
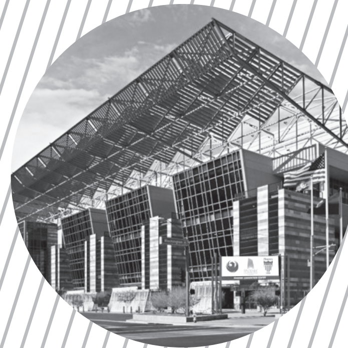





CITY OF PHOENIX
EMPLOYEES' RETIREMENT PLAN

COMPREHENSIVE ANNUAL FINANCIAL REPORT
FISCAL YEARS ENDING JUNE 30, 2017 AND 2016

CITY OF PHOENIX
EMPLOYEES' RETIREMENT PLAN
(A Component Unit of the City of Phoenix, Arizona)

SEVENTY-FIRST ANNUAL
COMPREHENSIVE ANNUAL FINANCIAL REPORT
FOR THE FISCAL YEARS ENDED
JUNE 30, 2017 and 2016

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Phoenix, Arizona 85003
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Prepared by:
City of Phoenix
Employees' Retirement System
and
City of Phoenix
Finance Department

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Introductory Section

The **Introductory Section** contains the Certificate of Achievement for Excellence in Financial Reporting, the letter of transmittal, the Retirement Board structure, the administrative organization and the Chairperson's Report.

Public Pension Coordinating Council

Public Pension Standards Award
For Funding and Administration
2017

Presented to

City of Phoenix Employees' Retirement System

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

Presented by the Public Pension Coordinating Council, a confederation of

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

Alan H. Winkle
Program Administrator

Government Finance Officers Association

Certificate of
Achievement
for Excellence
in Financial
Reporting

Presented to

City of Phoenix
Employees' Retirement Plan
Arizona

For its Comprehensive Annual
Financial Report
for the Fiscal Year Ended

June 30, 2016

Executive Director/CEO

City of Phoenix
RETIREMENT SYSTEM

December 21, 2017

Chairperson and Members of the Retirement Board
City of Phoenix Employees' Retirement Plan:

I am pleased to submit this Comprehensive Annual Financial Report (CAFR) of the City of Phoenix Employees' Retirement Plan (COPERS or the Plan) as of and for the years ended June 30, 2017 and 2016. This report consists of the Introductory, Financial, Investment, Actuarial and Statistical sections.

The Plan is governed by the City of Phoenix Employees' Retirement Law of 1953 (Chapter XXIV of the City of Phoenix Charter). This law has been revised over the years, with the latest amendment approved by the City voters on August 25, 2015.

COPERS was created to provide retirement, survivor and disability benefits to the City of Phoenix general employees. COPERS is a qualified retirement plan under the Internal Revenue Code. The City of Phoenix Employees' Retirement Board (the Board) is the trustee of the Plan.

The Mayor and City Council are covered by the Elected Officials Retirement Plan of Arizona (EORPA). Sworn police and fire employees are covered by the Arizona Public Safety Personnel Retirement System (APSPRS). The EORPA and the APSPRS were created by Arizona State Statute. EORPA and APSPRS benefit payments, investments and overall administration of the Plans are handled by centralized State Boards, and each of the retirement plans publish separate financial reports. However, the administration of the system and responsibility for making the APSPRS provisions effective for each employer are vested in Local Boards. For the City of Phoenix, this responsibility rests with the City of Phoenix Fire Pension Board and the City of Phoenix Police Pension Board. The COPERS Retirement Program Administrator serves as the Local Board Secretary for both Boards, and COPERS' staff perform the administrative functions on behalf of those Boards.

FINANCIAL INFORMATION

Responsibility for accuracy of the data, completeness, and fairness of the presentation of the CAFR, including all disclosures, rests with the Retirement Board. The Plan's record-keeping, financial statement and investment control responsibilities have been performed by the City's Finance Department. To the best of our knowledge and belief, this report is accurate in all material respects and is reported in a manner designed to present fairly the Fiduciary Net Position and changes in Fiduciary net position. All disclosures necessary to enable the reader to gain an understanding of the Plan's financial activities have been included. The Management's Discussion and Analysis, which begins on page 16, provides analysis of the financial activities for the fiscal years ended June 30, 2017 and 2016.

The Government Finance Officers Association of the United States and Canada (GFOA) awarded a Certificate of Achievement for Excellence in Financial Reporting to COPERS for its comprehensive annual financial report for the fiscal year ended June 30, 2016. In order to be awarded a Certificate of Achievement, an organization must conform to the highest standards of fiduciary reporting and full disclosure.

INTERNAL CONTROLS

Internal controls are procedures designed to accomplish the following: to protect assets from loss, theft or misuse; to check the accuracy and reliability of accounting data; to promote operational efficiency; and, to encourage compliance with managerial policies. The Board and the City of Phoenix (the City) management are responsible for establishing a system of internal controls designed to provide reasonable assurance that these objectives are met. Because the cost of internal controls should not outweigh their benefits, the City's comprehensive framework of internal controls has been designed to provide reasonable, rather than absolute, assurance that the financial statements are free of any material misstatements. Representatives from the City Auditor's Department meet periodically with the Board to review their audit plans and present the results of the audits. Moreover, representatives from the independent auditors meet annually with the Board to review their audit plans and receive input from the Board. The City also maintains budgetary controls designed to ensure compliance with legal provisions of the annual budget adopted by the City Council.

This report has been prepared in conformance with the principles of governmental accounting and reporting as set forth by the Governmental Accounting Standards Board. Transactions of COPERS are reported on the accrual basis of accounting. Revenues are recorded when earned, without regard to the date of collection, and expenses are recorded when incurred. The City's internal accounting and audit controls are designed to provide for the accuracy, reliability and integrity of all financial records.

MAJOR INITIATIVES INVOLVING PLAN ADMINISTRATION

Through the hard work and cooperation of the Retirement office, the Retirement Board, the City Manager's office, the City Attorney's office, and outside tax counsel, COPERS was successful in applying for an IRS Determination Letter prior to the IRS terminating the Determination Letter program. On April 28, 2017, the IRS issued COPERS that Determination Letter. The Determination Letter affirms that the COPERS plan documents comply with the Internal Revenue Code's requirements for a qualified public pension plan and that COPERS remains a tax-qualified plan. While that is, of course, of utmost importance, the Determination Letter will also significantly help our investment program as we work with both domestic and international investment managers by providing outside confirmation that COPERS is a tax-qualified plan.

The Board conducted three Requests for Proposals (RFP) for consultants during the fiscal year. Following the RFP processes, the Board retained the services of Gabriel Roeder Smith & Company (GRS) to provide actuarial consulting services, Alignium LLC to provide real estate investment consulting services, and Managed Medical Review Organization, Inc., for independent medical evaluation services.

The Board engaged in a year-long effort to educate themselves regarding the investable universe as the Trustees considered significant changes to the investment program's asset allocation. In March of 2017, the Board adopted a revised asset allocation that more closely aligns the Board's risk tolerance with expected returns. (The new asset allocation is not reflected in the June 30, 2017 reporting due to timing of the implementation process.) Following the adoption of the new asset allocation, the Board significantly revised its Investment Policy Statement.

ADMINISTRATIVE BUDGET

The City provides an annual budgetary allocation to pay for the general administration of COPERS. The cost paid by the City for COPERS' administration was $1.819 million. Most investment-related expenses, such as investment custody costs, investment manager fees, and consultant fees, are paid directly from the Plan's assets. Certain administrative fees for legal, medical, actuarial and computer services are also paid directly from Plan assets. The investment costs amounted to $16.75 million for the fiscal year ended June 30, 2017. These costs represented 0.71% of total Plan assets.

FUNDING STATUS AND PROGRESS

Fund balances are derived from net assets and are accumulated to meet current and future obligations to retirees and beneficiaries. COPERS' funding objective is to meet these obligations through contributions, which remain approximately level as a percent of member payroll. The actuarial valuation as of June 30, 2017, reflects a funded ratio of 58.2% (using the actuarial valuation of assets), the difference between the actuarial value of assets and the actuarially-calculated pension liability. The unfunded actuarial accrued liability will be amortized as a level percent of payroll over future years, except that the amortization of the impact of the assumption changes adopted in both 2013 and 2015 are being phased in to the full level percent of payroll amount over four years. The amortization period as of June 30, 2017 is 21 years. A smoothed market value of assets was used for the June 30, 2017 valuation. This method spreads the difference between the actual and expected investment return over four years. A detailed discussion of the funding of COPERS is provided in the Actuarial Section of this report.

INVESTMENT ACTIVITIES

As of June 30, 2017, the net asset value of the COPERS Plan is $2.353 billion. The fiscal year net return for the Plan is 7.3%, which is 0.05% above the assumed rate of return of 7.25%. The five year annualized return, net of fees, is 8.0%.

The Board considered and approved four contracts for investment managers during the year.

PROFESSIONAL SERVICES

The Retirement Board retains professional consultants to prudently discharge its fiduciary responsibility for the proper administration of the Plan. Gabriel Roeder Smith & Company (GRS) provides actuarial services and the corresponding certification. BNY Mellon serves as the master custodian. Brokerage trade execution monitoring is compiled by Elkins/McSherry, LLC. Meketa Investment Group provides investment performance analysis, asset allocation review and investment consulting to the Retirement Board. Alignium provides consultative services to COPERS regarding its real estate investments. COPERS' financial statements are audited by Baird, Kurtz & Dobson (BKD) and reviews of operations are performed by the City Auditor's Department. Managed Medical Review Organization, Inc., provides independent medical evaluation services related to disability retirement applications.

The City Attorney’s office provides legal representation. COPERS also uses outside legal services in the event the City Attorney’s office has a conflict or for specialized legal work. Those firms are Ice Miller, Ryan, Rapp & Underwood, P.L.C., and Robinson Bradshaw.

SUBSEQUENT EVENTS

During its July, 2017 Board meeting, the COPERS Board approved the reduction of the Fund's assumed rate of return from 7.50% to 7.25% following a presentation and recommendation by its actuarial consultant, GRS. Included with that change was a reduction in the inflation rate assumption from 3.00% to 2.50%. GRS used these assumptions in conducting the 2017 actuarial valuation for the Fund.

ACKNOWLEDGMENTS

The Plan received the Public Pension Standards Award for Funding and Administration. This award was presented by the Public Pension Coordinating Council, a confederation of the National Association of State Retirement Administrators, the National Conference on Public Employee Retirement Systems and the National Council on Teacher Retirement. This is the seventh year the Plan has applied for and received this award.

The guidance provided by the Retirement Board is greatly appreciated. The preparation of this report is a collaborative effort of many individuals. I would like to acknowledge the hard work of the COPERS staff, the Finance Department and the Retirement Board. This report is intended to provide important information crucial to the understanding of the pension plan.

Sincerely,

Scott A. Miller
Retirement Program Administrator

RETIREMENT BOARD



CHARLENE REYNOLDS
Chairperson, Retirement Board
Elected Board Member

SUSAN PERKINS
Vice Chairperson, Retirement Board
Retiree Board Member

JOHN HEDBLOM
Citizen Board Member



LORI BAYS
Human Resources Director
City of Phoenix
Ex-Officio Board Member

TONI MACCARONE
Special Assistant to the City Manager
City of Phoenix
Ex-Officio Board Member

KATHLEEN GITKIN
City Treasurer
City of Phoenix
Ex-Officio Board Member


DAVID NIETO
Elected Board Member

DENISE OLSON
Chief Financial Officer
City of Phoenix
Ex-Officio Board Member

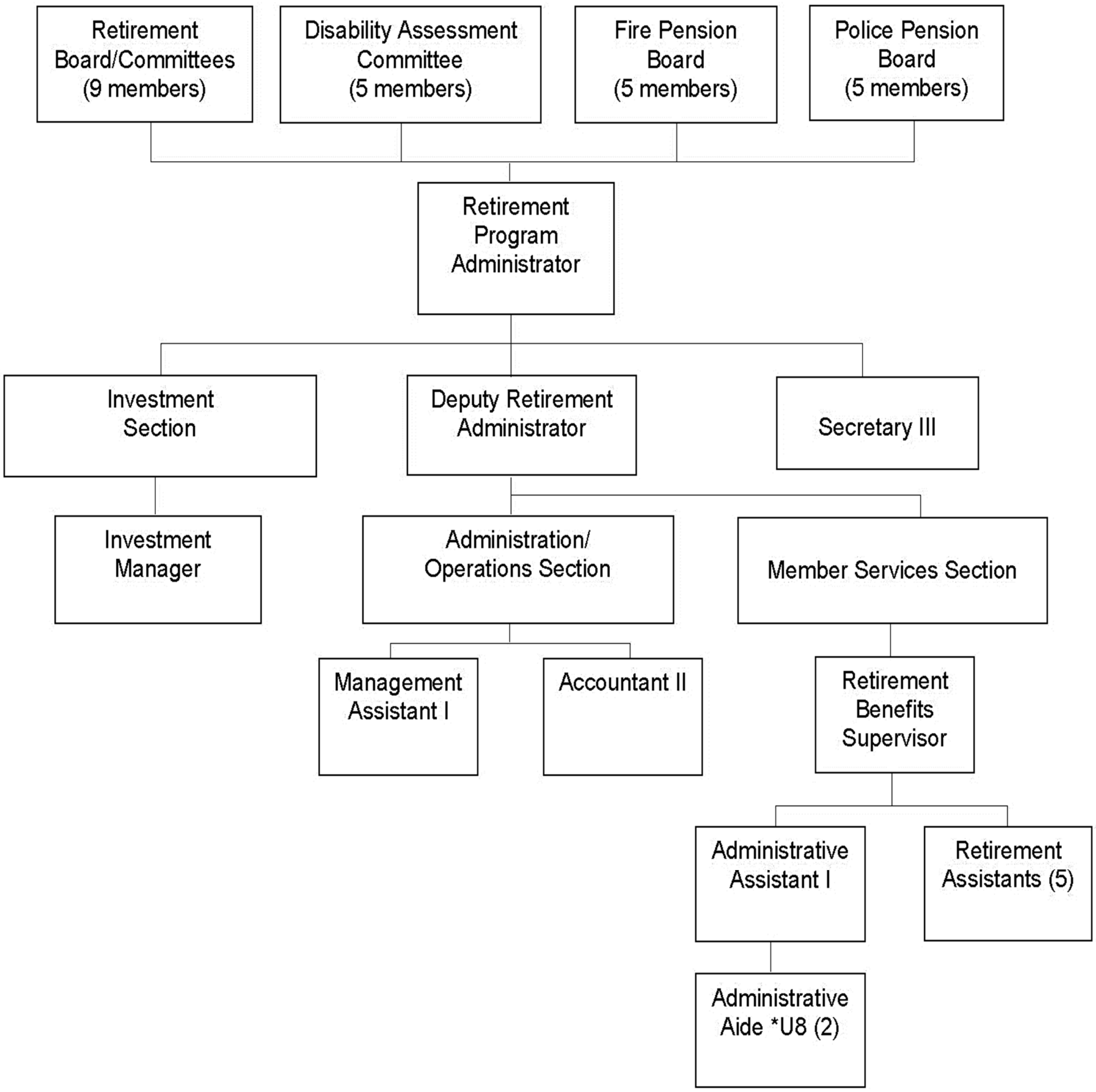
VACANT
Elected Board Member

Retirement Board Committees

Investment Committee	Charter Amendments/Policies & Procedures Committee
Kathleen Gitkin, Chairperson	Lori Bays, Chairperson
John Hedblom	David Nieto
Denise Olson	Denise Olson
Susan Perkins	
Charlene Reynolds	

Legal Review Committee	Disability Assessment Committee
Toni Maccarone, Chairperson	Scott Miller, Chairperson
John Hedblom	Jon Brodsky
David Nieto	Leslie Dewar
Susan Perkins	Ron Ramirez
	Robert Jones, M.D.

Retirement Department Administrative Organization



Please refer to the Investment Section for a list of Investment Managers on page 61 and the Schedule of Investment Fees on pages 67-68 and 70.

Administrative Staff

Scott A. Miller	Retirement Program Administrator
Vacant	Administrative Aide
Kyle Corbin	Administrative Assistant I
Trista Eaden	Management Assistant I
Jana Evans	Administrative Aide
Greg Fitchet	Investment Officer
Bobbie Gonzalez	Retirement Assistant
Rosemarie Gonzales	Retirement Assistant
Marissa Hernandez	Retirement Assistant
Josie Romero	Retirement Assistant
Vacant	Retirement Assistant
Monica Lofton	Accountant II
Scott Steventon	Deputy Retirement Administrator
Lollita Whitfield	Retirement Benefits Supervisor
Marcia Wilson	Secretary III

Accounting

Denise Olson — Chief Financial Officer, Finance Department

Treasurer

Kathleen Gitkin — City Treasurer, Finance Department

Legal

Michelle Wood — Assistant City Attorney IV, Law Department

Actuary

Gabriel, Roeder Smith & Company — Denver, CO

Auditor

Baird, Kurtz & Dobson, LLP (BKD) — Dallas, TX
Certified Public Accountants under contract with the City Auditor

Brokerage

Elkins McSherry LLC — New York, NY

Investment Services

Refer to Investment Section for:
Investment Managers on page 59
Schedule of Fees and Commissions on pages 65 – 66 and 68

Legal Services

ICE Miller — Indianapolis, IN

Master Custodian

BNY Mellon — Pittsburgh, Pennsylvania

Medical Advisors

Several physicians and clinics used for evaluation of disability applicants on a "per case" basis

City of Phoenix
RETIREMENT SYSTEM

December 21, 2017

To COPERS Members and Retirees:

On behalf of the Retirement Board, it is my pleasure to present the City of Phoenix Employees' Retirement System (COPERS) Comprehensive Annual Financial Report (CAFR) for the fiscal years ended June 30, 2017 and June 30, 2016. This annual report contains information regarding the COPERS administration, financial statements, investments, actuarial and statistical data.

During the fiscal year, the Board's investment consultant, Meketa, provided performance measurement and assisted the Board with analysis of investment issues. Meketa reports the COPERS' total fund assets increased from $2.148 billion to $2.349 billion and net performance for the year ended June 30, 2017 was 7.3%. The annualized net return for the past three and five years was 4.7% and 8.0%, respectively.

The Board has implemented a diversified portfolio, in which all segments of the U.S. and International equity markets are represented. The fixed income and real estate allocations are diversified among several managers. Real estate holdings are further diversified among geographic locations and property types. The Board recently modified the plan's asset allocation with the objective of maximizing its returns with the lowest possible risk.

The Board's new actuarial consultant, Gabriel Roeder Smith & Company (GRS), conducted the annual actuarial valuation as of June 30, 2017. GRS reports the funded ratio based on the actuarial value of assets (AVA) of the plan to be 58.2%, an increase from the June 30, 2016 funded ratio of 57.3%. The plan sponsor, the City of Phoenix, remains committed to funding the employer's actuarially-computed contribution amount.

Representatives from the City Auditor Department and external auditors under contract with the City Auditor meet annually with the Board to review their audit plans, receive input from the Board and present the results of their audits.

The CAFR and the Popular Annual Financial Report (PAFR) for the fiscal years ended June 30, 2016 and 2015 were once again recognized by the Government Finance Officers Association. These reports are accessible through the COPERS' internet site.

The COPERS Board continues to focus on fulfilling its fiduciary obligation to the COPERS members, retirees and beneficiaries. Please contact the Retirement Office with any questions or comments.

Sincerely,

Charlene Reynolds
Chairperson, Retirement Board

Financial Section

The Financial Section contains the opinion of the independent auditors, management's discussion and analysis, the audited financial statements, notes to the financial statements, and relevant supplemental information.

BKD LLP
CPAs & Advisors

14241 Dallas Parkway, Suite 1100 // Dallas, TX 75254-2961
972.702.8262 // fax 972.702.0673 // bkd.com

Independent Auditor's Report

Honorable Mayor and Members of the City Council
City of Phoenix Employees' Retirement System Retirement Board
Phoenix, Arizona

We have audited the accompanying financial statements of the City of Phoenix Employees' Retirement System (Plan), a fiduciary fund of the City of Phoenix, Arizona, as of and for the year ended June 30, 2017, and the related notes to financial statements, which collectively comprise the Plan's basic financial statement 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.

Auditor's Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

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

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

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the net position restricted for pensions of the Plan as of June 30, 2017, and the changes in its net position restricted for pensions for the year then ended in accordance with accounting principles generally accepted in the United States of America.

Prior Year Audited by Other Auditors

The 2016 financial statements were audited by other auditors and their report thereon, dated December16, 2016, expressed an unmodified opinion.

Other Matters

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the management's discussion and analysis and pension 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 the Plan's basic financial statements. The introductory section, supplementary information, investment section, actuarial section and statistical section as listed in the table of contents, are presented for purposes of additional analysis and are not a required part of the basic financial statements.

The supplementary information including the schedule of investment expenses, schedule of administrative expenses and schedule of administrative expenditures and encumbrances 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 supplementary information noted above is fairly stated, in all material respects, in relation to the basic financial statements as a whole.

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

BKD, LLP

Dallas, Texas
December 21, 2017

Management's Discussion and Analysis (unaudited)

Dear Members and Retirees:

The City of Phoenix Employees' Retirement System ("COPERS" or the "Plan") is pleased to provide the following analysis of the financial activities for the fiscal years ended June 30, 2017 and 2016. The information provided is intended to be considered in conjunction with the Transmittal Letter in the Introductory Section, the Statements provided in the Financial, Investment, Actuarial and Statistical Sections of this Comprehensive Annual Financial Report ("CAFR"), and the Notes to the Financial Statements.

Financial Highlights:
(in thousands)

- As of June 30, 2017, COPERS has $2,353,607 in Net Position Restricted for Pensions, as identified in the Statements of Fiduciary Net Position on page 24. This amount represents an increase of 9.4% from June 30, 2016. The increase is attributable primarily to gains experienced in the financial markets, which impacted COPERS' investment performance. The Net Position Restricted for Pensions as of June 30, 2016, was $2,151,421 compared to $2,209,526 as of June 30, 2015. The decrease of 2.6% during 2016 was attributable to losses experienced in the financial markets, which impacted COPERS' investment performance.

- COPERS' additions to the Net Position Restricted for Pensions, as reported in the Statements of Changes in Fiduciary Net Position on page 25, for the fiscal year ended June 30, 2017 was $426,276 compared to $158,538 for fiscal year ended June 30, 2016 and $192,301 for fiscal year ended June 30, 2015. The increase for the current year was attributable primarily to market performance and additional hiring done by the plan sponsor. The amount for the fiscal year ending June 30, 2017 includes employer and employee contributions of $183,066 and net investment income of $243,210. Fiscal year ended June 30, 2016 and June 30, 2015, employer and employee contributions were $149,367 and $145,152, respectively. The net investment income was $9,171 and $47,149 for fiscal years ended June 30, 2016 and June 30, 2015, respectively.

- The Statements of Changes in Fiduciary Net Position reported an increase in deductions in Plan net position of 3.4% from the fiscal year ended June 30, 2017. This compares to a 5.7% increase in deductions between June 30, 2016 and June 30, 2015. Deductions for fiscal year ended June 30, 2017 were $224,090 compared to $216,643 for fiscal year ended June 30, 2016 and $205,017 for fiscal year ended June 30, 2015. The increases in deductions as of June 30, 2017 and June 30, 2016 are attributable to an increase in the number of retirees and refunds of contributions.

Using This Annual Report:

This report is prepared to provide information as a means for making management decisions, complying with statutory provisions, and demonstrating the responsible stewardship of the assets of the Plan. The financial statements starting on page 24 in the Financial Section identify the Net Position Restricted for Pensions, and provide a comparison of the current fiscal year to the prior year.

Overview of Financial Statements:

The Financial Section includes the following:

- Statements of Fiduciary Net Position (Page 24)
- Statements of Changes in Fiduciary Net Position (Page 25)
- Notes to the Financial Statements (Page 26)
- Required Supplementary Information (Page 48)
- Supplementary Information (Page 51)

Statements of Fiduciary Net Position:

These statements identify the receivables, investments, and liabilities of the Plan to arrive at the Net Position Restricted for Pensions payable to retirees and survivors. The current year information is provided in comparison to the previous year to assist the reader in evaluating the progress of the Plan.

Statements of Changes in Fiduciary Net Position:

The Statements of Changes in Fiduciary Net Position differ from the Statements of Fiduciary Net Position by providing the reader with the Plan's additions and deductions for the current year and the previous year. The statements provide the net increases or decreases realized during the years.

Notes to the Financial Statements:

The Notes to the Financial Statements are an integral part of the financial statements. The information provides the reader with a better understanding of the data presented in the financial statements to further evaluate the financial condition and operations of the Plan.

Required Supplementary Information:

The Schedule of Changes in Net Pension Liability and Related Ratios provides the Plan's funding progress for the last four years and the funding ratio to identify the Plan's ability to meet its current and future benefit obligations. The Schedule of Employer Contributions for the last ten years includes the City's required dollar amount of contributions made to the Plan. The Notes to the Required Supplementary Information provide additional information regarding actuarial assumptions and factors affecting trends.

Supplementary Information:

The Supplementary Information includes Administrative Expenditures and Encumbrances for the current and previous year in operating COPERS. The administrative expenditures are paid by the City of Phoenix and are not recognized in the COPERS financial statements. The Schedules of Investment Expenses provide the reader with the cost to the Plan for managing and monitoring the Plan's assets.

Financial Analysis
(in thousands)

The evaluation of the Plan's net position provides a measurement tool in assessing the progress and performance of the Plan. COPERS' Net Position Restricted for Pensions as of June 30, 2017 was $2,353,607. This amount represents an increase of 9.4% from Net Position Restricted for Pensions of $2,151,421 as of June 30, 2016. The Net Position Restricted for Pensions as of June 30, 2015 was $2,209,526. The Net Position Restricted for Pensions held Cash & Cash Equivalents as of June 30, 2017 of $38,582 compared to $19,231 for June 30, 2016 resulting in an increase of $19,351. Cash & Cash Equivalents will fluctuate due to timing of investments managed by the individual fund managers. Uninvested cash will be held in Cash & Cash Equivalents and may change at any point in time. The Net Position Restricted for Pensions held Total Liabilities as of June 30, 2017 of $272,162 compared to $278,082 for June 30, 2016. This change was primarily attributable to the reduction in purchases of investments that were in process at prior fiscal year-end. The return on investments for fiscal years ended June 30, 2017, 2016 and 2015 was 7.30%, .60%, and 2.19%, respectively. The below chart outlines investment performance over the last three fiscal years.

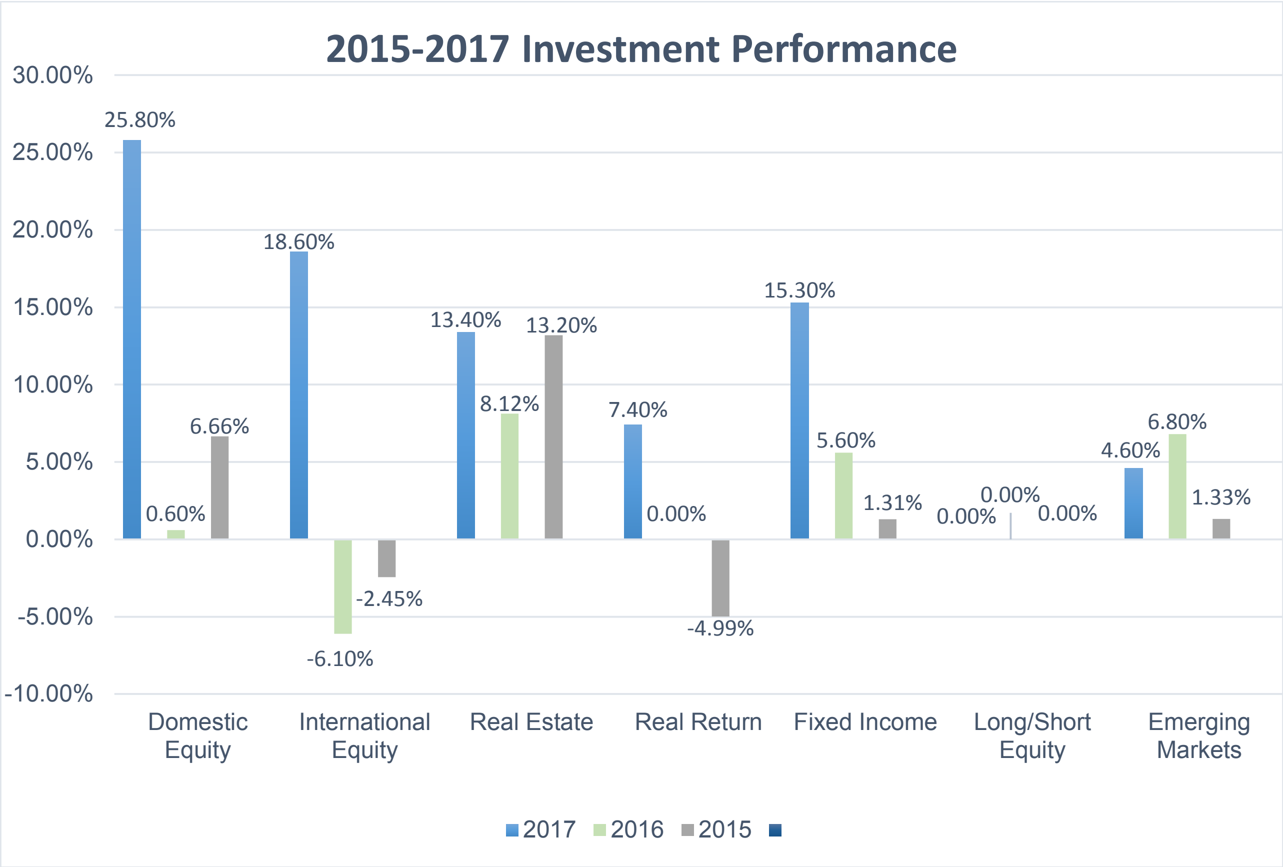


Table 1: COPERS Fiduciary Net Position for Benefits for June 30, 2017 and 2016 (in thousands)

	2017	2016	Change	% Change
Cash & Cash Equivalents	$ 38,582	$ 19,231	$ 19,351	100.6 %
Total Receivables	130,948	143,698	(12,750)	(8.9)
Total Investments	2,456,239	2,266,574	189,665	8.4
Total Assets	2,625,769	2,429,503	196,266	8.1
Total Liabilities	272,162	278,082	(5,920)	(2.1)
COPERS Net Position	**$ 2,353,607**	**$ 2,151,421**	**$ 202,186**	**9.4**

Table 2: COPERS Fiduciary Net Position for Benefits for June 30, 2016 and 2015 (in thousands)

	2016	2015	Change	% Change
Cash & Cash Equivalents	$ 19,231	$ 50,557	$ (31,326)	(62.0) %
Total Receivables	143,698	190,532	(46,834)	(24.6)
Total Investments	2,266,574	2,299,851	(33,277)	(1.4)
Total Assets	2,429,503	2,540,940	(111,437)	(4.4)
Total Liabilities	278,082	331,414	(53,332)	(16.1)
COPERS Net Position	**$ 2,151,421**	**$ 2,209,526**	**$ (58,105)**	**(2.6)**

Reserves:

COPERS maintains five accounts to hold reserves for benefit payments. Additions to the reserves come from contributions (employer and member) and investment income. Distributions from the reserves include monthly pension benefits and increases to eligible pensions under the Pension Equalization Program and the "13th Check." A schedule of reserve account balances is included in Note 3 to the Financial Statements.

COPERS Activities:
(in thousands)

COPERS provides retirement pensions, survivor benefits, member contribution refunds, and disability benefits to qualified members and their beneficiaries. These benefits are financed through employer and member contributions and income from COPERS investments.

Net investment income, which includes net appreciation and depreciation in fair value of investments, bond interest, dividend income, net securities lending income and investment expenses for the fiscal year ended June 30, 2017 was $243,210 (including securities lending). This compares to net investment income for June 30, 2016 and June 30, 2015 of $8,919 and $47,149, respectively. Employer contributions increased during the fiscal year due to the increase in the annual contribution rate and ongoing hiring from 31.59% for Tier 1 and 25.59% for Tier 2/3 in fiscal year 2016 to 32.16% for Tier 1 and 26.16% for Tier 2/3 in fiscal year 2017. The resulted in contributions from $152,153 for the fiscal year ended June 30, 2017 compared to $119,844 for the fiscal year ended June 30, 2016. Deductions increased by 3.4% over the prior fiscal year, primarily as a result of increases in benefit payments and the number of retirees. This compares to a 5.7% increase in deductions from June 30, 2015 to June 30, 2016. Benefit payments for the fiscal years ended June 30, 2017, 2016 and 2015 were $220,276, $213,047 and $201,178, respectively. The increase in benefit payments for the last two fiscal years is due to an increase in the number of retirees.

The summary of COPERS revenues (additions) and expenses (deductions) for the fiscal years ended June 30, 2017, 2016 and 2015 are provided in Table 3 and Table 4:

Table 3: Additions and Deductions to/from Fiduciary Net Position for the fiscal years ended June 30, 2017 and June 30, 2016 (in thousands)

	2017	2016	Change	% Change
Additions				
Employer Contributions	$ 152,153	$ 119,844	$ 32,309	27.0 %
Members' Contributions	30,870	29,306	1,564	5.3
Inter-System Transfers	43	217	(174)	(80.2)
Net Investment Income	242,888	8,919	233,969	2,623.3
Net Securities Lending Income	322	252	70	27.8
Total	**$ 426,276**	**$ 158,538**	**$ 267,738**	**168.9 %**
Deductions				
Benefit Payments	220,276	213,047	7,229	3.4 %
Refunds	3,227	3,047	180	5.9
Inter-System Transfers	207	315	(108)	(34.3)
Administrative Expense	380	234	146	62.4
Total	**$ 224,090**	**$ 216,643**	**$ 7,447**	**3.4 %**
Change in Net Position Restricted for Pensions	**202,186**	**(58,105)**	**260,291**	**(448.0) %**
Ending Net Position Restricted for Pensions	**$ 2,353,607**	**$ 2,151,421**	**$ 202,186**	**9.4 %**

Table 4: Additions and Deductions to/from Fiduciary Net Position for the fiscal years ended June 30, 2016 and June 30, 2015 (in thousands)

	2016	2015	Change	% Change
Additions				
Employer Contributions	$ 119,844	$ 117,092	$ 2,752	2.4 %
Members' Contributions	29,306	27,861	1,445	5.2
Inter-System Transfers	217	199	18	9.0
Net Investment Income	8,919	46,978	(38,059)	(81.0)
Net Securities Lending Income	252	171	81	47.4
Total	**$ 158,538**	**$ 192,301**	**$ (33,763)**	**(17.6)** %
Deductions				
Benefit Payments	213,047	$ 201,178	$ 11,869	5.9 %
Refunds	3,047	3,004	43	1.4
Inter-System Transfers	315	421	(106)	(25.2)
Administrative Expense	234	414	(180)	(43.5)
Total	**$ 216,643**	**$ 205,017**	**$ 11,626**	**5.7** %
Change in Net Position Restricted for Pensions	**(58,105)**	**(12,716)**	**(45,389)**	**356.9** %
Ending Net Position Restricted for Pensions	**$ 2,151,421**	**$ 2,209,526**	**$ (58,105)**	**(2.6)** %

Requests for Information:

This report is prepared to provide the Retirement Board, members, retirees and citizens with an overview of the plan, to assess COPERS' financial position and to show accountability for funds received. Questions regarding the information provided in this financial report or requests for additional information may be addressed to:

COPERS
200 W. Washington, 10th Floor
Phoenix, AZ 85003
(602) 534-4400
www.phoenix.gov/copers

Statements of Fiduciary Net Position for the Fiscal Year Ended June 30, 2017 and 2016 (in thousands)

	2017	2016
ASSETS		
Cash and Cash Equivalents	$ 38,582	$ 19,231
Receivables		
City of Phoenix Contributions	4,988	3,586
Member Contributions	1,006	822
Interest and Dividends	1,541	1,693
Unsettled Broker Transactions - Sales	93,359	57,500
Unsettled Broker Transactions - Foreign Exchange Sales	29,719	74,045
Other	335	6,052
Total Receivables	130,948	143,698
Investments, at Fair Value		
Temporary Investments from Securities Lending Collateral	90,569	83,249
Fixed Income	512,001	533,517
Domestic Equities and Other	592,444	492,950
International Equities	446,101	196,903
International Equities Commingled	244,881	403,499
Hedge Funds	254,936	239,666
Real Estate	315,307	316,790
Total Investments	2,456,239	2,266,574
Total Assets	2,625,769	2,429,503
LIABILITIES		
Payable for Securities Lending Collateral	90,569	83,249
Unsettled Broker Transactions - Purchases	150,076	118,927
Unsettled Broker Transactions - Foreign Exchange Purchases	29,719	73,929
Due to the City of Phoenix - Other	287	98
Investment Management Fees Payable	1,411	1,755
Other Payables	100	124
Total Liabilities	272,162	278,082
Net Position Restricted for Pensions	$ 2,353,607	$2,151,421

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

Statements of Changes in Fiduciary Net Position for the fiscal years ended June 30, 2017 and 2016 (in thousands)

	2017	2016
ADDITIONS		
Contributions		
City of Phoenix	$ 152,153	$ 119,844
Member	30,870	29,306
Inter-System Transfers	43	217
Total Contributions	183,066	149,367
Net Investment Income		
From Investing Activities		
Net Appreciation/(Depreciation) in Fair Value of Investments	228,354	(14,314)
Interest	6,696	7,145
Dividends	20,204	20,404
Other	4,386	3,079
Total Income from Investing Activities	259,640	16,314
Less Investing Activities Expense	(16,752)	(7,395)
Net Income from Investing Activities	242,888	8,919
From Security Lending Activities		
Security Lending Gross Income	761	402
Less Security Lenging Activity		
Agent Fees	(138)	(108)
Broker Rebates/Collateral Management Fees	(301)	(42)
Total Security Lending Expenses, net	(439)	(150)
Net Income from Security Lending Activities	322	252
Total Net Investment Income	243,210	9,171
Total Additions	426,277	158,538
DEDUCTIONS		
Benefit Payments	220,276	213,047
Refunds of Contributions	3,227	3,047
Inter-System Transfers	207	315
Administrative Expenses	380	234
Total Deductions	224,090	216,643
NET INCREASE/(DECREASE) IN NET POSITION	202,186	(58,105)
Net Position Restricted for Pensions		
Beginning of Year	2,151,421	2,209,526
End of Year	$ 2,353,607	$2,151,421

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

Note 1 - Summary of Significant Accounting Policies

The City of Phoenix Employees’ Retirement Plan (“COPERS” or the “Plan”) is a defined benefit single-employer public employees' retirement system for the City of Phoenix (“City”) general municipal employees. The accounting policies of COPERS conform to accounting principles generally accepted in the United States of America (“GAAP”) as applicable to governmental retirement plans.

a. Reporting Entity

COPERS prepares and distributes separate financial statements as required by the Charter of the City of Phoenix (Chapter XXIV, Article II, Employees’ Retirement Law of 1953) (“Charter”). Its financial statements are also included as a component unit of the City reporting entity due to the significance of COPERS’ operational and financial relationships with the City. The City is the only non-employee contributor to the pension plan. Not all employees of the City are covered under COPERS. Police officers and firefighters are covered under the Arizona Public Safety Personnel Retirement System (“APSPRS”) and elected officials under the Elected Officials Retirement Plan of Arizona (“EORPA”). APSPRS and EORPA were established by Arizona State Statute and are administered by an independent Board of Trustees. The City's involvement with these plans is limited to the administration of benefits for APSPRS through the City of Phoenix Fire and Police Local Boards and making the required annual contributions.

b. Basis of Accounting

COPERS’ financial statements are prepared using the accrual basis of accounting using the economic resources measurement focus. Employee contributions are recognized as revenues in the period in which employee services are performed and the contributions are therefore earned. Employer contributions are recognized at the same time, as the City is formally committed to contributing the actuarially determined amount each year. Benefit payments received each month by retirees are recognized as an expense of the prior month, and refunds are recognized as expenses when due and payable, in accordance with the terms of the plan.

c. Use of Estimates

The preparation of financial statements in conformity with GAAP requires management to make a number of estimates and assumptions that affect the reported amounts of net position restricted for pensions and changes therein. Actual results could differ from those estimates.

d. Investments

Equity securities and fixed-income securities are reported at fair value (Note 8). Interest and dividend income is recognized on the accrual basis as earned. Purchases and sales of investments are recorded on a trade-date basis. Cash equivalents are determined by using a maturity of no more than 90 days at time of purchase. The fair value of an investment is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The fair values of investments are generally based on published market prices and quotations obtained from major investment firms.

Note 1 - Summary of Significant Accounting Policies (Continued)

In May of 2017, the Board significantly revised the Investment Policy Statement that was more than 10 years old. The Board felt these revisions were necessary to:

- Update the objectives and guidelines that govern the investment of COPERS' assets;
- Establish a long-term target asset allocation with a high likelihood of meeting COPERS' objectives; and
- Protect the financial health of COPERS through the implementation of a stable, long-term investment policy.

Significant areas of revision include revising the asset allocation, reflecting the changes in the Phoenix City Charter that previously limited the types of investments COPERS could make, and the addition of prudent investor language. A comparison between the asset allocation used for this reporting period and the revised allocation is below:

Asset Class	Old Target	Revised Target
U.S. Equity	18%	16%
Developed Market Equity (non-U.S.)	16%	9%
Public Emerging Market Equity	-	8%
Private Equity	3%	9%
Investment Grade Bonds	20%	15%
TIPS	-	7%
High Yield Bonds	-	5%
Bank Loans	-	3%
Emerging Market Bonds	5%	3%
Infrastructure	-	4%
Natural Resources	-	4%
Hedge Funds	15%	5%
Real Estate	15%	12%
GTAA	8%	-
Cash	-	-

In consultation with their investment manager and consulting actuary, the Board believes the revised asset allocation will have a greater probability of earning the assumed rate of return. The revised asset allocation was adopted during the reporting period, but not implemented due to the timing of the implementation process. Until fully realized, the effects of these changes is not known.

Note 2 - Description of Plan

a. Purpose

COPERS is a single-employer, defined benefit pension plan established by the City Charter. Its purpose is to provide retirement, disability retirement and survivor benefits for its members. Members are full-time employees on a work schedule which consists of the number of full-time hours per week designated for the class of employment for the employee's classification and which work schedule is intended to be continuous over a period of twelve months. All full-time classified civil service employees and full-time appointive officials of the City with the exception of sworn police and firefighters are required, as a condition of employment, to contribute to COPERS.

b. Administration

The general administration, management and operation of COPERS are vested in a nine-member Retirement Board consisting of three elected employee members, four statutory members, a citizen member and a retiree member. The Retirement Board appoints the Retirement Program Administrator, a civil service position, and contracts other services necessary to properly administer the Plan.

c. Plan Amendment and Termination

COPERS is administered in accordance with the Charter and can be amended or repealed only by a vote of the people. There are no provisions for termination of COPERS. Voters approved changes to the City of Phoenix retirement system at an election held on August 25, 2015. New employees hired on or after January 1, 2016 were placed in Tier 3. The employee contribution rate for Tier 3 is based on 50% of the actuarially determined rate necessary to fully fund the Annual Required Contribution, with a maximum employee contribution rate of 11%.

d. Membership Data

	June 30	
	2017	**2016**
Current retirees, beneficiaries and survivors	6,822	6,734
Alternate payees	158	151
Terminated vested members	925	885
Active members:		
Tier 1	6,030	6,416
Tier 2	823	953
Tier 3	1,177	414
Total Members	15,935	15,553

Note 2 - Description of Plan (Continued)

e. Pension Benefits

Benefits are calculated on the basis of a given rate, final average salary and service credit. Members are eligible for retirement benefits at age 60 plus ten or more years of service credit, age 62 with five or more years of service credit, or where age and service credits equal 80 for Tier 1 employees and 87 for Tier 2 and 3 employees. The below table outlines the benefits for each tier.

Tier 1	Tier 2	Tier 3
• Up to 32.5 yrs service @ 2.0%	• Less than 20 yrs service @ 2.10%	• Less than 10 yrs service@1.85%
• 32.5 to 35.5 yrs service @ 1.0%	• 20 yrs but less than 25 yrs service @ 2.15%	• 10 yrs but less than 20 yrs service @ 1.9%
• 35.5 yrs service & over @ 0.5%	• 25 yrs but less than 30 yrs service @ 2.20%	• 20 yrs but less than 30 yrs service @ 2.0%
	• 30 yrs or more @ 2.30%	• 30 yrs or more @ 2.1%

A deferred pension is available at age 62 for members who have five or more years of service credit at time of separation and leave their accumulated contributions in COPERS.

A supplemental post-retirement payment and a permanent benefit increase (under the Pension Equalization Program) may be provided to Tier 1 and Tier 2 retirees if sufficient reserves are available at the end of the fiscal year. The reserve is funded if the five-year average investment return exceeds 8%.

f. Disability Benefits

A member who becomes permanently disabled for the performance of duty is eligible for a disability benefit if the disability is 1) by reason of a personal injury or disease and the member has ten or more years of service credit or 2) due to on-the-job injuries, regardless of service credit.

g. Survivor Benefits

Dependents of deceased members may qualify for survivor benefits if the deceased member had ten or more years of service credit or if the member's death was in the line of duty with the City and compensable under the Workmen's Compensation Act of the State of Arizona. Chapter XXIV, Section 25 of the Charter of the City of Phoenix specifies the dependents and conditions under which they qualify for survivor benefits.

h. Refunds

Upon separation from employment, a member or beneficiary not entitled to a pension may withdraw the member's contribution plus applicable interest. An interest rate of 3.75% for fiscal year 2017 was granted by the Retirement Board to be applied at June 30, 2017 to the members' mean account balances during the fiscal year. The acceptance of a refund cancels the individual's rights and benefits in COPERS. Employer contributions to COPERS are not refundable.

Note 2 - Description of Plan (Continued)

i. Tax Exempt Status of Member Contributions

COPERS has received a favorable letter of determination of qualification from the Internal Revenue Service under Section 401(a) of the Internal Revenue Code. Continued tax-exempt status of COPERS is contingent on future operations remaining in compliance with Section 401(a).

Under Internal Revenue Code Section 414(h)(2) and Revenue Ruling 81-36, effective January 1, 1985 the City of Phoenix authorized that a portion of its contributions be earmarked as being made by the members of COPERS, and "picked up" that portion of the designated active member contributions. The member contribution that is picked up by the City of Phoenix is treated as an employer contribution for federal and state income tax purposes and excluded from the member's gross income until distributed by COPERS.

Note 3 – Net Position Restricted for Pensions

Various accounts have been established to hold the reserves for benefit payments:

- The **Income Account** is used to account for COPERS' investment income and loss, including net appreciation or depreciation in fair value and miscellaneous income. At year-end, the Income Account is closed to the Employees' Savings Account, the Pension Accumulation Account, the Pension Reserve Account and the Pension Equalization Reserve Account, which results in no fund balance in the Income Account.

- The **Employees' Savings Account** is used to account for member contributions, member refunds, and the member portion of investment income. As a condition of employment, a member hired before July 1, 2013 is required to contribute 5% of his/her covered compensation; a member hired after this date is required to contribute 50% of the actuarially determined rate, while the City contributes the other 50%. Effective with the election on August 25, 2015, the employee contribution for Tier 2 and 3 cannot exceed 11%. Accumulated contributions receive regular interest that is computed at the end of each fiscal year on the mean balance in the members' accounts during the year. The rate of interest is established each year by the Board (3.75% in fiscal year 2017 and 2016). Transfers are made from the Employees' Savings Account to the Pension Reserve Account when a member retires or becomes eligible for disability benefits.

- The **Pension Accumulation Account** is used to account for employer contributions and for a portion of investment income. The Charter requires the City to contribute an amount that is determined annually by COPERS' retained actuaries. Contributions are based upon a level percentage of payroll funding principle so that the contribution rates do not fluctuate significantly over time. This contribution is over and above the member contributions made by the City. The Pension Accumulation Account may carry a negative balance as the City contribution rate includes a component for the unfunded actuarial liability (UAL). Transfers are made from the Pension Accumulation Account to the Pension Reserve Account when a member retires or becomes eligible for disability benefits.

- The **Pension Reserve Account** is used to account for distributions to retirees and the balance receives regular interest that is computed at the end of each fiscal year on the mean balance during the year. The rate of interest is the actuarial assumed rate.

- The **Pension Equalization Reserve Account** is used for funding increases to eligible pensions under the Pension Equalization Program and the "13th Check." The Pension Equalization Program was established on October 1, 1991, when voters of the City of Phoenix approved an amendment to the City Charter, allowing pension adjustments to be paid to retired members of COPERS. These adjustments are to be made exclusively from COPERS' investment earnings in excess of 8% (per Charter) over the preceding 5-year period, and may not exceed the Phoenix Area Consumer Price Index (CPI). This amendment was effective January 1, 1992, and will benefit only retirees who, as of January 1 of each year, have received at least 36 pension payments.

Note 3 – Net Position Restricted for Pensions (continued)

Following are the fiscal year-end reserve balances as of June 30, 2017 and 2016 respectively, based on amortized cost for fixed income investments and cost for equity investments (in thousands):

	2017	2016
Employees' Savings	$ 469,443	$ 455,374
Pension Accumulation	(1,180,969)	(951,996)
Pension Reserve	2,749,828	2,492,374
Pension Equalization Reserve	148	7,867
Convert to Fair Value	315,157	147,802
Total Based on Fair Value	$ 2,353,607	$ 2,151,421

Note 4 - Investment Fees (in thousands)

The investment costs from Plan assets were $16,752 and $7,395 for the fiscal years ended June 30, 2017 and 2016, respectively. This information is provided in greater detail in the Supplementary Information section of this document.

Fund Manager fees charged to the Plan for investments for actively managed funds are deducted from income earned and are not separately reflected. Consequently, Fund Manager fees are reflected as a reduction of investment return for such investments.

Note 5 - Funding Requirement Determinations and Actual Contributions (in thousands)

City of Phoenix contributions for the fiscal year ended June 30, 2017 were $152,153 which is equivalent to 29.19% of the estimated annual active member payroll, compared to $119,844 or 25.29% for the fiscal year ended June 30, 2016. Member contributions for the fiscal years ended June 30, 2017 and June 30, 2016 were $30,870 and $29,306, respectively. The Tier 1 employee contribution rate is 5%. The Tier 2 employee contribution rate was 15.51% through January 1, 2016 and 11% thereafter. The Tier 3 employee contribution rate is 11%.

Employer contributions are actuarially determined amounts, which together with member contributions are sufficient to cover both (i) normal costs of the plan and (ii) financing of unfunded actuarial costs over a selected period of future years. (See Note 6)

Note 6 – Funded Status and Funding Progress (as of most recent valuation)

Unfunded actuarial liabilities are determined annually by the consulting actuary, applying actuarial assumptions to reflect the time value of money (through discounts for interest) and the probability of payment (by means of decrements, such as for death, disability, withdrawal or retirement) between the valuation date and the expected date of payment.

The information presented in the required supplementary schedules was determined as part of the actuarial valuations at the date indicated. Additional information as of the latest actuarial valuation follows:

Description	**Methods/Assumptions**	
Valuation Date	**June 30, 2017**	**June 30, 2016**
Actuarial Cost Method	Individual Entry Age	Individual Entry Age
Amortization Method	Level Percentage of Payroll, Open	Level Percentage of Payroll, Open
Remaining Amortization Period	20-Years, with 1-Year Phase In	20-Years, with 2-Year Phase In
Actuarial Assumptions		
Investment Rate of Return	7.5%	7.5%
Projected Salary Increases (a)	3.0%-9.6%	3.5%-10.1%
Cost-of-Living Adjustments	1.5%	1.5%
Factors Affecting Trends:	None	None

(a) Includes inflation at 2.50%, a decrease from 3.50% from the prior year. Merit and longevity assumptions are age-related rates.

Note 6 – Funded Status and Funding Progress (as of most recent valuation) (continued)

The actuarial assumptions employed as of June 30, 2017 and June 30, 2016, include the following:

1) Salary Scale – Projected salary increases of 3.0% per year compounded annually attributable to inflation, with another 0.5% to competition and productivity. Additional projected salary increases ranging from 0.0% to 6.1% (6.6% for 2016) per year, depending on age, attributable to merit and longevity.

2) Multiple Decrement Tables:

   a) Death - For determination of member, retiree and beneficiary mortality, the MP-2015 Mortality Improvement Scale.

   b) Disability - Based upon 0.960 times the CalPERS Public Agency: Miscellaneous Ordinary Disability Incidence table for males.

   c) Withdrawal - Based upon COPERS' experience, measures the probability of members terminating employment for reasons other than retirement, death or disability.

The foregoing actuarial assumptions are based on the presumption that COPERS will continue as presently chartered. If COPERS is amended, different actuarial assumptions and other factors might be applicable in determining actuarial present values.

Note 6 – Funded Status and Funding Progress (as of most recent valuation) (continued)

The target allocation and best estimates of arithmetic real rates of return for each major asset class based on Meketa's capital market assumptions are summarized in the following table:

Asset Class	Target Allocation	10-Year Expected Real Return Rate of Return
Broad US Equity	25%	7.3%
Broad International Equity	19%	8.3%
Intermediate Duration Fixed Income	15%	2.6%
Emerging Markets Debt Hard	5%	5.5%
Real Estate	13%	7.3%
Diversified Hedge Funds	11%	4.3%
Private Equity	3%	10.3%
Diversified Inflation Strategies	7%	4.7%
Cash	2%	1.5%

Actual returns may be lower due to volatility of returns. The long-term expected rate of return is based on Meketa's capital market assumptions with a 2.5% inflation assumption.

Discount Rate

The discount rate used to measure the total pension liability was 7.25%. The projection of cash flows used to determine the discount rate assumed that Tier 1 member contributions remain at 5.0% of payroll, Tier 2 and 3 member contributions are set equal to half of the total actuarially determined contribution rate, not to exceed 11 percent, and City contributions will be made at rates equal to the difference between the actuarially determined contribution rates and the member rates. 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 was applied to all periods of projected benefit payments to determine the total pension liability.

Sensitivity of the Net Position Liability to Changes in the Discount Rate

The table below presents the net pension liability of the Plan calculated using the discount rate of 7.25%, as well as what the net pension liability would be if it were calculated using the discount rate that is 1.0% lower (6.25%) or 1.0% higher (8.25%) than the current rate at June 30, 2017. Changes in the discount rate affect the measurement of the TPL (Total Pension Liability). Lower discount rates produce a higher TPL and higher discount rates produce a lower TPL. Because the discount rate does not affect the measurement of assets, the percentage change in the NPL can be very significant for a relatively small change in the discount rate. A 1.0% decrease in the discount rate increases the TPL by approximately 12.2% and increases the NPL (Net Pension Liability) by approximately 28.4%. A 1.0% increase in the discount rate decreases the TPL by approximately 10.2% and decreases the NPL by approximately 23.7%. The table below shows the sensitivity of the NPL to the discount rate.

Note 6 – Funded Status and Funding Progress (as of most recent valuation) (continued)

Sensitivity of Net Pension Liability to Changes in Discount Rate (in thousands)

	1% Decrease	Discount Rate	1% Increase
	6.25%	7.25%	8.25%
Total Pension Liability	$4,635	$4,130	$3,709
Plan Fiduciary Net Position	2,354	2,354	2,354
Net Pension Liability	$2,281	$1,776	$1,355

The Net Pension Liability as a percent of Plan Fiduciary Net Position was 57.0% and 54.0% at June 30, 2017 and June 30, 2016, respectively.

Note 7 - Funding Policy

As a condition of employment, COPERS members are required to contribute a percentage of their salary to COPERS as provided in Chapter XXIV, Section 27, of the City Charter. The below table outlines the contribution rates for Tiers 1, 2, and 3 for fiscal year 2016-2017.

Tier	Contribution Rate
Tier 1	5%
Tier 2	15.51% through December 31, 2016, then capped at 11%
Tier 3	Capped at 11%

Present members' accumulated contributions at June 30, 2017 were $469,443, including interest compounded annually, compared to $455,374 at June 30, 2016, and are included in the Employee Savings Account as discussed on page 30. The City's funding policy is designed to provide annual contributions to COPERS in amounts that are estimated to remain a constant percentage of members' compensation each year, such that, when combined with members' contributions, all active member benefits will be fully funded as earned. Contributions by the City to the Plan are actuarially determined.

Note 8 – Investments

The Board has a duty to invest and manage the assets of the Plan solely in the interests of the members and beneficiaries. The Board shall invest and manage trust assets as a prudent investor would, by considering the purposes, terms, distribution requirements, and other circumstances of the Plan. In satisfying this standard, the Board shall exercise reasonable care, skill, and caution.

The Board's present policy has resulted in approximately 23.7% at fair value being invested in domestic common stocks as of June 30, 2017 or approximately 23.9% at cost. The City Charter does not contain any limitations on the percent invested in international equities. The Board's present policy has a target of 19% investment (at fair value) in international equity investments. As of June 30, 2017 approximately 18.6% was invested (at fair value) in international equity investments.

Note 8 - Investments (continued)

A summary of investments at June 30, 2017 and 2016 is as follows (in thousands):

	2017		2016	
	Fair Value	Amortized Cost	Fair Value	Amortized Cost
Temporary Investments from Securities Lending Collateral (Note 9)	$ 90,569	$ 90,569	$ 83,249	$ 83,249
Fixed Income	512,001	465,452	533,516	493,734
Domestic Equity and Other	592,444	499,319	492,951	454,211
International Equities	446,101	428,117	403,499	448,095
International Equities Commingled	244,881	181,539	196,903	177,144
Hedge Funds	254,936	222,780	239,666	222,780
Real Estate	315,307	253,307	316,790	239,559
Total Investments	**$2,456,239**	**$ 2,141,083**	**$2,266,574**	**$ 2,118,772**
Cash and Cash Equivalents	38,582	38,582	19,231	19,231
Total	**$2,494,821**	**$ 2,179,664**	**$2,285,805**	**$ 2,138,003**

COPERS investments are managed by professional fund managers and are held by a plan custodian who is a COPERS agent.

Note 8 - Investments (continued)

The following schedule provides the categories of investments at June 30, 2017 and 2016 (in thousands):

Investment Categories	2017 Fair Value	2016 Fair Value
Cash	$ 2,590	$ 2,506
Short-Term Investment Fund	35,992	16,725
Cash and Cash Equivalents	$ 38,582	$ 19,231
Temporary Investments from Securities Lending Collateral	$ 90,569	$ 83,249
Fixed Income:		
Futures	$ 173	$ 236
SWAPS	816	(4,689)
U S Government Guaranteed Securities	62,930	75,535
Government Agencies Securities	2,805	3,027
Mortgage Backed Securities-Residential	83,776	80,391
Asset Backed Securities	4,382	2,910
Municipal Bonds	3,990	4,365
Corporate Bonds	78,739	87,653
Corporate Bonds Commingled	12,808	5,276
Commingled Fixed Income	143,342	161,149
Foreign	14,920	17,345
Foreign Commingled	103,320	100,319
	$ 512,001	$ 533,517
Domestic Equities	$ 515,059	$ 455,424
Global Commingled	$ 446,101	$ 403,499
International Equities Comminged Funds	$ 244,881	$ 196,903
Private Equity	$ 77,385	$ 37,526
Hedge Funds	$ 254,936	$ 239,666
Real Estate Funds	$ 315,307	$ 316,790
Total with Securities Lending Collateral	$ 2,494,821	$ 2,285,805

Note 8 – Investments (continued)

Custodial Credit Risk - Deposits
Custodial credit risk for deposits is the risk that in the event of a depository institution failure, a government will not be able to recover deposits or collateral held by an outside party. As of June 30, 2017, COPERS did not realize any losses related to custodial credit risk for deposits.

Annual Money-Weighted Rate of Return

The rate of return for the year ended June 30, 2017, which is the annual money-weighted rate of return on pension plan investments, net of pension plan investment expense, was 7.30%. The money-weighted rate of return expresses investment performance, net of investment expense, adjusted for the changing amounts actually invested.

Custodial Credit Risk – Investments

Custodial credit risk for investments is the risk that in the event of a failure of a counterparty to a transaction, a government will not be able to recover the value of investment or collateral securities that are in the possession of an outside party. As of June 30, 2017 and 2016, COPERS did not realize any losses due to custodial credit risk for investments or securities lending arrangements. Note 9 on page 42 provides detailed information regarding securities lending. COPERS' policy requires all investments to be collateralized and registered in COPERS' or its nominee's name.

Concentration of Credit Risk

Concentration of Credit Risk is the risk of loss attributed to the magnitude of a government's investment in a single issuer. COPERS' investment policy does not allow for an investment in any one issuer that is in excess of 5% of COPERS' total investments which includes futures, options and swaps, except investments issued or explicitly guaranteed by the U.S. government. As of June 30, 2017 and 2016, COPERS did not have any investments with any one issuer in excess of 5%.

Foreign Currency Risk

Foreign currency risk is the risk that changes in exchange rates may adversely affect the fair value of an investment or a deposit. COPERS' investment in foreign fixed income is managed by PIMCO and Western Asset. Both managers report dollar and non-dollar denominated holdings, and provide for direct ownership of the underlying security. Dollar and non-dollar denominated holdings accounted for 95.77% and 4.23%, respectively, of the foreign fixed income investments at June 30, 2017. For fiscal year ending June 30, 2016, dollar denominated and non-dollar denominated holdings accounted for 93.45% and 6.55%, respectively.

Note 8 – Investments (continued)

Foreign Currency Exposure June 30, 2017 and 2016
(in thousands)

Currency	Fixed Income Currency Contracts 2017	Fixed Income Currency Contracts 2016
Australian Dollar	$ 16	$ 621
Brazilian Real	1,654	1,020
British Pound	455	708
Canadian Dollar	1,027	18
Chinese Reminbi	894	1,839
Euro	25	1,282
Icelandic Krona	5	-
Indian Rupee	216	-
Indonesia Rupiah	613	-
Japanese Yen	851	1,343
Malaysian Ringgit	-	187
Mexican Peso	2,988	2,182
Russian Ruble	774	1,658
Singapore Dollar	-	1,209
South Korean Won	-	3,208
Swedish Krona	36	-
Taiwan Dollar	-	364
Totals	$ 9,552	$ 15,639

Commitments (in thousands)

In connection with the purchase of various non-core real estate investments, COPERS had commitments totaling $670,890 as of June 30, 2017 and $516,666 as of June 30, 2016. Remaining unfunded commitments for real estate were $172,168 as of June 30, 2017 and $132,725 as of June 30, 2016. COPERS is not in any redemption queues. All non-core real estate is self-liquidating.

Credit Risk

Credit risk is the risk that an issuer or other counterparty to an investment will not fulfill its obligations. COPERS' investment policy permits purchasing any security that is included in the Barclays Capital US Aggregate Index and relies on the methodology used by Barclays Capital to determine if a security is investment grade. For fixed income securities and their futures or options derivatives, emphasis will be on high-quality securities.

COPERS currently has four managers responsible for fixed income investments. Aberdeen, MFS Heritage Trust Company ("MFS"), PIMCO and Western Asset Management Company ("Western") are active bond managers. As part of their portfolio, PIMCO and Western may enter into futures, options, and swaps contracts for hedging purposes and/or as a part of the overall portfolio strategy

Note 8 - Investments (continued)

and will be incidental to its securities trading activities for the account. Table I on page 41 provides information relating to the credit risk for COPERS' fixed income investments as of June 30, 2017 and 2016.

Interest Rate Risk

Interest rate risk is the risk that changes in interest rates adversely affect the fair value of an investment. Typically, the longer the maturity of an investment, the greater the sensitivity of its fair value to changes in interest rates. COPERS' investment services agreement with Western directs them to maintain an average weighted duration of portfolio security holdings including futures and options positions within +/- 20% of the Barclays Capital US Aggregate Index. COPERS' investment management agreement with Aberdeen specifies a weighted average duration of +/- two years of the Barclays Capital US Aggregate Index. The investment management agreement with PIMCO requires a weighted average duration of +/- two years of the Barclays Capital US Aggregate Index. The investment management agreement MFS specifies a weighted average duration of +/- seven years of the JPMorgan Emerging Markets Bond Index.

Information about the interest rate risk exposure of COPERS is provided in Table I on page 41. COPERS assets include several collateralized mortgage obligations and mortgage-backed securities, which could be considered as highly sensitive to interest rate changes, depending upon the exercise of prepayment options.

COPERS' investment policy permits the following investments, which include investments that are considered to be highly sensitive to interest rate changes due to long maturities, prepayment options, coupon multipliers, reset dates and similar terms:

- Obligations issued or guaranteed by the U.S. Federal Government, U.S. Federal Agencies or U.S. government-sponsored corporations and agencies.
- Obligations of U.S. and non-U.S. corporations such as mortgage bonds, convertible and non-convertible notes and debentures.
- Mortgage-backed and asset-backed securities, swaps, forwards, options on swaps, and options on forwards.
- Obligations denominated in U.S. dollars of international agencies, supranational entities and foreign governments (or their subdivisions or agencies).
- Securities defined under Rule 144A and Commercial paper defined under Section 4(2) of the Securities Act of 1933.
- Bank Loans, TBA Securities and Mortgage Dollar Rolls.
- General obligation bonds, revenue bonds, improvement district bonds, or other evidences of indebtedness of any state of the United States, or any of the counties or incorporated cities, towns and duly organized school districts in the State of Arizona which are not in default as to principal and interest.

Note 8 – Investments (continued)

Table I: Credit Rating and Maturity for COPERS' Fixed Income Investments (in thousands)

	Credit Quality Ratings	2017 Fair Value	2017 Weighted Average Maturity (Years)	2016 Fair Value	2016 Weighted Average Maturity (Years)
Derivatives	Not Rated	$ 845	9.474	$ (4,603)	20.372
Derivatives	A	144	7.397	151	8.438
Total Derivatives		**989**		**(4,452)**	
U.S. Government Guaranteed Securities	Not Rated	$ 12,102	12.538	$ 3,106	13.983
U.S. Government Guaranteed Securities	AAA	40,991	16.115	71,781	16.518
U.S. Government Guaranteed Securities	AA	5,688	11.087	-	-
U.S. Government Guaranteed Securities	A	4,034	9.174	11	25.937
U.S. Government Guaranteed Securities	BBB	116	13.246	637	6.248
Total U. S. Government Guaranteed Securities		**62,930**		**75,535**	
Government Agency	AA	$ 2,805	4.364	$ 3,027	5.931
Total Government Agency		**2,805**		**3,027**	
Mortgage Backed	Not Rated	$ 68,940	30.001	$ 61,324	29.425
Mortgage Backed	AAA	9,285	24.732	12,501	26.123
Mortgage Backed	AA	1,505	10.105	1,728	11.976
Mortgage Backed	A	1,261	17.889	862	21.997
Mortgage Backed	BBB	376	16.971	634	17.603
Mortgage Backed	BB	819	17.113	661	24.323
Mortgage Backed	B	702	19.875	1,234	23.293
Mortgage Backed	CCC	710	18.252	939	19.727
Mortgage Backed	D	178	18.164	508	25.389
Total Mortgage Backed		**83,776**		**80,391**	
Asset Backed	AAA	$ 2,121	3.184	$ -	-
Asset Backed	AA	93	28.603	805	22.592
Asset Backed	A	979	18.298	1,128	20.460
Asset Backed	BBB	258	18.499	468	13.301
Asset Backed	BB	389	12.301	-	-
Asset Backed	CCC	543	27.263	509	28.286
Total Asset Backed		**4,382**		**2,910**	
Fixed Income Commingled	Not Rated	$ 143,342	6.000	$ 161,149	7.000
Total Fixed Income Commingled		**143,342**		**161,149**	
Municipal Bonds	AAA	$ 375	20.101	$ 393	21.101
Municipal Bonds	AA	3,081	22.769	3,434	23.450
Municipal Bonds	A	226	18.099	232	19.099
Municipal Bonds	BBB	308	24.523	306	25.523
Total Municipal Bonds		**3,990**		**4,365**	

Note 8 – Investments (continued)

Table I: Credit Rating and Maturity for COPERS' Fixed Income Investments (in thousands) - Continued

	Credit Quality Ratings	2017 Fair Value	2017 Weighted Average Maturity (Years)	2016 Fair Value	2016 Weighted Average Maturity (Years)
Corporate Bonds	Not Rated	$ 27,567	13.543	$ 30,339	14.080
Corporate Bonds	AAA	3,056	11.277	2,972	12.098
Corporate Bonds	AA	2,768	14.582	3,716	14.968
Corporate Bonds	A	11,418	8.071	14,700	9.348
Corporate Bonds	BBB	25,036	8.579	27,115	11.014
Corporate Bonds	BB	3,253	8.997	5,338	6.211
Corporate Bonds	B	4,756	12.965	2,790	16.019
Corporate Bonds	CCC	764	9.645	682	30.041
Corporate Bonds	D	121	29.970	-	-
Total Corporate Bonds		**78,739**		**87,652**	
Corporate Bonds Commingled	Not Rated	$ 12,808	10.376	$ 5,276	11.376
Total Corporate Bonds Commingled		**12,808**		**5,276**	
Foreign	Not Rated	$ 2,582	4.957	$ 4,159	12.830
Foreign	AAA	520	3.636	544	4.636
Foreign	AA	1,717	7.675	1,458	10.861
Foreign	A	1,490	16.305	2,184	12.635
Foreign	BBB	3,815	12.579	4,470	16.173
Foreign	BB	4,358	14.203	3,029	10.870
Foreign	B	438	6.315	1,249	6.896
Foreign	CC	-	-	252	7.519
Total Foreign		**14,920**		**17,345**	
Foreign Commingled	Not Rated	$ 103,320	8.200	$ 100,319	9.200
Total Foreign Commingled		**103,320**		**100,319**	
Total Fixed Investments by Maturity Date		$ 512,001		$ 533,517	

Note 9 – Securities Lending Program

State statutes and City Charter do not prohibit COPERS from participating in securities lending transactions, and COPERS has, via a Securities Lending Authorization Agreement effective May 6, 2015, authorized Bank of New York Mellon ("BNY") to lend its securities to broker-dealers and banks pursuant to a form of loan agreement.

During 2017 and 2016, BNY lent, on behalf of COPERS, certain securities held by BNY as custodian and received cash (United States and foreign currency), securities issued or guaranteed by the United States government and irrevocable letters of credit as collateral. BNY did not have the ability to pledge or sell collateral securities delivered absent a borrower default. Borrowers were required to deliver collateral for each loan equal to: (i) in the case of loaned securities denominated in United States dollars or whose primary trading market was located in the United States or sovereign debt issued by foreign governments, 100% of the fair value of the loaned securities; and (ii) in the case of loaned securities not denominated in United States dollars or whose primary trading market was not located in the United States, 105% of the fair value of the loaned securities.

Note 9 – Securities Lending Program (continued)

During 2017 and 2016, COPERS and the borrowers maintained the right to terminate all securities lending transactions on demand. The cash collateral received on each loan was invested, together with the cash collateral of other qualified tax exempt plan lenders, in a liquidity pool and a duration pool. The collateral pool had a weighted average maturity (WAM) of 21 days and a weighted average life (WAL) of 107 days. Because the loans were terminable at will, their duration did not generally match the duration of the investments made with cash collateral. The collateral held and the fair value of securities on loan for COPERS as of June 30, 2017 were $90,569 and $88,430, respectively, and as of June 30, 2016 were $83,249 and $81,286, respectively.

Note 10 – Risk and Uncertainties

COPERS invests in various investment securities. Investment securities are exposed to various risks such as interest rate, market and credit risks. Due to the level of risk associated with certain investment securities, it is at least reasonably possible that changes in the values of investment securities will occur in the near term and such changes could materially affect the amounts reported in the statements of changes in fiduciary net position. Because the values of individual investments fluctuate with market conditions, the amount of investment gains or losses that COPERS will recognize in its future financial statements cannot be determined.

Note 11 – Funds To/From Other Systems

Under the provisions of Arizona Revised Statutes, Sections 38-730 and 38-922 as amended, transfers between COPERS and the Arizona State Retirement System ("ASRS") are allowed when the City hires an employee who was formerly covered by ASRS, or a COPERS member who separates from City of Phoenix employment goes to work for an entity that covers its employees under ASRS. Effective July 2011, a change in statute changed the method of retirement service credit transfers between COPERS and ASRS. Previously, retirement service credits (time) would be transferred between systems without possible service reduction or member cost. Beginning July 2011, retirement service credit transfers are based on an actuarial present value (APV) methodology to the extent the prior retirement system is funded on a fair value basis. With this calculation, for the member to receive all of their service credits they may have to pay for a portion of the service or accept a reduced transfer of service credits.

Note 12 – Interfund Balances

On the Statement of Fiduciary Net Position, the liability, if any, due to the City of Phoenix results from the fact that COPERS does not have a local bank account. The City of Phoenix Payroll Section issues both Retirement pension warrants and employee retirement contribution refund warrants from the City's bank account through a warrant or direct deposit.

Until Retirement personnel instruct the custodian bank to wire funds to the City of Phoenix in reimbursement for the warrants and direct deposits, the Retirement Plan is in debt to the City. Also, City employees previously employed by government entities may purchase prior service credits.

Note 13 – Contingent Liabilities

COPERS is a party in pending litigation matters. While the final outcomes cannot be determined at this time, management is of the opinion that the final obligations, if any, for these legal actions will not have a material adverse effect on COPERS' financial position or change in net position.

Note 14 – Fair Value Measurements (in thousands)

Investment valuation
COPERS categorizes the fair value measurements of its investments based on the hierarchy established by generally accepted accounting principles. The hierarchy is based on the valuation inputs used to measure the fair value of assets. The fair value hierarchy, which has three levels, is based on the valuation inputs used to measure an asset's fair value: Level 1 inputs are quoted prices in active markets for identical assets; Level 2 inputs are significant other observable inputs; Level 3 inputs are significant unobservable inputs.

Investments
Investments, including derivative instruments that are not hedging derivatives, are measured at fair value on a recurring basis. Recurring fair value measurements are those that Governmental Accounting Standards Board (GASB) Statements require or permit in the statement of fiduciary net position at the end of each reporting period. Investments' fair value measurements are as follows at June 30, 2017 and 2016 (in thousands).

	2017			
Investments by fair value level	**Total**	**Level 1**	**Level 2**	**Level 3**
Domestic Equities	515,059	297,262	200	217,596
International Equities Commingled	244,881	-	-	244,881
Private Equity	77,385	-	-	77,385
Fixed Income				
Futures	173	173	-	-
SWAPS	816	-	816	-
US Government and Agency Securities	65,735	62,803	2,932	-
Mortgage Backed Securities - Residential	83,776	-	83,776	-
Asset Backed Securities	4,382	-	4,382	-
Municipal Bonds	3,990	-	3,990	-
Corporate Bonds	78,739	2,993	53,906	21,840
Corporate Bonds Commingled	12,808	-	-	12,808
Foreign	14,920	-	14,920	-
Foreign Commingled	103,320	-	-	103,320
Total fixed income securities	368,659	65,969	164,722	137,969
Temporary Investments from Securities Lending	90,569		90,569	
Subtotal	**1,296,553**	**363,231**	**255,491**	**677,831**

Note 14 – Fair Value Measurements (in thousands) (continued)

Investments by fair value level	2017 Total	Level 1	Level 2	Level 3
Investments measured at the net asset value (NAV)				
Hedge Funds	254,936			
Commingled Fixed Income	143,342			
Global Commingled	446,101			
Real Estate Funds	315,307			
Subtotal	**1,159,686**			
Total	**$2,456,239**	**$ 363,231**	**$ 255,491**	**$ 677,831**

Investments by fair value level	2016 Total	Level 1	Level 2	Level 3
Domestic Equities	455,424	252,947	315	202,162
International Equities Commingled	196,903	-	-	196,903
Private Equity	37,526	-	-	37,526
Fixed Income				
Futures	236	-	236	-
SWAPS	(4,689)	-	(4,689)	-
US Government and Agency Securities	78,562	74,887	3,675	-
Mortgage Backed Securities - Residential	80,391	-	80,391	-
Asset Backed Securities	2,910	-	2,910	-
Municipal Bonds	4,365	-	4,365	-
Corporate Bonds	87,653	-	60,884	26,769
Corporate Bonds Commingled	5,276	-	-	5,276
Foreign	17,345	-	15,871	1,474
Foreign Commingled	100,319	-	-	100,319
Total fixed income securities	372,368	74,887	163,643	133,838
Temporary Investments from Securities Lending	83,249		83,249	
Subtotal	**1,145,470**	**74,887**	**246,892**	**133,838**
Investments measured at the net asset value (NAV)				
Hedge Funds	239,666			
Commingled Fixed Income	161,149			
Global Commingled	403,499			
Real Estate Funds	316,790			
Subtotal	**1,121,104**			
Total	**$ 2,266,574**	**$ 74,887**	**$ 246,892**	**$ 133,838**

Alternative investments measured at NAV include hedge funds, real estate, opportunistic and global fixed income, and infrastructure investments. Below is a description of the various investment strategies:

- COPERS invests in two direct hedge funds and one customized fund of one. All three funds have a global macro strategy.
- COPERS' portfolio consists of one comingled fixed income fund and two fixed income separate accounts. These accounts have a core-plus strategy.
- COPERS has two global commingled funds. One fund which has a global large cap growth mandate and the second fund which has a large cap value mandate.
- COPERS' real estate investments consists of two core real estate funds and 14 non-core real estate partnerships. The core funds permit redemptions with a 90-day notice, the non-core fund investments have a limited liquidity and redemptions are restricted.

Certain investments are reported at the net asset values calculated by the investment manager. These investments, at June 30, 2017, detailed in the following table, are subject to capital calls and specific redemption terms:

	6/30/2017	Unfunded Commitments	Redemption Frequency	Redemption Notice Period
Hedge Funds	254,936	-	Not Applicable	-
Commingled Fixed Income	143,342	-	Daily	0 - 30 Days
Global Commingled	446,101	-	Daily	0 - 30 Days
Real Estate Funds	315,307	170,049	Not Applicable	-

Additionally, COPERS has unfunded private equity commitments totaling $94,205.

Debt and equity securities categorized as Level 1 are valued based on prices quoted in active markets for those debts and securities. Debt and equity securities categorized as Level 2 are valued using matrix pricing techniques maintained by the various pricing vendors for these securities. Matrix pricing is used to value securities based on the relationship to benchmark quoted prices. Investment derivative instruments categorized as Level 2 are valued using market approaches that consider, as applicable, benchmark interest rates or foreign exchange rates. Mortgage-backed securities categorized as Level 2 are valued using discounted cash flow techniques. Debt and equity securities categorized as Level 3 are debt and securities whose stated market price is unobservable by the market place, many of these securities are priced by the issuers or industry groups for these securities. Collateralized debt obligations categorized as Level 3 are valued using consensus pricing. The fair value of international commingled equity funds and related short-term investments classified in Level 3 represent the value of unit positions in funds that are not publicly traded on an exchange. Fair value of these securities can be impacted by redemption restrictions imposed by the fund managers.

Required Supplementary Information

The schedules of Required Supplementary Information started with one year of information as of the implementation of GASB 67 in 2014, but eventually will need to build up to 10 years of information. The schedule below shows the changes in NPL and related ratios required by GASB. As more information becomes available, additional years will be displayed.

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

Total Pension Liability	2017	2016	2015	2014
Service cost (MOY)	$ 72,876	$ 80,757	$ 75,310	$ 78,331
Interest (includes interest on service cost)	293,258	293,206	266,355	257,219
Changes of benefit terms	-	(3,229)	-	-
Differences between expected and actual experience	429	(76,891)	(31,009)	(20,336)
Changes of assumptions	2,420	(69,420)	254,870	-
Benefit payments, including refunds of member contributions	(223,667)	(216,193)	(204,403)	(179,877)
Net change in pension liability	**$ 145,315**	**$ 8,230**	**$ 361,123**	**$ 135,337**
Total Pension liability - beginning	**3,984,137**	**3,975,907**	**3,614,784**	**3,479,447**
Total Pension liability - ending	**$ 4,129,452**	**$ 3,984,137**	**$ 3,975,907**	**$ 3,614,784**
Plan Fiduciary Net Position				
Contributions - employer	$ 152,153	$ 119,844	$ 117,092	$ 110,629
Contributions - member	30,870	29,523	27,861	27,760
Net investment income	243,210	9,171	47,148	298,736
Benefit payments, including refunds of member contributions and transfer outs	(223,667)	(216,409)	(204,403)	(179,877)
Administrative Expenses	(380)	(234)	(414)	(628)
Net change in plan fiduciary net position	**$ 202,186**	**$ (58,105)**	**$ (12,716)**	**$ 256,620**
Plan fiduciary net position - beginning	**$ 2,151,421**	**$ 2,209,526**	**$ 2,222,242**	**$ 1,965,622**
Plan fiduciary net position - ending	**$ 2,353,607**	**$ 2,151,421**	**$ 2,209,526**	**$ 2,222,242**
Net Pension Liability	**$ 1,775,845**	**$ 1,832,716**	**$ 1,766,381**	**$ 1,392,543**
Plan fiduciary net position as a percentage of the total pension liability	57.00%	54.00%	55.57%	61.48%
Covered payroll	$ 521,295	$ 473,974	$ 460,441	$ 485,227
Net pension liability as a percentage of covered payroll	340.66%	386.67%	383.63%	286.99%

Required Supplementary Information (continued)

Schedule of Employer Contributions – Last 10 Fiscal Years (in thousands)

Fiscal Year	Actuarial Determined Contribution	Contributions In Relation To The Actuarially Determined Contributions	Contribution Deficiency (Excess)	Covered Payroll		Contributions As A Percentage of Covered Payroll
2016-17	$ 152,153	$ 152,153	$ -	$ 521,295		29.19%
2015-16	119,844	119,844	-	473,974		25.29%
2014-15	117,092	117,092	-	484,309	*	24.18%
2013-14	110,629	110,629	-	518,746	*	21.33%
2012-13	115,244	115,244	-	524,648		21.97%
2011-12	114,709	114,709	-	540,792		21.21%
2010-11	105,682	105,682	-	541,388		19.52%
2009-10	90,965	90,965	-	578,327		15.73%
2008-09	86,241	86,241	-	587,171		14.69%
2007-08	66,383	66,383	-	580,207		11.44%

*For fiscal years 2013-14 and 2014-15, the Plan's actuary was calculating covered employee payroll based on their assumption this was an estimated amount. For subsequent reports, the actuary began using actual amounts which slightly changed the amounts previously reported.

Schedule of Investment Returns for Year Ended June 30, 2017

	2017	2016	2015	2014
Annual money-weighted rate of return, net of investment expenses	7.30%	0.60%	2.19%	15.42%

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

Notes to the Required Supplementary Information (continued)

In July and August 2017, the COPERS Board adopted several new actuarial assumptions based upon the recommendations from its actuary, GRS, for the purpose of determining contribution rates. The 2017 adopted changes are:

1. The discount rate was lowered to 7.25%.
2. The rate of inflation was lowered to 2.50%.
3. The payroll growth rate lowered to 3.00%.
4. Pension Equalization Reserve (PER) was valued for future benefits payable through the PER as a 1.5% annual compound cost-of-living adjustment (COLA).

In August and October 2015, the COPERS Board adopted new actuarial assumptions and methods, based upon the recommendations from its actuary, Cheiron, for the purpose of determining contributions and to meet the GASB 67 implementation requirements to be applied to the financial reporting for the fiscal year ending June 30, 2015.

The 2015 adopted changes are the following:

1. PER was valued for future benefits payable through the PER as a 1.5% annual compound COLA. Amortization method for the unfunded actuarial liability (UAL) was amortized over a 20-year period as a level percentage of payroll with a four-year phase-in to the full amortization rate. Future gains and losses are amortized over closed 20-year periods as a level percentage of payroll from the valuation date in which they are first recognized. For Tier 1, members contribute 5% of pay and the City contributes the remainder of the total contribution rate. For the Tier 2, the members and the City each pay half of the total contribution rate.
2. Revised data tables for merit/salary increases, retirement rates, termination rates, disability incidence rates, and mortality rates.

In September 2013, the COPERS Board adopted new assumptions and methods, based upon the recommendations from its actuary, Cheiron, for the purpose of determining contributions and to meet the GASB 67 implementation requirements to be applied to the financial reporting for the fiscal year ending June 30, 2014.

The September 2013 adopted changes are the following:

1. Discount rate was lowered to 7.5% based on the expected return on assets.
2. Salary increase rate was changed for price inflation to 3.00%, real wage growth to 0.50% and wage inflation to 3.5%.
3. Amortization method for the unfunded actuarial liability (UAL) was amortized over a 25-year period as a level percentage of payroll with a four-year phase-in to the full amortization rate. Future gains and losses are amortized over closed 20-year periods as a level percentage of payroll from the valuation date in which they are first recognized. For Tier 1, members contribute 5% of pay and the City contributes the remainder of the total contribution rate. For the Tier 2, the members and the City each pay half of the total contribution rate.
4. The administrative expense assumption was added. In prior years, the discount rate was assumed to be net of administrative expenses.

Supplementary Information

Schedule of Investment Expenses for the Fiscal Years Ended June 30, 2017 and 2016 (in thousands)

(1) Fees for these managers are not paid separately as are fees to other fund managers; they are not included in the investment expenses report in the Statements of Changes in Fiduciary Net Position. The fees are a component of the overall performance of the investment.

Payee	Fees 2017	Fees 2016	Nature of Services
Aberdeen/Artio Global Investors	421,775	453,572	Investment Management
Cramer Rosenthal McGlynn	511,949	447,421	Investment Management
Eagle Asset	292,595	237,959	Investment Management
FTSE RAFI DV EX US	64,055	55,398	Investment Management
FTSE RAFI US LOW VOL	89,693	77,366	Investment Management
J P Morgan	947,651	965,458	Investment Management
MFS	513,077	509,546	Investment Management
Mondrian	425,955	390,751	Investment Management
Total	$ 3,266,750	$ 3,137,471	

Payee (1)	Fees 2017	Fees 2016	Nature of Services
Artisan Partners	$ 1,158,834	$ 1,016,496	Investment Management
Baillie Gifford	559,135	514,536	Investment Management
Carlson Capital	944,899	754,052	Investment Management
Fir Tree	819,229	489,694	Investment Management
GMO	676,225	784,814	Investment Management
HSI Real Estate V	500,000	-	Investment Management
JDM Partners	241,689	241,689	Investment Management
Morgan Stanley	799,727	766,053	Investment Management
Neuberger	594,000	474,833	Investment Management
Northwood GP, LLC IV	974,484	736,743	Investment Management
Northwood Series V	887,043	678,349	Investment Management
PAAMCO	1,321,849	1,285,162	Investment Management
PIMCO All Asset	1,429,632	1,329,844	Investment Management
PIMCO Total Return	416,204	439,902	Investment Management
RECAP III	113,574	226,915	Investment Management
RECAP IV	450,000	337,500	Investment Management
Robeco Investment Management	527,335	488,030	Investment Management
TA Associates	51,537	71,805	Investment Management
The Boston Company	320,231	295,027	Investment Management
Western Asset	248,703	244,587	Investment Management
Wheelock I	96,263	183,664	Investment Management
Wheelock II	355,359	450,000	Investment Management
Wrightwood Capital	-	6,921	Investment Management
Total	$ 13,485,952	$ 11,816,616	

Supplementary Information (continued)

Schedule of Administrative Expenditures and Encumbrances (Non-GAAP Budgetary Basis) Paid by the City of Phoenix for the Fiscal Years Ended June 30, 2017 and 2016

	2017		2016	
	Original Budget	Plan Actual	Original Budget	Plan Actual
Personal Services				
Staff Salaries and Benefits	$ 998,374	$ 968,307	$ 983,501	$ 848,777
Insurance	196,064	199,770	200,185	165,720
Social Security and Medicare	72,015	67,143	72,669	59,995
Retirement Contributions	314,197	280,472	234,714	206,449
Total Personal Services	**$ 1,580,650**	**$ 1,515,692**	**$ 1,491,069**	**$ 1,280,941**
Professional Services				
Consultants	$ 500	$ 180	$ 500	$ 137
Audit and Accounting	106,610	116,038	139,053	89,262
Medical Advisors	-	16,720	-	3,717
Computer Services	126,276	126,276	-	88,197
Total Professional Services	**$ 233,386**	**$ 259,214**	**$ 139,553**	**$ 181,313**
Communications				
Printing	$ 9,500	$ 8,322	$ 11,000	$ 7,691
Postage and Mailing	11,000	9,940	13,400	11,600
Telephone	1,102	2,580	1,127	1,622
Subscriptions and Memberships	1,500	1,912	2,220	1,276
Total Communications	**$ 23,102**	**$ 22,754**	**$ 27,747**	**$ 22,189**
Miscellaneous				
Supplies	$ 6,250	$ 5,999	$ 9,250	$ 5,585
Computer Equipment	600	1,505	-	1,042
Other	17,588	13,815	16,680	44,569
Total Miscellaneous	**$ 24,438**	**$ 21,319**	**$ 25,930**	**$ 51,196**
Total Administrative Expenditures and Encumbrances	**$ 1,861,576**	**$ 1,818,979**	**$ 1,684,299**	**$ 1,535,639**

Note: The above table represents administrative expenditures of COPERS that are budgeted and paid by the City of Phoenix through their general fund and are not part of COPERS' plan assets.

Administrative expenses recognized in the Statement of Changes in Fiduciary Net Position include the payment of fees for legal, medical, and actuarial services.

Schedule of Administrative Expenses (Plan Assets) for the Fiscal Years Ended June 30, 2017 and 2016

Payee	Fees Paid	
	2017	2016
Actuarial Consulting	$ 143,531	$ 98,521
Legal Services	94,431	38,905
Technology	141,587	96,983
Total	$ 379,549	$ 234,409

Investment Section

The **Investment Section** contains the Plan's report on investment activity, its investment policies, schedules of investment results and related information.

MEKETA INVESTMENT GROUP

BOSTON MA
CHICAGO IL
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PORTLAND OR
SAN DIEGO CA
LONDON UK

December 15, 2017

Board of Trustees
City of Phoenix Employees' Retirement System
c/o Scott Miller
Retirement Program Administrator
200 W. Washington Street, 10th Floor
Phoenix, AZ 85003

Dear Board Members:

Fiscal 2017 Recap[1]

The 2017 fiscal year started off strong for most risk assets as global equity markets rebounded and investment losses incurred in the wake of Brexit were quickly recovered. The British Pound, however, continued its slide to new historic lows. Emerging markets and high yield bonds outperformed in response to the continued quantitative easing from the foreign central banks (the level of central bank asset purchases surpassed the level directly following the Global Financial Crisis) and record low interest rates. During the third quarter 2016, domestic equity markets gained 4.4%, international developed equity markets gained 6.4%, and emerging markets posted a solid gain of 9.0%. Most fixed income asset classes continued to experience positive performance during the third quarter, benefiting from accommodative central bank policy. The Barclays Aggregate Bond Index gained 0.5%, the Barclays High Yield Index was up 5.6%, and the Barclays TIPS Index increased 1.0%.

The fourth quarter of 2016 was more eventful than the third. In a stunning upset, Donald Trump won the United States Presidential election and the markets responded. Mr. Trump's pro-growth polices, including lower taxes, higher infrastructure spending, and less regulation led to a stronger U.S. dollar and higher inflation expectations (10-year U.S. Treasury jumped from 1.8% to 2.4%). This environment generally benefited U.S. equities, while hurting U.S. bonds and foreign assets. For the quarter, domestic equity markets gained 4.2%, international developed equity markets lost -0.7%, and emerging markets declined -4.2%. Most fixed income asset classes experienced negative performance. The Barclays Aggregate Bond Index lost -3.0%, the Barclays High Yield Index was up 1.8%, and the Barclays TIPS Index decreased -2.4%. As 2016 came to an end, it was clear that monetary policy was moving in different directions globally. In the U.S., the Federal Reserve (Fed) had started tightening, electing in December to make their only Federal Funds rate increase in 2016 (0.50% to 0.75%). In Europe, the European Central Bank (ECB) had pledged to

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1 Relevant market reference benchmark: domestic equity (Russell 3000), international developed equity (MSCI EAFE), and emerging markets (MSCI Emerging Markets).

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extend its bond-buying program until the end of 2018, while lowering monthly purchases starting in April 2017 from 80 billion euros to 60 billion euros. The ECB continued to keep interest rates at record lows with the deposit rate at -0.4% and its key interest rate close to 0%. In Japan, the Bank of Japan (BOJ) made no changes at the year-end meeting. The Bank of Japan maintained the scale of their asset purchase program, kept bank deposit rates negative (-0.1%), and continued to target a 0% yield on the 10-year Japanese government bond.

The first quarter of 2017 was stronger than the fourth quarter of 2016, with nearly all major asset classes producing positive returns. For the quarter, domestic equity markets gained 5.7%, international developed equity markets gained 7.2%, and emerging markets gained 11.4%. All major fixed income asset classes experienced positive performance as well. The Barclays Aggregate Bond Index gained 0.8%, the Barclays High Yield Index was up 2.7%, and the Barclays TIPS Index increased 1.3%. It seemed that global growth was finally moving in the right direction as the International Monetary Fund (IMF) increased their outlook, citing improvements in manufacturing, trade, and investment. This was the first increase in the IMF's forecast in six years. In the U.S., the Fed continued to tighten, electing to make its third 0.25% rate increase in March (0.75% to 1.00%), while the ECB and BOJ maintained the status quo. Near the end of the quarter, the United Kingdom triggered Article 50 of the Lisbon Treaty, officially starting the clock on the U.K.'s formal exit from the European Union. The U.K. will have up to two years to complete the process.

The final three months of the fiscal year presented a strong backdrop for foreign equity markets, somewhat of a reversal from the prior quarters. For the quarter, domestic equity markets gained 3.0%, international developed equity markets gained 6.1%, and emerging markets gained 6.3%. Most fixed income asset classes were slightly positive, with the exception of TIPS. The Barclays Aggregate Bond Index was up 1.4%, the Barclays High Yield Index was up 2.2%, and the Barclays TIPS Index decreased -0.4%. The IMF once again increased the global growth forecast, although the growth drivers had changed. In the U.S., despite softening data, the Fed raised rates by another 0.25% (1.00% to 1.25%). The ECB and BOJ elected not to make any changes to interest rates. However, improving economic conditions and recent statements by Mario Draghi have led to some speculation that the ECB could begin reducing its bond-purchasing program next year. The ECB has committed to continuing purchases through the end of calendar year 2017 and beyond, if needed, and to keeping interest rates low until their bond buying is done. Inflation levels remain below the ECB's target though, and are projected to stay there, which could lead to continual support.

Fiscal 2017 Market Returns

Equity markets were very strong throughout the fiscal year with most major equity indexes posting returns in the high teens to low twenties. The Russell 3000 returned +18.5%, while the MSCI ACWI (ex. U.S.) and MSCI

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Emerging Markets returned +20.5% and +23.7%, respectively. Fixed income was mixed by credit quality as investment grade credits were slightly negative but lower-grade credits were positive. For the full fiscal year: Barclays Aggregate Bond Index returned -0.3%, Barclays TIPS Index returned -0.6%, Credit Suisse Leveraged Loans returned +7.5%, Barclays High Yield Index returned +12.7%, and JPM GBI-EM Global Diversified (unhedged emerging market bonds) returned +6.7%.

Alternative asset classes were also mixed for the fiscal year. NAREIT Equity returned -1.7%, Bloomberg Commodity Index returned -6.5%, Dow Jones Brookfield Global Infrastructure returned +8.0%, and S&P Global Natural Resources returned +15.3%. Private real estate and private equity continued to provide strong returns, as the National Council of Real Estate Fiduciaries (NCREIF) Property Index returned +7.0%, and the Cambridge Associates Private Equity Composite returned +12.0% for the fiscal year[1].

Fiscal 2018 Outlook

Looking forward, Meketa Investment Group believes that four key issues are of primary concern:

1) The potential for simultaneous monetary tightening globally:

After the Global Financial Crisis, major central banks injected massive amounts of liquidity into the market by purchasing bonds from banks (i.e., quantitative easing). They also reduced short term interest rates to record lows. Already the U.S. central bank has ended its bond-buying program, started to increase interest rates, and started to discuss reducing its balance sheet. Although other central banks, like Japan (BOJ) and Europe (ECB), continue to stimulate their respective economies, discussions have started about reducing stimulus in the near term. If major central banks start to tighten their policies at the same time it could lead to higher rates, less liquidity, and lower overall economic activity.

2) Uncertainty related to the U.S. economy and policies:

Post U.S. presidential election, hopes have been high for new policies lowering taxes, increasing infrastructure spending, and reducing regulations. Investors have placed their bets based on the assumption that these policies would come to fruition creating the potential for disappointment. The recent failed attempt to pass revised healthcare legislation illustrates that there could be some bumps with moving forward with the new administration's agenda.

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[1] Returns for real estate and private equity benchmarks are lagged one quarter due to the availability of data.

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3) Declining growth in China, along with uncertain fiscal and monetary policies:

The process of transitioning from a growth model based on fixed asset investment by the government, to a model of consumption-based growth will be difficult. Similar policies as China's decision to unexpectedly devalue their currency or to support stock prices could prove disruptive and decrease confidence in China's government. Capital outflows remain a key issue in China. They have made some efforts to tighten regulations to stem outflows, but higher rates and growth in the U.S., and elsewhere, could add to outflow pressures. China's abandonment of its support of the yuan, and a resulting major devaluation of the currency, could prove particularly disruptive to global markets and trade. The hot property market and the growing mountain of debt in the corporate sector remain other key risks.

4) Risks related to the U.K.'s exit from the European Union:

European imbalances are rooted in structural issues in the Eurozone related to the combination of a single currency combined with 17 fiscal authorities. In the broader European Union, tensions exist, as highlighted in the U.K. referendum (Brexit) last year, related to policies on immigration, laws, and budgetary contributions. Additional countries leaving either group, particularly the Eurozone, could set a dangerous precedent, especially if they ultimately experience growth. The massive influx of refugees into Europe from the Middle East and North Africa exacerbates economic stress. Furthermore, the votes last year in the U.S. presidential election and Brexit highlight a growing populist/antitrade sentiment. Stagnant wages, growing inequality, and the perception of jobs being lost abroad are key contributors. Reducing trade and imposing tariffs would likely lead to inflation, reduced efficiencies, and heightened tensions between countries.

Retirement System Investment Results and Asset Allocation

The fair value of the City of Phoenix Employees' Retirement System was $2.349 billion as of June 30, 2017. This was an increase of $200.7 million from June 30, 2016 due to $50.5 million in net cash outflows, offset by positive investment performance. The System's net of fees return was +11.5% over the fiscal year, +4.7% over three years, +8.0% over five years, and +3.8% over ten years[1]. The System's current actuarial assumed rate of return is 7.25%.

As of June 30, 2017, the System's assets were allocated to U.S. equities (25.8%), international equities (18.6%), U.S. fixed income (15.3%), emerging markets

[1] Returns over one-year are annualized.

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bonds (4.6%), real return assets (7.4%), private equity assets (3.3%), real estate assets (13.4%), absolute return assets (10.9%), and cash (0.7%).

During the fiscal year, the Board approved a new asset allocation policy with an expected return of 7.26%, in line with the actuarial assumed rate of return of 7.25%. The new asset allocation policy increases the diversification of the Retirement System by adding new dedicated asset classes, including emerging markets equity, TIPS, high yield bonds, bank loans, infrastructure, and natural resources. We look forward to continuing our work with Staff and the Board to move the Retirement System towards its new policy targets, with the ultimate goal of allowing the Retirement System to continue to meet its obligations to participants.

Sincerely,

Larry Witt, CFA
Senior Vice President

Stephen P. McCourt, CFA
Managing Principal

Laura B. Wirick, CFA, CAIA
Principal

Outline of Investment Policies and Objectives
Adopted July, 1990 and subsequently amended

1. COPERS' asset allocation targets (at fair value) as of June 30, 2017 were 16.5% large cap domestic equities, 6.5% small/mid cap equities, 19.4% large cap international equities, 2.6 small/mid cap international equities, 20% domestic fixed income, 15.0% real estate, 5.0% emerging market debt, 5.0% real return and 10% long/short equity. In March 2017, the COPERS Board adopted a new asset allocation that more closely aligns the Board's risk tolerance and expected returns. This new asset allocation is not reflected in the June 30, 2017 reporting due to timing of the implementation process.

2. Each asset class will be broadly diversified to be similar to the market for the asset class. The market for equities shall be represented by the Russell 3000 Value Index, MSCI EAFE Index, MSCI Emerging Markets. The market for bonds shall be represented by the Barclays Capital Aggregate, Barclays High Yield, and the JPM EMBI Global Diversified Indices. The market for real estate shall be represented by the NCREIF ODCE Property Index.

3. Multiple managers will be employed. Allocations among the managers will be controlled by the Trustees to maintain both diversification and policy guidelines.

4. Investments will conform to the Phoenix City Charter, Chapter XXIV, Part II, Section 34 (See Note 8). All other investments are prohibited.

5. COPERS' main investment objective is to achieve a rate of return that exceeds inflation by at least 3% over time. The actuarial assumed rate of return is 7.25%.

Directed Brokerage Commissions

A directed brokerage commissions program was established by COPERS' Board on July 31, 1991. Becker, Burke Associates ("BBA") provided the directed brokerage commissions program through December 31, 2003. As of January 1, 2004 State Street Global Markets, LLC ("SSGM") became the provider of the commission recapture program. SSGM has agreed to allocate to the fund 80% of commissions for US trades executed with a network of brokers and 100% (above the "execution only" rate) for US trades directly with SSGM's Trading Desk, identified and designated by investment managers as "directed." Under this program, COPERS' equity managers are requested to execute trades to achieve best execution of fund transactions and to use best efforts to place trades with SSGM. For the fiscal year ended June 30, 2017, the total payments received from the directed brokerage commissions program under SSGM were $6,707.

<u>Investment Services Under Contract (as of June 30, 2017)</u>

Equity Managers

Artisan Partners	Ting Rattanaphasouk	San Francisco, CA
Baillie Gifford	Kathrin Hamilton	Edinburgh, Scotland
Cramer Rosenthal McGlynn	Clair Componi	New York, NY
Eagle Asset Management	Clay Lindsey	St. Petersburg, FL
GMO	Ryan Dawley	Berkeley, CA
Mondrian	Paul Ross	Boston, MA
Robeco Investment Management	William Supple	Philadelphia, PA
State Street Global Advisors	Megan Hart	San Francisco, CA
The Boston Company	Jerry Navarette	Boston, MA

Hedge Fund Managers

Carlson Capital	Erin Kraxberger	Dallas, TX
Fir Tree Partners	Benjamin Ghriskey	New York, NY
PAAMCO	Jim Meehan	Irvine, CA

Transition Managers

Northern Trust Transition Management	Grant Johnsey	Chicago, IL
Russell Implementation Services, Inc	Steve Cauble	Seattle, WA
State Street Global Markets	James Doherty	Irvine, CA

Fixed Income Managers

Aberdeen Asset Management	Teri Smith	Philadelphia, PA
MFS Institutional Advisors	Carolyn Lucey	Boston, MA
PIMCO	Matt Clark	Newport Beach, CA
Western Asset Management	Sue Signori	Pasadena, CA

Private Equity

Neuberger Berman	Kaci Boyer	Dallas, TX

Real Estate Managers

JDM Partners	Mel Shultz	Phoenix, AZ
J.P. Morgan	Christopher Hawkins	San Francisco, CA
Hemisferio Sul Investments	Diogo Bustani	Sao Paulo, BR
Morgan Stanley Real Estate Advisor	Candice Todd	Atlanta, GA
Northwood Real Estate Partners	Jennifer Davis	New York, NY
RECAP II, III, IV, SC Core	Liwen Ho	Singapore, CH
TA Realty Associates	Tom Landry	Boston, MA
Wheelock Street Real Estate	Lawrence Settanni	Greenwich, CT
Wrightwood Financial	Jennifer Naylor	Chicago, IL

Real Return Managers

Research Affiliates LLC	Jeff Wilson	Newport Beach, CA

Real Estate Consultant

Alignium	Dan Krivinksas	Chicago, IL

Investment Consultant

Meketa Investment Group	Larry Witt	Carlsbad, CA

Schedule of Investment Results
For the Fiscal Year Ended June 30, 2017

		Annualized	
	1-Year	3-Years	5-Years
TOTAL PORTFOLIO:			
COPERS	11.5 %	4.7	8.0 %
Policy Benchmark	10.6	5.5	8.5
Meketa All Pension Plans > $1B median	12.6	4.5	8.1
EQUITY FUNDS:			
Artisan Global Opportunities (4)	25.0	-	-
MSCI ACWI Ex US Index	18.8	-	-
Baillie Gifford	26.3	5.3	9.9
MSCI ACWI Ex USA	20.5	0.8	7.2
Cramer Rosenthal McGlynn	22.4	8.2	13.9
Russell 2000 Value Index	24.9	7.0	13.4
Eagle Asset Management	22.9	8.7	14.4
Russell 2000 Growth Index	24.4	7.6	14.0
GMO (1)	20.0	2.2	-
MSCI ACWI	18.8	4.8	-
Mondrian Investment Partners	19.1	4.1	9.7
MSCI World Small Cap Index	21.3	4.0	11.4
Robeco Investment Management (2)	20.5	7.2	-
Russell 1000 Value Index	15.5	7.4	-
SSgA FTSE RAFI US Low Vol (3)	5.0	-	-
FTSE RAFI USD Lo Vol Index	5.0	-	-
The Boston Company	18.5	3.9	13.7
Russell Midcap Index	15.9	7.5	15.1
FIXED INCOME FUNDS:			
Aberdeen	1.2	2.7	2.5
Barclays US Aggregate Bond Index	(0.3)	2.5	2.2
MFS Heritage Trust (5)	7.0	4.9	-
JPMorgan EMBI Global Dvf'd	6.0	5.4	-
Western Asset Management	3.3	3.6	3.8
Barclays Aggregate	(0.3)	2.5	2.2
PIMCO Total Return	2.3	2.7	2.3
Barclays Aggregate	(0.3)	2.5	2.2
HEDGE FUND OF FUNDS:			
Carlson (6)	5.4	-	-
Fir Tree International (8)	5.7	-	-
PAAMCO (7)	7.1	0.2	-
PRIVATE EQUITY FUNDS:			
Neuberger Berman Sonoran (9)	7.4	-	-
REAL ESTATE FUNDS:			
J P Morgan	6.9	9.7	11.1
JDM Partners	5.6	3.1	1.4
Morgan Stanley	9.1	12.1	12.9
NCREIF ODCE Index	6.9	10.3	10.8
Northwood RE IV (10)	16.5	13.7	-
Northwood RE V (11)	6.6	-	-
RECAP II	40.8	(11.1)	(0.6)
RECAP III	(3.5)	(1.9)	4.7
RECAP IV (12)	13.8	-	-
SC Core (13)			
TA Associates Realty	1.8	8.9	9.6
Wheelock	12.3	17.6	20.8
Wheelock II (14)	23.3	14.2	-
Wrightwood	-	-	-
REAL RETURN FUND			
PIMCO All Asset (15)	10.8	1.4	-
All Asset Index	6.1	2.9	-

Schedule of Investment Results
(Continued)

(1) GMO has been an international equity manager but the investments within GMO were restructured effective October 1, 2013 and performance figures of the restructured investments would not be representative of the benchmark.
(2) Robeco Investment Management was added as a domestic large cap value manager on May 1, 2013. Funds transitioned from Dimensional Fund Advisors. Performance figures would not be representative of the benchmark index.
(3) SSgA FTSE RAFI US Low Vol was added as an equity manager effective January 1, 2015. Performance figures would not be representative of the benchmark index.
(4) Artisan Global Opportunities was added as an equity manager effective December 1, 2014. Performance figures would not be representative of the benchmark index.
(5) MFS Heritage Trust added as a core plus fixed income manager effective February 1, 2013. Performance figures would not be representative of the benchmark index.
(6) Carlson was added as a hedge fund manager effective August 1, 2014. Performance figures would not be representative of the benchmark index.
(7) PAAMCO added as a hedge funds manager effective January 2, 2009. PAAMCO transition mandates from Long/Short Equity to Absolute Return as of January 1, 2014. Performance figures would not be representative of the benchmark index.
(8) Fir Tree International was added as a hedge fund manager effective August 1, 2014. Performance figures would not be representative of the benchmark index.
(9) Neuberger Berman Sonoran was added as a private equity manager on April 1, 2015. Performance figures would not be representative of the benchmark index.
(10) Northwood IV was added as an opportunistic real estate manager on February 1, 2014. Performance figures would not be representative of the benchmark index.
(11) Northwood V was added as an opportunistic real estate manager on February 1, 2015. Performance figures would not be representative of the benchmark index.
(12) RECAP IV was added as an opportunistic real estate manager on February 1, 2015. Performance figures would not be representative of the benchmark index.
(13) SC Core Fund LLC was added as an Asian core+ real estate fund on March 21, 2016. Performance would not be representative of the benchmark index.
(14) Wheelock II was added as an opportunistic real estate manager on September 1, 2014. Performance figures would not be representative of the benchmark index.
(15) PIMCO All Asset added as a real return manager on December 1, 2013. Performance figures would not be representative of the benchmark index.

The calculations above were prepared by COPERS' consultant, using a time-weighted rate of return, based on fair value. Non-core real estate performance is calculated as an IRR.

Asset Allocation by Manager

As of June 30, 2017

Manager	Style	Management (in thousands)	% of Portfolio
CASH AND CASH EQUIVALENTS FUNDS			
The Boston Company	Mid Cap Value	$ 891	0.04 %
COPERS Cash Account	Short Term Income Fund	17,345	0.72
PIMCO Total Return	Core Plus Fixed Income	2,814	0.12
Cramer Rosenthal McGlynn	Small Cap Value	3,086	0.13
Eagle Asset Management	Small Cap Growth	1,922	0.08
JPM Strategic Property	Core Plus Fixed Income	1	0.00
MFS Emerging Markets Debt	Core Plus Fixed Income	4,015	0.17
MS Prime Property	Core Plus Fixed Income	920	0.04
Robeco Investment Management	Large Cap Value	3,676	0.15
Western Asset Management	Core Plus Fixed Income	3,912	0.16
TOTAL CASH & CASH EQUIVALENT FUNDS		38,582	1.61
DOMESTIC EQUITIES FUNDS			
The Boston Company	Mid Cap Value	43,164	1.80
Cramer Rosenthal McGlynn	Small Cap Value	57,587	2.40
Eagle Asset Management	Small Cap Growth	55,975	2.33
FTSE RAFI DV EX US	Large Cap Core	72,763	3.00
FTSE RAFI US Low Vol	Large Cap Core	144,835	6.02
Robeco Investment Management	Large Cap Value	140,535	5.85
Western Asset Management	Large Cap Value	200	0.01
TOTAL DOMESTIC EQUITIES FUNDS		515,059	21.41
FIXED INCOME FUNDS			
Aberdeen/Artio Global Investors	Core Plus Fixed Income	143,342	5.96
Boston Company Asset Mgmt	Mid Cap Value	2,993	0.12
PIMCO Total Return	Core Plus Fixed Income	176,132	7.33
MFS Emerging Markets Debt	Emerging Markets Debt	103,320	4.30
Western Asset Management	Core Plus Fixed Income	86,214	3.59
TOTAL FIXED INCOME FUNDS		512,001	21.30
INTERNATIONAL COMMINGLED FUNDS			
Artisan Partners	International	152,618	6.35
GMO	International	120,379	5.01
PIMCO All Asset Custom Index	International	173,104	7.20
TOTAL INTERNATIONAL COMMINGLED FUNDS		446,101	18.56 %

Asset Allocation by Manager
As of June 30, 2017 (Continued)

Manager	Style	Management (in thousands)	% of Portfolio
INTERNATIONAL EQUITIES FUNDS			
Baillie Gifford	International	$ 181,557	7.55 %
Mondrian Investment Partners	International	63,324	2.63
TOTAL INTERNATIONAL EQUITIES FUNDS		244,881	10.18
REAL ESTATE FUNDS			
Cramer Rosenthal McGlynn	Non-Core Real Estate	$ 916	0.04 %
Eagle Asset Management	Non-Core Real Estate	812	0.03
HSI Real Estate V	Non-Core Real Estate	5,321	0.22
JDM Partners	Non-Core Real Estate	26,574	1.11
JPM Strategic Property	Core Real Estate	91,518	3.81
Morgan Stanley	Core Real Estate	94,279	3.92
Northwood IV	Non-Core Real Estate	16,911	0.70
Northwood V	Non-Core Real Estate	21,237	0.88
RECAP II	Non-Core Real Estate	30	0.00
RECAP III	Non-Core Real Estate	8,890	0.37
RECAP IV	Non-Core Real Estate	15,816	0.66
SC Core Fund LP	Non-Core Real Estate	9,065	0.38
TA Realty Associates	Non-Core Real Estate	1,554	0.06
Wheelock Street Partners	Non-Core Real Estate	4,836	0.20
Wheelock Street Partners II	Non-Core Real Estate	17,548	0.73
TOTAL REAL ESTATE FUNDS		315,307	13.11
PRIVATE EQUITY FUNDS			
Neuberger	Private Equity	$ 77,385	3.22 %
TOTAL PRIVATE EQUITY FUNDS		77,385	3.22
HEDGE FUNDS			
Carlson	Hedge Fund of Funds	$ 63,287	2.63 %
Fir Tree International	Hedge Fund of Funds	56,160	2.34
PAAMCO	Hedge Fund of Funds	135,489	5.64
TOTAL HEDGE FUNDS		254,936	10.61
Total Portfolio Before Securities Lending		$ 2,404,252	100.00 %
Securities Lending		90,569	
TOTAL INVESTMENTS		$ 2,494,821	

List of Largest Assets Held
As of June 30, 2017 (dollars in thousands)

Ten Largest Bond Holdings (Fair Value)

Par Value	Description	Interest Rate	Due	Rating	Fair Value
$ 14,000	FNMA	3.50	09/01/2047	AAA	$ 14,333
14,300	US Treasury Note	1.75	04/30/2022	AAA	14,217
12,000	FNMA	4.00	08/01/2047	AAA	12,593
7,300	US Treasury Bond	2.75	11/15/2042	AAA	7,213
5,070	US Treasury Bond	3.75	11/15/2043	AAA	5,959
5,000	FNMA	4.50	08/01/2047	AAA	5,356
5,300	US Treasury Note	2.25	02/15/2027	AAA	5,275
5,000	FNMA	3.00	08/01/2047	AAA	4,985
4,300	US Treasury Note	1.50	08/15/2026	AAA	4,022
3,074	US Treasury - CPI	2.50	01/15/2029	AAA	3,696

Ten Largest Stock Holdings (Fair Value)

Shares	Stock	Fair Value
76,825	JP Morgan Chase & Co	$ 7,021
272,203	Bank of America Corp	6,603
78,412	Citigroup Inc	5,245
29,785	Berkshire Hathaway Inc	5,045
33,881	Johnson & Johnson	4,482
65,752	Wells Fargo & Co	3,643
33,671	Chevron Corp	3,513
53,184	Merck & Co Inc	3,408
22,128	Apple Inc	3,187
99,055	Cisco Systems Inc	3,100

A complete list of portfolio holdings is available at the COPERS office.

Schedule of Investment Related Fees (in thousands)
For the Fiscal Year Ended June 30, 2017

	Management	Fees (1)
CASH AND CASH EQUIVALENTS FUNDS		
The Boston Company	$ 891	$ -
COPERS Cash Account	17,345	-
PIMCO Total Return	2,814	-
Cramer Rosenthal McGlynn	3,086	-
Eagle Asset Management	1,922	-
JPM Strategic Property	1	
MFS Emerging Markets Debt	4,015	
MS Prime Property	920	-
Robeco Investment Management	3,676	-
Western Asset Management	3,912	-
TOTAL CASH & CASH EQUIVALENT FUNDS	$ 38,582	$ -
DOMESTIC EQUITIES FUNDS		
The Boston Company	$ 43,164	$ 320
Cramer Rosenthal McGlynn	57,587	512
Eagle Asset Management	55,975	293
FTSE RAFI DV EX US	72,763	64
FTSE RAFI US LOW VOL	144,835	89
Robeco Investment Management	140,535	527
Western Asset Management	200	-
TOTAL DOMESTIC EQUITIES FUNDS	$ 515,059	$ 1,805
FIXED INCOME FUNDS		
Aberdeen/Artio Global Investors	$ 143,342	$ 421
Boston Company Asset Mgmt	2,993	-
MFS Emerging Markets Debt	103,320	513
PIMCO Total Return	176,132	416
Western Asset Management	86,214	248
TOTAL FIXED INCOME FUNDS	$ 512,001	$ 1,598
GLOBAL COMMINGLED FUNDS		
Artisan Partners	$ 152,618	$ 1,158
GMO	120,379	676
PIMCO All Asset	173,104	1,430
TOTAL GLOBAL COMMINGLED FUNDS	$ 446,101	$ 3,264

Schedule of Investment Related Fees (in thousands)

For the Fiscal Year Ended June 30, 2017 (Continued)

Manager	Management	Fees (1)
INTERNATIONAL EQUITIES FUNDS		
Baillie Gifford	$ 181,557	$ 559
Mondrian International	63,324	426
TOTAL INTERNATIONAL EQUITIES	244,881	985
REAL ESTATE FUNDS		
Cramer Rosenthal McGlynn	916	-
Eagle Asset Management	812	-
HSI Real Estate V	5,321	500
JDM Partners	26,574	242
JP Morgan Strategic Property	91,518	948
Morgan Stanley Prime Property	94,279	800
Northwood GP LLC IV	16,911	974
Northwood Series V	21,237	887
RECAP II	30	-
RECAP III	8,890	114
RECAP IV	15,816	450
SC Core Fund	9,065	-
TA Realty Associates	1,554	51
Wheelock Street Partners	4,836	96
Wheelock Street Partners II	17,548	355
TOTAL REAL ESTATE	315,307	5,417
HEDGE FUNDS		
Carlson Capital	63,287	945
Fir Tree Partners	56,160	819
PAAMCO	135,489	1,321
TOTAL HEDGE FUNDS	254,936	3,085
PRIVATE EQUITY		
Neuberger Berman	77,385	594
TOTAL PRIVATE EQUITY FUNDS	77,385	594
Total before Securities Lending	2,404,252	16,752
Securities Lending **(2)**	90,569	
TOTAL	$ 2,494,821	$ 16,752

(1) Does not represent contractual fee schedule and may include expenses other than management fees.
(2) No separate billing for the securities lending program, the fees are netted from the securities lending income.

Investment Summary
As of June 30, 2017

Type of Investment		Fair Value (in thousands)	Percent of Total Fair Value	
Fixed Income:				
Asset Backed	$	4,382	0.18	%
Commingled Fixed Income		143,342	5.96	
Consumer Services		62	-	
Corporate Bonds		80,578	3.35	
Corporate Bonds Commingled		10,848	0.45	
Derivatives		989	0.04	
Energy Related		59	-	
Foreign Bonds		14,920	0.62	
Foreign Bonds Commingled		103,320	4.30	
Government Agency		2,805	0.12	
Mortgage Backed		83,776	3.48	
Municipal Bonds		3,990	0.17	
US Government Guaranteed		62,930	2.63	
Total Fixed Income		512,001	21.30	%
Domestic Equities:				
Basic Materials		13,454	0.56	
Commingled		144,834	6.02	
Consumer Discretionary		9,803	0.41	
Consumer Goods		8,795	0.37	
Consumer Services		24,390	1.01	
Energy Related		2,676	0.11	
Financials		78,201	3.25	
Health Care		45,625	1.89	
Industrials		51,848	2.16	
Information Technology		12,969	0.54	
International Equity		72,763	3.03	
Oil and Gas		12,479	0.52	
Technology		37,222	1.55	
Total Domestic Equities		515,059	21.42	%
Real Estate:				
Asset Backed		185,797	7.73	
Limited Partnership		37,543	1.56	
Private Equity		37,366	1.55	
Real Estate Fund		54,601	2.27	
Total Real Estate		315,307	13.11	%
Hedge Funds:				
Corporate Bonds		135,488	5.64	
Other		119,448	4.97	
Total Hedge Funds		254,936	10.61	%
International Equities:				
Asset Backed		244,881	10.19	
Global Commingled:				
Global Commingled		446,101	18.55	%
Private Equity:				
Private Equity		77,385	3.22	%
Cash and Cash Equivalents:				
Cash & Cash Equivalents		38,582	1.60	
Total before Securities Lending	$	2,404,252	100.00	%
Securities Lending		90,569		
Total Investments	$	2,494,821		

Schedule of Commissions
For the Fiscal Year of June 30, 2017

Brokerage Firm	Number of Shares Traded	Total Commissions	Commissions Per Share
Goldman Sachs	1,433,418	30,674.38	0.021
Credit Suisse	740,449	16,337.16	0.022
J.P. Morgan	698,697	14,384.14	0.021
Merrill Lynch	741,524	14,237.76	0.019
State Street	418,607	11,676.80	0.028
Bernstein Sanford & Co	585,749	11,258.52	0.019
Barclays Capital	372,401	10,395.21	0.028
All Other Brokers (1)	4,648,552	117,910.35	
Total	**$ 9,639,397**	**$ 226,874.32**	

(1) Includes brokers with total commissions less than $10,000 each.

Actuarial Section

The **Actuarial Section** contains the actuary's certification letter, supporting schedules prepared by the actuary and a summary of plan provisions.

GRS Retirement Consulting

P: 720.274.7270 | F: 303.694.0633 | www.grsconsulting.com

December 13, 2017

Mr. Scott A. Miller
Retirement Program Administrator
City of Phoenix Employees' Retirement System
200 W. Washington Street, 10th Floor
Phoenix, Arizona 85003

Re: City of Phoenix Employees' Retirement System Actuarial Certification

Dear Mr. Miller:

At the request of the City of Phoenix Employees' Retirement System ("COPERS"), Gabriel Roeder Smith & Company (GRS) has performed the actuarial valuation of the benefits associated with the COPERS defined benefit pension plan. The information in the Actuarial Section is based on our annual actuarial valuation report, with the most recent valuation conducted as of June 30, 2017. The Actuarial Section is intended to be used in conjunction with the full report.

The information in the Financial Section is based on the GASB 67 and 68 valuation report, with the most recent report conducted as of June 30, 2017. The Financial Section is intended to be used in conjunction with the full report.

This letter and the schedules listed below represent GRS' certification of the funded status as required for the financial report for the fiscal year ended June 30, 2017. GRS prepared the following schedules (information prior to 2017 was provided by COPERS):

- Actuarial Section
  - Summary of Actuarial Assumptions and Methods
  - Schedule of Retirees Members Added To and Removed From Rolls
  - Solvency Test
  - Analysis of Financial Experience
  - Summary of Benefit Provisions
- Financial Section
  - Sensitivity of Net Pension Liability to Changes in Discount Rate
  - Schedule of Changes in Net Pension Liability and Related Ratios
  - Schedule of Employer Contributions

Data

The valuation was based upon information as of June 30, 2017, furnished by COPERS staff, concerning system benefits, financial transactions, plan provisions and active members, terminated members, retirees and beneficiaries. We checked for internal and year-to-year consistency, but did not audit the

7900 East Union Avenue | Suite 650 | Denver, Colorado 80237-2746

Mr. Scott Miller
December 13, 2017
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data. We are not responsible for the accuracy or completeness of the information provided by COPERS staff.

Actuarial Assumptions and Methods

The assumptions adopted by the COPERS Board were primarily based upon the prior actuary's analysis. The most recent experience study had covered the period of July 1, 2009 through June 30, 2014. The new assumptions were adopted in August of 2015. Updated mortality assumptions were adopted in October of 2015. In 2017 the Board accepted GRS's recommendation in the economic assumption analysis and directed GRS to use a 7.25% discount rate, a 2.50% inflation assumption and a 3.0% payroll growth assumption.

We believe the assumptions are internally consistent and are reasonable, based on the actual experience of COPERS.

The actuarial assumptions and methods used to develop the Net Pension Liability, Discount Rate Sensitivity, Schedule of Changes in the Net Pension Liability, and Schedule of Net Pension Liability, noted above, meet the parameters set forth in the disclosures presented in the Financial Section by Government Accounting Standards Board Statement No. 67 including the use of the Entry Age Normal actuarial cost method to calculate the total pension liability.

The results of the actuarial valuation are dependent upon the actuarial assumptions used. Actual results can and almost certainly will differ, as actual experience deviates from the assumptions. Even seemingly minor changes in the assumptions can materially change the liabilities, calculated contribution rates and funding periods. A review of the impact of a different set of assumptions on the funded status of COPERS is outside the scope of this actuarial valuation.

The current actuarial assumptions are outlined in the section titled "Summary of Actuarial Assumptions and Methods."

Benefits

There were no changes to the plan provisions during the past year. The current benefit provisions are outlined in the section titled "Summary of Benefit Provisions."

Funding Policy and Objectives

The Actuarially Determined Contribution is determined by taking the sum of the normal cost, a component to amortize the unfunded liability and a component to cover administrative expenses. The Board's current funding policy is to contribute an amount each year based on the most recently calculated Actuarially Determined Contribution.

The unfunded accrued liability is comprised of experience gains and losses, assumption changes and benefit changes. A base is established in each year for changes in the unfunded accrued liability arising from these sources. In September 2013, the Board adopted amortization payment methods that

GRS Retirement Consulting

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amortize the pre-assumption changes of July 1, 2013 over a closed 25-year period as a level percentage of payroll; amortizes the assumption change liability as of July 1, 2013 over a closed 25-year period as a level percentage of payroll with a four-year phase in, and amortizes future gains and losses over a closed 20 year period. Future gains cannot be amortized over a period shorter than the period remaining on the 25-year amortization schedule. Since the 2016 actuarial valuation the actuarially determined contribution has increased from 37.16% of pay to 37.99% of pay. The increase is primarily due to the decrease in the assumed rate of return from 7.50% to 7.25% and a return on the actuarial value of assets that was lower than assumed.

Assuming all actuarial assumptions are met, this method of payment of the unfunded liability will result in full funding of the unfunded accrued liability in 21 years. Actual results can and almost certainly will differ, as actual experience deviates from the assumptions.

Certification

All of our work conforms with generally accepted actuarial principles and practices, and to the Actuarial Standards of Practice issued by the Actuarial Standards Board. In our opinion, our calculations also comply with the requirements of, where applicable, the Internal Revenue Code, and ERISA.

The signing actuaries are independent of COPERS sponsor. Leslie Thompson is an Enrolled Actuary. All signing actuaries are Members of the American Academy of Actuaries, and meet the Qualification Standards of the American Academy of Actuaries. Finally, all of the undersigned are experienced in performing valuations for large public retirement systems.

Respectfully submitted,

Gabriel, Roeder, Smith & Company

Leslie L. Thompson

Leslie Thompson, FSA, FCA, EA, MAAA
Senior Consultant

Paul T Wood

Paul Wood, ASA, FCA, MAAA
Consultant

GRS Retirement Consulting

Supporting Schedules

Summary of Actuarial Assumptions and Methods

The assumptions were adopted by the City of Phoenix Employees' Retirement System primarily upon the prior actuary's analysis. The most recent experience study had covered the period of July 1, 2009 through June 30, 2014. The new assumptions were adopted in August of 2015. Updated mortality assumptions were adopted in October of 2015. Additionally, updated economic assumptions were adopted in July of 2017, which were used in the June 30, 2017 valuation.

Valuation Date

The valuation date is June 30th of each plan year. This is the date as of which the actuarial present value of future benefits and the actuarial value of assets are determined.

Actuarial Cost Method

The actuarial valuation uses the Entry Age Normal actuarial cost method. Under this method, the employer contribution rate is the sum of (i) the employer normal cost rate, and (ii) a rate that will amortize the unfunded actuarial liability.

1. The valuation is prepared on the projected benefit basis. The present value of each participant's expected benefit payable at retirement or termination is determined, based on age, service, sex, compensation, and the interest rate assumed to be earned in the future (7.25%). The calculations take into account the probability of a participant's death or termination of employment prior to becoming eligible for a benefit, as well as the possibility of his terminating with a service benefit. Future salary increases are also anticipated. The present value of the expected benefits payable on account of the active participants is added to the present value of the expected future payments to retired participants and beneficiaries to obtain the present value of all expected benefits payable from the Plan on account of the present group of participants and beneficiaries.

2. The employer contributions required to support the benefits of the Plan are determined following a level percent of pay funding approach, and consist of a normal cost contribution and an unfunded accrued liability contribution, plus a component to cover administrative expenses.

3. The normal cost and the allocation of benefit values between service rendered before and after the valuation date were determined using the individual entry age actuarial cost method having the following characteristics of (i) the annual normal costs for each active member, payable from the date of entry into the system to the date of retirement, are sufficient to accumulate the value of the member's benefit at the time of retirement, and (ii) each annual normal cost is constant percentage of the member's year-by-year projected covered pay.

4. The unfunded accrued liability contributions are determined by subtracting the actuarial value of assets from the actuarial accrued liability. Amortization bases are established each year and amortized over periods in accordance with the following amortization methods.

    a. The UAL as of June 30, 2013, developed prior to implementing the September 2013 assumption changes, is amortized over a closed 25-year period as a level percentage of payroll.

Supporting Schedules (continued)

b. The impact of the September 2013 assumption changes on the UAL is amortized over a closed 25-year period as a level percentage of payroll with a four-year phase-in to the full amortization rate. The phase-in is calculated by multiplying the first year amortization payment by 25 percent. For the second year, the amortization schedule is recalculated reflecting the 25 percent payment in the first year and the remaining 24-year period and the calculated amortization payment is then multiplied by 50 percent. The process is repeated until the full amortization payment is made beginning in the fourth year of the 25-year period.

c. The impact of the August 2015 assumption changes on the UAL is amortized over a closed 20-year period as a level percentage of payroll with a four-year phase-in to the full amortization rate. The phase-in is calculated by multiplying the first year amortization payment by 25 percent. For the second year, the amortization schedule is recalculated reflecting the 25 percent payment in the first year and the remaining 19-year period and the calculated amortization payment is then multiplied by 50 percent. The process is repeated until the full amortization payment is made beginning in the fourth year of the 20-year period.

d. Future gains and losses are amortized over closed 20-year periods as a level percentage of payroll from the valuation date in which they are first recognized. However, gains will not be amortized over a shorter period than the remaining period on the amortization of the 2013 UAL.

Actuarial Value of Assets

The actuarial value of assets is determined by recognizing market value gains and losses over a four-year period. Gain and loss bases to be spread over the four-year period are determined by comparing expected returns based on the market value of assets and cash flows during the year to actual investment returns. The actuarial value of assets must be between 80 and 120% of market value.

Actuarial Assumptions

Economic Assumptions

1. Investment return: 7.25% per annum, compounded annually. Inflation is assumed to be 2.50%.

2. Salary increase rate: Individual salary increases are composed of a price inflation component, a real wage growth component, and a merit or longevity component that varies by age. The table below combines the various components of salary increases for sample ages. Growth in the total payroll is assumed to be 3.00%.

Supporting Schedules (continued)

Percentage Increase in Salary				
Age	**Price Inflation**	**Real Wage Growth**	**Merit or Longevity**	**Total**
20	2.50%	0.50%	6.60%	9.60%
25	2.50	0.50	5.00	8.00
30	2.50	0.50	3.65	6.65
35	2.50	0.50	2.60	5.60
40	2.50	0.50	1.85	4.85
45	2.50	0.50	1.25	4.25
50	2.50	0.50	0.75	3.75
55	2.50	0.50	0.40	3.40
60	2.50	0.50	0.15	3.15
65	2.50	0.50	0.00	3.00

3. COLA Due to Pension Equalization Reserve (PER): In September 2013, the Board first adopted an assumption valuing future benefits payable through the PER as a 1.5% annual compound cost-of-living adjustment (COLA). The PER only applies to Tier 1 and Tier 2 benefits. In August 2017, the assumption was lowered to 1.25% effective with the July 1, 2017 valuation.

Demographic Assumptions

1. Rates of Mortality for Healthy and Disabled Lives: Mortality rates are based on the sex-distinct employee and annuitant mortality tables described below, including adjustment factors applied to the published tables for each group. Half of active member deaths are assumed to be duty-related. Future mortality improvements are reflected by applying the MP-2015 projection scale on a generational basis to the adjusted base tables from the base year shown below.

   (i) Non-Annuitant - CalPERS Employee Mortality Table without scale BB projection.

Gender	Adjustment Factor	Base Year
Male	1.054	2009
Female	1.112	2009

   (ii) Healthy Annuitant - CalPERS Healthy Annuitant Mortality Table without scale BB projection.

Gender	Adjustment Factor	Base Year
Male	1.019	2009
Female	1.061	2009

   (iii) Disabled Annuitant - RP2014 Disabled Annuitant Mortality Table without MP-2014 projection.

Supporting Schedules (continued)

Gender	Adjustment Factor	Base Year
Male	0.984	2006
Female	1.038	2006

Mortality - Sample Rates with Projections to 2017

	Probability of Death Pre-Retirement		Probability of Death Post-Retirement		Probability of Death Post-Disability	
Age	Men	Women	Men	Women	Men	Women
20	0.024%	0.016%	0.020%	0.014%	0.582%	0.191%
25	0.033	0.020	0.024	0.018	0.669	0.195
30	0.043	0.025	0.034	0.029	0.625	0.269
35	0.052	0.037	0.055	0.049	0.794	0.411
40	0.067	0.050	0.098	0.091	1.033	0.594
45	0.091	0.065	0.019	0.183	1.568	0.853
50	0.132	0.093	0.427	0.433	1.770	1.035
55	0.214	0.146	0.562	0.440	2.099	1.411
60	0.334	0.213	0.770	0.510	2.591	1.827
65	0.475	0.296	0.985	0.677	3.302	2.205
70	0.636	0.409	1.584	1.106	4.203	2.849
75	0.857	0.594	2.650	1.945	5.694	4.164
80	1.197	0.936	4.713	3.336	8.072	6.307
85	8.478	6.075	8.478	6.075	11.846	9.532
90	14.577	11.181	14.577	11.181	17.714	13.860

Disability Rates

2. The disability incidence rates are 0.960 times the CalPERS Public Agency Miscellaneous Ordinary Disability Incidence table for Males. Half of disabilities are assumed to be duty-related. Sample disability rates of active members are provided in the table below. The rates apply to both male and female COPERS members.

Sample Attained Ages	Probability of Disablement
25	0.0163%
30	0.0183
35	0.0471
40	0.1172
45	0.1834
50	0.2046
55	0.2122
60	0.2132

Supporting Schedules (continued)

3. Termination rates (for causes other than death, disability or retirement): Termination rates are based on age and service. Termination rates are not applied after a member becomes eligible for a retirement benefit. Rates at selected ages are shown

Probability of Termination						
Years of Service						
Age	0	1	2	3	4	5+
20	17.00%	15.00%	9.00%	8.00%	6.25%	5.50%
25	17.00%	15.00%	9.00%	8.00%	6.25%	5.50%
30	15.00%	11.25%	8.00%	6.75%	5.25%	4.50%
35	15.00%	8.75%	7.00%	5.50%	4.50%	3.50%
40	15.00%	7.50%	6.25%	4.50%	4.00%	2.75%
45	15.00%	6.50%	5.50%	4.50%	4.00%	2.25%
50	15.00%	6.50%	5.50%	4.50%	4.00%	2.00%
55	15.00%	6.50%	5.50%	4.50%	4.00%	2.00%
60	15.00%	6.50%	5.50%	4.50%	4.00%	2.00%

4. **Retirement Rates**

Probability of Retirement				
Years of Service				
Age	< 15	15-24	25-31	≥ 32
50-51	0.00%	0.00%	40.00%	40.00%
52	0.00%	0.00%	35.00%	40.00%
53	0.00%	0.00%	32.50%	32.50%
54	0.00%	22.50%	27.50%	32.50%
55-58	0.00%	22.50%	22.50%	32.50%
59	0.00%	22.50%	22.50%	42.50%
60	10.00%	22.50%	27.50%	42.50%
61	17.00%	22.50%	32.50%	42.50%
62	17.00%	30.00%	32.50%	42.50%
63	17.00%	25.00%	32.50%	42.50%
64	17.00%	25.00%	37.50%	42.50%
65	30.00%	32.50%	40.00%	42.50%
66-69	25.00%	32.50%	40.00%	42.50%
70	100.00%	100.00%	100.00%	100.00%

Other Assumptions

1. Percent married: 90% of employees are assumed to be married.

Supporting Schedules (continued)

2. Age difference: Male members are assumed to be three years older than their spouses, and female members are assumed to be three years younger than their spouses.

3. Unused Vacation and Compensatory Time: For Tier 1 and Tier 2 members, compensatory service credits and lump sum payments for unused vacation and compensatory time are assumed to increase the present value of normal retirement benefits by 9.0%. No increase to the present value of normal retirement benefits was assumed for Tier 3 members.

4. Member Contribution Crediting Rate: Member contributions are assumed to be credited with interest at 3.75% per annum.

Schedule of Retirees Members Added To and Removed From Rolls
(in thousands)

	Added to Rolls		Removed		Total			
Year Ended	Count	Annual Pensions	Count	Annual Pensions	Count	Annual Pensions	Average Annual Pensions	% Increase in Pensions
6/30/2008	348	$ 10,935	148	$ 2,732	4,417	$113,433	$ 25,681	10.8%
6/30/2009	426	14,195	174	3,002	4,669	126,220	27,034	11.3%
6/30/2010	432	15,139	170	3,206	4,931	138,273	28,042	9.5%
6/30/2011	444	15,251	184	3,574	5,191	149,950	28,887	8.4%
6/30/2012	448	14,488	161	4,174	5,478	160,294	29,256	6.9%
6/30/2013	426	12,574	201	3,996	5,703	168,843	29,606	5.4%
6/30/2014	597	20,138	145	3,232	6,155	187,559	30,473	11.1%
6/30/2015	578	20,077	192	4,225	6,541	205,816	31,466	9.7%
6/30/2016	375	11,253	182	4,329	6,734	213,061	31,640	3.5%
6/30/2017	321	9,317	233	4,395	6,822	218,364	32,009	2.5%

Solvency Test (in thousands)

	Actuarial Accrued Liability for				Portion of Actuarial Liability Covered by Reported Assets		
Valuation Date	Active Member Contributions	Retirees and Beneficiaries and Vested Terminations	Members (Employer Financed Portion)	Actuarial Valuation Assets	(5)/(2)	[(5) - (2)]/(3)	[(5) - (2)] -(3)] /(4)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
6/30/2007	$ 403,819	$ 964,006	$ 798,294	$ 1,816,509	100.0%	100.0%	56.2%
6/30/2008	433,742	1,066,886	912,737	1,908,414	100.0%	100.0%	44.7%
6/30/2009	446,039	1,193,391	878,664	1,895,148	100.0%	100.0%	29.1%
6/30/2010	445,141	1,311,929	940,217	1,868,093	100.0%	100.0%	11.8%
6/30/2011	446,456	1,431,877	874,576	1,834,620	100.0%	96.9%	0.0%
6/30/2012	443,964	1,525,152	970,258	1,827,528	100.0%	90.7%	0.0%
6/30/2013	396,583	1,881,123	1,201,741	1,962,533	100.0%	83.2%	0.0%
6/30/2014	393,754	2,099,274	1,121,756	2,120,700	100.0%	82.3%	0.0%
6/30/2015	383,029	2,465,862	1,127,017	2,202,923	100.0%	73.8%	0.0%
6/30/2016	393,626	2,522,989	1,067,522	2,283,216	100.0%	74.9%	0.0%
6/30/2017	406,651	2,638,084	1,084,717	2,402,707	100.0%	75.7%	0.0%

Supporting Schedules (continued)

Analysis of Financial Experience (in thousands)

	Derivation for Year Ended June 30, 2017				
	2017	2016	2015	2014	2013
(1) UAL at Start of Year	1,700,921	1,772,985	1,494,084	1,516,915	1,111,845
(2) Normal cost for year*	73,256	80,757	75,679	78,331	71,828
(3) Contributions for year	(183,023)	(178,288)	(157,683)	(153,885)	(143,502)
(4) Assumed Investment Income Accural on (1), (2) and (3)	123,527	129,383	109,037	110,987	86,136
(5) Expected UAL Before Changes	1,714,681	1,804,836	1.521,117	1,552,347	1,126,307
(6) Effect of Assumption/Method Changes	2,420	(69,420)	254,870	-	423,247
(7) Effect of Benefit Changes	-	(3,229)	-	-	-
(8) Expected UAL After Changes	1,717,101	1,732,187	1,775,987	1,552,347	1,549,554
(9) Actual UAAL	1,726,745	1,700,921	1,772,985	1,494,084	1,516,915
(10) Gain (loss) (8) - (9)	(9,644)	31,266	3,002	58,265	32,639
(11) As % of AL at Start of Year	0.2%	0.8%	0.1%	1.7%	1.1%

	2012	2011	2010	2009	2008
(1) UAL at Start of Year	918,289	829,195	622,946	504,950	349,611
(2) Normal cost for year	77,366	80,099	78,731	83,089	72,806
(3) Contributions for year	(133,822)	(119,613)	(116,482)	(98,157)	(95,435)
(4) Assumed Investment Income Accural on (1), (2) and (3)	71,248	64,652	48,228	39,755	27,005
(5) Expected UAL Before Changes	933,081	854,333	633,424	529,637	353,987
(6) Effect of Assumption/Method Changes	-	-	-	-	94,539
(7) Effect of Benefit Changes	-	-	-	-	-
(8) Expected UAL After Changes	933,081	854,333	633,424	529,637	448,526
(9) Actual UAAL	1,111,845	918,289	829,195	622,946	504,950
(10) Gain (loss) (8) - (9)	(178,764)	(63,956)	(195,771)	(93,309)	(56,424)
(11) As % of AL at Start of Year	-6.5%	-2.4%	-7.8%	-3.9%	-3.5%

*Includes administrative expenses for 2017

Summary of Benefit Provisions

Membership

Full-time employees of the City of Phoenix other than police officers, firefighters, or elected officials who are covered by another retirement system to which the City contributes.

Members who were hired before July 1, 2013, as well as members who joined the City between July 1, 2013 and December 31, 2015 who were members of ASRS prior to July 1, 2011 and did not withdraw their contributions are Tier 1 members.

Members hired into employment with the City between July 1, 2013 and December 31, 2015 who are not Tier 1 members are Tier 2 members.

Members hired into employment with the City on or after July 1, 2016 who are not Tier 1 members or Tier 2 members are Tier 3 members.

Final Average Compensation (FAC)

Tier 1/Tier 2
The average of annual compensation for the period of 3 consecutive years producing the highest average contained within the last 10 years immediately preceding retirement.

Tier 3
The average of annual compensation for the period of 5 consecutive years producing the highest average contained within the last 10 years immediately preceding retirement. Annual compensation will be limited to the first $125,000 of compensation, indexed to inflation (CPI-U) each January 1, commencing on January 1, 2017. For calendar year 2017, the annual compensation limit was $126,875.

Credited Service

Credited service is determined based on Section 14 of Chapter XXIV of the Phoenix City Charter as well as COPERS administrative policy number 43. In no case is more than a year of service credited to any member for all service rendered in any calendar year. The amount of service credited to members varies by Tier, as detailed below.

Tier 1
A member is credited with a month of service for each calendar month in which the member performs at least 10 days of City service. A member is credited with a year of service for any calendar year in which the member has at least 10 months of credited service. If a member has less than 10 months of credited service for any calendar year, they are credited for the actual number of months.

Tier 2/Tier 3
A member is credited with a month of service for each calendar month in which the member performs at least 20 days of City service. A member is credited with a year of service for any calendar year in which the member has at least 12 months of credited service. If a member has less than 12 months of credited service for any calendar year, they are credited for the actual number of months.

Summary of Benefit Provisions (continued)

Voluntary Retirement (no reduction for age)

Tier 1

Eligibility:
Sum of age and credited service equals 80 or more, age 60 with 10 or more years of credited service or age 62 with 5 or more years of credited service.

Annual Benefit:
Eligible unused sick leave service multiplied by 2% of FAC plus 2% of FAC times credited service up to 32.5 years plus 1% of FAC times service in excess of 32.5 years plus 0.5% of FAC times service in excess of 35.5 years. Minimum monthly pension is $250 ($500 if member has 15 or more years of service).

Tier 2/Tier3

Eligibility:
Sum of age and credited service equals 87 or more, age 60 with 10 or more years of credited service or age 62 with 5 or more years of credited service.

Annual Benefit:
Eligible unused sick leave service multiplied by 2% of FAC for Tier 2 members only plus FAC times credited service times the corresponding accrual rate:

Tier 2		Tier 3	
Years of Service	**Accrual Rate**	**Years of Service**	**Accrual Rate**
0 < Service ≤ 20	2.10%	0 < Service ≤ 10	1.85%
20 < Service ≤ 25	2.15%	10 < Service ≤ 20	1.90%
25 < Service ≤ 30	2.20%	20 < Service ≤ 30	2.00%
Service >30	2.30%	Service >30	2.10%

Note that for Tier 2 and Tier 3, the same accrual rate will apply for each year of service based on the total years of service.

Deferred Vested Retirement

Eligibility:
Termination of City employment prior to age 62 with 5 or more years of credited service.

Annual Benefit:
Accrued regular retirement amount based on credited service, unused sick leave service, and FAC at time of termination, payable beginning at age 62.

Duty Disability Retirement

Eligibility:
Total and permanent disability incurred in line of duty with the City.

Summary of Benefit Provisions (continued)

Annual Benefit:
Computed in the same manner as the regular retirement amount base on FAC and credited service at time of disability retirement. Minimum is 15% of FAC for Tier 1 members and 15.75% for Tier 2 and Tier 3 members. Maximum during worker's compensation period is difference between final compensation and annualized workers compensation. At expiration of worker's compensation period, amount is recomputed to include years during which worker's compensation was paid.

Non-Duty Disability Retirement

Eligibility:
Total and permanent disability after 10 or more years of credited service.

Annual Benefit:
Computed in the same manner as the regular retirement amount base on FAC and credited service at time of disability retirement.

Pre-Retirement Duty Death Benefit

Eligibility:
Death in line of duty with the City and compensable under worker's compensation.

Annual Benefit:
To the spouse: Joint and 100% survivor actuarial equivalent of accrued regular retirement amount based on FAC and credited service and unused sick leave service at time of death. Minimum of 10 years of service is credited. To the children of a deceased member with 10 or more years of credited service: each child shall receive a monthly pension of $200 until adoption, marriage, death or attainment of age 18.

Pre-Retirement Non-Duty Death Benefit

Eligibility:
10 or more years of credited service.

Annual Benefit:
Same as Pre-Retirement Duty Death Benefit.

Refund of Contributions

Eligibility:
Termination of covered service employment prior to eligibility for any other benefits.

Annual Benefit:
No annual benefit. Accumulated member contribution with interest at no more than 3.75% annually after July 1, 2016.

Pension Equalization Reserve (PER)

The PER is credited with Excess Earnings, if any, each calendar year. Excess Earnings are defined as the excess over 8.0% of the annual average of the time-weighted rates of return for the immediately preceding five calendar years. The amounts credited to the PER are either used to fund percentage increases to pension amounts or one-time post retirement distribution benefits (13th checks).

Summary of Benefit Provisions (continued)

On July 1 of each year, persons in receipt of a pension for at least 36 months receive a percentage increase based on the lesser of:

i. Phoenix area Consumer Price Index (CPI) and
ii. The amount the balance in the PER can fully fund

The increase, subject to the availability of funds in the PER, is payable beginning with the April 1 payment each year, retroactive to January 1 of the same year.

Also, after each plan year's return is known, all pensioners (excluding minors) as of the end of the plan year are eligible to receive a one-time post retirement distribution (13th check). The 13th check is a percentage of the pensioner's annual benefits based on the lesser of:

i. One half of the Phoenix area Consumer Price Index (CPI) and
ii. The excess of the rate of return over the assumed interest rate

The percentage cannot be more than three percent, but must be at least one percent and is subject to the availability of funds in the PER. The 13th check is payable on December 1.

The PER is only applicable for Tiers 1 and 2.

Projected Percentage

Actuarially determined normal cost rate plus an amortization rate on the unfunded actuarial liability and a rate for administrative expenses, stated as a percentage of projected member compensation.

Member Contribution Rates

Tier 1: 5% of pay
Tier 2/Tier 3: 50% of the Projected Percentage not to exceed 11% of pay on or after January 1, 2016

City Contribution Rates

Total Projected Percentage less Member Contribution Rates for each Tier.

Statistical Section

The section provides financial and demographic data pertaining to COPERS.

The purpose of the statistical section is to provide the reader with data which is considered to be pertinent to the financial and economic condition of the retirement plan. Each schedule is defined below with an explanation of the schedule and an identification of the source of the data.

Schedule of Changes in Fiduciary Net Position

This schedule provides the additions and deductions to the plan for the past ten years. The change in net position is provided to illustrate whether sufficient resources are available in the current fiscal year to cover plan benefits. This schedule is developed using the Statements of Changes in Fiduciary Net Position for the past ten years.

Schedule of Benefit Expenses by Type

This schedule provides the benefit expenses of the plan by type for the last ten years. COPERS benefits include payments for service retirements, disability benefits, death in service benefits, child benefits, payment to alternate payees and survivor benefits. This schedule is developed using reports from the City's accounting system. The expenses can be found in COPERS' Statements of Changes in Fiduciary Net Position for the past ten years.

Schedule of Retired Members by Type of Benefit

This schedule provides the number of retired members by type of benefit. COPERS plan benefits include payments for deferred benefits, normal retirement benefits, disability benefits, survivor benefits, death benefits and payments to alternate payees. The schedule is developed using COPERS' database.

Schedule of Average Benefit Payment Amounts

This schedule provides the average benefit payments per years of credited service. This information is provided to illustrate the changes in benefit payment amounts as the amount of service credit earned increases. This schedule is developed using COPERS' database.

Schedule of Changes in Fiduciary Net Position (in thousands)
Last Ten Fiscal Years

	2017	2016	2015	2014	2013
ADDITIONS					
Member Contributions	$ 30,870	$ 29,306	$ 27,861	$ 28,815	$ 27,738
Employer Contributions	152,153	119,844	117,092	115,244	110,094
Funds from Other Systems	43	217	199	160	105
Net Investment Income (Loss)	243,210	9,171	47,149	298,576	195,305
Total Additions to Fiduciary Net Position	$ 426,276	$ 158,538	$ 192,301	$ 442,795	$ 333,242
DEDUCTIONS					
Benefit Payments	220,276	213,047	201,178	177,447	165,521
Refunds of Contributions	3,227	3,047	3,004	2,192	2,464
Funds to Other Systems	207	315	421	238	606
Administrative Expenses	380	234	414	628	389
Total Deductions from Fiduciary Net Position	224,090	216,643	205,017	180,506	168,980
CHANGE IN NET POSITION RESTRICTED FOR PENSIONS	$ 202,186	$ (58,105)	$ (12,716)	$ 262,289	$ 164,262

	2012	2011	2010	2009	2008
ADDITIONS					
Member Contributions	$ 28,140	$ 28,648	$ 30,240	$ 31,774	$ 31,237
Employer Contributions	105,682	90,965	86,241	66,383	64,198
Funds from Other Systems	4,030	4,999	4,619	2,411	4,755
Net Investment Income (Loss)	(5,664)	315,936	143,016	(375,388)	(106,022)
Total Additions to Fiduciary Net Position	$ 132,188	$ 440,548	$ 264,116	$ (274,820)	$ (5,832)
DEDUCTIONS					
Benefit Payments	156,679	145,922	133,522	121,484	109,308
Refunds of Contributions	2,333	2,470	2,877	2,812	2,623
Funds to Other Systems	1,365	2,872	1,699	1,518	2,103
Administrative Expenses	328	251	402	477	-
Total Deductions from Fiduciary Net Position	160,705	151,515	138,500	126,291	114,034
CHANGE IN NET POSITION RESTRICTED FOR PENSIONS	$ (28,517)	$ 289,033	$ 125,616	$ (401,111)	$ (119,866)

Note: Administrative expenses of COPERS are paid by the City of Phoenix. As of October 2, 2008, the COPERS Board approved the payment of certain fees for legal, medical, actuarial, and computer services from Plan Assets.

Schedule of Benefit Expenses by Type
Last Ten Fiscal Years

Retirement and Survivor Benefits
(in thousands)

Fiscal Year	Age & Service Benefits Retirees	Disability Benefits Retirees Death In Service	Duty	Non-Duty	Survivors	Deferred	Child	Alternate Payee	Total Benefits
2016-2017	$ 191,440	$ 3,271	$ 672	$ 3,311	$15,038	$ 2,801	$ 61	$ 2,074	$218,668
2015-2016	186,802	3,324	686	3,273	14,150	2,721	62	2,029	213,047
2014-2015	176,699	3,109	710	3,184	12,958	2,582	47	1,889	201,178
2013-2014	154,684	2,921	711	2,898	12,157	2,373	32	1,701	177,477
2012-2013	143,970	2,812	702	2,880	11,581	2,158	31	1,387	165,521
2011-2012	136,223	2,793	700	2,882	10,792	1,997	36	1,257	156,680
2010-2011	126,576	2,706	718	2,774	10,047	1,859	32	1,210	145,922
2009-2010	115,115	2,672	707	2,650	9,633	1,651	32	1,062	133,522
2008-2009	104,189	2,795	716	2,541	8,819	1,444	33	947	121,484
2007-2008	93,116	2,583	690	2,398	8,413	1,287	39	782	109,308
2006-2007	85,252	2,509	668	2,202	7,799	1,208	39	681	100,366

*Amounts shown are annualized amounts based on the June 30th payroll.

Refunds
(in thousands)

Fiscal Year	Beneficiaries	Separation	Total Refunds
2016-2017	$ 518	$ 2,598	$ 3,227
2015-2016	589	2,413	3,047
2014-2015	725	2,279	3,004
2013-2014	515	1,677	2,192
2012-2013	821	1,644	2,464
2011-2012	437	1,896	2,333
2010-2011	677	1,793	2,470
2009-2010	963	1,914	2,877
2008-2009	618	2,194	2,812
2007-2008	149	2,474	2,623
2006-2007	376	2,394	2,770

Schedule of Retired Members by Type of Benefit
As of June 30, 2017

Monthly Benefit	Number of Retirees	Deferred	Normal or Voluntary	Duty Disability	Non-Duty Disability	Survivor Payment	Death Benefit	Alternate Payee
		Type of Retirement						
Deferred	925	925	-	-	-	-	-	-
$1 - 300	95	-	45	1	-	14	22	13
301 – 400	136	-	87	6	2	29	3	9
401 – 500	135	-	86	7	2	31	1	8
501 – 600	142	-	96	4	6	24	4	8
601 – 700	170	-	91	3	9	52	5	10
701 – 800	177	-	97	2	10	44	10	14
801 – 900	189	-	119	5	21	29	8	7
901 – 1,000	174	-	92	2	13	48	5	14
1,001 – 1,100	196	-	119	4	11	44	9	9
1,101 – 1,200	200	-	128	1	17	35	7	12
1,201 – 1,300	166	-	117	1	12	24	4	8
1,301 – 1,400	171	-	111	-	11	31	9	9
1,401 – 1,500	178	-	132	2	8	25	9	2
1,501 – 2,000	808	-	621	15	38	85	31	18
2,001 – 2,500	859	-	737	2	12	87	12	9
2,501 – 3,000	761	-	690	-	10	47	10	4
3,001 – 4,000	1,124	-	1,051	-	8	52	12	1
4,001 – 5,000	632	-	607	-	2	17	5	1
5,001+	667	-	635	-	-	27	3	2
Totals	7,905	925	5,661	55	192	745	169	158

Schedule of Average Benefit Payment Amounts
By Year of Retirement

Retirement Effective Dates	Years of Credited Service					
For Fiscal Years Ending June 30:	5-9	10-14	15-19	20-24	25-29	30+
2017						
Average Monthly Benefit	$ 705.81	$ 973.60	$ 1,887.47	$2,534.96	$3,720.04	$3,945.87
Mean Monthly Final Average Compensation	4,447.09	4,259.10	5,826.38	5,694.16	6,652.33	6,235.95
Number of Active Retirees	17.00	37.00	32.00	48.00	67.00	53.00
2016						
Average Monthly Benefit	$ 736.45	$1,275.96	$ 1,669.03	$2,597.60	$3,613.86	$4,779.84
Mean Monthly Final Average Compensation	4,573.73	5,203.89	5,076.77	5,891.97	6,582.60	7,289.30
Number of Active Retirees	25.00	42.00	44.00	50.00	88.00	43.00
2015						
Average Monthly Benefit	$ 627.12	$1,198.23	$ 1,800.35	$2,832.46	$3,747.22	$4,451.39
Mean Monthly Final Average Compensation	4,394.71	4,918.77	5,272.00	6,355.55	6,642.33	6,734.34
Number of Active Retirees	41.00	62.00	66.00	95.00	206.00	136.00
2014						
Average Monthly Benefit	$ 627.98	$1,171.08	$ 2,093.01	$2,620.92	$3,963.91	$4,471.11
Mean Monthly Final Average Compensation	4,149.40	4,891.54	6,133.52	5,746.43	6,986.39	6,578.83
Number of Active Retirees	31.00	43.00	47.00	82.00	148.00	58.00
2013						
Average Monthly Benefit	$ 559.68	$1,260.13	$ 1,907.01	$2,599.91	$3,748.72	$4,933.05
Mean Monthly Final Average Compensation	4,273.41	5,221.78	5,509.08	5,821.48	6,697.39	7,417.31
Number of Active Retirees	41.00	41.00	28.00	54.00	94.00	48.00
From July 1, 2013 to June 30, 2017						
Average Monthly Benefit	$ 651.41	$1,175.80	$ 1,871.37	$2,637.17	$3,758.75	$4,516.25
Mean Monthly Final Average Compensation	4,367.67	4,899.02	5,563.55	5,901.92	6,712.21	6,851.15
Number of Active Retirees	31.00	45.00	43.40	65.80	120.60	67.60

City of Phoenix
Employees' Retirement System
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