized and unrealized loss in credit default swaps for the year 2017 was \$3,701,848, or (\$3,701,848).
- **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 invest in options during 2017.

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, 2017:

 Investments and Short-Term Holdings Measured At Fair Value (as of December 31, 2017)				
	Fair Value	Fair Value Measurements Using		
		Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Investments by Fair Value Level				
Fixed Income				
U.S. Corporate Bonds	\$4,566,156,132	\$102,772,761	\$4,359,159,726	\$104,223,645
Non-U.S. Notes and Bonds	8,544,691,603		8,070,302,173	474,389,430
U.S. Government and Agencies	7,374,793,059		7,374,793,059	
U.S. Mortgage Backed	2,778,481,781		2,723,847,447	54,634,334
Total Fixed Income	23,264,122,575	102,772,761	22,528,102,405	633,247,409
Equities				
Domestic Equities	20,183,498,915	20,157,485,192	60,477	25,953,246
International Equities	17,293,919,498	17,286,717,379	3,632,656	3,569,463
Total Equities	37,477,418,413	37,444,202,571	3,693,133	29,522,709
Total Investments by Fair Value Level	\$60,741,540,988	\$37,546,975,332	\$22,531,795,538	\$662,770,118
Investments Measured at the Net Asset Value (NAV)				
Real Estate	\$7,586,217,183			
Private Equity	9,293,307,227			
Hedge Funds ¹	14,234,505,069			
Commingled Mutual Funds				
U.S. Corporate Bonds	537,630,842			
U.S. Mortgage Backed	100,727,074			
International Equities	2,376,379,967			
Defined Contribution Commingled Mutual Funds				
Domestic Equities	738,987,494			
U.S. Corporate Bonds	333,920,494			
U.S. Government and Agencies	32,154,332			
International Equities	389,072,026			
Total Investments Measured at the NAV	\$35,622,901,708			
Investment Derivative Instruments				
Foreign Exchange Contracts	(\$1,812,789)		(\$1,812,789)	
Swaps (Total Return and Credit Default)	(5,220,004)		(5,220,004)	
Total Investment Derivative Instruments	(\$7,032,793)		(\$7,032,793)	
Investments Not Subject to Fair Value Leveling (at cost or amortized cost)				
Cash	\$106,392,296			
Commercial Paper	1,405,273,910			
Interest-Bearing Short-Term Certificates	321,655,000			
Repurchase Agreements	1,480,000,000			
Short-Term Investment Funds (STIF)	963,185,725			
U.S. Treasury Obligations	349,201,163			
Total Investments Not Subject to Fair Value Leveling	\$4,625,708,094			
Total Cash and Investments Before Collateral on Loaned Securities	\$100,983,117,997			

¹ Hedge Funds includes risk parity and global tactical asset allocation.

 Other Investment Derivative Instruments (as of December 31, 2017)				
	Fair Value	Fair Value Measurements Using		
		Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Investment Commitments Payable—Forward-Currency Purchases	\$106,723,114		\$106,723,114	
Investment Sales Proceeds—Forward-Currency Sales	(\$226,720,330)		(\$226,720,330)	

 Reinvested Cash Collateral for Securities on Loan (as of December 31, 2017)				
	Fair Value	Fair Value Measurements Using		
		Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Investments by Fair Value Level				
Fixed Income				
U.S. Government and Agencies	\$205,029,223	\$25,000,000	\$180,029,223	
U.S. Corporate Bonds	1,038,368,639		1,038,368,639	
Non-U.S. Corporate Notes and Bonds	572,559,432		572,559,432	
Total Investments by Fair Value Level	1,815,957,294	25,000,000	1,790,957,294	
Investments Not Subject to Fair Value Leveling (at cost or amortized cost)				
Cash	232,684,208			
Certificates of Deposit	674,886,041			
Commercial Paper	1,606,337,833			
Commingled Funds	262,960,364			
Receivables/Payables	(2,314,038)			
Repurchase Agreements	1,374,994,818			
Short-Term Debt				
Short-Term Investment Funds	562,889,018			
U.S. Treasury Obligations Less than One Year	1,407,420,622			
Total Reinvested Cash Collateral for Loaned Securities	\$7,935,816,160	\$25,000,000	\$1,790,957,294	

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 derivatives, 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 and international debt.

Changes in the significant unobservable inputs in the table on page 66 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, 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, including investment management. 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, and are considered to be alternative investments. Investments categorized according to NAV include hedge funds, real estate, and private equity limited partnership interests. These represent OPERS' collective ownership interests in limited partnership vehicles that invest in non-registered funds which are valued based on the net asset values of the underlying investments.

Unlike more traditional investments, alternative 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 calendar year-end. If December 31 statements are available, those values are preferentially 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.

Hedge funds are most often established as private investment limited partnerships open to a limited number of accredited investors. Investments in hedge 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 hedge fund investment and reports characteristics of the asset class quarterly.

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.


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 alternative investments is as follows:

Private Equity	10 to 12 years
Closed-End Real Estate	10 to 12 years
Open-End Real Estate	10+ years
Separately Managed Real Estate	3 to 10 years
Hedge Funds	Monthly, Quarterly, Annually, Bi-Annually

As of December 31, 2017, the alternative investments 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' alternative investments measured at NAV as of December 31, 2017:

				
	Net Asset Value	Unfunded Commitments	Redemption Frequency (If Currently Eligible)	Redemption Notice Period
Real Estate				
Closed-End Private Real Estate ¹	\$1,249,847,758	\$1,077,251,849	N/A	N/A
Open-End Private Real Estate ²	1,898,487,194		Quarterly	90 Days
Separate Account Private Real Estate ³	4,437,882,231	657,832,025	N/A	N/A
Private Equity⁴	9,293,307,227	6,088,153,243	N/A	N/A
Hedge Funds				
Event-Driven ⁵	2,002,894,556	N/A	Quarterly, Annual	45-90 Days
Long/Short Equity ⁶	1,424,662,141	N/A	Monthly, Quarterly	5-65 Days
Multi-Strategy ⁷	8,087,072,969	N/A	Monthly, Quarterly, Annual	3-90 Days
Relative Value ⁸	1,245,369,758	N/A	Monthly, Quarterly	30-60 Days
Tactical Trading ⁹	1,474,505,645	N/A	Monthly, Quarterly, Bi-Annual	2-65 Days
Commingled Mutual Funds¹⁰				
U.S. Corporate Bonds	537,630,842	N/A	Monthly	10 Days
U.S. Mortgage Bonds	100,727,074	N/A	Monthly	15 Days
International Equities	2,376,379,967	N/A	Daily, Monthly	1-7 Days
Defined Contribution Commingled Mutual Funds¹¹				
Domestic Equities	738,987,494	N/A	Daily	Daily
U.S. Corporate Bonds	333,920,494	N/A	Daily	Daily
U.S. Government and Agencies	32,154,332	N/A	Daily	Daily
International Equities	389,072,026	N/A	Daily	Daily
Total Investments Measured at the NAV	\$35,622,901,708			

¹ **Closed-End Private Real Estate**—Closed-end private real estate includes finite-life pooled 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.

² **Open-End Private Real Estate**—Open-end private real estate holds infinite-life pooled 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 **Separate Account Private Real Estate**—Separate account real estate includes separately managed investment accounts where OPERS is the sole investor. The account is governed by the investment management agreement between OPERS and the manager. The OPERS separate accounts may invest in stabilized, 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.

⁴ **Private Equity**—Private equity invests through closed-end, finite-life, commingled funds that are typically structured as limited partnerships, where the investors are limited partners (LPs) and the fund sponsor/manager

is the general partner. 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.

- 5 Event-Driven Hedge Funds**—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 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.
- 6 Long/Short Equity Hedge Funds**—Equity hedge strategies maintain positions both long and short in primarily equity and equity derivative securities. A wide variety of investment processes can be employed to arrive at an investment decision, including both quantitative and fundamental techniques. Strategies can be broadly diversified or narrowly focused on specific sectors and can range broadly in terms of levels of net exposure, leverage employed, holding period, concentrations of market capitalizations and valuation ranges of typical portfolios. 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 Hedge Funds**—Multi-strategy managers combine several strategies within the same fund in order 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, derivatives 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 Relative Value Hedge Funds**—Relative value managers maintain positions in which the investment thesis is predicated on the realization of a valuation discrepancy in the relationship between multiple securities. Managers employ a variety of fundamental and quantitative techniques to establish investment insights, and security types range broadly across equity, fixed income, derivative or other security types. Fixed Income strategies are typically quantitatively driven to measure the existing relationship between instruments and, in some cases, identify attractive positions in which the risk-adjusted spread between these instruments represents an attractive opportunity. The valuations are based on manager-provided net asset values located in the monthly capital account statements, that are adjusted for estimated performance.
- 9 Tactical Trading Hedge Funds**—Tactical managers execute a broad range of strategies in which the investment process is predicated on movements in underlying economic variables and the impact these have on equity, fixed income, hard currency, and commodity markets. Managers employ a variety of techniques, both discretionary and systematic analyses, combinations of top down and bottom up disciplines, quantitative and fundamental approaches, and long and short-term holding periods. The valuations are based on manager-provided net asset values located in the monthly capital account statements, that are adjusted for estimated performance.
- 10 Commingled Mutual Funds**—The commingled mutual funds seek to outperform the Bloomberg Barclays U.S. Corporate High Yield Index, Bloomberg Barclays Capital U.S. Aggregate Bond Index, MSCI All Country World Free x U.S. Index, and MSCI Emerging Markets Small Cap Net Index. The valuations are based on manager-provided net asset values located in the monthly account statements.
- 11 Defined Contribution Commingled Mutual Funds**—The defined contribution funds, other than the Stable Value Fund, 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 Stable Value Fund is a custom index whose primary objective is to preserve value of principal. Its secondary objective is to exceed the long-term return of a custom index. The valuations are based on manager-provided net asset values located in the monthly account statements.

4. Vacation and Sick Leave

As of December 31, 2017, \$8,016,392 was accrued for unused vacation and sick leave for employees of OPERS. Employees who resign or retire are entitled to full compensation for all earned but unused vacation leave for 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 their unused sick leave up to a maximum of 2,000 hours, or payment of 1,000 hours.


5. 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. 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.

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. Accordingly, OPERS does not include the deferred compensation assets or liabilities of the Ohio Deferred Compensation Plan in its financial statements.

6. 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, 2017 are as follows:

 Annual Required Pension and Health Care Contributions				
Year Ended	Pension		Health Care	
	Annual Required Contributions	Percent Contributed	Annual Required Contributions	Percent Contributed
2017	\$5,843,498	100%	\$830,450	100%

Under GASB 51, internal payroll related to the implementation of capital projects is capitalized as part of the fixed asset cost. OPERS implemented GASB 51 at the end of 2008, and began capitalizing internal labor costs effective January 1, 2009. The capitalized cost includes salary and wages as well as the corresponding employer paid Medicare and retirement contribution expenses. The portion of the 2017 annual required contribution included in fixed assets was \$316,348 for pension and \$44,958 for health care.

7. Self-insured Employee Health Care


Under a professionally administered plan, OPERS self-insures for general health, hospitalization, and prescription drug employee benefits. OPERS maintained specific stop-loss coverage per employee for medical benefits in the amount of \$250,000 for 2017. Employees share in the cost of their coverage by payroll deductions, which are netted against the claims cost. Employee deductions and vendor rebates totaled \$2,385,973 in 2017. The summary of changes in incurred but not reported claims for the year ended December 31, 2017 follows:

 Employee Health Insurance	
	2017
Balance January 1	\$154,750
Claims Incurred	9,609,589
Claims Paid	(9,764,339)
Balance December 31	\$0

The liability for self-insured employee health care is included in Accounts Payable and Other Liabilities on the Combining Statement of Fiduciary Net Position.

8. Net Pension Liability


The components of the net pension liability of the defined benefit portion of the pension plans as of December 31, 2017 are as follows:

 Net Pension Liability/(Asset) (\$ in millions)				
As of December 31, 2017	All Plans	Traditional Pension Plan	Combined Plan ¹	Member-Directed Plan ¹
Total Pension Liability	\$102,653	\$102,274	\$365	\$14
Plan Fiduciary Net Position	87,105	86,586	501	18
Employers' Net Pension Liability/(Asset)	\$15,548	\$15,688	(\$136)	(\$4)
Plan Fiduciary Net Position as a Percentage of Total Pension Liability/(Asset)	84.85%	84.66%	137.28%	124.46%

¹ The Combined Plan and Member-Directed Plan information in the Net Pension Liability 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, 2017, 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:

			
Actuarial Information	Traditional Pension Plan	Combined Plan	Member-Directed Plan
Measurement and Valuation Date	December 31, 2017	December 31, 2017	December 31, 2017
Experience Study	5-Year Period Ended December 31, 2015	5-Year Period Ended December 31, 2015	5-Year Period Ended December 31, 2015
Actuarial Cost Method	Individual entry age	Individual entry age	Individual entry age
Actuarial Assumptions			
Investment Rate of Return	7.50%	7.50%	7.50%
Wage Inflation	3.25%	3.25%	3.25%
Projected Salary Increases	3.25%-10.75% (includes wage inflation at 3.25%)	3.25%-8.25% (includes wage inflation at 3.25%)	3.25%-8.25% (includes wage inflation at 3.25%)
Cost-of-living Adjustments	Pre-1/7/2013 Retirees: 3.00% Simple Post-1/7/2013 Retirees: 3.00% Simple through 2018, then 2.15% Simple	Pre-1/7/2013 Retirees: 3.00% Simple Post-1/7/2013 Retirees: 3.00% Simple through 2018, then 2.15% Simple	Pre-1/7/2013 Retirees: 3.00% Simple Post-1/7/2013 Retirees: 3.00% Simple through 2018, then 2.15% Simple

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

The discount rate used to measure the total pension liability was 7.5% 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 table below displays the Board-approved asset allocation policy for 2017 and the long-term expected real rates of return.

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

The 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 real rate of return by weighting the expected future real rates of return by the target asset allocation percentage, adjusted for inflation.

During 2017, OPERS managed investments in three investment portfolios: the Defined Benefit portfolio, the Health Care portfolio and the Defined Contribution portfolio. The 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 16.82% for 2017.


The following table presents the net pension liability or asset calculated using the discount rate of 7.5%, 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)			
Employers' Net Pension Liability/(Asset) As of December 31, 2017	1% Decrease 6.5%	Current Discount Rate 7.5%	1% Increase 8.5%
All Plans	\$27,782	\$15,548	\$5,358
Traditional Pension Plan	\$27,858	\$15,688	\$5,542
Combined Plan	(\$74)	(\$136)	(\$179)
Member-Directed Plan	(\$2)	(\$4)	(\$5)

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 157-158. The Member-Directed Plan is a defined contribution plan allowing members at retirement to have the option to convert their defined contribution account to a defined benefit annuity. The purchased defined benefit annuities under this plan were included in this annual report from a GASB 67 perspective.

9. Net OPEB Liability—Health Care

The components of the net OPEB liability of the defined benefit health care plans as of December 31, 2017 were as follows:


 Net OPEB Liability (\$ in millions)	
As of December 31, 2017	
Total OPEB Liability	\$23,678
Plan Fiduciary Net Position	12,819
Employers' Net OPEB Liability	\$10,859
Plan Fiduciary Net Position as a Percentage of Total OPEB Liability	54.14%

The total OPEB liability was determined by an actuarial valuation as of December 31, 2016, rolled forward to the measurement date of December 31, 2017, by incorporating the expected value of health care cost accruals, the actual health care payments, and interest accruals during the year.

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 total OPEB liability was determined by an actuarial valuation as of December 31, 2016, rolled forward to the measurement date of December 31, 2017.

The actuarial valuation used the following actuarial assumptions applied to all prior periods included in the measurement in accordance with the requirements of GASB 74:

 Key Methods and Assumptions Used in Valuation of Total OPEB Liability	
Actuarial Information	
Actuarial Valuation Date	December 31, 2016
Rolled-Forward Measurement Date	December 31, 2017
Experience Study	5-Year Period Ended December 31, 2015
Actuarial Cost Method	Individual entry age normal
Actuarial Assumptions	
Single Discount Rate	3.85%
Investment Rate of Return	6.50%
Municipal Bond Rate	3.31%
Wage Inflation	3.25%
Projected Salary Increases	3.25%-10.75% (includes wage inflation at 3.25%)
Health Care Cost Trend Rate	7.5% initial, 3.25% ultimate in 2028

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

A single discount rate of 3.85% was used to measure the OPEB liability on the measurement date of December 31, 2017. 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) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating as of the measurement date (to the extent that the contributions for use with the long-term expected rate are not met). This single discount rate was based on an expected rate of return on the health care investment portfolio of 6.50% and a municipal bond rate of 3.31%. The projection of cash flows used to determine this single discount rate assumed that employer contributions will be made at rates equal to the actuarially determined contribution rate. Based on these assumptions, the health care fiduciary net position and future contributions were sufficient to finance health care costs through the year 2034. As a result, the long-term expected rate of return on health care investments was applied to projected costs through the year 2034, and the municipal bond rate was applied to all health care costs after that date.

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 pension plans. Health care is a discretionary benefit. The table below displays the Board-approved asset allocation policy for 2017 and the long-term expected real rates of return.

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


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

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

The following table presents the OPEB liability calculated using the single discount rate of 3.85%, and the expected net OPEB liability if it were calculated using a discount rate that is 1.0% 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, 2017	1% Decrease 2.85%	Single Discount Rate 3.85%	1% Increase 4.85%
Employers' Net OPEB Liability	\$14,427	\$10,859	\$7,973

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, 2017	1% Decrease	Current Health Care Cost Trend Rate Assumption	1% Increase
Employers' Net OPEB Liability	\$10,390	\$10,859	\$11,344

Retiree health care valuations use a health care cost-trend assumption that changes over several years built into the assumption. The near-term rates reflect increases in the current cost of health care; the trend starting in 2018 is 7.50%. 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 that in the not-too-distant future, the health plan cost trend will decrease to a level at, or near, wage inflation. On this basis, the actuaries project premium rate increases will continue to exceed wage inflation for approximately the next decade, but by less each year, until leveling off at an ultimate rate, assumed to be 3.25% in the most recent valuation.

The funding status of health care and the Schedules of Funding Progress are found in the Actuarial Section of this document on page 159.

Defined Benefit Pension Plans

The Schedules of Changes in Net Pension Liability 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 Employee Payroll represents the collective total of the OPERS eligible wages of all OPERS employers within each plan.


 Schedules of Changes in Net Pension Liability and Related Ratios (\$ in millions)				All Plans ¹
	2017	2016	2015	2014
Net Change in Total Pension Liability				
Service Cost	\$1,823.3	\$1,763.4	\$1,710.7	\$1,685.3
Interest on Total Pension Liability	7,347.3	7,131.5	6,978.9	6,778.9
Changes of Benefit Terms	-	-	-	-
Difference Between Expected and Actual Experience	(456.1)	37.5	(334.0)	(321.4)
Changes in Assumptions	-	5,344.6	-	-
Benefit Payments, Including Refunds of Employee Contributions	(6,227.6)	(5,942.8)	(5,808.6)	(5,502.2)
Net Change in Total Pension Liability	2,486.9	8,334.2	2,547.0	2,640.6
Total Pension Liability—Beginning	100,166.4	91,832.2	89,285.2	86,644.6
Total Pension Liability—Ending	\$102,653.3	\$100,166.4	\$91,832.2	\$89,285.2
Net Change in Plan Fiduciary Net Position				
Employer Contributions	\$1,779.6	\$1,606.0	\$1,564.7	\$1,520.3
Member Contributions	1,324.5	1,294.8	1,246.7	1,228.1
Net Investment Income	12,657.6	5,976.9	276.3	5,074.7
Benefit Payments, Including Refunds of Employee Contributions	(6,227.6)	(5,942.8)	(5,808.6)	(5,502.2)
Non-Investment Administrative Expenses	(52.2)	(51.9)	(49.1)	(49.8)
Other ²	108.8	71.1	66.9	125.5
Net Change in Plan Fiduciary Net Position	9,590.7	2,954.1	(2,703.1)	2,396.6
Plan Fiduciary Net Position—Beginning	77,514.2	74,560.1	77,263.2	74,866.6
Plan Fiduciary Net Position—Ending	\$87,104.9	\$77,514.2	\$74,560.1	\$77,263.2
Net Pension Liability/(Asset)	\$15,548.4	\$22,652.2	\$17,272.1	\$12,022.0
Plan Fiduciary Net Position as a Percentage of the Total Pension Liability/(Asset)	84.85%	77.39%	81.19%	86.54%
Covered Employee Payroll	\$14,058.0	\$13,717.6	\$13,177.0	\$12,932.5
Net Pension Liability/(Asset) as a Percentage of Covered Employee Payroll	110.60%	165.13%	131.08%	92.96%

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 and Interplan Activity.

See Notes to Required Supplementary Information, beginning on page 90.

See accompanying Independent Auditors' Report, beginning on page 20.

 Schedules of Changes in Net Pension Liability and Related Ratios (\$ in millions)		Traditional Pension Plan ¹			
	2017	2016	2015	2014	
Net Change in Total Pension Liability					
Service Cost	\$1,796.9	\$1,738.6	\$1,687.0	\$1,659.6	
Interest on Total Pension Liability	7,320.5	7,107.3	6,956.7	6,759.0	
Changes of Benefit Terms	-	-	-	-	
Difference Between Expected and Actual Experience	(441.6)	45.5	(322.3)	(309.7)	
Changes in Assumptions	-	5,328.8	-	-	
Benefit Payments, Including Refunds of Employee Contributions	(6,219.8)	(5,936.9)	(5,804.1)	(5,498.8)	
Net Change in Total Pension Liability	2,456.0	8,283.3	2,517.3	2,610.1	
Total Pension Liability—Beginning	99,817.9	91,534.6	89,017.3	86,407.2	
Total Pension Liability—Ending	\$102,273.9	\$99,817.9	\$91,534.6	\$89,017.3	
Net Change in Plan Fiduciary Net Position					
Employer Contributions	\$1,722.9	\$1,556.5	\$1,498.7	\$1,476.1	
Member Contributions	1,324.5	1,294.8	1,246.7	1,228.1	
Net Investment Income	12,586.4	5,947.2	274.9	5,056.3	
Benefit Payments, Including Refunds of Employee Contributions	(6,219.8)	(5,936.9)	(5,804.1)	(5,498.8)	
Non-Investment Administrative Expenses	(52.2)	(51.9)	(49.1)	(49.8)	
Other ²	114.4	86.6	90.0	125.8	
Net Change in Plan Fiduciary Net Position	9,476.2	2,896.3	(2,742.9)	2,337.7	
Plan Fiduciary Net Position—Beginning	77,109.6	74,213.3	76,956.2	74,618.5	
Plan Fiduciary Net Position—Ending	\$86,585.8	\$77,109.6	\$74,213.3	\$76,956.2	
Net Pension Liability/(Asset)	\$15,688.1	\$22,708.3	\$17,321.3	\$12,061.1	
Plan Fiduciary Net Position as a Percentage of the Total Pension Liability/(Asset)	84.66%	77.25%	81.08%	86.45%	
Covered Employee Payroll	\$13,085.0	\$12,794.0	\$12,321.2	\$12,139.7	
Net Pension Liability/(Asset) as a Percentage of Covered Employee Payroll	119.89%	177.49%	140.58%	99.35%	

¹ Includes money purchase annuities for re-employed retirees and additional annuities.

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

See Notes to Required Supplementary Information, beginning on page 90.

See accompanying Independent Auditors' Report, beginning on page 20.


Schedules of Changes in Net Pension Liability and Related Ratios (\$ in millions)		Combined Plan ¹			
	2017	2016	2015	2014	
Net Change in Total Pension Liability					
Service Cost	\$26.4	\$24.8	\$23.7	\$25.7	
Interest on Total Pension Liability	26.0	23.5	21.6	19.4	
Changes of Benefit Terms	-	-	-	-	
Difference Between Expected and Actual Experience	(17.9)	(10.2)	(13.3)	(13.2)	
Changes in Assumptions	-	15.2	-	-	
Benefit Payments, Including Refunds of Employee Contributions	(5.6)	(5.0)	(3.7)	(2.8)	
Net Change in Total Pension Liability	28.9	48.3	28.3	29.1	
Total Pension Liability—Beginning	336.2	287.9	259.6	230.5	
Total Pension Liability—Ending	\$365.1	\$336.2	\$287.9	\$259.6	
Net Change in Plan Fiduciary Net Position					
Employer Contributions	\$53.6	\$47.1	\$44.0	\$44.2	
Member Contributions	-	-	-	-	
Net Investment Income	68.6	28.8	1.3	17.9	
Benefit Payments, Including Refunds of Employee Contributions	(5.6)	(5.0)	(3.7)	(2.8)	
Non-Investment Administrative Expenses	-	-	-	-	
Other ²	(7.3)	(15.6)	(3.1)	(2.2)	
Net Change in Plan Fiduciary Net Position	109.3	55.3	38.5	57.1	
Plan Fiduciary Net Position—Beginning	391.9	336.6	298.1	241.0	
Plan Fiduciary Net Position—Ending	\$501.2	\$391.9	\$336.6	\$298.1	
Net Pension Liability/(Asset)	(\$136.1)	(\$55.7)	(\$48.7)	(\$38.5)	
Plan Fiduciary Net Position as a Percentage of the Total Pension Liability/(Asset)	137.28%	116.55%	116.90%	114.83%	
Covered Employee Payroll	\$412.7	\$392.3	\$366.9	\$346.0	
Net Pension Liability/(Asset) as a Percentage of Covered Employee Payroll	(32.99%)	(14.19%)	(13.26%)	(11.13%)	

¹ Includes annuitized defined contribution accounts. The Combined Plan information in the Net Pension Liability 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.

See Notes to Required Supplementary Information, beginning on page 90.

See accompanying Independent Auditors' Report, beginning on page 20.

 Schedules of Changes in Net Pension Liability and Related Ratios (\$ in millions)		Member-Directed Plan ¹			
	2017	2016	2015	2014	
Net Change in Total Pension Liability					
Service Cost	-	-	-	-	
Interest on Total Pension Liability	\$0.8	\$0.7	\$0.6	\$0.5	
Changes of Benefit Terms	-	-	-	-	
Difference Between Expected and Actual Experience	3.4	2.2	1.6	1.5	
Changes in Assumptions	-	0.6	-	-	
Benefit Payments, Including Refunds of Employee Contributions	(2.2)	(0.9)	(0.8)	(0.6)	
Net Change in Total Pension Liability	2.0	2.6	1.4	1.4	
Total Pension Liability—Beginning	12.3	9.7	8.3	6.9	
Total Pension Liability—Ending	\$14.3	\$12.3	\$9.7	\$8.3	
Net Change in Plan Fiduciary Net Position					
Employer Contributions	\$3.1	\$2.4	\$22.0	-	
Member Contributions	-	-	-	-	
Net Investment Income	2.5	0.9	0.1	\$0.5	
Benefit Payments, Including Refunds of Employee Contributions	(2.2)	(0.9)	(0.8)	(0.6)	
Non-Investment Administrative Expenses	-	-	-	-	
Other ²	1.7	0.1	(20.0)	1.9	
Net Change in Plan Fiduciary Net Position	5.1	2.5	1.3	1.8	
Plan Fiduciary Net Position—Beginning	12.7	10.2	8.9	7.1	
Plan Fiduciary Net Position—Ending	\$17.8	\$12.7	\$10.2	\$8.9	
Net Pension Liability/(Asset)	(\$3.5)	(\$0.4)	(\$0.5)	(\$0.6)	
Plan Fiduciary Net Position as a Percentage of the Total Pension Liability/(Asset)	124.46%	103.40%	103.91%	107.10%	
Covered Employee Payroll	\$560.3	\$531.3	\$488.9	\$446.8	
Net Pension Liability/(Asset) as a Percentage of Covered Employee Payroll	(0.62%)	(0.08%)	(0.08%)	(0.13%)	

¹ Includes annuitized defined contribution accounts. The Member-Directed Plan information in the Net Pension Liability 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 and Interplan Activity.

See Notes to Required Supplementary Information, beginning on page 90.

See accompanying Independent Auditors' Report, beginning on page 20.

Within the Traditional Pension Plan, OPERS classifies employees into four divisions: State, Local, Law Enforcement and Public Safety. The Public Safety and Law Enforcement divisions have different contribution rates, benefit formulas, and retirement eligibility requirements than those of the State and Local members. The member and employer contribution rates are actuarially determined within the constraints of statutory limits for each division. Both the member and employer contribution rates for Public Safety and Law Enforcement members are higher than those of the State and Local members to recognize the higher cost of these benefits. Accordingly, both member and employer contributions are used to calculate the proportionate shares of employers.

Schedule of Member and Employer Contributions			Traditional Pension Plan ¹		
Year Ended December 31	Actuarially Determined Contributions ²	Contributions Paid	Contribution Deficiency/ (Excess)	Covered Employee Payroll ³	Contributions as a Percent of Covered Payroll
2017	\$3,047,313,879	\$3,047,313,879	-	\$13,085,037,696	23.3%
2016	2,851,382,826	2,851,382,826	-	12,793,976,661	22.3
2015	2,745,411,751	2,745,411,751	-	12,321,236,358	22.3
2014	2,704,218,157	2,704,218,157	-	12,139,692,990	22.3
2013	2,778,566,900	2,778,566,900	-	11,999,928,351	23.2
2012	2,407,224,107	2,407,224,107	-	11,883,831,019	20.3
2011	2,454,599,959	2,454,599,959	-	12,103,258,896	20.3
2010	2,315,100,186	2,315,100,186	-	12,165,415,760	19.0
2009	2,256,548,622	2,256,548,622	-	12,289,885,494	18.4
2008	2,145,747,568	2,145,747,568	-	12,546,006,885	17.1

¹ The actuarially determined contribution to fund the cost of pensions includes member and employer contributions. The contributions reported in this schedule are consistent with the presentation of the employers' proportionate shares.

² The Board has approved all contribution rates as recommended by the actuary.

³ Covered Employee Payroll was calculated based on actual information obtained from OPERS-contributing employers during the fiscal year, which differs from the funding valuation covered payroll. Covered payroll used in the funding valuation is based on the annualized pay rate of all Traditional Pension Plan active members as of the valuation date.

See Notes to Required Supplementary Information, beginning on page 90.

See accompanying Independent Auditors' Report, beginning on page 20.

The Combined Plan defined benefit pension is funded only from the employer contributions, with the member contributions deposited to a defined contribution account. Both member and employer contributions for the Member-Directed Plan are deposited into the participants' defined contribution accounts. However, the Member-Directed Plan defined benefit annuities purchased by eligible Member-Directed Plan retirees are funded with accumulated member contributions, vested employer contributions and gains or losses resulting from the member-selected investment options. As a result, the Member-Directed Plan table on page 86 shows all employer contributions to the plan since there are no separate actuarially determined contributions calculated for purchased annuities and employer contributions are used to determine the employer proportionate share of this activity. The tables below 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 Employee Payroll ²	Contributions as a Percent of Covered Payroll
2017	\$1,832,523,797	\$1,832,523,797	-	\$14,058,005,653	13.0%
2016	1,656,729,065	1,656,729,065	-	13,717,592,219	12.1
2015	1,611,150,408	1,611,150,408	-	13,177,006,156	12.2
2014	1,568,121,657	1,568,121,657	-	12,932,540,544	12.1
2013	1,655,726,521	1,655,726,521	-	12,331,162,054	13.4
2012	1,267,795,786	1,267,795,786	-	12,193,467,217	10.4
2011	1,290,029,652	1,290,029,652	-	12,399,464,698	10.4
2010	1,153,671,398	1,153,671,398	-	12,449,782,144	9.3
2009	1,069,336,423	1,069,336,423	-	12,548,337,499	8.5
2008	937,458,579	937,458,579	-	12,801,062,526	7.3

Schedule of Employer Contributions ¹					Traditional Pension Plan
Year Ended December 31	Actuarially Determined Contributions	Contributions Paid	Contribution Deficiency/ (Excess)	Covered Employee Payroll ²	Contributions as a Percent of Covered Payroll
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
2012	1,208,150,727	1,208,150,727	-	11,883,831,019	10.2
2011	1,233,002,841	1,233,002,841	-	12,103,258,896	10.2
2010	1,097,711,440	1,097,711,440	-	12,165,415,760	9.0
2009	1,019,582,360	1,019,582,360	-	12,289,885,494	8.3
2008	892,693,746	892,693,746	-	12,546,006,885	7.1

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

See Notes to Required Supplementary Information, beginning on page 90.

See accompanying Independent Auditors' Report, beginning on page 20.

Schedule of Employer Contributions ¹					Combined Plan
Year Ended December 31	Actuarially Determined Contributions	Contributions Paid	Contribution Deficiency/ (Excess)	Covered Employee Payroll ²	Contributions as a Percent of Covered Payroll
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
2012	23,998,486	23,998,486	-	309,636,198	7.8
2011	23,280,520	23,280,520	-	296,205,802	7.9
2010	26,432,761	26,432,761	-	284,366,384	9.3
2009	23,397,299	23,397,299	-	258,452,005	9.1
2008	20,352,999	20,352,999	-	255,055,641	8.0

Schedule of Employer Contributions ¹					Member-Directed Plan
Year Ended December 31	Actuarially Determined Contributions	Contributions Paid	Contribution Deficiency/ (Excess)	Covered Employee Payroll ^{2, 3}	Contributions as a Percent of Covered Payroll
2017	\$56,030,522	\$56,030,522	-	\$560,309,175	10.0%
2016	53,120,880	53,120,880	-	531,288,662	10.0
2015	68,448,551	68,448,551	-	488,918,191	14.0
2014	47,851,530	47,851,530	-	446,803,577	10.7
2013	38,540,851	38,540,851	-		
2012	35,646,573	35,646,573	-		
2011	33,746,291	33,746,291	-		
2010	29,527,197	29,527,197	-		
2009	26,356,764	26,356,764	-		
2008	24,411,834	24,411,834	-		

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

³ Covered payroll calculated in conjunction with GASB 67 implementation in 2014. Information not available prior to 2014 implementation.

See Notes to Required Supplementary Information, beginning on page 90.

See accompanying Independent Auditors' Report, beginning on page 20.

During 2017, 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.


 Schedule of Investment Returns		Defined Benefit Portfolio
Year	Annual Money-Weighted Rate of Return Net of Investment Expenses	
2017	16.8%	
2016	8.3	
2015	0.4	
2014	6.9	

See Notes to Required Supplementary Information, beginning on page 90.

See accompanying Independent Auditors' Report, beginning on page 20.

Post-employment Health Care Coverage or OPEB

The Schedule of Changes in Net OPEB Liability 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 Employee Payroll represents the collective total of the OPERS eligible wages of all OPERS employers within each pension plan.

		Health Care
		2017
Net Change in Total OPEB Liability		
Service Cost		\$546.9
Interest on Total OPEB Liability		921.2
Changes of Health Care Terms		-
Difference Between Expected and Actual Experience		12.5
Changes in Assumptions		1,168.7
Health Care Payments, Including Refunds of Employee Contributions		(952.0)
Net Change in Total OPEB Liability		1,697.3
Total OPEB Liability—Beginning		21,980.8
Total OPEB Liability—Ending		\$23,678.1
Net Change in Plan Fiduciary Net Position		
Employer Contributions		\$157.4
Contributions—Non-employer Contributing Entities		-
Employee Contributions		-
Net Investment Income		1,756.8
Health Care Payments, Including Refunds of Employee Contributions		(952.0)
Non-Investment Administrative Expenses		(24.9)
Other ¹		1.0
Net Change in Plan Fiduciary Net Position		938.3
Plan Fiduciary Net Position—Beginning		11,880.5
Plan Fiduciary Net Position—Ending		\$12,818.8
Net OPEB Liability		\$10,859.3
Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability		54.14%
Covered Employee Payroll		\$14,058.0
Net OPEB Liability as a Percentage of Covered Employee Payroll		77.25%

¹ Other includes Contract and Other Receipts and Other Income.

See Notes to Required Supplementary Information, beginning on page 90.

See accompanying Independent Auditors' Report, beginning on page 20.

With the assistance of the System’s actuary, the Board may approve a portion of each employer contribution to OPERS be set aside for the funding of post-employment health care coverage. The portion of Traditional Pension Plan and Combined Plan employer contributions allocated to health care was 1.0% in 2017. The 2018 allocation is expected to be 0% for health care funding, expected to continue thereafter. The employer contribution as a percent of covered payroll deposited for the Member-Directed Plan participants’ health care accounts for 2017 was 4.0%. 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 no funding 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 Employee Payroll ¹	Contributions as a Percent of Covered Payroll
2017	\$739,451,097	\$157,417,888	\$582,033,209	\$14,058,005,652	1.1%
2016*	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
2012	1,422,859,434	494,048,415	928,811,019	12,193,467,217	4.2
2011	1,831,329,260	503,458,216	1,327,871,044	12,399,464,698	4.2
2010	1,650,917,533	628,685,237	1,022,232,296	12,449,782,144	5.2
2009	1,698,928,499	740,817,891	958,110,608	12,548,337,499	6.0
2008	1,855,720,690	891,561,073	964,159,617	12,801,062,526	7.1

* 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 OPEB. Therefore, starting in 2016, the total employer contributions presented includes the contributions for all health care plans.

¹ Covered Employee Payroll was calculated based on actual information obtained from OPERS-contributing employers during the fiscal year, which differs from the funding valuation covered payroll. 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 2017, OPERS managed investments in three investment portfolios: the Defined Benefit portfolio, the Health Care portfolio and the Defined Contribution portfolio. The Health Care portfolio includes the assets for health care expenses for the Traditional Pension Plan, Combined Plan and Member-Directed Plan eligible members. Within the Health Care portfolio, contributions into the 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.

Schedule of Investment Returns		Health Care Portfolio
Year	Annual Money-Weighted Rate of Return Net of Investment Expenses	
2017	15.3%	

See Notes to Required Supplementary Information, beginning on page 90.

See accompanying Independent Auditors’ Report, beginning on page 20.

Defined Benefit Pension Plans

Actuarial Assumptions and Methods Used in Determining Contribution Rates

Actuarially determined contributions are constrained by contribution limits established by statute. Contribution rates are calculated as of December 31, two years prior to the end of the fiscal year in which contributions are reported. The actuarial assumptions and methods used to determine contribution rates are described below based on the actuarial valuation study for the year ended December 31, 2017.

- **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 total pension liability.
- **Asset Valuation Method**—For actuarial purposes, assets are valued utilizing a method that recognizes assumed investment returns fully each year. Difference 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, 18 years from December 31, 2018.
- **Investment Return**—An investment rate of return of 7.50% compounded annually was assumed for all members, retirees, and beneficiaries.
- **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 ranging from 0.00% to 7.50% per year depending on age, attributable to seniority and merit.
- **Multiple Decrement Tables-Mortality**—Pre-retirement mortality rates are based on the RP-2014 Employees mortality table for males and females, adjusted for mortality improvement back to the observation period base year of 2006. The base year for males and females was then established to be 2015 and 2010, respectively. Post-retirement mortality rates are based on the RP-2014 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 are based on the RP-2014 Disabled mortality table for males and females, adjusted for mortality improvement back to the observation period base year of 2006. The base year for males and females was then established to be 2015 and 2010, respectively. Mortality rates for a particular calendar year are 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, 2017 was based on the December 31, 2015 health care actuarial valuation, two years prior to the end of the fiscal year in which contributions are reported. The actuarial assumptions and methods used to determine contribution rates are described below based on the health care actuarial valuation study for the year ended December 31, 2016, rolled forward to a December 31, 2017 measurement date.

- **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 OPEB liability.
- **Asset Valuation Method**—For actuarial purposes, assets are valued utilizing a method that recognizes assumed investment returns fully each year. Difference 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%.
- **Investment Return**—An investment rate of return of 6.50%, compounded annually (net of OPEB plan investment expenses, including inflation).
- **Salary Scale**—Wage inflation plus additional projected salary increases ranging from 0.50% to 6.30% per year depending on age, attributable to seniority and merit.
- **Amortization Method**—Level percent of payroll, open amortization period, 30 years equivalent single amortization period.
- **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.
- **Multiple Decrement Tables-Mortality**—Pre-retirement mortality rates are based on the RP-2014 Employees mortality table for males and females, adjusted for mortality improvement back to the observation period base year of 2006. The base year for males and females was then established to be 2015 and 2010, respectively. Post-retirement mortality rates are based on the RP-2014 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 are based on the RP-2014 Disabled mortality table for males and females, adjusted for mortality improvement back to the observation period base year of 2006. The base year for males and females was then established to be 2015 and 2010, respectively. Mortality rates for a particular calendar year are determined by applying the MP-2015 mortality improvement scale to all of the above described tables.

Factors Significantly Affecting Trends in Reported Amounts

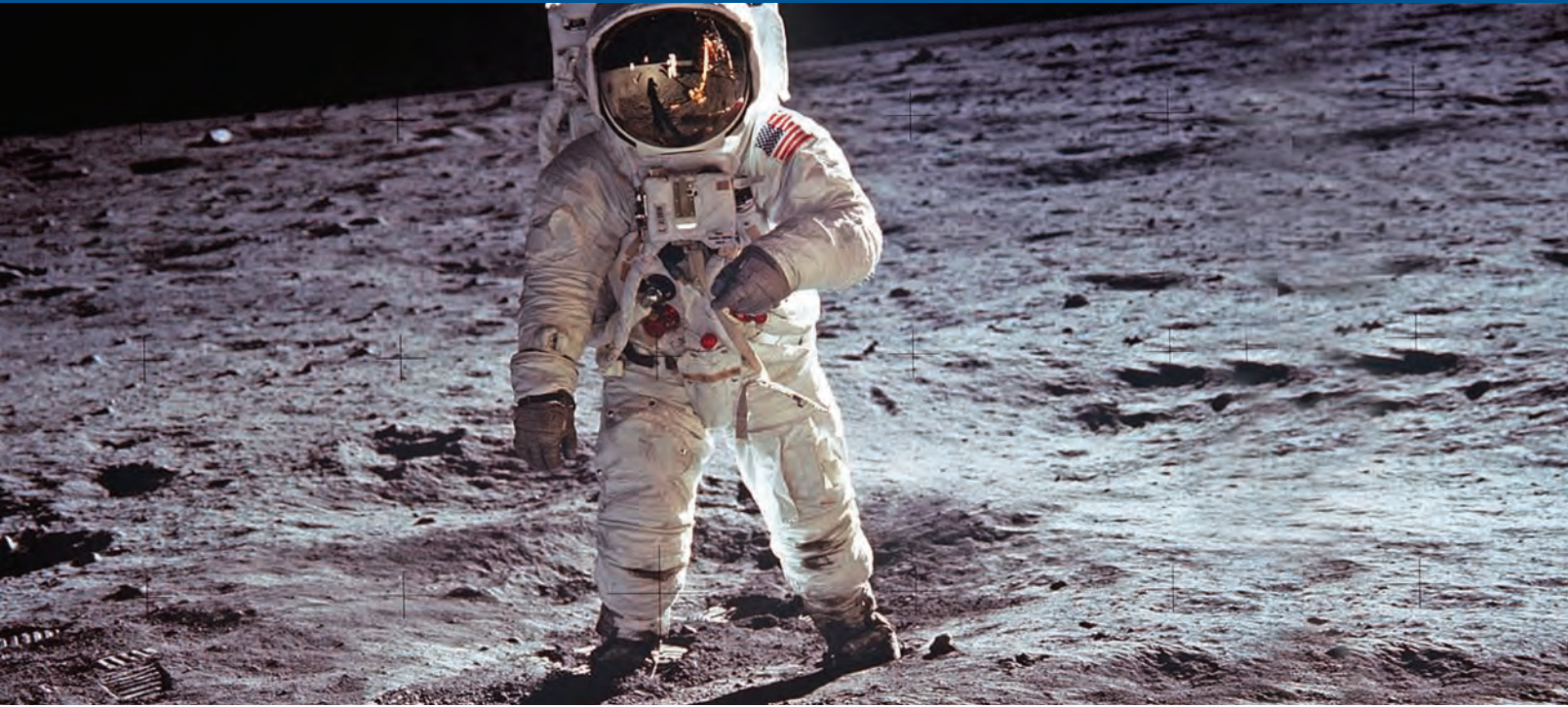
There were no recent significant changes of pension benefit terms, health care plans, investment policies, the size or composition of the population covered by the benefit terms and health care plans impacting the actuarial valuation studies for pension and health care for the measurement date of December 31, 2017.

 Administrative Expenses (for the year ended December 31, 2017)	
Personnel Expenses	
Wages and Salaries	\$47,569,266
Retirement Contributions—OPERS	6,312,901
Retirement Contributions—Medicare	665,371
Employee Insurance	8,645,627
Other Personnel Expense	199,623
Purchased Services and Supplies	
Professional Expenses	
Audit Services	547,547
Actuarial Services	790,700
Consulting Services	677,620
Investment and Financial Services	15,167,897
Legal and Investigation Services	1,584,334
Medical Examinations	984,975
Retirement Study Council	294,949
Custodial and Banking Fees	3,900,332
Information Technology	7,681,489
Communications	2,789,024
Office Supplies, Equipment and Other Miscellaneous	808,066
Education—Member and Staff	1,272,777
Facility Expenses	4,363,433
Subtotal Operating Expenses	104,255,931
Depreciation Expense	
Building	2,323,211
Furniture and Equipment	9,894,939
Subtotal Depreciation	12,218,150
Total Administrative Expenses	116,474,081
Investment Expenses	(39,168,601)
Net Administrative Expenses	\$77,305,480

 Schedule of Investment Expenses¹ (for the year ended December 31, 2017)	
Investment Staff Expense	\$16,668,901
Investment Services	19,260,754
Investment Legal Services	1,052,636
Allocation of Administrative Expenses (See Note 2b to Financial Statements)	2,186,310
Total Investment Expenses	\$39,168,601

¹ Excludes fees and commissions, please see Schedules of Brokerage Commissions Paid beginning on page 106.

Investment Section



Carefully planned success

When Ohioan Neil Armstrong stepped off the lunar module to be the first person to walk on the moon, his comment was: *That's one small step for a man; one giant leap for mankind.* That small step was the result of thousands—maybe millions—of carefully taken small steps, some significant setbacks, and always, always a focus on the mission.

The successful moon landing represented the cumulative efforts of dedicated professionals who focused on delivering the stated vision of landing a man on the moon and successfully returning the team to earth. All involved were steadfast and diligent as each focused on the long-term goal of man taking steps on the moon.

Similarly, the OPERS investment professionals are steadfast and diligent in working to maximize returns and minimize risk, working toward the stated mission of providing secure retirement benefits for all OPERS members.

Investment returns generate approximately two-thirds of a member's retirement. The OPERS investment professionals focus on investing member and employer contributions for the long term—so that each OPERS retiree, present and future, can enjoy retirement.

OPERS fact: Neil Armstrong taught us to aim high and take all the steps necessary to ensure success. Although not an OPERS retiree, Neil Armstrong shares a very strong link with OPERS retirees. Similar to almost 90 percent of all OPERS retirees, Neil Armstrong lived his retirement years in Ohio.





Ohio Public Employees Retirement System

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

Dear Members and Beneficiaries:

As with most investors across the nation, the OPERS Investment team delivered strong returns for 2017. Positive results are great to report in any year, but are especially important as we constantly strive to strengthen the stability of the System when, more than ever before, significant demands are being placed on investment returns.

Let's focus on what happened and how this team was able to maximize our results, while always seeking to minimize the risks inherent in any market.

The Year in Review

U.S. stocks delivered strong results in 2017 despite geopolitical tension and the seemingly never-ending Washington intrigue. The major indices all ended up significantly, with the S & P 500 up 19 percent and the Dow up 25 percent by year-end. By sector, the big winners included biotechnology and international stocks. The biotech sector delivered almost one-third of all top performers, while international stocks posted 26.8 percent growth.

Because the market is fluid, the investment team monitors and aligns with the market during the year. Each quarter in 2017 provided opportunity and challenge. The first quarter provided some concerns as a sluggish 1.2 percent growth rate was posted. However, by the third quarter, the U.S. economy was expanding at a brisk pace. In fact, the July-September growth rate provided the fastest expansion in growth in three years. By fourth quarter, despite small losses toward the end of the year, U.S. and global equity markets delivered a three-decade high price level after eight years of the fits-and-starts recovery from the 2008 market.

2017 Investment Results

On behalf of the entire Investment Division team, I'm pleased to report OPERS finished 2017 with strong results—providing an important and necessary boost to the asset base as we continue to work to recover from the massive losses of the 2008 market and the ensuing eight years of varying recovery.

- The OPERS Defined Benefit portfolio produced, net of fees, investment returns of 16.82 percent;
- The Health Care portfolio, net of fees, returned 15.25 percent.

These returns exceeded the policy benchmark returns by 1.63 percent for the Defined Benefit portfolio and 0.94 percent for the Health Care portfolio. These returns equate to \$1.1 billion of excess returns for the Defined Benefit portfolio and \$0.1 billion for the Health Care portfolio.

These returns placed OPERS in the top third of its peer universe for both 2017 and the three-year period ended in 2017.

During 2017, total value of investments under management exceeded \$100 billion for the first time. Notably, all but three asset classes provided excess returns. Our investment results reflect a strong market and demonstrate a capable Investment staff with the ability, diligence and professionalism to target opportunities and deliver results with an acceptable level of risk.

Why Good Years Matter

It's always gratifying to report strong results. However, it's important to place the results of 2017 in context with other years—appropriate as OPERS is a long-term investor focused on multi-decade results. A good year helps balance the indifferent markets of some past years and the very negative market in 2008. As a result of the financial crisis of 2008, OPERS started 2017 with a \$34 billion shortfall in long-term investment returns. Had the crash not occurred and OPERS earned the expected rate of return, the asset base at the end of 2016 would be \$34 billion higher than actual amounts. Therefore, it's important to understand that, although we ended 2017 with strong returns that help offset a portion of the \$34 billion shortfall at the start of 2017, the Defined Benefit portfolio still has a shortfall of more than \$25 billion at the end of 2017.

OPERS needs strong years like 2017 to balance out negative and indifferent years. Like all mature pension systems, OPERS pays out more in benefits than are received in contributions. The difference is made up from investment income. In years when more is paid out than received and the market is poor, the financial stability of the System is eroded because fewer funds are available to re-invest in down-markets to generate returns when markets recover. In 2017, investment returns were able to add to the financial stability of the System, a good thing. However, the returns were not enough to completely mitigate the erosion of the last decade—a decade where returns suffered from the 2008 global financial crisis.

Looking to 2018

You've heard it; we know it: Past performance is no guarantee of future success. Many forecasters expect 2018 to be a strong year. Some analysts think the increased stimulus of the tax relief package will boost the domestic economy to 2.5 percent growth in 2018. But some analysts urge caution as the economy is held back by higher budget deficits and rising interest rates.

Of course we're working to make 2018 mirror the strong returns of 2017. We sincerely want and need strong returns to help stabilize the OPERS asset base and continue to offset the past shortfall. However, it's unrealistic and imprudent to think markets will always be strong. We target a historically achievable return earned as consistently as possible.

OPERS' ongoing philosophy

We know the demand for returns is expected to continue as health care costs and the number of retirees continues to rise. What we do not know, and no one can, is what the market will do in a given year.

We are neither too conservative nor too aggressive—meaning our highs will never be as high as investors who have a higher risk threshold. In fact, we know that we actually benefit from

having less overall volatility (the ups and downs) in our annual results because we do not have to recover as much when markets crater. Our long-term time horizon positions us to maximize growth potential while providing the ability to absorb loss. We do not over-diversify but work to identify opportunities and take the time to understand what we are investing in—and we have stringent monitoring of returns and performance.

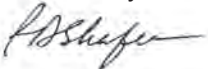
OPERS continues to be well-positioned to meet its obligations because we are diligent in funding the Plans, managing the costs, and adhering to Board-approved asset allocation and diversification strategies. We remain focused on the goal that investment returns should be positioned to provide more than half of the total amount of benefit payments.

Final thoughts

It's a responsibility and a privilege to have the opportunity to discuss the annual results of the OPERS Investment team. Simply put, we were successful in 2017. We were able to reduce the investment return shortfall and we were able to continue to position the System to absorb losses and capitalize on gains.

As I retire in June 2018, this is my final letter to accompany this document. It's been an honor to work closely with the OPERS Board, and management team, and lead the efforts of this outstanding Investment staff.

All the very best,



Richard D. Shafer, CFA
Chief Investment Officer

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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April 20, 2018

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 Comprehensive Annual Financial Report (CAFR), 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-policies.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

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Page 2

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.



Craig Svendsen, CFA
Partner



Introduction

The total OPERS investment portfolio, as reflected in the Combining Statement of Fiduciary Net Position, pages 38-39, 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 transferred from defined contribution accounts for defined benefit annuities. The investment of these assets is the responsibility of the Investment staff, adhering to the policies approved by the OPERS Board of Trustees (Board).

In 2005, the Health Care portfolio assets were 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 provide post-employment health care 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, health care assets were included in two trusts established under Internal Revenue Code Sections 115 and 401(h). Accordingly, historical information was reported in this section as the 115 Health Care Trust and 401(h) Health Care Trust portfolios. The 401(h) Health Care Trust portfolio was transferred to the 115 Health Care Trust portfolio on July 1, 2016 and one Health Care portfolio remains. 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 (starting on page 101) relates to System-wide investments and includes the assets of all three portfolios as of December 31, 2017. The balance of information in this Investment Section is organized as follows: Defined Benefit portfolio investments (pages 111-115) relating exclusively to defined benefit assets; Health Care portfolio investments (pages 117-121) relating exclusively to health care assets; and Defined Contribution portfolio investments (pages 123-125) relating exclusively to defined contribution assets. The Investment Objectives and Policies and Asset Class Policies (pages 127-136) provide information on System-wide investment policies and performance objectives.

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.

A complete list of assets held at December 31, 2017 is available from OPERS upon request.


The table below reflects the total investment portfolio, which includes three component portfolios, as of December 31, 2017: the Defined Benefit portfolio, the Health Care portfolio and the Defined Contribution portfolio.

Investments are 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. 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 investment results reported for these asset classes in the Investment Section reflect this practice. The table below displays the fair values of investment assets consistent with the presentation in the financial statements on pages 38-39.

 Summary of Cash, Cash Equivalents and Investments (as of December 31, 2017)		
	Fair Value	Percent of Total Fair Value
Cash and Cash Equivalents		
Cash	\$106,392,296	0.11%
Cash Equivalents		
Commercial Paper	1,405,273,910	1.39
U.S. Treasury Obligations	349,201,163	0.34
Repurchase Agreements	1,480,000,000	1.47
Interest-Bearing Short-Term Certificates	321,655,000	0.32
Short-Term Investment Funds (STIF)	963,185,725	0.95
Total Cash and Cash Equivalents	4,625,708,094	4.58
Investments		
Fixed Income		
U.S. Corporate Bonds	5,437,707,468	5.38
Non-U.S. Notes and Bonds	8,544,691,603	8.46
U.S. Government and Agencies	7,406,947,391	7.34
U.S. Mortgage Backed	2,879,208,855	2.85
Subtotal Fixed Income	24,268,555,317	24.03
Domestic Equities	20,922,486,409	20.72
Real Estate	7,586,217,183	7.51
Private Equity	9,293,307,227	9.21
International Equities	20,059,371,491	19.86
Hedge Funds and Derivatives ¹	14,227,472,276	14.09
Total Long-Term Investments	96,357,409,903	95.42
Total Cash, Cash Equivalents and Investments	\$100,983,117,997	100.00%

¹ Hedge Funds and Derivatives includes risk parity and global tactical asset allocation.

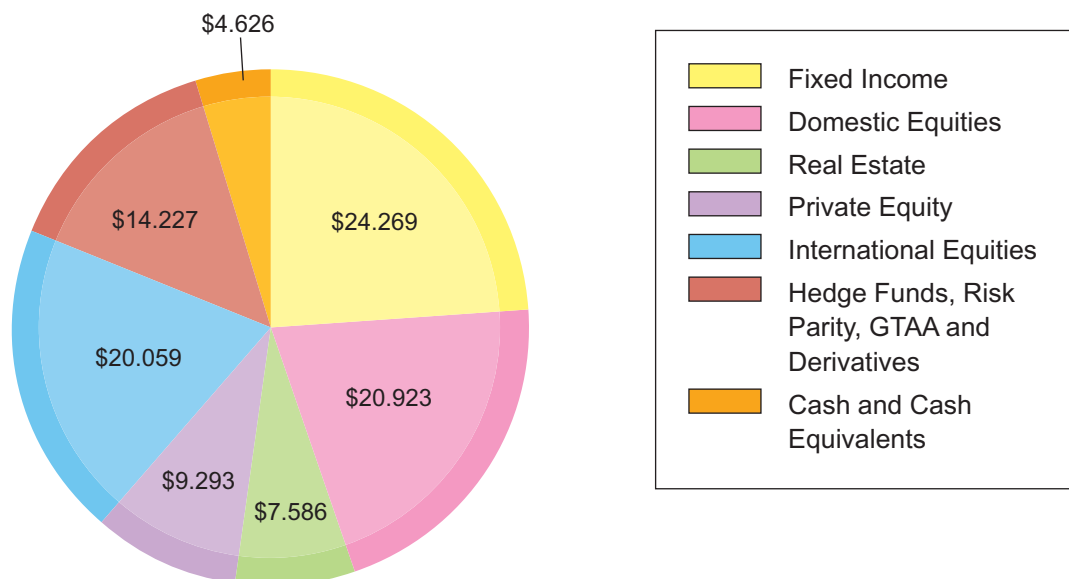
The table below reflects the breakdown of the total investment portfolio into the three component portfolios—the Defined Benefit, Health Care and Defined Contribution portfolios.

				
	Defined Benefit	Health Care	Defined Contribution	Total
Fixed Income	\$19,571,112,794	\$4,348,639,837	\$348,802,686	\$24,268,555,317
Domestic Equities	16,780,256,183	3,403,242,732	738,987,494	20,922,486,409
Real Estate	7,586,217,183			7,586,217,183
Private Equity	9,293,307,227			9,293,307,227
International Equities	17,024,789,853	2,645,509,612	389,072,026	20,059,371,491
Hedge Funds and Derivatives ²	12,572,722,006	1,654,750,270		14,227,472,276
Cash and Cash Equivalents	3,800,213,051	823,866,242	1,628,801	4,625,708,094
Total	\$86,628,618,297	\$12,876,008,693	\$1,478,491,007	\$100,983,117,997

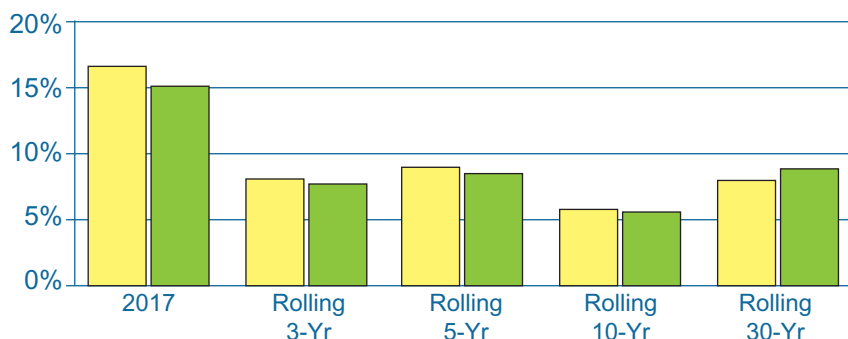
¹ Assets summarized on performance basis.

² Hedge Funds and Derivatives includes risk parity and global tactical asset allocation.

Total Investment Summary (as of December 31, 2017, \$ in billions)




Total Investment Returns—Annual Rates of Return¹



	2017	Rolling 3-Yr	Rolling 5-Yr	Rolling 10-Yr	Rolling 30-Yr
Total Investment Returns	16.62%	8.06%	8.95%	5.80%	7.95%
Policy Benchmark Returns	15.11%	7.68%	8.47%	5.55%	8.83% ^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
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			
1992	5.66	5.66			
1991	15.68	15.68			
1990	6.30	6.30			
1989	18.38	18.38			
1988	9.25	9.25			


^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 Trust portfolio assets.

^b The 115 Health Care Trust was established in September 2014. Returns are two-month cumulative returns in 2014 since funding of the 115 Health Care Trust portfolio began in 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, 2017)		
Description	Shares	Fair Value
Apple Inc.	3,707,047	\$627,343,564
Microsoft Corp.	5,620,528	480,779,965
Amazon.com Inc.	309,220	361,623,513
JPMorgan Chase & Co.	2,811,587	300,671,114
Facebook Inc.	1,692,814	298,713,958
Samsung Electronics Co. Ltd	119,245	283,813,147
Johnson & Johnson Co.	1,957,908	273,558,906
Berkshire Hathaway Inc.	1,362,129	270,001,210
Exxon Mobil Corp.	3,038,600	254,148,504
Alphabet Inc.	237,997	250,706,040
Total	20,857,075	\$3,401,359,921

 Largest Bond Holdings (by fair value)¹ (as of December 31, 2017)					
Description	Coupon	Maturity	Rating	Par Value	Fair Value
U.S. Treasury Bond	2.500%	2/15/2045	AAA	\$163,351,000	\$155,772,092
U.S. Treasury Note	2.000%	11/30/2022	AAA	153,886,000	152,495,585
U.S. Treasury Note	1.625%	12/31/2019	AAA	149,216,000	148,439,863
U.S. Treasury Note	1.750%	12/31/2020	AAA	144,512,000	143,523,104
Brazil Notas Do Tesouro Nacional Series F	10.000%	1/1/2027	BB	476,549,000	141,682,065
U.S. Treasury Note	1.375%	8/31/2020	AAA	124,972,000	123,157,158
U.S. Treasury Note	1.375%	3/31/2020	AAA	117,542,000	116,166,947
U.S. Treasury Note	1.500%	5/31/2020	AAA	116,742,000	115,596,655
U.S. Treasury Bond	2.875%	5/15/2043	AAA	111,729,000	114,901,519
U.S. Treasury Note	1.500%	10/31/2019	AAA	114,082,000	113,304,551
Total				\$1,672,581,000	\$1,325,039,539

¹ A complete list of assets held at December 31, 2017 is available upon request.


 U.S. Equity Commissions (for the year ended December 31, 2017)			
Brokerage Firm	U.S. Equity Commissions Paid	Shares Traded	Average Commission Per Share
UBS Securities LLC	\$443,146	39,752,723	\$0.011
J.P. Morgan Securities LLC	196,619	17,365,210	0.011
Credit Suisse Securities (USA) LLC	188,553	12,828,942	0.015
Weeden & Co.	135,328	16,932,345	0.008
Merrill Lynch & Co. Inc.	127,629	12,521,320	0.010
RBC Capital Markets Corp.	117,890	8,032,101	0.015
Citigroup Global Markets Inc.	101,647	9,349,429	0.011
Liquidnet Inc.	94,340	4,741,823	0.020
Morgan Stanley & Co.	89,775	5,252,982	0.017
Barclays Capital Inc.	74,180	7,501,727	0.010
Converge LLC	64,877	2,489,260	0.026
Investment Technology Group Inc.	61,774	6,622,116	0.009
Sanford C. Bernstein & Co.	53,414	4,689,060	0.011
Goldman Sachs & Co.	51,281	4,328,619	0.012
Jefferies & Co.	38,594	2,023,027	0.019
HSBC Securities Inc.	35,301	4,912,539	0.007
KeyBanc Capital Markets Inc.	33,637	1,681,873	0.020
ISI Group Inc.	33,134	1,653,948	0.020
Deutsche Bank Securities Inc.	27,297	6,873,000	0.004
S.G. Securities	24,607	4,885,269	0.005
Wells Fargo Securities LLC	20,625	1,015,318	0.020
BMO Capital Market Corp.	20,187	937,933	0.022
Other Commissions less than \$20,000	195,342	16,833,648	0.012
Total U.S. Equity Commissions	\$2,229,177	193,224,212	\$0.012

 Non-U.S. Equity Commissions (for the year ended December 31, 2017)			
Brokerage Firm	Non-U.S. Equity Commissions Paid	Shares Traded	Average Commission Per Share
UBS Securities LLC	\$507,361	492,645,914	\$0.001
Instinet LLC	376,715	159,808,279	0.002
Morgan Stanley & Co.	337,882	105,283,466	0.003
Citigroup Global Markets Inc.	319,641	101,407,267	0.003
Deutsche Bank Securities Inc.	313,664	183,005,114	0.002
Goldman Sachs & Co.	310,443	113,174,901	0.003
J.P. Morgan Securities LLC	303,307	74,066,913	0.004
Merrill Lynch & Co. Inc.	299,913	141,332,255	0.002
Credit Suisse Securities LLC	268,588	96,084,418	0.003
Investment Technology Group Inc.	237,059	82,697,345	0.003
HSBC Securities Inc.	216,599	46,416,501	0.005
Sanford C. Bernstein & Co.	196,068	39,988,450	0.005
S.G. Securities	179,071	103,332,286	0.002
Macquarie Bank Ltd.	121,902	36,112,936	0.003
Credit Lyonnais Bank	105,606	58,012,193	0.002
RBC Capital Markets Corp.	95,887	4,082,956	0.023
Bank of New York Mellon Corp.	79,835	14,721,621	0.005
Barclays Capital Inc.	70,379	7,631,580	0.009
Daiwa Capital Markets Inc.	68,311	19,139,392	0.004
Banque BNP Paribas	63,545	10,951,138	0.006
Jefferies & Co.	48,581	10,946,849	0.004
CLSA Global Markets Pte Ltd.	42,170	9,586,478	0.004
Exane	33,208	4,091,108	0.008
Converge LLC	32,237	1,239,298	0.026
Societe Generale Securities Services	30,772	2,370,044	0.013
Banco Bradesco SA	30,047	5,049,869	0.006
Investec Securities	28,635	5,864,418	0.005
Banco Santander SA	26,330	3,093,601	0.009
Hyundai Securities	24,575	213,557	0.115
SMBC Nikko Securities Inc.	24,569	927,200	0.026
Pershing Securities Ltd.	24,428	4,062,832	0.006
Banco BTG Pactual SA	21,427	1,564,052	0.014
Banco Itau International	20,803	1,559,860	0.013
Liquidnet Inc.	20,163	2,011,072	0.010
Other Commissions less than \$20,000	565,324	87,510,405	0.006
Total Non-U.S. Equity Commissions	\$5,445,045	2,029,985,568	\$0.003


 Futures Commissions (for the year ended December 31, 2017)			
Brokerage Firm	Futures Commissions Paid	Contracts Traded	Average Commission Per Contract
Goldman Sachs & Co.	\$623,852	302,930	\$2.06
Credit Suisse Securities LLC	200,246	101,942	1.96
Total Futures Commissions	\$824,098	404,872	\$2.04
Total U.S. Equity, Non-U.S. Equity and Futures Commissions	\$8,498,320	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 \$612,541 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 2017, \$302,943 of investment research services were purchased using CSA funds.

 Schedule of Fees to External Asset Managers by Portfolio (for the year ended December 31, 2017)				
	Defined Benefit	Health Care	Defined Contribution	Total
Fixed Income	\$28,106,796	\$4,220,188	\$205,550	\$32,532,534
Domestic Equities	12,911,536	2,016,601	370,197	15,298,334
International Equities	48,426,037	7,398,332	360,653	56,185,022
Private Equity ¹	209,997,958			209,997,958
Hedge Funds and Other ¹	185,128,552	22,427,679		207,556,231
Real Estate ¹	84,440,690			84,440,690
Total Fees	\$569,011,569	\$36,062,800	\$936,400	\$606,010,769

¹All 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. These fees include investment management fees, performance fees and other expenses, such as audit expenses, in limited partnership structures, as well as fee offsets that may have the effect of reducing the total amount of fees. See the following table for a breakdown of fees by category.

 Schedule of Fees to External Asset Managers by Category (for the year ended December 31, 2017)					
	Net Management Fees	Fund Expenses	Subtotal	Performance Fees	Total
Fixed Income	\$32,532,534		\$32,532,534		\$32,532,534
Domestic Equities	15,298,334		15,298,334		15,298,334
International Equities	56,185,022		56,185,022		56,185,022
Private Equity ¹	98,375,058	\$23,894,314	122,269,372	\$87,728,586	209,997,958
Hedge Funds and Other ¹	107,814,911	15,603,474	123,418,385	84,137,846	207,556,231
Real Estate ¹	49,683,976	11,391,467	61,075,443	23,365,247	84,440,690
Total Fees	\$359,889,835	\$50,889,255	\$410,779,090	\$195,231,679	\$606,010,769

¹All 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. 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 net profits realized by the fund during the period.

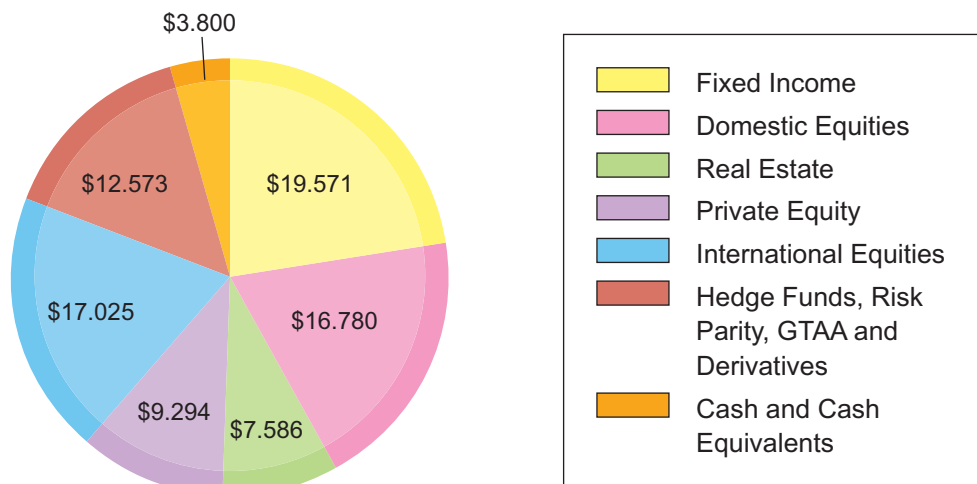
 Schedule of External Asset Managers (for the year ended December 31, 2017)		
U.S. Equity Managers		
Affinity Investment Advisors	Hahn Capital Management LLC	Wasatch Advisors
Atlanta Capital Management, Company LLC	Matarin Capital	Winslow Asset Management
Bowling Portfolio Management LLC	New South Capital Management	
CT Mason Inc. (aka Grace Capital)	Nicholas Investment Partners	
Dean Investment Associates	Oberweis Asset Management Inc.	
Decatur Capital Management	Opus Capital Management	
Disciplined Growth Investors	Penn Capital Management	
First Fiduciary Investment Counsel Inc.	Quantitative Management Associates LLC	
Geneva Capital Management Ltd.	Redwood Investments LLC	
Non-U.S. Equity Managers		
Acadian	J.P. Morgan	Trilogy Global Advisors LP
AQR Capital Management LLC	J O Hambro Capital Management Ltd.	T. Rowe Price International Ltd.
Arrowstreet	Lazard	Vontobel Asset Management
Ballie Gifford	LSV	Walter Scott & Partners
BlackRock Financial Management Inc.	Manning and Napier	Wasatch Advisors Inc.
Copper Rock Capital Partners LLC	Oldfield Partners LLP	
Dimensional Fund Advisors	Schroder Investment Management NA Inc.	
Fisher Investments	Strategic Global Advisors	
Bond Managers		
Aberdeen Asset Management	Franklin Templeton Institutional LLC	Stone Harbor
AFL-CIO Housing Investment Trust	Lazard	Wellington Management
Ashmore Investment Management Ltd.	Loomis, Sayles & Company LP	
BlueBay Asset Management	MacKay Shields	
Capital Guardian	Neuberger Berman	
CIFC	Nomura Group	
Fort Washington Investment Advisors Inc.	Post Advisory Group	
Hedge Fund Managers		
AQR Capital Management	Egerton Capital	Prisma Capital Partners LP
Aristeia Capital LLC	First Quadrant	Putnam Investments
Arrowgrass Partnership	Graham Capital	Schroders
Ascend Partners	Highline Capital Partners	Scopia Capital
Beach Point Capital Management	Jana Partners	Taconic Investment Partners
BHR Capital	K2 Advisors	Third Point Partners
BlackRock Financial Management, Inc.	Kepos Capital	Visium Asset Management
Bridgewater Associates	KLS Diversified Asset Management	Wellington Management
Brigade Capital Management LP	Kynikos Associates	Winton Capital
Canyon Capital Advisors LLC	Lakewood Capital Partners	York Capital Management
Chatham Asset Partners	Lynx Asset Management AB	
CQS Management	Oceanwood Capital Management LLP	
Davidson Kempner Institutional Partners LP	Och Ziff Capital Management	
Discovery Capital Management	Panagora Asset Management	

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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 the following information will be presented at a specific portfolio level.

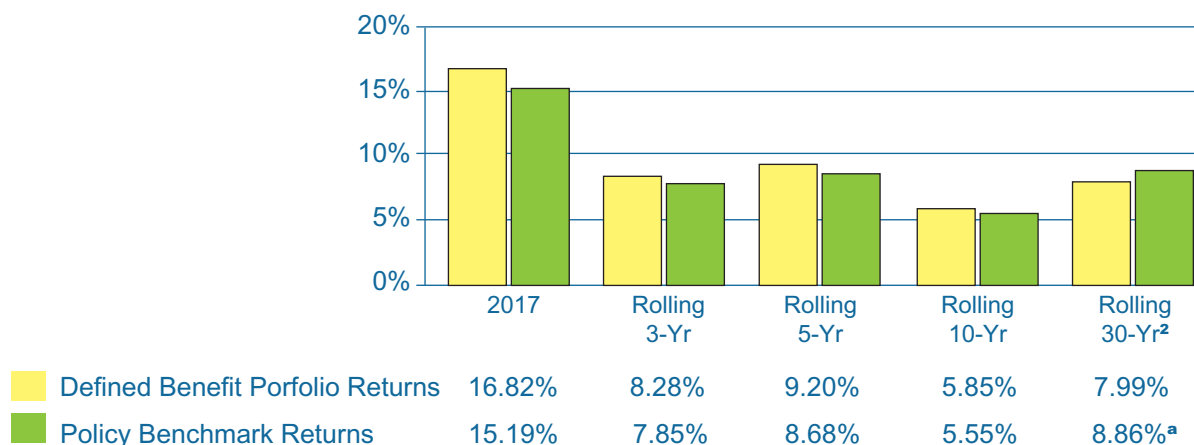
Defined Benefit Portfolio Asset Allocation (as of December 31, 2017, \$ in billions)



Investment Returns

The Defined Benefit portfolio returned 16.82% in 2017. 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 on the policy benchmark for 2017 was 15.19%.

Investment Returns—Annual Rates of Return¹ **Defined Benefit Portfolio**




^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.

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

 Schedule of Investment Results (for the year ended December 31, 2017)		Defined Benefit Portfolio	
	2017	Rolling 3-Year	Rolling 5-Year
Total Defined Benefit Portfolio	16.82%	8.28%	9.20%
Total Defined Benefit Portfolio Benchmark¹	15.19	7.85	8.68
U.S. Equity Composite	21.22	10.95	15.22
U.S. Equity Composite Benchmark	21.13	11.12	15.58
Non-U.S. Equity Composite	31.26	9.80	8.40
Non-U.S. Equity Composite Benchmark	29.24	8.60	6.91
Core Fixed Composite	3.75	2.45	2.53
Core Fixed Composite Benchmark	3.54	2.24	2.10
TIPS Composite	2.88	2.02	N/A
TIPS Composite Benchmark	3.01	2.05	N/A
High Yield Composite	6.98	5.77	5.42
High Yield Composite Benchmark	7.50	6.35	5.78
Emerging Markets Debt Composite	13.15	5.08	1.17
Emerging Markets Debt Composite Benchmark	12.26	4.73	1.12
Securitized Debt Composite	7.52	3.82	9.87
Securitized Debt Composite Benchmark	5.76	4.73	4.43
Floating Rate Debt Composite	5.81	2.80	3.86
Floating Rate Debt Composite Benchmark	4.25	4.50	4.33
Global High Yield Debt Composite ²	3.20	2.57	N/A
Global High Yield Debt Composite Benchmark ²	3.12	3.84	N/A
Private Equity Composite	19.60	10.63	13.18
Private Equity Composite Benchmark	15.13	9.82	13.42
Real Estate Composite	9.03	12.40	14.18
Real Estate Composite Benchmark	7.55	10.69	11.42
Hedge Funds Composite	7.25	3.08	4.53
Hedge Funds Composite Benchmark	7.46	3.99	4.30
Opportunistic Composite	2.50	1.50	0.75
Opportunistic Composite Benchmark	2.31	1.40	1.58
Commodities Composite	6.40	(7.00)	N/A
Commodities Composite Benchmark	5.77	(7.52)	N/A
Cash Composite	1.23	0.75	0.58
Cash Composite Benchmark	0.86	0.41	0.27
Additional Annuity Composite	1.97	1.82	1.67
Additional Annuity Composite Benchmark	0.86	0.41	0.27
Risk Parity Composite	18.51	7.04	N/A
Risk Parity Composite Benchmark	11.50	7.22	N/A
GTAA Composite	17.03	7.98	N/A
GTAA Composite Benchmark	15.16	6.55	N/A
U.S. Treasury Composite	2.33	N/A	N/A
U.S. Treasury Composite Benchmark	2.31	N/A	N/A

¹ **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 114.

² Returns for this asset class are as of February 28, 2017. Global High Yield was closed as of February 28, 2017.

 Historical Asset Class Target Allocations	Defined Benefit Portfolio				
Asset Class	2017	2016	2015	2014	2013
U.S. Equity	22.0%	22.4%	22.3%	21.4%	22.0%
Opportunistic	0.1	0.1	0.1	0.1	0.5
Core Bonds	8.9	9.8	9.5	10.3	10.0
Floating Rate Debt	0.1	0.2	0.5	0.7	1.0
Global High Yield	N/A	1.0	1.0	1.0	1.5
Securitized Debt	1.0	1.0	1.0	1.0	1.0
Non-U.S. Equity	18.9	18.5	18.6	19.5	22.0
Private Real Estate/REITs	10.0	10.0	10.0	10.0	10.0
Private Equity	10.0	10.0	10.0	10.0	10.0
Cash Equivalents	0.0	0.0	0.0	0.0	2.0
High Yield	3.0	3.0	3.0	3.0	5.0
Emerging Markets Debt	7.0	6.0	6.0	6.0	3.0
Hedge Funds	8.0	8.0	8.0	8.0	6.0
Commodities	1.0	1.0	1.0	1.0	1.0
Risk Parity	5.0	5.0	5.0	5.0	2.0
GTAA	2.0	2.0	2.0	2.0	2.0
TIPS	2.0	1.0	1.0	1.0	1.0
U.S. Treasury	1.0	1.0	1.0	N/A	N/A
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				
	2017	2016	2015	2014	2013
U.S. Equity	Russell 3000 Stock Index ¹	Russell 3000 Stock Index	Russell 3000 Stock Index	Russell 3000 Stock Index	Russell 3000 Stock Index
Opportunistic	Custom Opportunistic Benchmark ²	Custom Opportunistic Benchmark	Custom Opportunistic Benchmark	Custom Opportunistic Benchmark	Custom Opportunistic Benchmark
Core Bonds	Bloomberg Barclays U.S. Aggregate Bond Index ³	Bloomberg Barclays U.S. Aggregate Bond Index	Custom Core Fixed	Custom Core Fixed	Custom Core Fixed
Floating Rate Debt	Credit Suisse Leveraged Loan Index ⁴	Credit Suisse Leveraged Loan Index	Credit Suisse Leveraged Loan Index	Credit Suisse Leveraged Loan Index	Credit Suisse Leveraged Loan Index
Global High Yield	N/A	Bloomberg Barclays Global High Yield Index	Barclays Global High Yield	Barclays Global High Yield	Barclays Global High Yield
Securitized Debt	Non-Agency CMBS Component of Bloomberg Barclays U.S. Aggregate Bond Index + 2% ⁵	Bloomberg Barclays CMBS Index + 2%	Barclays CMBS Index + 2%	Barclays CMBS Index + 2%	Barclays CMBS Index + 2%
Non-U.S. Equity	Custom Non-U.S. Equity Benchmark (net) ⁶	Custom Non-U.S. Equity Benchmark (net)	Custom Non-U.S. Equity Benchmark (net)	Custom Non-U.S. Equity Benchmark (net)	Custom Non-U.S. Equity Benchmark (net)
Private Real Estate	Custom Private Real Estate ⁷	Custom Private Real Estate	Custom Private Real Estate	Custom Private Real Estate	Custom Private Real Estate
Private Equity	SSPEI Index ⁸	SSPEI Index	SSPEI Index	Custom Private Equity	Custom Private Equity
Cash Equivalents	BofAML U.S. 3-month Treasury Bill Index ⁹	BofAML U.S. 3-month Treasury Bill Index	BofAML U.S. 3-month Treasury Bill Index	BofAML U.S. 3-month Treasury Bill Index	BofAML U.S. 3-month Treasury Bill Index
High Yield	Bloomberg Barclays U.S. Corporate High Yield ¹⁰	Bloomberg Barclays U.S. Corporate High Yield	Barclays Capital U.S. Corporate High Yield	Barclays Capital U.S. Corporate High Yield	Barclays Capital U.S. Corporate High Yield
Emerging Markets Debt	Custom Emerging Markets Debt Benchmark ¹¹	Custom Emerging Markets Debt Benchmark	Custom Emerging Markets Debt Benchmark	Custom Emerging Markets Debt Benchmark	Custom Emerging Markets Debt Benchmark
Hedge Funds	Custom Hedge Funds Benchmark ¹²	Custom Hedge Funds Benchmark	Custom Hedge Funds Benchmark	Custom Hedge Funds Benchmark	Custom Hedge Funds Benchmark
Commodities	S&P Goldman Sachs Commodity Index ¹³	S&P Goldman Sachs Commodity Index	S&P Goldman Sachs Commodity Index	S&P Goldman Sachs Commodity Index	S&P Goldman Sachs Commodity Index
Risk Parity	Custom Risk Parity Benchmark ¹⁴	Custom Risk Parity Benchmark	Custom Risk Parity Benchmark	Custom Risk Parity Benchmark	Custom Risk Parity Benchmark
GTAA	Custom GTAA Benchmark ¹⁵	Custom GTAA Benchmark	Custom GTAA Benchmark	Custom GTAA Benchmark	Custom GTAA Benchmark
TIPS	Bloomberg Barclays U.S. TIPS Index ¹⁶	Bloomberg Barclays U.S. TIPS Index	Barclays U.S. TIPS Index	Barclays U.S. TIPS Index	Barclays U.S. TIPS Index
U.S. Treasury	Bloomberg Barclays U.S. Treasury Index ¹⁷	Bloomberg Barclays U.S. Treasury Index	Barclays U.S. Treasury Index	N/A	N/A

Footnotes found on next page.

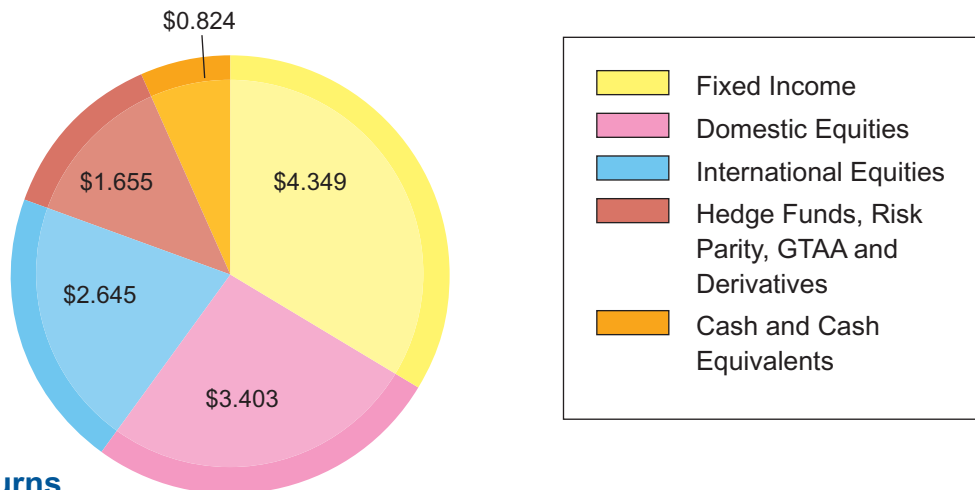
Footnotes for Schedule of Investment Results—Defined Benefit Portfolio

The footnotes below provide definitions for the asset class composite benchmark indices as of December 31, 2017:

- ¹ **Russell 3000 Stock Index**—A 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**—Market value weight of the underlying portfolio benchmarks.
- ³ **Bloomberg Barclays U.S. Aggregate Bond Index**—A market capitalization-weighted index covering the universe of most U.S. traded investment grade bonds, excluding municipal bonds and TIPS.
- ⁴ **Credit Suisse Leveraged Loan Index**—Is designed to mirror the investible universe of the U.S.-denominated leveraged loan market.
- ⁵ **Non-Agency CMBS Component of Bloomberg Barclays U.S. Aggregate Bond Index + 2%**—Is the Bloomberg Barclays non-agency CMBS ERISA-Eligible component of the Bloomberg Barclays U.S. Aggregate Index plus 200 annualized basis points. This index, which includes investment grade securities that are ERISA-Eligible under the underwriter's exemption, is the only CMBS sector that is included in the U.S. Aggregate Index.
- ⁶ **Custom Non-U.S. Equity Benchmark (net)**—As of December 31, 2017, blend was 55% MSCI World x U.S. Standard (net), 31% MSCI Emerging Markets Standard (net), 10% MSCI World x U.S. Small Cap (net), and 4% MSCI Emerging Markets Small Cap (net).
- ⁷ **Custom Private Real Estate**—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 24 open-end commingled funds pursuing a core investment strategy.
- ⁸ **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.
- ⁹ **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.
- ¹⁰ **Bloomberg Barclays U.S. Corporate High Yield**—Covers the universe of fixed rate, non-investment grade debt.
- ¹¹ **Custom Emerging Markets Debt Benchmark**—As of December 31, 2017, blend was 50% J.P. Morgan EMBI Global Index, and 50% J.P. Morgan GBI-Emerging Markets Global Diversified USD Index.
- ¹² **Custom Hedge Funds Benchmark**—As of December 31, 2017, blend was 30% HFRI Event-Driven (Total) Index, 20% HFRI Equity Hedge (Total) Index, 20% HFRI Macro (Total) Index, 15% HFRI Relative Value (Total) Index, 15% HFRI Fund Weighted Composite Index.
- ¹³ **Standard & Poor's Goldman Sachs Commodity Index**—Tracks general price movements and inflation in the world economy. The index is calculated primarily on a world-production weighted basis and is comprised of the principal physical commodities that are the subject of active, liquid futures markets.
- ¹⁴ **Custom Risk Parity Benchmark**—Market value weight of the underlying portfolio benchmarks.
- ¹⁵ **Custom Global Tactical Asset Allocation (GTAA) Benchmark**—Market value weight of the underlying portfolio benchmarks.
- ¹⁶ **Bloomberg Barclays U.S. TIPS Index**—This index consists of inflation-protected securities issued by the U.S. Treasury.
- ¹⁷ **Bloomberg Barclays U.S. Treasury Index**—Is designed to measure 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 index. Separate Trading of Registered Interest and Principal of Securities (STRIPS) are excluded from the index. The U.S. Treasury index is a component of the U.S. Aggregate, U.S. Universal, Global Aggregate and Global Treasury indices.

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Health Care Portfolio Asset Allocation (as of December 31, 2017, \$ in billions)

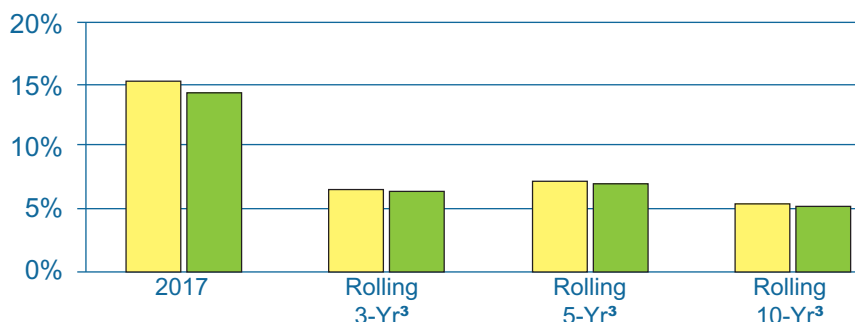


Investment Returns

The Health Care portfolio returned 15.25% in 2017. 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 2017 was 14.31%.

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


Investment Returns—Annual Rates of Return¹ **Health Care Portfolio**



	2017	Rolling 3-Yr ³	Rolling 5-Yr ³	Rolling 10-Yr ³
Health Care Portfolio Returns ²	15.25%	6.61%	7.28%	5.44%
Health Care Policy Benchmark Returns ²	14.31%	6.50%	7.02%	5.34%

¹ Annual Rates of Return—The Health Care portfolio return is based on a time-weighted calculation and market value-weighted calculation. The policy benchmark is derived by a market value-weighted calculation of the Health Care portfolio 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. In 2017, one health care trust exists, referred to as the Health Care portfolio. The rolling 3-year returns, the rolling 5-year returns, and the rolling 10-year returns are the combined returns of the former 115 Health Care Trust portfolio and the 401(h) Health Care Trust portfolio for all years prior to 2017.

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

 Schedule of Investment Results (for the period ended December 31, 2017)		Health Care Portfolio	
	2017	Rolling 3-Year ¹	Rolling 5-Year ¹
Total Health Care Portfolio	15.25%	6.61%	7.28%
Total Health Care Portfolio Benchmark²	14.31	6.50	7.02
U.S. Equity Composite	21.22	10.95	15.22
U.S. Equity Composite Benchmark	21.13	11.12	15.58
Non-U.S. Equity Composite	31.26	9.80	8.40
Non-U.S. Equity Composite Benchmark	29.24	8.60	6.91
Core Fixed Composite	3.75	2.45	2.53
Core Fixed Composite Benchmark	3.54	2.24	2.14
TIPS Composite	2.88	2.02	0.13
TIPS Composite Benchmark	3.01	2.05	0.13
High Yield Composite	6.98	5.77	5.42
High Yield Composite Benchmark	7.50	6.35	5.78
Emerging Markets Debt Composite	13.15	5.08	1.17
Emerging Markets Debt Composite Benchmark	12.26	4.73	1.12
Securitized Debt Composite	7.52	3.82	9.87
Securitized Debt Composite Benchmark	5.76	4.73	4.43
Floating Rate Debt Composite	5.81	2.80	3.86
Floating Rate Debt Composite Benchmark	4.25	4.50	4.33
Global High Yield Debt Composite ³	3.20	2.57	N/A
Global High Yield Debt Composite Benchmark ³	3.12	3.84	N/A
REITs Composite	3.81	4.97	9.09
REITs Composite Benchmark	3.76	4.95	9.08
Hedge Funds Composite	7.25	3.08	4.53
Hedge Funds Composite Benchmark	7.46	3.99	4.30
Opportunistic Composite	2.50	1.50	N/A
Opportunistic Composite Benchmark	2.31	1.40	N/A
Commodities Composite	6.40	(7.00)	(11.52)
Commodities Composite Benchmark	5.77	(7.52)	(12.16)
Cash Composite ⁴	1.24	0.75	0.59
Cash Composite Benchmark ⁴	0.86	0.41	0.27
Risk Parity Composite	18.51	7.04	N/A
Risk Parity Composite Benchmark	11.50	7.22	N/A
GTAA Composite	17.03	7.98	N/A
GTAA Composite Benchmark	15.16	6.55	N/A
U.S. Treasury Composite	2.33	N/A	N/A
U.S. Treasury Composite Benchmark	2.31	N/A	N/A
Short-Term Liquidity Composite ⁴	N/A	N/A	N/A
Short-Term Liquidity Composite Benchmark ⁴	N/A	N/A	N/A

Footnotes found on next page.

- ¹ 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. In 2017, one health care trust exists, now referred to as the Health Care portfolio. The Rolling 3-Year returns and the Rolling 5-Year returns are the combined returns of the former 115 Health Care Trust portfolio and the 401(h) Health Care Trust portfolio for all years prior to 2017.
- ² **Health Care Portfolio Benchmark**—The returns for this benchmark are derived from the asset class composite benchmark returns summarized in the table on the previous page, the historical asset class target allocations listed in the table below, and the asset class composite benchmark indices listed in the table on page 120.
- ³ Returns for this asset class are as of February 28, 2017. Global High Yield was closed as of February 28, 2017.
- ⁴ Cash and Short-Term Liquidity 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.

Historical Asset Class Target Allocations						Health Care Portfolio		
Asset Class	2017 ^a	2016 ^b		2015 ^c		2014 ^d		2013 ^d
	HC	401(h)	HC 115	401(h)	HC 115	401(h)	HC 115	401(h)
U.S. Equity	24.1%	24.7%	24.5%	24.4%	9.8%	23.4%	23.4%	23.5%
Commodities	2.0	2.0	2.0	2.0	1.0	2.0	2.0	2.0
Opportunistic	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.5
Core Bonds	15.9	16.6	16.8	16.5	7.0	17.3	17.3	17.0
Floating Rate Debt	0.1	0.4	0.2	0.5	N/A	0.7	0.7	1.0
Global High Yield	N/A	1.5	1.5	1.5	N/A	1.5	1.5	2.0
Securitized Debt	1.0	1.0	1.0	1.0	N/A	1.0	1.0	1.0
TIPS	6.0	5.0	5.0	5.0	2.0	5.0	5.0	3.5
High Yield	3.0	2.5	2.5	2.5	1.0	2.5	2.5	2.0
Non-U.S. Equity	20.8	20.2	20.4	20.5	8.1	21.5	21.5	24.6
Emerging Markets Debt	7.0	6.0	6.0	6.0	2.0	6.0	6.0	5.0
REITs	6.0	6.0	6.0	6.0	3.0	6.0	6.0	6.0
Cash Equivalents	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.0
Private Equity	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.5
Hedge Funds	6.0	6.0	6.0	6.0	3.0	6.0	6.0	5.4
Risk Parity	5.0	5.0	5.0	5.0	3.0	5.0	5.0	2.0
GTAA	2.0	2.0	2.0	2.0	1.0	2.0	2.0	2.0
U.S. Treasury	1.0	1.0	1.0	1.0	N/A	N/A	N/A	N/A
Short-Term Liquidity	N/A	N/A	N/A	N/A	59.0	N/A	N/A	N/A
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

^a As of 2017, one health care trust remained. The Health Care portfolio (HC) represents all health care assets within the one trust.

^b With the transfer of the 401(h) Health Care Trust (401(h)) assets to the 115 Health Care Trust (HC 115) on July 1, 2016, the Board approved changing the target allocation for the HC 115 to be the same as the target allocation for the 401(h) prior to June 30, 2016.

^c The HC 115 target allocation for 2015 reflects a change approved by the Board effective October 1, 2015. For the first nine months of 2015, the target allocation was the same as the 401(h).

^d The HC 115 was established in 2014. The HC 115 portion of this column represents average target allocations that reflect adjustments during implementation of the HC 115. Information prior to 2014 does not exist for HC 115. Health care assets were contained in the 401(h) until it closed on June 30, 2016 and the assets transferred to the HC 115.

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 ¹⁷			
Asset Class Composite Benchmarks	As of December 31				
	2017	2016	2015	2014	2013
U.S. Equity	Russell 3000 Stock Index ¹	Russell 3000 Stock Index	Russell 3000 Stock Index	Russell 3000 Stock Index	Russell 3000 Stock Index
Commodities	S&P Goldman Sachs Commodity Index ²	S&P Goldman Sachs Commodity Index	S&P Goldman Sachs Commodity Index	S&P Goldman Sachs Commodity Index	S&P Goldman Sachs Commodity Index
Opportunistic	Custom Opportunistic Benchmark ³	Custom Opportunistic Benchmark	Custom Opportunistic Benchmark	Custom Opportunistic Benchmark	Custom Opportunistic Benchmark
Core Bonds	Bloomberg Barclays U.S. Aggregate Bond Index ⁴	Bloomberg Barclays U.S. Aggregate Bond Index	Custom Core Fixed	Custom Core Fixed	Custom Core Fixed
Floating Rate Debt	Credit Suisse Leveraged Loan Index ⁵	Credit Suisse Leveraged Loan Index	Credit Suisse Leveraged Loan Index	Credit Suisse Leveraged Loan Index	Credit Suisse Leveraged Loan Index
Global High Yield	N/A	Bloomberg Barclays Global High Yield	Barclays Global High Yield	Barclays Global High Yield	Barclays Global High Yield
Securitized Debt	Non-Agency CMBS Component of Bloomberg Barclays U.S. Aggregate Bond Index + 2% ⁶	Bloomberg Barclays CMBS Index + 2%	Barclays CMBS Index + 2%	Barclays CMBS Index + 2%	Barclays CMBS Index + 2%
TIPS	Bloomberg Barclays U.S. TIPS Index ⁷	Bloomberg Barclays U.S. TIPS Index	Barclays U.S. TIPS Index	Barclays U.S. TIPS Index	Barclays U.S. TIPS Index
High Yield	Bloomberg Barclays U.S. Corporate High Yield ⁸	Bloomberg Barclays Capital U.S. Corporate High Yield	Barclays Capital U.S. Corporate High Yield	Barclays Capital U.S. Corporate High Yield	Barclays Capital U.S. Corporate High Yield
Non-U.S. Equity	Custom Non-U.S. Equity Benchmark (net) ⁹	Custom Non-U.S. Equity Benchmark (net)	Custom Non-U.S. Equity Benchmark (net)	Custom Non-U.S. Equity Benchmark (net)	Custom Non-U.S. Equity Benchmark (net)
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	DJ U.S. Select RESI ¹¹	DJ U.S. Select RESI	DJ U.S. Select RESI	DJ U.S. Select RESI	DJ U.S. Select RESI
Cash Equivalents	BofAML U.S. 3-Month Treasury Bill Index ¹²	BofAML U.S. 3-Month Treasury Bill Index	BofAML U.S. 3-Month Treasury Bill Index	BofAML U.S. 3-Month Treasury Bill Index	BofAML U.S. 3-Month Treasury Bill Index
Private Equity	N/A	N/A	N/A	Custom Private Equity	Custom Private Equity
Hedge Funds	Custom Hedge Funds Benchmark ¹³	Custom Hedge Funds Benchmark	Custom Hedge Funds Benchmark	Custom Hedge Funds Benchmark	Custom Hedge Funds Benchmark
Risk Parity	Custom Risk Parity Benchmark ¹⁴	Custom Risk Parity Benchmark	Custom Risk Parity Benchmark	Custom Risk Parity Benchmark	Custom Risk Parity Benchmark
GTAA	Custom GTAA Benchmark ¹⁵	Custom GTAA Benchmark	Custom GTAA Benchmark	Custom GTAA Benchmark	Custom GTAA Benchmark
U.S. Treasury	Bloomberg Barclays U.S. Treasury Index ¹⁶	Bloomberg Barclays U.S. Treasury Index	Barclays U.S. Treasury Index	N/A	N/A
Short-Term Liquidity	N/A	N/A	90-day U.S. Treasury Bill Index	N/A	N/A

Footnotes found on next page.

Footnotes for Schedule of Investment Results—Health Care Portfolio

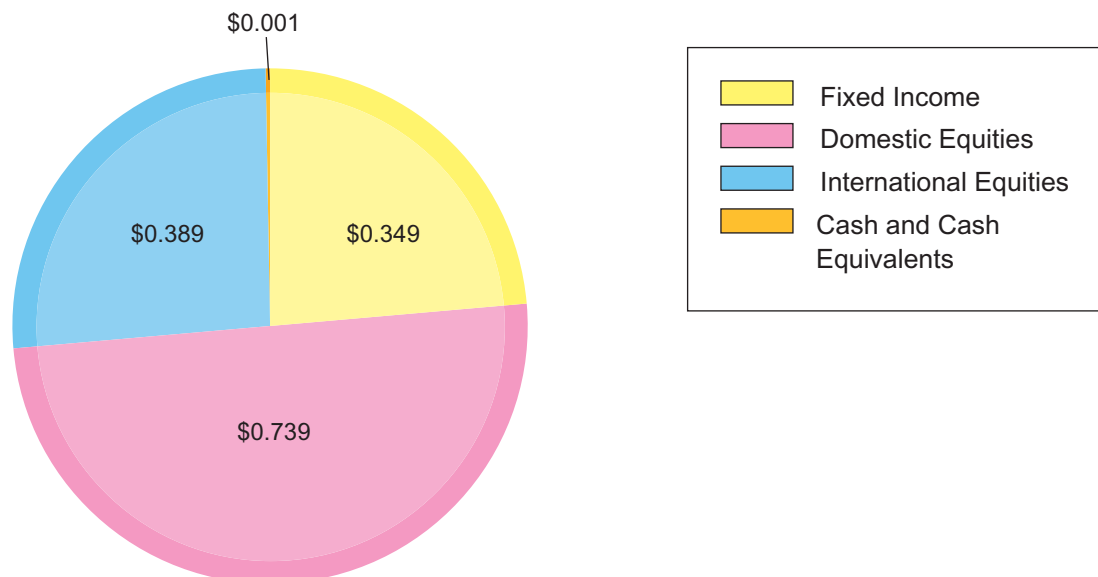
The footnotes below provide definitions for the asset class composite benchmark indices as of December 31, 2017:

- ¹ **Russell 3000 Stock Index**—A 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 **Standard & Poor's Goldman Sachs Commodity Index**—Tracks general price movements and inflation in the world economy. The index is calculated primarily on a world-production weighted basis and is comprised of the principal physical commodities that are the subject of active, liquid futures markets.
- ³ **Custom Opportunistic Benchmark**—Market value weight of the underlying portfolio benchmarks.
- ⁴ **Bloomberg Barclays U.S. Aggregate Bond Index**—A market capitalization-weighted index covering the universe of most U.S. traded investment grade bonds, excluding municipal bonds and TIPS.
- ⁵ **Credit Suisse Leveraged Loan Index**—This index is designed to mirror the investible universe of the U.S.-denominated leveraged loan market.
- ⁶ **Non-Agency CMBS Component of Bloomberg Barclays U.S. Aggregate Bond Index + 2%**—Is the Bloomberg Barclays non-agency CMBS ERISA-Eligible component of the Bloomberg Barclays U.S. Aggregate Index plus 200 annualized basis points. This index, which includes investment grade securities that are ERISA-Eligible under the underwriter's exemption, is the only CMBS sector that is included in the U.S. Aggregate Index.
- ⁷ **Bloomberg Barclays U.S. TIPS Index**—This index consists of Inflation-Protection securities issued by the U.S. Treasury.
- ⁸ **Bloomberg Barclays U.S. Corporate High Yield**—Covers the universe of fixed rate, non-investment grade debt.
- ⁹ **Custom Non-U.S. Equity Benchmark (net)**—As of December 31, 2017, blend was 55% MSCI World x U.S. Standard (net), 31% MSCI Emerging Markets Standard (net), 10% MSCI World x U.S. Small Cap (net), and 4% MSCI Emerging Markets Small Cap (net).
- ¹⁰ **Custom Emerging Markets Debt Benchmark**—As of December 31, 2017, blend was 50% J.P. Morgan EMBI Global Index, and 50% J.P. Morgan GBI-Emerging Markets Global Diversified USD Index.
- ¹¹ **DJ U.S. Select RESI**—The Dow Jones U.S. Select RESI represents equity REITs and REOCs traded in the U.S.
- ¹² **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.
- ¹³ **Custom Hedge Funds Benchmark**—As of December 31, 2017, blend was 30% HFRI Event-Driven (Total) Index, 20% HFRI Equity Hedge (Total) Index, 20% HFRI Macro (Total) Index, 15% HFRI Relative Value (Total) Index, 15% HFRI Fund Weighted Composite Index.
- ¹⁴ **Custom Risk Parity Benchmark**—Market value weight of the underlying portfolio benchmarks.
- ¹⁵ **Custom Global Tactical Asset Allocation (GTAA) Benchmark**—Market value weight of the underlying portfolio benchmarks.
- ¹⁶ **Bloomberg Barclays U.S. Treasury Index**—Is designed to measure 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 index. Separate Trading of Registered Interest and Principal of Securities (STRIPS) are excluded from the index. The U.S. Treasury Index is a component of the U.S. Aggregate, U.S. Universal, Global Aggregate and Global Treasury indices.
- ¹⁷ 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 on July 1, 2016. This table represents benchmark indices for both portfolios over the years disclosed. Beginning in 2017, as there is only one health care trust, this section was renamed to Health Care Portfolio.

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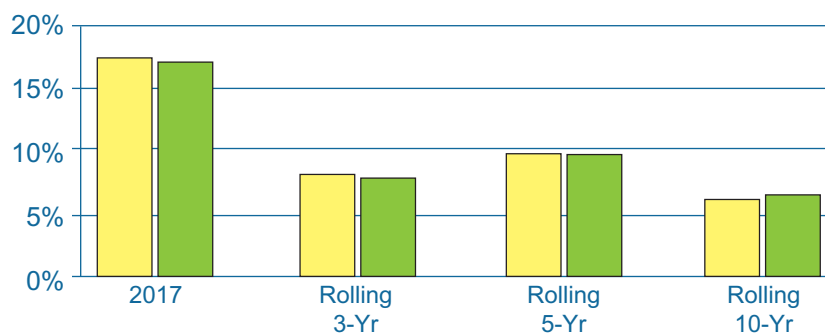
Defined Contribution Portfolio Asset Allocation (as of December 31, 2017, \$ in billions)



Investment Returns

The Defined Contribution portfolio returned 17.39% in 2017. The portfolio composite is derived from the individual investment option returns and their actual year-end fair 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 following page.


Investment Returns—Annual Rates of Return¹ Defined Contribution Portfolio



Defined Contribution Portfolio Returns	17.39%	8.11%	9.79%	6.20%
Policy Benchmark Returns	17.19%	8.01%	9.78%	6.39%

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.

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

 Schedule of Investment Results (for the year ended December 31, 2017)		Defined Contribution Portfolio	
	2017	Rolling 3-Year	Rolling 5-Year
Target Payout Fund	8.83%	4.19%	4.27%
Target Payout Fund Index ¹	8.25	4.05	4.18
Target 2020 Fund	11.45	5.40	6.44
Target 2020 Fund Index ²	10.94	5.14	6.26
Target 2025 Fund	15.08	6.63	7.98
Target 2025 Fund Index ³	14.54	6.49	7.90
Target 2030 Fund	18.07	7.89	9.15
Target 2030 Fund Index ⁴	17.76	7.65	9.01
Target 2035 Fund	19.24	8.24	9.50
Target 2035 Fund Index ⁵	19.15	8.17	9.44
Target 2040 Fund	19.98	8.44	9.70
Target 2040 Fund Index ⁶	19.60	8.32	9.69
Target 2045 Fund	20.41	8.70	10.11
Target 2045 Fund Index ⁷	20.14	8.53	10.00
Target 2050 Fund	20.94	8.81	10.19
Target 2050 Fund Index ⁸	20.82	8.72	10.12
Target 2055 Fund	21.04	8.87	10.17
Target 2055 Fund Index ⁹	20.84	8.72	10.12
Target 2060 Fund	20.96	N/A	N/A
Target 2060 Fund Index ¹⁰	20.84	N/A	N/A
Stable Value Index Portfolio	1.97	1.82	1.67
Stable Value Index Benchmark ¹¹	1.64	1.66	1.98
Bond Index Portfolio	3.56	2.23	2.11
Bloomberg Barclays U.S. Aggregate Bond Index Benchmark ¹²	3.54	2.24	2.10
U.S. Stock Index Portfolio	21.07	11.10	15.55
Russell 3000 Stock Index Benchmark ¹³	21.13	11.12	15.58
Large Cap Index Portfolio	21.60	11.16	15.64
Russell 1000 Stock Index Benchmark ¹⁴	21.69	11.23	15.71
Small Cap Index Portfolio	14.58	9.89	14.07
Russell 2000 Index Benchmark ¹⁵	14.65	9.96	14.12
Non-U.S. Stock Index Portfolio	27.57	8.26	6.82
MSCI ACWI x U.S. Index Benchmark ¹⁶	27.19	7.83	6.80

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, 2017:

- ¹ **Target Payout Fund Index**—Blend was 25% Bloomberg Barclays Government 1-3 Year Index, 32% Bloomberg Barclays U.S. Aggregate, 10% Russell 1000, 5% Russell 2000, 15% MSCI ACWI Net Dividend Return x U.S., 13% Bloomberg Barclays U.S. TIPS.
- ² **Target 2020 Fund Index**—Blend was 13% Bloomberg Barclays Government 1-3 Year Index, 36% Bloomberg Barclays U.S. Aggregate, 12% Russell 1000, 8% Russell 2000, 20% MSCI ACWI Net Dividend Return x U.S., 11% Bloomberg Barclays U.S. TIPS.
- ³ **Target 2025 Fund Index**—Blend was 2% Bloomberg Barclays Government 1-3 Year Index, 37% Bloomberg Barclays U.S. Aggregate, 16% Russell 1000, 12% Russell 2000, 28% MSCI ACWI Net Dividend Return x U.S., 5% Bloomberg Barclays U.S. TIPS.
- ⁴ **Target 2030 Fund Index**—Blend was 24% Bloomberg Barclays U.S. Aggregate, 20% Russell 1000, 16% Russell 2000, 36% MSCI ACWI Net Dividend Return x U.S., 3% Bloomberg Barclays U.S. Government/Credit, 1% Bloomberg Barclays U.S. TIPS.
- ⁵ **Target 2035 Fund Index**—Blend was 13% Bloomberg Barclays U.S. Aggregate, 22% Russell 1000, 18% Russell 2000, 40% MSCI ACWI Net Dividend Return x U.S., 7% Bloomberg Barclays U.S. Government/Credit.
- ⁶ **Target 2040 Fund Index**—Blend was 9% Bloomberg Barclays U.S. Aggregate, 22% Russell 1000, 19% Russell 2000, 42% MSCI ACWI Net Dividend Return x U.S., 8% Bloomberg Barclays U.S. Government/Credit.
- ⁷ **Target 2045 Fund Index**—Blend was 7% Bloomberg Barclays U.S. Aggregate, 24% Russell 1000, 20% Russell 2000, 42% MSCI ACWI Net Dividend Return x U.S., 7% Bloomberg Barclays U.S. Government/Credit.
- ⁸ **Target 2050 Fund Index**—Blend was 6% Bloomberg Barclays U.S. Aggregate, 25% Russell 1000, 20% Russell 2000, 44% MSCI ACWI Net Dividend Return x U.S., 5% Bloomberg Barclays U.S. Government/Credit.
- ⁹ **Target 2055 Fund Index**—Blend was 5% Bloomberg Barclays U.S. Aggregate, 25% Russell 1000, 20% Russell 2000, 45% MSCI ACWI Net Dividend Return x U.S., 5% Bloomberg Barclays U.S. Government/Credit.
- ¹⁰ **Target 2060 Fund Index**—Blend was 5% Bloomberg Barclays U.S. Aggregate, 25% Russell 1000, 20% Russell 2000, 45% MSCI ACWI Net Dividend Return x U.S., 5% Bloomberg Barclays U.S. Government/Credit. This fund was launched in December 2015; thus, the 3-year and 5-year rolling returns information does not exist.
- ¹¹ **Stable Value Index Benchmark**—Blend was 15% Bloomberg Barclays Aggregate Index, 45% Bloomberg Barclays 1-5 Year Government/Corporate Bond, 35% Bloomberg Barclays Intermediate Government/Credit, 5% Bank of America Merrill Lynch 3-Month U.S. Treasury Bill.
- ¹² **Bloomberg Barclays U.S. Aggregate Bond Index Benchmark**—A market value-weighted index consisting of Bloomberg Barclays Corporate, Government and Mortgage-Backed Indices. This index is the broadest available measure of the aggregate U.S. fixed income market.
- ¹³ **Russell 3000 Stock Index Benchmark**—A 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.
- ¹⁴ **Russell 1000 Stock Index Benchmark**—A 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.
- ¹⁵ **Russell 2000 Stock Index Benchmark**—A 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.
- ¹⁶ **MSCI All Country World Net Dividend Return x U.S. Index (MSCI ACWI Net Dividend Return x U.S. Benchmark)**—A capitalization-weighted index of stocks representing 45 developed and emerging country markets, excluding the U.S. market.

The largest direct investments in the state of Ohio, measured at the fair value of our investment in the securities of firms headquartered in Ohio, totaled approximately \$0.4 billion at the end of the year.

The largest indirect investments, measured at the fair value of our investment in the securities of companies with the largest employment presence in the state, totaled approximately \$1.1 billion. Employment presence is measured by the number of persons employed 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 employed approximately 205,000 people in Ohio.

 Top Ohio Holdings (for the year ended December 31, 2017)				
Direct		Indirect		
Largest Firms Headquartered In Ohio	Fair Value	Firms with Largest Employment Presence	Ohio Employment Estimated Headcount	Fair Value
Procter & Gamble Co.	\$168,947,474	Wal-Mart Stores Inc.	50,500	\$102,706,419
Progressive Corp.	58,544,753	Kroger Co.	43,850	16,987,734
Welltower Inc.	37,285,044	JPMorgan Chase & Co.	21,000	300,671,114
Mettler-Toledo International Inc.	35,144,131	General Electric Co.	14,500	108,644,695
American Electric Power Co. Inc.	25,289,982	Honda Motor Co. Ltd.	14,500	15,471,039
Sherwin Williams Co.	25,063,285	United Parcel Service Inc.	14,425	58,631,213
L Brands Inc.	18,572,631	Home Depot Inc.	12,000	164,849,782
Kroger Co.	16,987,734	Lowe's Companies Inc.	11,800	56,601,111
Marathon Petroleum Corp.	15,181,338	Berkshire Hathaway Inc.	11,200	270,001,210
		Bob Evans Farms Inc.	11,100	221,563
Total	\$401,016,372	Total	204,875	\$1,094,785,880

The investment and fiduciary responsibilities of the Board are governed by 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 2017 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, adherence 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 133 and are posted on the OPERS website, OPERS.org, where they can be viewed in their entirety.

Note: Policies adapted to meet plain-language standards of the OPERS Comprehensive Annual 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 strategic asset allocations. To ensure conformance with 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 of each portfolio. A comprehensive strategic asset allocation review is completed approximately every five years. The review helps to assess the continuing appropriateness of the asset allocation policy and could include an asset/liability study, required funding, actuarial interest rate assumption and funded status of liabilities. Additionally, the review may also include a study of portfolio design and comparisons with peers. A review was completed in 2016, in conjunction with an actuarial five-year experience study, resulting in minimal changes to the strategic asset allocation of the portfolios for 2017. After the experience study, the Board approved a decrease in the actuarial interest rate, from 8.0% to 7.5%, in 2016.

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 asset allocation policy establishes a framework with a high likelihood of realizing 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 of 7.5%, over a reasonably longer time horizon.

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 39% and 23%, respectively, with the remaining 31%, 5% and 2% allocated to Alternatives (Private Equity, Real Estate, Commodities, Hedge Funds, and Opportunistic), Risk Parity and Global Tactical Asset Allocation (GTAA), 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 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	39.0%	31 to 47%	
U.S. Equity	Custom Allocation ¹	+/- 5%	Russell 3000 Stock Index
Non-U.S. Equity	Custom Allocation ¹	+/- 5%	Custom benchmark of the following indices: 55% MSCI World Index x U.S. Standard (net) 10% MSCI World Index x U.S. Small Cap (net) 31% MSCI Emerging Markets Standard (net) 4% MSCI Emerging Markets Small Cap (net)
Fixed Income	23.0%	16 to 30%	
Core Fixed	9.0	6 to 12	Bloomberg Barclays U.S. Aggregate Bond Index
Emerging Markets Debt	7.0	3 to 9	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
Floating Rate Debt	0.0	0 to 2	Credit Suisse Leveraged Loan Index
Securitized Debt	1.0	0 to 2	Non-Agency CMBS component of Bloomberg Barclays U.S. Aggregate Bond Index plus 200 bps
TIPS	2.0	1 to 3	Bloomberg Barclays U.S. TIPS Index
High Yield	3.0	0 to 5	Bloomberg Barclays U.S. High Yield Index
U.S. Treasury	1.0	0 to 2	Bloomberg Barclays U.S. Treasury Index
Alternatives	31.0%	22 to 40%	
Private Equity	10.0	5 to 15	State Street Private Equity Index (SSPEI)
Real Estate	10.0	5 to 15	Net NFI-ODCE plus 85 basis points
Hedge Funds	8.0	4 to 12	Custom benchmark using the HFRI Single Strategy Indices weighted by the target allocations listed in the Annual Investment Plan
Opportunistic	2.0	0 to 4	Market value weight of underlying portfolio benchmarks
Commodities	1.0	0 to 2	S&P GSCI Total Return Index
Risk Parity	5.0%	2 to 8%	Market value weight of underlying portfolio benchmarks
GTAA	2.0%	0 to 4%	Market value weight of underlying portfolio benchmarks
Operating Cash	0.0%	0 to 3%	N/A
Total	100.0%		

¹ The custom allocation is reset quarterly based on the U.S. to Non-U.S. equity ratio as measured by the market capitalization of the MSCI ACWI-Investible Market Index.

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, and b) earning a reasonable return.

Asset Allocation and Performance Objectives

The approved asset allocation policy establishes a framework with a high likelihood of realizing the long-term investment objective. The Health Care portfolio performance objective is to exceed the performance benchmark net of investment expenses. The table below sets forth targets, ranges and performance benchmarks for each asset class:

 Health Care Asset Allocation			
Asset Class	Target Allocation	Range	Benchmark Index
Public Equity	43.0%	34 to 52%	
U.S. Equity	Custom Allocation ¹	+/- 5%	Russell 3000 Stock Index
Non-U.S. Equity	Custom Allocation ¹	+/- 5%	Custom benchmark of the following indices: 55% MSCI World Index x U.S. Standard (net) 10% MSCI World Index x U.S. Small Cap (net) 31% MSCI Emerging Markets Standard (net) 4% MSCI Emerging Markets Small Cap (net)
Fixed Income	34.0%	24 to 44%	
Core Fixed	16.0	11 to 21	Bloomberg Barclays U.S. Aggregate Bond Index
Emerging Markets Debt	7.0	3 to 9	Custom benchmark of the following indices: 50% J.P. Morgan Emerging Markets Bond Index Global 50% J.P. Morgan Government Bond Index-Emerging Markets Global Diversified
Floating Rate Debt	0.0	0 to 2	Credit Suisse Leveraged Loan Index
Securitized Debt	1.0	0 to 2	Non-Agency CMBS component of Bloomberg Barclays U.S. Aggregate Bond Index plus 200 bps
TIPS	6.0	3 to 9	Bloomberg Barclays U.S. TIPS Index
High Yield	3.0	0 to 5	Bloomberg Barclays U.S. High Yield Index
U.S. Treasury	1.0	0 to 2	Bloomberg Barclays U.S. Treasury Index
Alternatives	16.0%	11 to 21%	
REITs	6.0	3 to 9	Dow Jones U.S. Select RESI Total Return
Hedge Funds	6.0	3 to 9	Custom benchmark using the HFRI single strategy indices weighted by the target allocations listed in the Annual Investment Plan
Opportunistic	2.0	0 to 4	Market value weight of underlying portfolio benchmarks
Commodities	2.0	0 to 4	S&P GSCI Total Return Index
Risk Parity	5.0%	2 to 8%	Market value weight of underlying portfolio benchmarks
GTAA	2.0%	0 to 4%	Market value weight of underlying portfolio benchmarks
Operating Cash	0.0%	0 to 3%	N/A
Total	100.0%		

¹ The custom allocation is reset quarterly based on the U.S. to Non-U.S. equity ratio as measured by the market capitalization of the MSCI ACWI-Investible Market Index.

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 portfolios 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, OPERS 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 the 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. The asset class ranges for each OPERS target date fund, for the period December 1, 2017 through November 30, 2018, are on the next page.

 Defined Contribution Asset Allocation										
OPERS Investment Fund	OPERS Target Date Funds									
	Payout		2020		2025		2030		2035	
	Target	Range	Target	Range	Target	Range	Target	Range	Target	Range
Large Cap Index Fund	10.0%	+/-2.0%	12.0%	+/-2.0%	16.0%	+/-3.0%	20.0%	+/-3.0%	22.0%	+/-3.0%
Small Cap Index Fund	5.0	+/-2.0	8.0	+/-2.0	12.0	+/-2.0	16.0	+/-3.0	18.0	+/-3.0
Non-U.S. Stock Index Fund	15.0	+/-3.0	20.0	+/-3.0	28.0	+/-4.0	36.0	+/-5.0	40.0	+/-5.0
Bond Index Fund	32.0	+/-4.0	36.0	+/-5.0	37.0	+/-5.0	24.0	+/-3.0	13.0	+/-2.0
Short-Term Bond Fund	25.0	+/-4.0	13.0	+/-2.0	2.0	+/-1.0	0.0	+/-0.0	0.0	+/-0.0
Long-Duration Bond Fund	0.0	+/-0.0	0.0	+/-0.0	0.0	+/-0.0	3.0	+/-1.0	7.0	+/-2.0
TIPS Fund	13.0	+/-2.0	11.0	+/-2.0	5.0	+/-2.0	1.0	+/-1.0	0.0	+/-0.0

 Defined Contribution Asset Allocation (continued)										
OPERS Investment Fund	OPERS Target Date Funds									
	2040		2045		2050		2055		2060	
	Target	Range	Target	Range	Target	Range	Target	Range	Target	Range
Large Cap Index Fund	22.0%	+/-3.0%	24.0%	+/-3.0%	25.0%	+/-4.0%	25.0%	+/-4.0%	25.0%	+/-4.0%
Small Cap Index Fund	19.0	+/-3.0	20.0	+/-3.0	20.0	+/-3.0	20.0	+/-3.0	20.0	+/-3.0
Non-U.S. Stock Index Fund	42.0	+/-5.0	42.0	+/-5.0	44.0	+/-5.0	45.0	+/-5.0	45.0	+/-5.0
Bond Index Fund	9.0	+/-2.0	7.0	+/-2.0	6.0	+/-2.0	5.0	+/-2.0	5.0	+/-2.0
Short-Term Bond Fund	0.0	+/-0.0	0.0	+/-0.0	0.0	+/-0.0	0.0	+/-0.0	0.0	+/-0.0
Long-Duration Bond Fund	8.0	+/-2.0	7.0	+/-2.0	5.0	+/-2.0	5.0	+/-2.0	5.0	+/-2.0
TIPS Fund	0.0	+/-0.0	0.0	+/-0.0	0.0	+/-0.0	0.0	+/-0.0	0.0	+/-0.0

• **OPERS Funds**

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

OPERS Fund	Market Index
Stable Value	Custom Index ¹
Bond Index	Bloomberg Barclays U.S. Aggregate
Stock Index	Russell 3000
Large Cap	Russell 1000
Small Cap	Russell 2000
Non-U.S. Stock Index	MSCI ACWI Net Dividend Return x U.S. Index

¹ The Stable Value Fund (SVF) is managed actively. Its primary objective is to preserve the value of principal. Its secondary objective is to exceed the long-term return of a custom index comprised of 45% of the Bloomberg Barclays 1-5 Year Government/Corporate Bond Index, 35% of the Bloomberg Barclays Intermediate Government/Corporate Bond Index, 15% of the Bloomberg Barclays Aggregate Bond Index and 5% of the Bank of America Merrill Lynch 3-Month U.S. Treasury Bill Index. A typical stable value fund return fluctuates less than one percent each year; therefore, neither the short-term returns nor volatility of the SVF 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 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 50% 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 50% 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.

Rebalancing

The ranges specified for the target date funds are a function of the expected volatility of each asset class and the proportion of the total fund allocated to the asset class. The staff ensures target date funds conform to the asset allocation policy through quarterly review and rebalancing.

Performance Objectives and Risk Management

The performance objective for the target date funds is to meet the return of the respective performance benchmarks primarily through the use of passive index funds. 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 specified in the Defined Contribution Fund policy. The performance objective for the OPERS funds is to meet the return of respective performance benchmarks, gross of 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 OPERS 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.

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, securitized debt, Treasury inflation-protected securities (TIPS), high yield, global 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 manage the TIPS and U.S. Treasury allocations as indices. External managers, with special expertise, manage the high-yield, emerging debt, global high yield and floating rate debt investments.

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 a 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 Stock Index	0-100 basis points
Non-U.S. Equity	Custom benchmark of the following indices: 55% MSCI World Index x U.S. Standard (net) 10% MSCI World Index x U.S. Small Cap (net) 31% MSCI Emerging Markets Standard (net) 4% MSCI Emerging Markets Small Cap (net)	0-300 basis points

Real Estate

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

The private market real estate initiative has one manager who actively manages the program and who is limited to 20 percent of the private-market activity. A summary of the long-term guidelines are as follows:

- At least 80 percent of the private market real estate portfolio is invested in apartment, industrial, office and retail assets.
- Holdings outside the U.S. are limited to no more than 25 percent of the total.
- Any single direct investment is limited to 15 percent of the target allocation.
- Single closed-end commingled funds are limited to either \$400 million or 5 percent of the target allocation, whichever is greater.
- Single open-end commingled funds are limited to 10 percent of the target allocation.

The public market real estate portfolio manager is internal and uses a passive-management strategy.

The OPERS 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. Health Care portfolio real estate is benchmarked against the Dow Jones U.S. Select RESI Total Return Index.

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 using active management strategies, private equity adds diversification to the Defined Benefit portfolio. Risk is managed by limiting single-fund exposure to less than 25 percent of total commitment or \$400 million, whichever is less. Additionally, specific quantitative and qualitative constraints govern the fund.

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

Cash Management

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.

Derivatives

Derivatives 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. Derivatives may be used to enhance returns and reduce risk by managing or hedging exposure including, but not limited to stock markets, commodities and currencies.

Derivatives are grouped into three categories:

- **Category I:** Securities-based and traded either via an exchange or over the counter.
- **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 derivatives and physical securities, limits have been established:

- Use of Category III derivatives are limited to 10% of total net asset value of public market assets held in separate accounts, excluding foreign exchange derivatives used for hedging. (Additional portfolio-level restrictions may apply).
- The combined exposure of Category II and III derivatives will not exceed 20% of total net asset value, excluding foreign exchange derivatives 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.

Hedge Funds

Hedge fund investments are structured to preserve capital and provide competitive returns with a low correlation to traditional asset classes. Hedge funds provide diversification, reduced volatility of returns and long-term return enhancement.

The performance objective is a custom benchmark using the HFRI single-strategy indices weighted by the target allocation.

The requirements for establishing appropriate risk metrics for each hedge fund include: (1) providing risk parameter and performance reporting on a monthly basis; (2) seeking advice from legal counsel, the due diligence consultant and/or investment advisor to determine if audited financial statements are required based on the specific structure of each investment; and, (3) establishing position-level transparency targets. Hedge fund allocations are limited to \$400 million, or 10 percent, of the sub-asset class fair value, whichever is greater for hedge fund managers; and, direct hedge fund managers are limited to \$200 million, or 7 percent, of the sub-asset class fair value, whichever is greater.

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 percent for domestic securities and 105 percent for international securities. The maximum percentage of assets that may be on loan is 50 percent of the eligible assets while the maximum amount that may be on loan with any one borrower is 15 percent of the eligible assets.

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 be in any of the commodities that comprise the Standard & Poor's-Goldman Sachs Commodity Index and/or the Bloomberg Commodity Index at the time of purchase.

Opportunistic

Investments in the Opportunistic sub-asset class include investment strategies or assets not currently used 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 0.5% of the sum of the Defined Benefit or Health Care portfolio assets at the time of funding.

Global Tactical Asset Allocation (GTAA)

GTAA capitalizes on short-term opportunities among global capital market assets. The strategy focuses on general movements in the market rather than on performance of individual securities. GTAA investments are expected to provide fund-level diversification and an additional source of excess return.

GTAA assets may be invested in all types of instruments intended to obtain exposure to a wide variety of asset types including equities, fixed income (both sovereign and credit-based exposures), inflation-linked bonds, commodities and other asset types. Instruments used may be exchange-traded or non-exchange traded and may be physical securities or derivatives, and some degree of leverage may be employed.

The overall benchmark for GTAA is the market value weight of the underlying managers' benchmarks. Concentration to any one manager is limited. Investment advisors will help identify managers, using a process approved by the chief investment officer. In addition to the investment due-diligence process, each manager will undergo an operational due-diligence review prior to funding to evaluate non-investment related risk factors.

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 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 expectation through approval of the Annual Investment Plan. By allocating to multiple Risk Parity managers, concentration to any one manager is limited.

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 by our actuaries for the annual actuarial valuations, described further in the Actuarial Section. Finally, the single-discount rate and long-term municipal bond rates are applicable to the implementation of GASB 74 in this 2017 annual report, including 2016 opening balances. These rates are used in the Accounting Basis valuations for health care. Information for 2015 and prior is not available.

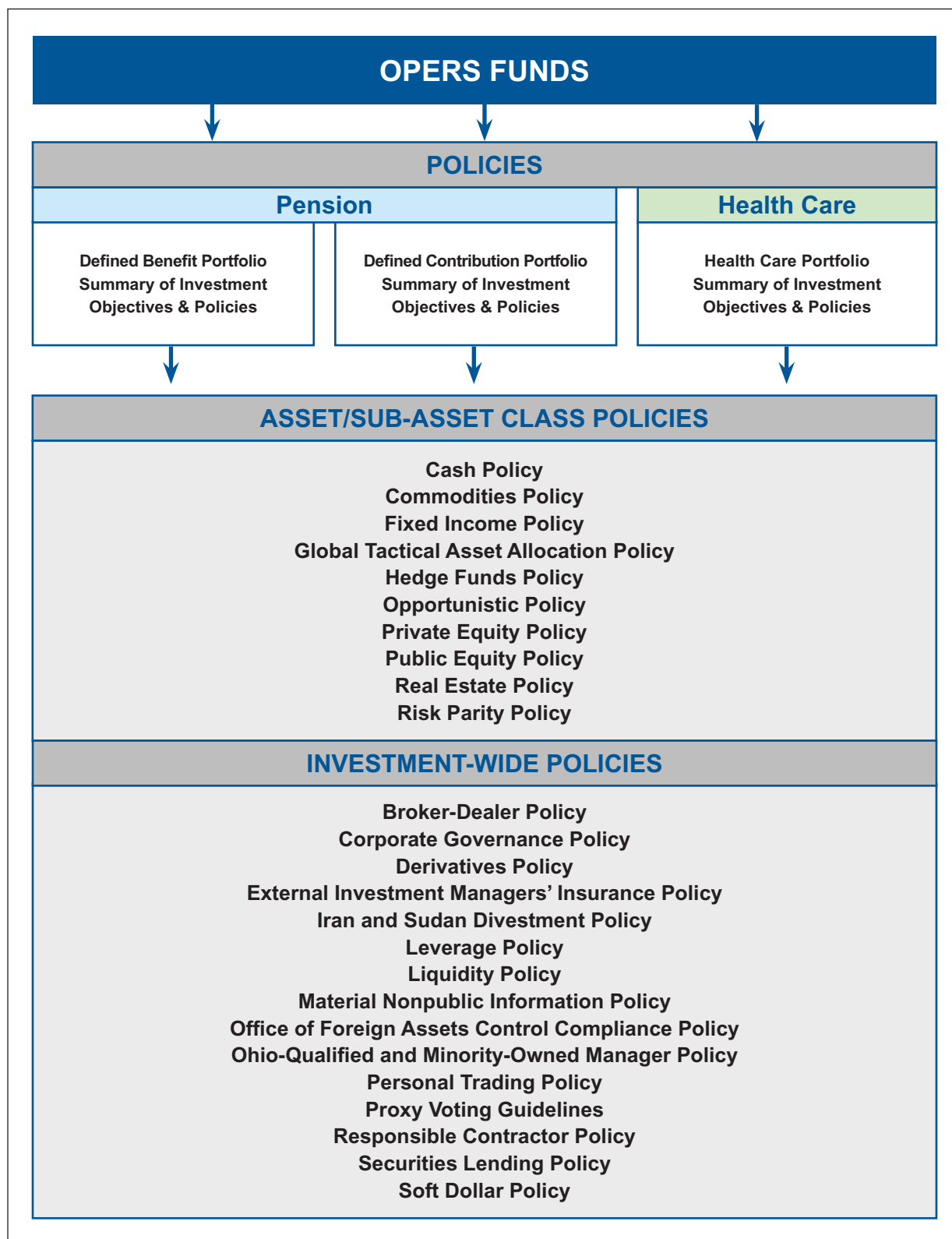
Rates are presented for five years in the following table:

Investment Rates by Portfolio					
	2017	2016	2015	2014	2013
Defined Benefit Portfolio					
Actual Rate of Return	16.82%	8.31%	0.33%	6.96%	14.38%
Benchmark Return	8.53	8.64	0.25	5.81	14.24
Long-Term Expected Rate of Return	8.00	8.00	8.00	8.00	8.00
Actuarial Assumed Rate of Return	7.50	7.50	8.00	8.00	8.00
Health Care Portfolio¹					
Actual Rate of Return	15.25%	7.55%	(2.18%)	5.28%	11.36%
Benchmark Return	8.53	7.75	(1.88)	5.01	10.70
Long-Term Expected Rate of Return	6.50	6.50	6.50	6.50	6.50
Actuarial Assumed Rate of Return	6.50	5.00	5.00	5.00	5.00
Single Discount Rate (GASB 74) ²	3.85	4.23	N/A	N/A	N/A
Long-Term Municipal Bond Rate ²	3.31	3.78	N/A	N/A	N/A

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 of these 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) 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 the Notes to Combining Financial Statements found in Note 9 of the Financial Section.

The following exhibit illustrates the structure and relationship of the 28 investment policies within the total System and its three investment portfolios in 2017.



Actuarial Section



Changing demographics

Today, members are living longer in retirement than ever before—a cause for celebration. In fact, some members live longer in retirement than as active, contributing employees. Because OPERS leaders—Board members and management—have traditionally focused forward and worked closely with actuaries and other experts, these changes were anticipated and the System was able to structure the solutions necessary to handle the changing demographics.

OPERS has a tradition of anticipating challenges so that the System can be shaped to absorb significant change without jeopardizing the overall structure. When any potential erosion to the stability of the System is identified, it is analyzed and evaluated. Once verified, we develop options that are also thoroughly analyzed. Then and only then do we propose the solutions to keep OPERS stable for the long-term. These solutions are ideally designed to be implemented early to minimize impact to members.

The changes to the plan design over the past 10 years were designed to help the System evolve and adapt to address, among other challenges, the changing demographics of our members and the financial markets. We want each member to live fully and long in retirement—and know that OPERS has made the decisions necessary to ensure just that.

OPERS fact: Even though health care is not a required or guaranteed benefit, OPERS recognizes the importance of having meaningful access to health care for retirees. To help curb costs, and help ensure retirement years are enjoyable, all members and retirees are encouraged to embrace healthy lifestyles. Small steps can make a big impact over time.





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May 10, 2018

The 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 necessary to fund the pension defined benefits provided by OPERS, and
- Determine the number of years required to amortize the unfunded actuarial accrued liabilities based upon established contribution rates.

The most recent funding valuation was completed based upon population data, asset data, and plan provisions as of December 31, 2017. A report containing the results of the funding valuation is produced annually, in some cases due to timing issues after the publication of the Comprehensive Annual Financial Report (CAFR).

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 CAFR. Financial reporting information has been produced based upon a measurement date of December 31, 2017 for GASB Statement Nos. 67 and 68 and December 31, 2017 for GASB Statement Nos. 74 and 75.

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The Retirement Board
Ohio Public Employees Retirement System
May 10, 2018
Page 2

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

Actuarial Section

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

Financial Section

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

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 (NPL) 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 7.5%. 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 7.5%. For determining the Net OPEB Liability (NOL) 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 6.5%. 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 3.85%.



The Retirement Board
Ohio Public Employees Retirement System
May 10, 2018
Page 3

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, 2017 valuations were based upon assumptions that were recommended in connection with an Experience Study covering the 2011-2015 period.

The computed pension amortization period as of the December 31, 2017 annual valuation is 18 years and the System is 81% funded with respect to pension benefits, based upon the actuarial accrued liability and the funding value of assets.

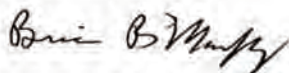
Based upon the results of the December 31, 2017 valuations, we are pleased to report to the Board that the Public Employees Retirement System of Ohio is meeting its basic financial objective and continues to operate in accordance with the actuarial principles of level percent of payroll financing.

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 CAFR 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,



Brian B. Murphy, FSA, EA, FCA, MAAA, PhD



Mita D. Drazilov, ASA, FCA, MAAA

BBM/MDD:mdd:dj



The defined benefit pension and health care actuarial information presented in this *2017 Comprehensive Annual Financial Report (CAFR)* is based on the most current actuarial valuations for the System. The pension valuation data is presented as of December 31, 2017 and the health care valuation data is presented as of December 31, 2016, a year in arrears. The pension actuarial assumptions are applicable to 2017 and the health care actuarial assumptions in this section are applicable to 2016, unless otherwise noted. This section presents actuarial information for pension and health care on a Funding Basis. 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 in the Financial Section of the CAFR on a financial reporting basis, or Accounting Basis, as required by GASB 67. Likewise, in conjunction with GASB Statement No. 74 (GASB 74), *Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans*, OPERS is reporting actuarial results of health care as of the December 31, 2016 valuation date, rolled-forward to the measurement date of December 31, 2017, in the Financial Section of the CAFR on an Accounting Basis, as required by GASB 74.

The Accounting Basis calculation methodologies defined in 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 versus 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. Thus, actuarial information for health care presented on an Accounting Basis, will represent December 31, 2016 valuation results rolled-forward to the December 31, 2017 measurement date. The information included in this section is reflected on a Funding Basis rather than Accounting Basis. Therefore, the GASB 67 net pension liability and the GASB 74 net health care, or OPEB, liability results will differ from the unfunded actuarial accrued liability results provided in the Schedules of Funding Progress included in this section, beginning on page 157. 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 and reported.

OPERS conducts an experience study every five years in accordance with Ohio Revised Code Section 145.22. The OPERS Board of Trustees (Board)-appointed actuary conducted an experience study for the five-year period ended December 31, 2015. Following this experience study, in consultation with the actuary, the Board approved and adopted the methods and assumptions disclosed in this section in 2016. These methods and assumptions apply to the pension plans, Traditional Pension Plan, Combined Plan, Member-Directed Plan, and health care.

Pension plan and health care details can be found in the Plan Statement beginning on page 221.

Funding Method

An individual entry age actuarial cost method of valuation was used in determining pension benefit and health care liabilities and normal cost under both of the funding valuations included in this section and 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.

Economic Assumptions

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

- **Investment Return**—For pension, 7.50% compounded annually, net of administrative expenses. For health care, 5.00% compounded annually, net of administrative expenses.
- **Wage Inflation Rate**—Calculated at 3.25% 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 pay changes related to individual merit and seniority effects.
- **Price Inflation**—For pension, 2.50% of the investment return rate and wage inflation rate is assumed to be price inflation.
- **Assumed Real Rate of Return**—For pension, 4.25% per year. For health care, 1.75% 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, 7.50% and 5.00%, respectively, that is more than the assumed total wage growth rate of 3.25%. Refer to the Notes to Combining Financial Statements, Note 9, 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, assumed to remain constant. For purposes of financing the unfunded actuarial accrued liabilities, total payroll was assumed to grow at the wage-inflation rate of 3.25% per year.
- **Health Care Payments**—For the 2016 health care valuation, health care expenses were assumed to increase initially at 7.50%, before leveling off to 3.25% in 2028. For projection and valuation purposes, health reimbursement arrangement accounts 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 Employee Pay Increases**—An active employee'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 Employee Pay Increases									
Age	Merit and Seniority				Wage Inflation	Total Increase Next Year			
	State	Local	Public Safety	Law		State	Local	Public Safety	Law
30	3.38%	3.38%	3.70%	3.70%	3.25%	6.63%	6.63%	6.95%	6.95%
40	1.90	1.77	1.46	1.46	3.25	5.15	5.02	4.71	4.71
50	0.92	0.92	0.94	0.94	3.25	4.17	4.17	4.19	4.19
60	0.42	0.42	0.40	0.40	3.25	3.67	3.67	3.65	3.65

- 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					
		All Divisions		State		Local		Public Safety & Law Enforcement	
		Men	Women	Men	Women	Men	Women	Men	Women
25	5 & over	0.05%	0.02%	0.10%	0.10%	0.10%	0.10%	0.20%	0.60%
35	5 & over	0.05	0.03	0.16	0.16	0.13	0.10	0.34	0.60
45	5 & over	0.12	0.07	0.47	0.47	0.37	0.26	0.78	1.38
55	5 & over	0.29	0.17	1.05	1.05	0.90	0.71	2.32	2.65
60	5 & over	0.49	0.27	1.25	1.25	1.00	0.85	2.60	2.75

The turnover probabilities in the tables on page 145 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 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 before age 35, 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. The percentage withdrawing their contributions is 100% at age 35 and is reduced for each year of age after 35, becoming 0% at age 55 (age 45 for Public Safety and Law Enforcement division members).
- **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. Members eligible for an annuity may be eligible to participate in OPERS health care.

Asset Valuation Method

For actuarial purposes, and under the Funding Basis, the funding value of defined benefit pension and health care assets recognizes assumed investment returns fully 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%.

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.

Decrement Assumptions

The probabilities used by the actuary related to specific risk areas are displayed in the tables starting on the next page:

- **Mortality**—For pension and health care, 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 period 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 previously noted tables.
- **Retirement**—Probabilities of age-and-service retirement applicable to members eligible to retire are as shown in the schedules on pages 148 through 152.

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. Members who were eligible to retire under law in effect prior to SB 343, or who will be eligible to retire no later than five years after January 7, 2013, comprise transition Group A. Members who have 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, comprise transition Group B. Group C comprises those members who are not in either of the other groups and members who were hired on or after January 7, 2013. See pages 224 through 226 of the Plan Statement 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 the following total years of service credit and have attained division specific 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.

Service	State		Local	
	Men	Women	Men	Women
30	37%	40%	35%	35%
31	28	33	26	30
32-39	24	26	23	24
40-42	35	33	32	24
43-44	35	33	32	20
45	25	25	32	20
46-49	25	25	25	20
50 & Over	100	100	100	100

Retirement Age	State		Local	
	Men	Women	Men	Women
65-66	22%	22%	20%	20%
67	20	20	15	20
68-71	20	20	15	17
72-76	15	20	15	17
77-78	15	25	15	17
79	15	25	15	22
80-84	25	25	20	22
85 & Over	100	100	100	100

Retirement Age	Public Safety	Law Enforcement
48-51	N/A	20%
52-53	30%	20
54-55	25	20
56-57	25	23
58-59	20	25
60	35	30
61-69	35	25
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.

Service	State		Local	
	Men	Women	Men	Women
31	37%	40%	35%	35%
32	28	33	26	30
33-40	24	26	23	24
41-43	35	33	32	24
44-45	35	33	32	20
46	25	25	32	20
47-50	25	25	25	20
51 & Over	100	100	100	100

Retirement Age	State		Local	
	Men	Women	Men	Women
66-67	22%	22%	20%	20%
68	20	20	15	20
69-72	20	20	15	17
73-77	15	20	15	17
78-79	15	25	15	17
80	15	25	15	22
81-84	25	25	20	22
85 & Over	100	100	100	100

Retirement Age	Public Safety	Law Enforcement
50-53	N/A	20%
54-57	25%	20
58-59	20	23
60-61	35	25
62	35	30
63-69	35	25
70-71	100	25
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	37%	40%	35%	35%
2	28	33	26	30
3-10	24	26	23	24
11-13	35	33	32	24
14-15	35	33	32	20
16	25	25	32	20
17-20	25	25	25	20
21 & Over	100	100	100	100

67 & 5 Condition Retirement Age	State		Local	
	Men	Women	Men	Women
67-68	22%	22%	20%	20%
69	20	20	15	20
70-73	20	20	15	17
74-78	15	20	15	17
79-80	15	25	15	17
81	15	25	15	22
82-84	25	25	20	22
85 & Over	100	100	100	100

Retirement Age	Public Safety	Law Enforcement
52-55	N/A	20%
56-57	25%	20
58-59	20	20
60-61	35	23
62-63	35	25
64	35	30
65-69	35	25
70-73	100	25
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.

Retirement Age	State		Local		Public Safety
	Men	Women	Men	Women	
48-51	N/A	N/A	N/A	N/A	8%
52-54	N/A	N/A	N/A	N/A	N/A
55-58	10%	10%	9%	11%	N/A
59	10	11	9	11	N/A
60	10	12	9	11	N/A
61	10	13	9	12	N/A
62	15	15	13	13	N/A
63	15	15	14	14	N/A
64	15	15	12	15	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.

Retirement Age	State		Local		Public Safety	Law Enforcement
	Men	Women	Men	Women		
48-49	N/A	N/A	N/A	N/A	8%	8%
50-53	N/A	N/A	N/A	N/A	8	N/A
54	N/A	N/A	N/A	N/A	N/A	N/A
55-58	10%	10%	9%	11%	N/A	N/A
59	10	11	9	11	N/A	N/A
60	10	12	9	11	N/A	N/A
61	10	13	9	12	N/A	N/A
62	15	15	13	13	N/A	N/A
63	15	15	14	14	N/A	N/A
64-65	15	15	12	15	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.

Retirement Age	State		Local		Public Safety	Law Enforcement
	Men	Women	Men	Women		
48-51	N/A	N/A	N/A	N/A	N/A	8%
52-55	N/A	N/A	N/A	N/A	8%	N/A
56	N/A	N/A	N/A	N/A	N/A	N/A
57-60	10%	10%	9%	11%	N/A	N/A
61	10	11	9	11	N/A	N/A
62	10	12	9	11	N/A	N/A
63	10	13	9	12	N/A	N/A
64	15	15	13	13	N/A	N/A
65	15	15	14	14	N/A	N/A
66	15	15	12	15	N/A	N/A

The tables below 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 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
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
2012	57.4	22.7	37,741	18,832	69.3	23,468
2011	57.3	22.6	36,549	18,221	69.3	22,614
2010	57.2	22.4	35,025	17,380	69.3	21,600
2009	57.2	22.2	33,808	16,725	69.3	20,731
2008	57.2	22.0	32,401	15,942	69.4	19,751

Average Defined Benefits Paid 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
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
2012	64.2	8.5	45,218	2,785	66.2	2,891
2011	64.2	7.9	49,751	2,757	66.0	2,828
2010	64.3	7.9	40,548	2,158	65.9	2,219
2009	65.0	7.6	35,139	1,590	66.6	1,635
2008	64.0	7.4	29,454	1,239	64.8	1,260

Actuarial Valuation Data

Actuarial Section

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
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
2012	3,264	3,702	326,227	11,885	36,432	(1.08)	195,622	4,523	23,121
2011	3,248	3,695	328,640	12,103	36,828	1.27	189,753	4,232	22,303
2010	3,245	3,699	334,507	12,165	36,367	1.15	181,433	3,868	21,319
2009	3,264	3,714	341,777	12,288	35,953	0.29	174,637	3,576	20,477
2008	3,275	3,724	349,969	12,546	35,849	3.87	169,000	3,300	19,525

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
2017	3,227	3,683	7,948	\$419	\$52,340	6.44%	283	\$1	\$4,304
2016	3,232	3,678	7,803	400	51,262	4.25	239	1	3,956
2015	3,247	3,283	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
2012	3,264	3,702	6,948	309	44,473	0.88	57	0	2,891
2011	3,248	3,695	6,714	296	44,087	3.13	36	0	2,828
2010	3,245	3,699	6,667	284	42,748	4.56	20	0	2,219
2009	3,264	3,714	6,335	258	40,884	2.91	8	0	1,635
2008	3,275	3,724	6,419	255	39,726	6.60	7	0	1,260

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 Traditional Pension and 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 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		
Valuation Year	Member-Directed Plan ¹			Combined Plan ¹		
	Number ²	Annual Allowance (\$ millions)	Average Allowance	Number ²	Annual Allowance (\$ millions)	Average Allowance
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
2012	62	0	3,516	38	0	2,922
2011	38	0	2,652	22	0	2,286
2010	18	0	2,275	12	0	1,920
2009	10	0	2,158	4	0	1,770
2008	4	0	3,468	5	0	1,778

¹ Plan inception January 1, 2003.

² Number represents an individual count of retirees and beneficiaries.

Retirees and Beneficiaries Added to and Removed from Rolls Actuarial Section

The tables below 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 the Year and the Average Annual Allowances represent the value of pension payments for the retiree population on the rolls at December 31, 2017.

The statistics presented below 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 (refer to the Plan Statement beginning on page 221 for a description of these benefits). Prior to 2011, the statistics excluded retired members with less than five years of service credit. Restated data for years prior to 2011 is not available.

Schedule of Retirees and Beneficiaries Added to and Removed from Rolls								Traditional Pension Plan	
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		
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
2012	11,263		281,185,485	5,772	87,465,474	189,357	4,501,952,331	6.8	23,775
2011 ^a	12,235		321,228,243	5,402	80,530,077	183,866	4,215,359,130	10.2	22,926
2010	10,607		278,758,820	4,041	59,271,884	173,235	3,824,710,874	8.0	22,078
2009	10,839		289,793,503	5,542	78,808,830	166,669	3,541,886,599	8.6	21,251
2008	9,240		225,548,983	4,124	56,416,940	161,372	3,261,996,219	7.4	20,214

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		
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
2012	19		59,135	0	0	55	158,191	68.4	2,876
2011 ^a	15		50,537	0	0	36	93,925	119.2	2,609
2010	11		29,695	0	0	19	42,849	228.7	2,255
2009	4		7,545	3	3,702	8	13,035	46.8	1,629
2008	5		5,492	0	0	7	8,879	162.2	1,268

^a Data aggregation methodology modified from values reported in the 2011 Comprehensive Annual Financial Report.

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

² Plan inception January 1, 2003.

The Schedules of Funding Progress below include the Traditional Pension Plan, the defined benefit component of the Combined Plan and the actuarial impact of 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. New to this section are 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 197 and 199 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 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
2017	\$102,656	\$83,292	\$19,364	81%	\$13,498	143%	18
2016	100,166	80,280	19,886	80	13,186	151	19
2015 ^a	97,177	78,061	19,116	80	12,688	148	20
2015 ^b	91,832	78,061	13,771	85	12,688	105	19
2014	89,285	74,865	14,420	84	12,486	114	21
2013	86,645	71,411	15,234	82	12,331	124	24
2012	83,878	67,855	16,023	81	12,194	131	26
2011	84,530	65,436	19,094	77	12,399	154	30
2010 ^a	80,485	63,649	16,836	79	12,449	135	24
2010 ^b	79,630	60,600	19,030	76	12,449	153	29
2009	76,555	57,629	18,926	75	12,548	151	30
2008	73,466	55,315	18,151	75	12,801	142	30

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
2017	\$102,274	\$82,797	\$19,477	81%	\$13,085	149%	19
2016	99,818	79,865	19,953	80	12,794	156	20
2015 ^a	96,863	77,700	19,163	80	12,321	156	20
2015 ^b	91,535	77,700	13,835	85	12,321	112	19
2014	89,017	74,567	14,450	84	12,140	119	21
2013	86,407	71,175	15,232	82	12,000	127	25
2012	83,664	67,670	15,994	81	11,885	135	26
2011	84,325	65,274	19,051	77	12,103	157	30
2010 ^a	80,307	63,515	16,792	79	12,165	138	25
2010 ^b	79,459	60,461	18,998	76	12,165	156	30
2009	76,407	57,519	18,888	75	12,290	154	30
2008	73,346	55,230	18,116	75	12,546	144	30

^a Revised actuarial assumptions based on experience study.

^b Results from original valuation prior to re-statement after completion of experience study.

¹ The amounts reported on this schedule do not include assets or liabilities for health care.

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
2017	\$365	\$479	(\$114)	131%	\$413	0%	0
2016	336	402	(66)	120	392	0	0
2015 ^a	303	350	(47)	116	367	0	0
2015 ^b	288	350	(62)	122	367	0	0
2014	260	289	(29)	111	346	0	0
2013	230	229	1	100	331	0	0
2012	212	183	29	86	309	9	1
2011	203	161	42	79	296	14	2
2010 ^a	177	134	43	76	284	15	3
2010 ^b	171	138	33	81	284	12	2
2009	148	110	38	74	258	15	3
2008	120	85	35	71	255	14	4

^a Revised actuarial assumptions based on experience study.

^b Results from original valuation prior to re-statement after completion of experience study.

¹ The amounts reported on this schedule do not include assets or liabilities for health care.

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 schedule below 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
2017	\$16,770	\$16,770	\$0	100%	N/A	N/A
2016 ^c	12,961	12,961	0	100	N/A	N/A
2015 ^a	10,291	10,622	(331)	103	N/A	N/A
2015 ^b	9,767	10,622	(855)	109	N/A	N/A
2014	8,291	8,772	(481)	106	N/A	N/A
2013	6,884	6,826	58	99	N/A	N/A
2012	2,666	2,524	142	95	N/A	N/A
2011	1,173	1,156	17	99	N/A	N/A
2010 ^a	496	454	42	92	N/A	N/A
2010 ^b	490	439	51	90	N/A	N/A
2009	253	206	47	81	N/A	N/A
2008	166	148	18	89	N/A	N/A

^a Revised actuarial assumptions based on experience study.

^b Results from original valuation prior to re-statement after completion of experience study.

^c Restated upon finalization of actuarial valuation subsequent to issuance of the 2016 CAFR.

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.

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 schedule below 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 (UAAL)	Ratio of Assets to AAL	Active Member Payroll ¹	UAAL as Percent of Active Member Payroll ¹	Solvency Years ²
2016	\$19,924	\$12,098	\$7,826	60.7%	\$14,058	56%	12
2015 ^a	19,224	11,933	7,291	62.1	12,951	56	Indefinite
2015 ^b	18,515	11,933	6,582	64.5	12,951	50	Indefinite
2014	19,405	12,062	7,343	62.2	12,654	58	Indefinite
2013	19,784	12,031	7,753	60.8	12,331	63	Indefinite
2012	19,182	12,193	6,989	63.6	12,194	57	Indefinite
2011	31,020	12,115	18,905	39.1	12,399	153	10
2010 ^a	30,531	12,320	18,211	40.4	12,449	146	11
2010 ^b	26,929	11,267	15,662	41.8	12,449	126	11
2009	31,558	10,936	20,622	34.7	12,548	165	11
2008	29,623	10,748	18,875	36.3	12,801	147	11
2007	29,825	12,801	17,024	42.9	12,584	135	31

^a Revised actuarial assumptions based on experience study.

^b Results from original valuation prior to re-statement after completion of experience study.

¹ Starting in 2016, the Active Member Payroll includes the Member-Directed Plan with the implementation of GASB 74 as this health care was considered to be defined benefit in nature.

² Solvency years represent 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 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 means of checking a plan’s progress under its funding program. In a short-term solvency test, the plan’s present assets (cash and investments) are compared to: 1) active and inactive member contributions on deposit; 2) the liabilities for future benefits payable to present retired lives; and 3) the liabilities for service already rendered by active/inactive members.

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

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		
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) ^c	(3)
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 ^a	13,469	56,376	27,018	77,700	100	100	29
2015 ^b	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
2012	12,640	49,667	21,357	67,670	100	100	25
2011	12,299	46,588	25,439	65,274	100	100	25
2010 ^a	12,134	42,362	25,811	63,515	100	100	35
2010 ^b	12,134	41,715	25,609	60,461	100	100	26
2009	11,933	38,577	25,897	57,519	100	100	27
2008	11,546	35,485	26,315	55,230	100	100	31

^a Results restated based on experience study.

^b Results from original valuation prior to completion of experience study.

^c By law, OPERS is obligated to pay the 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.

¹ Does not include assets set aside for health care.

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) ^c	(3)
2017	\$3	\$23	\$340	\$479	100%	100%	133%
2016	3	18	315	402	100	100	121
2015 ^a	2	14	287	350	100	100	116
2015 ^b	3	13	272	350	100	100	123
2014	3	10	246	289	100	100	112
2013	2	6	223	229	100	100	100
2012	2	3	207	183	100	100	86
2011	1	2	200	161	100	100	79
2010 ^a	1	1	175	134	100	100	75
2010 ^b	1	1	169	138	100	100	80
2009	1	0	147	110	100	100	74
2008	1	0	119	85	100	100	71

^a Results restated based on experience study.

^b Results from original valuation prior to completion of experience study.

^c By law, OPERS is obligated to pay the 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.

¹ Does not include assets set aside for health care.

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

Analysis of Financial Experience (continued on next page)				
Type of Activity	Gains (or Losses) for Year (\$ in millions)			
	2017	2016	2015	2014
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.	\$62.2	\$55.5	\$71.6	(\$91.9)
Disability Retirements When disability claims are less than assumed, a gain results. If claims are greater than assumed, a loss occurs.	72.8	61.2	83.1	95.0
Death-In-Service Annuities When survivor claims are less than assumed, a gain results. If claims are greater than assumed, a loss occurs.	36.0	41.3	41.0	40.4
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.	(6.1)	5.2	22.1	4.7
Pay Increases When pay increases are less than assumed, a gain results. If pay increases are greater than assumed, a loss occurs.	410.6	(48.1)	367.1	461.8
Investment Return When investment returns are greater than assumed, a gain results. If investment returns are less than assumed, a loss occurs.	203.5	(467.8)	261.6	471.3
Retiree Mortality 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.	82.4	31.9	74.4	95.8
Gains/(Losses) During Year From Financial Experience	\$861.4	(\$320.8)	\$920.9	\$1,077.1

Analysis of Financial Experience (continued on next page)				
Type of Activity	Gains (or Losses) for Year (\$ in millions)			
	2017	2016	2015	2014
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	\$0.06	\$0.07	(\$0.16)
Disability Retirements When disability claims are less than assumed, a gain results. If claims are greater than assumed, a loss occurs.	4.30	3.82	3.93	4.66
Death-In-Service Annuities When survivor claims are less than assumed, a gain results. If claims are greater than assumed, a loss occurs.	(0.04)	0.94	0.42	1.04
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.	(1.16)	(0.44)	0.23	(0.74)
Pay Increases When pay increases are less than assumed, a gain results. If pay increases are greater than assumed, a loss occurs.	9.89	4.09	5.92	4.92
Investment Return When investment returns are greater than assumed, a gain results. If investment returns are less than assumed, a loss occurs.	3.99	(2.02)	(0.08)	3.05
Retiree Mortality 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.	0.02	(0.03)	0.29	0.04
Gains/(Losses) During Year From Financial Experience	\$17.21	\$6.42	\$10.78	\$12.81

Actual vs. Recommended Contribution Rates

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

Traditional Pension Plan					
Gains (or Losses) for Year (\$ in millions)					
2013	2012	2011	2010	2009	2008
(\$77.2)	(\$113.2)	(\$179.0)	(\$20.5)	(\$27.5)	\$10.1
64.0	71.6	88.1	59.2	74.0	39.1
29.5	42.0	36.1	32.0	34.6	31.7
(13.0)	8.9	15.9	99.8	(58.9)	(27.9)
551.7	1,261.7	359.5	773.7	1,141.8	220.2
617.1	(398.4)	(1,193.8)	153.5	(620.5)	(15,813.5)
140.4					
\$1,312.5	\$872.6	(\$873.2)	\$1,097.7	\$543.5	(\$15,540.3)

Combined Plan					
Gains (or Losses) for Year (\$ in millions)					
2013	2012	2011	2010	2009	2008
(\$0.09)	(\$0.11)	(\$0.09)	(\$0.12)	(\$0.12)	(\$0.06)
4.34	4.86	4.52	2.78	2.07	1.94
0.66	0.59	(0.02)	0.04	0.53	0.05
(0.09)	0.44	0.55	(1.67)	7.56	1.98
5.53	7.55	3.00	2.29	(3.35)	(0.21)
2.84	(0.38)	(2.69)	(3.44)	(3.25)	(23.83)
0.10					
\$13.29	\$12.95	\$5.27	(\$0.12)	\$3.44	(\$20.13)

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Statistical Section



Moving forward requires a defined starting point

You just can't get there from here—a common phrase when discussing a major undertaking. Of course, almost any destination can be attained with a clear starting point, detailed instructions, and a defined goal—all broken down into small steps throughout the journey.

When starting in a public position, few are thinking about retirement. Yet, the OPERS professionals provide the many small attainable steps, clearly explained, for all members at all stages of their careers. Each small step will take each member closer to his/her retirement destination—a destination that becomes clearer and clearer with each year in employment. We know how to gather just the right information and light the way so that all members can manage all the steps necessary to attain a secure retirement.

OPERS fact: Ohio maintains dozens of lighthouses along its many waterways. Many lighthouses are the property of the Ohio Department of Natural Resources (ODNR). As a state department, ODNR employees are OPERS members.



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 by Year,
- Changes in Fiduciary Net Position,
- Additions by Source,
- Deductions by Type,
- Benefits by Type,
- Refunds by Type, and
- Number of Refund Payments by Plan.

The schedules on page 197 through 198 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 page 199 through 200 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. The overall objective is to maintain a funding level that will meet all future health care obligations. Refer to the schedules of pension and health care assets vs. liabilities.

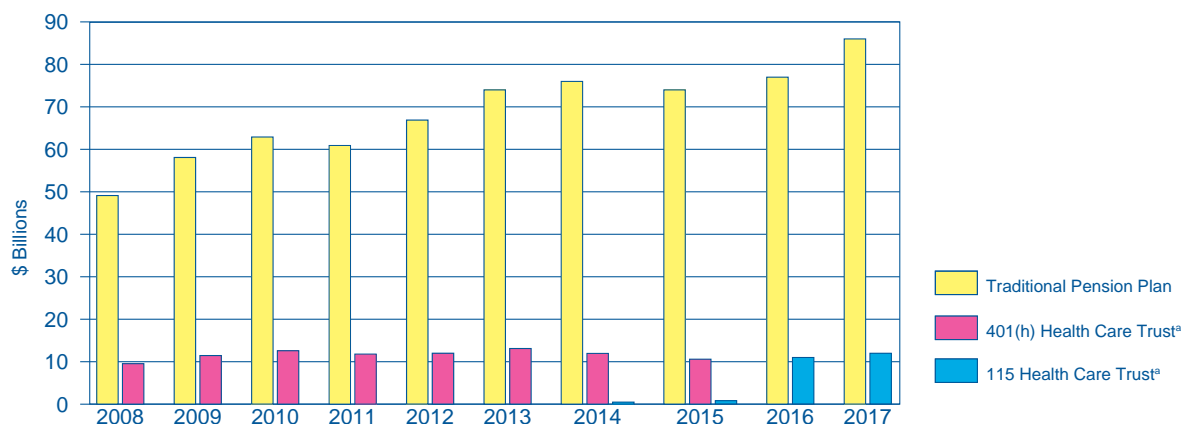
The schedules beginning on page 196 show demographic and economic information and operating information. The demographic and economic information is designed to assist in understanding the environment in which OPERS operates. The operating information is intended to provide contextual information about operations to assist in assessing the System's economic condition. The demographic and economic information, and the operating information presented includes:

- Funds Restricted for Member Health Care Accounts,
- Pension Assets vs. Pension Liabilities,
- Health Care Assets vs. Liabilities,
- Investment Rates by Portfolio—Defined Benefit and Health Care,
- 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,
- 2017 Pension Benefits and Retirees by Ohio County,
- Retirees by Geographic Location,
- Contribution Rates,
- Number of Employer Units, and
- Principal Participating Employers.

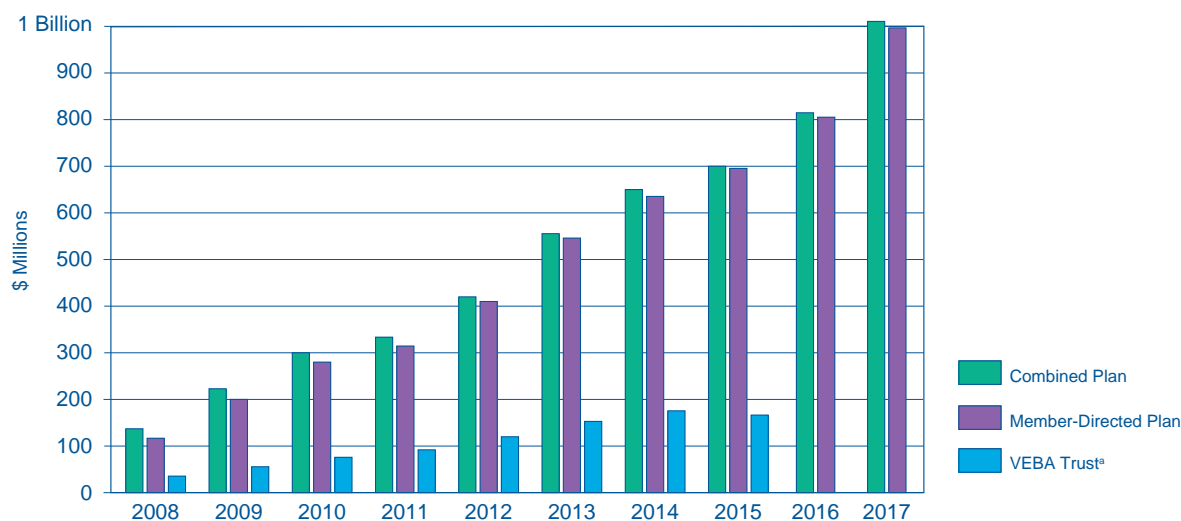
All non-accounting data is derived from OPERS internal sources.

Statistical Section

Net Position by Plan Traditional Pension Plan, 401(h) Health Care Trust, 115 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 Trust	Total Net Position
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
2012	67,668,091,799	420,197,546	410,662,967		12,828,625,322	119,615,875	81,447,193,509
2011 ^b	61,330,891,370	333,095,015	317,193,338		11,959,000,311	90,696,132	74,030,876,166
2010 ^b	63,153,243,166	300,437,631	279,096,442		12,682,612,422	76,231,029	76,491,620,690
2009	57,630,423,957	223,384,797	200,588,070		11,415,195,274	55,784,131	69,525,376,229
2008	49,312,811,154	138,950,485	117,342,021		9,596,082,077	36,333,066	59,201,518,803

^a The 401(h) Health Care Trust and the Voluntary Employees' Beneficiary Association (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.

^b Net Position by Plan was restated to correct allocation of investment income as of December 31, 2010, with the restatement rolled forward through 2011 and 2012. The restatement by plan does not impact the total net position of the System.


¹ The 115 Health Care Trust was established in 2014.


				
Year	2017	2016	2015	2014
All Plans				
Employees' Savings Fund	\$14,300,330,700	\$13,914,959,537	\$13,471,062,846	\$13,194,306,671
Employers' Accumulation Fund—Pension/Health Care	25,650,181,722	19,218,910,213	16,076,648,809	22,768,644,951
Annuity and Pension Reserve Fund	58,106,232,497	54,462,722,183	54,705,647,821	52,331,183,968
Survivors' Benefit Fund	1,742,699,663	1,669,466,891	1,694,085,497	1,675,926,615
Defined Contribution Fund—Retirement/Health Care	1,502,124,254	1,216,155,401	1,219,165,845	1,154,079,903
Income Fund	112,115,080	123,776,306	122,714,098	114,494,235
Expense Fund	12,135,920	4,833,694	2,076,902	5,258,765
Total Fund Balance	\$101,425,819,836	\$90,610,824,225	\$87,291,401,818	\$91,243,895,108
Traditional Pension Plan				
Employees' Savings Fund	\$14,297,505,057	\$13,912,277,541	\$13,468,694,332	\$13,191,067,352
Employers' Accumulation Fund—Pension	12,351,857,327	6,965,583,478	4,243,982,790	9,655,043,969
Annuity and Pension Reserve Fund	58,069,537,977	54,433,695,575	54,681,766,733	52,314,439,706
Survivors' Benefit Fund	1,742,699,663	1,669,466,891	1,694,085,497	1,675,926,615
Income Fund	112,115,080	123,776,306	122,714,098	114,494,235
Expense Fund	12,135,920	4,833,694	2,076,902	5,258,765
Total Fund Balance	\$86,585,851,024	\$77,109,633,485	\$74,213,320,352	\$76,956,230,642
Combined Plan				
Employees' Savings Fund	\$2,587,678	\$2,629,485	\$2,343,149	\$2,994,501
Employers' Accumulation Fund—Pension	476,864,676	372,135,835	320,876,515	286,747,478
Annuity and Pension Reserve Fund	21,799,531	17,116,877	13,366,406	8,359,792
Defined Contribution Fund—Retirement	521,166,144	423,969,820	364,328,339	352,147,956
Total Fund Balance	\$1,022,418,029	\$815,852,017	\$700,914,409	\$650,249,727
Member-Directed Plan				
Employees' Savings Fund	\$237,965	\$52,511	\$25,365	\$244,818
Employers' Accumulation Fund—Pension	2,626,054	703,037	(390,717)	250,542
Annuity and Pension Reserve Fund	14,894,989	11,909,731	10,514,682	8,384,470
Defined Contribution Fund—Retirement	980,958,110	792,185,581	688,390,700	626,392,783
Total Fund Balance	\$998,717,118	\$804,850,860	\$698,540,030	\$635,272,613
115 Health Care Trust¹				
Employers' Accumulation Fund—Health Care	\$12,818,833,665	\$11,880,487,863	\$841,112,040	\$386,080,172
Total Fund Balance	\$12,818,833,665	\$11,880,487,863	\$841,112,040	\$386,080,172
401(h) Health Care Trust¹				
Employers' Accumulation Fund—Health Care			\$10,671,068,181	\$12,440,522,790
Total Fund Balance			\$10,671,068,181	\$12,440,522,790
Voluntary Employees' Beneficiary Association Trust¹				
Defined Contribution Fund—Health Care			\$166,446,806	\$175,539,164
Total Fund Balance			\$166,446,806	\$175,539,164

^a Net Position by Plan was restated to correct the allocation of investment income as of December 31, 2010, with restatement rolled forward through 2011 and 2012. The restatement by plan does not impact the total net position of the System.

¹ The 115 Health Care Trust was established in 2014. The 401(h) Health Care Trust and the Voluntary Employees' Beneficiary Association 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.


Statistical Section

					
2013	2012	2011 ^a	2010 ^a	2009	2008
\$12,828,423,536 22,852,975,720 50,525,254,541 1,654,787,855 1,011,655,646 113,671,739 3,167,261	\$12,641,655,468 19,074,270,351 47,232,908,883 1,627,212,197 763,702,610 107,444,000	\$12,300,117,438 15,959,261,830 43,513,048,458 1,568,050,108 587,622,632 99,016,985 3,758,715	\$12,134,839,989 22,278,219,189 39,927,499,750 1,527,374,797 522,426,170 99,070,651 2,190,144	\$11,933,642,333 20,026,006,552 35,616,195,176 1,472,264,995 376,419,373 95,184,666 5,663,134	\$11,546,208,967 13,503,733,507 32,410,382,036 1,418,388,692 216,885,601 100,226,117 5,693,883
\$88,989,936,298	\$81,447,193,509	\$74,030,876,166	\$76,491,620,690	\$69,525,376,229	\$59,201,518,803
\$12,826,142,567 9,507,406,396 50,513,356,451 1,654,787,855 113,671,739 3,167,261	\$12,639,906,042 6,066,140,290 47,227,389,270 1,627,212,197 107,444,000	\$12,298,673,251 3,850,924,715 43,510,467,596 1,568,050,108 99,016,985 3,758,715	\$12,133,856,642 9,464,360,661 39,926,390,271 1,527,374,797 99,070,651 2,190,144	\$11,932,873,455 8,508,596,858 35,615,840,849 1,472,264,995 95,184,666 5,663,134	\$11,545,651,011 3,832,714,973 32,410,136,478 1,418,388,692 100,226,117 5,693,883
\$74,618,532,269	\$67,668,091,799	\$61,330,891,370	\$63,153,243,166	\$57,630,423,957	\$49,312,811,154
\$1,894,549 233,588,347 5,481,510 318,648,483	\$1,606,472 179,466,995 3,114,881 236,009,198	\$1,362,904 149,374,928 1,514,253 180,842,930	\$975,589 131,266,975 644,239 167,550,828	\$768,977 102,108,811 251,905 120,255,104	\$557,956 74,976,136 73,758 63,342,635
\$559,612,889	\$420,197,546	\$333,095,015	\$300,437,631	\$223,384,797	\$138,950,485
\$386,420 296,170 6,416,580 539,922,867	\$142,954 37,744 2,404,732 408,077,537	\$81,283 (38,124) 1,066,609 316,083,570	\$7,758 (20,869) 465,240 278,644,313	(\$99) 105,609 102,422 200,380,138	(\$39,679) 171,800 117,209,900
\$547,022,037	\$410,662,967	\$317,193,338	\$279,096,442	\$200,588,070	\$117,342,021
\$13,111,684,807	\$12,828,625,322	\$11,959,000,311	\$12,682,612,422	\$11,415,195,274	\$9,596,082,077
\$13,111,684,807	\$12,828,625,322	\$11,959,000,311	\$12,682,612,422	\$11,415,195,274	\$9,596,082,077
\$153,084,296	\$119,615,875	\$90,696,132	\$76,231,029	\$55,784,131	\$36,333,066
\$153,084,296	\$119,615,875	\$90,696,132	\$76,231,029	\$55,784,131	\$36,333,066

		(continued through page 173)			
Year	2017	2016	2015	2014	
All Plans					
Assets					
Cash and Cash Equivalents	\$4,625,708,094	\$4,586,305,505	\$3,064,065,686	\$2,882,858,353	
Receivables	1,113,071,247	1,112,083,698	954,980,282	1,088,837,041	
Investments	96,357,409,903	85,449,650,603	83,819,475,118	87,891,142,075	
Collateral on Loaned Securities	7,935,816,160	8,288,355,523	8,270,812,672	7,854,368,780	
Net Capital Assets	131,801,306	132,961,073	132,811,651	133,629,210	
Prepaid Expenses and Other Assets	1,304,949	764,515	1,217,369	2,261,461	
Total Assets	110,165,111,659	99,570,120,917	96,243,362,778	99,853,096,920	
Liabilities and Net Position					
Benefits Payable	114,904,201	110,396,253	93,550,718	99,844,976	
Investment Commitments Payable	671,584,704	539,826,060	475,568,951	593,164,943	
Obligations Under Securities Lending	7,933,640,759	8,285,285,181	8,271,338,789	7,852,803,699	
Other Liabilities	19,162,159	23,789,198	111,502,502	63,388,194	
Net Position (Fund Balance)	101,425,819,836	90,610,824,225	87,291,401,818	91,243,895,108	
Total Liabilities and Net Position	\$110,165,111,659	\$99,570,120,917	\$96,243,362,778	\$99,853,096,920	
Traditional Pension Plan					
Assets					
Cash and Cash Equivalents	\$3,781,114,065	\$3,695,255,724	\$2,381,670,021	\$2,357,796,670	
Receivables	954,982,358	880,590,006	637,347,978	709,932,322	
Investments	82,334,875,328	72,913,065,131	71,514,345,166	74,279,082,505	
Collateral on Loaned Securities	7,891,300,747	8,247,367,947	8,215,428,672	7,809,036,934	
Net Capital Assets	99,218,172	98,085,389	96,541,605	96,963,543	
Prepaid Expenses and Other Assets	1,304,949	764,515	1,217,369	2,261,461	
Total Assets	95,062,795,619	85,835,128,712	82,846,550,811	85,255,073,435	
Liabilities and Net Position					
Benefits Payable	260,431	1,253,982	255,699	311,575	
Investment Commitments Payable	568,614,823	456,426,672	393,965,905	475,297,939	
Obligations Under Securities Lending	7,889,137,549	8,244,312,788	8,215,951,266	7,807,480,885	
Other Liabilities	18,931,792	23,501,785	23,057,589	15,752,394	
Net Position (Fund Balance)	86,585,851,024	77,109,633,485	74,213,320,352	76,956,230,642	
Total Liabilities and Net Position	\$95,062,795,619	\$85,835,128,712	\$82,846,550,811	\$85,255,073,435	
Combined Plan					
Assets					
Cash and Cash Equivalents	\$18,789,542	\$15,750,245	\$10,566,328	\$8,947,770	
Receivables	14,429,447	12,005,543	22,378,455	21,472,538	
Investments	988,897,434	787,029,411	674,801,893	623,991,406	
Collateral on Loaned Securities	42,918,686	39,693,971	34,258,885	27,497,528	
Net Capital Assets	3,947,072	3,885,497	3,950,559	3,998,438	
Total Assets	1,068,982,181	858,364,667	745,956,120	685,907,680	
Liabilities and Net Position					
Investment Commitments Payable	3,657,231	2,833,383	1,801,004	1,787,256	
Obligations Under Securities Lending	42,906,921	39,679,267	34,261,065	27,492,049	
Other Liabilities			8,979,642	6,378,648	
Net Position (Fund Balance)	1,022,418,029	815,852,017	700,914,409	650,249,727	
Total Liabilities and Net Position	\$1,068,982,181	\$858,364,667	\$745,956,120	\$685,907,680	
Member-Directed Plan					
Assets					
Cash and Cash Equivalents	\$1,938,245	\$666,696	\$334,220	\$274,295	
Receivables	13,193,710	11,590,244	23,237,455	21,577,499	
Investments	981,494,690	790,661,959	677,842,112	638,145,075	
Collateral on Loaned Securities	1,596,727	1,293,605	2,237,421	767,134	
Net Capital Assets	2,891,519	2,962,075	3,025,179	3,150,369	
Total Assets	1,001,114,891	807,174,579	706,676,387	663,914,372	
Liabilities and Net Position					
Investment Commitments Payable	801,484	1,030,593	245,260	137,585	
Obligations Under Securities Lending	1,596,289	1,293,126	2,237,563	766,982	
Other Liabilities			5,653,534	27,737,192	
Net Position (Fund Balance)	998,717,118	804,850,860	698,540,030	635,272,613	
Total Liabilities and Net Position	\$1,001,114,891	\$807,174,579	\$706,676,387	\$663,914,372	


See footnotes on page 172.

Statistical Section

 Fiduciary Net Position by Year					
2013	2012	2011 ^a	2010 ^a	2009	2008
\$3,333,382,605 1,092,845,990 85,137,610,781 6,958,964,420 131,389,851 2,912,709	\$2,780,697,535 2,212,003,770 77,617,850,120 6,827,172,458 121,172,935 3,841,978	\$2,847,839,851 1,554,352,796 71,149,016,095 10,401,223,945 112,092,861 779,630	\$3,654,805,279 1,437,458,798 72,661,379,153 9,250,107,607 112,130,055 471,611	\$1,742,538,072 1,976,201,742 66,819,524,257 9,978,449,975 113,508,936 236,290	\$1,429,632,493 1,016,153,104 57,289,210,006 7,665,906,536 117,521,350 284,846
96,657,106,356	89,562,738,796	86,065,305,178	87,116,352,503	80,630,459,272	67,518,708,335
90,115,030 554,398,461 6,953,717,885 68,938,682 88,989,936,298	101,188,640 1,116,869,935 6,816,672,766 80,813,946 81,447,193,509	119,591,363 1,423,836,318 10,410,130,422 80,870,909 74,030,876,166	142,993,825 1,155,469,120 9,250,107,607 76,161,261 76,491,620,690	140,959,867 916,348,545 9,978,449,975 69,324,656 69,525,376,229	131,922,479 437,680,710 7,665,906,536 81,679,807 59,201,518,803
\$96,657,106,356	\$89,562,738,796	\$86,065,305,178	\$87,116,352,503	\$80,630,459,272	\$67,518,708,335
\$2,826,596,339 760,735,070 71,393,042,048 6,924,316,299 98,948,820 2,912,709	\$2,324,824,614 1,690,953,615 64,487,332,183 6,797,920,566 85,661,140 3,841,978	\$2,321,930,951 1,181,127,055 58,890,460,789 10,363,838,801 84,923,332 779,630	\$2,969,362,112 1,039,459,387 59,973,039,802 7,708,958,738 85,155,975 471,611	\$1,652,107,085 915,977,579 55,741,813,567 9,653,891,069 86,063,353 236,290	\$1,208,848,813 741,420,763 47,649,655,710 5,357,710,312 91,213,500 284,846
82,006,551,285	75,390,534,096	72,843,060,558	71,776,447,625	68,050,088,943	55,049,133,944
78,477 451,977,660 6,919,095,886 16,866,993 74,618,532,269	682,136 918,234,060 6,787,465,861 16,060,240 67,668,091,799	1,061,656 1,124,645,829 10,372,713,265 13,748,438 61,330,891,370	31,862 899,118,485 7,708,958,738 15,095,374 63,153,243,166	6,950,608 749,608,796 9,653,891,069 9,214,513 57,630,423,957	130,259 364,423,724 5,357,710,312 14,058,495 49,312,811,154
\$82,006,551,285	\$75,390,534,096	\$72,843,060,558	\$71,776,447,625	\$68,050,088,943	\$55,049,133,944
\$9,425,463 17,071,301 534,668,467 20,966,014 3,921,730	\$6,574,926 9,350,843 416,161,716 18,059,949 4,357,765	\$6,248,674 7,707,808 339,986,995 23,506,898 65,084	\$7,127,776 6,892,606 303,637,263 15,196,825 34,750	\$3,716,643 6,259,012 233,771,271 16,765,205 1,932	\$2,982,361 5,788,861 157,027,020 7,044,675 118
586,052,975	454,505,199	377,515,459	332,889,220	260,514,063	172,843,035
1,549,789 20,950,208 3,940,089 559,612,889	2,690,744 18,032,174 13,584,735 420,197,546	2,823,632 23,527,027 18,069,785 333,095,015	1,950,989 15,196,825 15,303,775 300,437,631	1,942,496 16,765,205 18,421,565 223,384,797	1,527,796 7,044,675 25,320,079 138,950,485
\$586,052,975	\$454,505,199	\$377,515,459	\$332,889,220	\$260,514,063	\$172,843,035
\$282,346 15,586,438 560,933,809 482,373 2,856,649	\$91,299 6,821,748 432,851,458 205,837 3,667,974	\$980,013 7,353,279 338,695,474 111,647 94,933	\$1,349,705 5,657,850 301,502,301 40,463 38,662	\$2,322,907 5,901,916 221,224,028 30,222 2,294	\$2,194,785 5,995,977 137,235,988 9,177 137
580,141,615	443,638,316	347,235,346	308,588,981	229,481,367	145,436,064
196,803 482,009 32,440,766 547,022,037	155,855 205,521 32,613,973 410,662,967	123,669 111,743 29,806,596 317,193,338	6,707 40,463 29,445,369 279,096,442	787,160 30,222 28,075,915 200,588,070	1,585,226 9,177 26,499,640 117,342,021
\$580,141,615	\$443,638,316	\$347,235,346	\$308,588,981	\$229,481,367	\$145,436,064


continued on page 172

continued from page 171

				
Year	2017	2016	2015	2014
115 Health Care Trust¹				
Assets				
Cash and Cash Equivalents	\$823,866,242	\$874,632,840	\$228,930,728	\$7,797,254
Receivables	130,465,732	207,897,905	173,883,586	197,641,190
Investments	12,052,142,451	10,958,894,102	484,975,264	182,748,955
Net Capital Assets	25,744,543	28,028,112	1,441,984	
Total Assets	13,032,218,968	12,069,452,959	889,231,562	388,187,399
Liabilities and Net Position				
Benefits Payable	114,643,770	109,142,271	1,634,811	
Investment Commitments Payable	98,511,166	79,535,412	1,789,658	1,803,774
Other Liabilities	230,367	287,413	44,695,053	303,453
Net Position (Fund Balance)	12,818,833,665	11,880,487,863	841,112,040	386,080,172
Total Liabilities and Net Position	\$13,032,218,968	\$12,069,452,959	\$889,231,562	\$388,187,399
401(h) Health Care Trust¹				
Assets				
Cash and Cash Equivalents			\$437,888,805	\$503,893,407
Receivables			83,230,392	125,472,731
Investments			10,314,427,768	12,008,141,647
Collateral on Loaned Securities				
Net Capital Assets			27,020,679	28,631,421
Total Assets			10,862,567,644	12,666,139,206
Liabilities and Net Position				
Benefits Payable			91,451,759	99,279,185
Investment Commitments Payable			76,923,764	113,120,724
Obligations Under Securities Lending				
Other Liabilities			23,123,940	13,216,507
Net Position (Fund Balance)			10,671,068,181	12,440,522,790
Total Liabilities and Net Position			\$10,862,567,644	\$12,666,139,206
Voluntary Employees' Beneficiary Association Trust¹				
Assets				
Cash and Cash Equivalents			\$4,675,584	\$4,148,957
Receivables			14,902,416	12,740,761
Investments			153,082,915	159,032,487
Collateral on Loaned Securities			18,887,694	17,067,184
Net Capital Assets			831,645	885,439
Total Assets			192,380,254	193,874,828
Liabilities and Net Position				
Benefits Payable			208,449	254,216
Investment Commitments Payable			843,360	1,017,665
Obligations Under Securities Lending			18,888,895	17,063,783
Other Liabilities			5,992,744	
Net Position (Fund Balance)			166,446,806	175,539,164
Total Liabilities and Net Position			\$192,380,254	\$193,874,828


^a Net Position by Plan was restated to correct the allocation of investment income as of December 31, 2010, with the restatement rolled forward through 2011 and 2012. The adjustment is reflected in the Cash and Cash Equivalents line and has no impact on the total net position of the System.

¹ The 115 Health Care Trust was established in 2014. The 401(h) Health Care Trust and the Voluntary Employees' Beneficiary Association 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.

 Changes in Fiduciary Net Position (last 10 fiscal years) (continued through page 181)				
Year	2017	2016	2015	2014
All Plans				
Additions				
Member Contributions	\$1,421,754,296	\$1,387,215,220	\$1,332,308,994	\$1,307,428,830
Employer Contributions	1,989,941,685	1,941,632,324	1,864,823,741	1,829,907,525
Contracts and Other Receipts ¹	93,061,535	172,338,832	172,067,637	270,728,202
Retiree-Paid Health Care Premiums ¹		184,368,783	248,601,375	238,406,380
Federal Subsidy ¹		4,065,058	175,930,875	176,619,891
Net Income/(Loss) from Investing Activity	14,619,914,555	6,926,572,065	9,415,961	5,775,317,835
Other Income/(Expense), net	2,641,100	(2,544,366)	(4,887,359)	8,304,360
Interplan Activity	20,961,756	17,205,339	19,759,373	10,357,663
Total Additions	18,148,274,927	10,630,853,255	3,818,020,597	9,617,070,686
Deductions				
Pension Benefits	5,839,789,809	5,588,000,966	5,401,880,992	5,112,123,787
Health Care Expenses ¹	952,001,573	1,197,374,344	1,822,571,428	1,740,814,106
Refunds of Contributions	443,220,698	429,791,141	449,265,410	425,701,829
Administrative Expenses	77,305,480	79,059,058	77,036,684	74,114,491
Interplan Activity	20,961,756	17,205,339	19,759,373	10,357,663
Total Deductions	7,333,279,316	7,311,430,848	7,770,513,887	7,363,111,876
Net Increase/(Decrease)	10,814,995,611	3,319,422,407	(3,952,493,290)	2,253,958,810
Net Position Held in Trust, Beginning of Year	90,610,824,225	87,291,401,818	91,243,895,108	88,989,936,298
Net Position Held in Trust, End of Year	\$101,425,819,836	\$90,610,824,225	\$87,291,401,818	\$91,243,895,108
Traditional Pension Plan²				
Additions				
Member Contributions	\$1,324,457,501	\$1,294,853,664	\$1,246,732,014	\$1,228,144,074
Employer Contributions	1,722,856,378	1,556,529,162	1,498,679,737	1,476,074,083
Contracts and Other Receipts	90,937,696	77,862,156	75,209,820	114,830,564
Net Income/(Loss) from Investing Activity	12,586,432,979	5,947,233,326	274,898,652	5,056,307,357
Other Income/(Expense), net	2,516,572	(2,560,081)	(4,887,369)	625,549
Interplan Activity	20,961,756	11,168,557	19,759,373	10,357,663
Total Additions	15,748,162,882	8,885,086,784	3,110,392,227	7,886,339,290
Deductions				
Pension Benefits	5,835,175,377	5,584,517,896	5,398,844,664	5,109,100,939
Refunds of Contributions	384,615,309	352,362,641	405,320,800	389,707,612
Administrative Expenses	52,154,657	51,871,700	49,137,053	49,832,366
Interplan Activity				
Total Deductions	6,271,945,343	5,988,752,237	5,853,302,517	5,548,640,917
Special Item³		(21,414)		
Net Increase/(Decrease)	9,476,217,539	2,896,313,133	(2,742,910,290)	2,337,698,373
Net Position Held in Trust, Beginning of Year	77,109,633,485	74,213,320,352	76,956,230,642	74,618,532,269
Net Position Held in Trust, End of Year	\$86,585,851,024	\$77,109,633,485	\$74,213,320,352	\$76,956,230,642


See footnotes on page 180.

Statistical Section

 Changes in Fiduciary Net Position					
2013	2012	2011*	2010	2009	2008
\$1,279,945,223	\$1,266,800,236	\$1,286,385,298	\$1,275,688,737	\$1,290,805,214	\$1,303,865,947
1,794,039,132	1,778,728,069	1,809,470,716	1,796,343,429	1,822,639,448	1,840,585,266
250,228,379	218,259,489	211,847,098	197,507,372	219,182,666	180,763,502
178,140,822	159,614,898	148,370,246	111,638,313	94,370,543	82,695,255
105,965,762	182,579,917	192,118,407	142,658,293	69,132,772	63,310,194
11,006,164,375	10,375,431,044	179,956,702	9,268,181,189	12,274,797,785	(22,770,412,901)
13,898,739	12,103,692	11,255,503	7,930,265	794,525	1,635,996
13,034,171	16,981,683	10,077,664	10,528,250	7,879,768	7,470,205
14,641,416,603	14,010,499,028	3,849,481,634	12,810,475,848	15,779,602,721	(19,290,086,536)
4,931,491,707	4,590,938,871	4,329,918,267	3,961,552,022	3,661,174,109	3,388,953,861
1,644,244,641	1,609,157,697	1,576,457,152	1,568,065,943	1,488,266,219	1,377,274,519
441,284,204	307,486,279	323,672,042	233,054,714	222,580,254	221,300,825
68,619,091	69,617,155	70,101,033	71,030,458	75,844,945	74,022,980
13,034,171	16,981,683	10,077,664	10,528,250	7,879,768	7,470,205
7,098,673,814	6,594,181,685	6,310,226,158	5,844,231,387	5,455,745,295	5,069,022,390
7,542,742,789	7,416,317,343	(2,460,744,524)	6,966,244,461	10,323,857,426	(24,359,108,926)
81,447,193,509	74,030,876,166	76,491,620,690	69,525,376,229	59,201,518,803	83,560,627,729
\$88,989,936,298	\$81,447,193,509	\$74,030,876,166	\$76,491,620,690	\$69,525,376,229	\$59,201,518,803
\$1,206,808,750	\$1,199,073,380	\$1,221,597,118	\$1,217,388,746	\$1,236,966,262	\$1,253,053,822
1,571,758,150	1,208,150,727	1,233,002,841	1,097,711,440	1,019,582,360	892,693,746
121,818,099	122,281,629	121,560,871	113,080,115	160,232,136	113,351,117
9,423,847,940	8,713,817,411	274,530,266	7,678,536,712	9,822,978,753	(19,258,540,437)
414,878	329,493	340,460	763,943	140,494	1,021,007
13,034,171	16,918,042	10,077,664	10,501,974	7,839,790	7,289,779
12,337,681,988	11,260,570,682	2,861,109,220	10,117,982,930	12,247,739,795	(16,991,130,966)
4,928,972,847	4,589,973,216	4,329,452,581	3,961,217,461	3,661,076,709	3,388,862,796
411,321,700	284,217,216	302,812,289	219,808,143	212,209,227	212,802,651
46,946,971	49,179,821	51,196,146	52,375,762	56,805,048	53,853,085
				36,008	180,426
5,387,241,518	4,923,370,253	4,683,461,016	4,233,401,366	3,930,126,992	3,655,698,958
6,950,440,470	6,337,200,429	(1,822,351,796)	5,884,581,564	8,317,612,803	(20,646,829,924)
67,668,091,799	61,330,891,370	63,153,243,166	57,630,423,957	49,312,811,154	69,959,641,078
\$74,618,532,269	\$67,668,091,799	\$61,330,891,370	\$63,515,005,521	\$57,630,423,957	\$49,312,811,154


continued on page 176

continued from page 175

 Changes in Fiduciary Net Position (last 10 fiscal years)				
Year	2017	2016	2015	2014
Combined Plan				
Additions				
Member Contributions	\$41,265,878	\$39,232,690	\$36,685,161	\$34,604,398
Employer Contributions	53,636,897	47,079,023	44,022,120	44,196,044
Contracts and Other Receipts	688,384	620,078	492,260	412,808
Net Income/(Loss) from Investing Activity	142,733,244	63,694,711	(6,501,919)	32,379,863
Other Income, net	2,135			
Interplan Activity				
Total Additions	238,326,538	150,626,502	74,697,622	111,593,113
Deductions				
Pension Benefits	3,089,538	1,981,664	1,791,115	2,230,987
Refunds of Contributions	16,220,141	21,857,512	12,577,944	10,974,442
Administrative Expenses	3,181,465	2,559,387	2,522,610	2,375,278
Interplan Activity	9,269,382	9,290,331	7,141,271	5,375,568
Total Deductions	31,760,526	35,688,894	24,032,940	20,956,275
Net Increase/(Decrease)	206,566,012	114,937,608	50,664,682	90,636,838
Net Position Held in Trust, Beginning of Year	815,852,017	700,914,409	650,249,727	559,612,889
Net Position Held in Trust, End of Year	\$1,022,418,029	\$815,852,017	\$700,914,409	\$650,249,727
Member-Directed Plan				
Additions				
Member Contributions	\$56,030,917	\$53,128,866	\$48,891,819	\$44,680,358
Employer Contributions	56,030,522	53,120,880	68,448,551	47,851,530
Contracts and Other Receipts	577,914	527,291	495,540	700,770
Net Income/(Loss) from Investing Activity	139,385,790	66,099,386	(13,070,950)	28,212,549
Other Income, net	4,511			
Interplan Activity				
Total Additions	252,029,654	172,876,423	104,764,960	121,445,207
Deductions				
Pension Benefits	1,524,894	1,501,406	1,245,213	791,861
Refunds of Contributions	42,385,248	55,570,988	31,366,666	25,019,775
Administrative Expenses	2,560,880	2,305,383	2,260,306	2,400,900
Interplan Activity	11,692,374	7,187,816	6,625,358	4,982,095
Total Deductions	58,163,396	66,565,593	41,497,543	33,194,631
Net Increase/(Decrease)	193,866,258	106,310,830	63,267,417	88,250,576
Net Position Held in Trust, Beginning of Year	804,850,860	698,540,030	635,272,613	547,022,037
Net Position Held in Trust, End of Year	\$998,717,118	\$804,850,860	\$698,540,030	\$635,272,613


See footnotes on page 180.

Statistical Section

 Changes in Fiduciary Net Position					
2013	2012	2011 ^a	2010	2009	2008
\$32,535,565	\$30,193,165	\$29,256,952	\$27,272,707	\$26,096,068	\$25,123,220
45,427,520	23,998,486	23,280,520	26,432,761	23,397,299	20,352,999
680,258	745,347	386,879	384,947	124,823	844,005
78,379,140	50,732,608	(5,810,229)	35,971,101	44,034,607	(53,571,566)
			1,267		68,857
157,022,483	105,669,606	47,114,122	90,062,783	93,652,797	(7,182,485)
1,526,005	610,545	305,215	128,366	35,566	11,911
7,731,155	6,173,714	6,462,849	3,540,043	2,905,883	3,623,723
2,264,293	2,295,688	2,559,312	2,584,673	2,638,279	2,990,092
6,085,687	9,487,128	5,129,362	6,043,719	3,638,757	4,105,870
17,607,140	18,567,075	14,456,738	12,296,801	9,218,485	10,731,596
139,415,343	87,102,531	32,657,384	77,765,982	84,434,312	(17,914,081)
420,197,546	333,095,015	300,437,631	223,384,797	138,950,485	156,864,566
\$559,612,889	\$420,197,546	\$333,095,015	\$301,150,779	\$223,384,797	\$138,950,485
\$40,600,908	\$37,533,691	\$35,531,228	\$31,027,284	\$27,742,884	\$25,688,905
38,540,851	35,646,573	33,746,291	29,527,197	26,356,764	24,411,834
785,072	492,890	802,270	462,075	173,832	223,485
88,633,791	46,860,344	(10,151,205)	34,223,485	42,835,328	(46,084,400)
			1,108		55,277
168,560,622	120,533,498	59,928,584	95,241,149	97,108,808	4,295,101
992,855	355,110	160,471	206,195	61,834	79,154
22,231,349	17,095,349	14,396,904	9,706,528	7,465,144	4,874,451
2,028,864	2,118,855	2,354,183	2,435,285	2,514,665	2,762,484
6,948,484	7,494,555	4,920,130	4,382,873	3,821,116	3,183,909
32,201,552	27,063,869	21,831,688	16,730,881	13,862,759	10,899,998
136,359,070	93,469,629	38,096,896	78,510,268	83,246,049	(6,604,897)
410,662,967	317,193,338	279,096,442	200,588,070	117,342,021	123,946,918
\$547,022,037	\$410,662,967	\$317,193,338	\$279,098,338	\$200,588,070	\$117,342,021

continued on page 178


continued from page 177

 Changes in Fiduciary Net Position (last 10 fiscal years)				
Year	2017	2016	2015	2014
115 Health Care Trust³				
Additions				
Employer Contributions	\$157,417,888	\$274,419,455	\$253,673,333	\$111,561,319
Contracts and Other Receipts ¹	857,541	93,306,585	95,860,582	143,813,190
Retiree-Paid Health Care Premiums ¹		184,368,783		
Federal Subsidy ¹		4,065,058	175,930,875	131,904,250
Net Income/(Loss) from Investing Activity	1,751,362,542	352,629,538	(23,073,355)	(1,193,356)
Other Income, net	117,882	15,715	10	76,970
Interplan Activity		6,036,782		
Total Additions	1,909,755,853	914,841,916	502,391,445	386,162,373
Deductions				
Health Care Expenses ¹	952,001,573	1,195,956,899	45,184,620	
Administrative Expenses	19,408,478	21,693,387	2,174,957	82,201
Total Deductions	971,410,051	1,217,650,286	47,359,577	82,201
Special Item³				
Net Increase/(Decrease)	938,345,802	11,039,375,823	455,031,868	386,080,172
Net Position Held in Trust, Beginning of Year	11,880,487,863	841,112,040	386,080,172	
Net Position Held in Trust, End of Year	\$12,818,833,665	\$11,880,487,863	\$841,112,040	\$386,080,172

401(h) Health Care Trust⁴				
Additions				
Employer Contributions				\$135,522,351
Contracts and Other Receipts			\$9,435	10,950,386
Retiree-Paid Health Care Premiums			248,601,375	238,406,380
Federal Subsidy				44,715,641
Net Income/(Loss) from Investing Activity		\$490,208,570	(223,464,384)	648,566,894
Other Income, net				7,601,841
Total Additions		490,208,570	25,146,426	1,085,763,493
Deductions				
Health Care Expenses			1,774,989,836	1,738,596,173
Administrative Expenses			19,611,199	18,329,337
Total Deductions			1,794,601,035	1,756,925,510
Special Item³				
Net Increase/(Decrease)		(10,671,068,181)	(1,769,454,609)	(671,162,017)
Net Position Held in Trust, Beginning of Year		10,671,068,181	12,440,522,790	13,111,684,807
Net Position Held in Trust, End of Year		\$0	\$10,671,068,181	\$12,440,522,790

See footnotes on page 180.


Statistical Section

 Changes in Fiduciary Net Position					
2013	2012	2011 ^a	2010	2009	2008

\$120,056,440	\$494,048,415	\$503,458,216	\$628,685,237	\$740,817,891	\$891,561,073
126,941,889	94,730,390	89,087,996	83,572,868	58,649,547	66,343,542
178,140,822	159,614,898	148,370,246	111,638,313	94,370,543	82,695,255
105,965,762	182,579,917	192,118,407	142,658,293	69,132,772	63,310,194
1,397,348,823	1,549,970,894	(78,923,627)	1,511,164,964	2,356,554,863	(3,400,647,342)
13,483,861	11,774,199	10,915,043	7,163,609	654,031	614,989
1,941,937,597	2,492,718,713	865,026,281	2,484,883,284	3,320,179,647	(2,296,122,289)
1,642,525,598	1,607,921,528	1,575,561,578	1,567,551,611	1,488,032,855	1,377,146,173
16,352,514	15,172,174	13,076,814	12,782,968	13,033,595	13,596,943
1,658,878,112	1,623,093,702	1,588,638,392	1,580,334,579	1,501,066,450	1,390,743,116
283,059,485	869,625,011	(723,612,111)	904,548,705	1,819,113,197	(3,686,865,405)
12,828,625,322	11,959,000,311	12,682,612,422	11,415,195,274	9,596,082,077	13,282,947,482
\$13,111,684,807	\$12,828,625,322	\$11,959,000,311	\$12,319,743,979	\$11,415,195,274	\$9,596,082,077

continued on page 180

continued from page 179

 Changes in Fiduciary Net Position (last 10 fiscal years)				
Year	2017	2016	2015	2014
Voluntary Employees' Beneficiary Association Trust Additions				
Employer Contributions ⁵		\$10,483,804		\$14,702,198
Contracts and Other Receipts		22,722		20,484
Net Income/(Loss) from Investing Activity		6,706,534	\$627,917	11,044,528
Other Income, net				
Interplan Activity				
Total Additions		17,213,060	627,917	25,767,210
Deductions				
Health Care Expenses		1,417,445	2,396,972	2,217,933
Administrative Expenses		629,201	1,330,559	1,094,409
Interplan Activity		727,192	5,992,744	
Total Deductions		2,773,838	9,720,275	3,312,342
Special Item³		(180,886,028)		
Net Increase/(Decrease)		(166,446,806)	(9,092,358)	22,454,868
Net Position Held in Trust, Beginning of Year		166,446,806	175,539,164	153,084,296
Net Position Held in Trust, End of Year		\$0	\$166,446,806	\$175,539,164

³ Net Position by Plan was restated to adjust the allocation of investment income as of December 31, 2010, with the restatement shown in the beginning net position of 2011. The restatement by plan does not impact the total net position of the System.

¹ Governmental Accounting Standards Board (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 Contracts and Other Receipts has been revised and is now included in Health Care Expenses, starting in 2017 upon implementation of this standard.


² The year 2009 was restated for reclassification of Alternative Retirement Plan contribution accrual from Employer Contributions to Contracts and Other Receipts.


³ 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 and 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.

⁴ The year 2010 was restated for reclassification of Early Retirement Reinsurance Program from Contracts and Other Receipts to Federal Subsidy, and the reclassification of the Pending Medical Claims adjustment from Health Care Expenses to Other Income. Pending Medical Claims formerly consisted of the annual adjustment made to the incurred but not reported liability included in Benefits Payable. This liability fluctuates from year to year based on changes in the claims experience and is now reflected in the appropriate plan claims line item.

⁵ Beginning in 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.


Statistical Section

 Changes in Fiduciary Net Position					
2013	2012	2011 ^a	2010	2009	2008
\$18,256,171	\$16,883,868	\$15,982,848	\$13,986,794	\$12,485,134	\$11,565,614
3,061	9,233	9,082	7,367	2,328	1,353
17,954,681	14,049,787	311,497	8,284,927	8,394,234	(11,569,156)
	63,641		338	39,978	56,292
			26,276		
36,213,913	31,006,529	16,303,427	22,305,702	20,921,674	54,103
1,719,043	1,236,169	895,574	514,332	233,364	128,346
1,026,449	850,617	914,578	851,770	853,358	820,376
		28,172	101,658	383,887	
2,745,492	2,086,786	1,838,324	1,467,760	1,470,609	948,722
33,468,421	28,919,743	14,465,103	20,837,942	19,451,065	(894,619)
119,615,875	90,696,132	76,231,029	55,784,131	36,333,066	37,227,685
\$153,084,296	\$119,615,875	\$90,696,132	\$76,622,073	\$55,784,131	\$36,333,066

 Additions by Source (last 10 fiscal years)		(continued through page 185)			
Year	2017	2016	2015	2014	
All Plans¹					
Member Contributions	\$1,421,754,296	\$1,387,215,220	\$1,332,308,994	\$1,307,428,830	
Employer Contributions	1,989,941,685	1,941,632,324	1,864,823,741	1,829,907,525	
Purchase of Service	22,466,320	18,073,121	22,850,005	26,521,581	
Retiree-Paid Health Care Premiums ²		184,368,783	248,601,375	238,406,380	
Early Retirement Incentive Payments	5,537,160		2,636,885	15,180,991	
Transfers from Other Retirement Systems	51,563,749	44,266,370	47,270,349	69,328,737	
Vendor Rebates and Other Receipts ²	117,285	91,735,221	91,372,473	150,377,554	
Additional Annuity/Voluntary Contributions	2,136,358	2,074,383	1,668,697	1,693,612	
Other Employer Payments	11,240,663	16,189,737	6,269,228	7,625,727	
Federal Subsidy ²		4,065,058	175,930,875	176,619,891	
Net Income/(Loss) from Investing Activity	14,619,914,555	6,926,572,065	9,415,961	5,775,317,835	
Other Income/(Expense), net	2,641,100	(2,544,366)	(4,887,359)	8,304,360	
Interplan Activity	20,961,756	17,205,339	19,759,373	10,357,663	
Total Additions	\$18,148,274,927	\$10,630,853,255	\$3,818,020,597	\$9,617,070,686	
Traditional Pension Plan					
Member Contributions	\$1,324,457,501	\$1,294,853,664	\$1,246,732,014	\$1,228,144,074	
Employer Contributions	1,722,856,378	1,556,529,162	1,498,679,737	1,476,074,083	
Purchase of Service	22,321,608	17,926,008	22,718,488	26,297,267	
Early Retirement Incentive Payments	5,227,186		2,649,968	14,427,760	
Transfers from Other Retirement Systems	51,563,749	44,199,326	43,081,440	66,309,930	
Additional Annuity Contributions	1,182,500	1,235,194	830,196	945,803	
Other Employer Payments	10,642,653	14,501,628	5,929,728	6,849,804	
Net Income/(Loss) from Investing Activity	12,586,432,979	5,947,233,326	274,898,652	5,056,307,357	
Other Income/(Expense), net	2,516,572	(2,560,081)	(4,887,369)	625,549	
Interplan Activity	20,961,756	11,168,557	19,759,373	10,357,663	
Total Additions	\$15,748,162,882	\$8,885,086,784	\$3,110,392,227	\$7,886,339,290	
Combined Plan					
Member Contributions	\$41,265,878	\$39,232,690	\$36,685,161	\$34,604,398	
Employer Contributions	53,636,897	47,079,023	44,022,120	44,196,044	
Purchase of Service	141,951	136,029	131,373	218,582	
Transfers from Other Retirement Systems					
Voluntary Contributions	398,332	336,536	353,335	153,014	
Other Employer Payments	148,101	147,513	7,552	41,212	
Net Income/(Loss) from Investing Activity	142,733,244	63,694,711	(6,501,919)	32,379,863	
Other Income, net	2,135				
Interplan Activity					
Total Additions	\$238,326,538	\$150,626,502	\$74,697,622	\$111,593,113	
Member-Directed Plan					
Member Contributions	\$56,030,917	\$53,128,866	\$48,891,819	\$44,680,358	
Employer Contributions	56,030,522	53,120,880	68,448,551	47,851,530	
Purchase of Service	2,761	11,084	144	5,732	
Voluntary Contributions	555,526	502,653	485,166	594,795	
Other Employer Payments	19,627	13,554	10,230	100,243	
Net Income/(Loss) from Investing Activity	139,385,790	66,099,386	(13,070,950)	28,212,549	
Other Income, net	4,511				
Interplan Activity					
Total Additions	\$252,029,654	\$172,876,423	\$104,764,960	\$121,445,207	


See footnotes on page 184.

Statistical Section

 Additions by Source					
2013	2012	2011	2010	2009	2008
\$1,279,945,223	\$1,266,800,236	\$1,286,385,298	\$1,275,688,737	\$1,290,805,214	\$1,303,865,947
1,794,039,132	1,778,728,069	1,809,470,716	1,796,343,429	1,822,639,448	1,840,585,266
60,100,714	62,507,139	59,976,857	51,936,153	42,247,663	47,326,741
178,140,822	159,614,898	148,370,246	111,638,313	94,370,543	82,695,255
7,294,662	13,568,992	23,366,505	27,964,615	93,149,748	34,588,480
46,370,923	39,590,467	31,487,779	31,862,677	26,142,599	43,533,703
121,660,735	90,103,930	84,515,422	72,854,648	47,557,407	44,672,114
5,786,692	5,402,253	5,334,480	5,296,310	3,915,521	4,498,262
9,014,653	7,086,708	7,166,055	7,592,969	6,169,728	6,144,202
105,965,762	182,579,917	192,118,407	142,658,293	69,132,772	63,310,194
11,006,164,375	10,375,431,044	179,956,702	9,268,181,189	12,274,797,785	(22,770,412,901)
13,898,739	12,103,692	11,255,503	7,930,265	794,525	1,635,996
13,034,171	16,981,683	10,077,664	10,528,250	7,879,768	7,470,205
\$14,641,416,603	\$14,010,499,028	\$3,849,481,634	\$12,810,475,848	\$15,779,602,721	(\$19,290,086,536)
\$1,206,808,750	\$1,199,073,380	\$1,221,597,118	\$1,217,388,746	\$1,236,966,262	\$1,253,053,822
1,571,758,150	1,208,150,727	1,233,002,841	1,097,711,440	1,019,582,360	892,693,746
59,756,708	62,193,231	59,770,075	51,738,819	42,177,769	47,167,085
6,943,575	13,134,027	22,388,005	26,567,998	87,738,002	32,401,549
42,242,610	36,013,336	28,505,778	23,234,777	20,972,055	24,779,353
4,744,751	4,530,704	4,447,182	4,699,133	3,705,856	3,615,649
8,130,455	6,410,331	6,449,831	6,839,388	5,638,454	5,387,481
9,423,847,940	8,713,817,411	274,530,266	7,678,536,712	9,822,978,753	(19,258,540,437)
414,878	329,493	340,460	763,943	140,494	1,021,007
13,034,171	16,918,042	10,077,664	10,501,974	7,839,790	7,289,779
\$12,337,681,988	\$11,260,570,682	\$2,861,109,220	\$10,117,982,930	\$12,247,739,795	(\$16,991,130,966)
\$32,535,565	\$30,193,165	\$29,256,952	\$27,272,707	\$26,096,068	\$25,123,220
45,427,520	23,998,486	23,280,520	26,432,761	23,397,299	20,352,999
343,752	313,711	201,906	150,035	68,726	159,371
		35,957			
270,861	425,653	134,608	177,121	48,855	684,634
65,645	5,983	14,408	57,791	7,242	
78,379,140	50,732,608	(5,810,229)	35,971,101	44,034,607	(53,571,566)
			1,267		
					68,857
\$157,022,483	\$105,669,606	\$47,114,122	\$90,062,783	\$93,652,797	(\$7,182,485)
\$40,600,908	\$37,533,691	\$35,531,228	\$31,027,284	\$27,742,884	\$25,688,905
38,540,851	35,646,573	33,746,291	29,527,197	26,356,764	24,411,834
254	197	4,876	(1,168)	1,168	285
771,080	445,896	752,690	420,056	160,810	197,979
13,738	46,797	44,704	43,187	11,854	25,221
88,633,791	46,860,344	(10,151,205)	34,223,485	42,835,328	(46,084,400)
			1,108		
					55,277
\$168,560,622	\$120,533,498	\$59,928,584	\$95,241,149	\$97,108,808	\$4,295,101

continued on page 184

continued from page 183

 Additions by Source (last 10 fiscal years)				
Year	2017	2016	2015	2014
115 Health Care Trust³				
Employer Contributions	\$157,417,888	\$274,419,455	\$253,673,333	\$111,561,319
Retiree-Paid Health Care Premiums ²		184,368,783		
Early Retirement Incentive Payments	309,974		(13,083)	
Transfers from Other Retirement Systems		67,044	4,188,909	2,742,476
Vendor Rebates and Other Receipts ²	117,285	91,735,221	91,362,132	140,981,424
Other Employer Payments	430,282	1,504,320	322,624	89,290
Federal Subsidy—Medicare Part D ²		122,044	743,345	223,579
Federal Subsidy—Medicare PDP ²		3,943,014	175,187,530	131,680,671
Net Income/(Loss) from Investing Activity	1,751,362,542	352,629,538	(23,073,355)	(1,193,356)
Other Income, net	117,882	15,715	10	76,970
Interplan Activity		6,036,782		
Total Additions	\$1,909,755,853	\$914,841,916	\$502,391,445	\$386,162,373
401(h) Health Care Trust^{1,3}				
Employer Contributions				\$135,522,351
Purchase of Service				
Retiree-Paid Health Care Premiums			\$248,601,375	238,406,380
Early Retirement Incentive Payments				753,231
Transfers from Other Retirement Systems				276,331
Vendor Rebates and Other Receipts			10,341	9,396,130
Other Employer Payments			(906)	524,694
Federal Subsidy—Medicare Part D				170,515
Federal Subsidy—Medicare PDP				44,545,126
Federal Subsidy—Early Retiree Reinsurance Program				
Net Income/(Loss) from Investing Activity		\$490,208,570	(223,464,384)	648,566,894
Other Income, net				7,601,841
Total Additions		\$490,208,570	\$25,146,426	\$1,085,763,493
Voluntary Employees' Beneficiary Association Trust³				
Employer Contributions ⁴		\$10,483,804		\$14,702,198
Vendor Rebates and Other Receipts				
Other Employer Payments		22,722		20,484
Net Income/(Loss) from Investing Activity		6,706,534	\$627,917	11,044,528
Other Income, net				
Interplan Activity				
Total Additions		\$17,213,060	\$627,917	\$25,767,210


¹ In the year 2010, 401(h) Health Care Trust expenses were restated for reclassification of Pending Medical Claims adjustment from Health Care Medical Expense to Other Income. Pending Medical Claims consists of the annual adjustment made to the incurred but not reported liability included in Benefits Payable. This liability fluctuates from year to year based on changes in the claims experience.


² Governmental Accounting Standards Board (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 Contracts and Other Receipts has been revised and is now included in Health Care Expenses, starting in 2017 upon implementation of this standard.

³ 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 and the net positions of these trusts were consolidated into the 115 Health Care Trust on July 1, 2016.

⁴ 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.


Statistical Section

 Additions by Source					
2013	2012	2011	2010	2009	2008
\$120,056,440	\$494,048,415	\$503,458,216	\$628,685,237	\$740,817,891	\$891,561,073
178,140,822	159,614,898	148,370,246	48,467	94,370,543	82,695,255
351,087	434,965	978,500	111,638,313	5,411,746	2,186,931
4,128,313	3,577,131	2,946,044	8,627,900	5,170,544	18,754,350
121,660,735	90,103,930	84,515,422	72,854,394	47,557,407	44,672,114
801,754	614,364	648,030	645,490	509,850	730,147
246,139	926,931	788,419	72,100,529	69,132,772	63,310,194
105,719,623	181,652,986	81,802,880			
		109,527,108	70,557,764		
1,397,348,823	1,549,970,894	(78,923,627)	1,511,164,964	2,356,554,863	(3,400,647,342)
13,483,861	11,774,199	10,915,043	7,163,609	654,031	614,989
\$1,941,937,597	\$2,492,718,713	\$865,026,281	\$2,484,883,284	\$3,320,179,647	(\$2,296,122,289)
\$18,256,171	\$16,883,868	\$15,982,848	\$13,986,794	\$12,485,134	\$11,565,614
			254		
3,061	9,233	9,082	7,113	2,328	1,353
17,954,681	14,049,787	311,497	8,284,927	8,394,234	(11,569,156)
			338		
	63,641		26,276	39,978	56,292
\$36,213,913	\$31,006,529	\$16,303,427	\$22,305,702	\$20,921,674	\$54,103

 (continued through page 189)				
Year	2017	2016	2015	2014
All Plans²				
Pension—Annuities	\$5,828,340,070	\$5,577,629,182	\$5,390,859,219	\$5,101,735,902
Pension—Installment Payments	1,618,270	1,112,846	1,003,891	1,628,513
Pension—Other	7,893,619	7,857,337	8,647,208	7,482,091
Disability Case Management and Exams	1,937,850	1,401,601	1,370,674	1,277,281
Refunds	443,220,698	429,791,141	449,265,410	425,701,829
Medicare Parts A and B	23,597,598	50,445,768	77,867,474	113,967,145
Medical ¹	296,063,521	588,576,618	940,420,011	921,172,088
Prescription Drug	148,293,992	170,627,591	672,710,524	634,474,812
Dental ¹	30,321,168	55,456,293	53,818,027	50,907,491
Vision ¹	5,518,194	9,902,183	9,847,918	9,564,606
Disease Management ¹	3,304,104	2,090,646	3,865,654	3,840,401
Wellness Retiree Medical Account Plan Claims	15,038,205	6,990,116	16,460,228	4,669,630
Health Reimbursement Account Plan Claims	423,371,301	310,233,492	45,184,620	
Member-Directed Retiree Medical Account Plan Claims	6,493,490	3,051,637	2,396,972	2,217,933
Administrative Expenses	77,305,480	79,059,058	77,036,684	74,114,491
Interplan Activity	20,961,756	17,205,339	19,759,373	10,357,663
Total Deductions	\$7,333,279,316	\$7,311,430,848	\$7,770,513,887	\$7,363,111,876
Traditional Pension Plan				
Pension—Annuities	\$5,825,344,908	\$5,575,258,958	\$5,388,827,561	\$5,100,341,567
Pension—Other	7,892,619	7,857,337	8,646,429	7,482,091
Disability Case Management and Exams	1,937,850	1,401,601	1,370,674	1,277,281
Refunds	384,615,309	352,362,641	405,320,800	389,707,612
Administrative Expenses	52,154,657	51,871,700	49,137,053	49,832,366
Interplan Activity				
Total Deductions	\$6,271,945,343	\$5,988,752,237	\$5,853,302,517	\$5,548,640,917
Combined Plan				
Pension—Annuities	\$1,863,005	\$1,443,631	\$1,255,978	\$773,394
Pension—Other	1,000		779	
Pension—Installment Payments	1,225,533	538,033	534,358	1,457,593
Refunds	16,220,141	21,857,512	12,577,944	10,974,442
Administrative Expenses	3,181,465	2,559,387	2,522,610	2,375,278
Interplan Activity	9,269,382	9,290,331	7,141,271	5,375,568
Total Deductions	\$31,760,526	\$35,688,894	\$24,032,940	\$20,956,275
Member-Directed Plan				
Pension—Annuities	\$1,132,157	\$926,593	\$775,680	\$620,941
Pension—Installment Payments	392,737	574,813	469,533	170,920
Refunds	42,385,248	55,570,988	31,366,666	25,019,775
Administrative Expenses	2,560,880	2,305,383	2,260,306	2,400,900
Interplan Activity	11,692,374	7,187,816	6,625,358	4,982,095
Total Deductions	\$58,163,396	\$66,565,593	\$41,497,543	\$33,194,631


See footnotes on page 188.

Statistical Section

 Deductions by Type					
2013	2012	2011	2010	2009	2008
\$4,920,408,972	\$4,582,583,776	\$4,322,202,507	\$3,954,057,452	\$3,653,998,513	\$3,381,914,006
1,549,139	463,923	207,443	246,225	50,709	41,250
7,913,434	7,891,172	7,508,317	7,248,345	7,124,887	6,998,605
1,620,162					
441,284,204	307,486,279	323,672,042	233,054,714	222,580,254	221,300,825
112,820,822	112,530,781	109,072,281	107,770,173	105,854,803	103,934,337
912,071,417	888,700,307	872,219,550	871,299,322	877,861,028	827,135,910
551,391,403	541,552,286	530,404,030	526,054,523	494,674,419	441,059,097
48,106,058	41,711,390	38,467,223	38,978,748		
9,038,035	7,896,366	7,288,175	7,668,138		
4,535,512	4,711,813	4,620,914	2,557,254		
4,562,351	10,818,585	13,489,405	13,223,453	9,642,605	5,016,829
1,719,043	1,236,169	895,574	514,332	233,364	128,346
68,619,091	69,617,154	70,101,033	71,030,458	75,844,945	74,022,980
13,034,171	16,981,684	10,077,664	10,528,250	7,879,768	7,470,205
\$7,098,673,814	\$6,594,181,685	\$6,310,226,158	\$5,844,231,387	\$5,455,745,295	\$5,069,022,390
\$4,919,439,251	\$4,582,082,044	\$4,321,944,264	\$3,953,969,116	\$3,653,951,822	\$3,381,864,191
7,913,434	7,891,172	7,508,317	7,248,345	7,124,887	6,998,605
1,620,162					
411,321,700	284,217,216	302,812,289	219,808,143	212,209,227	212,802,651
46,946,971	49,179,821	51,196,146	52,375,762	56,805,048	53,853,085
				36,008	180,426
\$5,387,241,518	\$4,923,370,253	\$4,683,461,016	\$4,233,401,366	\$3,930,126,992	\$3,655,698,958
\$533,920	\$273,809	\$187,051	\$61,125	\$30,566	\$11,911
992,085	336,736	118,164	67,241	5,000	
7,731,155	6,173,714	6,462,849	3,540,043	2,905,883	3,623,723
2,264,293	2,295,688	2,559,312	2,584,673	2,638,279	2,990,092
6,085,687	9,487,128	5,129,362	6,043,719	3,638,757	4,105,870
\$17,607,140	\$18,567,075	\$14,456,738	\$12,296,801	\$9,218,485	\$10,731,596
\$435,801	\$227,923	\$71,192	\$27,211	\$16,125	\$37,904
557,054	127,187	89,279	178,984	45,709	41,250
22,231,349	17,095,349	14,396,904	9,706,528	7,465,144	4,874,451
2,028,864	2,118,854	2,354,183	2,435,285	2,514,665	2,762,484
6,948,484	7,494,556	4,920,130	4,382,873	3,821,116	3,183,909
\$32,201,552	\$27,063,869	\$21,831,688	\$16,730,881	\$13,862,759	\$10,899,998

continued on page 188

continued from page 187

				
Year	2017	2016	2015	2014
115 Health Care Trust^{2,3}				
Medicare Parts A and B	\$23,597,598	\$50,445,768		
Medical	512,594,568	588,576,618		
Medical—Health Care Receipts	(216,531,047)			
Prescription Drug	148,293,992	170,627,591		
Dental	52,497,066	55,456,293		
Dental—Health Care Receipts	(22,175,898)			
Vision	9,554,018	9,902,183		
Vision—Health Care Receipts	(4,035,824)			
Disease Management	3,304,104	2,090,646		
Wellness Retiree Medical Account Plan Claims	15,038,205	6,990,116		
Health Reimbursement Account Plan Claims	423,371,301	310,233,492	\$45,184,620	
Member-Directed Retiree Medical Account Plan Claims	6,493,490	1,634,192		
Administrative Expenses	19,408,478	21,693,387	2,174,957	\$82,201
Total Deductions	\$971,410,051	\$1,217,650,286	\$47,359,577	\$82,201
401(h) Health Care Trust^{3,4}				
Medicare Parts A and B			\$77,867,474	\$113,967,145
Medical ¹			940,420,011	921,172,088
Prescription Drug			672,710,524	634,474,812
Dental ¹			53,818,027	50,907,491
Vision ¹			9,847,918	9,564,606
Disease Management ¹			3,865,654	3,840,401
Wellness Retiree Medical Account Plan Claims			16,460,228	4,669,630
Administrative Expenses			19,611,199	18,329,337
Total Deductions			\$1,794,601,035	\$1,756,925,510
Voluntary Employees' Beneficiary Association Trust³				
Member-Directed Retiree Medical Account Plan Claims		\$1,417,445	\$2,396,972	\$2,217,933
Administrative Expenses		629,201	1,330,559	1,094,409
Interplan Activity		727,192	5,992,744	
Total Deductions		\$2,773,838	\$9,720,275	\$3,312,342


¹ The breakdown of medical disbursements between Medical, Dental, Vision, and Disease Management is not available for 2009 and prior.

² Governmental Accounting Standards Board (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 Contracts and Other Receipts has been revised and is now included in Health Care Expenses, starting in 2017 upon implementation of this standard. In this schedule, the receipts are netted against Medical, Dental and Vision line items in 2017.

³ 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 and the net positions of these trusts were consolidated into the 115 Health Care Trust on July 1, 2016.

⁴ The 401(h) Health Care Trust expenses in 2010 were restated for reclassification of Pending Medical Claims adjustment from Health Care Medical Expense to Other Income. Pending Medical Claims formerly consisted of the annual adjustment made to the incurred but not reported liability included in Benefits Payable. This liability fluctuates from year to year based on changes in the claims experience and is now reflected in the appropriate plan claims line item within this schedule.

Statistical Section


 Benefits by Type (last 10 fiscal years)		(continued on next page)			
Year	2017	2016	2015	2014	
All Plans¹					
Annuities and Installment Payments ²	\$5,288,583,786	\$5,272,086,225	\$5,833,988,140	\$5,534,152,991	
Disabilities	847,508,744	974,782,897	1,070,397,368	1,057,979,091	
Other Systems/Death/QEBA ³	11,737,599	11,682,188	12,010,912	10,646,707	
Survivors	199,058,257	206,548,755	244,014,180	243,271,541	
Wellness Retiree Medical Account Plan Claims	15,038,205	6,990,116	16,460,228	4,669,630	
Health Reimbursement Account Plan Claims	423,371,301	310,233,492	45,184,620		
Member-Directed Retiree Medical Account Plan Claims ²	6,493,490	3,051,637	2,396,972	2,217,933	
Total Pension Benefits and Health Care	\$6,791,791,382	\$6,785,375,310	\$7,224,452,420	\$6,852,937,893	
Traditional Pension Plan Pension Benefits					
Age-and-Service Annuities	\$4,916,944,682	\$4,676,894,918	\$4,500,470,313	\$4,228,575,327	
Disabilities	649,478,101	648,136,068	642,937,688	634,409,874	
Other Systems	113,934	291,376	503,683	987,644	
Survivors	192,915,530	187,233,171	182,549,547	178,633,434	
Additional Annuities	5,698,454	5,653,264	5,491,671	5,421,653	
Money Purchase Annuities	58,402,011	54,918,287	55,385,312	51,413,944	
Death	7,892,618	7,857,337	8,646,429	7,482,091	
QEBA ³	3,730,047	3,533,475	2,860,021	2,176,972	
Total Pension Benefits	\$5,835,175,377	\$5,584,517,896	\$5,398,844,664	\$5,109,100,939	
Combined Plan Pension Benefits					
Annuities	\$1,863,005	\$1,443,631	\$1,255,978	\$773,394	
Installment Payments	1,225,533	538,033	534,358	1,457,593	
Death	1,000		779		
Total Pension Benefits	\$3,089,538	\$1,981,664	\$1,791,115	\$2,230,987	
Member-Directed Plan Pension Benefits					
Annuities	\$1,132,157	\$926,593	\$775,680	\$620,941	
Installment Payments	392,737	574,813	469,533	170,920	
Total Pension Benefits	\$1,524,894	\$1,501,406	\$1,245,213	\$791,861	
115 Health Care Trust⁴ Health Care					
Annuities ⁵	\$454,218,561	\$531,136,686			
Annuities—Health Care Receipts ⁵	(151,293,354)				
Disabilities ⁵	286,728,726	326,646,829			
Disabilities—Health Care Receipts ⁵	(88,698,083)				
Survivors ⁵	8,894,059	19,315,584			
Survivors—Health Care Receipts ⁵	(2,751,332)				
Wellness Retiree Medical Account Plan Claims	15,038,205	6,990,116			
Health Reimbursement Account Plan Claims	423,371,301	310,233,492	\$45,184,620		
Member-Directed Retiree Medical Account Plan Claims ²	6,493,490	1,634,192			
Total Health Care	\$952,001,573	\$1,195,956,899	\$45,184,620		
401(h) Health Care Trust⁴ Health Care					
Annuities			\$1,269,605,295	\$1,245,719,219	
Disabilities			427,459,680	423,569,217	
Survivors			61,464,633	64,638,107	
Wellness Retiree Medical Account Plan Claims			16,460,228	4,669,630	
Total Health Care			\$1,774,989,836	\$1,738,596,173	
Voluntary Employees' Beneficiary Association Trust⁴ Health Care					
Member-Directed Retiree Medical Account Plan Claims ²		\$1,417,445	\$2,396,972	\$2,217,933	
Total Health Care		\$1,417,445	\$2,396,972	\$2,217,933	

¹ The 401(h) Health Care Trust expenses in 2010 were restated for reclassification of Pending Medical Claims adjustment from Health Care Medical Expense to Other Income. Pending Medical Claims formerly consisted of the annual adjustment made to the incurred but not reported liability included in Benefits Payable. This liability fluctuates from year to year based on changes in the claims experience and is now reflected in the appropriate plan claims line item within this schedule.

² 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 is 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.

³ Qualified Excess Benefit Arrangement (QEBA) commenced in 2000.

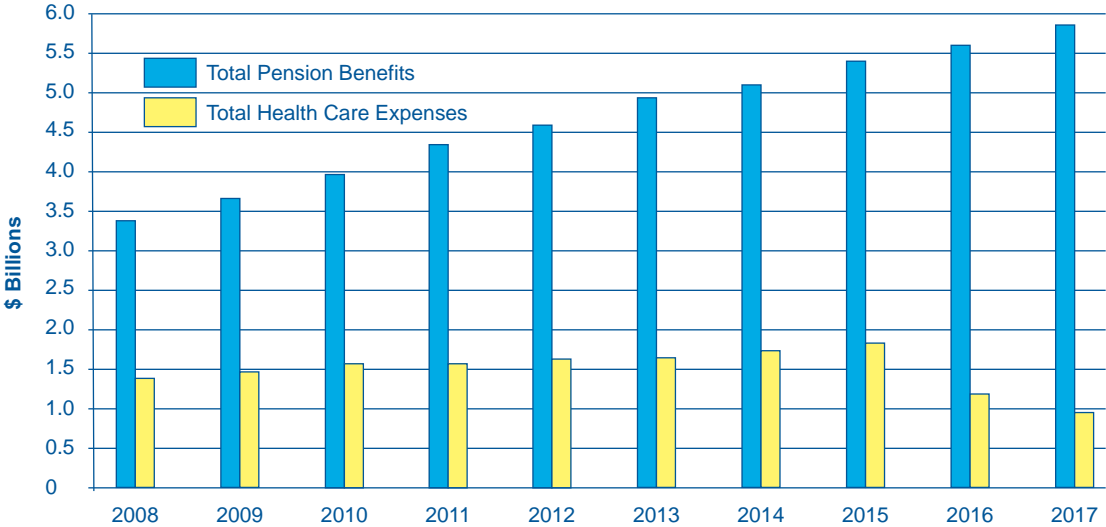
Statistical Section

 Benefits by Type					
2013	2012	2011	2010	2009	2008
\$5,277,262,585	\$4,903,795,068	\$4,644,669,875	\$4,284,189,841	\$3,936,639,166	\$3,612,396,852
1,040,711,575	1,017,238,745	984,655,943	982,774,343	966,748,686	915,061,487
13,550,680	34,367,830	31,381,217	26,785,331	20,803,990	25,216,043
237,930,114	232,640,171	231,283,405	222,130,665	215,372,517	208,408,823
4,562,351	10,818,585	13,489,405	13,223,453	9,642,605	5,016,829
1,719,043	1,236,169	895,574	514,332	233,364	128,346
\$6,575,736,348	\$6,200,096,568	\$5,906,375,419	\$5,529,617,965	\$5,149,440,328	\$4,766,228,380
\$4,044,320,992	\$3,739,845,743	\$3,518,341,988	\$3,185,230,279	\$2,929,672,689	\$2,676,785,413
624,038,549	603,354,845	578,018,246	556,074,897	529,948,352	509,082,328
3,534,484	24,815,413	22,453,906	18,490,323	13,014,368	17,565,698
174,766,735	170,092,349	165,488,973	159,725,674	154,482,707	149,770,901
26,011,745	4,341,522	4,324,569	3,432,344	2,867,888	2,537,528
46,284,146	37,970,927	31,897,588	29,968,936	23,301,083	25,470,583
7,913,434	7,891,172	7,508,317	7,248,345	7,124,887	6,998,605
2,102,762	1,661,245	1,418,994	1,046,663	664,735	651,740
\$4,928,972,847	\$4,589,973,216	\$4,329,452,581	\$3,961,217,461	\$3,661,076,709	\$3,388,862,796
\$533,920	\$273,809	\$187,051	\$61,125	\$30,566	\$11,911
992,085	336,736	118,164	67,241	5,000	
\$1,526,005	\$610,545	\$305,215	\$128,366	\$35,566	\$11,911
\$435,801	\$227,923	\$71,192	\$27,211	\$16,125	\$37,904
557,054	127,187	89,279	178,984	45,709	41,250
\$992,855	\$355,110	\$160,471	\$206,195	\$61,834	\$79,154
\$1,158,126,842	\$1,120,671,221	\$1,089,640,044	\$1,065,223,721	\$980,700,106	\$907,512,263
416,673,026	413,883,900	406,637,697	426,699,446	436,800,334	405,979,159
63,163,379	62,547,822	65,794,432	62,404,991	60,889,810	58,637,922
4,562,351	10,818,585	13,489,405	13,223,453	9,642,605	5,016,829
\$1,642,525,598	\$1,607,921,528	\$1,575,561,578	\$1,567,551,611	\$1,488,032,855	\$1,377,146,173
\$1,719,043	\$1,236,169	\$895,574	\$514,332	\$233,364	\$128,346
\$1,719,043	\$1,236,169	\$895,574	\$514,332	\$233,364	\$128,346

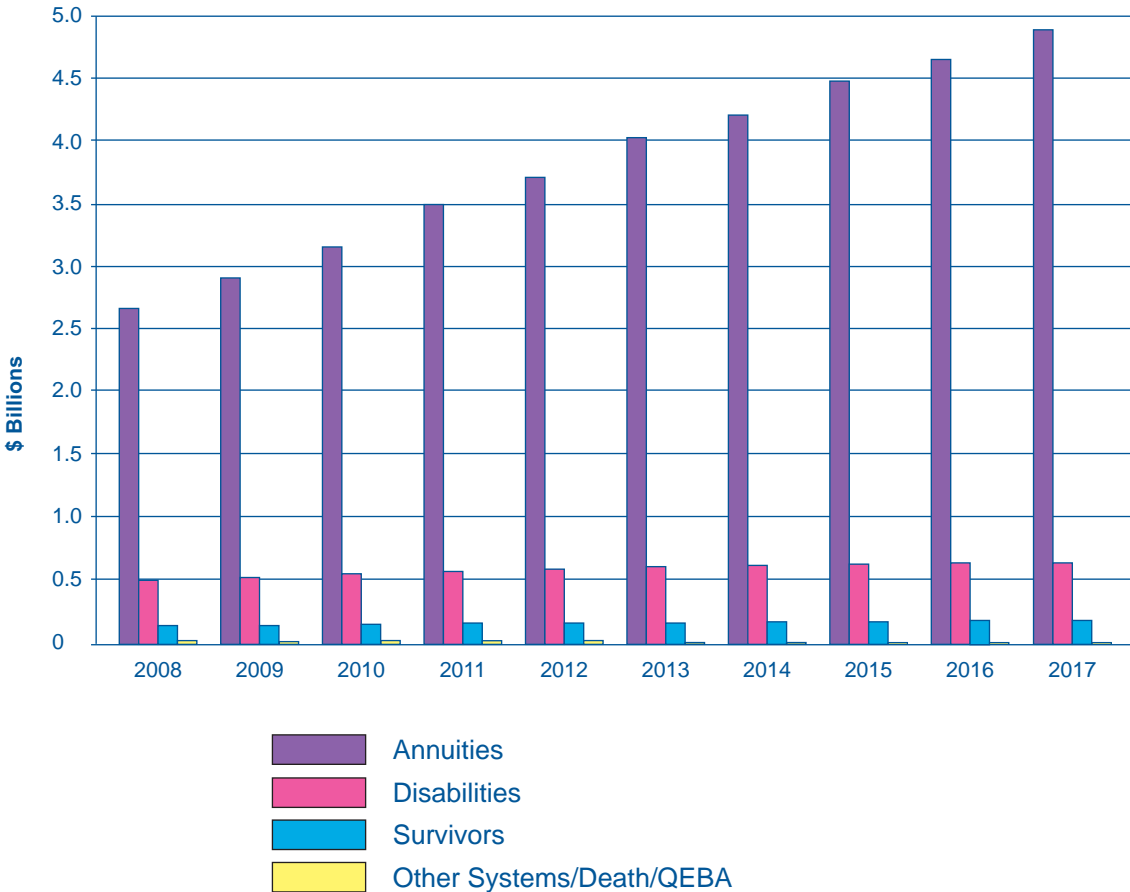
⁴ The 115 Health Care Trust was established and funding began in 2014. Notional deposits to retiree accounts and initial health care disbursements began in October 2015, during the initial open enrollment period, for January 2016 premium reimbursements. The 401(h) Health Care Trust and the Voluntary Employees' Beneficiary Association Trust were terminated as of June 30, 2016 and the net positions of these trusts consolidated into the 115 Health Care Trust on July 1, 2016.

⁵ Governmental Accounting Standards Board (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 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

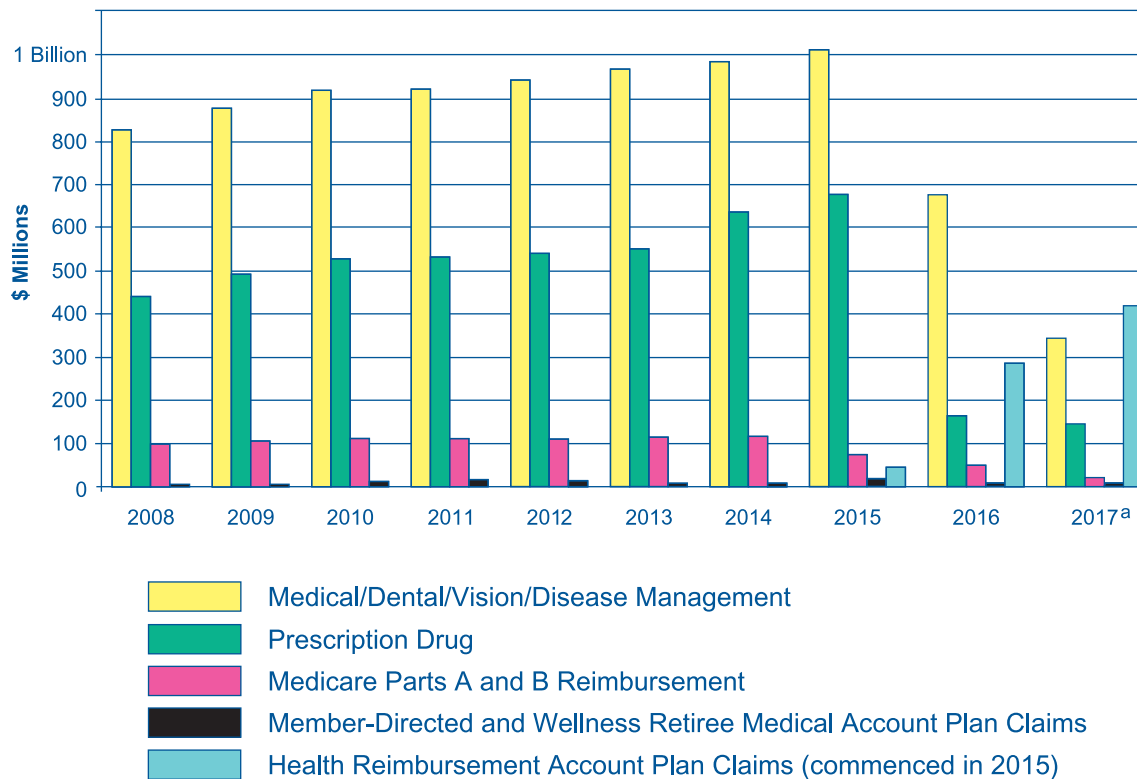


Pension Benefits by Type





Statistical Section

Health Care Expenses by Type




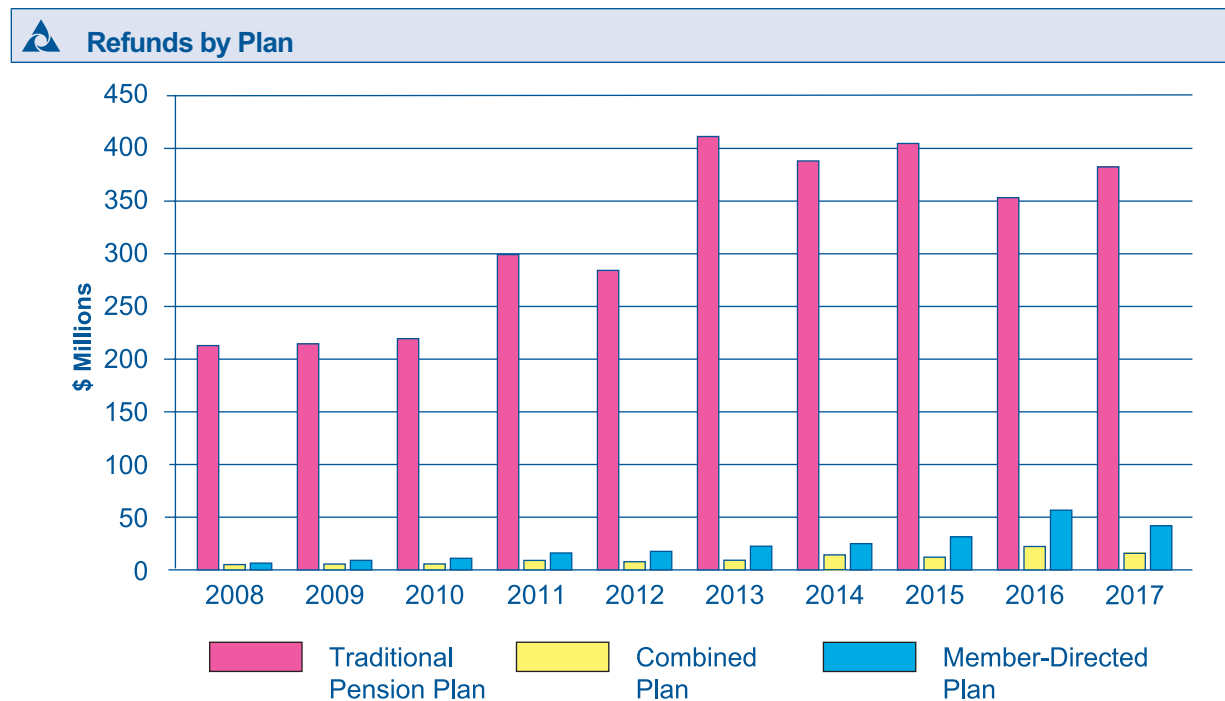
^a Beginning in 2017, Governmental Accounting Standards Board (GASB) Statement No.74 requires health care expenses to be reported net of certain health care receipts. The presentation of Retiree-Paid Health Care Premiums, Federal Subsidy and formulary rebates included in Vendor Rebates and Other has 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.

 Refunds by Type (last 10 fiscal years) (continued on next page)				
Year	2017	2016	2015	2014
All Plans				
Separation	\$348,274,709	\$342,642,457	\$322,526,720	\$313,034,142
Beneficiaries	30,944,474	31,834,420	25,357,397	22,186,469
Other	64,001,515	55,314,264	101,381,293	90,481,218
Total Refunds	\$443,220,698	\$429,791,141	\$449,265,410	\$425,701,829
Traditional Pension Plan				
Separation	\$291,311,871	\$266,436,121	\$279,546,170	\$277,494,212
Beneficiaries	29,301,923	30,612,256	24,393,337	21,732,182
Other	64,001,515	55,314,264	101,381,293	90,481,218
Total Refunds	\$384,615,309	\$352,362,641	\$405,320,800	\$389,707,612
Combined Plan				
Separation	\$15,716,660	\$21,752,826	\$12,254,484	\$10,789,116
Beneficiaries	503,481	104,686	323,460	185,326
Total Refunds	\$16,220,141	\$21,857,512	\$12,577,944	\$10,974,442
Member-Directed Plan				
Separation	\$41,246,178	\$54,453,510	\$30,726,066	\$24,750,814
Beneficiaries	1,139,070	1,117,478	640,600	268,961
Total Refunds	\$42,385,248	\$55,570,988	\$31,366,666	\$25,019,775


 Number of Refund Payments by Plan (last 10 fiscal years)				
Year	Traditional Pension Plan	Combined Plan	Member-Directed Plan	Total
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
2012	24,487	384	1,099	25,970
2011	26,686	391	893	27,970
2010	21,797	345	736	22,878
2009	21,413	389	822	22,624
2008	23,173	451	799	24,423

Statistical Section

 Refunds by Type					
2013	2012	2011	2010	2009	2008
\$299,488,361 17,577,111 124,218,732	\$275,020,766 23,366,136 9,099,376	\$291,727,781 21,276,967 10,667,294	\$205,298,464 20,870,868 6,885,382	\$192,467,640 21,549,473 8,563,141	\$192,910,095 19,118,230 9,272,500
\$441,284,204	\$307,486,278	\$323,672,042	\$233,054,714	\$222,580,254	\$221,300,825
\$270,224,068 16,878,900 124,218,732	\$252,159,989 22,957,850 9,099,376	\$271,336,582 20,808,413 10,667,294	\$192,608,328 20,314,433 6,885,382	\$182,274,674 21,371,412 8,563,141	\$184,463,536 19,066,615 9,272,500
\$411,321,700	\$284,217,215	\$302,812,289	\$219,808,143	\$212,209,227	\$212,802,651
\$7,605,803 125,352	\$6,138,096 35,618	\$6,319,318 143,531	\$3,515,815 24,228	\$2,824,743 81,140	\$3,596,259 27,464
\$7,731,155	\$6,173,714	\$6,462,849	\$3,540,043	\$2,905,883	\$3,623,723
\$21,658,490 572,859	\$16,722,681 372,668	\$14,071,881 325,023	\$9,174,321 532,207	\$7,368,223 96,921	\$4,850,300 24,151
\$22,231,349	\$17,095,349	\$14,396,904	\$9,706,528	\$7,465,144	\$4,874,451



OPERS notionally funds and tracks member balances in the Health Reimbursement Arrangement (HRA), Member-Directed Plan health care accounts, and Wellness health care 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 Statement No. 74 (GASB 74), *Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans*. Health care liabilities recorded in the combining financial statements also contain estimates on incurred but not reported amounts for the current year. 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 held in trust restricted for health care costs of all OPERS health care plans are \$12.8 billion as of December 31, 2017. While OPERS is not required to disclose the funds restricted for health care by individual plans, we do track the funds set aside in member health care accounts. This table shows these balances and a summary of activity for the year for the member HRA, Member-Directed Plan, and Wellness health care accounts, 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.

 Funds Restricted for Member Health Care Accounts (last two years, \$ in millions)		
Year	2017	2016
Health Reimbursement Arrangement (HRA) Accounts		
Notional Deposits into Member Accounts	\$529.1	\$546.8
Transferred In—Wellness RMA	8.5	
Health Care Claims Paid	(388.1)	(292.8)
Health Care Claims Accrued	(35.3)	(17.4)
Net Increase in Member Accounts	114.2	236.6
Balance, Beginning of Year	236.6	
Balance, End of Year	\$350.8	\$236.6
Wellness Retiree Medical Accounts¹		
Notional Deposits into Member Accounts		\$2.5
Transferred Out—HRA	(\$8.5)	
Health Care Claims Paid	(4.6)	(5.4)
Health Care Claims Accrued	(2.0)	(1.8)
Net Decrease in Member Accounts	(15.1)	(4.7)
Balance, Beginning of Year	18.2	22.9
Balance, End of Year	\$3.1	\$18.2
Member-Directed Retiree Medical Accounts		
Notional Deposits into Member Accounts	\$30.0	\$23.5
Health Care Claims Paid	(6.4)	(2.7)
Health Care Claims Accrued	(0.1)	(0.4)
Net Increase in Member Accounts	23.5	20.4
Balance, Beginning of Year	186.8	166.4
Balance, End of Year	\$210.3	\$186.8
Net Position, End of Year, Member-Directed Health Care	\$242.0	\$195.3
Total Funds Restricted for Member Health Care Accounts	\$564.2	\$441.6

¹ Enrollment in wellness incentive programs was discontinued in December 2016. Therefore, deposits to the Wellness Retiree Medical Accounts (RMA) ceased. If Wellness RMA account holders also had a Health Reimbursement Arrangement (HRA) account, the balance in the Wellness RMA was transferred to the HRA. In addition, OPERS initiated an automatic claims payment process for reimbursements for retiree health care costs paid through pension deduction. This process will reimburse members for eligible health care premiums paid to OPERS up to the member's available Wellness RMA balance.

Statistical Section

Pension Assets vs Pension Liabilities—Accounting Basis ¹ (last four fiscal years, \$ in millions)				All Plans
Year	2017	2016	2015	2014
Plan Fiduciary Net Position	\$87,105	\$77,514	\$74,560	\$77,263
Total Pension Liability	\$102,653	\$100,166	\$91,832	\$89,285
Employers' Net Pension Asset/(Liability)	(\$15,548)	(\$22,652)	(\$17,272)	(\$12,022)
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	84.85%	77.39%	81.19%	86.54%

Pension Assets vs Pension Liabilities—Accounting Basis ¹ (last four fiscal years, \$ in millions)				Traditional Pension Plan
Year	2017	2016	2015	2014
Plan Fiduciary Net Position	\$86,586	\$77,110	\$74,213	\$76,956
Total Pension Liability	\$102,274	\$99,818	\$91,534	\$89,017
Employers' Net Pension Asset/(Liability)	(\$15,688)	(\$22,708)	(\$17,321)	(\$12,061)
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	84.66%	77.25%	81.08%	86.45%

Pension Assets vs Pension Liabilities—Accounting Basis ¹ (last four fiscal years, \$ in millions)				Combined Plan
Year	2017	2016	2015	2014
Plan Fiduciary Net Position	\$501	\$392	\$337	\$298
Total Pension Liability	\$365	\$336	\$288	\$260
Employers' Net Pension Asset/(Liability)	\$136	\$56	\$49	\$38
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	137.28%	116.55%	116.90%	114.83%

Pension Assets vs Pension Liabilities—Accounting Basis ¹ (last four fiscal years, \$ in millions)				Member-Directed Plan
Year	2017	2016	2015	2014
Plan Fiduciary Net Position	\$18	\$12	\$10	\$9
Total Pension Liability	\$14	\$12	\$10	\$8
Employers' Net Pension Asset/(Liability)	\$4	\$0	\$0	\$1
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	124.46%	103.40%	103.91%	107.10%

¹ The Accounting Basis is calculated under Governmental Accounting Standards Board Statement No. 67 (GASB 67). GASB 67 was initially implemented in 2014, data for years prior to 2014 is not available. For more information on the Accounting Basis, refer to Note 8 starting on page 73 in the Financial Section.

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 8 on page 73). Funding Basis assumptions can be found in the Actuarial Section starting on page 139.

Pension Assumptions—Key Differences Between Accounting and Funding Valuations		
Valuation Basis	Accounting	Funding
Measurement and Valuation Date	December 31, 2017	December 31, 2017
Assets Valuation Method	Fair Value	4-year, smoothed market-12% corridor ²
Investment Rate of Return Used to Calculate Liability	Single Discount Rate ¹	Actuarial Assumed 7.5%

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, 2017 was not needed. Therefore, the long-term expected rate of return on pension plan investments, 7.5%, was applied to all periods of projected benefit payments to determine the Total Pension Liability.

² For actuarial purposes, and under the Funding Basis, the funding value of defined benefit assets recognizes assumed investment returns fully 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 fair value by more than 12%.

Statistical Section

Pension Assets vs Pension Liabilities—Funding Basis ¹ (last 10 fiscal years, \$ in millions)													All Plans	
Year	2017	2016 ^f	2015 ^a	2015 ^b	2014	2013	2012 ^d	2012 ^c	2011	2010 ^{a, e}	2010 ^b	2009	2008	
Pension Assets	\$83,292	\$80,280	\$78,061	\$78,061	\$74,865	\$71,411	\$67,855	\$67,855	\$65,436	\$63,649	\$60,600	\$57,629	\$55,315	
Accrued Liabilities	\$102,656	\$100,167	\$97,177	\$91,832	\$89,285	\$86,645	\$83,878	\$87,105	\$84,530	\$80,485	\$79,630	\$76,555	\$73,466	
Unfunded Liabilities	(\$19,364)	(\$19,887)	(\$19,116)	(\$13,771)	(\$14,420)	(\$15,234)	(\$16,023)	(\$19,250)	(\$19,094)	(\$16,836)	(\$19,030)	(\$18,926)	(\$18,151)	
Funded Ratio	81.14%	80.15%	80.33%	85.00%	83.85%	82.42%	80.90%	77.90%	77.41%	79.08%	76.10%	75.28%	75.29%	
Amortization Years	18	19	20	19	21	24	26	30	30	24	29	30	30	
Net Unrealized Gains/(Losses) ²	\$3,813	(\$2,766)	(\$3,501)	(\$3,501)	\$2,398	\$3,455	\$0	\$0	(\$3,589)	\$0	\$3,050	\$104	(\$5,927)	

Pension Assets vs Pension Liabilities—Funding Basis ¹ (last 10 fiscal years, \$ in millions)													Traditional Pension Plan	
Year	2017	2016	2015 ^a	2015 ^b	2014	2013	2012 ^d	2012 ^c	2011	2010 ^{a, e}	2010 ^b	2009	2008	
Pension Assets	\$82,797	\$79,865	\$77,700	\$77,700	\$74,567	\$71,175	\$67,670	\$67,670	\$65,274	\$63,515	\$60,461	\$57,519	\$55,230	
Accrued Liabilities	\$102,274	\$99,818	\$96,863	\$91,535	\$89,017	\$86,407	\$83,664	\$86,876	\$84,325	\$80,307	\$79,459	\$76,407	\$73,346	
Unfunded Liabilities	(\$19,477)	(\$19,953)	(\$19,163)	(\$13,835)	(\$14,450)	(\$15,232)	(\$15,994)	(\$19,206)	(\$19,051)	(\$16,792)	(\$18,998)	(\$18,888)	(\$18,116)	
Funded Ratio	80.96%	80.01%	80.22%	84.89%	83.77%	82.37%	80.88%	77.89%	77.41%	79.09%	76.09%	75.28%	75.30%	
Amortization Years	19	20	20	19	21	25	26	31	30	25	30	30	30	
Net Unrealized Gains/(Losses) ²	\$3,789	(\$2,755)	(\$3,487)	(\$3,487)	\$2,389	\$3,443	(\$2)	(\$2)	(\$3,581)	\$0	\$3,054	\$111	(\$5,918)	

Pension Assets vs Pension Liabilities—Funding Basis ¹ (last 10 fiscal years, \$ in millions)													Combined Plan	
Year	2017	2016	2015 ^a	2015 ^b	2014	2013	2012 ^d	2012 ^c	2011	2010 ^{a, e}	2010 ^b	2009	2008	
Pension Assets	\$479	\$402	\$350	\$350	\$289	\$229	\$183	\$183	\$161	\$134	\$138	\$110	\$85	
Accrued Liabilities	\$365	\$336	\$303	\$288	\$260	\$230	\$212	\$226	\$203	\$177	\$171	\$148	\$120	
Unfunded Liabilities	\$114	\$66	\$47	\$62	\$29	(\$1)	(\$29)	(\$43)	(\$42)	(\$43)	(\$33)	(\$38)	(\$35)	
Funded Ratio	130.97%	119.62%	115.59%	121.71%	111.15%	99.57%	86.32%	80.97%	79.31%	75.71%	80.70%	74.32%	70.83%	
Amortization Years	0	0	0	0	0	0	1	0	2	3	2	3	4	
Net Unrealized Gains/(Losses) ²	\$23	(\$10)	(\$14)	(\$14)	\$9	\$12	\$2	\$2	(\$8)	\$0	(\$4)	(\$7)	(\$9)	

Pension Assets vs Pension Liabilities—Funding Basis ¹ (last 10 fiscal years, \$ in millions)													Member-Directed Annuities	
Year	2017	2016 ^f	2015 ^a	2015 ^b	2014	2013	2012	2011	2010 ^{a, e}	2010 ^b	2009	2008		
Pension Assets	\$16,770	\$12,961	\$10,622	\$10,622	\$8,772	\$6,826	\$2,524	\$1,156	\$0,454	\$0,439	\$0,206	\$0,148		
Accrued Liabilities	\$16,770	\$12,961	\$10,291	\$9,767	\$8,291	\$6,884	\$2,666	\$1,173	\$0,496	\$0,490	\$0,253	\$0,166		
Unfunded Liabilities	\$0	\$0	\$0,331	\$0,855	\$0,481	(\$0,058)	(\$0,142)	(\$0,017)	(\$0,042)	(\$0,051)	(\$0,047)	(\$0,018)		
Funded Ratio	100.00%	100.00%	103.22%	108.75%	105.80%	99.16%	94.67%	98.55%	91.54%	89.63%	81.39%	88.95%		
Net Unrealized Gains/(Losses) ²	\$0,989	(\$0,296)	(\$0,473)	(\$0,473)	\$0,108	\$0,273	\$0,062	(\$0,044)	\$0,000	\$0,015	\$0,002	\$0,016		

^a Information after completion of the experience study.

^b Information prior to completion of the experience study.

^c Information prior to benefit changes enacted January 7, 2013.

^d Valuation revised to reflect benefit changes enacted January 7, 2013.


^e Funding Value was set to Market Value as of December 31, 2010.

^f Restated upon finalization of actuarial valuation subsequent to issuance of the 2016 CAFR.

¹ This table presents actuarial information on a Funding Basis. For more information on the Funding Basis, refer to the Actuarial Section beginning on page 139.


² For actuarial purposes, and under the Funding Basis, the funding value of defined benefit assets recognizes assumed investment returns fully each year. Differences between actual and assumed investment returns are phased in, or smoothed, over a closed four-year period. The funding value is not permitted to deviate from fair value by more than 12%. This amount represents the net unrealized investment gains/losses remaining at the end of each year to be smoothed in future years.

Statistical Section

 Health Care Assets vs Health Care Liabilities—Accounting Basis¹ (last fiscal year, \$ in millions)	
Year	2017
Plan Fiduciary Net Position	\$12,819
Total OPEB Liability	\$23,678
Employers' Net OPEB Liability	(\$10,859)
Plan Fiduciary Net Position as a Percentage of Total OPEB Liability	54.14%


¹ The Accounting Basis is calculated under Governmental Accounting Standards Board Statement No. 74 (GASB 74). GASB 74 was implemented as of December 31, 2017, data prior to 2017 is not available. For more information on the Accounting Basis, refer to Note 9 on page 76 in the Financial Section.

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 9 on page 76). Funding Basis assumptions can be found in the Actuarial Section starting on page 139.

 Health Care Assumptions—Key Differences Between Accounting and Funding Valuations		
Valuation Basis	Accounting	Funding
Actuarial Valuation Date	December 31, 2016	December 31, 2016
Rolled-Forward Measurement Date	December 31, 2017	N/A
Assets Valuation Method	Fair Value	4-year, smoothed market—12% corridor ²
Investment Rate of Return Used to Calculate Liability	Single Discount Rate ¹ 3.85%	Actuarial Assumed 5.00%

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) 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 6.50%; the municipal bond rate is 3.31% (based on the daily rate closest to but not later than the measurement date of the Fidelity "20-year Municipal GO AA Index"); and, the resulting Single Discount Rate is 3.85%.

² For actuarial purposes, and under the Funding Basis, the funding value of defined benefit assets recognizes assumed investment returns fully 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 fair value by more than 12%.

 Health Care Assets vs Liabilities—Funding Basis¹ (last 10 fiscal years, \$ in millions)									Total Health Care Fund			
Year	2016	2015 ^a	2015 ^b	2014	2013	2012	2011	2010 ^{a, c}	2010 ^b	2009	2008	2007
Health Care Assets	\$12,098	\$11,933	\$11,933	\$12,062	\$12,031	\$12,193	\$12,115	\$12,320	\$11,267	\$10,936	\$10,748	\$12,801
Accrued Liabilities	\$19,924	\$19,224	\$18,515	\$19,405	\$19,784	\$19,182	\$31,020	\$30,531	\$26,929	\$31,558	\$29,623	\$29,825
Unfunded Liabilities	(\$7,826)	(\$7,291)	(\$6,582)	(\$7,343)	(\$7,753)	(\$6,989)	(\$18,905)	(\$18,211)	(\$15,662)	(\$20,622)	(\$18,875)	(\$17,024)
Funded Ratio	60.72%	62.10%	64.45%	62.16%	60.81%	63.56%	39.06%	40.35%	41.84%	34.65%	36.28%	42.92%
Solvency Period	12	Indefinite ²	Indefinite ²	Indefinite ²	Indefinite ²	Indefinite ²	10	11	11	11	11	31
Net Unrealized Gains/(Losses) ³	(\$218)	(\$421)	(\$421)	\$764	\$1,080	\$635	(\$519)	\$0	\$1,052	\$479	(\$1,152)	\$482

^a Information after completion of the experience study.

^b Information prior to completion of the experience study.

^c Funding Value was set to Market Value as of December 31, 2010.

¹ This table presents actuarial information on a Funding Basis. For more information on the Funding Basis, refer to the Actuarial Section beginning on page 139.

² Funds expected to be sufficient to fund future health care needs.

³ For actuarial purposes, and under the Funding Basis, the funding value of defined benefit assets recognizes assumed investment returns fully each year.

Differences between actual and assumed investment returns are phased in, or smoothed, over a closed four-year period. The funding value is not permitted to deviate from fair value by more than 12%. This amount represents the net unrealized investment gains/losses remaining at the end of each year to be smoothed in future years.

The Board approved changes to the OPERS health care plans in 2012. The ultimate goal of the health care changes was to match the cash deposits to the health care trust (assumed to be 4%) and disbursements from the health care trust (also assumed to be 4%). Since deposits and disbursements will rarely equal exactly, the Board established a health care stabilization fund to hold deposits in excess of 4%. The balance of the stabilization fund will supplement deposits to the health care core (operating) fund when employer contributions or investment income of 4% was not available during the year or disbursements from the trust exceed 4% during the year. The stabilization fund is tracked in OPERS internal records, but 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 Liabilities ¹ (last 5 fiscal years, \$ in millions)				Health Care—Core Fund		
Year	2016	2015 ^a	2015 ^b	2014	2013	2012
Health Care Assets	\$10,338	\$10,109	\$10,109	\$10,622	\$11,110	\$11,759
Accrued Liabilities	\$19,924	\$19,224	\$18,515	\$19,405	\$19,784	\$19,182
Unfunded Liabilities	(\$9,586)	(\$9,115)	(\$8,406)	(\$8,783)	(\$8,674)	(\$7,423)
Funded Ratio	51.89%	52.59%	54.60%	54.74%	56.16%	61.30%
Solvency Period	10	Indefinite ²	Indefinite ²	Indefinite ²	Indefinite ²	Indefinite ²

^a Information after completion of the experience study.

¹ As the stabilization fund was created in 2012, information prior to 2012 is not available.

^b Information prior to completion of the experience study.

² Funds expected to be sufficient to fund future health care needs.

Contribution Rates				
Year	Actuarially Determined Contribution Rate	Employer Contribution Rate Funding Health Care		Note
	All Plans	Traditional Pension Plan	Combined Plan	
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	12.96	1.00	1.00	(1)
2012	11.52	4.00	6.05	(1)
2011	14.55	4.00	6.05	(1)
2010	13.34	5.08	4.31	(1) (2)
2009	13.26	5.88	5.02	(1) (3)
2008	14.57	7.00	5.90	(1)

(1) 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.

(2) The portion of the employer contribution rate allocated to fund health care for the Traditional Pension Plan was 5.50% for the period January 1, 2010 through February 28, 2010, and decreased to 5.00% for the period March 1, 2010 through December 31, 2010. The overall effective rate for the year was 5.08%. The rates for the Combined Plan for the same periods were 4.73% and 4.23%, respectively, for an overall effective rate for the year of 4.31%.

(3) The portion of the employer contribution rate allocated to fund health care for the Traditional Pension Plan was 7.00% for the period January 1, 2009 through March 31, 2009, and decreased to 5.50% for the period April 1, 2009 through December 31, 2009. The overall effective rate for the year was 5.88%. The rates for the Combined Plan for the same periods were 5.90% and 4.73%, respectively, for an overall effective rate for the year of 5.02%.

Health Care Self-Funding Rate ¹	
Year	Rate
2016	4.60%
2015 ^a	4.70
2015 ^b	4.00
2014	4.10
2013	4.10
2012	3.80
2011	6.40
2010	6.70
2009	8.00
2008	7.70
2007	7.40

^a Information after completion of the experience study.

^b Information prior to completion of the experience study.


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.

Statistical Section

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 by our actuaries for the annual actuarial valuations, described further in the Actuarial Section. Finally, the single discount rate and long-term municipal bond rates are applicable to the implementation of GASB 74 in this 2017 annual report, including 2016 opening balances. These rates are used in the Accounting Basis valuations for health care. Information for 2015 and prior is not available.

Rates are presented for five years in the following table:


 Investment Rates by Portfolio					
	2017	2016	2015	2014	2013
Defined Benefit Portfolio					
Actual Rate of Return	16.82%	8.31%	0.33%	6.96%	14.38%
Benchmark Return	8.53	8.64	0.25	5.81	14.24
Long-Term Expected Rate of Return	8.00	8.00	8.00	8.00	8.00
Actuarial Assumed Rate of Return	7.50	7.50	8.00	8.00	8.00
Health Care Portfolio¹					
Actual Rate of Return	15.25%	7.55%	(2.18%)	5.28%	11.36%
Benchmark Return	8.53	7.75	(1.88)	5.01	10.70
Long-Term Expected Rate of Return	6.50	6.50	6.50	6.50	6.50
Actuarial Assumed Rate of Return	6.50	5.00	5.00	5.00	5.00
Single Discount Rate (GASB 74) ²	3.85	4.23	N/A	N/A	N/A
Long-Term Municipal Bond Rate ²	3.31	3.78	N/A	N/A	N/A

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 of these 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) 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 9 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 2011 through 2017 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. Prior to 2011, the values represent the number of individuals receiving a benefit payment from OPERS, where one retiree’s account may be issued to multiple recipients or beneficiaries. Restated data for years prior to 2011 is not available.

 Traditional Pension Plan				
Year End	Annuities	Disabilities	Survivors	Total
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
2012	155,008	22,768	12,712	190,488
2011	149,598	22,476	12,802	184,876
2010	143,035	23,041	13,437	179,513
2009	135,918	22,651	13,358	171,927
2008	130,734	22,515	13,250	166,499

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 221). 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 2011 through 2017. 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
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
2012	151,765	2,112	153,877	1,131	155,008
2011	146,687	1,901	148,588	1,010	149,598

Statistical Section


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 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, elect to purchase an annuity, 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 purchase an annuity, transfer their defined contribution account to another financial institution, or refund their account (refer to the Plan Statement beginning on page 221).

 Combined Plan¹					
Year End	Age-and-Service Annuities	Annuitized DC Accounts	Installment Payments	Liquidated or Deferred DC Accounts ²	Number of Retirees
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
2012	55	37	13	5	55
2011	36	22	13	1	36
2010	21	13	7	1	21
2009	9	6	3		9
2008	7	5		2	7

¹ As of April 1, 2012, no member had elected a combination annuity and installment payment benefit distribution since commencement of the plan January 1, 2003. Retirements effective on or after April 1, 2012, no longer have this option.


² Beginning in 2013, 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 Plan¹			
Year End	Annuities	Installment Payments	Total
2017	242	5	247
2016	219	7	226
2015	185	9	194
2014	154	13	167
2013	131	14	145
2012	62	16	78
2011	38	15	53
2010	18	13	31
2009	9	10	19
2008	5	5	10


¹ As of April 1, 2012, no member had elected a combination annuity and installment payment benefit distribution since commencement of the plan on January 1, 2003. Retirements effective on or after April 1, 2012, no longer have this option.

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 2010 through 2017 counts for the Health Care Plans table reflect the number of retirees and primary beneficiaries, and the number of additional dependents and other beneficiaries receiving coverage. 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 this 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. Corresponding data for years prior to 2010 is not available. These counts represent all Traditional Pension Plan and Combined Plan retirees, dependents, and beneficiaries receiving 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
2017	169,368	37,072	206,440
2016	170,590	42,938	213,528
2015	170,687	52,110	222,797
2014	167,327	58,692	226,019
2013	165,967	61,041	227,008
2012	163,940	62,456	226,396
2011	161,315	62,507	223,822
2010	157,269	60,624	217,893
2009	N/A	N/A	213,220
2008	N/A	N/A	208,857

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. Funding for Member-Directed Plan health care was accumulated in a Voluntary Employees' Beneficiary Association Trust (VEBA Trust). The VEBA Trust was closed as of June 30, 2016 and the net position transferred into the 115 Health Care Trust (115 Trust) on July 1, 2016. Beginning July 1, 2016, funding for the Member-Directed Plan health care is accumulated in the 115 Trust.

 Member-Directed Plan Retiree Health Care	
Year End	Total Covered Lives
2017	6,203
2016	5,605
2015	4,063
2014	3,509
2013	3,112
2012	2,589
2011	2,073
2010	1,577
2009	1,260
2008	365

Statistical Section


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 2017)							
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	11,317	1,815	13,132	47	614	623	14,416
\$300-499	8,590	495	9,085	111	1,799	287	11,282
\$500-999	22,560	510	23,070	901	4,083	363	28,417
\$1,000-1,499	21,377	154	21,531	2,627	2,700	163	27,021
\$1,500-1,999	18,818	79	18,897	4,235	1,403	73	24,608
\$2,000 & Over	89,104	74	89,178	13,401	1,991	43	104,613
Totals	171,766	3,127	174,893	21,322	12,590	1,552	210,357

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 purchase a defined benefit annuity, 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 April 1, 2012, only installment payments with a remaining account balance are counted.


 Combined Plan (as of December 2017)			
Amount of Monthly Benefit	Employer Age-and-Service Annuities	Annuitized DC Accounts	DC Installment Payments
\$1-299	132	120	
\$300-499	93	50	
\$500-999	51	17	
\$1,000-1,499	6	5	
\$1,500-1,999	1	1	
\$2,000 & Over			
Various			6
Totals	283	193	6

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 installments payments with a remaining account balance are counted.

 Member-Directed Plan (as of December 2017)			
Amount of Monthly Benefit	Annuitized DC Accounts	DC Installment Payments	Total Retirees
\$1-299	113		113
\$300-499	59		59
\$500-999	53		53
\$1,000-1,499	12		12
\$1,500-1,999	2		2
\$2,000 & Over	3		3
Various		5	5
Totals	242	5	247


Number of New Pension Retirees

The values included in the following tables represent the number of new benefit recipients each year. The 2011 through 2017 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. Prior to 2011, the values represent the number of new individuals receiving a benefit payment from OPERS where one retiree account may be issued to multiple recipients or beneficiaries. Related data for years prior to 2011 is not available.

 Traditional Pension Plan				
Year	Annuities	Disabilities	Survivors	Total
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
2012	9,793	1,245	358	11,396
2011	10,885	1,051	400	12,336
2010	10,503	1,327	737	12,567
2009	9,026	1,132	723	10,881
2008	8,689	1,351	695	10,735

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 221). 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-employed period.

The table below displays the composition of the 2011 through 2017 Traditional Pension Plan Annuities by type. 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). Comparable data for years prior to 2011 is not available.


 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
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
2012	9,607	53	9,660	133	9,793
2011	10,730	54	10,784	101	10,885

Statistical Section


Number of New Pension Retirees (continued)

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 purchase a defined benefit annuity, 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, with no new elections after that date.

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	Defined Contribution Installment Payments	Liquidated or Deferred Defined Contribution Accounts
2017	49	38		
2016	43	30		
2015	41	30		
2014	56	35		
2013	45	27		
2012	19	15	1	3
2011	15	9	7	
2010	12	7	4	1
2009	2	1	1	
2008	5	3	2	

The Member-Directed Plan table displays the distribution of members electing either a defined benefit annuity or an installment payment option.

 Member-Directed Plan			
Year	Annuities	Installment Payments	Total
2017	25		25
2016	34		34
2015	31		31
2014	24		24
2013	69		69
2012	24	1	25
2011	20	6	26
2010	8	4	12
2009	6	5	11
2008	3	4	7

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 221 for benefit eligibility requirements). The Average Final Average Salary represents a composite for each group.

The 2011 through 2017 statistics include members with less than five years of service. Comparable data for years prior to 2011 is not available. The Total New Retirees column represents the average monthly benefit and average FAS for the retiree counts listed in each year.

		Schedule of Average Benefits ¹ (last 10 fiscal years)							Traditional Pension Plan
		Years Credited Service							Total New Retirees
Retirement Effective Dates		0-4	5-9	10-14	15-19	20-24	25-30	30+	
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
2012	Average Monthly Benefit	\$236	\$668	\$904	\$1,323	\$1,824	\$2,361	\$3,309	\$2,078
	Average Final Average Salary	\$7,385	\$31,007	\$37,923	\$43,991	\$47,969	\$54,624	\$60,927	\$49,262
	Number of Active Recipients	146	1,035	1,677	1,353	1,544	1,761	3,747	11,263
2011	Average Monthly Benefit	\$309	\$606	\$897	\$1,320	\$1,857	\$2,361	\$3,270	\$2,186
	Average Final Average Salary	\$10,126	\$30,676	\$37,732	\$43,790	\$49,365	\$55,207	\$60,228	\$50,406
	Number of Active Recipients	156	962	1,569	1,410	1,518	1,786	4,834	12,235
2010	Average Monthly Benefit		\$684	\$893	\$1,216	\$1,623	\$2,218	\$3,315	\$2,190
	Average Final Average Salary		\$30,128	\$36,592	\$41,616	\$45,312	\$51,264	\$58,633	\$48,897
	Number of Active Recipients		806	1,460	1,203	1,249	1,493	4,396	10,607
2009	Average Monthly Benefit		\$670	\$901	\$1,217	\$1,608	\$2,195	\$3,263	\$2,228
	Average Final Average Salary		\$30,925	\$37,211	\$42,333	\$45,453	\$51,770	\$57,750	\$49,335
	Number of Active Recipients		801	1,435	1,111	1,205	1,389	4,898	10,839
2008	Average Monthly Benefit		\$658	\$803	\$1,102	\$1,491	\$2,140	\$3,006	\$1,980
	Average Final Average Salary		\$28,690	\$34,193	\$39,625	\$43,193	\$49,965	\$55,247	\$46,068
	Number of Active Recipients		784	1,360	1,012	1,066	1,268	3,750	9,240

¹ All years begin January 1 and end December 31.

Statistical Section

Schedule of Average Benefits (continued)

		Schedule of Average Benefits ¹ (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
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
2012	Average Monthly Benefit		\$255	\$263			\$259
	Average Final Average Salary		\$48,341	\$39,064			\$43,459
	Number of Active Recipients		9	10			19
2011	Average Monthly Benefit		\$237	\$454			\$281
	Average Final Average Salary		\$49,177	\$75,127			\$54,367
	Number of Active Recipients		12	3			15
2010	Average Monthly Benefit		\$229	\$217			\$225
	Average Final Average Salary		\$61,819	\$33,958			\$51,688
	Number of Active Recipients		7	4			11
2009	Average Monthly Benefit		\$212	\$232			\$222
	Average Final Average Salary		\$54,215	\$42,062			\$48,139
	Number of Active Recipients		1	1			2
2008	Average Monthly Benefit		\$95	\$85			\$91
	Average Final Average Salary		\$25,665	\$21,305			\$23,921
	Number of Active Recipients		3	2			5

¹ All years begin January 1 and end December 31.

Member Counts by Plan

The tables below represent the number of members in each retirement plan based on their status in the plan. 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.

The 2011 through 2017 Benefit Recipient counts represent retired members only, regardless of the number of recipients designated by the retiree’s plan of payment. These statistics are representative of OPERS contributing membership. Prior to 2011, the values represent the number of individuals receiving a benefit payment from OPERS where one retiree account may be issued to multiple recipients or beneficiaries.

Member Count—Pension Plans				Total All Pension Plans
Year End	Active	Inactive	Retirees	Total
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
2012	348,235	467,298	190,621	1,006,154
2011	349,189	452,718	184,965	986,872
2010	356,734	438,434	179,565	974,733
2009	365,229	416,548	171,955	953,732
2008	374,002	395,445	166,516	935,963

Member Count—Pension Plans				Traditional Pension Plan
Year End	Active	Inactive	Retirees	Total
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
2012	331,836	462,597	190,488	984,921
2011	333,340	448,417	184,876	966,633
2010	341,779	434,804	179,513	956,096
2009	351,166	413,461	171,927	936,554
2008	360,107	392,687	166,499	919,293

Statistical Section

Member Counts by Plan (continued)

Member Count—Pension Plans				Combined Plan
Year End	Active	Inactive	Retirees	Total
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
2012	6,903	1,460	55	8,418
2011	6,674	1,314	36	8,024
2010	6,554	1,052	21	7,627
2009	6,403	942	9	7,354
2008	6,376	846	7	7,229

Member Count—Pension Plans				Member-Directed Plan
Year End	Active	Inactive	Retirees	Total
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
2012	9,496	3,241	78	12,815
2011	9,175	2,987	53	12,215
2010	8,401	2,578	31	11,010
2009	7,660	2,145	19	9,824
2008	7,519	1,912	10	9,441

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. Comparable data for years prior to 2011 is not available.

Member Count—Pension Plans				All Plans
Year End	Active	Inactive	Retirees	Total
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
2012	348,235	465,940	190,619	1,004,794
2011	349,188	451,353	184,963	985,504

Member Counts by Plan (continued)

The values included in the tables below represent the number of individuals covered by the OPERS health care plans. The 2010 through 2017 counts in these tables reflect the number of retirees and primary beneficiaries only. In addition to a retiree, a primary benefit recipient could be a survivor of a deceased retiree continuing to receive coverage on the retiree’s account, which is representative of the OPERS contributing membership. Dependents and Other Beneficiaries, primarily receiving dental and vision coverage, is shown separately for 2010 through 2017. Corresponding data for years prior to 2010 is not available.

Member Count—Health Care Plans				Total All Health Care Plans	
Year End	Active	Inactive	Retirees & Primary Beneficiaries	Dependents & Other Beneficiaries	Total
2017	11,613	4,309	175,571	37,072	228,565
2016	11,469	3,976	176,195	42,938	234,578
2015	11,235	4,764	174,750	52,110	242,859
2014	10,745	4,194	170,836	58,692	244,467
2013	9,962	3,543	169,079	61,041	243,625
2012	9,501	3,189	166,529	62,456	241,675
2011	9,170	2,918	163,388	62,507	237,983
2010	8,392	2,574	158,846	60,624	230,436
2009	7,660	2,126	214,480		224,266
2008	7,520	1,886	209,222		218,628

Member Count—Health Care Plans			Traditional Pension Plan and Combined Plan		
Year End	Active	Inactive	Retirees & Primary Beneficiaries ¹	Dependents & Other Beneficiaries ¹	Total
2017	N/A	N/A	169,368	37,072	206,440
2016	N/A	N/A	170,590	42,938	213,528
2015	N/A	N/A	170,687	52,110	222,797
2014	N/A	N/A	167,327	58,692	226,019
2013	N/A	N/A	165,967	61,041	227,008
2012	N/A	N/A	163,940	62,456	226,396
2011	N/A	N/A	161,315	62,507	223,822
2010	N/A	N/A	157,269	60,624	217,893
2009	N/A	N/A	213,220		213,220
2008	N/A	N/A	208,857		208,857

¹ Prior to 2010, Retirees & Primary Beneficiaries was defined as the total number of covered lives.

Statistical Section

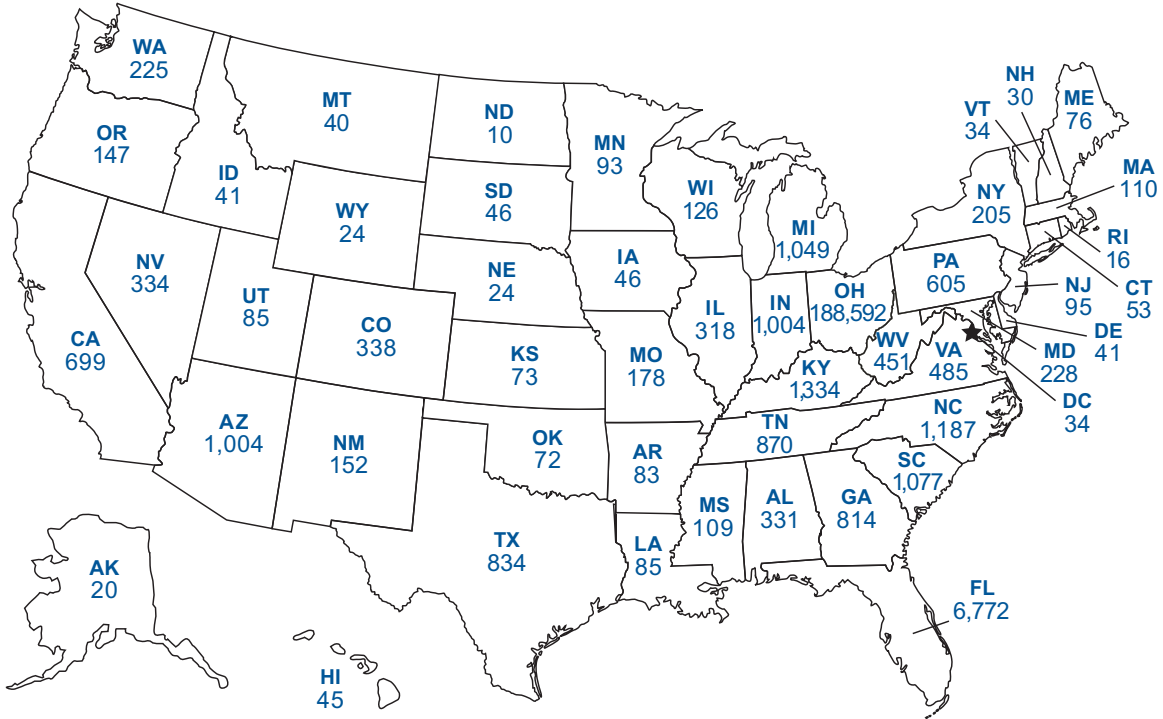
Member Counts by Plan (continued)

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 221.)

Member Count—Health Care Plans			Member-Directed Health Care Plan	
Year End	Active	Inactive	Retiree Recipients	Total
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
2012	9,501	3,189	2,589	15,279
2011	9,170	2,918	2,073	14,161
2010	8,392	2,574	1,577	12,543
2009	7,660	2,126	1,260	11,046
2008	7,520	1,886	365	9,771


Retirees by Geographical Location (as of December 31, 2017)

Retirees by State



Retirees Outside United States

Armed Forces—Europe.....2	Israel.....6	Puerto Rico.....18
Armed Forces—Pacific3	Italy.....6	Romania.....1
Australia.....3	Japan.....2	Scotland.....2
Austria.....1	Jordan.....1	Senegal.....1
Bulgaria.....1	Latvia.....1	Serbia.....1
Canada.....26	Lebanon.....1	Singapore.....1
China.....1	Lithuania.....1	Slovakia.....2
Costa Rica.....2	Mexico.....1	South Africa.....1
England.....3	N. Ireland.....2	Spain.....4
Ethiopia.....1	New Zealand.....2	Thailand.....3
France.....4	Northern Mariana Islands.....1	Turkey.....1
Germany.....2	Norway.....1	United Kingdom.....2
Greece.....2	Peru.....1	Virgin Islands.....3
Hungary.....1	Philippines.....1	West Indies.....1
Ireland.....3	Poland.....1	

 Contribution Rates at December 31			Traditional Pension Plan				
	Year	Member Rates	Employer Rates			Total Employer Rates	Total Aggregate Employer and Member Rates
			Normal Cost	Unfunded Liability	Health		
State	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
	2012	10.00	5.36	4.64	4.00	14.00	24.00
	2011	10.00	5.34	4.66	4.00	14.00	24.00
	2010 ^a	10.00	5.35	3.65	5.00	14.00	24.00
	2009 ^b	10.00	4.89	3.61	5.50	14.00	24.00
2008	10.00	4.89	2.11	7.00	14.00	24.00	
Local	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
	2012	10.00	5.05	4.95	4.00	14.00	24.00
	2011	10.00	5.04	4.96	4.00	14.00	24.00
	2010 ^a	10.00	5.06	3.94	5.00	14.00	24.00
	2009 ^b	10.00	4.46	4.04	5.50	14.00	24.00
2008	10.00	4.46	2.54	7.00	14.00	24.00	
Law Enforcement	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
	2012	12.10	8.16	5.94	4.00	18.10	30.20
	2011	11.60	8.43	5.67	4.00	18.10	29.70
	2010 ^a	11.10	8.95	3.92	5.00	17.87	28.97
	2009 ^b	10.10	9.65	2.48	5.50	17.63	27.73
2008	10.10	9.65	0.75	7.00	17.40	27.50	
Public Safety	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
	2012	11.50	7.77	6.33	4.00	18.10	29.60
	2011	11.00	8.32	5.78	4.00	18.10	29.10
	2010 ^a	10.50	8.55	4.32	5.00	17.87	28.37
	2009 ^b	10.10	8.63	3.50	5.50	17.63	27.73
2008	10.10	8.63	1.77	7.00	17.40	27.50	

^a The health care contribution rate decreased from 5.5% to 5.0% effective March 1, 2010.

^b The health care contribution rate decreased from 7.0% to 5.5% effective April 1, 2009.

continued on page 217

Statistical Section

continued from page 216

Contribution Rates at December 31							Combined Plan	
	Year	Member Rates	Employer Rates				Total Employer Rates	Total Aggregate Employer and Member Rates
			Normal Cost	Unfunded Liability ¹	Mitigation Rate	Health		
State	2017	10.00%	7.52%	3.98%	1.50%	1.00%	14.00%	24.00%
	2016	10.00	7.56	3.44	1.00	2.00	14.00	24.00
	2015	10.00	7.54	3.69	0.77	2.00	14.00	24.00
	2014	10.00	6.99	4.24	0.77	2.00	14.00	24.00
	2013	10.00	7.20	5.03	0.77	1.00	14.00	24.00
	2012	10.00	7.18	0.00	0.77	6.05	14.00	24.00
	2011	10.00	7.18	0.00	0.77	6.05	14.00	24.00
	2010 ^a	10.00	7.18	1.82	0.77	4.23	14.00	24.00
	2009 ^b	10.00	7.21	1.29	0.77	4.73	14.00	24.00
2008	10.00	7.21	0.12	0.77	5.90	14.00	24.00	
Local	2017	10.00%	7.40%	4.10%	1.50%	1.00%	14.00%	24.00%
	2016	10.00	7.42	3.58	1.00	2.00	14.00	24.00
	2015	10.00	7.41	3.82	0.77	2.00	14.00	24.00
	2014	10.00	6.83	4.40	0.77	2.00	14.00	24.00
	2013	10.00	6.87	5.36	0.77	1.00	14.00	24.00
	2012	10.00	6.88	0.30	0.77	6.05	14.00	24.00
	2011	10.00	6.88	0.30	0.77	6.05	14.00	24.00
	2010 ^a	10.00	6.87	2.13	0.77	4.23	14.00	24.00
	2009 ^b	10.00	6.88	1.62	0.77	4.73	14.00	24.00
2008	10.00	6.88	0.45	0.77	5.90	14.00	24.00	

^a The health care contribution rate decreased from 4.73% to 4.23% effective March 1, 2010.

^b The health care contribution rate decreased from 5.90% to 4.73% effective April 1, 2009.

¹ Unfunded Liability includes the impact of defined contribution account purchases of defined benefit annuities.

Contribution Rates at December 31							Member-Directed Plan		
	Year	Member Rates	Employer Rates				Total Employer Rates	Total Aggregate Employer and Member Rates	
			Normal Cost	Unfunded Liability	Administrative Fee	Mitigation Rate			Health ¹
State	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		0.77	4.50	14.00	24.00
	2014	10.00	8.73	N/A		0.77	4.50	14.00	24.00
	2013	10.00	8.73	N/A		0.77	4.50	14.00	24.00
	2012	10.00	8.73	N/A		0.77	4.50	14.00	24.00
	2011	10.00	8.73	N/A		0.77	4.50	14.00	24.00
	2010	10.00	8.73	N/A		0.77	4.50	14.00	24.00
	2009	10.00	8.73	N/A		0.77	4.50	14.00	24.00
2008	10.00	8.73	N/A		0.77	4.50	14.00	24.00	
Local	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		0.77	4.50	14.00	24.00
	2014	10.00	8.73	N/A		0.77	4.50	14.00	24.00
	2013	10.00	8.73	N/A		0.77	4.50	14.00	24.00
	2012	10.00	8.73	N/A		0.77	4.50	14.00	24.00
	2011	10.00	8.73	N/A		0.77	4.50	14.00	24.00
	2010	10.00	8.73	N/A		0.77	4.50	14.00	24.00
	2009	10.00	8.73	N/A		0.77	4.50	14.00	24.00
2008	10.00	8.73	N/A		0.77	4.50	14.00	24.00	


¹ Beginning October 2014, the Board approved the funding of participant Member-Directed Plan health care accounts using the reserves in the Member-Directed Plan health care plan (formerly titled the VEBA Trust) rather than the allocation of employer contributions. Instead, employer contributions were allocated to the Member-Directed Plan through December 31, 2015 to repay the original plan start-up and administrative costs. Contributions resumed to the Member-Directed health care plan in January 2016.

Number of Employer Units									All Plans ¹
Calendar Year	State	County ²	Law Enforcement	Municipalities	Villages	Miscellaneous	Libraries	Townships	Totals
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
2012	271	214	242	245	678	491	253	1,308	3,702
2011	271	211	241	246	675	490	253	1,308	3,695
2010	269	215	241	247	675	491	253	1,308	3,699
2009	270	238	237	248	671	489	253	1,308	3,714
2008	269	244	248	251	670	474	254	1,314	3,724


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, 2017 was 3,227.


² Effective January 1, 2010, House Bill 420 transferred authority for managing county law libraries to County Law Library Resource Boards within county governments. This consolidation with county governments resulted in a reduction in the number of individual employer units.

Statistical Section

 Principal Participating Employers						
Employers by Participating Employer Ranking	2017			2008 ^a		
	Covered Employees	Rank	Percentage of Total System	Covered Employees	Rank	Percentage of Total System
The Ohio State University	40,140	1	11.55%	24,177	1	6.46%
Cuyahoga County	7,768	2	2.24	10,208	2	2.73
MetroHealth Medical Center	7,472	3	2.15	5,854	6	1.57
University of Cincinnati	7,007	4	2.02	5,766	7	1.54
Franklin County	6,828	5	1.96	6,749	4	1.80
City of Columbus	6,167	6	1.77	6,788	3	1.81
City of Cleveland	5,750	7	1.65	6,141	5	1.64
Ohio University	5,639	8	1.62	N/A	N/A	N/A
Ohio Department of Transportation	5,460	9	1.57	5,729	9	1.53
Kent State University	5,042	10	1.45	N/A	N/A	N/A
Hamilton County	N/A	N/A	N/A	5,744	8	1.54
Montgomery County	N/A	N/A	N/A	4,910	10	1.31
All Other (see table on page 220)	250,457	N/A	72.02	291,936	N/A	78.07
Total	347,730	N/A	100.00%	374,002	N/A	100.00%

^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 in 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, a 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, does not exist. As a result, the values for 2008 in this table reflect the number of employers based on employer units.

 Employer Units						
Employers by Employer Unit Ranking	2017			2008		
	Covered Employees	Rank	Percentage of Total System	Covered Employees	Rank	Percentage of Total System
The Ohio State University	40,073	1	11.53%	24,177	1	6.46%
Cuyahoga County	7,594	2	2.18	10,208	2	2.73
MetroHealth Medical Center	7,472	3	2.15	5,854	6	1.57
University of Cincinnati	6,946	4	2.00	5,766	7	1.54
Franklin County	6,231	5	1.79	6,749	4	1.80
City of Cleveland	5,750	6	1.66	6,141	5	1.64
City of Columbus	5,658	7	1.63	6,788	3	1.81
Ohio University	5,609	8	1.61	N/A	N/A	N/A
Ohio Department of Transportation	5,460	9	1.57	5,729	9	1.53
Kent State University	5,012	10	1.44	N/A	N/A	N/A
Hamilton County	N/A	N/A	N/A	5,744	8	1.54
Montgomery County	N/A	N/A	N/A	4,910	10	1.31
All Other (see table on page 220)	251,925	N/A	72.44	291,936	N/A	78.07
Total	347,730	N/A	100.00%	374,002	N/A	100.00%

 Employers—All Other Categories¹								
Employer Type	2017				2008 ^a			
	Employer Units		Participating Employers		Employer Units		Participating Employers	
	Number	Employees	Number	Employees	Number	Employees	Number	Employees
State	243	64,194	151	64,954	266	84,172	266	84,172
County	230	71,435	118	76,870	240	72,564	240	72,564
Municipalities	240	48,496	233	48,144	249	52,869	249	52,869
Miscellaneous	505	21,947	497	21,503	473	30,022	473	30,022
Libraries	253	12,939	252	12,930	254	15,498	254	15,498
Townships	1,308	11,018	1,307	12,314	1,314	14,741	1,314	14,741
Villages	658	13,715	659	13,742	670	14,416	670	14,416
Law Enforcement/Public Safety	236	8,181	N/A	N/A	248	7,654	248	7,654
Total	3,673	251,925	3,217	250,457	3,714	291,936	3,714	291,936

^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, does not exist. As a result, the values for 2008 in this table reflect the number of employers based on employer units.

¹ This table displays additional information on the All Other category in the two tables on the previous page. To get the total number of employers reported in the table and related footnote on page 218, combine the numbers in this table with those on page 219 for the employer units (10 plus 3,673 = 3,683 for 2017) and participating employers (10 plus 3,217 = 3,227 for 2017). GASB requires a 10 year look-back to the year being presented. Therefore, information for 2009 through 2016 is not relevant.

Plan Statement



Facing the future—retirement basics

OPERS provides financial security for Ohio public employees in retirement. However, when considering the decision to retire, members are encouraged to gather and understand all the numbers that will affect your retirement years.

What numbers make the biggest difference? Of course everyone's situation is unique. However, in general, all members and retirees should:

- **Know your budget**

Know where your money goes—monthly and seasonally. Only when you know how much you spend can you actually anticipate how much you'll need.

- **Build up a personal savings account**

Unexpected expenses happen to everyone—from needing a new furnace to a refrigerator on the blink—a savings account provides security by ensuring that an unforeseen situation can be handled.

- **Eliminate credit card debt**

Credit cards are great but must be managed carefully. Make sure you research your credit card options and choose the one that's best for you. Remember simple basics:

- Pay credit cards off every month
- Never exceed 25 percent of your credit line (may affect your credit score)
- Do not use a credit card to make ends meet—adjust your budget elsewhere

- **Look for ways to boost your income**

Eliminate unnecessary expenses—remember your public library provides access to books, videos, music, magazines and newspapers.

OPERS facts: The state of Ohio sponsors a deferred compensation program. The program is available to all OPERS members and permits you to defer a portion of your salary until future years. The Ohio Deferred Compensation Plan is another great avenue of saving toward a secure retirement.



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 plan features. However, it is not a substitute for the state and federal laws that govern OPERS.

All public employees, 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 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 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 80 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.

Effective January 7, 2013, legislation modified components of the Traditional Pension and Combined plans. Members were impacted by these changes to varying degrees, based on retirement group. Three retirement groups (A, B and C) were designed to ease the transition for key components of the pension plan changes.

- **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 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 employee 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 employee 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 OPERS investment options. The investment options include six core funds comprised of a series of fixed income and equity funds, 10 target date funds, and a self-directed brokerage account. 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 employee and vested employer contributions and the investment gains and losses on those contributions.

Plan Statement

- **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, employee contributions are deposited into the member's individual account and the member directs the investment by selecting from professionally managed OPERS investment options. The investment options include six core funds comprised of a series of fixed income and equity funds, 10 target date funds, and a self-directed brokerage account. The defined contribution account value available at retirement is based on employee contributions and the investment gains and losses on those contributions.

Contributions

Employers are required to make contributions to the System on the basis of a percentage 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 2017 was 14.0%. Employers in the Law Enforcement and Public Safety divisions contributed 18.1%.

The 2017 employee 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%. Individual accounts for each OPERS member are maintained and funds contributed by members of the Traditional Pension Plan are fully refundable at service termination or death. The refund value of contributions made by members of the Combined Plan and the Member-Directed Plan are subject to changes (gains or losses) that occur as a result of the member's selected investment options.

Additional Voluntary Contributions

- **The Traditional Pension Plan**

A member or a re-employed retiree who is contributing to a money purchase annuity may deposit additional money or rollover funds into the Additional Annuity Program. Voluntary after-tax additional annuity deposits are limited by federal tax law to 100% of a member's annual income from all public employers contributing to OPERS or to the current annual IRS limitation, whichever is less. Additional Annuity deposits are invested in the OPERS Stable Value Fund and are subject to daily investment gains and losses. Earnings are tax-deferred until the time of distribution.

Upon termination of employment or retirement, the member may either choose to receive a refund of the account value or an annuity. The annuity program offers the same payment options as those offered for an age-and-service retirement under the Traditional Pension Plan.

- **The Member-Directed Plan and Combined Plan**

Members participating in the Member-Directed or Combined plans may deposit additional money or rollover funds into their individual defined contribution account. Voluntary after-tax deposits are limited by federal tax law to 100% of a member's annual income from all public employers contributing to OPERS or to the current annual IRS limitation, whichever is less. The additional contributions are invested in the same investment options the member selected for his/her individual defined contribution account, and are subject to investment gains and losses.

Upon termination of employment or retirement, members may elect to receive either a lump-sum refund of the account value or any of the retirement distribution options available to defined contribution accounts.

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 law in effect prior to the legislation or who will be eligible to retire no later than five years after January 7, 2013, comprise retirement Group A. Members who have 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, are included in retirement Group B. 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
	N/A	N/A	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

Plan Statement

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 (CBBC). The base benefit amount calculated by the formula will be reduced if a member begins receiving a retirement benefit before he/she reaches the age-and-service requirements for an unreduced benefit.

In the Traditional Pension Plan, the benefit formula for State and Local members in retirement Groups A and B applies a factor of 2.2% to the member's FAS for the first 30 years of service. A factor of 2.5% is applied to years of service in excess of 30. The benefit formula for State and Local members in retirement Group C applies a factor of 2.2% to the member's FAS for the first 35 years of service and a factor of 2.5% is applied to years of service in excess of 35.

In the Traditional Pension Plan, the benefit formula for members in the Public Safety and Law Enforcement divisions applies a factor of 2.5% to member's FAS for the first 25 years of service as a Public Safety or Law Enforcement member. A factor of 2.1% is applied to years of service in excess of 25.

In the Combined Plan, the benefit formula for the defined benefit component of the plan for State and Local members in retirement 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 retirement Group C applies a factor of 1.0% to the member's FAS and the first 35 years of service and a factor of 1.25% is applied to years in excess of 35. In the defined contribution component of the Combined Plan, the current value of the individual account is available at retirement. The balance can be rolled over to another eligible retirement plan, made payable to the member with taxes withheld, or converted to a lifetime annuity through OPERS, or a combination of the three options.

Beginning in January 2013, the CBBC was introduced to reduce the impact of inflating FAS. For purposes of determining the CBBC, the member's accumulated contributions (less any contributions attributed to a non-law annuity) are combined with a portion of employer-paid delinquent contributions, a portion of early retirement incentive plan funding and member contributions used to fund a disability under the original plan, if applicable. The total accumulated member contributions (as calculated in the previous sentence) are multiplied by the OPERS Board of Trustees (Board)-established CBBC factor. The CBBC factor in effect for 2017 was 6.0. The member is eligible for the lesser of an annuity calculated on FAS and years of service credit or the calculated CBBC value. The CBBC applies to all new retirees, with an exception for certain members in Group A. The reduction caused by the CBBC for retirement Group A members may not exceed 5% of the retirement allowance the member would have otherwise received unless, for any full month of service after January 1, 1987, the member's monthly eligible salary was less than \$1,000.

Service credit allowed under Chapter 145 of the Ohio Revised Code for retirement eligibility and calculation of a formula benefit includes:

- 1) Service to the state of Ohio or an Ohio political subdivision for which contributions have been paid;
- 2) Certain military service that interrupted contributing public service;
- 3) Any out-of-public service period of three years or less during which the member was receiving an award under the Ohio Bureau of Workers' Compensation;
- 4) Previously unreported service in Ohio;
- 5) Service purchased by the member for:
 - a) Military service that pre-dates public employment;

- b) Prisoner-of-war service;
 - c) An authorized leave of absence that did not exceed one year;
 - d) Comparable public service that is not being used for other retirement programs except Social Security, performed outside Ohio or with the federal government, or for which contributions were made to an Ohio municipal retirement system;
 - e) Restoration of previously refunded service;
 - f) Restoration of previously refunded service from the Ohio Police and Fire Pension Fund, Ohio State Highway Patrol Retirement System, or Cincinnati Retirement System, not being used for any other retirement benefit;
 - g) Service that was previously covered by a valid exemption under OPERS;
 - h) The amount of 35% additional credit on completed terms of full-time contributing elected official service, or board, commission, or other public body service by members who are appointed by the Governor with the advice and consent of the Senate;
 - i) Service purchased in the Combined Plan or the Traditional Pension Plan representing contributing service earned in the Member-Directed Plan or Combined Plan; and,
 - j) Restoration of contributing service earned in the Traditional Pension Plan prior to January 1, 2003 that was transferred to the Member-Directed Plan or the Combined Plan at initial plan selection.
- 6) Service purchased by an employer under a retirement incentive plan.

Beginning in 2014, the minimum eligible salary required to earn full-time service was increased to \$600 per month, with an index feature based on salary increases granted to township trustees. Township trustees received a salary increase in 2017. Beginning January 1, 2017, the minimum eligible salary required to earn full-time service was \$630; in 2018, it increased to \$660.

A choice of several benefit payment plans is available. The choices include benefits payable throughout the member's lifetime (Single Life Plan) or in a lesser amount during the individual's life but continuing after the member's death to one or more survivors (Joint Life Plan or Multiple Life Plan).

A benefit payable under Joint Life Plan or Multiple Life Plan is the actuarial equivalent of the Single Life Plan, but the payment to the member is reduced because it is based on the combined life expectancies of the member and the beneficiary(ies).

The Multiple Life Plan is an option available to members whose retirement is effective on or after November 1, 2006. The payment plan is a multiple joint survivorship annuity providing benefits to the member throughout his/her lifetime, with payments continuing to the member's surviving beneficiaries after the member's death. The member may designate two-to-four beneficiaries, with each receiving at least 10% of the benefit (exceptions are court ordered spousal benefits). Total allocations to all beneficiaries may not exceed 100% of the benefit.

Effective January 1, 2004, OPERS established a partial lump-sum option payment (PLOP) for certain retirees and benefit recipients. The PLOP is an option at retirement that allows a recipient to receive a lump-sum benefit payment along with a reduced monthly retirement allowance. The PLOP cannot be less than six times or more than 36 times the monthly amount that would be payable to the member under the plan of payment selected, and cannot result in a monthly allowance that is less than 50% of that monthly amount. The total amount paid as a lump sum and a monthly benefit is the actuarial equivalent of the amount that would have been paid had the lump sum not been selected.

Plan Statement

Disability Benefits

OPERS members are eligible for one of two disability programs: the original plan or the revised plan. Employees 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. There are a number of features common to both plans.

A member who has at least 60 contributing months 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 his/her 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.

Application must be made within two years from the date the member's contributing service ended, unless the Board determines that the member was physically or mentally incapacitated for duty and unable to make an application. The member must not be receiving an age-and-service retirement benefit or have received a refund of his/her accumulated contributions. If the Board approves the disability benefit application and the member is otherwise eligible, the benefit is effective the first day of the month following the member's service termination. A disability benefit recipient may be required to undergo periodic medical examinations. A disability benefit terminates under either disability plan if the member is no longer disabled, returns to public employment, chooses to begin receiving an age-and-service benefit, or dies.

A new disability standard will be applied to disability recipients (excluding Law Enforcement division disability recipients) whose application for disability was received by OPERS on or after January 7, 2013. Disability benefit recipients will be evaluated under an own-occupation standard (at the time of application and for the first three years of disability). This time period may be extended from three years to five years, if the recipient is receiving rehabilitative services acceptable to a physician selected by the Board. The own-occupation standard requires the benefit recipient to be physically or mentally incapable of performing the duties of his/her last public position. Subsequent to the three-year or five-year period, the benefit recipient is evaluated under an any-occupation standard. The any-occupation standard for terminating a benefit requires the benefit recipient to be physically or mentally incapable of performing the duties of any position that meets the following criteria:

- 1) Replaces at least 75% of the recipient's inflation-adjusted FAS;
- 2) Can reasonably be found in the recipient's regional job market; and
- 3) The recipient is qualified to perform based on the recipient's experience or education.

Members covered under the original plan must apply for disability benefits prior to turning age 60 (or age 62 for members in retirement Group C). Under the original plan, the amount of the disability allowance is based on the member's FAS and total service credit, plus the length of time between the effective date of disability and age 60 (or 62). The disability benefit cannot exceed 75%, nor be less than 30%, of the member's FAS. The disability benefit continues for the member's lifetime as long as the qualifying disability persists. The benefit is funded by the employee's accumulated contributions and reserves accumulated from employer contributions. The benefit is fully taxable until age 60 (or 62), after which a specified dollar amount each month, representing the return of previously taxed contributions, is tax-free. For a Law Enforcement member disabled due to an on-duty injury or illness, 30% of the benefit payment is excludable from taxable income.

Under the revised plan, the disability allowance is based on the member's FAS and service credit. The disability benefit cannot be less than 45%, or exceed 60%, of the member's FAS. The benefit is funded by reserves accumulated from employer contributions, and is fully taxable. For a Law Enforcement member disabled due to an on-duty injury or illness, 45% of the benefit payment is excludable from taxable income.

Benefits under the revised plan are payable for only a definite period of time, depending on the member's age on the benefit effective date. When the disability benefit ends, the member may apply for a service retirement benefit or a refund of his/her account. The service retirement benefit amount is the greater of:

- 2.2% of FAS multiplied by the years of service (contributing and disability) not to exceed 45% of FAS; or
- the regular or Law Enforcement benefit calculation using only the member's years of contributing service.

The disability benefit for Combined Plan members is calculated using the same formulas and criteria described above. Combined Plan members are required to transfer their individual defined contribution accounts to the Traditional Pension Plan to fund the benefit.

Members who apply for a disability benefit on or after January 7, 2013 are required to apply for Social Security Disability Insurance (SSDI). If a member is determined to be eligible for SSDI benefit, he/she may be subject to an offset to the extent that the member's OPERS disability benefit plus the SSDI benefit exceed the member's FAS, adjusted for inflation. The offset does not apply to a disability recipient who is a Law Enforcement member or who has at least five years of service credit for periods during which the recipient had earnings from other employment that were taxable under the Federal Insurance Contributions Act.

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. Listed below is the order of automatic succession under Ohio law:

- 1) Spouse,
- 2) Children,
- 3) Dependent parents,
- 4) If none of the above, parents share equally in a refund of the account; and
- 5) If none of the foregoing, a refund of the account is paid to the estate.

Qualified beneficiaries will be eligible to receive monthly survivor benefits if, at the time of the member's death, at least one of the following qualifications was met:

- 1) The member had 18 months of Ohio service credit with three of those months within the two and one-half years immediately before death; or
- 2) The member was receiving a disability benefit from OPERS; or
- 3) The member was eligible for retirement but did not retire.

If none of these qualifications was met at the member's death, a refund of the member's OPERS account value as defined by the Ohio Revised Code may be made. The member's beneficiary may choose a refund of the member's account only if no children are eligible for monthly benefits. If the member dies while receiving a disability benefit under the original plan and eligible survivors select a cash refund of the account, the amount is reduced by the amount of disability benefits that had already been paid. There is no reduction in amount if the member dies while receiving a benefit under the revised disability plan or while still working.

Plan Statement

Qualified surviving spouses (with no children eligible for monthly benefits) may receive a benefit representing the greater of \$250 a month or an annual benefit equal to 25% of the decedent's FAS. If the decedent had 20 or more years of service, the percent of FAS increases with each year of service over 20 up to a maximum of 60%. Benefits begin when a qualified surviving spouse reaches age 62, or at any age if the decedent had 10 or more years of Ohio service credit, qualifying children, or the spouse is adjudged physically or mentally incompetent. Benefits to a qualified survivor terminate when the survivor ceases to meet eligibility requirements.

If a deceased member was eligible for a service retirement benefit at time of death, a surviving spouse or other sole dependent beneficiary may elect to receive a monthly benefit calculated as though the member had retired and elected the Joint Life Plan with 100% to the survivor. This joint survivor option provides a monthly allowance that continues through the beneficiary's lifetime. The beneficiary also has the option of electing a PLOP.

A child of a deceased member may qualify for monthly benefits if the child has never been married and is under age 22. A child who is adjudged physically or mentally incompetent at the time of the member's death is eligible for benefits regardless of age. Benefits terminate upon the child's first marriage, adoption by someone other than a step-parent, abandonment, death, or during active military service.

A dependent parent is one who received at least one-half support from the member during the 12 months preceding the member's death. A dependent parent may receive survivor benefits if age 65 or older, or at any age if adjudged physically or mentally incompetent at the time of the member's death. Survivor benefit payments terminate upon the parent's death.

The eligible survivors of Combined Plan members may elect to receive monthly survivor benefits. The survivor benefit is calculated using the same formulas and criteria described above, and the member's defined contribution account is transferred to the Traditional Pension Plan to fund the benefit.

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, current law provides that the cost-of-living adjustment is 3%. For those retiring subsequent to January 7, 2013, beginning in calendar year 2019, current law provides that the cost-of-living adjustment will be based on the average percentage 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 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. If the member has at least five but less than 10 years of qualified service credit in the plan, the additional amount is 33% of the member's eligible contributions. Members with at least 10 years of qualified service credit in the plan may receive an additional amount equal to 67% of eligible contributions.

Under the Traditional Pension Plan, full recovery of all employee contributions to OPERS is guaranteed. If the individual is eligible for a monthly retirement benefit and is legally married at the time the refund application is filed, spousal consent is required. A Traditional Pension Plan member who is also a member of the State Teachers Retirement System of Ohio or the School Employees Retirement System of Ohio is not required to refund from all systems at the time the member seeks a refund from OPERS.

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. The balance can be converted to a lifetime annuity through OPERS; or a portion of the balance can be converted to an 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 employee 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%

Plan Statement

Coverage and 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 forfeiture, and contributions remitted during the two-month forfeiture period will not be included in the calculation of a Money Purchase Plan benefit.

An OPERS retiree who returns to work in an OPERS-covered position must enroll in the employer's health care plan if the employer offers a plan to other employees in similar positions. After the two-month forfeiture period, the retiree may continue his/her participation in an OPERS health care plan. The coverage provided by the employer plan is primary and the OPERS coverage is secondary. Federal law prohibits retirees from being covered by the OPERS health care plan as secondary coverage if the retiree is enrolled in a high deductible health plan and a health savings account. If the OPERS retiree is over age 65 and employer-sponsored coverage is not available, the retiree may either elect to participate in the OPERS-sponsored coverage offered to re-employed retirees or forgo funding and reimbursement in a health reimbursement arrangement (HRA) during the period of re-employment. The HRA was established for the OPERS Medicare Connector. Refer to the Health Care Coverage for Traditional Pension Plan and Combined Plan section below for more information on the OPERS Medicare Connector.

Retirees cannot continue to receive benefits and work as an independent contractor under a contract for any period of time for the employer from which they retired. This prohibition is applicable regardless of the number of hours or days actually worked. A retiree may be compensated under a contract for services as an independent contractor for another public employer. If this occurs within the first two months of retirement, he or she will forfeit pension benefits for the entire period of service as an independent contractor.

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 employee contributions made during the period of re-employment, plus interest. Retirees age 65 and older may receive an annuity benefit based on the amount of their employee contributions during the period of re-employment plus interest, and an amount from the employer's contributions established by the Board. The additional amount paid from employer contributions is currently set at 67% of the employee contributions and interest. Payment options are the same as those described under the Age-and-Service Retirement section.

Health Care Coverage 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 reimbursement for eligible retirees and their eligible dependents.

Eligibility

Members who applied for age-and-service retirement with effective dates of December 1, 2014, or earlier, and who had 10 or more years of service credit, had access to OPERS-provided health care coverage on a subsidized basis. Beginning January 1, 2015, members must be at least age 60 with 20 years of qualifying service. Members in Group A are eligible for coverage at any age with 30 or more years of qualifying service. Members in Groups B and C are eligible for coverage at any age

with 31 and 32 years of qualifying service, respectively. See the Age-and-Service Retirement section beginning on page 224 for a description of Groups A, B and C.

Qualifying service credit for determining eligibility to participate in the health care plans includes the following types of credit: contributing service, other Ohio retirement system service transfers, interrupted military (USERRA), unreported time, and restored (refunded) service. Beginning January 1, 2014, 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.

In addition to retirees, access to health care coverage is also available for disability recipients and survivor recipients. Spouses and dependents of eligible recipients, as defined in rules governing the health care plans, may be covered through additional premiums.

Recipients of disability benefits prior to January 1, 2014 have continued access to health care coverage 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 way 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 OPERS health care. If enrolled, the allowance will be determined in the same way as an age-and-service retiree.

Coverage Options

Currently, Medicare eligible retirees are able to select medical and prescription drug plans from a range of options and may elect optional vision and dental plans. Retirees and eligible dependents enrolled in Medicare Parts A and B have the option to enroll in a Medicare supplement plan with the assistance of the OPERS Medicare Connector. The OPERS Medicare Connector is a relationship with a vendor selected by OPERS and tasked with assisting retirees, spouses and dependents with selecting a medical and pharmacy plan. Monthly allowances, based on years of service and the age the retiree first enrolled in OPERS coverage, are deposited into an HRA.

For non-Medicare retirees and eligible dependents, OPERS sponsors medical and prescription coverage through a professionally managed self-insured plan. An allowance to offset a portion of the monthly premium is offered to retirees and eligible dependents. The allowance is based on the retiree's years of service and age when they first enrolled in OPERS coverage.

Medicare-eligible retirees who choose to become re-employed in an OPERS-covered position are prohibited from participating in an HRA by federal law. For this group of retirees, OPERS sponsors secondary coverage through a professionally managed self-insured program. Retirees who enroll in this plan are provided with a monthly allowance to offset a portion of the monthly premium. Medicare-eligible spouses and dependents can also enroll in this plan as long as the retiree is enrolled.

As mentioned, a monthly allowance for health care coverage for retirees and their eligible dependents is provided by OPERS. The base allowance is determined by the Medicare status of the retirees or dependents. For those retiring on or after January 1, 2015, the allowance provided is 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 premium base. Those who retired prior to January 1, 2015, with an allowance at or above 75%, will have an allowance of at least 75%. Members retiring at any age with 30 or more years (based on retirement group) of qualifying service have at least a 71% allowance.

Plan Statement

While spouses have access to health care, the allowances for spouses have been phased out. Spouses who are not Medicare-eligible will have access to OPERS group coverage at full cost through at least 2020. Spouses who are Medicare-eligible will have access to the OPERS Medicare Connector also at full cost. If the retiree has at least 20 years of qualifying service and is enrolled in OPERS health care, children (up to age 26) will receive half of the retiree's allowance percentage. If the recipient has less than 20 years of qualifying service, children (up to age 26) transitioned from the 2015 allowance to zero over the three-year period.

Medicare Part A

OPERS reimburses retirees who do not have 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 Medicare Connector. OPERS also will reimburse 50 percent 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.

Medicare Part B

When they become eligible, recipients and their covered dependents enrolled in OPERS health care must enroll in Medicare Part B (medical) to participate in a plan sponsored by OPERS.

Low Income Discount

Recipients not yet eligible for Medicare with household income at or below 200% of the poverty level may apply for a 30% reduction in the cost of medical and pharmacy premiums. In 2017, OPERS expanded the low income discount policy for surviving spouses. Surviving spouses enrolled in Medicare Parts A and B meeting the income requirements of the program are eligible to continue receiving a 2017 spousal HRA allowance for health care in 2018. Recipients who may be eligible for the discount or the HRA allowance are required to provide proof of income and re-apply each year.

Dental and Vision Coverage

Recipients and dependents also have access to dental and vision coverage. These are fully insured products with the retiree paying the total cost of coverage, including premiums, plan deductibles, and out-of-pocket expenses.

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. Beginning January 1, 2017, interest on the accounts will accrue only if the Health Care investment portfolio earns a return greater than zero in the prior year. 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 information as of the date listed and approved changes. 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 health care plans at any time. There is no promise, guarantee, contract, or vested right to health care coverage or a premium allowance.



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INDEPENDENT AUDITORS' REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING AND ON COMPLIANCE AND OTHER MATTERS BASED ON AN AUDIT OF FINANCIAL STATEMENTS PERFORMED IN ACCORDANCE WITH GOVERNMENT AUDITING STANDARDS

Board of Trustees
The Ohio Public Employees Retirement System, and
The Honorable Dave Yost, Auditor of State

We have audited, in accordance with the auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States, the financial statements of the Ohio Public Employees Retirement System (OPERS), which comprise the combining statement of fiduciary net position as of December 31, 2017, and the related combining statement of changes in fiduciary net position for the year then ended, and the related notes to the financial statements, and have issued our report thereon dated June 14, 2018.

We have also audited, in accordance with the auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States, the schedules of employer allocations of OPERS' Traditional Pension Plan, Combined Plan and Member-Directed Plan (the specified Plans), as of and for the year ended December 31, 2017, and the columns titled net pension liability (asset), total deferred outflows of resources, total deferred inflows of resources, and total employer pension expense (revenue) as of and for the year ended December 31, 2017 and net pension liability (asset) for the year ended December 31, 2016 (specified column totals), included in the accompanying schedules of collective pension amounts of the specified Plans, and the related notes, and have issued our report thereon dated June 14, 2018.

We have also audited, in accordance with the auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States, the schedules of employer allocations of OPERS' 115 Health Care Trust (OPEB), as of and for the year ended December 31, 2017, and the columns titled net OPEB liability, total deferred outflows of resources, total deferred inflows of resources, and total employer OPEB expense as of and for the year ended December 31, 2017 and net OPEB liability for the year ended December 31, 2016 (specified column totals), included in the accompanying schedules of collective OPEB amounts of the 115 Health Care Trust, and the related notes, and have issued our report thereon dated June 14, 2018.

Internal Control Over Financial Reporting

In planning and performing our audits of the financial statements, the schedules of employer allocations for the specified Plans and 115 Health Care Trust and the specified column totals included in the schedules of collective pension amounts and collective OPEB amounts, we considered OPERS' internal control over financial reporting (internal control) to determine the audit procedures that are

Board of Trustees
The Ohio Public Employees Retirement System, and
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appropriate in the circumstances for the purpose of expressing our opinion on the financial statements, the schedules of employer allocations for the specified Plans and 115 Health Care Trust and the specified column totals included in the schedules of collective pension amounts and collective OPEB amounts, but not for the purpose of expressing an opinion on the effectiveness of OPERS' internal control. Accordingly, we do not express an opinion on the effectiveness of OPERS' internal control.

A *deficiency in internal control* exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, misstatements on a timely basis. A *material weakness* is a deficiency, or a combination of deficiencies, in internal control, such that there is a reasonable possibility that a material misstatement of OPERS' financial statements, the schedules of employer allocations for the specified Plans and 115 Health Care Trust and the specified column totals included in the schedules of collective pension amounts and collective OPEB amounts will not be prevented, or detected and corrected on a timely basis. A *significant deficiency* is a deficiency, or a combination of deficiencies, in internal control that is less severe than a material weakness, yet important enough to merit attention by those charged with governance.

Our consideration of internal control was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control that might be material weaknesses or significant deficiencies. Given these limitations, during our audits we did not identify any deficiencies in internal control that we consider to be material weaknesses. However, material weaknesses may exist that have not been identified.

Compliance and Other Matters

As part of obtaining reasonable assurance about whether OPERS' financial statements, the schedules of employer allocations for the specified Plans and 115 Health Care Trust and the specified column totals included in the schedules of collective pension amounts and collective OPEB amounts are free from material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements, noncompliance with which could have a direct and material effect on the determination of financial statement amounts. However, providing an opinion on compliance with those provisions was not an objective of our audits, and accordingly, we do not express such an opinion. The results of our tests disclosed no instances of noncompliance or other matters that are required to be reported under *Government Auditing Standards*.

Purpose of this Report

The purpose of this report is solely to describe the scope of our testing of internal control and compliance and the result of that testing, and not to provide an opinion on the effectiveness of OPERS' internal control or on compliance. This report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering OPERS' internal control and compliance. Accordingly, this communication is not suitable for any other purpose.



CliftonLarsonAllen LLP

Toledo, Ohio
June 14, 2018



Dave Yost • Auditor of State

OHIO PUBLIC EMPLOYEES RETIREMENT SYSTEM

FRANKLIN COUNTY

CLERK'S CERTIFICATION

This is a true and correct copy of the report which is required to be filed in the Office of the Auditor of State pursuant to Section 117.26, Revised Code, and which is filed in Columbus, Ohio.

Susan Babbitt

CLERK OF THE BUREAU

CERTIFIED
AUGUST, 7 2018