EMPLOYEES' RETIREMENT SYSTEM OF THE STATE OF HAWAII

COMPREHENSIVE ANNUAL FINANCIAL REPORT

FOR THE FISCAL YEAR ENDED JUNE 30, 2016

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Prepared by the Staff of the:
Employees' Retirement System of the State of Hawaii
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Employees' Retirement System

of the State of Hawaii

INTRODUCTORY SECTION

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Letter of Transmittal

DAVID Y. IGE
GOVERNOR

THOMAS WILLIAMS
EXECUTIVE DIRECTOR

KANOE MARGOL
DEPUTY EXECUTIVE DIRECTOR

STATE OF HAWAII
EMPLOYEES' RETIREMENT SYSTEM

November 29, 2017

Board of Trustees
Employees' Retirement System of the State of Hawaii

Dear Board Members:

We present the Comprehensive Annual Financial Report (CAFR) of the Employees' Retirement System for the fiscal year ended June 30, 2016. Responsibility for both the accuracy of the data, as well as the completeness and fairness of the presentation, rests with the management of the ERS. We trust that you and the members of the ERS will find this report useful in understanding your retirement system.

BACKGROUND

The ERS was established by the Legislature in 1925 to administer a retirement, disability, and survivor benefits program for State and county employees including teachers, professors, police officers, firefighters, judiciary employees, judges, and elected officials. The ERS is a qualified defined benefit public pension plan covered under Section 401(a) of the Internal Revenue Code. Hawaii Revised Statutes Chapter 88 and Hawaii Administrative Rules Title 6, Chapters 20 – 29 contain the language governing the pension trust. The ERS covers all eligible full-time and part-time State and county employees in the State of Hawaii. The ERS uses the entry age normal funding method to determine its current and future costs and appropriateness of its funding requirements. Funding for benefit payments comes from employer and member contributions, and investments.

Members of the Pension Trust belong to either the Contributory, Hybrid (a contributory class), or Noncontributory Class. Contributory and Hybrid Members make employee contributions to the Pension Trust and employers make contributions for employees of all three classes. Since 2006 most new employees of participating employers in the Pension Trust are required to join the Hybrid Class, except for certain employee groups that are required to be members of the Contributory Class. New benefit structures were established in 2011 for new members hired after June 30, 2012.

On March 31, 2016 the ERS' total membership of 135,178 was comprised of 67,377 active members, 45,506 retirees and beneficiaries 7,741 inactive vested members and 14,554 inactive non-vested members. This compares to 120,624 under historical methodology used in the actuarial valuation that excludes inactive non vested members. Participating employers include the State of Hawaii, City and County of Honolulu, and the counties of Hawaii, Maui, and Kauai.

Employees' Retirement System
of the State of Hawaii

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The ERS is also responsible for the custody of the Social Security Contribution Fund for the State of Hawaii. The Social Security contributions withheld from employees are remitted directly to the Internal Revenue Service by the State. As an agency type fund that is custodial in nature, the ERS has limited discretion in the management of this fund.

MAJOR ACCOMPLISHMENTS AND INITIATIVES IN FY 2016

During FY 2016, the ERS continued to focus on reforms to better structure the pension plan to meet its long-term pension obligations for current and future members, retirees and beneficiaries. The ERS completed a Five-Year Experience Study with our actuary and adopted new actuarial assumptions for the ERS valuation based on the their recommendations from the study, completed the 2015 Asset Liability Study with our investment consultant and updated the long-term asset allocation policy based on the results of this study, and introduced legislation to improve the cash flow of ERS. The ERS ended the fiscal year with net assets at $14.1 billion based on ERS' investment portfolio returns (gross of fees, time weighted rate of return) -0.8% for the fiscal year.

The Board of Trustees adopted new actuarial assumptions based on the recent actual results of 2010-2015 Five Year Experience Study, that combined with ERS' actual results of FY 2016 resulted in the Net Pension Liability (NPL) increasing to $13.4 billion as of June 30, 2016 from $8.7 billion as of June 30, 2015 with corresponding funded ratio decrease to 51.3% from 62.4%, respectively. The main changes in the actuarial assumptions (effective June 30, 2016) that affected the NPL increase are lowering the investment return assumption from 7.65% to 7.00% and increasing life expectancy of the ERS membership. (A complete list of assumptions is located in the Actuary Section of the CAFR and a summary of changes is discussed in the Required Supplementary Information (RSI) of the Financial Section of the CAFR.) While the new assumptions are adversely affecting the ERS current financial position, these are in-line with ERS' long term objectives of establishing sustainable contributions on a level basis each year to give predictability to the employer and employees who make contributions and realizing full funding of the ERS.

During FY2015 the Board of Trustees approved a new risk-based asset allocation strategy (as described in Investment Section of this CAFR) to increase insight and transparency to the risks embedded in the allocation decision to put risk management at the center of its asset allocation decisions. Upon completion of the 2015 Asset-Liability Study in fiscal year 2016, that showed lowering investment return expectations, the Board of Trustees approved a new long-term asset allocation policy to be implemented through fiscal year 2020 that we believe will position the portfolio over the long-term to weather any potential economic downturns, achieve higher returns, and overall help improve the pension plan's sustainability.

These actuary and investment related initiatives are discussed in more detail of the Investment and Actuary Sections of the CAFR.

The 2016 legislation session included three laws that affect the ERS.

- Act 31 (SB2841), relating to payment of employer contributions helps improve the cash flow of ERS if employers pay contributions at the beginning of the fiscal year by allowing the funds to be invested which may reduce future employer contributions required if increased investment earnings are realized.
- Act 263 (HB1370): Relating to Domestic Relations Orders provides for direct payments by the ERS to an alternate payee pursuant to a Hawaii domestic relations order effective July 1, 2018. A Hawaii domestic relations order creates or recognizes the right of an alternate payee, or assigns to an alternate payee, the right to receive all or a portion of the benefits payable with respect to a member or retirant under the ERS.

- Act 1 (SSL SB2077): Relating to Hawaii Health Systems Corporation (HHSC) Maui Separation would allow this group of terminated employees the option of electing a cash severance payment or certain early retirement benefits from the State of Hawaii as a result Act 103 (SLH 2015). Because the ERS' tax exempt status was challenged with the passage of Act 1, since the United States Internal Revenue Code does not permit governmental defined benefit pension plans like the ERS to offer employees a choice between a "cash or deferred arrangement", in August 2016, the ERS obtained a Temporary Restraining Order delaying the implementation of Act 1 and requested a Private Letter Ruling from the Internal Revenue Service regarding this critical tax qualification issue. In March 2017, the IRS issued a Private Letter Ruling confirming ERS' position. This Act was repealed on May 18, 2017 by Act 18 (SB207), SLH/2017 with a retroactive effective date of July 20, 2016.

Events subsequent to June 30, 2016

As a result of the ERS's funded position from the 2016 actuary valuation, the 2017 State Legislature (Act 17 SLH 2017) approved a four-year phase in of employer contribution rate increase effective July 1, 2017 that will increase the rate for Police and Fire from current of 25% to 41% as of July 1, 2020, and the rate for All Other Employees from the current rate of 18% to 24 % as of July 1, 2020.

ACCOUNTING SYSTEM AND REPORTS

The accrual basis of accounting is used to record financial transactions. Expenses are recorded when the liability is incurred, and revenues are recorded in the accounting period in which they are earned and become measurable. Interest earned is accrued on a monthly basis. Accounts receivable at year end, in addition to accrued interest receivable, reflect accrued employer charges and investment proceeds due on sales that have not yet settled. Investments are recorded at fair value. Fixed assets are recorded at cost less accumulated depreciation.

The ERS adopted Governmental Accounting Standards Board (GASB) Statement No. 72, Fair Value Measurement and Application, in 2016, addresses accounting and reporting issues related to fair value measurements. This statement requires additional disclosures to be made about fair value measurements, the level of fair value hierarchy, and valuation techniques of ERS' investments.

The *Notes to the Financial Statements (Notes)* contain additional detailed information on the statutory provisions under which the ERS operates. In addition, the Notes include a summary of significant accounting policies, and provide explanatory information to help readers better understand the data contained in the financial statements.

The management of the ERS is responsible for and has implemented systems of internal accounting controls designed to provide reasonable assurances for the safeguarding of assets and the reliability of financial records. We believe that the internal accounting controls currently in place are adequate to meet the purpose for which they were intended. To the best of our knowledge and belief, the enclosed data, including the financial statements, supporting schedules and statistical tables is accurate in all material respects and is reported in a manner that fairly presents the financial position and results of the ERS' operations.

INVESTMENTS

The primary goal of the ERS investment strategy is the preservation of capital. The Board of Trustees seeks preservation of capital with a consistent, positive return for the investment portfolio. Effective October 1, 2014, the ERS adopted a risk-based, functional framework for allocating capital within the investment portfolio. This framework makes use of strategic/functional classes that in-turn utilize underlying asset classes and strategies. Per the investment policy, the ERS undertook an Asset-Liability Study in FY 2015 and was finalized in FY 2016. As a result, ERS approved a new long-term asset allocation policy that will be implemented in several phases through June 30, 2020. A summary of the ERS' long-term asset allocation strategy for the fiscal year may be found in the Investment Section of this report. The full Investment Policies, Guidelines, and Procedures Manual is available on the ERS website at http://ers.ehawaii.gov.

Professional investment managers have been retained to execute the Board's investment strategies and have full discretion within statutory provisions, Board policies and their respective guidelines. The investment managers retained by the Board as of June 30, 2016 are listed in the Investment Section.

Net investment income, including dividends, interest, other investment earnings, and gains/losses on the sale of investments resulted in a loss of $169 million in FY2016. This translates to an investment return of approximately -0.8% for the year, using rate of return methodologies that are generally accepted by the Global Investment Performance Standards (GIPS).

FUNDING AND ACTUARIAL OVERVIEW

In the June 30, 2016 report of the Fund's valuation our actuaries, Gabriel Roeder Smith & Company noted that that our unfunded actuarial accrued liability (UAAL) increased to $12.4 billion from $8.7 billion on June 30, 2015 based on the previous GASB reporting standards. Under the current market-based GASB standards effective in FY 2015, the Net Pension Liability increased to $13.4 billion on June 30, 2016 from $8.7 billion as of June 30, 2015. On the market basis, this represents a decrease in funded position to 51.3% for FY 2016 from 62.4% for FY 2015. The ERS full funding period increased to 66 at June 30, 2016 from 26 years at June 30, 2015. This is primarily from the effects of new actuarial assumptions effective with the June 30, 2016 valuation.

PROFESSIONAL SERVICES

Professional consultants are appointed by the Board of Trustees to perform professional services that are essential to the effective and efficient operation of the ERS. Opinions from KPMG LLP, the auditors for the ERS, and the actuary, Gabriel, Roeder, Smith & Company, are included in this report. Pension Consulting Alliance, LLC is the ERS' investment consultant, and their report on the ERS' investment program and performance results is also included in this report.

ACKNOWLEDGEMENTS

This report is from the collaborative efforts of the ERS staff and consultants to provide extensive and reliable information as a basis for making management decisions, determining compliance with legal provisions, and for determining responsible stewardship of the assets contributed by the ERS' members and their employers. This report will be provided to the Governor, legislators, State and county departments and other interested parties.

Aloha,

Thomas Williams

Thomas Williams
Executive Director

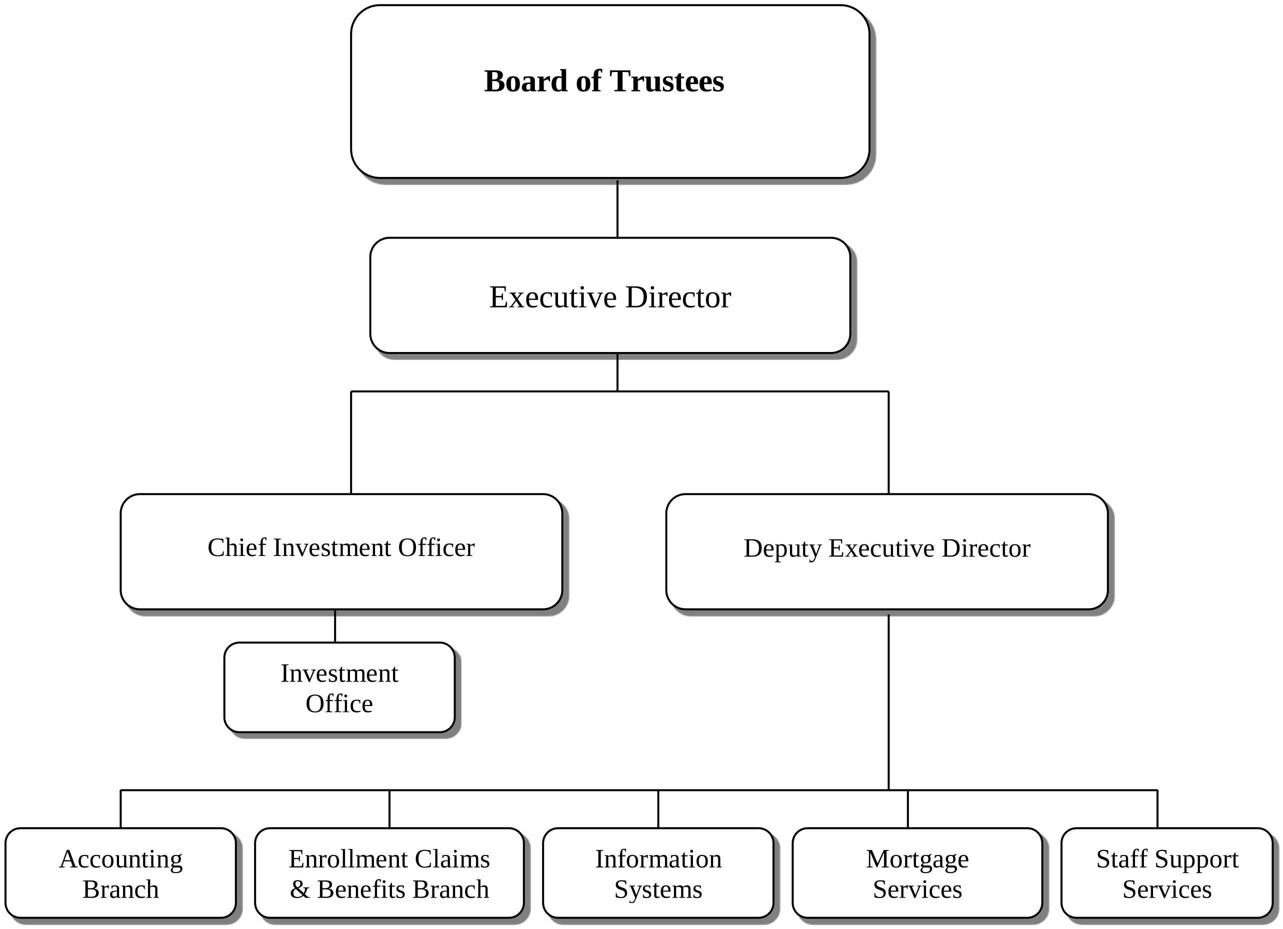
Board of Trustees

The Board of Trustees is the governing body of the Employees' Retirement System of the State of Hawaii, with certain areas of administrative control vested in the State Department of Budget and Finance.

Four of the eight members on the Board are elected by the membership: two general employees, a teacher and a retiree. Three members are citizens of the State, one of whom is an officer of a bank authorized to do business in the State or a person of similar experience, who are not employees and are appointed by the Governor. The State Director of Finance is an ex-officio member by statute.

	Date Current Term Began	**Date Term Ends**
Elected:		
Mr. Patrick Frane	November 19, 2013	January 1, 2018
Ms. Jackie Ferguson-Miyamoto	January 2, 2014	January 1, 2020
Mr. Emmit A. Kane	January 2, 2014	January 1, 2020
Dr. Catherine Chan	January 2, 2016	January 1, 2022
Appointed:		
Mr. Vince Barfield, Board Chair	August 11,2011	January 1, 2017
Mr. Colbert M. Matsumoto	January 2, 2013	January 1, 2019
Mr. Jerry E. Rauckhorst	January 2, 2014	January 1, 2020
Ex-Officio:		
Mr. Wesley K. Machida	December 27, 2014	December 3, 2018

Organizational Structure



Executive Director	Thomas Williams
Deputy Executive Director	Kanoe Margol
Chief Investment Officer	Vijoy P. Chattergy

Actuary
Gabriel, Roeder, Smith and Company

Auditors
State of Hawaii, Office of the Auditor
KPMG LLP

Legal Advisor
Attorney General of the State of Hawaii

Medical Board
Dr. Patricia L. Chinn, Chair
Dr. Howman Lam, Member
Dr. Gerald J. McKenna, Member

** A list of investment professionals is located in the *Investment Section* of this CAFR.

Plan Summary

The Employees' Retirement System (ERS) of the State of Hawaii was established by the Legislature in 1925 to provide retirement, disability and survivor benefits for State employees, teachers, professors, county employees, police officers, firefighters, judges and elected officials.

The ERS is a qualified defined benefit pension plan under Section 401(a) of the Internal Revenue Code. As such, the ERS is exempt from federal income taxation on its investment earnings. Since January 1, 1988, member contributions have been tax deferred under Section 414(h) of the Internal Revenue Code.

Members are covered by the provisions of the Contributory, Hybrid or Noncontributory retirement class. Except for employees in certain positions who are required to be Contributory members, most new employees from July 1, 2006 are enrolled as Hybrid Members.

Those in the Contributory Class are required to make contributions to the ERS and may also be covered by Social Security. Employees in the following occupational groups are required to be members of the Contributory Class: police officers, firefighters, judges, elected officials, legislative officers, attorney general investigators, narcotics enforcement investigators, and public safety investigations staff investigators. As of March 31, 2016, 6,070 active employees were enrolled in the Contributory Class, or about 9.0% of our active members.

On July 1, 2006, the Hybrid Class became effective pursuant to Act 179/2004. Members in the Hybrid Class (a contributory benefit structure) must also contribute to the ERS and are generally covered by Social Security. The Hybrid Class covers most employees hired from July 1, 2006, as well as certain employees hired before July 1, 2006 who elected to change to Hybrid Membership. The Hybrid membership will continue to increase going forward as most new employees hired from July 1, 2006 will be required to become a Hybrid member. As of March 31, 2016, the Hybrid Class had 46,245 members or about 68.6% of the ERS' active membership.

Noncontributory Members do not make contributions to the ERS and are covered by Social Security. The Noncontributory Class covers employees hired from July 1, 1984 to June 30, 2006, as well as employees hired before July 1, 1984 who elected to join the Noncontributory Class. As of March 31, 2016, there were 15,062 active employees in the Noncontributory Class, which represents over 22.4% of all active members on this date.

Most employees hired after June 30, 2012 fall under the new tier of benefits, contributions and vesting requirements as a result of legislation passed in 2011.

A summary of the general retirement benefits, including retirement options, for Contributory, Hybrid and Noncontributory members are on the following pages. For more detailed and current information on the contributions, benefits, eligibility and other plan details please visit the ERS website at http://ers.ehawaii.gov/.

Summary of Retirement Benefit Plan Provisions

Membership for employees hired prior to July 1, 2012 [(a)]

	Noncontributory	Contributory	Hybrid
Employee Contributions	No employee contributions	7.8% of salary	6.0% of salary
Normal Retirement			
Eligibility	Age 62 and 10 years credited service; ***or*** Age 55 and 30 years credited service	Age 55 and 5 years credited service	Age 62 and 5 years credited service; ***or*** Age 55 and 30 years credited service
Benefit	1-1/4% of average final compensation* times years of credited service	2% of average final compensation* times years of credited service	2% of average final compensation* times years of credited service, with a split formula for Noncontributory service at 1-1/4%

* Average final compensation (AFC) is an average of the highest salaries during any three years of credited service, excluding any salary paid in lieu of vacation or if ERS membership occurred prior to 1/1/71, AFC may be an average of the highest salaries during any five years of credited service including any salary paid in lieu of vacation.

	Noncontributory	Contributory	Hybrid
Early Retirement			
Eligibility	Age 55 and 20 years credited service	Any age and 25 years credited service	Age 55 with 20 years credited service
Benefit	Maximum allowance reduced 6% per year under age 62	Maximum allowance reduced 5% per year under age 55 plus 4% per year under age 50	Maximum allowance reduced 5% per year under age 62
Deferred Vesting			
Eligibility	10 years credited service	5 years credited service and contributions left in the ERS	5 years credited service and contributions left in the ERS
Benefit	Accrued maximum allowance payable as early as age 55 or at age 65 with 10 but less than 20 years of credited service	Accrued maximum allowance payable at age 55	Accrued maximum allowance payable as early as age 55 or at age 62 with 5 but less than 20 years of credited service

[(a)] Per Act 163/2012, SLH, the major changes to membership requirements, contribution amounts, and benefits structures for employees hired after June 30, 2012 are discussed on pages 17-21.

Summary of Retirement Benefit Plan Provisions (continued)

Membership for employees hired prior to July 1, 2012 (continued) [a]

	Noncontributory	Contributory	Hybrid
Annuity Savings Account			
Interest	Not applicable	4.5% per annum on employee contributions and accrued interest, ***or*** If hired after June 30, 2011, 2.0% per annum on employee contributions and accrued interest	4.5% per annum on employee contributions and accrued interest, ***or*** If hired after June 30, 2011, 2.0% per annum on employee contributions and accrued interest
Refund Eligibility	Not applicable	Contributions may be withdrawn upon retirement or termination of employment; upon refund, all service and any future retirement benefit will be forfeited	Contributions may be withdrawn upon retirement or termination of employment; upon refund, all service and any future retirement benefit will be forfeited
Refund Benefit			
- Terminates with less than 5 years credited service	Not applicable	Return of member's contributions and accrued interest	Return of member's contributions and accrued interest
- Terminates with 5 or more years of credited service	Not applicable	Return of member's contributions and accrued interest	Return of member's Hybrid contributions and accrued interest, times 150%; plus any non-Hybrid contributions and accrued interest
Ordinary Disability			
Eligibility	10 years credited service	10 years credited service	10 years credited service
Benefit	1-1/4% of AFC times years of credited service, unreduced for age (Minimum is 12.5% of AFC)	1-3/4% of AFC times years of credited service, unreduced for age (Minimum is 30% of AFC)	2% of AFC times years of credited service, unreduced for age; split formula for Noncontributory service at 1-1/4% (Minimum is 25% of AFC)

[a] Per Act 163/2012, SLH, the major changes to membership requirements, contribution amounts, and benefits structures for employees hired after June 30, 2012 are discussed on pages 17-21.

Summary of Retirement Benefit Plan Provisions (continued)

Membership for employees hired prior to July 1, 2012 (continued) [(a)]

	Noncontributory	**Contributory**	**Hybrid**
Service-Connected Disability			
Eligibility	Any age or credited service	Any age or credited service	Any age or credited service
Benefit	Lifetime pension of 35% of AFC ** For accidents occurring before July 1, 2004, accrued maximum allowance, but not less than 15% of AFC	Lifetime pension of 50% of AFC plus refund of member's contributions and accrued interest ** For accidents occurring before July 7, 1998, a different benefit is used	Lifetime pension of 35% of AFC plus refund of member's contributions and accrued interest
Ordinary Death			
Eligibility	Active employee at time of death with at least 10 years of credited service	Active employee at time of death with at least 1 year of service	Active employee at time of death with at least 5 years of service
Benefit	Surviving spouse/reciprocal beneficiary (until remarriage or reentry into a new reciprocal beneficiary relationship) and dependent children (up to age 18) receive a benefit equal to a percentage of member's accrued maximum allowance unreduced for age; ***or*** Option B (100% Joint and Survivor) lifetime pension for surviving spouse/reciprocal beneficiary if member was eligible for retirement at time of death.	Lump sum payment of member's contributions and accrued interest plus a percentage of the salary earned in the 12 months preceding death; ***or*** Option 3 (50% Joint and Survivor) lifetime pension if member was not eligible for retirement at the time of death, credited with at least 10 years of service, and one beneficiary designated; ***or*** Option 2 (100% Joint and Survivor) lifetime pension if member was eligible for retirement at the time of death and one beneficiary designated; ***or*** If less than 1 year of service, return of member's contributions and accrued interest.	Lump sum payment of member's Hybrid contributions and accrued interest (times 150%) plus return of non-Hybrid contributions and accrued interest; ***or*** Option 3 (50% Joint Survivor) lifetime pension if member was not eligible for retirement at the time of death, credited with at least 10 years of service and one beneficiary designated; ***or*** Option 2 (100% Joint Survivor) lifetime pension if member was eligible for retirement at the time of death, and one beneficiary designated; ***or*** If less than 5 years of service, return of member's contributions and accrued interest.

[(a)] Per Act 163/2012, SLH, the major changes to membership requirements, contribution amounts, and benefits structures for employees hired after June 30, 2012 are discussed on pages 17-21.

Summary of Retirement Benefit Plan Provisions (continued)

Membership for employees hired prior to July 1, 2012 (continued) [a]

	Noncontributory	**Contributory**	**Hybrid**
Service-Connected Death			
Eligibility	Any age or service	Any age or service	Any age or service
Benefit	Surviving spouse/reciprocal beneficiary receives monthly benefit equal to 30% of AFC (until remarriage or re-entry into a new reciprocal beneficiary relationship); additional benefits payable to surviving dependent children (up to age 18). If there is no spouse/reciprocal beneficiary or dependent children, no benefit is payable.	Lump sum payment of member's contributions and accrued interest to designated beneficiary, plus monthly benefit of 50% of AFC to surviving spouse/reciprocal beneficiary (until remarriage or re-entry into a new reciprocal beneficiary relationship). If there is no surviving spouse or reciprocal beneficiary, surviving dependent children (up to age 18) or dependent parents shall be eligible for a monthly benefit. If there is no spouse/reciprocal beneficiary or dependent children/parents, the ordinary death benefit shall be payable to the designated beneficiary.	Lump sum payment of member's contributions and accrued interest to designated beneficiary, plus monthly benefit of 50% of AFC to surviving spouse/reciprocal beneficiary (until remarriage or re-entry into a new reciprocal beneficiary relationship). If there is no surviving spouse or reciprocal beneficiary, surviving dependent children (up to age 18) or dependent parents shall be eligible for a monthly benefit. If there is no spouse/reciprocal beneficiary or dependent children/parents, the ordinary death benefit shall be payable to the designated beneficiary.
Post Retirement Benefit - For all types of retirements (service, disability or death)	Each retiree's original retirement allowance is increased by 2.5% on each July 1 beginning the calendar year after retirement. This cumulative benefit is not compounded and increases each year by another 2.5% of the original retirement allowance without a ceiling (i.e., 2.5% of the original retirement allowance the first year, 5% the second year, 7.5% the third year, etc.).		

[a] Per Act 163/2012, SLH, the major changes to membership requirements, contribution amounts, and benefits structures for employees hired after June 30, 2012 are discussed on pages 17-21.

Summary of Retirement Benefit Plan Provisions (continued)

Membership for employees hired prior to July 1, 2012 (continued) [(a)]

The plan provisions summarized in the preceding pages apply to teachers and most State and County employees, hired before July 1, 2012. Special provisions applicable to other groups of employees, hired by July 1, 2012, are summarized in Item A to D below:

A) Police officers, firefighters, investigators of the Department of the Attorney General, narcotic enforcement investigators, and public safety investigations staff investigators contribute 12.2% of their monthly salary to the ERS instead of 7.8%. These members may retire at age 55 with 5 years of credited service or at any age with 25 years of credited service and receive a retirement benefit of 2-1/2% of average final compensation (AFC) for each year of such service up to a maximum of 80% AFC, provided the last 5 years is credited service in any of these occupations.

B) Judges, elected officials, and legislative officers may retire at age 55 with at least 5 years of credited service, or at any age with at least 10 years of credited service and receive a pension of 3-1/2% of AFC for each year of such service plus an annuity from their contributions allocable to the period of such service. This benefit cannot exceed 75% of the AFC. Judges hired after June 30, 1999 need 25 years of credited service in order to retire before age 55.

C) Sewer workers in specified classifications and water safety officers may retire at any age if they are credited with 25 years of such service with the last 5 or more years in these occupations. Hybrid members in this job category are required to contribute 9.75% of their salary to the ERS.

D) Emergency medical technicians (EMT) may retire at any age if they are credited with 30 years of such service with the last 5 or more years in these occupations effective June 30, 2003. The years of service to qualify for early retirement is gradually being reduced through June 30, 2008 when 25 years of EMT service will qualify these members for early retirement. Hybrid members in this job category are required to contribute 9.75% of their salary to the ERS.

(a) Per Act 163/2012, SLH, the major changes to membership requirements, contribution amounts, and benefits structures for employees hired after June 30, 2012 are discussed on pages 17-21.

Summary of Retirement Benefit Plan Provisions (continued)

Membership for employees hired after June 30, 2012 [(b)]

	Noncontributory	Contributory	Hybrid
Employee Contributions	No employee contributions	9.8% of salary	8.0% of salary
Normal Retirement			
Eligibility	Age 62 and 10 years credited service; ***or*** Age 55 and 30 years credited service	Age 60 and 10 years credited service	Age 65 and 10 years credited service; ***or*** Age 60 and 30 years credited service
Benefit	1-1/4% of average final compensation* times years of credited service	1.75% of average final compensation* times years of credited service	1.75% of average final compensation* times years of credited service, with a split formula for Noncontributory service at 1-1/4%

* Average final compensation (AFC) is an average of the highest salaries (limited to base pay and shortage differentials) during any five years of credited service, excluding any salary paid in lieu of vacation.

	Noncontributory	Contributory	Hybrid
Early Retirement			
Eligibility	Age 55 and 20 years credited service	Age 55 with 25 years credited service	Age 55 with 20 years credited service
Benefit	Maximum allowance reduced 6% per year under age 62	Maximum allowance reduced 5% per year under age 60 plus 4% per year under age 55	Maximum allowance reduced 5% per year under age 65
Deferred Vesting			
Eligibility	10 years credited service	10 years credited service and contributions left in the ERS	10 years credited service and contributions left in the ERS
Benefit	Accrued maximum allowance payable as early as age 55 or at age 65 with 10 but less than 20 years of credited service	Accrued maximum allowance payable at age 60, or at age 55 with 25 years of service with age reduction	Accrued maximum allowance payable as early at age 65 or at age 60 with 30 years of service, or at age 55 with 20-29 years of credited service with age reduction

[(b)] Membership requirements, contribution amounts, and benefits structures for employees hired before July 1, 2012 are discussed on pages 12-16.

Membership for employees hired after June 30, 2012 (continued) [(b)]

	Noncontributory	Contributory	Hybrid
Annuity Savings Account			
Interest	Not applicable	2.0% per annum on employee contributions and accrued interest	2.0% per annum on employee contributions and accrued interest
Refund Eligibility	Not applicable	Contributions may be withdrawn upon retirement or termination of employment; upon refund, all service and any future retirement benefit will be forfeited	Contributions may be withdrawn upon retirement or termination of employment; upon refund, all service and any future retirement benefit will be forfeited
Refund Benefit			
- Terminates with less than 10 years credited service	Not applicable	Return of member's contributions and accrued interest	Return of member's contributions and accrued interest
- Terminates with 10 or more years of credited service	Not applicable	Return of member's contributions and accrued interest	Return of member's Hybrid contributions and accrued interest, times 120%; plus any non-Hybrid contributions and accrued interest
Ordinary Disability			
Eligibility	10 years credited service	10 years credited service	10 years credited service
Benefit	1-1/4% of AFC times years of credited service, unreduced for age (Minimum is 12.5% of AFC)	1-3/4% of AFC times years of credited service, unreduced for age (Minimum is 30% of AFC)	1-3/4% of AFC times years of credited service, unreduced for age (Minimum is 25% of AFC)

[(b)] Membership requirements, contribution amounts, and benefits structures for employees hired before July 1, 2012 are discussed on pages 12-16.

Summary of Retirement Benefit Plan Provisions (continued)

Membership for employees hired after June 30, 2012 (continued) [(b)]

	Noncontributory	Contributory	Hybrid
Service-Connected Disability			
Eligibility	Any age or credited service	Any age or credited service	Any age or credited service
Benefit	Lifetime pension of 35% of AFC	Lifetime pension of 50% of AFC plus refund of member's contributions and accrued interest	Lifetime pension of 35% of AFC plus refund of member's contributions and accrued interest
Ordinary Death			
Eligibility	Active employee at time of death with at least 10 years of credited service	Active employee at time of death with at least 1 year of service	Active employee at time of death with at least 10 years of service
Benefit	Surviving spouse/reciprocal beneficiary (until remarriage or reentry into a new reciprocal beneficiary relationship) and dependent children (up to age 18) receive a benefit equal to a percentage of member's accrued maximum allowance unreduced for age; ***or*** Option B (100% Joint and Survivor) lifetime pension for surviving spouse/reciprocal beneficiary if member was eligible for retirement at time of death.	Lump sum payment of member's contributions and accrued interest plus a percentage of the salary earned in the 12 months preceding death; ***or*** Option 3 (50% Joint and Survivor) lifetime pension if member was not eligible for retirement at the time of death, credited with at least 10 years of service, and one beneficiary designated; ***or*** Option 2 (100% Joint and Survivor) lifetime pension if member was eligible for retirement at the time of death and one beneficiary designated; ***or*** If less than 1 year of service, return of member's contributions and accrued interest.	Lump sum payment of member's Hybrid contributions and accrued interest (times 120%) plus return of non-Hybrid contributions and accrued interest; ***or*** Option 3 (50% Joint Survivor) lifetime pension if member was not eligible for retirement at the time of death, credited with at least 10 years of service and one beneficiary designated; ***or*** Option 2 (100% Joint Survivor) lifetime pension if member was eligible for retirement at the time of death, and one beneficiary designated; ***or*** If less than 10 years of service, return of member's contributions and accrued interest.

[(b)] **M**embership requirements, contribution amounts, and benefits structures for employees hired before July 1, 2012 are discussed on pages 12-16.

Summary of Retirement Benefit Plan Provisions (continued)

Membership for employees hired after June 30, 2012 (continued) [b]

	Noncontributory	Contributory	Hybrid
Service-Connected Death			
Eligibility	Any age or service	Any age or service	Any age or service
Benefit	Surviving spouse/reciprocal beneficiary receives monthly benefit equal to 30% of AFC (until remarriage or re-entry into a new reciprocal beneficiary relationship); additional benefits payable to surviving dependent children (up to age 18). If there is no spouse/reciprocal beneficiary or dependent children, no benefit is payable.	Lump sum payment of member's contributions and accrued interest to designated beneficiary, plus monthly benefit of 50% of AFC to surviving spouse/reciprocal beneficiary (until remarriage or re-entry into a new reciprocal beneficiary relationship). If there is no surviving spouse or reciprocal beneficiary, surviving dependent children (up to age 18) or dependent parents shall be eligible for a monthly benefit. If there is no spouse/reciprocal beneficiary or dependent children/parents, the ordinary death benefit shall be payable to the designated beneficiary.	Lump sum payment of member's contributions and accrued interest to designated beneficiary, plus monthly benefit of 50% of AFC to surviving spouse/reciprocal beneficiary (until remarriage or re-entry into a new reciprocal beneficiary relationship). If there is no surviving spouse or reciprocal beneficiary, surviving dependent children (up to age 18) or dependent parents shall be eligible for a monthly benefit. If there is no spouse/reciprocal beneficiary or dependent children/parents, the ordinary death benefit shall be payable to the designated beneficiary.

Post Retirement Benefit - For all types of retirements (service, disability or death)

Each retiree's original retirement allowance is increased by 1.5% on each July 1 beginning the calendar year after retirement. This cumulative benefit is not compounded and increases each year by another 1.5% of the original retirement allowance without a ceiling (i.e., 1.5% of the original retirement allowance the first year, 3% the second year, 4.5% the third year, etc.).

[b] Membership requirements, contribution amounts, and benefits structures for employees hired before July 1, 2012 are discussed on pages 12-16.

Summary of Retirement Benefit Plan Provisions (continued)

Membership for employees hired after June 30, 2012 (continued) [(b)]

The plan provisions summarized in the preceding pages apply to teachers and most State and County employees, hired after June 30, 2012. Special provisions applicable to other groups of employees, hired after June 30, 2012, are summarized in Item A to D below:

A) Police officers, firefighters, investigators of the Department of the Attorney General, narcotic enforcement investigators, and public safety investigations staff investigators contribute 14.2 % of their monthly salary to the ERS instead of 9.8%. These members may retire at age 60 with 10 years of credited service or at age 55 with 25 years of credited service and receive a retirement benefit of 2-1/4% of average final compensation (AFC) for each year of such service up to a maximum of 80% AFC, provided the last 5 years is credited service in any of these occupations.

B) Judges may retire at age 60 with at least 10 years of credited service, or at age 55 with at least 25 years of credited service and receive a pension of 3% of AFC for each year of such service plus an annuity from their contributions allocable to the period of such service. Similarly, elected officials and legislative officers may retire at any age with 10 years of elected, legislative or mixed service and receive a pension of 3% of AFC for each year of service plus an annuity from their contributions allocable to the period of such service. These benefits cannot exceed 75% of the AFC.

C) Contributory Class sewer workers in specified classifications, water safety officers and emergency medical technicians may retire at age 60 with 10 years of credited service or at age 55 with 25 years of such service with the last 5 or more years in these occupations.

D) Hybrid Class sewer workers in specified classifications, water safety officers and emergency medical technicians may retire at age 65 with 10 years of credited service or at age 55 with 25 years of such service with the last 5 or more years in these occupations. They are required to contribute 11.75% instead of 8% of their salary to the ERS.

[(b)] Membership requirements, contribution amounts, and benefits structures for employees hired before July 1, 2012 are discussed on pages 12-16.

Taxation of Benefits

All retirement benefits are subject to Federal income tax but are exempt from Hawaii State income tax. Certain occupational (work related) disability benefits are exempt from Federal income tax. Arrangements to initiate voluntary withholding of Federal income tax can be made at any time. The ERS provides retirees with a 1099-R tax form on or before January 31 of each year.

Additional Benefits

Retirees, their spouses and dependent children under age 19 are eligible to receive life insurance, medical, dental, vision, and prescription drug coverage from the Employer-Union Health Benefits Trust Fund (EUTF) if they were hired before July 1, 1996, and retire with at least 10 years of continuous credited service. If they were first hired after June 30, 1996, health benefits are available on a cost-sharing basis as long as the member retires with at least 10 years of continuous service. A dependent of a retiree who is a full-time student at an accredited college, university or technical school and who is 19 through 26 years old is also eligible for coverage. A retiree with a hire date after July 1, 2001 will only receive coverage for him or herself on a cost sharing basis.

Unused sick leave is excluded from credited service in determining health benefit coverage.

Retirees are responsible for premiums in excess of the amount of employer contributions. Retirees and their spouses are eligible to receive a reimbursement of the Medicare Part B medical insurance premium. More information is available on the EUTF's website at www.eutf.hawaii.gov.

Applying for Retirement

A service retirement application can be filed with the ERS 150 days but no less than 30 days prior to the effective date of retirement. Once the application has been filed, cancellation prior to the effective date of retirement is permitted; however, the law requires mandatory retirement upon the third application. Members may obtain retirement information and application forms at the following locations:

Oahu Office
City Financial Tower
201 Merchant Street, Suite 1400
Honolulu, HI 96813
Phone: (808) 586-1735
Fax: (808) 587-5766

Kauai Office
3060 Eiwa Street, Room 302
Lihue, Hawaii 96766
Phone: (808) 274-3010
Fax: (808) 241-3193

Hawaii Office
101 Aupuni Street, Suite 208
Hilo, Hawaii 96720
Phone: (808) 974-4076
Fax: (808) 974-4078

Maui Office
54 S. High Street, Room 218
Wailuku, Hawaii 96793
Phone: (808) 984-8181
Fax: (808) 984-8183

Molokai and Lanai
Toll-free to Oahu:
1-800-468-4644, ext 61735

Continental U.S. only
Toll free to Oahu
1-888-659-0708

Counseling Service

It is the policy of the ERS to render every possible service to its members; however, as thousands of inquiries are received and answered annually, in addition to the actual processing of claims and benefits, present staff and appropriations restrict this service to those members whose immediate welfare is dependent upon the prompt settlement of benefits. Members who are definite about retirement should contact the ERS to request formal retirement estimates. For members who are not planning immediate retirement and interested in their benefit status a retirement benefit calculator and other retirement information are available on the ERS' website at http://ers.ehawaii.gov/.

Retirement Options

CONTRIBUTORY AND HYBRID MEMBERS

Maximum Allowance: The member receives a lifetime maximum allowance; at death, the difference between the value of the member's contributions at the time of retirement and the retirement allowance paid prior to death is paid to the designated beneficiary(ies) or estate.

Option One: The member receives a reduced lifetime allowance based on age; at death, the difference between the initial insurance reserve and the retirement allowance paid prior to death is paid to the designated beneficiary(ies) or estate. In lieu of the lump-sum balance, the beneficiary may elect to receive an allowance for life based on the value of the balance; provided that the allowance is not less than $100 per month.

Option Two (100% Joint and Survivor): The member receives a reduced lifetime allowance based on ages of both the member and the sole beneficiary and at death; the same allowance is paid to the designated beneficiary for life. Should the designated beneficiary predecease the retiree, another beneficiary cannot be named and all payments will cease at the retiree's death. For retirements on or after December 1, 2004, should the beneficiary predecease the retiree, the retiree's reduced pension "pops up" or increases to the corresponding Maximum Allowance instead of remaining at the reduced amount.

Option Three (50% Joint and Survivor): This option is similar to Option Two. The member receives a reduced lifetime allowance which is higher than Option Two and is based on ages of both the member and the sole beneficiary; however, at death one-half of the allowance is paid to the designated beneficiary for life. Like Option Two, should the designated beneficiary predecease the retiree, another beneficiary cannot be named and all payments will cease at the retiree's death. For retirements on or after December 1, 2004, should the beneficiary predecease the retiree, the retiree's reduced pension "pops up" or increases to the corresponding Maximum Allowance instead of remaining at the reduced amount.

Option Four: This option allows the member to devise a plan that will provide a benefit according to the member's specifications. It requires certification by the Actuary and approval of the Board of Trustees. The following Option Four plans have been approved:

Combination of Options Five and Maximum Allowance: The member receives a reduced lifetime allowance and is allowed to withdraw the pre-1987 nontaxable contributions, 50% of accumulated contributions, or 75% of accumulated contributions (Hybrid members are not allowed the 75% option); at death, the difference between the value of the member's contributions at the time of retirement and the retirement allowance paid prior to death is paid to the designated beneficiary(ies) or estate.

Combination of Options Five and One: The member receives a reduced lifetime allowance and is allowed to withdraw the pre-1987 nontaxable contributions, 50% of accumulated contributions, or 75% of accumulated contributions (Hybrid members are not allowed the 75% option); at death, the difference between the initial insurance reserve and the retirement allowance paid prior to death is paid to the designated beneficiary(ies) or estate.

Combination of Options Five and Two: The member receives a reduced lifetime allowance based on ages of both the member and the sole beneficiary, and is allowed to withdraw the pre-1987 nontaxable contributions, 50% of accumulated contributions, or 75% of accumulated contributions (Hybrid members are not allowed the 75% option); at death, the same allowance is paid to the designated beneficiary for life. As in the case of Option Two, should the designated beneficiary predecease the retiree, another beneficiary cannot be named and all payments will cease at the retiree's death. For retirements on or after December 1, 2004, should the beneficiary predecease the retiree, the retiree's reduced pension "pops up" or increases to the corresponding Maximum Allowance instead of remaining at the reduced amount.

Retirement Options (continued)

CONTRIBUTORY AND HYBRID MEMBERS (continued)

Combination of Options Five and Three: The member receives a reduced lifetime allowance based on ages of both the member and the sole beneficiary, and is allowed to withdraw the pre-1987 nontaxable contributions, 50% of accumulated contributions, or 75% of accumulated contributions (Hybrid members are not allowed the 75% option); at death, one-half of the allowance is paid to the designated beneficiary for life. As in the case of Option Three, should the designated beneficiary predecease the retiree, another beneficiary cannot be named and all payments will cease at the retiree's death. For retirements on or after December 1, 2004, should the beneficiary predecease the retiree, the retiree’s reduced pension “pops up” or increases to the corresponding Maximum Allowance instead of remaining at the reduced amount.

Option Five: The member receives a reduced lifetime allowance and is allowed to withdraw all accumulated contributions; at death, there is no further benefits payable.

Option Four and Option Five are restricted to those members with at least ten years of credited service excluding unused sick leave credit.

Regardless of the option selected, should death of the Contributory or Hybrid member occur during the first year of retirement, the designated beneficiary may elect to receive benefits as if death had occurred immediately prior to retirement in lieu of the death benefits described above.

NONCONTRIBUTORY MEMBERS

Maximum Allowance: The member receives a lifetime pension and at death, there is no further benefit payable.

Option A (50% Joint and Survivor): The member receives a reduced lifetime pension and at death, one-half of the pension is paid to the sole designated beneficiary for life. Should the designated beneficiary predecease the retiree, another beneficiary cannot be named and all payments will cease upon the retiree's death. For retirements on or after December 1, 2004, should the beneficiary predecease the retiree, the retiree’s reduced pension “pops up” or increases to the corresponding Maximum Allowance instead of remaining at the reduced amount.

Option B (100% Joint and Survivor): The member receives a reduced lifetime pension and at death, the same pension is paid to the sole designated beneficiary for life. Like Option A, should the designated beneficiary predecease the retiree, another beneficiary cannot be named and all payments will cease upon the retiree's death. For retirements on or after December 1, 2004, should the beneficiary predecease the retiree, the retiree’s reduced pension “pops up” or increases to the corresponding Maximum Allowance instead of remaining at the reduced amount.

Option C (Ten-Year Guarantee): The member receives a reduced lifetime pension. Should death occur within ten years of retirement, the same pension will be paid to the designated beneficiary, or otherwise to the retiree's estate for the balance of the ten-year period. Should the designated beneficiary predecease the retiree, another beneficiary can be named.

Regardless of the option selected, should death occur during the first year of retirement, the designated beneficiary may elect to receive benefits under Option B in lieu of the death benefits described above, provided that if the retiree would not have been permitted by applicable law or the rules of the Board to name the designated beneficiary under Option B, the designated beneficiary may elect to receive the death benefit under Option A.

Legislative Highlights 2016

The following Acts were passed by the 2016 Legislature and approved by the Governor. . For more information on these and other legislation, you may visit the website at www.capitol.hawaii.gov.

Act 31 (SB2841): Relating to Payment of Employer Contributions

This Act helps improve the cash flow of ERS if employers pay contributions at the beginning of the fiscal year by allowing the funds to be invested which may reduce future employer contributions required if increased investment earnings are realized.

- This Act confirmed that employers may make ERS contributions in advance and provided that subsequent monthly payments would not be required if previous advance payments were sufficient to cover the required contributions for the month.
- Effective: July 1, 2016

Act 263 (HB1370): Relating to Domestic Relations Orders

The intent of this Act is to provide for direct payments by the ERS to an alternate payee pursuant to a Hawaii domestic relations order.

- A Hawaii domestic relations order creates or recognizes the right of an alternate payee, or assigns to an alternate payee, the right to receive all or a portion of the benefits payable with respect to a member or retirant under the ERS.
- Requires the ERS to make direct payments by a spouse or former spouse of an ERS member or retirant pursuant to a Hawaii domestic relations order.
- Effective: July 1, 2018

Act 1 (SSL SB2077): Relating to Hawaii Health Systems Corporation (HHSC) Maui Separation

- **Note: This Act was repealed on May 18, 2017 by Act 18 (SB207), SLH/2017 effective July 20, 2016**

The purpose of this Act was to provide severance payment or special early retirement benefits to three public Maui-based State hospital employees whose State jobs were being terminated and their employment transferred to a private operator as a result of Act 103/SLH 2015.

- This Act would allow this group of terminated employees the option of electing a cash severance payment or certain early retirement benefits from the State of Hawaii.

Note: The Employees' Retirement System determined its tax-qualification under the Internal Revenue Service (IRS) may be in jeopardy by allowing this election between taxable and tax-deferred benefits under Act 1. On August 9, 2016, the Employees' Retirement System (ERS) filed a lawsuit against the State of Hawaii and Hawaii Health Systems Corporation (HHSC) to stop Act 1, 2016 Hawaii Laws 2nd Special Session. A Temporary Restraining Order (TRO) granting the system's request was issued on August 22, 2016. On August 26, 2016, ERS submitted an expedited ruling request on the issue to the Internal Revenue Service. On September 27, 2016, the First Circuit Court issued a preliminary injunction confirming that Act 1 should be stayed until the ERS receives a response from the IRS.

On March 2, 2017, the IRS issued a private letter ruling stating that if Act 1 is enacted, the election permitted to choose the voluntary severance benefits or a subsidized early retirement benefit would constitute a "cash or deferred election" for the member, thus creating a "cash or deferred arrangement, and result in ERS not meeting the qualifications requirements IRC § 401(a). On May 18, 2017, this was repealed by Act 18, SLH/2017 retroactively effective as of July 20, 2016.

Employees' Retirement System

of the State of Hawaii

Submitted by

THE AUDITOR
STATE OF HAWAII

FINANCIAL SECTION

Independent Auditors' Report

KPMG LLP
Suite 2100
1003 Bishop Street
Honolulu, HI 96813-6400

The Auditor
State of Hawaii:

Report on the Financial Statements

We have audited the accompanying financial statements of the Employees' Retirement System of the State of Hawaii (the ERS) as of and for the year ended June 30, 2016 and the related notes to the financial statements, which collectively comprise the ERS' basic financial statements as listed in the table of contents.

Management's Responsibility for the Financial Statements

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

Auditor's Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in Government Auditing Standards, issued by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of 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 principles used and the reasonableness of significant estimates made by management, as well as evaluating the overall presentation of the financial statements.

The Auditor
State of Hawaii:

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

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the fiduciary net position of the Employees' Retirement System of the State of Hawaii as of June 30, 2016, and the changes in fiduciary net position for the year then ended, in conformity with U.S. generally accepted accounting principles.

Emphasis of Matter

As discussed in Note C(1) to the financial statements, in 2016, the ERS adopted Government Accounting Standards Board Statement No. 72, *Fair Value Measurement and Application*. Our opinion is not modified with respect to this matter.

Other Matters

Required Supplementary Information

U.S. generally accepted accounting principles require that the management's discussion and analysis on pages 31 through 37 and the required supplementary information, including the schedules of changes in the employers' net pension liability and related ratios, employers' net pension liability, employer contributions, and investment returns, on pages 75 through 84 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.

Supplementary and Other Information

Our audit was conducted for the purpose of forming an opinion on the financial statements that collectively comprise the ERS' basic financial statements.

The supplementary information including the combining schedule of changes in fiduciary net position, social security contribution fund, statement of changes in assets

The Auditor
State of Hawaii

and liabilities, schedules of administrative expenses and investment expenses in schedules 1 through 4 for the year ended June 30, 2016 is presented for purposes of additional analysis, and is not a required part of the basic financial statements. The combining schedule of changes in fiduciary net position, social security contribution fund – statement of changes in assets and liabilities, and schedules of administrative expenses and investment expenses are 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 combining schedule of changes in fiduciary net position, social security contribution fund – statement of changes in assets and liabilities, schedules of administrative expenses and fairly stated in all material respects in relation to the basic financial statements taken as a whole.

The information contained in the Introductory, Investment, Actuarial, and Statistical sections have not been subjected to the auditing procedures applied in the audit of the basic financial statements, and accordingly, we do not express an opinion or provide any assurance on them.

Other Reporting Required by *Government Auditing Standards*

In accordance with *Government Auditing Standards*, we have also issued our report dated November 29, 2017 on our consideration of the ERS' internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with Government Auditing Standards in considering the ERS' internal control over financial reporting and compliance.

KPMG LLP

Honolulu, Hawaii
November 29, 2017

Management's Discussion and Analysis (Unaudited)

This Management's Discussion and Analysis (MD&A) of the Employees' Retirement System of the State of Hawaii (the ERS) provides highlights and comparisons of the financial position and performance of the ERS as of and for the year ended June 30, 2016. The MD&A is presented as a narrative overview and analysis in conjunction with the Letter of Transmittal, which is included in the Introductory Section of the ERS Comprehensive Annual Financial Report (CAFR). For more detailed information pertaining to the ERS' financial activities, the reader should also review the actual financial statements, including the notes and supplementary schedules.

Overview of the Financial Statements

The ERS is responsible for administering a defined-benefit pension plan for state government, local government, and public education employees in the State of Hawaii (the State). The ERS also oversees the short-term investments of the federal Social Security employer contributions for the State in the Social Security Contribution Fund (Contribution Fund).

The ERS' financial statements include fiduciary type funds that are used to account for resources held for the benefit of parties outside of the ERS. The primary fund is defined as a Pension Trust Fund as these assets are held for the benefit of its members and their beneficiaries for the payment of pension benefits, while the Contribution Fund is an agency type fund that is custodial in nature. Throughout this discussion and analysis, units of measure (i.e., billions, millions, and thousands) are approximate, being rounded up or down to the nearest tenth of the respective unit value.

The ERS adopted Governmental Accounting Standards Board (GASB) Statement No. 72, *Fair Value Measurement and Application,* in 2016, which addresses accounting and reporting issues related to fair value measurements. This statement requires disclosures to be made about fair value measurements, the level of fair value hierarchy, and valuation techniques, that can be found in note F-2 Investments and Fair Value.

This discussion and analysis is intended to serve as an introduction to the ERS' financial reporting, which comprises the following components:

- The two main basic financial statements include the statement of fiduciary net position as of June 30, 2016, and the related statement of changes in fiduciary net position during the fiscal year from July 1, 2015 to June 30, 2016 (FY 2016). These provide a snapshot of the resources available at the end of the fiscal year and a summary of changes in resources available to pay pension benefits to members, retirees, and beneficiaries.
- The related notes to financial statements are an integral part of the basic financial statements and include detailed information that is essential to a full understanding of the data provided in the basic financial statements.
- The Required Supplementary Schedules of Changes in the Employers' Net Pension Liability and Related Ratios, Employers' Net Pension Liability, Employer Contributions and Investment Returns, and the related Notes to Required Supplementary Information, are required to be presented to supplement the basic financial statements for placing the financial statements in an appropriate operational, economic, or historical context.

- The remaining supplementary information are derived from and relate directly to the underlying accounting and other records used to prepare the financial statements, and provides additional detailed information concerning the changes in operating reserves established by legislation, and the operating and investment related expenses of the ERS.

Financial Highlights

- The fiduciary net position restricted for pension benefits (or net assets) decreased during FY 2016 to $14.1 billion resulting in a decline of the funded status of ERS to 51.3% as of June 30, 2016. This represents a decrease of -$0.4 billion, -2.8%, from the fiduciary net position restricted for pension benefits of $14.5 billion as of June 30, 2015.

- The ERS investment return (gross of fees) was -0.8% for the 2016 fiscal year compared to a moderate 4.2% return during the 2015 fiscal year, using the time-weighted rate of return methodologies that are generally accepted by the Global Investment Performance Standards (GIPS) (that is shown in the *Investment Section* of this CAFR). The investment program underperformed its actuarial and investment goal of 7.65% that was effective for the one-year period beginning July 1, 2015 (FY 2016; and subsequently reduced to 7.00% effective June 30, 2016). Under GASB Statement No. 67 pension reporting standards, the annual money-weighted return on ERS' pension plan investments, net of pension plan investment expense, was -1.2% and 4.0% for FY 2016 and FY 2015, respectively.

  Effective October 1, 2014, the Board of Trustees of the System approved the adoption of a change in its asset allocation policy from the asset-class policy to a new risk-based asset allocation framework within the categories of Broad Growth, Principal Protection, Real Estate and Real Return, that is expected to be implemented through 2020. The results of operations for these FY 2016 financial statements are prepared on the historical asset-based investment strategy since fixed income is the only asset class that has transitioned to the new risk based strategy as of June 30, 2016. Please refer to Note F1 later in Notes to Financial Statements and the Investment Section of this CAFR for more detailed information on the asset allocation policy.

- There was no legislation implemented in 2016 that significantly impacts the pension trust.

- The BOT implemented new actuarial assumptions effective June 30, 2016 (based on the five year experience study from 2010 to 2015) that significantly impacts the ERS valuation and net pension liability as of June 30, 2016. The main changes that impact the ERS are:

  - decrease investment return assumption from 7.65% to 7.00% effective June 30, 2016.

  - increase in life expectancy, adding an explicit assumption for continued future mortality improvement (generational approach).

- Total pension liability as of June 30, 2016 increased to $27.4 billion from June 30, 2015 that was $23.2 billion, while the corresponding net pension liability was $13.4 billion and $8.7 billion, respectively. Covered payroll for the ERS increased in FY 2016 to $4.1 billion from FY 2015 total of $4.0 billion, for 2.5% increase.

- The fiduciary net position as a percentage of total pension liability was 51.3% and 62.4% as of June 30, 2016 and June 30, 2015, respectively, while the funded ratio on an actuarial basis decreased to 54.7% from 62.2%, respectively. The main difference between the two methods is under GASB Statement No. 67 for financial reporting purposes the fiduciary net position is based only on the market value of assets while under actuarial value for the net assets for funding purposes allows for a four-year market smoothing of assets of net appreciation.
- Contributions from members and employers increased by a total of $52.1 million during FY 2016, or 5.5%. Most of the increase is due to an increase in required contribution rates paid by the employers for all employee groups, and to a lesser extent an increase in member contributions with more active members being required to contribute, and an increase in the number of new employees contributing at higher contribution rates. The historical summary of legislation impacting the ERS actuarial valuations is discussed in more detail in the "Summary of Plan Changes" in the Actuarial Section.
- Total retirement benefit payments increased by $61.9 million, or 5.3%, to $1,232.6 million in FY 2016 from $1,170.7 million in FY 2015. Pension benefits continues to increase due to 2.8% more retirees and beneficiaries (45,506 in 2016 versus 44,283 in 2015), an increase in the average pension benefit for new retirees, and the annual 2.5% postretirement increase.
- Administrative expenses remained relatively unchanged at $14.0 million in FY 2016 and FY 2015. Administrative expenses for all years were within the ERS' budgeted amounts.

Analysis of Fiduciary Net Position Restricted for Pension Trust

Summary of Fiduciary Net Position
June 30, 2016 and 2015
(Dollars in millions)

	2016	2015	FY 2016 % change
Assets:			
Cash and cash equivalents and short-term investments	$ 524.1	$ 656.5	(20.2) %
Receivables	331.7	213.5	55.4
Investments	13,636.5	14,145.3	(3.6)
Invested securities lending collateral	1,268.7	1,232.8	2.9
Equipment	6.3	8.3	(24.1)
Total assets	15,767.3	16,256.4	(3.0)
Liabilities			
Securities lending liability	1,268.7	1,232.8	2.9
Investment accounts and other payables	428.6	518.1	(17.3)
Total liabilities	1,697.3	1,750.9	(3.1)
Fiduciary net position restricted for pensions	$ 14,070.0	$ 14,505.5	(3.0)

Summary of Changes in Fiduciary Net Position
June 30, 2016 and 2015
(Dollars in millions)

	2016	2015	FY 2015 % change
Additions:			
Contributions	$ 993.4	$ 941.3	5.5 %
Net investment income (loss)	(169.4)	556.4	(130.4)
Total additions	824.0	1,497.7	(45.0)
Deductions:			
Retirement benefit payments	1,232.6	1,170.7	5.3
Refund of contributions	12.9	10.5	22.9
Administrative expenses	14.0	14.0	-
Total deductions	1,259.5	1,195.2	5.4
Increase (decrease) in fiduciary net position	$ (435.5)	$ 302.5	(244.0)

Investments, Investment Income, and Investment Expense

The ERS is a long-term investor and manages its pension assets with long-term objectives in mind. A primary element of the ERS' investment philosophy is diversification among various asset classes. The ERS makes estimates of long-term market returns and establishes an asset allocation strategy taking into account the risks associated with each asset class.

The rate of return (gross of fees time-weighted rate of returns) on the ERS investment portfolio during FY 2016 was -0.8% resulting from losses in public equity markets and the underperformance of most other asset classes, except real estate, compared to 4.2% in FY 2015. Total net investment loss was-$169.4 in FY 2016 compared to total net investment income of $556.4 in FY 2015.

Negative investment returns for FY 2016 were caused by losses in international equity of -10.5% and domestic equity of -1.9% and the underperformance of most other asset classes. Real estate was the only asset-type allocation that exceeded the 7.65% actuarial investment rate target benchmark for FY 2016 with returns of 15.1%. Other asset classes with positive returns that did not exceed the actuarial benchmark include real return at 5.3%, private equity at 5.2%, diversified fixed-income at 4.4%, covered calls at 3.6%, and international fixed income at 1.8%.

The ERS participates in a securities lending program through its global custodian as a way to earn incremental income to enhance the investment portfolio yield.

The asset distribution of the ERS' investment securities for the pension trust, excluding pending trade settlements and securities lending collateral, at June 30, 2016 and 2015 is presented below at fair value. Investment balances between the asset classes will change over time based on market sectors' performance and our rebalancing efforts to maintain asset allocation targets. Changes will also occur for financial reporting since certain real estate and alternative investments are reported on the consolidated method of accounting using the value of the underlying investments since ERS is the majority owner of the business organization. Please refer to the Investment Section of the CAFR for a discussion on asset allocation plan targets and investments by investment strategy.

Investments in short-term securities and cash are generally held by external investment managers for liquidity to settle pending trades and investments, and should not exceed 5-10 percent of the investments for certain managers based on their investment mandate. These amounts reported on the financial statements also include cash requirements used by ERS to fund pension benefits and transition amounts between individual investments. Fluctuations will occur based on the trading activity and timing of the settlements. The changes during FY 2016 are mainly due to losses in the public market equities and to a lesser extent asset rebalancing.

Asset Class
June 30, 2016 and 2015
(Dollars in millions)

	2016	%	2015	%
Short term investments and cash	$ 524.1	3.7 %	$ 656.5	4.4 %
Equity securities	8,541.9	60.3	9,261.5	62.6
Fixed income	3,117.1	22.0	2,807.1	19.0
Real estate	967.1	6.8	1,188.5	8.0
Alternative investments	1,010.4	7.2	888.2	6.0
Total investment assets	14,160.6	100.0	14,801.8	100.0
Less loans on real estate and alternative investments	170.2		247.4	
	$ 13,990.4		$ 14,554.4	

Investment expenses includes (a) investment management fees paid to external investment advisor firms that oversee the ERS' investment portfolio and (b) operational activities of certain real estate and alternative investments since these assets are reported on the consolidated method of accounting using the activity of the underlying investments since ERS is the majority owner of the business organization.

Total investment management fees earned by external investment advisors decreased approximately -30.3% during FY 2016 compared to FY 2015 primarily due to a decrease in incentive fees accrued during FY 2016 for excess returns earned by real estate managers on the separately managed accounts. The real estate investment managers may receive an incentive fee for superior investment returns by the manager above their corresponding benchmark, while maintaining an acceptable level of investment risk. Incentive fees are recognized on the accrual basis of accounting for the increase or decrease of the change in real estate values during the year, and are only paid upon the sale of the asset if the asset has "excess earnings" when the real estate asset is actually sold. The ERS requires external managers to provide the ERS with a "most favored nations" contract clause that guarantees the ERS with the lowest management fees the managers offer their clients for investment accounts with similar investment mandates and similar account size.

During FY 2016, the ERS was transitioning from a portfolio asset allocation return-based process to a risk-based process that makes use of strategic/functional classes that in-turn utilize underlying asset classes and strategies approved by the Board of Trustees in FY 2015. This framework shifts the portfolio asset allocation from a return-based process to a risk-based process that makes use of strategic/functional classes that in-turn utilize underlying asset classes and strategies. Each of these classes is designed to achieve a certain goal (e.g., Real Return class) and/or be exposed to a specific set of macroeconomic risks that are common among the different strategy types and/or assets within the class (e.g., Broad Growth class). As a result of this structure, each strategic class is expected to be exposed to a set of major and minor macroeconomic risks. The effect of the new risk-based methodology is discussed in the *Investment Section* of this CAFR.

Following the completion of an Asset-Liability Study in FY 2016 (that was started during FY 2015) the ERS adopted a new long-term strategic allocation policy which includes evolving policy targets designed to efficiently transition the Plan to the new long-term strategic allocation over time through June 30, 2020. The transition of the investment allocation is discussed in Note F-1, Investment Policy and the *Investment Section* of this CAFR.

Contributions

Contributions from employers and employees totaled $993.4 million and $941.3 million in FY 2016 and FY 2015, respectively. During FY 2016, total contributions increased by $52.1 million, or 5.5%, with the continued implementation of legislation passed in 2011 and 2012 that raised employer contribution rates for all employee groups and increased contribution rates for new members. The increase in contributions is mainly due to an increase in employer contribution rates effective July 1, 2015, and to a lesser extent, an increase in covered payroll and an increase in the percentage of active members required to make during the year. Please refer to the Financial Section in the ERS 2016 and 2015 CAFR for more information.

Pension Plan Benefits and Expenses

Pension benefit payments continue to be the primary expense of the ERS with payments increasing to $1,232.6 million in FY 2016 from $1,170.7 million in FY 2015. The pension benefits increase is attributed to the continued net increase in the number of retirees being paid, higher pension benefits for recent retirees, and the annual postretirement increase for ERS' retirees.

Refunds to terminating Hybrid and Contributory Class members increased during the year.

Administrative expenses remained relatively flat (a slight decrease) in FY 2016 compared to FY 2015. Increases in computer system maintenance and personnel-related costs, were offset by a decrease in professional services.

Pension Plan Changes

There was no significant legislation passed in 2016 that affects pension plan provisions. Pension plan changes, including legislative and Board of Trustees' actions, are summarized in the Introductory Section and Actuarial Section of the CAFR.

Actuarial Valuations and Measurement of Net Pension Liability

The recent investment return environments, compounded with new actuarial assumptions effective with the June 30, 2016 valuation, have materially changed the outlook for ERS. The actual FY 2016 investments underperformed the fiscal year 7.65% investment return assumption (effective July 1, 2015) on a market basis and a smoothed basis; and liabilities grew faster than expected due to salary increases being larger than the fiscal year expectations. The Board of Trustees adopted new actuarial assumptions effective with the June 30, 2016 valuation based on the actuarial experience study from July 1, 2010 to June 30, 2015. The main changes in new actuarial assumptions adopted by the Board of Trustees effective with the June 30, 2016 valuation compared to the June 30, 2015 valuation include:

- decrease investment return assumption from 7.65% to 7.00% effective June 30, 2016.
- increase in life expectancy, adding an explicit assumption for continued future mortality improvement (generational approach).

The total pension liability for fiscal year ended June 30, 2016 is based on the actuarial valuation performed as of June 30, 2016 and a measurement date of June 30, 2016.

Per the valuation as of June 30, 2016, the ERS' total pension liability was $27.4 billion, covered payroll totaled $4.1 billion, and the ERS' fiduciary net position was $14.1 billion resulting in a net pension liability of $13.4 billion. The June 30, 2015 valuation results include the ERS' total pension liability of $23.2 billion, covered payroll at $4.0 billion, and the ERS' fiduciary net position of $14.5 billion resulting in a net pension liability of $8.7 billion. The ERS' fiduciary net position as a percentage of total pension liability was 51.3% and 62.4% on June 30, 2016 and 2015, resulting in the net pension liability as a percentage of covered payrolls of 325.1% and 218.6%, respectively. Most of the increase in pension liabilities is based on reducing the investment return assumption to 7.00% effective with the June 30, 2016 valuation, followed by increasing life expectancy (mortality assumption), and to a lesser extent overall payroll growth and individual salary increases.

Based on the results of the actuarial valuation as of June 30, 2016, including existing statutory employer contribution rates, the ERS actuary determined the funding period for paying off the unfunded actuarial accrued liability (UAAL) of the ERS Pension Trust is 66 years. Because this period exceeds the 30 years, the objectives set in Hawaii Revised Statutes (HRS) are currently not being realized. (HRS§88-122(e)(1) state that the employer contribution rates are subject to adjustment when the funding period is in excess of 30 years.)

Future Events Affecting the ERS (effective after June 30, 2016)

Increase in Statutory Employer Contribution Rates – Future State and counties employer contributions are expected to increase pursuant to a phased-in contribution rate increase over four years beginning July 1, 2017. Per Act 17 (SLH 2017), the rate for Police and Fire employees increases to 28.00% on July 1, 2017; 31.00% on July 1, 2018; 36.00% on July 1, 2019; and 41.00% on July 1, 2020 and the rate for All Other Employees increases to 18.00% on July 1, 2017; 19.00% on July 1, 2018; 22.00% on July 1, 2019; and 24.00% on July 1, 2020. These employer contribution rates are applied to the total covered payroll in each respective category to determine the required employer contributions, and are not incorporated in the ERS' June 30, 2016 actuary valuation.

Requests for Information

This financial report is designed to provide a general overview of the Employees' Retirement System of the State of Hawaii's finances. For questions concerning any information in this report or for additional information, contact the Employees' Retirement System of the State of Hawaii, 201 Merchant Street, Suite 1400, Honolulu, Hawaii 96813.

Financial Statements

Combining Statement of Fiduciary Net Position

June 30, 2016

Assets		
Cash and cash equivalents and short-term investments		
Cash and cash equivalents	$	71,906,104
Short-term investments		452,234,648
		524,140,752
Receivables		
Accounts receivable and others		5,546,300
Investment sales proceeds		197,451,653
Accrued investment income		49,758,195
Employer and member contributions		78,921,403
		331,677,551
Investments, at fair value		
Equity securities		8,541,857,929
Fixed income securities		3,117,134,649
Real estate investments		967,131,489
Alternative investments		1,010,360,689
		13,636,484,756
Other		
Invested securities lending collateral		1,268,719,491
Equipment, at cost, net of depreciation		6,287,484
		1,275,006,975
Total assets		15,767,310,034
Liabilities		
Accounts and other payables		46,683,310
Payable for securities purchased		211,762,793
Securities lending collateral		1,268,719,491
Notes payable		170,165,523
Total liabilities		1,697,331,117
Commitments and contingencies		
Fiduciary net position restricted for pensions	$	14,069,978,917

See accompanying notes to financial statements

Financial Statements (continued)

Statement of Changes in Fiduciary Net Position

Year ended June 30, 2016

Additions		
Contributions		
Employer contributions	$	756,558,222
Member contributions		236,801,861
Total contributions		993,360,083
Investment income		
From investing activities:		
Net depreciation in fair value of investments		(526,781,374)
Interest on fixed income securities		111,375,783
Dividends on equity securities		148,730,385
Income on real estate investments		90,598,348
Interest on short-term investments		467,823
Alternative investment income		85,051,373
Miscellaneous		575,897
		(89,981,765)
Less investment expenses		87,271,479
Net investment loss from investing activities		(177,253,244)
From securities lending activities:		
Securities lending income		9,060,237
Securities lending expenses, net		1,175,103
Net investment income from securities lending activities		7,885,134
Total net investment loss		(169,368,110)
Total additions		823,991,973
Deductions		
Benefit payments		1,232,589,353
Refunds of member contributions		12,927,672
Administrative expenses		13,960,587
Total deductions		1,259,477,612
Net decrease in fiduciary net position		(435,485,639)
Fiduciary net position restricted for pensions		
Beginning of year		14,505,464,556
End of year	$	14,069,978,917

See accompanying notes to financial statements.

June 30, 2016

Note A – Description of the ERS

1. General

The Employees' Retirement System of the State of Hawaii (the ERS) began operations on January 1, 1926, having been established by the Territorial Legislature in the preceding year. The provisions of the ERS are contained in Chapter 88 of the Hawaii Revised Statutes (HRS) and applicable provisions of the federal Internal Revenue Code. The ERS is a cost-sharing, multiple-employer public employee retirement system established as a defined benefit pension plan to administer a pension benefits program for all State and county employees, including teachers, professors, police officers, firefighters, correction officers, judges, and elected officials.

The ERS is a qualified defined-benefit pension plan under Section 401(a) of the Internal Revenue Code. The ERS' current favorable determination letter from the Internal Revenue Service expires on January 31, 2019. Since January 1, 1988, member contributions have been tax deferred under Section 414(h)(2) of the Internal Revenue Code, and Chapter 88 mandates that employers pick up the employee contributions. These contributions are classified as member contributions in the financial statements. As a public entity, the ERS is not required to file a federal income tax return with the Internal Revenue Service. As a defined-benefit pension plan, the ERS is required to withhold federal income tax from member and benefit recipient payments in accordance with the Internal Revenue Code.

Effective July 20, 2016, Act 1 (SSLH 2016), provided either a severance payment or a special early retirement benefit to certain members. In August 2016, the ERS obtained a Temporary Restraining Order delaying the implementation of Act 1 and requested a Private Letter Ruling from the Internal Revenue Service regarding a critical tax qualification issue since the United States Internal Revenue Code does not permit governmental defined benefit pension plans like the ERS to offer employees a choice between a "cash or deferred arrangement." In March 2017, ERS received a private letter ruling confirming that the election would constitute a "cash or deferred arrangement" if Act 1 was enacted. As of May 18, 2017, there is no impact to ERS regarding this issue with the passage of Act 18 (SLH 2017), that repeals Act 1 retroactive to July 20, 2016, its effective date.

The ERS Pension Trust is comprised of three pension classes for membership purposes and considered to be a single plan for accounting purposes because all assets of the ERS may legally be used to pay the benefits of any of the ERS members or beneficiaries, as defined by the terms of the ERS. The ERS provides retirement, survivor, and disability benefits for three membership classes known as the contributory, hybrid, and noncontributory members.

Generally, all full-time employees of State and counties of Hawaii are required to be members of the ERS. Some positions of the State and counties of Hawaii are not eligible for ERS membership and may be covered by another separate retirement program. Membership of the plan and the benefits provided are based on the individual's employment group and ERS membership date. A member may belong to only one class based on their latest employment. A member may change classes in certain situations due to a change in their employment date or job classification. If a member earns service in different classes or benefit structures, the member's retirement benefit is bifurcated based on the applicable membership service earned (such as service credits and benefit multiplier percentage of such service).

The two major employment groups applicable to employer and member contribution rates, vesting requirements, and benefit provisions are (a) Police and Firefighters and (b) All Other Employees. There are four major benefit structures for contributory class members based on employment group and membership date while there are two benefit structures for hybrid class members based on their membership date as discussed below. The noncontributory class has one benefit structure.

Note A – Description of the ERS (continued)

1. General (continued)

Employer, pensioner, and employee membership data as of March 31, 2016 are as follows:

Employers:	
State	1
County	4
Total employers	5
Pensioners and beneficiaries currently receiving benefits:	
Pensioners currently receiving benefits:	
Police and firefighters	3,466
All other employees	38,188
Total pensioners	41,654
Beneficiaries currently receiving benefits:	
Police and firefighters	285
All other employees	3,567
Total beneficiaries	3,852
Total pensioners and beneficiaries	45,506
Terminated vested members entitled to benefits but not yet receiving benefits:	
Police and firefighters	366
All other employees	7,375
Total terminated vested members	7,741
Inactive members	
Police and firefighters	599
All other employees	13,955
Total inactive members	14,554
Total terminated vested and inactive members	22,295
Active members:	
Vested:	
Police and firefighters	4,221
All other employees	45,265
Total vested members	49,486
Nonvested:	
Police and firefighters	866
All other employees	17,025
Total nonvested members	17,891
Total active members	67,377
Total membership	135,178

Note A – Description of the ERS (continued)

2. The Financial Reporting Entity

As required by U.S. generally accepted accounting principles, these financial statements present the ERS (the primary government) as a separate reporting entity from the State of Hawaii (the State). The ERS is not part of the State's financial reporting entity because it is a separate legal entity that is fiscally independent of the State. The ERS was established by Chapter 88 of the HRS and is governed by a Board of Trustees (the Board) as discussed below.

The Board administers the ERS on behalf of public employees of both the State and county governments. Except for limited administrative functions, the State does not have the power to supervise or control the Board in the exercise of its functions, duties, and powers. The Board consists of eight members. The State Director of Finance is a statutory member of the Board. Four members of the Board are elected by members and retirants of the ERS and the other three members of the Board are appointed by the Governor. Decisions are made with the concurring vote of five members of the Board. The Board appoints the Executive Director and Chief Investment Officer and engages actuarial and other services required to transact the business of the ERS.

3. Class Descriptions and Funding Policy

Members of the ERS are contributory, hybrid, or noncontributory members. All assets of the ERS (in the Pension Trust) may be used to pay benefits to any member of the ERS. Contribution rates are determined by state law as a percentage-of-payroll.

The statutory employer contribution rate includes the normal cost and accrued liability contribution and is determined separately for two groups of employees: (a) police officers and firefighters and (b) all other employees. Employer contribution rates are subject to adjustment in certain situations based on the plan's funded status or actuarial investigations. The ERS performs an actuarial investigation of the experience at least once every five years, plus an annual actuarial valuation of the assets and liabilities of the funds of the pension trust. The Board of Trustees adopts mortality, service, and other assumptions, factors, and tables as deemed appropriate and necessary, based on the actuarial investigation and actuary recommendation. Generally, actuarial assumptions and methods were adopted by Board of Trustees on December 12, 2016 as recommended by Gabriel, Roeder, Smith and Company (GRS) (from the 2015 Experience Study for the five-year period from June 30, 2010 through June 30, 2015) while the investment return assumption was adopted beginning with the 2016 valuation. See the Actuarial Section for all actuarial assumptions used.

Note A – Description of the ERS (continued)

3. Class Descriptions and Funding Policy (continued)

Effective July 1, 2008, the statutory employer contribution rate for employees in the Police and Fire category increased from 15.75% to 19.70%, and the rate for employees in the All Other category increased from 13.75% to 15.00%. Per legislation passed in 2011, the rate for Police and Fire employees increased to 22.00% on July 1, 2012; 23.00% on July 1, 2013; 24.00% on July 1, 2014; and 25.00% on July 1, 2015 and the rate for All Other Employees increased to 15.50% effective July 1, 2012; 16.00% effective July 1 2013; 16.50% effective July 1, 2014; and 17.00% effective July 1, 2015. These employer contribution rates are applied to the total covered payroll in each respective category to determine the required employer contributions. Administration of the Pension Trust is financed through contributions from the employers and employees (if applicable) and investment earnings.

Per Act 17 (SLH 2017), future employer contributions from State and counties are expected to increase pursuant to a phased-in contribution rate increase over four years beginning July 1, 2017. The rate for Police and Fire employees increases to 28.00% on July 1, 2017; 31.00% on July 1 , 2018; 36.00% on July 1, 2019; and 41.00% on July 1, 2020 and the rate for All Other Employees increases to 18.00% on July 1, 2017; 19.00% on July 1, 2018; 22.00% on July 1, 2019; and 24.00% on July 1, 2020. These future rate increases are not incorporated in the ERS' June 30, 2016 actuary valuation.

Note A – Description of the ERS (continued)

3. Plan Descriptions and Funding Policy (continued)

Effective July 1, 2012, employers may be required to make additional employer contributions to the ERS in certain situations. This legislation requires employers to pay additional contributions if a retiring employee, who was first employed prior to July 1, 2012 and who was last employed by the employer, has significant non-base pay increases included in their average final compensation. The additional contribution is equal to the actuarial present value of the additional benefits earned due to the "excessive" non-base pay increases.

Until June 30, 1984, all employees were required to be contributory members. Employees covered by Social Security on June 30, 1984 were given the option of changing to a noncontributory member or remain a contributory member. All new employees hired after June 30, 1984 and before July 1, 2006, who are covered by Social Security, were generally required to be noncontributory members. Qualified employees that were contributory or noncontributory members were given the option to change to Hybrid Class benefits structure effective July 1, 2006, or remain in their existing class. Starting July 1, 2006, all new employees covered by Social Security are required to be Hybrid Members, unless they are required to be Contributory members. Most employees not covered by Social Security (primarily Police and Fire employees) are required to be Contributory members.

The three membership classes provide a monthly retirement allowance (maximum allowance) equal to the benefit multiplier % (generally 1.25% or 2%), multiplied by the average final compensation (AFC), multiplied by years of credited service. The benefit multiplier decreased by 0.25% for new hybrid and contributory members hired after June 30, 2012. If a member earns service in a different benefit structure, the member's retirement benefit is bifurcated based on the applicable membership service earned (such as service credits and benefit multiplier percentage of such service). In lieu of the maximum allowance, the member may elect to receive an actuarially equivalent alternate retirement option with a reduced lifetime allowance (such as survivor benefit).

The AFC is the average salary earned during the five highest paid years of service, including the payment of salary in lieu of vacation, or three highest paid years of service, excluding the payment of salary in lieu of vacation, if the employee became a member prior to January 1, 1971. The AFC for members hired on or after this date, and before July 1, 2012, is based on the three highest paid years of service excluding the payment of salary in lieu of vacation. For new members hired after June 30, 2012, the AFC is based on the five highest paid years of service excluding the payment of salary in lieu of vacation.

For postretirement increases, every retiree's original retirement allowance is increased by 2.5% on each July 1 following the calendar year of retirement, if the retiree became an ERS member prior to July 1, 2012. This cumulative benefit is not compounded and increases each year by 2.5% of the original retirement allowance without a ceiling (2.5% of the original retirement allowance the first year, 5.0% the second year, 7.5% the third year, etc.). For new members hired after June 30, 2012, the postretirement annuity increase was decreased to 1.5% per year of the original retirement allowance without a ceiling (1.5% of the original retirement allowance the first year, 3.0% the second year, 4.5% the third year, etc.).

Note A – Description of the ERS (continued)

3. Class Descriptions and Funding Policy (continued)

The following summarizes the provisions relevant to the largest employee groups of the respective membership class. Retirement benefits for certain groups, such as sewer workers, judges, and elected officials, vary from general employees.

All contributions, benefits, and eligibility requirements are governed by Chapter 88 of the Hawaii Revised Statutes. For a more detailed summary of benefits for employees and a description of special provisions to groups of employees, refer to the Summary of Retirement Benefit Plan Provisions contained in the *Introductory Section* of this report. All of the statutory member contributions discussed in this section are classified as “member contributions” with the adoption of GASB Statement No. 82.

Contributory

Police officers, firefighters, and certain other members that are not covered by Social Security first hired prior to July 1, 2012 contribute 12.2% of their salary and receive a retirement benefit using the benefit multiplier of 2.5% for qualified service, up to a maximum of 80% of AFC. These members may retire at age 55 with 5 years of credited service or at any age with 25 years of credited service, provided the last 5 years of credited service is any of the qualified occupations.

Police officers, firefighters and certain other members that are not covered by Social Security first hired after June 30, 2012 contribute 14.2% of their salary and receive a retirement benefit using the benefit multiplier of 2.25% for qualified service, up to a maximum of 80% of AFC. These members may retire at age 60 with 10 years of credited service or at age 55 with 25 years of credited service, provided the last 5 years of credited service is any of the qualified occupations.

All other employees hired prior to July 1, 2012 are required to contribute 7.8% of their salary and are fully vested for benefits upon receiving 5 years of credited service. Contributory members may retire with full benefits at age 55 and 5 years of credited service. They may take early retirement at any age with at least 25 years of credited service and receive benefits reduced 5% per year under age 55 plus 4% per year under age 50. The benefit multiplier is 2% for employees covered by Social Security.

All other employees in the contributory class hired after June 30, 2012 are required to contribute 9.8% of their salary and are fully vested for benefits upon receiving 10 years of credited service. These members may retire with full benefits at age 60 and 10 years of credited service. Members may take early retirement at age 55 with 25 years of credited service and receive benefits reduced by 5% per year under age 60. The benefit multiplier is 1.75% for employees covered by Social Security.

Note A – Description of the ERS (continued)

3. Plan Descriptions and Funding Policy (continued)

Hybrid

All other employees hired before July 1, 2012 are required to contribute 6% of their salary and are fully vested for benefits upon receiving 5 years of credited service. Employees may retire with full benefits at age 62 and 5 years of credited service or at age 55 and 30 years of credited service. Early retirement benefits are available at age 55 and 20 years of credited service with benefits reduced by 5% per year under age 62. The benefit multiplier used to calculate retirement benefits is 2%. Hybrid members are covered by Social Security.

All other employees hired after June 30, 2012 are required to contribute 8% of their salary and are fully vested for benefits upon receiving 10 years of credited service. Employees may retire with full benefits at age 65 and 10 years of credited service or at age 60 and 30 years of credited service. Early retirement is available at age 55 and 20 years of credited service with benefits reduced 5% per year under age 65. The benefit multiplier used to calculate retirement benefits is 1.75%. Hybrid members are covered by Social Security.

Noncontributory

All other employees are fully vested upon receiving 10 years of credited service. The employer is required to make all contributions for these members. Employees may retire with full benefits at age 62 years and 10 years of credited service or age 55 and 30 years of credited services. Early retirement is available at age 55 years and 20 years of credited service with benefits reduced by 6% per year under age 62. The benefit multiplier used to calculate retirement benefits is 1.25%.

Ordinary disability retirement benefits require a minimum of 10 years of service, whereas service-connected disability resulting from a job-related accident does not have any service requirement. There is no age requirement to qualify for disability benefits.

Ordinary death benefits for contributory and noncontributory members require at least one year and ten years of service, respectively. Ordinary death benefits for hybrid members require five years of service if hired prior to July 1, 2012 or ten years of service if hired after June 30, 2012. There is no service requirement to qualify for service-connected death benefits.

4. The ERS as Employer

As an employer, the ERS participates in its pension benefits program, through the State. The ERS provides benefits for all of its full-time employees as contributory, hybrid, or noncontributory membership. Contributions are calculated as part of the State's total contribution requirements and are reimbursed to the State's General Fund as part of the fringe benefit rate on the ERS' employees' actual salaries.

Note A – Description of the ERS (continued)

5. Other Post Employment Benefits (OPEB)

In addition to the retirement benefits provided by the ERS Pension Trust, the participating employers, pursuant to HRS Chapter 87A, provide certain healthcare and life insurance benefits for State and county qualified employees and retirees. The Hawaii Employer-Union Health Benefits Trust Fund (EUTF) was established on July 1, 2003 to design, provide, and administer health benefits plans and a group life insurance benefits program for State and county employees and retirees.

Under Section 87A-33 of the HRS, the participating employers pay the EUTF a base monthly contribution for the health benefits plans of certain retired employees, including those who were hired before July 1, 1996 and retired after June 30, 1984, with ten or more years of credited service.

Under Section 87A-34 of the HRS, the participating employers pay the EUTF one-half of the base monthly contribution for the health benefits plans of retired employees who were hired before June 30, 1996, and retired after June 30, 1984, with fewer than ten years of credited service.

Under Sections 87A-35 and 87A-33(a)(6) of the HRS, the participating employers pay the EUTF for the health benefits plans of retired employees who were hired after June 30, 1996 but before July 1, 2001: (a) one-half of the base monthly contribution if the employee retired with between ten and fifteen years of credited service; (b) seventy-five percent of the base monthly contribution if the employee retired with between fifteen and twenty-five years of credited service; and (c) one hundred percent of the base monthly contribution if the employee retired with twenty-five or more years of credited service.

Under HRS § 87 A-36, the participating employers pay the EUTF for the health benefits plans of retired employees who were hired after June 30, 2001: (a) one-half of the base monthly contribution for a self-only plan if the employee retired with between ten and fifteen years of credited service; (b) seventy-five percent of the base monthly contribution for a self-only plan if the employee retired with between fifteen and twenty-five years of credited service; and (c) one hundred percent of the base monthly contribution for a self-only plan if the employee retired with twenty-five or more years of credited service.

Under Section 87A-37 of the HRS, the participating employers pay the EUTF a base monthly contribution (currently $4.16) for each retired employee enrolled in the EUTF group life insurance plan.

The net assets of the EUTF are not included in the ERS plan net assets. The EUTF issues a financial report that includes financial statements and required supplementary information.

Note B – Social Security Contribution Fund

The Social Security Contribution Fund (Contribution Fund) was established under Section 88-224 of the HRS for the following purposes:

1. To receive all federal Social Security employers' contributions from the State and interest and penalties on unpaid amounts;

2. To receive any appropriations to the Contribution Fund;

3. To pay amounts required to be paid to the Internal Revenue Service (IRS); and

4. To invest and collect income on resources held by the Contribution Fund.

All other non-State governmental agencies remit Social Security contributions directly to the IRS. Social Security contributions withheld from employees are remitted directly to the IRS by the employers. The Contribution Fund is considered an agency fund for financial reporting purpose. At June 30, 2016, the ERS held no amounts in the Contribution Fund as all amounts deposited into the Contribution Fund were paid directly to the IRS.

Note C – Summary of Significant Accounting Policies

A summary of the significant accounting policies consistently applied in the preparation of the accompanying financial statements follows:

1. Basis of Accounting

Fiduciary funds are used to account for assets held by the ERS in a trustee capacity or as an agent for individuals, private organizations, other governments, and/or other funds. The fiduciary fund types used by the ERS are a Pension Trust Fund and the Social Security Fund as an agency fund. Each of the fiduciary funds is considered a separate fiscal and accounting entity with a self-balancing set of accounts that comprise its assets, liabilities, equity, revenues and expenditures, or expenses, as appropriate. The accounting and reporting treatment applied to a fund is determined by its measurement focus. The Pension Trust Fund is accounted for on a flow of economic resources measurement focus. As an agency fund, the Contribution Fund is custodial in nature and does not measure results of operations.

The financial statements are prepared in conformity with U.S. generally accepted accounting principles (GAAP) using the accrual basis of accounting. Employer and member contributions are recognized in the period in which the contributions are legally due. Benefits and refunds are recognized when due and payable in accordance with the terms of the plan. Investment purchases and sales are recorded as of their trade date. Administrative expenses are financed exclusively with investment income.

Note C – Summary of Accounting Policies (continued)

1. Basis of Accounting (continued)

The ERS adopted Governmental Accounting Standards Board (GASB) Statement No. 72, Fair Value Measurement and Application, in fiscal year 2016, which addresses accounting and reporting issues related to fair value measurements. The definition of fair value 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. This statement requires disclosures to be made about fair value measurements, the level of fair value hierarchy, and valuation techniques, that can be found in note C-2, Method Used to Value Cash and Investments and note F-2, Investments and Fair Value.

2. Method Used to Value Cash and Investments

The ERS' investment policy for cash and investments, including the legal authority, are discussed below in Note F. Note F below includes a comprehensive discussion on fair value including the disclosure requirements of fair value required by GASB Statement No. 72.

Cash, investments and notes payable in the Pension Trust are reported at fair value. Unrealized gains and losses are included as investment income in the statement of changes in fiduciary net position. The investments of the Pension Trust Fund and Contribution Fund (the Retirement Funds) are valued on a monthly basis.

3. Revenue Recognition

Interest and dividend income is recognized when earned. Capital gains and losses are recognized on a trade-date basis. Purchases and sales of investments are also recorded on a trade-date basis.

Contributions are recorded when legally due.

4. Payment of Benefits

Withdrawals are recorded when due and payable in accordance with the terms of the plan.

5. Securities Lending

The ERS records collateral received under securities lending agreements where the ERS has the ability to spend, pledge, or sell the collateral without borrower default. Liabilities resulting from these transactions are also recorded. Additionally, costs associated with securities transactions, broker commissions paid, and lending agent management fees are reported as investment expenses in the accompanying financial statements. The statement of fiduciary net position does not include detailed holdings of securities lending collateral by investment classification.

Note C – Summary of Accounting Policies (continued)

6. Interest and Earnings Allocation

Pursuant to Sections 88-21 and 88-107 of the HRS, the Board shall annually allocate interest and other earnings of the Pension Trust Fund to the funds of the Pension Trust Fund, as follows:

a. Annuity Savings Reserve – Fixed at 4-1/2% regular interest rate for employees hired before July 1, 2011 and 2% regular interest rate for employees hired after June 30, 2011.

b. Expense Reserve – To be credited with all money to pay the administrative expenses of the ERS.

c. Pension Accumulation Reserve – To be credited with any remaining investment earnings.

7. Risk Management

The ERS reports liabilities, as discussed in note H, related to certain types of losses (including torts, theft of, damage to, or destruction of assets, errors or omissions, natural disasters, and injuries to employees) when it is probable that the losses have occurred and the amount of those losses can be reasonably estimated.

8. Use of Estimates

In preparing financial statements in conformity with accounting principles generally accepted in the United States, management is required to make estimates and assumptions that affect certain reported amounts and disclosures. Actual results could differ from those estimates.

Investments in limited partnerships and other alternative investments tend to be illiquid and the underlying assets are generally not publicly traded companies. Because of the inherent uncertainty in valuing privately held securities, the fair value may differ from the values that would have been used had a ready market for such securities existed, and the difference can be material. Accordingly, the realized value received upon the sale of the asset may differ from the recorded fair value.

The total pension liability is based on calculations that incorporate various actuarial and other assumptions, including discount rate, mortality, investment rate of return, inflation and payroll growth. The actuarial assumptions were based on the results of an experience study for the period from July 1, 2010 through June 30, 2015.

9. Recently Issued Accounting Policies

In January 2017, GASB issued Statement No. 84, Fiduciary Activities. Statement No. 84 establishes criteria for identifying fiduciary activities and guidance on reporting those activities. This Statement provides guidance on four fiduciary funds that should be reported, if applicable: pension (and other employee benefit) trust funds, investment trust funds, private-purpose trust funds, and custodial funds. GASB Statement No. 784 will be effective for periods beginning after December 15, 2018. ERS has not yet determined the impact of this standard on its financial statements and disclosures.

Note D – Description of Reserves

Section 88-109 of the HRS requires the establishment and maintenance of specific reserves within the ERS. The reserves in the Pension Trust Fund and their purposes are described hereunder:

1. **Pension Accumulation Reserves**

   To accumulate contributions made by the State and counties (except member contributions "picked up" as employer contributions under pursuant to IRC Section 414(h)(2)), transfers of retired members' contributions plus related interest income from the Annuity Savings Reserve and income from investments. All pension benefits, including the pensioners' bonus, are paid through this reserve.

2. **Annuity Savings Reserves**

   To accumulate members' contributions (including member contributions "picked up" as employer contributions under pursuant to IRC Section 414(h)(2)) and related interest income. Upon a member's retirement, the accumulated contributions and related interest income are transferred to the Pension Accumulation Reserve or refunded to the member upon termination.

3. **Expense Reserves**

   To pay all the expenses necessary in connection with the administration and operation of the ERS, the Board estimates the amount of money necessary to be paid into the expense reserve for the ensuing biennium to provide for the expense of operation of the ERS, and pays that amount into the expense account from the investment earnings of the ERS, subject to review by the legislature and approval by the Governor.

Fiduciary net position restricted for pensions as of June 30, 2016 are as follows:

		2016
Pension Accumulation Reserve	$	11,585,911,670
Annuity Savings Reserve		2,474,556,296
Expense Reserve		9,510,951
Total fiduciary net position restricted for pensions	$	14,069,978,917

Note E – Contributions

The ERS' funding policy provides for periodic employer contributions expressed as a percentage of annual covered payrolls. The funding method used to calculate the total employer contribution required is the entry age normal actuarial cost method. Employer contributions are governed by Chapter 88 of the HRS. The actuarially determined contribution rates may differ from the statutory contribution rates.

Employer rates are set by statute based on the recommendation of the ERS actuary resulting from an experience study conducted every five years. Since July 1, 2005, employer contribution rates are a fixed percentage of compensation, including the normal cost plus amounts required to pay for the unfunded actuarial accrued liability. From July 1, 2005 to June 30, 2008, the required contribution rates for employers were 15.75% for their police officers and firefighters, and 13.75% for all other employees. From July 1, 2008 to June 30, 2012, employers contributed 19.70% for their police officers and firefighters, and 15.00% for all other employees. Effective July 1, 2012, the employer rate increased to 22.00% for their police officers and firefighters, and 15.50% for all other employees. Effective July 1, 2013, the employer rate increased to 23.00% for their police officers and firefighters, and 16.00% for all other employees. Effective July 1, 2014, the employer rate increased to 24.00% for their police officers and firefighters, and 16.50% for all other employees. Effective July 1, 2015, the employer rate increased to 25.00% for their police officers and firefighters, and 17.00% for all other employees.

The employer normal cost is the level percentage of payroll contribution required to pay all benefits. Actuarial gains and losses resulting from differences between actual and assumed experience are reflected in the employer unfunded accrued liability.

Effective July 1, 2012, the last employer is required to make "additional contributions" to the ERS for employees that first became ERS members before July 1, 2012 and retire after June 30, 2012, if the member has "excessive" non-base pay during the last 10 years of employment. The additional contributions are based on the increased costs of the actuarial equivalent increase in pension benefits the member will be paid in retirement compared to the pension benefits that would be paid if the member did not have excess non-base pay in their Average Final Compensation amount.

Member contributions rates are statutorily established in accordance with Chapter 88 of the HRS, and are discussed in note A.3, Plan Descriptions and Funding Policy above. Since 1989, participating employers "pick up" ERS member contributions made by payroll deduction as "employer contributions" for tax purposes under IRC section 414(h)(2). These contributions are classified as member contributions being paid by the member for ERS purposes.

Note F – Deposit and Investment Disclosures

1. Investment Policy

Investments are governed pursuant to Sections 88-119 and 88-119.5 of the HRS. The Pension Trust Fund may invest in real estate loans and mortgages; preferred and common stocks; government obligations; corporate obligations; certain other debt obligations (such as obligations secured by collateral of certain other authorized securities listed here, obligations issued or guaranteed by certain development banks, and insurance company obligations); real property; alternative investments; and other securities and futures contracts. Investments in the Securities Lending Collateral Pool and the Contribution Fund are limited to investment grade, short-term marketable securities.

Note F – Deposit and Investment Disclosures (continued)

1. Investment Policy (continued)

The investment decision is further dictated by internal investment policies and asset allocation established by the Board. As a long-term investor, the ERS has established through its investment policy that preservation of capital is the primary goal of the ERS. Preservation of capital is to be attained with a consistent, positive return for the fund by diversifying the investment portfolio. The ERS recognizes risk associated for individual securities or asset classes may be reduced through diversification. Investments will be prudent and consistent with the best investment practices, in accordance with the Board's asset allocation strategy, assigned investment mandate, and in compliance with Chapter 88, HRS, as amended.

Use of leverage is restricted to certain asset classes in order to enhance yields of approved investments and/or to facilitate diversification of the portfolio. The use of debt must result in positive leverage where cash flow is in excess of debt service. Plan assets are managed on a total return with the long-term objective of achieving and maintaining a fully funded status basis (when combined with receiving the required employer and member contribution requirements) for the benefits provided through the Pension Trust. As part of the investment policy, the Board reviews the asset allocation annually and should perform a formal asset allocation study at least every three years to verify or amend the targets.

The Board of Trustees initiated a new asset-liability study during fiscal year 2015 that was completed during fiscal year 2016. As a result of the 2015 Asset-Liability Study, the Board adopted a new long-term strategic allocation policy which included evolving policy targets designed to efficiently transition the Plan to the new long-term strategic allocation over time. The 2015 Asset-Liability Study, and the approved long-term strategic allocation, fully incorporated the new risk-based, functional allocation framework. The following table shows the high level strategic allocation policy mapping, coupled with the actual ERS portfolio, that reflect the initial stages of decisions made during the 2015 Asset-Liability Study for the transition in methodologies that the ERS was strategically invested in during FY 2016.

Historical Asset Type Asset Allocation		Risk Based Asset Allocation			
Prior Asset Classes	Long-term Strategic Allocation	Broad Growth	Principal Protection	Real Return	Real Estate
Domestic Equity	30%	30%			
Non-US Equity	26%	26%			
Fixed Income	20%	8%	12%		
Real Estate	7%				7%
Private Equity	7%	7%			
Real Return	5%			5%	
Covered Calls	5%	5%			
Total	100%	76%	12%	5%	7%

Note F – Deposit and Investment Disclosures (continued)

1. Investment Policy (continued)

The ERS will strategically invest in the following classes:

Strategic Allocation (risk-based classes)	Strategic Class Weights	Expected Long-term Geometric Average Return	Expected Long-term Real Return[1]	Expected Annual Standard Deviation
Broad Growth	63%	8.35%	6.10%	14.65%
Principal Protection	7%	2.20%	-0.05%	3.50%
Real Return	10%	6.15%	3.90%	9.80%
Crisis Risk Offset	20%	5.50%	3.25%	11.55%
Total Portfolio	**100%**			

[1] Uses an expected inflation of 2.25%

It is expected that the ERS's implementation of the new long-term strategic allocation approved in FY 2016 will be completed by the end of the 2020 fiscal year as follows.

Implementation Plan for Long-term Strategic Policy						
	Current (6/30/2016)	4/1/2017	1/1/2018	1/1/2019	1/1/2020	Long-Term 7/1/2020
Broad Growth	76%	76%	72%	68%	64%	63%
Principal Protection	12%	9%	8%	8%	7%	7%
Real Return	5%	5%	7%	8%	9%	10%
Real Estate	7%	0%	0%	0%	0%	0%
Crisis Risk Offset	0%	10%	13%	16%	20%	20%
Opportunities	0%	0%	0%	0%	0%	0%
Total Portfolio	100%	100%	100%	100%	100%	100%

Rate of Return

For the year ended June 30, 2016, the annual money-weighted return on pension plan investments, net of pension plan investment expense, was -1.2%. The money-weighted rate of return expresses investment performance, net of investment expense, adjusted for changing amounts actually invested.

2. Deposits

Cash includes amounts in demand deposits for operations and invested funds held by ERS investment managers. The deposits are held in several financial institutions, including the custodian bank for processing investment transactions. Per State statute, deposits, held by banks located in the State, in excess of Federal Deposit Insurance Corporation (FDIC) coverage are guaranteed by securities pledged as collateral by the bank with the State Director of Finance. Uninsured and uncollateralized amounts are primarily cash held by the investment custodian for settlement of investment transactions. Deposits are presented in the basic financial statements at cost, which represent market or fair value.

Note F – Deposit and Investment Disclosures (continued)

2. Deposits (continued)

Custodial Credit Risk for Deposits is the risk that in the event of a bank failure, the ERS' deposits may not be returned to them. The ERS has not adopted a formal policy specific to custodial credit risk. The ERS' policy is to deposit cash in excess of operating requirements in income producing investments to maximize investment income.

At June 30, 2016, the carrying amount of deposits totaled approximately $71,906,104 and the corresponding bank balance was $76,430,330, all of which was exposed to custodial credit risk

3. Investments and fair value

The following table shows the investments of the ERS by investment type as of June 30, 2016.

Investments at fair value		
Cash and short-term instruments		
Cash and cash equivalents	$	71,906,104
Short-term bills and notes		76,039,821
Pooled and others		339,412,137
Repurchase agreements		29,800,000
Fixed income securities		
U.S. Treasury bonds and notes		512,229,273
U.S. government agencies bonds		38,230,645
U.S. government agency mortgage backed		368,760,094
U.S. government-sponsored agency mortgage backed		6,399,657
Commercial mortgage backed securities		14,619,204
U.S. corporate bonds		829,668,408
Non-U.S. government / agency bonds		950,797,859
Non-U.S. corporate bonds		369,271,078
Pooled and Others		9,714,468
Derivatives		
Forwards - Cash and short-term instruments		7,013,036
Forwards - Debt securities		28,770,966
Options - Cash and short-term instruments		(30,346)
Options - Equities		(20,431,894)
Options - Debt securities		300,153
Swaps - Equity securities		91,345
Swaps - Debt securities		(11,627,156)
Equities		8,562,198,478
Real estate		967,131,489
Alternative investments		1,010,360,689
Total investments	$	14,160,625,508
Short-term instruments for securities lending collateral pool	$	1,268,719,491

Note F – Deposit and Investment Disclosures (continued)

3. Investments and fair value (continued)

Investments are measured at fair value in accordance with GASB 72. The ERS categorizes its fair value measurements within the fair value hierarchy established by generally accepted accounting principles. Fair value is a market-based measurement of 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. A fair value measurement assumes that a transaction to sell an asset or transfer a liability takes place in either the principal market or most advantageous market (after taking into account transaction costs and transportation costs)

The fair value hierarchy categorizes the inputs to valuation techniques used to measure fair value into three levels. The hierarchy is based on the valuation inputs used to measure the fair value of the asset and give the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (level 1 measurements) and the lowest priority to unobservable inputs (level 3 measurements).

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

If the fair value of an asset or a liability is measured using inputs from more than one level of the fair value hierarchy, the measurement is considered to be based on the lowest priority level input that is significant to the entire measurement. The categorization of investments within the hierarchy is based upon the pricing transparency of the instrument and should not be perceived as the particular investment's risk.

<u>Fair value hierarchy levels</u>
Equity securities classified in level 1 of the fair value hierarchy are valued using prices quoted in active markets for those securities based on published market prices, quotations from national security exchanges, and security pricing services as of each month-end closing of the New York Stock Exchange. Fixed income securities classified as Level 1 include U.S. Treasuries. Fixed income pooled funds classified in Level 1 of the hierarchal framework are mutual funds with instruments which trade on a national exchange and the fund's NAV is the basis for the fund's transactions.

Short-term, fixed income securities, and invested securities lending collateral classified in level 2 have non-proprietary information that was readily available to market participants from multiple independent sources, which are known to be actively involved in the market. Pricing inputs may include market quotations, yields, maturities, call features and ratings. Derivative securities classified in level 2 are securities whose values are derived daily from associated traded securities.

Note F – Deposit and Investment Disclosures (continued)

3. Investments and fair value (continued)

Fixed income securities classified in level 3 are mortgaged backed term loans and bonds where input data is sourced from instruments whose values are estimated, out of necessity, using unobservable inputs due to lack of comparable securities in the market place or are valued using discounted cash flows.

Real Estate and Alternative Investments Limited Partnerships and Limited Liability Companies classified as level 3 are considered to be directly held: The ERS has a controlling interest in certain real estate and alternative investment partnerships and limited liability companies. These investment companies provide quarterly valuations based on the most recent capital account balance to ERS management and are audited annually. Individual properties are valued internally by the investment companies at least annually, in accordance with standard industry practice, and are adjusted as frequently as quarterly if material market or operational changes have occurred. Properties are generally valued every one to three years by external third-party appraiser(s). Alternative investments are valued using their respective NAV, and are generally audited annually. The most significant element of NAV is the fair value of the investment holdings. These holdings are valued by the general partners in conjunction with management, investment advisors, and valuation specialists. The valuation techniques vary based on investment type and involve a certain degree of expert judgment. The fair value for these investments could differ significantly if a readily accessible market values for these assets existed. Annual audits of most partnerships and limited liability companies include a review of compliance with the investment company's valuation policies.

Notes Payable: Notes payable are shown at estimated fair values. Notes payable, classified as level 3, consists of mortgage notes within the limited liability companies and limited partnerships of real estate (direct investment) that are secured by real estate of the respective company.

Investments measured at the net asset value (NAV)

Short-Term Investment Funds and Pooled Equity (not publicly traded) are reported on their respective net asset value (NAV). Fair value are based on the ERS' pro rata ownership percentage of the fund reported by the fund manager based on the fair value of the underlying assets that is determined by published market prices, or quotations from national security exchanges. Annual audits the pooled funds include a review of compliance with the investment company's valuation policies.

Real estate and alternative investments measured at their respective NAV and are generally audited annually. The most significant element of NAV is the fair value of the investment holdings. These holdings are valued by the general partners using valuation assumptions based on both market and property specific inputs, which are not observable and involve a certain degree of expert judgment. The valuation techniques vary based on investment type and involve a certain degree of expert judgment. The fair value for these investments could differ significantly if a readily accessible market values for these assets existed.

Investments measured at NAV are not required to be categorized in the fair value hierarchy levels.

Note F – Deposit and Investment Disclosures (continued)

3. Investments and fair value (continued)

The following table shows the fair value hierarchy by investment type as of June 30, 2016.

Investments, Derivative Instruments and Invested Securities Lending Collateral Measured at Fair Value

		Fair Value Measurement Using		
	Total	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Investments by Fair Value Level 6/30/2016				
Short-term investments				
Short-term bills and notes	$ 76,039,821	$ -	$ 76,039,821	$ -
Repurchase agreements	29,800,000	-	29,800,000	-
Total short-term investments	105,839,821	-	105,839,821	-
Equity securities				
Common stocks	6,445,116,703	6,445,116,703	-	-
Preferred shares and other	232,611,652	190,862,150	41,749,502	-
Total equity securities	6,677,728,355	6,635,978,853	41,749,502	-
Fixed income securities				
U.S. Treasury bonds and notes	512,229,273	512,229,273	-	-
U.S. government agencies bonds	38,230,645	-	38,230,645	-
U.S. government agency mortgage backed	368,760,094	-	368,760,094	-
U.S. government-sponsored agency mortgage	6,399,657	-	6,399,657	-
Commercial mortgage backed securities	14,619,204	-	14,619,204	-
U.S. corporate bonds	829,668,408	-	686,810,813	142,857,595
Non-U.S. government / agency bonds	950,797,859	-	950,797,859	-
Non-U.S. corporate bonds	369,271,078	-	351,572,772	17,698,306
Pooled and Others	9,714,468	7,829,920	142,413	1,742,135
Total fixed income securities	3,099,690,686	520,059,193	2,417,333,457	162,298,036
Real estate (direct investment)	724,863,418	-	-	724,863,418
Alternative investments (direct investment)	204,383,997	-	-	204,383,997
Total assets at fair value level	$ 10,812,506,277	$ 7,156,038,046	$ 2,564,922,780	$ 1,091,545,451
Liabilities				
Notes payable (on real estate-direct)	$ (170,165,523)	$ -	$ -	$ (170,165,523)
Total investments (excluding derivatives), net of notes payable measured by fair value level	$ 10,642,340,754	$ 7,156,038,046	$ 2,564,922,780	$ 921,379,928
Investment derivative instruments				
Currency purchases	$ 7,013,036	$ -	$ 7,013,036	$ -
To Be Announced (TBAs)	28,770,966	-	28,770,966	-
Options	(20,431,894)	-	(20,431,894)	-
Options on debt securities	300,153	-	300,153	-
Options on currency	(30,346)	-	(30,346)	-
Credit default swaps	(360,261)	-	(360,261)	-
Currency swaps	(1,174,994)	-	(1,174,994)	-
Equity variance swaps	91,345	-	91,345	-
Inflation swaps	(10,512)	-	(10,512)	-
Interest rate swaps	(10,081,389)	-	(10,081,389)	-
Total investment derivative instruments	$ 4,086,104	$ -	$ 4,086,104	$ -

Note F – Deposits and Investment Disclosures (continued)

3. Investments and fair value (continued)

Investments, Derivative Instruments and Invested Securities Lending Collateral Measured at Fair Value (contnued)

			Fair Value Measurement Using				
		Total		Quoted Prices in Active Markets for Identical Assets (Level 1)		Significant Other Observable Inputs (Level 2)		Significant Unobservable Inputs (Level 3)
Invested securities lending collateral								
Short-term instruments								
U.S. short-term funds	$	2,338,061	$	-	$	2,338,061	$	-
Repurchase agreements		396,302,012		-		396,302,012		-
Global asset backed notes		179,860,592		-		179,860,592		-
Global corporate notes		690,218,826		-		690,218,826		-
Total invested securities lending collateral	$	1,268,719,491	$	-	$	1,268,719,491	$	-

Investments and Derivative Instruments Measured at Fair Value (contnued)

Investments measured at net asset value (NAV)		
Short-term investments	$	339,412,137
Equity securities		1,884,470,123
Real estate		242,268,071
Alternative investments		805,976,692
Total investments measured at NAV		3,272,127,023

		June 30, 2016		Unfunded Commitments	Redemption Frequency (If Currently Eligible)	Redemption Notice Period (Days)
Short-term investments (a)	$	339,412,137	$	-	Daily	1 day
Equity securities (b)		1,884,470,123		-	Daily	2 days
Real estate (c)		242,268,071		354,288,000	Not eligible	n/a
Alternative investments (d)		805,976,692		848,213,000	Not eligible	n/a
Total investments measured at NAV	$	3,272,127,023	$	1,202,501,000		

(a) Short-term investments primarily consist of two pooled funds to invest excess cash at the ERS' custodian, The Bank of New York Mellon plus 15 other accounts. NAV is based on the ERS' pro rata ownership percentage of the fund reported by the fund manager based on the fair value of the underlying assets that is determined by published market prices, or quotations from national security exchanges.

Note F – Deposits and Investment Disclosures (continued)

3. Investments and fair value (continued)

(b) Equity securities consist of one fund that invests based on the all country world index. NAV is based on the ERS' pro rata ownership percentage of the fund reported by the fund manager based on the fair value of the underlying assets that is determined by published market prices, or quotations from national security exchanges.

(c) Real estate consists of 28 limited partnerships or limited liability companies that primarily invest in U.S. real estate. The most significant element of NAV is the fair value of the investment holdings. These holdings are valued by the general partners using valuation assumptions based on both market and property specific inputs, which are not observable and involve a certain degree of expert judgment, and are generally audited annually.

(d) Alternative investments consists of 190 limited partnerships or limited liability companies that invest in venture capital, growth equity, corporate finance/buyout, special situations, mezzanine debt, distressed debt, or co/direct investments. The most significant element of NAV is the fair value of the investment holdings. These holdings are valued by the general partners using valuation assumptions based on both market and property specific inputs, which are not observable and involve a certain degree of expert judgment, and are generally audited annually.

Reconciliation of Investment Level Disclosure to the Statement of Fiduciary Net Position

	Investments by Fair Value Level	Investments Measured by the NAV	Derivative Investments by Fair Value Level	Invested Securities Lending Collateral by Fair Value Level	Statement of Fiduciary Net Postion
Assets					
Short-term investments	$ 105,839,821	$ 339,412,137	$ 6,982,690	$ -	$ 452,234,648
Equity securities	6,677,728,355	1,884,470,123	(20,340,549)	-	8,541,857,929
Fixed income securities	3,099,690,686	-	17,443,963	-	3,117,134,649
Real estate investments	724,863,418	242,268,071	-	-	967,131,489
Alternative investments	204,383,997	805,976,692	-	-	1,010,360,689
Invested securities lending collateral	-	-	-	1,268,719,491	1,268,719,491
	$ 10,812,506,277	$ 3,272,127,023	$ 4,086,104	$ 1,268,719,491	$ 15,357,438,895
Liabilities					
Notes payable	$ 170,165,523	$ -	$ -	$ -	$ 170,165,523
	$ 170,165,523	$ -	$ -	$ -	$ 170,165,523

Note F – Deposits and Investment Disclosures (continued)

4. Credit Risk

Credit risk is defined as the risk that an issuer or other counterparty to an investment will not fulfill its obligations. Information regarding ERS' credit risk on derivative investments is discussed below in derivative disclosures note F10 while policies related to credit risk for securities lending program are discussed in note F9 below.

Risk Based Asset Class - In the last quarter of FY 2015, the fixed income mandate was transitioned to the new risk-based asset allocation methodology. All fixed income investment managers were retained as of June 30, 2016. Authorized security types are the same as the Asset-type based allocation guidelines. Investment managers were assigned to:

- Extended Global Credit component of the Broad Growth risk-based asset class, or
  - Benchmark: 50% BC Global Credit (Hedged) + 33.34% BC Global High Yield (Hedged) + 16.66% S&P LSTA Leveraged Loan
- Principal Protection risk-based asset class.
  - Benchmark: BC U.S. Intermediate Aggregate ex-Credit
- Summary of Concentration Limits for debt securities are:
  - Principal protection managers may invest in specific Issue or Issuer of 5% (without limit in supranationals, U.S. Treasuries, U.S. agencies, CMOs and asset-backed securities with minimum of AAA rating, sovereign debt and equivalently rated agencies of Organisation for Economic Co-operation and Development (OECD) governments). These managers are limited to (i) 10% in emerging markets (local currency and debt); (ii) 10% in private placements; (iii) 10% in preferred stocks and converted common stocks (common stock holdings not to exceed 180 days); (iv) 10% in non-U.S. Agency CMOs; and (v) 10% of Non-U.S. Dollar denominated securities (excludes money market securities and money market futures
  - Extended Global Credit managers may invest in specific Issue or Issuer of 5% (without limit in supranationals, U.S. Treasuries, U.S. agencies, CMOs and asset-backed securities with minimum of AAA rating, sovereign debt and equivalently rated agencies of Organisation for Economic Co-operation and Development (OECD) governments). They are limited to: (i) 10% in preferred stocks and converted common stocks (common stock holdings not to exceed 180 days); (iii) 75% in non-investment grade / Unrated; (iv) in Non-Benchmark markets up to 40% of non-benchmark non-government supported and up to 40% of non-benchmark government supported. Foreign currency is limited to (i) a 40% net foreign currency exposure (as measured by net amount of currency's outstanding long and short positions versus the U.S. Dollar); and (ii) a 80% gross foreign currency exposure (as measured by absolute value of all country-level currency long and short currency positions versus the U.S. Dollar)

Note F – Deposits and Investment Disclosures (continued)

4. Credit Risk (continued)

A table of the ERS' fixed income securities as of June 30, 2016 is below. Securities below investment grade of Baa and non-rated issues (average rating by S&P, Moody's and/or Fitch) amounted to $683,768,178 or 21.9% of total fixed income investments. All short-term investments, not held in a pooled investment, are rated A1/P1or better.

Credit Ratings - Average rating by S&P, Moodys and Fitch as of June 30, 2016

Ratings	US Govt Agency	US Govt sponsored-agency mortgage backed	US corporate bonds	Commercial mortgage backed securities	Non-US corporate bonds	Non US-govt/agencies bonds	Pooled & others	Total
AAA	$ 38,230,645	$ 368,339,917	$ 8,911,237	$ 11,564,094	$ 35,776,503	$ 292,509,851	$ -	$ 755,332,247
AA1	-	420,177	1,647,337	-	-	54,265,701	-	$ 56,333,215
AA2	-	-	-	37,039	27,616,196	172,042,512	-	$ 199,695,747
AA3	-	-	7,448,371	-	23,773,696	15,488,582	-	$ 46,710,649
A1	-	-	13,270,989	512,516	6,640,460	11,070,535	-	$ 31,494,500
A2	-	-	35,395,898	284,758	24,484,367	66,882,669	-	$ 127,047,692
A3	-	-	39,295,299	27,773	9,245,693	35,763,940	-	$ 84,332,705
BAA1	-	-	51,069,265	1,027,069	25,945,694	144,262,867	-	$ 222,304,895
BAA2	-	-	77,812,602	1,165,955	33,474,501	106,885,692	-	$ 219,338,750
BAA3	-	-	124,790,664	-	26,718,509	3,194,005	-	$ 154,703,178
BA1	-	-	37,227,024	-	21,937,442	-	-	$ 59,164,466
BA2	-	-	77,719,544	-	28,684,628	2,810,451	-	$ 109,214,623
BA3	-	-	95,382,290	-	22,107,258	-	-	$ 117,489,548
B1	-	-	60,863,249	-	30,162,559	2,658,475	-	$ 93,684,283
B2	-	-	82,149,065	-	16,077,235	-	-	$ 98,226,300
B3	-	-	54,181,029	-	19,730,467	16,562,700	-	$ 90,474,196
CAA1	-	-	21,639,678	-	11,592,365	-	-	$ 33,232,043
CAA2	-	-	16,944,492	-	2,688,064	-	-	$ 19,632,556
CAA3	-	-	4,126,700	-	42,000	-	-	$ 4,168,700
CA	-	-	297,393	-	-	-	-	$ 297,393
C	-	-	-	-	200,000	-	-	$ 200,000
D	-	-	282,800	-	381,250	-	-	$ 664,050
Not rated	-	-	19,213,482	-	1,992,191	26,399,879	9,714,468	$ 57,320,020
	$ 38,230,645	$ 368,760,094	$ 829,668,408	$ 14,619,204	$ 369,271,078	$ 950,797,859	$ 9,714,468	2,581,061,756
				US Treasury Bonds and Notes				512,229,273
				US Government agency - Government National Mortgage Association (GNMAs) mortgage backed				6,399,657
				subtotal				$ 3,099,690,686
				Derivatives				17,443,963
				Total fixed income securities in Investments				$ 3,117,134,649

5. Custodial Credit Risk

Custodial credit risk for investments is the risk that, in the event of a failure of the counterparty, the ERS will not be able to recover the value of the investment or collateral securities that are in the possession of an outside party. All securities, except certain pooled funds, are registered in the name of the ERS and are held in the possession of the ERS' custodial bank, The Bank of New York Mellon. Pooled funds not held by the custodial bank, such as certain equity investments, are registered in the name of the ERS. The ERS had $71,906,104 in cash and securities exposed to custodial credit risk.

Note F – Deposits and Investment Disclosures (continued)

6. Concentrations of Credit Risk

The ERS' debt securities managers are expected to maintain diversified portfolios by sector, quality, and maturity as discussed above in Credit Risk.

Equity securities shall be diversified by industry and in number. An investment manager may not hold more than 5% of an individual company's stock if that company's securities represent less than 3% of the investment manager's respective benchmark. (If those securities constitute more than 3% of the respective benchmark the manager shall not hold more than the benchmark weight plus 2 percentage points.)

At June 30, 2016, there was no single issuer exposure within the ERS' portfolio that comprises over 5% of the overall portfolio, or an investment that exceeded the above manager guidelines, and therefore, there is no concentration of credit risk to report.

7. Interest Rate Risk

Interest rate risk is the risk that changes in interest rates will adversely affect the fair value of an investment. The ERS has not adopted a formal policy that limits investment maturities as a means of managing its exposure to fair value changes arising from changing interest rates. External investment managers are given full discretion within their operational guidelines and are expected to maintain a diversified portfolio between and within sectors, quality, and maturity.

Duration is a measure of a debt investment's exposure to fair value changes arising from changes in interest rates. It uses the present value of cash flows, weighted for those cash flows as a percentage of the investment's full price. At June 30, 2016, the table below shows fixed income investment securities by investment type, amount, and the effective weighted duration for the ERS' total portfolio. Interest rate risk associated with swaps and other derivative instruments are discussed in the derivatives disclosure below:

Effective duration of fixed income assets by security type (excluding derivatives)

		Fair Value	Effective Weighted Duration (years)
Fixed Income Securities			
U.S. Treasury bonds and notes	$	512,229,273	7.5
U.S. government agencies bonds		38,230,645	1.9
U.S. government agency mortgage backed		368,760,094	2.0
U.S. government-sponsored agency mortgage backed		6,399,657	2.6
Commercial mortgage backed securities		14,619,204	0.2
U.S. corporate bonds		829,668,408	5.8
Non-U.S. government / agency bonds		950,797,859	8.9
Non-U.S. corporate bonds		369,271,078	5.8
Pooled and Others		9,714,468	n/a
Total	$	3,099,690,686	5.1

Note F – Deposits and Investment Disclosures (continued)

8. Foreign Currency Risk

Foreign currency risk is the risk that changes in exchange rates will adversely impact the fair value of an investment. The foreign currency risk exposure to the ERS arises from the international fixed income and international equity investment holdings. Board policy limits the use of foreign currency as a defensive measure to protect the portfolio value of non-U.S. equity and non-U.S. fixed income investments. External investment managers authorized to invest in these securities are given full discretion regarding their respective portfolio's foreign currency exposures, including using currency forward contracts, as established by their investment mandate. Cross-hedging is only allowed in non-U.S. fixed income portfolios. Counterparties for foreign currency derivatives must be rated A or equivalent. Derivatives investments are discussed in more detail in Note F.10.

The following table summarizes the ERS' exposure to foreign currency risk in U.S. dollars as of June 30, 2016. (Securities denominated in U.S. dollars are not presented.)

	Cash and Short Term Instruments	Debt Securities	Derivatives	Equities	Alternative	Real Estate	Grand Total
Argentine peso	$ 1,895	$ -	$ -	$ -	$ -	$ -	$ 1,895
Australian dollar	404,177	117,616,219	(1,447,585)	57,119,945	-	-	173,692,756
Brazilian real	309,242	2,024,776	(17,013)	70,412,240	-	-	72,729,245
Canadian dollar	1,046,523	26,898,283	(927,855)	88,222,261	-	-	115,239,212
Chilean peso	91,731	-	-	2,266,804	-	-	2,358,535
Chinese Yuan Renminbi	145	-	55,419	-	-	-	55,564
Colombian peso	70,948	-	-	1,485,505	-	-	1,556,453
Czech koruna	675	463,862	12,047	295,312	-	-	771,896
Danish krone	7,808	14,960,721	99,683	45,547,113	-	-	60,615,325
Egyptian pound	108,764	-	-	529,867	-	-	638,631
Euro	1,243,893	316,900,550	39,965,674	347,901,045	-	-	706,011,162
Hong Kong dollar	317,047	-	-	238,224,447	-	-	238,541,494
Hungarian forint	62,135	-	-	3,096,304	-	-	3,158,439
Indian Rupee	-	-	(23,111)	-	-	-	(23,111)
Indonesian rupiah	591,751	2,472,628	-	17,981,811	-	-	21,046,190
Japanese yen	75,350,493	46,628,614	(13,090,140)	195,106,603	-	-	303,995,570
Malaysian ringgit	153,622	-	(9,053)	7,029,280	-	-	7,173,849
Mexican peso	(28,670)	1,699,959	(86,713)	20,785,054	-	-	22,369,630
New Taiwan dollar	1	-	(32,162)	83,539,394	-	-	83,507,233
New Zealand dollar	59,607	116,954,796	(2,855,588)	-	-	-	114,158,815
Norwegian krone	243	-	(8,110)	2,886,975	-	-	2,879,108
Philippine peso	51,939	-	-	2,073,392	-	-	2,125,331
Polish zloty	9,894	31,204,213	532,764	14,452,228	-	-	46,199,099
Pound sterling	312,325	204,679,216	41,979,469	313,056,805	-	-	560,027,815
Qatari riyal	14,737	-	-	833,547	-	-	848,284
Russian ruble (new)	51,768	-	91,161	13,440,822	-	-	13,583,751
Singapore dollar	1,512	-	(143,551)	12,116,877	-	-	11,974,838
South African rand	667,839	68,640,643	(2,049,915)	70,259,091	-	-	137,517,658
South Korean won	164,403	-	(1,269)	117,072,978	-	-	117,236,112
Swedish krona	(10,167)	4,227,799	126,914	5,751,031	-	-	10,095,577
Swiss franc	12,214	-	66,418	104,273,153	-	-	104,351,785
Thai baht	386	-	(172)	31,201,086	-	-	31,201,300
Turkish Lira	15,342	-	-	15,145,563	-	-	15,160,905
UAE Dirham	26,505	-	-	4,187,910	-	-	4,214,415
Various Countries	-	-	-	1,883,422,401	-	-	1,883,422,401
Total	$ 81,110,727	$ 955,372,279	$ 62,237,312	$ 3,769,716,844	$ -	$ -	$ 4,868,437,162

Note F – Deposits and Investment Disclosures (continued)

9. Securities Lending

The ERS participates in a securities lending program administered by its bank custodian, The Bank of New York Mellon. Under this program, which is permissible under Chapter 88 of the HRS, certain equity and fixed-income securities of the ERS are lent to participating broker-dealers and banks (borrowers). In return, the ERS receives cash, securities issued or guaranteed by the U.S. government, securities issued or guaranteed by OECD (Organization for Economic Cooperation and Development) member states or their local authorities, Canadian Provincial debt, equity securities that are part of the U.S. and non U.S. indices, and/or letters of credit as collateral. The ERS does not have the ability to pledge or sell collateral securities absent of borrower default, thus only cash received as collateral is reported on the financial statements in accordance with accounting standards. Risk is mitigated by the investment policies and operational procedures regarding issuer, credit, exposure and rating limits utilized in the securities lending program. Borrowers are required to deliver collateral for each loan equal to: (a) in the case of loaned fixed-income securities and loaned equity securities denominated in U.S. dollars or whose primary trading market was located in the U.S., 102% of the market value of the loaned securities; and (b) in the case of loaned equity securities not denominated in U.S. dollars or whose primary trading market was not located in the U.S., 105% of the market value of the loaned securities. The collateral is marked to market daily. If the market value of the collateral falls below the minimum collateral requirements, additional collateral is provided. In addition, the bank custodian indemnifies the ERS by agreeing to purchase replacement securities or return cash collateral in the event the borrower fails to return the loaned security or fails to pay the ERS for income distributions by the securities' issuers while the securities are on loan.

The ERS does not impose any restrictions on the amount of loans the bank custodian made on behalf of the ERS. Also, the ERS and the borrowers maintain the right to terminate securities lending transactions on demand. The Bank of New York Mellon invests the cash collateral related to the ERS' loaned securities in a separate account, according to the ERS investment policies and procedures as discussed above in notes C2 and F1. As such, the maturities of the investments made with cash collateral generally do not match the maturities of the securities loans. The extent of such mismatch as of June 30, 2016 was 146 days.

At June 30, 2016, there was no credit risk exposure to borrowers since the ERS was collateralized as discussed above. The total securities on loan and collateral received are shown below.

Securities lent for collateral	Fair value of underlying securities	Cash	Noncash
U.S. fixed income	$ 422,531,304	$ 323,702,552	$ 114,422,937
U.S. equities	911,911,862	901,994,994	37,805,551
International equities	161,285,312	43,021,945	144,921,123
International fixed income	46,516,050	-	48,853,276
	$ 1,542,244,528	$ 1,268,719,491	$ 346,002,887

Note F – Deposits and Investment Disclosures (continued)

10. Derivative Financial Instruments

Derivatives are instruments (securities or contracts) whose value is dependent on such things as stock or bond prices, interest rate levels, or currency exchange rates. These are financial arrangements between two parties whose payments are based on or "derived" from the performance of some agreed-upon benchmark. As with any investment, derivative contracts are subject to various types of credit and market risks. Notably, these would include the possible inability of the counterparty to meet the terms of the contract, changes in the market value of the underlying collateral, changes in the interest rate environment, and fluctuation in foreign currency rates. The ERS enters into various derivative investment contracts to hedge, for the minimization of transaction costs and as a means of implementing value added strategies to enhance returns as authorized by Board policy.

Generally, derivatives are subject both to market risk and counterparty risk. The derivatives utilized by the ERS typically have no greater risk than their physical counterparts, and in many cases are offset by exposures elsewhere in the portfolio. Counterparty risk, the risk that the "other party" to a contract will default, is managed by utilization of exchange-traded futures and options where practicable (in which case the futures exchange is the counterparty and guarantees performance) and by careful screening of counterparties where use of exchange-traded products is impractical or uneconomical. ERS investment managers seek to control this risk through counterparty credit evaluations and approvals, counterparty credit limits, posting collateral, and exposure monitoring procedures. The ERS anticipates that counterparties will be able to satisfy their obligations under the contracts.

Derivative securities are priced and accounted for at their fair value. For exchange-traded securities such as futures and options, closing prices from the securities exchanges are used. Foreign exchange contracts are valued at the price at which the transaction could be settled by offset in the forwards markets.

The tables below summarize the ERS' investments in derivative securities and contracts held at June 30, 2016 and their associated risks. The various risks associated with these investments are included in the tables expressed in terms of market values, summarized by the type of contract as follows: credit, equity, foreign exchange, interest, and other. Due to the level of risk associated with certain derivative investment securities, it is reasonably possible that changes in the values of investment securities will occur in the near term, and such changes could affect the amounts reported in the financial statements. ERS could be exposed to risk if the counterparties to the contracts are unable to meet the terms of the contracts. ERS investment managers seek to control this risk through counterparty credit evaluations and approvals, counterparty credit limits, posting collaterals, and exposure monitoring procedures.

The notional amount is the nominal or the underlying face amount that is used to calculate payments made on that instrument or contract. Changes in the market value of all derivative contracts are recorded as net appreciation (depreciation) in fair value of investments in the Statement of Changes in Fiduciary Net Position.

The following table summarizes the ERS' investments in derivative securities and contracts held at June 30, 2016 with the related maturity information:

Note F – Deposits and Investment Disclosures (continued)

10. Derivative Financial Instruments (continued)

Asset categories		Notional values	Market value	Maturity (Range from)
Forwards	Currency purchases	$ -	$ 7,013,036	0.0 yrs
	To Be Announced (TBAs)	-	28,770,966	15.0 yrs to 30.1 yrs
	Total forwards	-	35,784,002	
Futures	Interest rate contracts	135,524,176	-	0.2 yrs to 2.0 yrs
	Futures total	135,524,176	-	
Options	Options	-	(20,431,894)	0.0 yrs to 4.2 yrs
	Options on debt securities	-	300,153	0.1 yrs to 0.7 yrs
	Options on currency	-	(30,346)	0.0 yrs to 0.7 yrs
	Options total	-	(20,162,087)	
Swaps	Credit default swaps	-	(360,261)	0.7 yrs to 30.5 yrs
	Currency swaps	-	(1,174,994)	2.2 yrs to 10.2 yrs
	Equity variance swaps	-	91,345	0.0 yrs to 0.8 yrs
	Inflation swaps	-	(10,512)	4.3 yrs to 4.9 yrs
	Interest rate swaps	-	(10,081,389)	0.6 yrs to 30.7 yrs
	Swaps total	-	(11,535,811)	
	Grand Total	$ 135,524,176	$ 4,086,104	

Forward Currency Exchange Contracts and To-Be-Announced (TBA) Securities

The ERS enters into various forward currency exchange contracts to manage exposure to changes in foreign currency exchange rates and to facilitate the settlement of foreign security transactions. A forward contract is an agreement to buy or sell a specific amount of currency at a specific delivery or maturity date for an agreed-upon price. Risks associated with such contracts include movements in the value of the foreign currency relative to the U.S. dollar and the ability of the counterparty to perform in accordance with the terms of the contract.

The TBA market that ERS invests in as part of its toolkit to manage interest rates and liquidity includes the forward trading of mortgage-backed securities (MBS) issued by federal agencies and federally sponsored agencies (commonly known as pass-through securities issued by Freddie Mac, Fannie Mae, and Ginnie Mae). The TBA market is one of the most liquid, and consequently the most important secondary market for mortgage loans as one MBS pool can be considered to be interchangeable with another pool.

Futures

Futures represent commitments to purchase (asset) or sell (liability) securities at a future date and at a specified price. Futures contracts are traded on organized exchanges (exchange traded) thereby minimizing the ERS' credit risk. The net change in the futures contracts value is settled daily in cash with the exchanges. Net gains or losses arising from the daily settlements are included in the net appreciation in fair value of securities in the Statement of Changes in Fiduciary Net Position. At June 30, 2016, the net notional value of futures contracts was $135,524,176.

Note F – Deposits and Investment Disclosures (continued)

10. Derivative Financial Instruments (continued)

Options

Options represent or give the buyers the right, but not the obligation, to buy or sell an asset at a preset price over a specified period. The option's price is usually a small percentage of the underlying asset's value. As a writer of financial options, the ERS receives a premium at the outset of the agreement and bears the risk of an unfavorable change in the price of the financial instrument underlying the option. As a purchaser of financial options, the ERS pays a premium at the outset of the agreement and the counterparty bears the risk of an unfavorable instrument underlying the option.

Swaps

Swaps represent an agreement between two or more parties to exchange sequences of cash flows over a period in the future. At June 30, 2016, the ERS had currency, equity variance, inflation, interest rate, and credit default swaps as allowed by Board policy. In the most common type of interest rate swap arrangement, one party agrees to pay fixed-interest payments on designated dates to a counterparty who, in turn, agrees to make return interest payments that float with some reference rate. Currency swaps allow an investor to exchange the principal and/or interest payments of a loan in one currency for equivalent amounts, in net present value terms, to another currency. Credit default swaps are the most common global credit market derivative that allows flexibility as an active portfolio management tool based on its ability to customize the exposure to corporate credit such as credit spreads and default risks. Credit default spreads and total return swaps are also used to gain access to global markets that do not have the transparency or efficiency of the U.S. credit markets. Variance swaps allow the investor to offset risks associated with the magnitude of movement of some underlying product (such as stock index price). Gains and losses from swaps are determined on market values and are included in the net appreciation in fair value of securities in the Statement of Changes in Fiduciary Net Position.

Derivatives, such as interest rate swaps, inflation swaps, and credit default swaps, are a tool or instrument used to manage inflation, interest rate, credit quality, and yield curve exposures of the investments. In certain situations, derivatives may result in a lower overall cost to the portfolio than owning individual securities underlying the derivatives. When evaluating securities, risk, and return are measured at the security and portfolio levels.

Note F – Deposits and Investment Disclosures (continued)

10. Derivative Financial Instruments (continued)

On June 30, 2016, credit ratings of the counterparty for ERS' investments in derivatives were as follows:

	Derivatives Counterparty Credit Ratings								
	Aa3	A1	A2	A3	Baa1	Baa3	Ba1	N/A	Grand Total
Bank of America Corp	-	-	-	-	24,882	-	-	-	$ 24,882
Barclays PLC	-	-	-	-	-	(28,833)	-	-	(28,833)
BNP Paribas SA	-	34,920	-	-	-	-	-	-	34,920
Citigroup Inc	-	-	-	-	(367,841)	-	-	-	(367,841)
CME Group Inc/IL	(4,037,347)	-	-	-	-	-	-	-	(4,037,347)
Credit Suisse Group AG	-	-	-	-	-	61,937	-	-	61,937
Deutsche Bank AG	-	-	-	(8,701)	-	-	-	-	(8,701)
Goldman Sachs Group Inc/The	-	-	-	(790,287)	-	-	-	-	(790,287)
HSBC Holdings PLC	-	(65,805)	-	-	-	-	-	-	(65,805)
Intercontinental Exchange Inc	-	-	71,625	-	-	-	-	-	71,625
JPMorgan Chase & Co	-	-	-	(90,025)	-	-	-	-	(90,025)
London Stock Exchange Group PLC	-	-	-	-	(6,132,977)	-	-	-	(6,132,977)
Morgan Stanley	-	-	-	(94,652)	-	-	-	-	(94,652)
Societe Generale SA	-	-	(472)	-	-	-	-	-	(472)
UBS Group AG	-	-	-	-	-	-	(16,781)	-	(16,781)
Foreign Currency Forwards	-	-	-	-	-	-	-	7,013,036	7,013,036
Exchange traded - Swap, Options and TBAs	-	-	-	-	-	-	-	8,513,425	8,513,425
Total	$ (4,037,347)	$ (30,885)	$ 71,153	$ (983,665)	$ (6,475,936)	$ 33,104	$ (16,781)	$ 15,526,461	$ 4,086,104

Note G – Pension Liability

1. Net Pension Liability

The components of the net pension liability of the ERS at June 30, 2016 were as follows:

Total Pension Liability	$27,439,233,629
Plan Fiduciary Net Position	14,069,978,917
Net Pension Liability	$13,369,254,712

Plan Fiduciary Net Position as a Percentage of Total Pension Liability	51.3%
Net Pension Liability as a Percentage of Covered Payroll	325.1%

Multi-year trend information regarding whether the actuarial value of plan assets is increasing or decreasing over time relative to the actuarial accrued liabilities for benefits can be found in the required supplementary information following the *Notes to the Financial Statements.*

Note G – Pension Liability (continued)

2. Summary of Actuarial Assumptions

The total pension liability was determined using the provisions of the GASB Statements No. 67 and No. 82 actuarial valuation as of June 30, 2016. These GASB rules only define pension liability for financial reporting purposes. The actuarial assumptions were based on the results of an experience study for the period from July 1, 2010, through June 30, 2015. When measuring the total pension liability, GASB uses the same actuarial cost method, all actuarial assumptions, and the same discount rate as the ERS uses for funding which can be found in the Notes to Required Supplementary Information.

Summary of Actuarial Valuation as of June 30, 2016 follows:

Valuation date	June 30, 2016
Actuarial cost method	Entry Age Normal
Amortization method	Level percent, open
Actuarial assumptions:	
Inflation assumption	2.50%
Investment rate of return, including inflation at 2.50%	7.00%
Payroll growth rate:	3.50%
Projected salary increases, including inflation at 2.50%	
- Police and Fire Employees	5.00% to 7.00%
- General Employees	3.50% to 6.50%
- Teachers	3.75% to 5.75%
Cost of living adjustments (COLAs)	
- COLAs are not compounded; and are based on original pension amounts.	
- Membership date prior to July 1, 2012	2.5%
- Membership date after June 30, 2012	1.5%

Mortality rate assumptions include the effects of the retirement status of members.

Pre-retirement mortality rates are:

Multiples of the RP 2014 mortality table for active employees based on the occupation of the member as follows:

	General Employees	Teachers	Police and Fire
	Male & Female	Male & Female	Male & Female
Ordinary	75%	55%	58%
% of Ordinary Chosing Annuity	41%	52%	24%
Duty Related	5%	5%	12%

Notes to Financial Statements (continued)

Post-Retirement Mortality rates are:

Healthy Retirees: The 2016 Public Retirees of Hawaii mortality table, generational projection using the BB projection table from the year 2016 and with multipliers based on plan and group experience. The following are sample rates of the base table as of 2016 with the corresponding multipliers:

Healthy Annuitant Mortality Rates Before Projection (Multiplier Applied)

	General Employees		Teachers		Police and Fire	
Age	Males	Females	Males	Females	Males	Females
50	0.1626%	0.1140%	0.1463%	0.1012%	0.1951%	0.1140%
55	0.3963%	0.1937%	0.3567%	0.1720%	0.4756%	0.1937%
60	0.6301%	0.2735%	0.5671%	0.2428%	0.7561%	0.2735%
65	0.9489%	0.3532%	0.8540%	0.3136%	1.1387%	0.3532%
70	1.3733%	0.7404%	1.2360%	0.6574%	1.6480%	0.7404%
75	2.1071%	1.3116%	1.8964%	1.1645%	2.5285%	1.3116%
80	3.6268%	2.2573%	3.2641%	2.0041%	4.3522%	2.2573%
85	6.6210%	4.1830%	5.9589%	3.7138%	7.9452%	4.1830%
90	12.1005%	8.2371%	10.8905%	7.3133%	14.5206%	8.2371%
Multiplier	100%	107%	90%	95%	120%	107%
Setback	0	0	0	0	0	0

The following table provides the life expectancy for individuals retiring in future years based on the assumption with full generational projection:

Life Expectancy for an Age 65 Retiree in Years

	Year of Retirement			
Gender	2020	2025	2030	2035
General Retirees				
Male	23.2	23.7	24.2	24.7
Female	26.4	26.8	27.2	27.5
Teachers				
Male	24.0	24.5	25.0	25.5
Female	27.3	27.7	28.0	28.3
Police and Fire				
Male	21.8	22.3	22.8	23.3
Female	26.4	26.8	27.2	27.5

Disabled retirees: Base Table for healthy retiree’s occupation, set forward 5 years, generational projection using the BB projection table from the year 2016. Minimum mortality rate of 3.5% for males and 2.5% for females.

Note G – Pension Liability (continued)

2. Summary of Actuarial Assumptions (continued)

The long-term expected geometric rate of returns on pension plan investments based on ERS' investment consultant, Pension Consulting Alliance, Inc.'s 2016 capital market projections for the target asset allocation as of June 30, 2016, are summarized in the following table:

Strategic Allocation (risk-based classes)	Long-term Expected geometric rate of return
Broad Growth	8.35%
Principal Protection	2.20%
Real Return	6.15%
Crisis Risk Offset	5.50%

Single Discount Rate

A single discount rate of 7.00% was used to measure the total pension liability. This single discount rate was based on the expected rate of return on pension plan investments of 7.00%. The projection of cash flows used to determine this single discount rate assumed that plan member contributions will be made at the current contribution rate and that employer contributions will be made at rates equal to the difference between actuarially determined contribution rates and the member rate. Based on these 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.

3. Sensitivity of the Net Pension Liability to Changes in the Single Discount Rate

The following presents the ERS' net pension liability calculated using a single discount rate of 7.00%, as well as what the ERS' net pension liability would be if it were calculated using a single discount rate that is 1-percentage-point lower (6.00%) or 1–percentage-point higher (8.00%) than the current rate.

1% Decrease (6.00%)	Current Discount Rate (7.00%)	1% Increase (8.00%)
$17,153,325,506	$13,369,254,712	$10,238,060,621

Note H – Risk Management

The ERS is exposed to various risks of loss related to torts; theft of, damage to, or destruction of assets; errors or omissions; natural disasters; and injuries to employees. As required by state law, the ERS participates in coverage with the State. The State retains various risks and insures certain excess layers with commercial insurance policies. The excess layers are consistent with the prior fiscal year. Settled claims for the State did not exceed the coverage provided by commercial insurance policies during the year ended June 30, 2016. Losses not covered by insurance are generally paid from legislative appropriations.

1. Torts

The ERS is involved in various litigation and claims, including claims regarding retirement benefits, the outcome of which cannot be presently determined. In the opinion of management, the outcome of these actions will not have a material adverse effect on the ERS' financial position.

2. Property and Liability Insurance

The ERS also purchased property and liability insurance for all real estate owned from outside carriers. During the past three fiscal years, no loss settlements exceeded insurance coverages.

3. Workers' Compensation Policy

The State has a self-insured workers' compensation policy. Workers' compensation claims are paid from legislative appropriations.

Note I – Commitments

In the normal course of business, the ERS enters into commitments with associated risks. The ERS adheres to the same credit policies, financial and administrative controls, and risk limiting and monitoring procedures for these commitments as for all investments.

The ERS has future financial commitments of up to $1,202,501,000 as of June 30, 2016, consisting of $354,288,000 in real estate investments, and $848,213,000 in alternative investments.

Note J – Deferred Compensation Plan

The ERS does not sponsor a deferred compensation program. The ERS' employees are eligible to participate in the deferred compensation plan sponsored by the State. The State-sponsored plan was created in accordance with Internal Revenue Code Section 457. The plan, available to all ERS employees, permits them to defer a portion of their salaries. The deferred compensation is not available to the employees until termination, retirement, death, or an unforeseeable emergency. All compensation deferred under the plan is held in trust by a custodian for the exclusive benefit of participants and beneficiaries.

Schedule of Changes in the Employers' Net Pension Liability and Related Ratios
Fiscal Years Ended June 30, 2016, 2015 and 2014

	2014	2015	2016
A. Total pension liability			
1. Service Cost	$421,956,129	$437,901,029	$484,278,499
2. Interest on the Total Pension Liability	1,618,917,776	1,693,252,684	1,748,619,873
3. Changes of benefit terms	-	-	-
4. Difference between expected and actual experienceof the Total Pension Liability	66,400,876	(192,816,757)	297,534,219
5. Changes of assumptions	-	261,213,541	2,915,922,677
6. Benefit payments, including refunds of employee contributions	(1,130,921,611)	(1,181,252,658)	(1,245,517,025)
7. Net change in total pension liability	$976,353,170	$1,018,297,839	$4,200,838,243
8. Total pension liability – beginning	21,243,744,377	22,220,097,547	23,238,395,386
9. Total pension liability – ending	$22,220,097,547	$23,238,395,386	$27,439,233,629
B. Plan fiduciary net position			
1. Contributions – employer	$653,127,697	$717,792,981	$756,558,222
2. Contributions – employer (picked-up employee contributions)	204,821,010	221,909,859	235,079,968
2. Contributions – employee	1,306,327	1,595,560	1,721,893
3. Net investment income	2,175,479,961	556,436,475	(169,368,110)
4. Benefit payments, including refunds of employee contributions	(1,130,921,611)	(1,181,252,658)	(1,245,517,025)
5. Pension Plan Administrative Expense	(12,626,030)	(14,032,964)	(13,960,587)
6. Other	-	-	-
7. Net change in plan fiduciary net position	$1,891,187,354	$302,449,253	($435,485,639)
8. Fiduciary net position – beginning	12,311,827,949	14,203,015,303	14,505,464,556
9. Fiduciary net position – ending	$14,203,015,303	$14,505,464,556	$14,069,978,917
C. Net pension liability	$8,017,082,244	$8,732,930,830	$13,369,254,712
D. Fiduciary net position as a percentage of the total pension liability	63.92%	62.42%	51.28%
E. Covered-employee payroll	$3,829,002,983	$3,995,447,345	$4,112,227,306
F. Net pension liability as a percentage of covered employee payroll	209.38%	218.57%	325.11%

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

Schedule of the Employers' Net Pension Liability
Fiscal Year Ended June 30, 2013 to June 30, 2016*

Fiscal year ended June 30,:	Total Pension Liability	Fiduciary Net Position	Net Pension Liability	Fiduciary Net Position as a % of Total Pension Liability	Covered Payroll	Net Pension Liability as a Percentage of Covered Payroll
2013	$21,243,744,377	$12,311,827,949	$8,931,916,428	57.96%	$3,720,809,962	240.05%
2014	$22,220,097,547	$14,203,015,303	$8,017,082,244	63.92%	$3,829,002,983	209.38%
2015	$23,238,395,386	$14,505,464,556	$8,732,930,830	62.42%	$3,995,447,345	218.57%
2016	$27,439,233,629	$14,069,978,917	$13,369,254,712	51.28%	$4,112,227,306	325.11%

* Schedule is intended to show information for 10 years. Additional years will be built prospectively as data becomes available.

Schedule of Employer Contributions
2007 to 2016
(In thousands)

Fiscal year ended June 30,:	Statutory Contributions	Covered Employee Payroll	Contributions as a Percentage of Covered Payroll
2007	$454,494	$3,340,488	13.6%
2008	488,770	3,601,722	13.6%
2009	578,672	3,838,000	15.1%
2010	547,670	3,713,593	14.7%
2011	538,692	3,731,383	14.4%
2012	548,353	3,706,137	14.8%
2013	581,447	3,720,810	15.6%
2014	653,128	3,829,003	17.1%
2015	717,793	3,995,447	18.0%
2016	756,558	4,112,227	18.4%

Notes: All contributions shown reflect statutory employer-paid contributions only. Employer contributions (picked-up employee/member contributions) and member contributions are excluded.

Schedule of Investment Returns
2014 to 2016

For fiscal year ended June 30,:	Annual Money-Rate of Return
2014	17.9%
2015	4.0%
2016	-1.2%

* Schedule is intended to show information for 10 years. Additional years will be built prospectively as data becomes available.

June 30, 2016

Note A - Description

There have been no changes in benefit terms since the last valuation.

There have been significant changes in following actuarial assumptions (as of June 30, 2015 and June 30, 2016) based on the Five-Year Experience Study report dated July 5, 2016:

- Decrease the investment return assumption from 7.65% to 7.00%.
- Decrease the mortality assumptions for longer life expectancy, expectancy, adding an explicit assumption for continued future mortality improvement (generational approach).

Other meaningful changes include

- Decrease the inflation assumption from 3.00% to 2.5%.
- Change the investment return assumption from net of all expenses to net of only investment expenses, add explicit charge for administrative expenses (0.35% of pay)
- Decrease the wage inflation (or employer budget growth) assumption from 4.00% to 3.50%
- For Police and Fire, increase the real component (above inflation) of the ultimate salary scale from 2.00% to 2.50%, leaving the nominal assumption of 5% unchanged
- For Police and Fire, decrease the step-rate portion of the salary scale
- For Police and Fire, increase the probabilities of members becoming disabled for Duty-related reasons
- Minor adjustments to the retirement, termination, and disability patterns for members consistent with experience and future expectations for active employees.

Methods and Assumptions Used in Calculations of Actuarially Determined Contributions

The actuarially determined contribution rates in the schedule of contributions are calculated as of June 30, 2016. The following significant actuarial methods and assumptions were used to determine contribution rates reported in that schedule. Please refer to the Actuarial Section for additional information on actuarial assumptions.

Valuation date	June 30, 2016
Actuarial cost method	Entry Age Normal
Amortization method	Level percent, open
Asset valuation method	4-year smoothed market
Assumed inflation rate	2.5%
Investment rate of return	7.00% (including 2.5% for inflation and a 4.50% net real rate of return)
Cost-of-living adjustments (COLAs)	
- COLAs are not compounded; and are based on original pension amount.	
- Membership date prior to July 1, 2012	2.5% (not compounded)
- Membership date after June 30, 2012	1.5% (not compounded)
Payroll growth rate assumption	3.50%

Projected salary increases are comprised of the following components:

	General Employees	Teachers	Police and Fire
Service component by year of credited service (a)	0.0% to 3.0%	0.0% to 2.0%	0.0% to 2.0%
General increase (b)	1.0%	1.25%	2.5%
Inflation (c)	2.5%	2.5%	2.5%
Total increase (a + b +c)	3.5% to 6.5%	3.75% to 5.75%	5.0% to 7.0%

Notes to Required Supplementary Information - Unaudited

Detailed salary increase rates by years of service are shown below:

	General Employees		Teachers	
Years of Service	Service-related Component (a)	Total Annual Rate of Increase (a + b +c)	Service-related Component (a)	Total Annual Rate of Increase (a + b +c)
1	3.00%	6.50%	2.00%	5.75%
2	3.00%	6.50%	1.75%	5.50%
3	2.00%	5.50%	1.75%	5.50%
4	1.50%	5.00%	1.50%	5.25%
5	1.50%	5.00%	1.00%	4.75%
6	1.25%	4.75%	1.00%	4.75%
7	1.25%	4.75%	0.75%	4.50%
8	1.00%	4.50%	0.75%	4.50%
9	1.00%	4.50%	0.50%	4.25%
10	1.00%	4.50%	0.50%	4.25%
11	0.75%	4.25%	0.50%	4.25%
12	0.75%	4.25%	0.50%	4.25%
13	0.50%	4.00%	0.25%	4.00%
14	0.50%	4.00%	0.25%	4.00%
15	0.50%	4.00%	0.25%	4.00%
16	0.50%	4.00%	0.25%	4.00%
17	0.50%	4.00%	0.25%	4.00%
18	0.50%	4.00%	0.25%	4.00%
19	0.50%	4.00%	0.25%	4.00%
20	0.25%	3.75%	0.25%	4.00%
21	0.25%	3.75%	0.25%	4.00%
22	0.25%	3.75%	0.25%	4.00%
23	0.25%	3.75%	0.25%	4.00%
24	0.25%	3.75%	0.25%	4.00%
25 or more	0.00%	3.50%	0.00%	3.75%

	Police and Fire	
Years of Service	Service-related Component (a)	Total Annual Rate of Increase (a + b +c)
1	2.00%	7.00%
2	2.00%	7.00%
3 or more	0.00%	5.00%

Notes to Required Supplementary Information - Unaudited

Mortality rates used in the valuation are:

Pre-retirement mortality rates are:

Multiples of the RP 2014 mortality table based on the occupation of the member.
The following factors are used in conjunction with the described above to derive the death rates:

	General Employees	Teachers	Police and Fire
Ordinary	75%	55%	58%
% of Ordinary Choosing Annuity	41%	52%	24%
Duty Related	5%	5%	12%

Post-retirement mortality rates are:

Healthy Retirees:

The 2016 Public Retirees of Hawaii mortality table, generational projection using the BB projection table from the year 2016 and with multipliers based on plan and group experience.

The following are sample rates of the base table as of 2016 with the corresponding multipliers:

Healthy Annuitant Mortality Rates Before Projection (Multiplier Applied)

	General Employees		Teachers		Police and Fire	
Age	Males	Females	Males	Females	Males	Females
50	0.1626%	0.1140%	0.1463%	0.1012%	0.1951%	0.1140%
55	0.3963%	0.1937%	0.3567%	0.1720%	0.4756%	0.1937%
60	0.6301%	0.2735%	0.5671%	0.2428%	0.7561%	0.2735%
65	0.9489%	0.3532%	0.8540%	0.3136%1	1.1387%	0.3532%
70	1.3733%	0.7404%	1.2360%	0.6574%	1.6480%	0.7404%
75	2.1071%	1.3116%	1.8964%	1.1645%	2.5285%	1.3116%
80	3.6268%	2.2573%	3.2641%	2.0041%	4.3522%	2.2573%
85	6.6210%	4.1830%	5.9589%	3.7138%	7.9452%	4.1830%
90	12.1005%	8.2371%	10.8905%	7.3133%	14.5206%	8.2371%
Multiplier	100%	107%	90%	95%	120%	107%
Setback	0	0	0	0	0	0

Notes to Required Supplementary Information - Unaudited

The following are life expectancy for individuals retiring in future years based on the assumption with full generational projection:

Life Expectancy for an Age 65 Retiree in Years

	Year of Retirement			
Gender	2020	2025	2030	2035
General Retirees				
Male	23.2	23.7	24.2	24.7
Female	26.4	26.8	27.2	27.5
Teachers				
Male	24.0	24.5	25.0	25.5
Female	27.3	27.7	28.0	28.3
Police and Fire				
Male	21.8	22.3	22.8	23.3
Female	26.4	26.8	27.2	27.5

Disabled Retirees:

Base Table for healthy retiree's occupation, set forward 5 years, generational projection using the BB projection table from the year 2016. Minimum mortality rate of 3.5% for males and 2.5% for females.

Change of Assumptions

The 2016 changes in assumptions are discussed below in Note B.

Note B – Significant Factors Affecting Trends in Actuarial Information

2016 Changes in Actuarial Assumptions

The following changes were made to the actuarial assumptions as of June 30, 2015 to June 30, 2016:

- The investment rate of return assumption was decreased from 7.65% to 7.00 %.
- Change the investment return assumption from net of all expenses to net of only investment expenses, add explicit charge for administrative expenses (0.35% of pay)
- The inflation assumption was decreased from 3.00% to 2.50 %
- Decrease the wage inflation (or employer budget growth) assumption from 4.00% to 3.50%
- The inflation component of salary increase rates decreased for all groups. The salary increase rates were changed to reflect a smaller productivity component for Teachers and Police & Fire. The service based component generally increased for most General Employees, decreased for most Teachers, and remain unchanged for most Police and Fire. The overall impact decreased assumed salary rate increase rates for all General Employees and Teachers, while remaining unchanged for almost all Police and Fire.
- The rates of mortality for active employees were decreased.
- The rates of mortality for healthy retirees and beneficiaries for most employee groups were decreased, adding an explicit assumption for continued future mortality improvement (generational approach).
- The rates of mortality for disabled retirees for most employee groups were decreased.
- The rates of disability of active employees increased for all General Employees, for Police and Fire from duty-related reasons and for Teachers from non-duty-related reasons.
- The rates of termination assumption for all employee groups was changed from separate male and female by employee group to a combined male & female by employee group. The rate of terminations for Police & Fire was increased. The rate of terminations for General Employees in the first six years of service decreased, and remains unchanged for other General Employees. After six years of service, the rates of termination generally increased Teachers, and remain unchanged for other Teachers.

2015 Changes in Actuarial Assumptions

The investment rate of return assumption was decreased from 7.75% as of June 30, 2014 to 7.65 % as of June 30, 2015.

2011 Changes in Plan Provisions Since 2010

The following changes were made to the actuarial assumptions:

- The investment rate of return assumption decreased from 8.00% to 7.75%.
- The salary increase rates were changed to reflect a larger productivity component for Police & Fire. Small changes also made to service-based components for all groups. The overall impact increased assumed salary increase rates for all employees.
- The rates of mortality for healthy retirees and beneficiaries for most employee groups were decreased.
- The rates of mortality for disabled retirees for most employee groups were increased.
- The rates of mortality for active employees for most employee groups were increased.
- The rates of disability for active employees for most general employees and teachers were decreased.
- The rates of retirement for most employees were increased.
- The rates of termination in the first six years of service for males generally increased, and remained mostly unchanged for females. After six years of service, the rates of termination generally increased for younger employees and decreased for employees from the age of 50.

Schedule 1

Combining Schedule of Changes in Fiduciary Net Position – All Trust Funds

Year ended June 30, 2016

	2016			
	Pension Accumulation Reserves	**Annuity Savings Reserves**	**Expense Reserves**	**Total**
Additions				
Appropriations and contributions:				
Employers	$ 756,558,222	$ -	$ -	$ 756,558,222
Members	-	236,801,861	-	236,801,861
Net investment gain	(169,368,110)	-	-	(169,368,110)
Total additions	587,190,112	236,801,861	-	823,991,973
Deductions				
Benefit payments	1,232,589,353	-	-	1,232,589,353
Refunds of member contributions	-	12,927,672	-	12,927,672
Administrative expenses	-	-	13,960,587	13,960,587
Total deductions	1,232,589,353	12,927,672	13,960,587	1,259,477,612
Other changes in net position restricted for pension benefits:				
Transfer due to retirement of members	142,146,596	(142,146,596)	-	-
Transfer of interest allocation	(99,289,033)	99,289,033	-	-
Transfer to pay administrative expenses	(13,014,314)	-	13,014,314	-
Return of unrequired funds due to savings in administrative expenses	-	-	-	-
	29,843,249	(42,857,563)	13,014,314	-
Net increase (decrease)	(615,555,992)	181,016,626	(946,273)	(435,485,639)
Fiduciary net position restricted for pensions:				
Beginning of year	12,201,467,662	2,293,539,670	10,457,224	14,505,464,556
End of year	$ 11,585,911,670	$ 2,474,556,296	$ 9,510,951	$ 14,069,978,917

See accompanying independent auditors' report.

Schedule 2

Social Security Contribution Fund

Statement of Changes in Assets and Liabilities

Year ended June 30, 2016

	2016			
	Beginning Balance	**Additions**	**Deductions**	**Ending Balance**
Assets				
Receivable from employers	$ -	$ 226,044,003	$ 226,044,003	$ -
Total assets	$ -	$ 226,044,003	$ 226,044,003	$ -
Liabilities				
Due to employers	$ -	$ 226,044,003	$ 226,044,003	$ -
Total liabilities	$ -	$ 226,044,003	$ 226,044,003	$ -

Supplementary Information (continued)

Schedule 3

Schedule of Administrative Expenses

Year ended June 30, 2016

		2016
Personnel services		
Salaries and wages	$	5,772,656
Fringe benefits		2,505,747
Net change in unused vacation credits		19,528
Total personnel services		8,297,931
Professional services		
Actuarial		102,500
Auditing and tax consulting		326,235
Disability hearing expenses		83,287
Legal services		510,267
Medical		363,109
Other services		77,395
Total professional services		1,462,793
Communication		
Postage		218,286
Printing and binding		72,831
Telephone		94,249
Travel		84,586
Total communication		469,952
Rentals		
Rental of equipment		96,876
Rental of premises		18,292
Total rentals		115,168
Other		
Armored car service		7,227
Repairs and maintenance		1,505,629
Stationery and office supplies		22,546
Miscellaneous		69,129
Total other		1,604,531
Depreciation		2,010,212
	$	13,960,587

See accompanying independent auditors' report.

Schedule 4

Schedule of Investment Expenses

Year ended June 30, 2016

		2016
Real estate and alternative investment expenses		
Operating expenses	$	41,554,924
Mortgage interest		7,632,088
Total real estate and alternative investment expenses		49,187,012
Investment expenses		
Investment manager/advisor fees	$	36,014,296
Bank custodian fees		576,530
Other investment expenses		1,493,641
Total investment expenses		38,084,467
Securities lending expenses		
Borrower rebates		100,435
Management fees		1,074,668
Total securities lending expenses		1,175,103
	$	88,446,582

See accompanying independent auditors’ report.

Employees' Retirement System

of the State of Hawaii

INVESTMENT SECTION

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Letter from Chief Investment Officer

DAVID Y. IGE
GOVERNOR

THOMAS WILLIAMS
EXECUTIVE DIRECTOR

KANOE MARGOL
DEPUTY EXECUTIVE DIRECTOR

STATE OF HAWAII
EMPLOYEES' RETIREMENT SYSTEM

November 29, 2017

Board of Trustees
201 Merchant Street, Suite 1400
Honolulu, HI 96813

Dear Members of the Board:

I am pleased to present investment highlights and performance for the Investment Section of the Comprehensive Annual Financial Report ("CAFR") for the fiscal year ending June 30, 2016 ("FY2016").

- ERS Fiduciary net position was valued at were valued at $14.1 billion as of June 30, 2016. The portfolio decreased by $0.4 billion over the fiscal year. The ERS continues to be ranked as one of the 250 largest institutional investors globally, a list that includes sovereign wealth funds, public retirement plan sponsors, and corporate plan sponsors.

- The ERS investment portfolio underperformed its one year and five year Policy Benchmark returns by 0.8% and 0.2%, respectively, while ending slightly above the Policy Benchmark for the three year return at 0.3%. The portfolio's return for the year was down 0.8%. The portfolio continued to outperform its peer group as measured by the BNY Mellon Public Funds Greater than $1 billion, for periods beyond one year. It matched the median public fund's performance for the ten year period.

ECONOMIC CONDITIONS

Markets were driven by dramatic episodic movements from by various geopolitical sources, followed by sharp though limited recoveries throughout the year.

Recall that at the end of fiscal-year 2015, the Greece debt impasse with the European Union ("EU") resulted in a nearly 3% drawdown on the ERS portfolio. That selloff could be laid directly on the uncertainty created by the EU and Greek leadership's failure to negotiate acceptable terms to keep the Greek economy, essentially, solvent. However, by mid-July, Greece was forced to accept negotiations to receive a new 86 billion euro package over three years predicated on tax and pension reforms. Acceptance of the new agreement, which had many elements of previous packages that the Greek government rejected just weeks before, helped the crisis to recede from the headlines of media coverage.

With Greece tamed for the moment, the summer experienced the initial big episodic market fluctuation from China. Nerves were already tense as slowing growth to 7% per annum threatened to unhinge global investments that have come to rely on China's impressive economic engine over the past couple of decades. A route in Chines stock markets lost some $3.4 trillion over the summer was further hampered when authorities took action that included the suspension of trading in stocks representing 21% of market capitalization at one point. Chinese economic policymakers then went "all in" and executed a surprise devaluation of its currency thereby precipitating global panic. Chinese authorities quickly reversed course and provided support for the currency, possibly increasing the confusion of global investors.

Markets reacted with relatively outsized moves that continued into September. Volatility indexes spiked to levels not seen since 2011, when U.S. was downgraded, peaking at the 40 level on August 24. As a result, for 2015 year-to-date, peak to trough values of large U.S. stocks ranged 13%. Broad global stocks ranged 18%, and emerging market indexes ranged 31%. The S&P 500 fell 8.5%, which was the largest drop since the dismal first quarter of fiscal-year 2012. The U.S. Federal Reserve ("Fed") put off raising interest rates, citing sluggish growth data, while the International Monetary Fund ("IMF") issued a warning that corporate failures would increase in emerging economies due to a decade of debt issuance. Near turn market direction now turned on U.S. corporate earnings strength and any indication of the Federal Reserve's policy on interest rates. Commodity prices indicated that the growth needed to justify current valuations might not be possible.

Equity markets roared back in October with the S&P 500 soaring 8.7%; its best month since October 2011. The U.S. was not alone as broad equity measures in Europe and Japan were up 8.0% and 9.7%, respectively, for the month. While concerns about global slowing and Fed tightening of interest rates dominated the late summer trading, the fall season saw central banks indicate or move to more supportive monetary policy. Concerns for slower growth remained, and the Fed put itself in a tough position of indicating an imminent rate increase while remaining open to data driven decision making. U.S. economic growth slowed to 1.5% annualized in the first quarter of FY2016. The slowing growth in the economy occurred despite continued low interest rates, increased household consumption, and strong final sales of domestic products. Market watchers scrutinized unemployment numbers in positioning for potential rate increases. On a bright bipartisan note, the U.S. federal government kept from shutting down when congressional leaders found a way to agree to terms to keep paying its debts through March 2017.

Following the worst downturn in equities indexes since 2011, the month of October saw the strongest returns since 2011. November was relatively muted, but then December saw unresolved concerns point markets down. Much of the market turbulence was being driven by geopolitical and macroeconomic surprises. The Fed held off on an interest rate hike until December 16, its first in ten years, and the growing reach of extremist terrorism heighted security concerns globally. However, the December selloff in oil and commodities put the most direct pressure on corporate balance sheets and concerns for future defaults and a selloff in risky assets.

Ordinarily, the Fed's December rate hike and a change in monetary policy would dominate market reaction, but falling energy and commodity prices, particularly oil and decisions not to cut production by Saudi Arabia, at the end of 2015 overwhelmed conditions. With oil well under $40 dollars a barrel, a price some observers felt was breakeven for certain producers, speculation grew that the unanticipated supply would have ramification in the high yield bond market and beyond. Entering 2016, markets had to still contend with concerns for slow growth in China and emerging markets and continued uncertainty around terrorism and Middle East tensions. Equity markets ended the year with losses for the first time since 2008. The New Year brought the biggest losses for a first day of trading. Global equity markets plunge over repeated days along with a selloff in commodity markets, focused on the price of oil. Oil prices hit a low of about $26 a barrel on January 20th. In the U.S., equities saw its worst January since 2009 at -5.1%, although the actual number of down trading days was about even with up days. However, the down days were more severe with all but one down day over 1% in losses. The VIX volatility index for large U.S. stocks remained above the historic average of 20 for all but a single trading day. U.S. Treasury bonds along with other safety assets rallied with the increased market volatility.

There were several disconnects that perplexed investors. The severe drop in oil prices and stock markets seemed to be too closely correlated. The U.S. dollar strengthening with economic weakness was odd. Additionally, the markets priced in one or two interest rate hikes by the Fed, while Fed officials indicated as many as four rate hikes were still possible in calendar-year2016. China economic weakness and perpetual slow growth in developed economies weighed on investor sentiment. Investors looked for secondary effects of the market dislocations as credit markets took a hit, particularly in high yield markets that saw spreads widen. Meanwhile, futures traders were more optimistic for the U.S. economic prospects, pricing the futures yield curve more positively, implying that the economy might continue to experience a healthy albeit tempered recovery.

As the general economic recovery from the Great Financial Crisis stretched out and job growth and consumer confidence remained solid, the prospects for inflation or a recession should increase. However, global monetary authorities took decisive action at the beginning of 2016 with the European Central Bank ("ECB") emphatically noting it would be accommodative and the Bank of Japan actually charging negative interest rates on new bank deposits in support of increasing economic activity.

As spring sprung, oil price instability paused, and markets turned toward central bank communications and the prospects for monetary policy. In the U.S., Federal Reserve chair, Janet Yellen, told markets not to rely so much on the so called "dot" chart and listed several criteria for further rate increases. The implications were that the Fed might not raise rates as rapidly as previously expected. In Europe, ECB president, Mario Draghi outlined multiple measures that would be taken to stimulate growth and spark inflation, but also curiously added that rates were at a low. Such commentary also led to market observers to wonder if the 2 year-old U.S. dollar rally was over. The currency weakness in the greenback helped provide some stability for oil and a rally in equities.

Macro risks continue to dominate the economy. A U.K. general referendum to exit the European Union loomed for early summer, and had echoes of the losses caused by the Greek crisis the previous June, which had material consequences for the portfolio. However, global equity markets continued on a recovery since oil producers, namely Saudi Arabia and Russia called for a production freeze in mid-February, which calmed the oil-equity swoons of the market. The pledge was supposed to have been ratified during talks in the city of Doha of some 18 oil producing nations in mid-April. However, those talks ended without a commitment or resolution as differences between the Saudis and Iran derailed the collective effort. The failed coordination did not precipitate a collapse in oil prices, and as a result the equity market continued to mend itself and focus more on fundamentals.

In Europe, concerns over anemic growth prevailed as the ECB seemingly paused at current level of monetary support, but indicated that more accommodative efforts would be forthcoming toward the end of summer. Some market commentators wondered aloud if Europe's pregnant pause intentionally left the door open for the Fed to raise key interest rates over the summer. At the time, the Fed and markets synced expectations on two interest rate increases before year-end, but concerns over exogenous events such as a the outcomes of a possible British exit from the EU and the U.S. presidential elections loomed large over any rate hikes.

In the rest of the world, concern for China growth abated somewhat, but uncertainty over the second largest economy continued with comments from global investors that Chinese credit markets were an un-pricked bubble. Emerging market equities joined debt investment in posting very strong returns, going into summer.

The end of the fiscal-year saw global market continue to move higher as volatility moved lower. There was much changing sentiment over the Fed's direction, but the ECB called on European governments to do more to stimulate growth, which the central bank continued to be accommodative in its bond buying program. Even the uncertainty over the U.K.'s vote to leave the EU had only a momentary but dramatic drag on markets.

Markets ended the year poised for further strength, after facing down a host of episodic and dramatic uncertainties in FY2016.

Portfolio Activity

FY2016 was analogous in certain ways to a set of ocean waves in the form of waves of market volatility rolling in to disrupt market calm and relatively steady economic improvements. Such market conditions required experienced and disciplined investors to navigate the tides. Specifically, the three major waves of market volatility were the surprise devaluation of the Chinese currency in August, the sudden steep drop in oil prices and the tandem selloff in the stock market in January, and the unexpected election results of the U.K. to leave the European Union in June. During these episodes, the ERS portfolio lost 6%, 8%, and 3%, respectively.

After each subsequent market drawdown, the portfolio recovered its value, but just like a surfer caught in a huge set, it was not able to recover enough to catch a wave in. Actually, the portfolio was down slightly in FY2016 (-0.8%), which is partially attributable to long-only active U.S. stock manager performing poorly and a relatively large exposure of the portfolio to non-U.S. equity manager.

The cynical observer will quickly conclude that FY2016 was a wipeout for the ERS. It did not meet the assumed rate of return. Performance was negative. A majority of peer pension plans outperformed the ERS in the period. While these statements are factual, they miss the important point. The ERS is a long-term investor. The assumed rate is a long-term average to be achieved over decades. Performance cannot hope to be positive every year, but was it was in fact resilient in FY2016. While experiencing major securities dislocations due to macro risk factors not seen since 2011 and 2008, the portfolio withstood each drawdown to recover its losses. In the end, the portfolio lost its footing because of discretionary stock-pickers inability to keep up with broad market indexes.

Needless to say, the poorest performing risk class for the ERS was its traditional growth or equity fund managers that collectively were down 4.8% underperforming its policy benchmark by nearly 1.0%. The best performing assets were in private markets. Real Estate returned 15.1% and Private Equity returned 5.2%, outperforming each ones benchmark by 3.2% and 7.5%, respectively.

The main message of the ERS's FY2016 portfolio activity was to continue on with its portfolio restructuring. In fact, the ERS remained focused on strategic mission critical activities to lower portfolio risk with more diversification of investments, to increase transparency through risk-based portfolio construction, and to control costs by negotiating lower fees with active managers adding new passive funds. Under the Board of Trustees direction, staff began to reconstruct the portfolio to better withstand the rough waters of global markets by making allocation decisions based on risk characteristics that are consistent with an evidence-based understanding of how financial markets work.

Office Development

FY2016 was the second complete year for the investment team in the Investment Office. The team consists of three Investment Offices, two Investment Specialists, one Chief Investment Officer, and one Secretary. The enhancement to the office's functions capabilities of staff resources continues to be significant. Staff is working with the Board and consultants to execute major policy changes focused on the further development of the Investment Policy Manual and restructuring of the portfolio structure. Some changes have already begun with the adoption of policy and the hiring of passive equity managers. It is expected that the next 12 to 18 months will result in a remaking of the portfolio. Staff is evaluating new analytical tools for risk management and how to streamline decision-making and operations related to private market investing. Ongoing professional management of the trust's assets will greatly increase the potential for the overall pension plan to remain a sustainable program.

OUTLOOK

While FY2016 was disappointing at a superficial review, it is heartening that the improvements in the portfolio and policy designs are beginning to become evident. In years past such market challenges as those experienced over the past 12 months might have resulted in much poorer results. The current portfolio was resilient in getting back lost performance quickly. Additionally, staff improved operations and capacity to execute investment directives. Increasingly, staff is taking a leadership role to work with the outside consultants and fund managers. Staff is gaining experience and knowledge to better manage the assets of the ERS.

We must continue to focus on the long-term and strategic needs of the investment portfolio. Clarity in policy direction and discipline in execution of strategy will lead to better results. The better alignment of interests and incentives for the ERS fund managers, consultants, and staff with the plan's members and beneficiaries will produce a portfolio even better able to withstand the episodic rouge waves and prolonged storms of market downturns we are sure to face in the future.

Respectfully yours,

Vijoy P Chattergy

Vijoy P. Chattergy
Chief Investment Officer

Letter from Investment Consultant

PCA PENSION CONSULTING ALLIANCE

MEMORANDUM

March 20, 2017

Board of Trustees
Employees' Retirement System of the State of Hawaii
City Financial Tower
201 Merchant Street, Suite 1400
Honolulu, HI 96813-2980

Dear Trustees:

Enclosed is our report on the investment activity for the Employees' Retirement System of the State of Hawaii (ERS) for periods ending June 30, 2016, as requested by the Government Financial Officers' Association (GFOA).

Hawaii ERS-Total Fund Performance

The net assets of the Retirement System were $14.1 billion as of June 30, 2016, a decrease of roughly ($435) million for the fiscal year. The ERS Total Fund generated mixed absolute and relative returns throughout the majority of the portfolio. The investment return for the Total Fund, expressed as a time-weighted total rate of return, was -0.8% for the 2016 fiscal year, compared to the benchmark's return of 0.0% and the BNY Mellon Public Funds Greater than $1 Billion Database peer median return of +0.4%. For the three-year period ending June 30, 2016, the Total Fund returned +6.8% per annum versus the benchmark's return of +6.5% and the BNY Mellon Public Funds Greater than $1 Billion Database peer median return of +6.5%. For the trailing five-year period ending June 30, 2016, the Total Fund returned +6.5% per annum versus the benchmark's return of +6.7% and the BNY Mellon Public Funds Greater than $1 Billion Database peer median return of +6.4%. The Total Fund’s returns over all examined periods were consistent with the global capital markets, and in particular, were primarily driven by the public global equity markets.

Strategic Class Performance

Domestic Equity[1] returned -1.9% for the 2016 fiscal year versus the Domestic Equity Index's return of +2.1% and the BNY Mellon Domestic Equity Database median return of -2.1%. Diversified Fixed Income posted a +4.4% return for the fiscal year versus the Diversified Fixed Income Blended Index’s return of +6.2% and the BNY Mellon Domestic Fixed Income Database median return of +4.4%. International Equity[1] posted a -10.5% return for the fiscal year versus the International Equity Index’s return of -10.2% and the BNY Mellon International Equity Database median return of -8.6%. International Fixed Income returned +1.8% for the fiscal year versus the International Fixed Income Blended Index’s return of +4.3% and the BNY Mellon International

1 Domestic and International Equity returns reflect the appropriate portion of the Global Equity portfolio (funded August 2011).
2 Lagged one quarter

PCA PENSION CONSULTING ALLIANCE

Fixed Income Database median return of +3.0%. Real Estate[3] returned +15.1% for the year ending June 30, 2016, versus the NCREIF[3] Total Index's return of +11.8%. Additional classes and their fiscal year returns include: Private Equity[3] at +5.2%, Real Return at +5.3%, and Covered Calls at +3.6%.

During 2014, the ERS adopted a risk-based, functional framework for allocating capital within the Total Fund. This framework makes use of strategic/functional classes that in-turn utilize underlying asset classes and strategies. As a result, nearly all of the ERS's existing asset classes have been remapped to various risk-based, functional strategic classes. Two pre-existing classes (Real Return and Real Estate), however, remained unchanged at this stage in the process. Over time, the Real Estate class will become embedded in the Broad Growth class and additional strategic classes may be added. Based on these changes, the verbiage below highlights the performance of the ERS's new risk-based strategic classes.

As calculated by BNY Mellon, the ERS's custodial bank, the Broad Growth[4] class produced a -2.6% return for the fiscal year versus the Broad Growth benchmark's return of -2.2%. The Broad Growth class utilizes three sub-components: 1) Traditional Growth, 2) Stabilized Growth, and 3) Private Growth2. The Traditional Growth sub-component generated a -4.8% return for the fiscal year, the Stabilized Growth sub-component produced a +4.2% return for the fiscal year, and the Private Growth2 sub-component generated a +5.2% return for the fiscal year. The Principal Protection class produced a +3.1% return for the fiscal year versus the Principal Protection benchmark's return of +4.2%. The Real Return class produced a return of +5.3% for the year ending June 30, 2016. The Real Estate[4] class returned +15.1% for the year ending June 30, 2016 versus the NCREIF[4] Total Index's return of +11.8%.

The ERS's transition to this new risk-based, functional allocation framework will likely require multiple years to fully complete. Furthermore, as a result of the 2015 Asset-Liability Study that was finalized in the 2016 fiscal year, it is expected that the ERS's implementation of the new long-term strategic allocation will be completed by the end of the 2020 fiscal year.

Market Conditions

The market backdrop for fiscal year 2016 was largely an extension of fiscal years 2014 and 2015, characterized by improving economic fundamentals, geopolitical uncertainty, and the continued, methodical unwinding of the Federal Reserve's quantitative easing program. With respect to the Federal Reserve's actions, fiscal year 2016 experienced the first increase in short-term interest rates since before the Great Financial Crisis. In-line with fiscal year 2015, fiscal year 2016 experienced material dichotomy in regards to returns across the global capital markets. For example, whereas large cap U.S. equities generated positive returns over the year, small cap U.S. equities produced meaningfully negative returns over the same period. Generally speaking, larger cap U.S. equities, private equity, private real estate, duration-oriented fixed income, and credit-oriented fixed income all saw positive absolute returns over the 2016 fiscal year. Non-U.S. equities and commodities, however, generated material negative returns that were near or below -10% for the fiscal year.

3 Lagged one quarter.
4 Contains lagged and non-lagged components
4 Lagged one quarter.

Letter from Investment Consultant (continued)

Inflation remained muted throughout the majority of the fiscal year, with only the final quarter producing an inflation figure above the Federal Reserve's annualized policy target of 2.0%. Unemployment in the United States continued to decline throughout the fiscal year, ultimately coming in at 4.9% at the end of the period. With respect to geopolitical uncertainty, the United Kingdom's referendum to withdrawal from the European United ("Brexit") was a material event at the end of the fiscal year, however, the majority of its short-term capital market impacts were reversed as quickly as they were introduced.

During fiscal year 2016, equities within the U.S., as measured by the Russell 3000 Index, advanced by +2.1%, while non-U.S. equities, as measured by the MSCI ACWI ex U.S. Index GD, declined by -9.8%. The relative performance between growth and value stocks in the domestic equity market was variable, with approximate parity in the larger cap segment and material outperformance by value stocks in the smaller cap segment. Additionally, emerging markets equities continued to trail their developed markets counterparts during fiscal year 2016.

In aggregate, global fixed income markets provided investors with returns in-line with their historical averages but above forward-looking expectations. With the exception of high yield, the majority of the fixed income indices produced returns in the mid-to-upper single digits. With respect to particular indices, investment-grade bonds, as measured by the Barclays Capital Aggregate Bond Index, returned +6.0%. Government bonds (BC Government) produced a return of +6.0%, mortgage-backed bonds (BC MBS) generated a +4.3% return, investment-grade credit bonds (BC Credit) rose by +7.6%, high-yield corporate bonds (BC High Yield) returned +1.6%, and emerging markets bonds (BC Emerging Markets) increased by +7.8%.

Throughout the complicated market conditions of the past few years, with its constant review and oversight, the Board continues to position the Employees' Retirement System of the State of Hawaii for competitive long-term performance consistent with its objectives.

Sincerely,

Pension Consulting Alliance, LLC

Report on Investment Activity by Investment Consultant

PCA PENSION CONSULTING ALLIANCE

Report on Investment Activity for the
Employees' Retirement System of the State of Hawaii
Prepared by Pension Consulting Alliance, LLC
June 2016

Outline of Investment Policies

The primary goal of the Plan is the preservation of capital. The Board of Trustees seeks preservation of capital with a consistent, positive return for the Fund. Although pure speculation is to be avoided, the Board appreciates the fact that an above-average return is associated with a certain degree of risk. Risk to be assumed must be considered appropriate for the return anticipated and consistent with the total diversification of the Fund.

Strategic Asset Allocation Policy

A formal asset-liability study is conducted every three-to-five years to verify or amend the Plan's policy targets. The targets are designed to achieve a certain level of return, and associated level of risk, that is aligned with the Plan's goals and objectives. The targets are evaluated on the basis of assets designated to each strategic class by the Board, rather than on a current invested position. The targets will be pursued primarily by cash flow on a long-term basis and will be revised if significant changes occur within the economic and/or capital market environment according to the rebalancing guidelines. The targets are to be reviewed annually for reasonableness relative to significant economic and market changes. The Board of Trustees initiated a new asset-liability study during fiscal year 2015 that was completed during fiscal year 2016. As a result of the 2015 Asset-Liability Study, the Board adopted a new long-term strategic allocation policy which included evolving policy targets designed to efficiently transition the Plan to the new long-term strategic allocation over time. It is expected that the ERS's implementation of the new long-term strategic allocation will be completed by the end of the 2020 fiscal year. The 2015 Asset-Liability Study, and the approved long-term strategic allocation, fully incorporated the new risk-based, functional allocation framework. The strategic allocation policy highlighted below, coupled with the actual ERS portfolio, reflect the initial stages of decisions made during the 2015 Asset-Liability Study.

Strategic Asset Allocation Policy (as of 6/30/2016)

During the 2016 fiscal year, the Plan was strategically invested in the following classes:

	Strategic Allocation (asset classes)		**Strategic Allocation (risk-based classes)**
Domestic Equity	**30%**	Broad Growth	**76%**
International Equity	**26%**	Principal Protection	**12%**
Total Fixed Income	**20%**	Real Return	**5%**
Real Estate	**7%**	Real Estate	**7%**
Private Equity	**7%**		
Real Return	**5%**		
Covered Calls	**5%**		

Report on Investment Activity by Investment Consultant (continued)

Long-Term Strategic Allocation Policy

As a result of the formal asset-liability study that began in fiscal year 2015 and was completed in fiscal year 2016, the Board adopted a new long-term strategic allocation policy. It will likely require multiple years to fully complete this transition, and thus it is expected that the ERS's implementation of the new long-term strategic allocation policy will be completed by the end of the 2020 fiscal year.

Expected Annualized Return and Risk

Based on PCA's 2016 Capital Market Assumptions, the target allocation is expected to achieve a long-term geometric average return of 7.65% (5.40% real return with expected inflation of 2.25%). The annual nominal return will vary on a year-by-year basis but is expected to approach the 7.65% annualized return expectation over time. For example, the annual nominal return is expected to fall within a range of minus (0.7%) and 16.5% approximately two-thirds of the time.

Long-Term Strategic Allocation Targets

The ERS will strategically invest in the following asset classes:

Strategic Allocation (risk-based classes)	Strategic Class Weights	Expected Long-term Geometric Average Return	Expected Long-term Real Return[1]	Expected Annual Standard Deviation
Broad Growth	63%	8.35%	6.10%	14.65%
Principal Protection	7%	2.20%	-0.05%	3.50%
Real Return	10%	6.15%	3.90%	9.80%
Crisis Risk Offset	20%	5.50%	3.25%	11.55%
Total Portfolio	**100%**	**7.65%**	**5.40%**	**8.55%**

[1] Uses an expected inflation of 2.25%

Report on Investment Activity by Investment Consultant (continued)

PCA PENSION CONSULTING ALLIANCE

Evolving Strategic Allocation Policy

Implementation Plan for Long-term Strategic Policy						
	Current (6/30/2016)	4/1/2017	1/1/2018	1/1/2019	1/1/2020	Long-Term 7/1/2020
Broad Growth	76%	76%	72%	68%	64%	**63%**
Principal Protection	12%	9%	8%	8%	7%	**7%**
Real Return	5%	5%	7%	8%	9%	**10%**
Real Estate	7%	0%	0%	0%	0%	**0%**
Crisis Risk Offset	0%	10%	13%	16%	20%	**20%**
Opportunities	0%	0%	0%	0%	0%	**0%**
Total Portfolio	*100%*	*100%*	*100%*	*100%*	*100%*	***100%***

Manager Evaluation

Public markets managers are measured against relevant indices and/or their respective peer groups of managers. Market indices and peer group benchmarks (when applicable) are assigned to each manager and are intended as a guide for the investment manager to understand the risk/reward posture of their portfolio. Real Estate managers are measured against the median performance of the BNY Mellon Real Estate Database and the NCREIF Total Return Index. Private Equity managers are measured against public market proxies and relevant peer groups. Managers have full discretion to manage the risk posture of their portfolios relative to their designated market index and may, with conviction and appropriate expertise, execute security strategies not reflected by their market index as long as they conform to the investment guidelines and the laws of the State of Hawaii.

Investment Practices

The full Employees' Retirement System of the State of Hawaii Investment Policy, Guidelines, and Procedures Manual (Manual) describes, in detail, acceptable investment practices, manager reporting requirements, manager performance guidelines, distribution of brokerage commissions, and securities lending guidelines. Material revisions to the Manual occurred during each of the last four fiscal years and will continue to transpire throughout the evolution of the Plan.

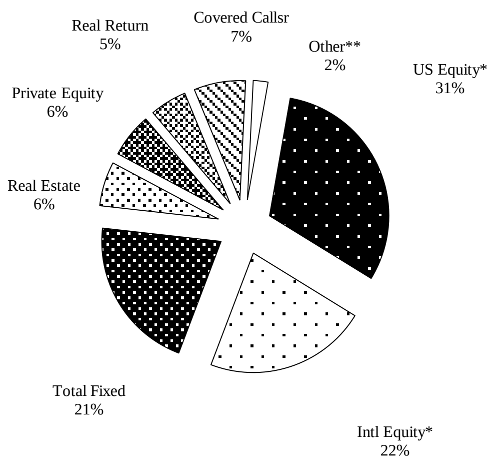
All rates of return are calculated using methodologies that are generally accepted by the Global Investment Performance Standards (GIPS). All public markets manager returns are time-weighted rates of return based on daily or monthly custodial data. All private markets manager returns seek to accurately represent cash flows and appraisal values.

Report on Investment Activity by Investment Consultant (continued)

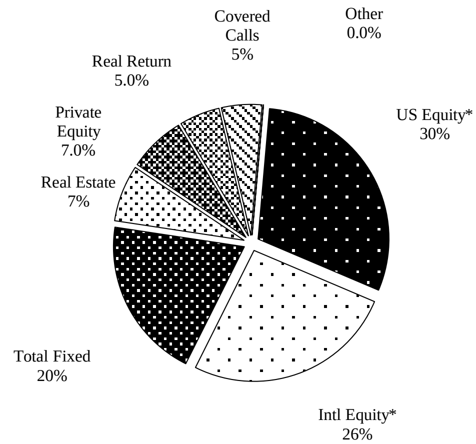
PCA PENSION CONSULTING ALLIANCE

Strategic Allocation as of June 30, 2016 (Asset Classes):

Actual Allocation



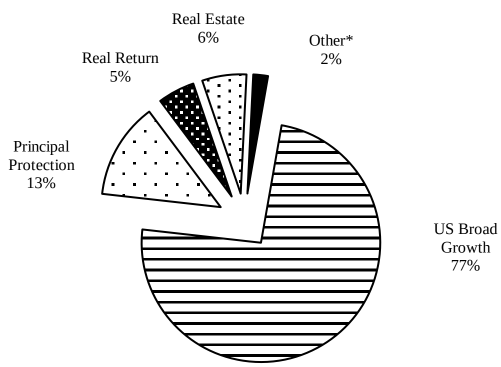
Target Allocation



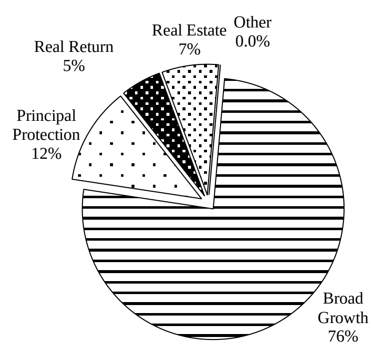
* Domestic and International Equity allocations reflect the appropriate portion of the Global Equity portfolio (funded August 2011).
** Includes transition activity/accounts that were in process at the end of the fiscal year

Strategic Allocation as of June 30, 2016 (Risk-based Classes):

Actual Allocation



Target Allocation



* Includes transition activity/accounts that were in process at the end of the fiscal year

Report on Investment Activity by Investment Consultant (continued)

PCA PENSION CONSULTING ALLIANCE

Investment Results as of June 30, 2016 (Asset Classes):

	Year Ended June 30, 2016	2015	2014	2013	2012	3 Years Ended 6/2016	5 Years Ended 6/2016
Domestic Equity*	**(1.90%)**	**8.01%**	**26.28%**	**21.16%**	**1.08%**	**10.19%**	**10.38%**
Domestic Equity Blended Index[1]	2.14%	7.29%	25.22%	21.46%	3.84%	11.13%	11.60%
Median Total Domestic Equity**	(2.12%)	7.75%	25.30%	22.16%	1.38%	9.73%	10.42%
Diversified Fixed-Income	**4.38%**	**1.90%**	**6.28%**	**1.72%**	**7.51%**	**4.17%**	**4.33%**
Diversified Fixed Income Blended Index[2]	6.21%	1.93%	5.28%	0.72%	7.19%	4.46%	4.24%
Median Domestic Fixed**	4.44%	1.77%	6.11%	0.41%	8.10%	4.08%	4.26%
International Equity*	**(10.48%)**	**(4.28%)**	**20.80%**	**12.64%**	**(14.36%)**	**1.16%**	**(0.03%)**
International Equity Blended Index[3]	(10.24%)	(5.26%)	21.75%	13.63%	(14.36%)	1.16%	0.15%
Median Non-U.S. Equity**	(8.60%)	(2.71%)	22.34%	15.77%	(13.10%)	3.01%	2.24%
International Fixed-Income	**1.82%**	**6.80%**	**6.88%**	**9.26%**	**3.42%**	**5.14%**	**5.60%**
International Fixed Blended Index[4]	4.34%	3.71%	5.72%	3.47%	6.22%	4.99%	4.93%
Median Non-U.S. Fixed**	2.95%	(10.02%)	9.04%	2.23%	6.56%	0.75%	0.42%
Covered Calls* **	**3.57%**	**5.56%**	**13.53%**	**6.57%**	**---**	**7.47%**	
CBOE S&P 500 BXM Index	3.99%	3.64%	14.12%	5.29%	---	7.14%	---
Real Estate** **	**15.06%**	**18.69%**	**6.47%**	**20.77%**	**15.99%**	**13.29%**	**---**
NCREIF Total Property Index****	11.84%	12.72%	11.18%	10.52%	13.41%	11.91%	15.29%
Median Real Estate**	11.88%	13.72%	14.20%	10.80%	9.45%	12.99%	11.93%
Private Equity** **	**5.17%**	**12.83%**	**20.39%**	**8.91%**	**11.87%**	**12.63%**	**12.77%**
Real Return	**5.33%**	**5.37%**	**7.96%**	**0.34%**	**5.48%**	**6.21%**	**4.87%**
Total Fund	**(0.78%)**	**4.23%**	**17.77%**	**12.57%**	**(0.14%)**	**6.79%**	**6.48%**
Composite Benchmark[5]	0.98%	3.47%	17.51%	11.61%	2.70%	7.08%	7.08%
Median Fund**	0.43%	3.11%	17.14%	12.65%	1.35%	6.48%	6.43%

*Domestic and International Equity returns reflect the appropriate portion of the Global Equity portfolio (funded August 2011).

** Universe data provided by BNY Mellon and Northern Trust. Class universes include managers and/or composites. Total Fund universe is the BNY Mellon: Public Funds > $1 billion for 2014-2016 & trailing periods and the Northern Trust: Public Funds > $1 Billion for 2012-2013 fiscal years.

***Received funding during fiscal year 2012.

****Lagged one quarter.

[1] 80% S&P 500 Index, 10% S&P Mid Cap 400 Index and 10% Russell 2000 Index through 12/31/08; Russell 3000 Index thereafter.

[2] BC Aggregate Index through 6/30/08; 85% BC US Universal Index and 15% Multiverse Non-US Hedged Index thereafter.

[3] 85% MSCI EAFE Free ND Index and 15% MSCI Emerging Markets ND Index through 6/30/11; 85% MSCI World ex US ND Index and 15% MSCI Emerging Markets ND Index through 6/30/12; MSCI ACWI ex US ND Index thereafter.

[4] Citigroup Non-US WGBI through 6/30/08; BC Multiverse Non-US Hedged Index thereafter.

[5] 34.9% S&P 500 Index, 4.5% S&P 400 Mid Cap Index, 4.5% Russell 2000 Index, 14.5% MSCI EAFE Free ND Index, 2.5% MSCI Emg Mkts ND Index, 7.5% NCREIF Property Index lagged, 3.6% Alternative Investments, 21.0% BC Aggregate Index, and 7.0% CG WGBI ex US Index through 12/31/08;
41.0% Russell 3000 Index, 14.5% MSCI EAFE Free ND Index, 2.5% MSCI Emg Mkts ND Index, 9.0% NCREIF Property Index lagged, 5.0% Alternative Investments, 21.0% BC Universal Index, and 7.0% BC Multiverse ex US Hedged Index through 6/30/11;
41.0% Russell 3000 Index, 14.5% MSCI World ex US ND Index, 2.5% MSCI Emg Mkts ND Index, 9.0% NCREIF Property Index lagged, 5.0% Alternative Investments, 21.0% BC Universal Index, and 7.0% BC Multiverse ex US Hedged Index through 9/30/11;
35.0% Russell 3000 Index, 18.0% MSCI World ex US ND Index, 3.0% MSCI Emg Mkts ND Index, 7.0% NCREIF Property Index lagged, 5.0% Private Equity, 5.0% Real Return, 18.0% BC Universal Index, 6.0% BC Multiverse ex US Hedged Index, and 3.0% CBOE BXM Index through 6/30/12;
30.0% Russell 3000 Index, 26.0% MSCI ACWI ex US ND Index, 7.0% NCREIF Property Index lagged, 6.0% Private Equity, 5.0% Real Return, 15.75% BC Universal Index, 5.25% BC Multiverse ex US Hedged Index, and 5.0% CBOE BXM Index through 6/30/13;
30.0% Russell 3000 Index, 26.0% MSCI ACWI ex US ND Index, 7.0% NCREIF Property Index lagged, 7.0% Private Equity, 5.0% Real Return, 15.0% BC Universal Index, 5.0% BC Multiverse ex US Hedged Index, and 5.0% CBOE BXM Index thereafter.

Report on Investment Activity by Investment Consultant (continued)

PCA PENSION CONSULTING ALLIANCE

Investment Results as of June 30, 2016 (Risk-based Classes):

	Year Ended June 30,					3 Years Ended	5 Years Ended
	2016	2015	2014	2013	2012	6/2016	6/2016
Broad Growth *	**(2.62%)**	---	---	---	---	---	---
Broad Growth Blended Index[1]	**(2.17%)**	---	---	---	---	---	---
Principal Protection	**3.11%**	**2.78%**	**6.28%**	**1.72%**	**7.51%**	**4.05%**	**4.26%**
Principal Protection Blended Index[2]	4.24%	1.73%	5.28%	0.72%	7.19%	3.74%	3.80%
Real Estate**	**15.06%**	**18.69%**	**6.47%**	**20.77%**	**15.99%**	**13.29%**	**15.29%**
NCREIF Total Property Index**	11.84%	12.72%	11.18%	10.52%	13.41%	11.91%	11.93%
Median Real Estate**	11.88%	13.72%	14.20%	10.80%	9.45%	12.99%	12.77%
Real Return	**5.33%**	**5.37%**	**7.96%**	**0.34%**	**5.48%**	**6.21%**	**4.87%**
Total Fund	**(0.78%)**	**4.23%**	**17.77%**	**12.57%**	**(0.14%)**	**6.79%**	**6.48%**
Composite Benchmark[3]	(0.04%)	2.74%	17.51%	11.61%	2.70%	6.47%	6.71%
Median Fund***	0.43%	3.11%	17.14%	12.65%	1.35%	6.48%	6.43%

* Per BNY Mellon data, the Broad Growth composite was incepted 10/1/2014. Contains lagged and non-lagged components.
** Lagged one quarter.
*** Universe data provided by BNY Mellon and Northern Trust. Class universes include managers and/or composites. Total Fund universe is the BNY Mellon: Public Funds > $1 billion for 2014-2016 & trailing periods and the Northern Trust: Public Funds > $1 Billion for 2012-2013 fiscal years.

[1] 78% MSCI ACWI IMI ND, 6.8% CBOE BXM Index, 5.1% BC Global Credit (hedged) Index, 3.4% BC Global High Yield (hedged) Index, 1.7% S&P LSTA Leveraged Loan Index, and 5% MSCI ACWI IMI ND (quarter lagged) + 2%.

[2] BC Aggregate Index through 6/30/08; 85% BC US Universal Index and 15% Multiverse Non-US Hedged Index through 9/30/14; BC Global Intermediate Aggregate ex. Credit (hedged) Index thereafter.

[3] 34.9% S&P 500 Index, 4.5% S&P 400 Mid Cap Index, 4.5% Russell 2000 Index, 14.5% MSCI EAFE Free ND Index, 2.5% MSCI Emg Mkts ND Index, 7.5% NCREIF Property Index lagged, 3.6% Alternative Investments, 21.0% BC Aggregate Index, and 7.0% CG WGBI ex US Index through 12/31/08;
41.0% Russell 3000 Index, 14.5% MSCI EAFE Free ND Index, 2.5% MSCI Emg Mkts ND Index, 9.0% NCREIF Property Index lagged, 5.0% Alternative Investments, 21.0% BC Universal Index, and 7.0% BC Multiverse ex US Hedged Index through 6/30/11;
41.0% Russell 3000 Index, 14.5% MSCI World ex US ND Index, 2.5% MSCI Emg Mkts ND Index, 9.0% NCREIF Property Index lagged, 5.0% Alternative Investments, 21.0% BC Universal Index, and 7.0% BC Multiverse ex US Hedged Index through 9/30/11;
35.0% Russell 3000 Index, 18.0% MSCI World ex US ND Index, 3.0% MSCI Emg Mkts ND Index, 7.0% NCREIF Property Index lagged, 5.0% Private Equity, 5.0% Real Return, 18.0% BC Universal Index, 6.0% BC Multiverse ex US Hedged Index, and 3.0% CBOE BXM Index through 6/30/12;
30.0% Russell 3000 Index, 26.0% MSCI ACWI ex US ND Index, 7.0% NCREIF Property Index lagged, 6.0% Private Equity, 5.0% Real Return, 15.75% BC Universal Index, 5.25% BC Multiverse ex US Hedged Index, and 5.0% CBOE BXM Index through 6/30/13;
30.0% Russell 3000 Index, 26.0% MSCI ACWI ex US ND Index, 7.0% NCREIF Property Index lagged, 7.0% Private Equity, 5.0% Real Return, 15.0% BC Universal Index, 5.0% BC Multiverse ex US Hedged Index, and 5.0% CBOE BXM Index through 9/30/14;
76% Broad Growth Blended Benchmark, 12% BC Global Intermediate Aggregate ex. Credit (hedged) Index, 5% CPI + 3%, and 7% NCREIF Property Index (quarter lagged) thereafter.

Investment Professionals

Investment Managers

U.S. Equities (Broad Growth)
- Bank of Hawaii
- Barrow, Hanley, Mewhinney & Strauss
- CM Bidwell & Associates
- CS McKee Investment Managers
- Jennison Associates
- JP Morgan Chase
- Sands Capital
- T. Rowe Price

International Equities (Broad Growth)
- Blackrock
- Franklin Templeton
- JP Morgan Chase
- Legal and General Investment Management
- Mercator Asset Management
- Quantitative Management Associates (QMA)
- Research Affiliates

Private Equity (Broad Growth)
- Hamilton Lane
- Stafford Partners

Covered Calls (Broad Growth)
- Gateway

Real Return
- Blackrock
- Hancock Timber Resource Group
- Kohlberg Kravis Roberts

Fixed-Income (Broad Growth)
- Bradford and Marzec
- Pacific Investment Management Company
- Western Asset Management Company

Fixed-Income (Principal Protection)
- First Hawaiian Bank
- Oechsle International Advisors
- Pacific Income Advisers
- Pacific Investment Management Company

Real Estate
- Angelo Gordon
- Almanac
- Blacksand Capital
- Blackstone Realty
- CB Richard Ellis
- Fortress Japan
- H/2
- Heitman Capital Management
- Invesco Realty Advisors
- ISquared
- LaSalle Investment Management
- Lone Star
- Lowe Enterprises
- Mesa Capital
- Prudential
- Torchlight

Other Service Providers

Commission Recapture Brokers
- ConvergEx Execution Solutions, LLC
- Capital Institutional Services, Inc.

Custodial Bank
- Bank of New York Mellon

Investment Advisor
- Pension Consulting Alliance, LLC
- Courtland Partners
- Hamilton Lane

Investment Schedules

List of Assets Directly Held (by fair value)*

as of June 30, 2016 (excludes investments in pooled vehicles and index funds)

** A complete list of holdings is available for review upon request.*

	Par / Shares	Security	Coupon	Maturity	Average Issue Rating	Fair Value
Domestic Fixed Income						
1	68,500,000	U.S. Treasury Note	1.000%	3/15/2018	AAA	$ 68,971,280
2	34,248,000	U.S. Treasury Note	0.875%	11/30/2017	AAA	34,389,787
3	21,300,000	U.S. Treasury Note	1.250%	3/31/2021	AAA	21,547,932
4	20,372,000	U.S. Treasury Note	1.625%	2/15/2026	AAA	20,601,185
5	17,770,000	U.S. Treasury Bond	3.000%	11/15/2045	AAA	20,432,657
6	17,800,000	U.S. Treasury Note	1.625%	11/15/2022	AAA	18,219,902
7	16,942,075	U.S. Treasury CPI Inflation	0.125%	4/15/2020	AAA	17,330,726
8	14,500,000	U.S. Treasury Note	1.875%	6/30/2020	AAA	15,055,060
9	11,998,938	U.S. Treasury CPI Inflation	2.375%	1/15/2025	AAA	14,326,732
10	12,760,000	U.S. Treasury Note	2.125%	8/15/2021	AAA	13,446,871
International Fixed Income						
1	29,518,000	Iceland Government Intern Regs	5.875%	5/11/2022	BAA1	34,454,590
2	29,358,000	Spain Government Bond 144A	1.600%	4/30/2025	BAA1	34,078,783
3	24,859,000	Italy Buoni Poliennali De 144A	3.500%	3/1/2030	BAA2	33,911,569
4	24,402,000	Ireland Government Bond Regs	3.400%	3/18/2024	A2	33,449,207
5	39,081,000	European Investment Bank	6.500%	8/7/2019	AAA	32,672,226
6	37,861,000	Kreditanstalt Fuer Wiederaufba	3.750%	7/18/2018	AAA	29,132,157
7	415,870,000	European Investment Bank Regs	9.000%	12/21/2018	AAA	28,911,157
8	38,660,000	Kreditanstalt Fuer Wiederaufba	3.750%	5/29/2020	AAA	28,471,228
9	23,670,000	Spain Government Bond	1.150%	7/30/2020	BAA1	27,465,315
10	16,168,095	United Kingdom Gilt Inflation	0.125%	3/22/2024	AA2	24,722,483
Domestic Equities						
1	607,522	Facebook Inc				69,427,614
2	83,959	Amazon.Com Inc				60,082,738
3	1,144,931	Microsoft Corp				58,586,119
4	590,273	Apple Inc				56,430,099
5	758,751	Visa Inc				56,276,562
6	857,562	Jpmorgan Chase & Co				53,288,902
7	990,799	Wells Fargo & Co				46,894,517
8	371,000	Johnson & Johnson				45,002,300
9	62,206	Alphabet Inc-Cl C				43,052,773
10	411,744	Philip Morris International In				41,882,599
International Equities						
1	128,622	Roche Holding Ag				33,812,456
2	23,139	Samsung Electronics Co Ltd				28,626,201
3	1,568,244	Arm Holdings Plc				23,710,608
4	31,683,000	China Construction Bank Corp				20,909,771
5	380,000	Wolseley Plc				19,658,981
6	2,212,282	Sage Group Plc/The				19,089,879
7	840,000	Tencent Holdings Ltd				19,067,408
8	908,820	Experian Plc				17,154,538
9	7,500	Sgs Sa				17,137,138
10	260,527	British American Tobacco Plc				16,866,837

Investment Schedules (continued)

Investments Summary

- excludes cash and cash equivalents and short-term investments

(Dollar values expressed in thousands)

		Fair Value as of June 30, 2016	Percentage
Equity securities			
Common stock	$	6,445,117	47.27%
Pooled funds		1,884,470	
Preferred shares and others		212,271	1.56%
		8,541,858	48.83%
Fixed income securities			
US treasury / government / agencies		556,860	4.08%
US mortgage-backed		383,379	2.81%
US corporate		829,668	6.08%
Non-US government / agencies		950,798	6.97%
Non-US corporate		369,271	2.71%
Pooled and others		27,159	0.20%
		3,117,135	22.85%
Others			
Real estate investments		967,131	7.09%
Alternative investments		1,010,361	7.41%
		1,977,492	14.50%
Total, investments at fair value	$	13,636,485	86.18%

Schedule of Investment Fees

by Asset Class Allocation

(Dollar values expressed in thousands)

		Fair value as of June 30, 2016		Total FY 2016 Investment Fees	Basis Points
Equities					
U.S. equities	$	4,095,672	$	12,536	31 bp
International equities		3,529,112		8,780	25
		7,624,784		21,316	28
Fixed Income					
Diversified income		1,990,599		2,892	15
Non U.S. fixed income		918,808		1,516	16
		2,909,407		4,408	15
Other Asset Allocations					
Real estate		786,993		4,284	54
Real return		671,151		2,423	36
Covered calls		988,550		1,673	17
Other assets		212,535		-	-
Private equity		805,679		213	3
		3,464,908		8,593	25
Other Investment Services					
Custodian fees		n/a		577	n/a
Investment consultant fees		n/a		1,689	n/a
Total	$	13,999,099	$	36,583	26

Investment Schedules (continued)

Schedule of Broker Commissions

The Employees' Retirement System participates in a Commission Recapture Program with three brokerage firms for equity trades, which are listed in the Investment Professionals section. Certain domestic and international equity investment managers are required to direct at least 35% of all brokerage transactions to participating brokers, subject to best execution. Commissions charged per share are based on the investment manager's normal rate schedule. All commissions recaptured are used exclusively by the ERS for the benefit of its members and beneficiaries. ERS does not guarantee participating brokers any minimums, required volumes or fees. During the fiscal year ended June 30, 2016 the ERS recaptured $340,902 in commissions.

The following is a list of brokers who received commissions during Fiscal Year 2016.

			Commission	
Brokerage Firms	Shares Traded	Dollar Volume of Trades	Dollar Amount	Per Share
ABG SECS, OSLO	1,251,863	$ 14,988,142	$ 20,995	$ 0.017
ALLEN & COMPANY LLC, JERSEY CITY	4,647	2,268,776	163	0.035
AUTONOMOUS LLP, LONDON	122,168	2,773,218	4,164	0.034
AUTONOMOUS RESEARCH US LP,NEW YORK	3,400	148,085	136	0.040
AUTONOMOUS, NEW YORK	280,900	17,409,164	9,818	0.035
AVONDALE PARTNERS LLC, NASHVILLE	600	36,462	24	0.040
BAIRD, ROBERT W & CO INC, MILWAUKEE	316,940	9,209,817	11,884	0.037
BANCO BILBAO VIZCAYA, MADRID	67,850	483,734	676	0.010
BANQUE PARIBAS, PARIS	2,801,204	7,711,727	5,922	0.002
BARCLAYS CAPITAL INC./LE, NEW JERSEY	33,791	2,388,162	374	0.011
BARCLAYS CAPITAL LE, JERSEY CITY	1,308,242	38,038,361	19,743	0.015
BARCLAYS CAPITAL SECS LTD, LONDON	1,181	66,473	20	0.017
BARCLAYS CAPITAL, LONDON (BARCGB33)	2,266,601	12,155,136	10,690	0.005
BB&T SECURITIES, LLC, RICHMOND	8,918	238,973	348	0.039
BBVA CORREDORES DE BOLSA SA, SANTIAGO	2,280,585	1,122,599	674	0.000
BERENBERG GOSSLER & CIE, HAMBURG	110,000	4,819,806	7,221	0.066
BERNSTEIN SANFORD C & CO, NEW YORK	4,721,139	56,130,139	33,096	0.007
BLOOMBERG TRADEBOOK LLC, NEW YORK	377,397	14,144,826	3,951	0.010
BMO CAPITAL MARKETS CORP, NEW YORK	607,697	13,215,569	14,551	0.024
BNP PARIBAS PEREGRINE SEC LTD, HONG KONG	163,900	4,141,272	4,732	0.029
BNP PARIBAS SEC SVCS, LONDON (PARBGB2L)	1,057,710	6,926,085	9,781	0.009
BNY CONVERGEX / LJR, HOUSTON	5,587,303	285,046,453	172,472	0.031
BNY CONVERGEX, NEW YORK	3,392,280	287,308,579	68,369	0.020
BROADCORT CAPITAL CORP FI, NEW YORK	32,436	3,876,125	1,020	0.031
BROADCOURT CAP CORP/SUB OF MLPF&S,NY	23,500	752,830	118	0.005
BROCKHOUSE AND COOPER, MONTREAL	86,545	1,000,429	400	0.005
BTIG LLC, SAN FRANCISCO	276,686	9,033,336	6,817	0.025
BUCKINGHAM RESEARCH GRP INC, BROOKLYN	10,700	692,533	392	0.037
CANACCORD GENUITY CORP, MONTREAL (CCAM)	5,354	125,418	122	0.023
CANACCORD GENUITY INC, JERSEY CITY	158,177	2,536,326	5,853	0.037
CANACCORD GENUITY INC.NEY YORK	30,852	1,100,103	1,017	0.033
CANACCORD GENUITY LTD, LONDON	10,954	212,055	84	0.008
CANTOR CLEARING SERV, NEW YORK	1,373	159,666	21	0.015
CANTOR FITZGERALD & CO INC, NEW YORK	123,569	15,827,438	2,656	0.021
Amounts carried forward	27,526,462	816,087,817	418,304	

Schedule of Broker Commissions (continued)

Brokerage Firms	Shares Traded	Dollar Volume of Trades	Commission Dollar Amount	Commission Per Share
Amounts brought forward	27,526,462	$ 816,087,817	$ 418,304	
CAP INSTL SVCS INC-EQUITIES, DALLAS	9,213,385	493,527,626	148,438	$ 0.016
CARNEGIE ASA, OSLO	187,275	2,533,130	3,551	0.019
CARNEGIE BANK AS, COPENHAGEN	43,105	1,299,921	1,817	0.042
CELFIN CAPITAL SA CORREDORES, SANTIAGO	4,630,551	1,188,547	713	0.000
CHASE BK, LONDON	2,847,625	4,587,708	2,753	0.001
CIBC WORLD MKTS INC, TORONTO	38,541	2,361,458	298	0.008
CIBC WORLD MKTS INC, TORONTO (WGDB)	2,637	133,865	21	0.008
CIMB GK SECURITIES PTE LTD, SINGAPORE	17,830	180,663	150	0.008
CITATION GROUP/BCC CLRG, NEW YORK	219,494	23,855,807	4,429	0.020
CITIBANK CUSTODIAL, TORONTO (CITC)	5,235	738,531	664	0.127
CITIGROUP GBL MKTS INC, NEW YORK	1,927,372	66,774,164	20,854	0.011
CITIGROUP GBL MKTS/SALOMON, NEW YORK	9,365,067	6,518,963	7,019	0.001
CITIGROUP GLOBAL MARKETS (EFP), NEW YORK	300	51,384	5	0.017
CITIGROUP GLOBAL MARKETS LTD, LONDON	1,009,093	12,394,877	10,082	0.010
CLSA AUSTRALIA PTY LTD, SYDNEY	1,345,778	5,215,000	7,388	0.005
CONVERGE LLC, NEW YORK	6,058,985	283,397,651	184,903	0.031
CORMARK SECURITIES INC./CDS, TORONTO	1,137	92,513	18	0.016
CORNERSTONE MACRO LLC, NEW YORK	45,900	1,635,904	1,607	0.035
COWEN AND COMPANY LLC, NEW YORK	569,618	23,052,905	17,660	0.031
CREDIT AGRICOLE SECURITIES, NEW YORK	295,311	9,409,042	10,409	0.035
CREDIT LYONNAIS SEC, SEOUL	11,179	3,010,510	6,064	0.542
CREDIT LYONNAIS SECS (ASIA), HONG KONG	3,636,791	4,456,037	6,471	0.002
CREDIT LYONNAIS SECS ASIA LTD, TAIPEI	8,000	27,798	7	0.001
CREDIT LYONNAIS SECS, SINGAPORE	10,052,684	7,249,802	7,070	0.001
CREDIT RESEARCH & TRADING LLC, JERSEY	38,400	941,626	1,163	0.030
CREDIT SUISSE (EUROPE), LONDON	2,167,838	20,567,742	25,294	0.012
CREDIT SUISSE (HK) LIMITED, HONG KONG	236,400	2,866,867	3,775	0.016
CREDIT SUISSE, NEW YORK (CSUS)	1,181,736	58,628,722	35,077	0.030
CRT CAPITAL GROUP LLC, STAMFORD	40,457	913,224	1,497	0.037
DAEWOO SECURITIES CO LTD, SEOUL	15,111	6,934,575	15,945	1.055
DAISHIN SECURITES CO. LTD, SEOUL	20,609	4,077,730	2,782	0.135
DAIWA SECS (HK) LTD, HONG KONG	81,000	4,959,289	2,882	0.036
DAIWA SECS AMER INC, NEW YORK	338,482	10,410,235	12,441	0.037
DAVIDSON(D A) & CO INC, NEW YORK	1,300	28,345	45	0.035
DBS VICKERS SEC PTE LTD, SINGAPORE	44,745	2,361,843	5,418	0.121
DEUTSCHE BK INTL EQ, LONDN (DEUTGB22EEQ)	4,793,919	11,144,936	6,137	0.001
DEUTSCHE BK SECS INC, NY (NWSCUS33)	39,635,768	149,502,422	89,403	0.002
DEUTSCHE MORGAN GRENFELL SEC, SYDNEY	14,000	1,201,277	1,323	0.095
DEUTSCHE SEC ASIA LTD, HONG KONG	6,124,965	13,791,986	8,263	0.001
DOWLING & PARTNERS, JERSEY CITY	54,336	1,710,218	2,010	0.037
DREXEL HAMILTON LLC, JERSEY CITY	4,787	463,574	78	0.016
Amounts carried forward	133,853,208	2,060,286,234	1,074,228	

Investment Schedules (continued)

Schedule of Broker Commissions (continued)

Brokerage Firms	Traded	of Trades	Amount	Per Share
Amounts brought forward	133,853,208	$ 2,060,286,234	$ 1,074,228	
EXANE, PARIS (EXANFRPP)	86,630	2,941,693	4,535	$ 0.052
FBR CAPITAL MARKETS & CO, ARLINGTON	96,031	4,289,080	3,586	0.037
FIDELITY CAP MKTS (DIV OF NFSC), BOSTON	80,369	2,747,047	2,234	0.028
FIDELITY CLEARING CANADA ULC, TOR (FIDC)	143,156	2,689,807	2,523	0.018
FIG PARTNERS LLC, ATLANTA	5,130	125,315	205	0.040
FOKUS BANK, TRONDHEIM	1,901	6,582	9	0.005
FOX RIVER EXECUTION TECH,LLC,JERSEY CITY	37,380	3,205,231	374	0.010
FUJI SECURITIES INC, JERSEY CITY	9,563	176,929	350	0.037
GK GOH SECURITIES	1,429,946	1,522,253	2,901	0.002
GMP SECURITIES L.P. TORONTO (GMPT)	16,532	542,044	179	0.011
GMP SECURITIES, LLC, NEW YORK	3,400	58,080	124	0.036
GOLDMAN SACHS & CO, NY	3,029,789	123,914,768	57,868	0.019
GOLDMAN SACHS EXECUTION & CLEARING, NY	48,800	3,409,253	854	0.018
GOLDMAN SACHS INTL, LONDON (GSILGB2X)	4,420,209	21,583,716	8,727	0.002
GORDON HASKETT CAP CORP, NJ	6,000	69,667	232	0.039
GREEN STREET ADVISORS, JERSEY CITY	4,100	76,616	164	0.040
GUGGENHEIM CAPITAL MKT LLC, JERSEY CITY	61,715	2,813,603	1,722	0.028
GUZMAN & COMPANY, CORAL GABLES	7,700	1,255,500	31	0.004
HONG KONG & SHANGHAI BKG CORP, HONG KONG	65,715,065	63,723,235	36,040	0.001
HSBC BANK BRASIL SA (COR), SAO PAULO	3,437,853	15,390,792	10,230	0.003
HSBC BANK PLC (MIDLAND BK)(JAC), LONDON	28,027,314	62,368,534	54,823	0.002
HSBC JAMES CAPEL, SEOUL	1,112,993	53,051,434	39,792	0.036
HSBC MEXICO, S.A. INST DE BANCA,MEXICO	8,679,170	13,293,311	8,223	0.001
HSBC SECS INC, NEW YORK	83,101,174	96,731,330	189,208	0.002
HSBC SECS, TAIPEI	49,251,425	56,811,835	38,609	0.001
HSBC SECURITIES (USA) INC, NEW YORK	5,276,298	38,884,138	55,486	0.011
ICBC FINCL SVCS, NEW YORK	35,000	3,658,944	613	0.018
ING BANK N V, LONDON	322,739	2,000,408	2,797	0.009
INSTINET CORP, NEW YORK	11,487,416	14,547,574	10,046	0.001
INSTINET CORP, NY	871,682	29,936,090	13,580	0.016
INSTINET EUROPE LIMITED, LONDON	89,419,853	95,191,546	56,407	0.001
INSTINET PACIFIC LTD, HONG KONG	28,520,163	52,541,475	30,937	0.001
INSTINET, SINGAPORE	9,246	496,083	199	0.022
INTERMONTE SIM S.P.A., MILANO	951,167	3,559,431	4,990	0.005
INVESTMENT TECHNOLOGY GROUP LTD,DUBLIN	6,650,955	100,882,634	104,936	0.016
INVESTMENT TECHNOLOGY GROUP, NEW YORK	317,406	13,664,741	3,159	0.010
ISI GROUP INC, NY	291,017	14,773,760	8,770	0.030
ITG AUSTRALIA LTD, MELBOURNE	14,500	1,089,312	1,200	0.083
ITG CANADA CORP, TORONTO	64,291	1,663,472	497	0.008
ITG INC, NEW YORK	53,501	2,592,672	1,380	0.026
J P MORGAN SEC, SYDNEY	40,958	1,622,046	1,110	0.027
Amounts carried forward	526,992,745	2,970,188,215	1,833,878	

Investment Schedules (continued)

Schedule of Broker Commissions (continued)

Brokerage Firms	Shares Traded	Dollar Volume of Trades	Commission Dollar Amount	Commission Per Share
Amounts brought forward	526,992,745	$ 2,970,188,215	$ 1,833,878	
J P MORGAN SECS LTD, LONDON	9,356,389	68,626,899	39,541	$ 0.004
J P MORGAN SECURITIES INC, BROOKLYN	885,386	35,188,366	22,004	0.025
J.P. MORGAN CLEARING CORP, NEW YORK	508,315	19,165,124	12,437	0.024
J.P. MORGAN SECURITIES, HONG KONG	50,549,115	31,649,954	18,042	0.000
JANNEY MONTGOMERY SCOTT, PHILADELPHIA	13,281	308,308	531	0.040
JEFFERIES & CO INC, NEW YORK	993,892	35,685,759	15,376	0.015
JEFFERIES & CO LTD, LONDON	40,800	1,165,748	1,401	0.034
JMP SECURITIES, SAN FRANCISCO	12,005	377,362	444	0.037
JONES & ASSOC, WESTLAKE VILLAGE	11,019	428,125	106	0.010
JONESTRADING INSTL SVCS LLC, WESTLAKE	64,756	1,166,334	1,592	0.025
JP MORGAN SECS (FAR EAST) LTD, SEOUL	434,051	18,169,452	10,922	0.025
JP MORGAN SECS (TAIWAN) LTD, TAIWAN	14,452,280	13,186,739	7,924	0.001
JP MORGAN SECS, SINGAPORE	3,213,300	1,961,079	1,176	0.000
JPMORGAN SECURITIES INC, NEW YORK	8,169,350	21,701,395	13,733	0.002
KEEFE BRUYETTE AND WOODS, JERSEY CITY	267,060	7,050,865	9,776	0.037
KEPLER EQUITIES, PARIS	370,023	7,964,617	7,656	0.021
KEYBANC CAPITAL MARKETS INC, JERSEY CITY	98,035	2,653,152	3,627	0.037
KEYBANC CAPITAL MARKETS INC, NEW YORK	182,812	6,114,973	6,097	0.033
KIM ENG SEC LTD, HONG KONG	1,875,589	1,953,682	3,723	0.002
KING (CL) & ASSOCIATES, ALBANY	1,100	70,766	44	0.040
KNIGHT CAPITAL EUROPE LTD, LONDON	12,848	253,438	503	0.039
KNIGHT CLEARING SERVICES LLC, JERSEY CIT	102,327	7,993,930	1,023	0.010
KNIGHT EQUITY MARKETS L.P.,JERSEY CITY	2,747,585	137,091,702	92,410	0.034
LARRAIN VIAL, SANTIAGO	10,012,061	1,358,721	815	0.000
LEERINK SWANN & CO, JERSEY CITY	115,303	4,944,031	2,769	0.024
LIBERUM CAPITAL LIMITED, LONDON	5,690	111,829	222	0.039
LIQUIDNET ASIA LTD, HONG KONG	1,644,400	2,292,343	2,288	0.001
LIQUIDNET EUROPE LIMITED, LONDON	50,500	3,434,419	768	0.015
LIQUIDNET INC, BROOKLYN	276,041	17,695,275	5,057	0.018
LIQUIDNET INC, NEW YORK	558,197	35,010,556	9,250	0.017
LONGBOW SECURITIES LLC, JERSEY CITY	14,000	571,315	536	0.038
LOOP CAPITAL MARKETS LLC, JERSEY CITY	19,063	1,294,917	286	0.015
LOOP CAPITAL MARKETS, JERSEY CITY	3,112	264,992	47	0.015
LUMINEX TRADING AND ANALYTICS, BOSTON	66,642	3,908,090	254	0.004
MACQUARIE BANK LIMITED, SYDNEY	800	60,589	67	0.084
MACQUARIE BANK LTD, HONG KONG	3,448,981	9,721,695	10,256	0.003
MACQUARIE SECURITIES LTD, SEOUL	2,494	2,735,006	6,276	2.516
MACQUARIE SECURITIES(USA)INC JERSEY CITY	251,505	7,860,941	8,987	0.036
MAXIM GROUP, JERSEY CITY	632,300	20,964,635	6,323	0.010
MERRILL LYNCH BROADCORT CAP, NEW YORK	14,725	400,224	288	0.020
MERRILL LYNCH CANADA (MLCT), TORONTO	3,900	7,040	9	0.002
Amounts carried forward	638,473,777	3,502,752,602	2,158,464	

Investment Schedules (continued)

Schedule of Broker Commissions (continued)

Brokerage Firms	Shares Traded	Dollar Volume of Trades	Commission Dollar Amount	Commission Per Share
Amounts brought forward	638,473,777	$ 3,502,752,602	$ 2,158,464	
MERRILL LYNCH GILTS LTD, LONDON	1,107,383	13,930,163	15,993	$ 0.014
MERRILL LYNCH INTL LONDON EQUITIES	106,642,355	103,629,315	69,551	0.001
MERRILL LYNCH PIERCE FENNER SMITH INC NY	2,379,750	119,843,929	47,487	0.020
MERRILL LYNCH PIERCE FENNER, WILMINGTON	10,409,088	10,530,892	6,189	0.001
MITSUBISHI UFJ SECURITIES LTD,HONG KONG	56,500	1,235,204	617	0.011
MITSUBISHI UFJ SECURITIES, NEW YORK	20,934	1,223,002	1,466	0.070
MIZUHO SECURITIES ASIA, HONG KONG	5,200	476,315	238	0.046
MIZUHO SECURITIES USA INC. NEW YORK	697,222	11,981,998	14,384	0.021
MKM PARTNERS LLC, GREENWICH	37,747	1,145,260	1,359	0.036
MORGAN STANLEY & CO INC, NY	99,675,987	214,661,559	124,551	0.001
MORGAN STANLEY & CO INTL LTD, SEOUL	823,186	33,920,574	18,513	0.022
MORGAN STANLEY & CO, LONDON (MSLNGB2X)	27,789,167	24,789,044	11,423	0.000
NATIONAL FINL SVCS CORP, NEW YORK	665,529	22,002,615	16,580	0.025
NATIXIS SECURITIES AMERICAS LLC,NEW YORK	280	14,678	6	0.021
NBCN CLEARING INC, MONTREAL	353,469	5,232,298	13,078	0.037
NEEDHAM & CO, NEW YORK	1,900	41,658	76	0.040
NESBITT BURNS, TORONTO (NTDT)	172,536	9,278,546	4,268	0.025
NORDEA BK PLC, HELSINKI (NDEAFIHH030)	1,957	77,808	156	0.080
ONEIL WILLIAM & CO INC/BCC,LOS ANGELES	17,400	257,076	564	0.032
OPPENHEIMER & CO INC, NEW YORK	42,263	1,715,801	1,603	0.038
OTR GLOBAL TRADING LLC, NEW YORK	12,600	253,667	444	0.035
PACIFIC CREST SECURITIES, PORTLAND	900	22,376	27	0.030
PAREL, PARIS	364,591	5,372,514	4,842	0.013
PARETO FONDS AS, OSLO	348,175	4,189,422	5,857	0.017
PENSERRA SECURITIES, NEW YORK	87,910	6,034,711	1,327	0.015
PERSHING LLC, JERSEY CITY	1,006,216	135,364,435	17,847	0.018
PERSHING SECURITIES LTD, LONDON	972,260	12,608,686	15,741	0.016
PIPER JAFFRAY & CO, MINNEAPOLIS	337,023	10,268,949	10,874	0.032
RAYMOND JAMES & ASSOC INC, ST PETERSBURG	350,950	20,305,926	11,316	0.032
RBC CAPITAL MARKETS LLC, NEW YORK	740,220	26,400,756	12,236	0.017
RBC DOMINION SECS INC, TORONTO (DOMA)	79,538	962,902	422	0.005
REDBURN PARTNERS LLP, LONDON	2,937,348	9,713,961	8,836	0.003
ROSENBLATT SECURITIES LLC, JERSEY CITY	600	20,115	6	0.010
ROYAL BANK OF CANADA EUROPE LTD, LONDON	2,302,044	19,214,927	28,785	0.013
S G WARBURG, SEOUL	467,526	13,151,959	13,155	0.028
SAMUEL A RAMIREZ & COMPANY, BROOKLYN	6,300	111,989	126	0.020
SANFORD C BERNSTEIN & CO INC, LONDON	3,737,650	29,186,748	28,892	0.008
SBC WARBURG DILLON READ, THAILAND	1,181,100	2,536,831	3,804	0.003
SCOTIA CAPITAL (USA) INC, NEW YORK	46,700	1,715,687	1,635	0.035
SCOTIA CAPITAL MKTS, TORONTO	229,880	3,313,809	4,495	0.020
SCOTIA MCLEOD INC, TORONTO (SCOT)	8,603	435,335	97	0.011
Amounts carried forward	904,591,764	4,379,926,042	2,677,330	

Investment Schedules (continued)

Schedule of Broker Commissions (continued)

Brokerage Firms	Shares Traded	Dollar Volume of Trades	Commission Dollar Amount	Commission Per Share
Amounts brought forward	904,591,764	$ 4,379,926,042	$ 2,677,330	
SG AMERICAS SECURITIES LLC, NEW YORK	9,140,319	32,639,307	19,721	$ 0.038
SG SEC (LONDON) LTD, LONDON	12,053,562	62,005,440	45,441	0.004
SG SECURITIES, HONG KONG	100,245,495	123,461,331	75,431	0.001
SIDOTI & CO LLC, NEW YORK	64,612	2,124,623	2,584	0.040
SIMMONS & CO INTL, HOUSTON	27,300	1,416,308	956	0.035
SJ LEVINSON & SONS LLC, JERSEY CITY	326,733	26,485,403	4,901	0.015
SJ LEVINSON AND SONS LLC, NEW YORK	11,100	1,809,530	167	0.015
SMBC NIKKO SECURITIES LTD, WAN CHAI	505,000	7,783,177	8,775	0.017
SMBC SECURITIES, INC NEW YORK	221,102	1,212,466	1,453	0.007
SOCIETE GENERALE LONDON BRANCH, LONDON	25,867	412,345	176	0.007
STATE STREET BROKERAGE SVCS, BOSTON	1,364,615	35,948,505	12,766	0.009
STATE STREET GLOBAL MARKETS LLC, BOSTON	1,300	131,183	29	0.022
STATE STREET GLOBAL MKT LLC, BOSTON	42,300	2,949,048	558	0.013
STEPHENS INC, LITTLE ROCK	64,236	1,988,071	2,378	0.037
STIFEL NICOLAUS	3,056,656	146,193,974	80,383	0.026
STRATEGAS SECURITIES LLC, NEW YORK	79,800	4,276,651	2,795	0.035
STUART FRANKEL & CO. INC, JERSEY CITY	82,700	7,587,257	1,241	0.015
SUNTRUST CAPITAL MARKETS INC, ATLANTA	80,591	2,468,357	2,874	0.036
SUSQUEHANNA FINL GROUP LLLP, NEW YORK	5,500	171,120	220	0.040
SVENSKA HANDELSBANKEN, STOCKHOLM	479,955	1,729,886	2,420	0.005
TD WATERHOUSE SEC, TORONTO (GIST)	380,700	13,191,011	11,315	0.030
TELSEY ADVISORY GROUP LLC, DALLAS	5,400	370,964	189	0.035
THEMIS TRADING LLC, JERSEY CITY	18,194,895	752,297,740	256,765	0.014
THINKEQUITY PARTNERS LLC, MINNEAPOLIS	19,100	556,692	764	0.040
TORONTO DOMINION SEC, TORONTO	42,276	2,801,773	533	0.013
UBS EQUITIES, LONDON	24,415	250,628	75	0.003
UBS SECURITIES LLC, STAMFORD	5,648,477	122,648,347	77,094	0.014
UBS WARBURG ASIA LTD, HONG KONG	85,425,770	23,635,744	16,018	0.000
UBS WARBURG AUSTRALIA EQUITIES, SYDNEY	2,263,267	5,464,284	9,147	0.004
UBS WARBURG SEC,TAIWAN	8,726,118	7,456,512	7,482	0.001
UBS WARBURG, LONDON	275,745,671	34,011,839	39,046	0.000
WEDBUSH MORGAN SECS INC, LOS ANGELES	3,600	63,325	144	0.040
WEEDEN & CO, NEW YORK	1,120,067	65,306,546	23,060	0.021
WELLS FARGO SECURITIES LLC, CHARLOTTE	458,103	15,549,873	9,056	0.020
WILLIAM BLAIR & CO, CHICAGO	62,203	1,934,062	2,376	0.038
WILLIAMS CAPITAL GROUP LP, JERSEY CITY	900	15,471	36	0.040
WOLFE TRAHAN SECURITIES, NEW YORK	23,000	1,570,537	816	0.035
WUNDERLICH SECURITIES INC, MEMPHIS	4,200	157,337	168	0.040
Total trades	1,430,618,669	5,890,002,709	3,396,683	0.002
			$ (340,902)	
	1,430,618,669	$ 5,890,002,709	$ 3,055,781	$ 0.002

Employees' Retirement System

of the State of Hawaii

ACTUARIAL SECTION

GASB STATEMENT NO. 67 REPORT

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June 20, 2017

Board of Trustees
Employees' Retirement System of
the State of Hawaii
City Financial Tower
201 Merchant St., Ste. 1400
Honolulu, HI 96813-2980

Dear Trustees:

This report provides information required by the Employees' Retirement System of the State of Hawaii ("ERS") in connection with the Governmental Accounting Standards Board (GASB) Statement No. 67 "Financial Reporting for Pension Plans."

Our calculation of the liability associated with the benefits described in this report was performed for the purpose of satisfying the requirements of GASB Statement Nos. 67. The calculation of the plan's liability for this report may not be applicable for funding purposes of the plan. A calculation of the plan's liability for purposes other than satisfying the requirements of GASB No. 67 may produce significantly different results. This report may be provided to parties other than the ERS only in its entirety and only with the permission of ERS.

This report is based upon information, furnished to us by ERS, concerning retirement and ancillary benefits, active members, deferred vested members, retirees and beneficiaries, and financial data. This information was checked for internal consistency, but it was not otherwise audited.

GRS provided the following information for the ERS to fulfill the GASB 67 reporting requirements that are included in the notes to the financial statements and the Required Supplementary Information located in the Financial Section of this CAFR.

- Single Discount Rate
- Required Discount Rate Sensitivity Information for the ERS providing the ratio of the Fiduciary Net Position to Total Pension Liability and the Net Pension Liability at a discount rate that is one percentage point lower and one percentage point higher that the discount rate at Meaturement Date
- Service Cost; Interest; Changes of Benefit Terms; Differences between Expected and Actual Experience; Changes in Assumptions.
- Required Supplementary Information – Schedule of Changes in Net Pension Liability.
- Required Supplementary Information – Schedule of Net Pension Liability.
- Required Supplementary Information – Schedule of Employer Contributions
- Actuarial components of Governmental Accounting and Standards Board (GASB) 67 requirements.

GASB STATEMENT NO. 67 REPORT (continued)

Certain tables included in the Required Supplementary Information should include a 10-year history of information. As provided for in GASB No. 67, this historical information is only presented for the years in which the information was measured in conformity with the requirements of GASB No. 67. The historical information in this report will begin with the information presented for the fiscal year ending June 30, 2014.

This report complements the actuarial valuation report, issued on January 9, 2017, that was provided to ERS and should be considered in conjunction with that report. Please see the significant actuarial valuation report information as of June 30, 2016 (located later in this section of the ERS' CAFR) for additional discussion of the nature of actuarial calculations and more information related to participant data, economic and demographic assumptions, and benefit provisions. (The entire actuarial valuation report, as of June 30, 2016, is available on the ERS' website at ers.ehawaii.gov.)

To the best of our knowledge, this report is complete, accurate, and in accordance with generally recognized actuarial methods. One or more of the undersigned are members of the American Academy of Actuaries and meet the Qualification Standards of the Academy of Actuaries to render the actuarial opinion herein.

The signing actuaries are independent of the plan sponsor.

Respectfully submitted,

By Lewis Ward	By J. Newton
Lewis Ward	Joseph P. Newton
Consultant	FSA, EA, MAAA

GABRIEL, ROEDER, SMITH & COMPANY

GASB STATEMENT NO. 67 REPORT (continued)

EXECUTIVE SUMMARY ***
as of June 30, 2016

	2016	2015
Actuarial Valuation Date	June 30, 2016	June 30, 2015
Pension Plan's Fiscal Year Ending Date (Measurement Date & Reporting Date)	June 30, 2016	June 30, 2015
Membership		
Number of		
- Retirees and beneficiaries	45,506	44,283
- Inactive, nonretired members **	22,295	21,253
- Active members	67,377	67,310
- Total	135,178	132,846
Reported Payroll for Fiscal Year	$4,112,227,306	$3,995,447,345
Net Pension Liability		
Total Pension Liability	$27,439,233,629	$23,238,395,386
Plan Fiduciary Net Position	14,069,978,917	14,505,464,556
Net Pension Liability	$13,369,254,712	$8,732,930,830
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	51.28%	62.42%
Net Pension Liability as a Percentage of Covered Payroll	325.11%	218.57%
Development of the Single Discount Rate		
Single Discount Rate	7.00%	7.65%
Long-Term Expected Rate of Return	7.00%	7.65%
Long-Term Municipal Bond Rate*	2.85%	3.80%
Last year ending June 30 in the 2016 to 2115 projection period for which projected benefit payments are fully funded (and 2015 to 2114)	None	None

*Source: "State and Local Bonds" rate from Federal Reserve statistical release (H.15) as of June 30, 2016 and June 26, 2015. The statistical release describes this rate as the "Bond Buyer Index, general obligation, 20 years to maturity, mixed quality." In describing this index, the Bond Buyer notes that the bonds' average credit quality is roughly equivalent to Moody's Investor Service's Aa2 rating and Standard & Poor's Corp AA.

** Inactive, nonretired members for GASB 68 reporting includes terminated vested members entitled to benefits but not yet receiving benefits plus inactive members (that while currently not vested for benefits may become vested in the future should they return to service and fulfill the additional service and contribution requirements applicable to their respective membership). The inactive membership counts used in the previous reporting method under GASB Statement No. 25 only included terminated vested members.

*** This information should be considered with the June 30, 2016 Actuarial Valuation Report information that follows this section beginning on page 121.

GASB STATEMENT NO. 67 REPORT (continued)

Discussion on GASB Statement No. 67.

Accounting Standard

For pension plans that are administered through trusts or equivalent arrangements, Governmental Accounting Standards Board (GASB) Statement No. 67, "Financial Reporting for Pension Plans," replaces the requirements of GASB Statement No. 25, "Financial Reporting for Defined Benefit Pension Plans and Note Disclosures for Defined Contribution Plans," and GASB Statement No. 50, "Pension Disclosures." GASB Statement No. 67 establishes standards of financial reporting for separately issued financial reports and specifies the required approach for measuring the pension liability of employers and non-employer contributing entities for benefits provided through the pension plan.

The following discussion provides a summary of the information that is required to be disclosed under these accounting standards. A number of these disclosure items are incorporated in the Financial Section of this CAFR. However, certain information, such as notes regarding accounting policies and investments, are not provided by GRS since the retirement system is responsible for preparing and disclosing that information to comply with these accounting standards.

Financial Statements

GASB Statement No. 67 requires defined benefit pension plans to present two financial statements, notes of the plan's financial statements and required supplementary information (RSI):

- The *statement of fiduciary net position* presents the following items as of the end of the pension plan's reporting period, such as: assets; deferred inflows and outflows of resources; liabilities; and fiduciary net position (assets, plus deferred outflows, minus liabilities, minus deferred inflows).
- The *statement of changes in fiduciary net position* presents the following for the plan's reporting period: additions, such as contributions and investment income; deductions, such as benefit payments and expenses; and net increase or decrease in the fiduciary net position (the difference between additions and deductions).
- The notes of the plan's financial statements include: a description of the types of benefits provided by the plan, as well as automatic or ad hoc COLAs; the number and classes of employees covered by the benefit terms; the composition of the pension plan's Board and the authority under which benefit terms may be amended; a description of the plan's funding policy, which includes member and employer contribution requirements; the pension plan's investment policies; a description of how fair value is determined; concentrations of investments greater than or equal to 5%; annual money-weighted rate of return on pension plan investments; the portion of the present value of benefits to be provided through the pension plan to current active and inactive plan members; the pension plan's fiduciary net position; the net pension liability; the pension plan's fiduciary net position as a percentage of the total pension liability; significant assumptions and methods used to calculate the total pension liability; inputs to the discount rates; and certain information about mortality assumptions and the dates of experience studies.
- The RSI requires a 10-year fiscal history of: sources of changes in the net pension liability; information about the components of the net pension liability and related ratios, including the pension plan's fiduciary net position as a percentage of the total pension liability, and the net pension liability as a percent of covered-employee payroll; a comparison of the actual employer contributions to the actuarially determined contributions based on the plan's funding policy; and the annual money-weighted rate of return on pension plan investments for each year.

Measurement of the Net Pension Liability

The net pension liability is to be measured as the total pension liability, less the amount of the pension plan's fiduciary net position. In actuarial terms, this will be the accrued liability less the market value of assets (not the smoothed actuarial value of assets that is often encountered in actuarial valuations performed to determine the employer's contribution requirement).

Timing of the Valuation

An actuarial valuation to determine the total pension liability is required to be performed at least every two years. The net pension liability and pension expense should be measured as of the pension plan's fiscal year end (measurement date) on a date that is within the employer's prior fiscal year. If the actuarial valuation used to determine the total pension liability is not calculated as of the measurement date, the total pension liability is required to be rolled forward from the actuarial valuation date to the measurement date.

The total pension liability shown in this report is based on an actuarial valuation performed as of June 30, 2016 and a measurement date of June 30, 2016.

Single Discount Rate

Projected benefit payments are required to be discounted to their actuarial present values using a single discount rate that reflects (1) a long-term expected rate of return on pension plan investments (to the extent that the plan's fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating (which is published by the Federal Reserve) as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the expected rate of return on pension plan investments is 7.00% the municipal bond rate is 2.85% (based on the weekly rate closest to but not later than the measurement date of the 20-Year Bond Buyer Index as published by the Federal Reserve); and the resulting single discount rate is 7.00%.

Letter from the Actuary

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January 9, 2017

Board of Trustees
Employees' Retirement System of
the State of Hawaii
City Financial Tower
201 Merchant St., Ste. 1400
Honolulu, HI 96813-2980

Dear Trustees:

Subject: Actuarial Valuation as of June 30, 2016

We certify that the information contained in the 2016 actuarial valuation report is accurate and fairly presents the actuarial position of the Employees' Retirement System of the State of Hawaii (ERS) as of June 30, 2016. There have been no adjustments for events which occurred after this date.

All calculations have been made in conformity with generally accepted actuarial principles and practices and with the Actuarial Standards of Practice issued by the Actuarial Standards Board. In our opinion, the results presented comply with the requirements of the Hawaii statutes and, where applicable, the Internal Revenue Code, ERISA, and the Statements of the Governmental Accounting Standards Board. The undersigned are independent actuaries. One or more of them are an Enrolled Actuary and/or a Member of the American Academy of Actuaries. All are experienced in performing valuations for large public retirement systems.

Actuarial valuations

The primary purpose of the valuation report is to determine the adequacy of the current employer contribution rate through measuring the resulting funding period, to describe the current financial condition of ERS, and to analyze changes in ERS's condition. In addition, the report provides various summaries of the data. This report may not be appropriate for other purposes. The information required by ERS in connection with Governmental Accounting Standards Board Statement No. 67(GASB No.67) will be provided in a separate report. (A summary of the GASB Statement No. 67 is presented immediately before this section.)

Valuations are prepared annually, as of June 30th of each year, the last day of ERS's plan year and fiscal year.

Letter from the Actuary (continued)

Board of Trustees
January 9, 2017
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Financing objectives

Contribution rates are established by Law that, over time, are intended to remain level as a percent of payroll. The employee and employer contribution rates have been set by Law and are intended to provide for the normal cost plus the level percentage of payroll required to amortize the unfunded actuarial accrued liability (UAAL) over a reasonable amount of time, which will ensure benefit security and intergenerational equity.

Progress toward realization of financing objectives

We have determined that the funding period for paying off the UAAL of the System (in aggregate) is 66 years. Because this period exceeds 30 years, the objectives set in State statute are currently not being realized. (Hawaii Revised Statutes §88-122(e)(1) state that the employer contribution rates are subject to adjustment when the funding period is in excess of 30 years.)

The funded ratio (the ratio of the actuarial value of assets to the actuarial accrued liability) is a standard measure of a plan's funded status. The funded status alone is not appropriate for assessing the need for future contributions nor assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations. However, the trend (historical and projected) of the funded ratio is a strong metric to use for assessing the dependability of the current funding policy and its ability to accumulate assets to pay benefits when due. The funded ratio is currently 54.7% and this is lower than the funded ratio from the previous valuation, primarily due to the impact of the new actuarial assumptions.

The 2011 Legislature made significant changes to the future employer contribution rates. The employer contribution rate for Police and Fire employees increased to 25.00% in FY2016, and the employer contribution rate for All Other Employees increased to 17.00% in FY2016. Under current law, the contribution rates are expected to stay at these levels until the System is fully funded. The Legislature also made changes to the benefits and member contribution rates for employees hired after June 30, 2012. Because these changes result in significantly higher contributions towards the unfunded liability in the future than in the current year, we believe it is more appropriate to determine the funding period using an open group projection rather than a static mathematical formula, which assumes that all amortization payments in the future will be the same percentage of pay as in the current year.

The actuarial accrued liability, the unfunded actuarial accrued liability (UAAL), and the determination of the resulting funding period illustrate the progress toward the realization of financing objectives. The System's UAAL was expected to increase from the prior year based on the recognition of the new actuarial assumptions. In addition, the System had a liability experience loss which was caused by individual salary increases being larger than expected by the assumptions. The System also experienced a loss on its investments. As a result, the UAAL grew based on this actuarial valuation as of June 30, 2016, ERS's underfunded status as measured by the UAAL is now $12.441 billion.

Because of the less favorable investment performance in FY2016, the System is now deferring $929 million in investment losses (compared with $42 million in deferred gains last year). If there are no significant investment gains or other actuarial gains over the next three years, the funded status of the System would be expected to decrease, as the remaining deferred investment losses are recognized.

Gabriel Roeder Smith & Company

Letter from the Actuary (continued)

Board of Trustees
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Thus, given the plan's current contribution rates and the new tier of benefits, if all actuarial assumptions are met (including the assumption of the plan earning 7.00% on the actuarial valuation of assets), it is expected that:

1. The employer normal cost as a percentage of pay will decrease to the level of the newest tier as the old tier population declines and is replaced by new tier members,
2. The employer contribution will remain level throughout the amortization period,
3. Thus, the net amount available to amortize the UAAL will increase over time,
4. The unfunded actuarial accrued liability will increase in nominal dollars until the net amount for amortization is large enough to cover the interest charges, or approximately 2062, and then begin to decrease
5. The unfunded actuarial accrued liability will be fully amortized after 66 years, and
6. In the absence of benefit improvements, the funded ratio will remain relatively flat for 30-40 years before beginning to increase until it reaches 100%.

However, based on our professional experience and current industry standards, 66 years is an inappropriate amount of time to allow for amortizing the current UAAL. This amount of time would push significant costs into several future generations, and does not allow for any future adverse experience that may arise. In fact, a 66 year funding period would push funding for the current membership well past the point in which a large majority of them would have died. We recommend the contribution rates be increased to bring the funding period into a more appropriate range, with a target of 25 years.

Benefit provisions and Legislative changes

This is the fourth valuation with members covered under the new benefit tier.

There have been no changes in the benefit provisions since the prior valuation. See the *Summary of Retirement Benefit Plan Provisions* in the Introductory Section of this CAFR for more details on the benefit provisions for members of the System.

Assumptions and methods

The actuarial assumptions used were adopted by the Board in December of 2016 based on the recommendations provided by an Experience Study performed by GRS.

Our Experience Study report dated July 5, 2016 provides details on the changes to the actuarial assumptions. A brief summary of the significant changes are shown below.

- Decrease the nominal investment return assumption to 7.00%.
- Decrease the inflation assumption from 3.00% to 2.5%.
- No change to the 1.00% general productivity component of the general wage inflation assumptions. However, consistent with the decrease in inflation, the nominal general wage inflation assumption will decrease from 4.00% to 3.50%. Extend the step-rate component in the salary assumption for General Employees and Teachers to 25 years.

Letter from the Actuary (continued)

Board of Trustees
January 9, 2017
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- Replace the base mortality tables with client-specific mortality tables developing using the actual mortality experience of non-disabled retirees in ERS. Recommend to project the rates on a fully generational basis by Scale BB to account for future mortality improvements.
- Minor adjustments to the retirement, termination, and disability patterns for members consistent with experience and future expectations for active employees.

There was no change to the use of a 4-year smoothing technique to determine the actuarial value of assets, used for determining the funding period. However, we did add a provision to ensure that the gain or loss from an individual year is fully recognized within 4 years.

There was no change to the actuarial funding method. The Entry Age Normal cost method (EAN) is the current funding method being used to allocate the actuarial costs of the System. The Entry Age Normal method will generally produce relatively level contribution amounts as a percentage of payroll from year to year, and allocates costs among various generations of taxpayers in a reasonable manner. It is by far the most commonly used actuarial cost method for large public retirement systems.

Further detail on the assumptions and methods may be found in the *Summary of Actuarial Methods and Assumptions* in this section of this CAFR.

The actuarial assumptions represent estimates of future experience and are not market measures. The results of the actuarial valuation are dependent on 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. Based on the scope of this engagement, we have not performed analysis on the potential range of future measurements based on other factors. The actuarial calculations are intended to provide information for rational decision making.

In our opinion, the assumptions are internally consistent and are reasonably based on the actual experience of ERS.

Data

Member data for retired, active, and inactive participants was supplied as of March 31, 2016, by ERS's staff. We have not subjected this data to any auditing procedures, but have examined the data for reasonableness and consistency with the prior year's data. Asset information was supplied by ERS's staff.

Responsibility for Tables and Schedules

The actuary is responsible for the information with respect to years after 1999 in the Required Supplementary Information, and the Notes to Required Supplementary Information in the Financial Section of the ERS's Comprehensive Annual Financial Report (CAFR). Information with respect to years prior to 2000 was supplied by ERS.

Gabriel Roeder Smith & Company

Letter from the Actuary (continued)

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Tables and schedules in the Actuarial Section of the CAFR were generally prepared directly by the Actuary. However, certain of these tables were prepared by ERS utilizing information from this report. When the tables were prepared by ERS from our report, they are so noted.

The undersigned are independent actuaries and consultants. Mr. Newton is an Enrolled Actuary, a Member of the American Academy of Actuaries and meets the Qualification Standards of the American Academy of Actuaries. Finally, all of the undersigned are experienced in performing valuations for large public retirement systems.

Sincerely,

Joe Newton, FSA, EA	Lewis Ward	Linna Ye, ASA, MAAA
Senior Consultant & Actuary	Consultant	Actuary

Executive Summary

The following table summarizes the key results of the June 30, 2016 actuarial valuation of the Employees' Retirement System of the State of Hawaii (ERS).

Item	**2016**	**2015**
Membership		
• Number of		
- Active members	67,377	67,310
- Retirees and beneficiaries	45,506	44,283
- Inactive, vested	7,741	7,413
- Total	120,624	119,006
• Covered payroll for active members	$4,118.4 million	$3,952.6 million
• Actual benefit payments and refunds	$1,245.5 million	$1,181.3 million
Assets		
• Actuarial (smoothed) value	$14,998.7 million	$14,463.7 million
• Market value	$14,070.0 million	$14,505.5 million
• Return on actuarial value	5.6%	7.9%
• Return on market value	(1.2%)	3.9%
• Employer contributions during fiscal year	$756,558,222	$717,792,981
• External cash flow %	(1.9%)	(1.8%)
Actuarial Information		
• Total normal cost % (employee + employer)	13.98%	11.66%
• Unfunded actuarial accrued liability (UAAL)	$12,440.5 million	$8,774.7 million
• Funded ratio (based on smoothed assets)	54.7%	62.2%
• Funded ratio (based on market assets)	51.3%	62.4%
• Funding period (years) *	66.0	26.0
• Employer contribution rate % of projected payroll ** For FY beginning July 1	17.91%	17.89%

* Funding Period based on actuarial value of assets, scheduled increases in employer contribution rates, and an open group projection reflecting changes in benefits and future member contribution rates.

** Weighted average of 25.00% Contribution Rate for Police and Firefighters and 17.0% Contribution Rate for All Other Employees.

Actuarial Certification Statement

	Police and Firefighters June 30, 2016	All Other Employees June 30, 2016	All Employees June 30, 2016
1. Gross normal cost as a percentage of pay	25.72%	12.46%	13.98%
2. Present value of future benefits			
a. Active employees	$ 3,592,697,672	$ 13,894,316,159	$ 17,487,013,831
b. Inactive members	67,016,533	635,569,722	702,586,255
c. Pensioners and beneficiaries	2,489,252,856	11,738,951,676	14,228,204,532
d. Total	$ 6,148,967,061	$ 26,268,837,557	$ 32,417,804,618
3. Present value of future employee and employer contributions			
a. Present value of future normal costs	$ 1,137,109,364	$ 3,841,461,625	$ 4,978,570,989
b. Present value of future employee contributions	568,905,568	1,632,054,382	2,200,959,950
c. Present value of future employer normal cost (Item 3a - Item 3b)	$ 568,203,796	$ 2,209,407,243	$ 2,777,611,039
4. Actuarial accrued liability (Item 2d - Item 3a)	$ 5,011,857,697	$ 22,427,375,932	$ 27,439,233,629
5. Actuarial value of assets			
a. Annuity Savings Fund	$ 916,686,396	$ 1,557,869,900	$ 2,474,556,296
b. Pension Accumulation Fund	2,001,964,287	10,522,228,477	12,524,192,764
c. Total	$ 2,918,650,683	$ 12,080,098,377	$ 14,998,749,060
6. Unfunded actuarial accrued liability	$ 2,093,207,014	$ 10,347,277,555	$ 12,440,484,569
7. Adequacy of contribution rates			
a. Statutory Contribution Rate for Fiscal Year 2017	25.00%	17.00%	17.91%
B. Funding period in years as of June 30, 2016 *	Infinite	59	66

*The Funding Period is calculated using an open group projection which reflects the impact of both the new employer contribution rates schedule and the benefits and member contribution rates for employees hired after June 30, 2012.

Gabriel Roeder Smith & Company

Actuarial Certification Statement (continued)

The actuarial valuation as of June 30, 2016 is based on the provisions of Chapter 88 of the Hawaii Revised Statutes, as amended. The assumptions used in the cost calculations were those adopted by the Board of Trustees on December 12, 2016 based on the actuary's actuarial experience investigation report covering the five-year period July 1, 2010 – June 30, 2015. The actuarial calculations were performed by qualified actuaries in accordance with accepted actuarial procedures.

In our opinion, the comparison of the current contribution policies to ERS's liabilities were calculated in accordance with the provisions of Chapter 88 regarding the funding of the Employees' Retirement System on an actuarial reserve basis.

All of our work conforms with generally accepted actuarial principles and practices, and with the Actuarial Standards of Practice issued by the Actuarial Standards Board. In our opinion, our calculations also comply with the requirements of state law and, where applicable, the Internal Revenue Code, ERISA, and the Statements of the Governmental Accounting Standards Board. The undersigned is an independent actuary and consultant. Mr. Newton is an Enrolled Actuary, a Member of the American Academy of Actuaries and meets the Qualification Standards of the American Academy of Actuaries. Finally, he is experienced in performing valuations for large public retirement systems.

Joe Newton

Joseph P Newton,, FSA, EA, MAAA
Senior Consultant & Actuary

Summary of 2016 Actuarial Valuation

Exhibit 1
Development of Employer Cost

	Police and Firefighters June 30, 2016	All Other Employees June 30, 2016	All Employees June 30, 2016
1. Projected FY 2017 payroll for contributions purposes	$ 484,128,704	$ 3,774,799,913	$ 4,258,928,617
2. Gross normal cost (Exhibit 3)	25.72%	12.46%	13.98%
3. Employer normal cost rate (Exhibit 3)	13.32%	7.57%	8.23%
4. Present value future benefits (Exhibit 2)	$ 6,148,967,061	$ 26,268,837,557	$ 32,417,804,618
5. Present value future employer normal cost	$ 568,203,796	$ 2,209,407,243	$ 2,777,611,039
6. Present value future employee contributions	$ 568,905,568	$ 1,632,054,382	$ 2,200,959,950
7. Actuarial accrued liability (Item 4 - Item 5 - Item 6)	$ 5,011,857,697	$ 22,427,375,932	$ 27,439,233,629
8. Actuarial value of assets	$ 2,918,650,683	$ 12,080,098,377	$ 14,998,749,060
9. Unfunded actuarial accrued liability (UAAL)			
(Item 7 - Item 8)	$ 2,093,207,014	$ 10,347,277,555	$ 12,440,484,569
10. Funding period *	Infinite	59	66

	Police and Firefighters June 30, 2015	All Other Employees June 30, 2015	All Employees June 30, 2015
1. Projected FY 2016 payroll for contributions purposes	$ 463,302,817	$ 3,708,099,091	$ 4,171,401,908
2. Gross normal cost (Exhibit 3)	20.39%	10.53%	11.66%
3. Employer normal cost rate (Exhibit 3)	8.04%	5.76%	6.02%
4. Present value future benefits (Exhibit 2)	$ 4,977,235,226	$ 22,062,844,503	$ 27,040,079,729
5. Present value future employer normal cost	$ 318,529,975	$ 1,550,192,702	$ 1,868,722,677
6. Present value future employee contributions	$ 516,410,798	$ 1,416,550,868	$ 1,932,961,666
7. Actuarial accrued liability (Item 4 - Item 5 - Item 6)	$ 4,142,294,453	$ 19,096,100,933	$ 23,238,395,386
8. Actuarial value of assets	$ 2,775,337,302	$ 11,688,332,975	$ 14,463,670,277
9. Unfunded actuarial accrued liability (UAAL)			
(Item 7 - Item 8)	$ 1,366,957,151	$ 7,407,767,958	$ 8,774,725,109
10. Funding period *	27	25	26

*The Funding Period is calculated using an open group projection which reflects the impact of both the new employer contribution rates schedule and the benefits and member contribution rates for employees hired after June 30, 2012.
Please refer to Exhibit 7 for the full projection.

Gabriel Roeder Smith & Company

Summary of 2016 Actuarial Valuation (continued)

Exhibit 2
Actuarial Present Value of Future Benefits

	Police and Firefighters June 30, 2016	All Other Employees June 30, 2016	All Employees June 30, 2016
1. Active members			
a. Service retirement benefits	$ 3,448,659,766	$ 12,706,944,580	$ 16,155,604,346
b. Termination benefits	102,331,078	806,508,688	908,839,766
c. Survivor benefits	19,051,626	141,603,947	160,655,573
d. Disability retirement benefits	22,655,202	239,258,944	261,914,146
e. Total	$ 3,592,697,672	$ 13,894,316,159	$ 17,487,013,831
2. Retired members			
a. Service retirement	$ 2,331,689,444	$ 10,903,901,755	$ 13,235,591,199
b. Disability retirement	30,740,070	221,253,328	251,993,398
c. Beneficiaries	126,823,342	613,796,593	740,619,935
d. Total	$ 2,489,252,856	$ 11,738,951,676	$ 14,228,204,532
3. Inactive members			
a. Vested terminations	$ 63,183,996	$ 565,038,743	$ 628,222,739
b. Nonvested terminations	3,832,537	70,530,979	74,363,516
c. Total	$ 67,016,533	$ 635,569,722	$ 702,586,255
4. Total actuarial present value of future benefits	$ 6,148,967,061	$ 26,268,837,557	$ 32,417,804,618

	Police and Firefighters June 30, 2015	All Other Employees June 30, 2015	All Employees June 30, 2015
1. Active members			
a. Service retirement benefits	$ 2,665,186,345	$ 10,240,759,922	$ 12,905,946,267
b. Termination benefits	85,772,444	731,959,892	817,732,336
c. Survivor benefits	42,053,042	255,744,079	297,797,121
d. Disability retirement benefits	12,769,956	98,503,689	111,273,645
e. Total	$ 2,805,781,787	$ 11,326,967,582	$ 14,132,749,369
2. Retired members			
a. Service retirement	$ 1,987,033,692	$ 9,516,257,391	$ 11,503,291,083
b. Disability retirement	29,157,877	180,700,290	209,858,167
c. Beneficiaries	101,639,064	507,003,334	608,642,398
d. Total	$ 2,117,830,633	$ 10,203,961,015	$ 12,321,791,648
3. Inactive members			
a. Vested terminations	$ 49,917,185	$ 471,817,363	$ 521,734,548
b. Nonvested terminations	3,705,621	60,098,543	63,804,164
c. Total	$ 53,622,806	$ 531,915,906	$ 585,538,712
4. Total actuarial present value of future benefits	$ 4,977,235,226	$ 22,062,844,503	$ 27,040,079,729

Gabriel Roeder Smith & Company

Summary of 2016 Actuarial Valuation (continued)

Exhibit 3
Analysis of Normal Cost

	Police and Firefighters June 30, 2016	All Other Employees June 30, 2016	All Employees June 30, 2016
1. Normal cost as a percent of pay			
a. Service retirement benefits	22.83%	9.35%	10.90%
b. Deferred termination benefits	1.15%	0.95%	0.97%
c. Refunds	0.89%	1.28%	1.24%
d. Disability retirement benefits	0.31%	0.38%	0.37%
e. Survivor benefits	0.19%	0.15%	0.15%
f. Administrative expenses	0.35%	0.35%	0.35%
g. Total	25.72%	12.46%	13.98%
2. Employee contribution rate	12.40%	4.89%	5.75%
3. Effective employer normal cost rate (Item 1g – Item 2)	13.32%	7.57%	8.23%

	Police and Firefighters June 30, 2015	All Other Employees June 30, 2015	All Employees June 30, 2015
1. Normal cost as a percent of pay			
a. Service retirement benefits	17.56%	8.00%	9.10%
b. Deferred termination benefits	0.84%	0.69%	0.71%
c. Refunds	1.32%	1.36%	1.35%
d. Disability retirement benefits	0.18%	0.17%	0.17%
e. Survivor benefits	0.49%	0.31%	0.33%
f. Administrative expenses	N/A	N/A	N/A
g. Total	20.39%	10.53%	11.66%
2. Employee contribution rate	12.35%	4.77%	5.64%
3. Effective employer normal cost rate (Item 1g – Item 2)	8.04%	5.76%	6.02%

Gabriel Roeder Smith & Company

Summary of 2016 Actuarial Valuation (continued)

Exhibit 4
Development of Actuarial Value of Assets

			Year Ending June 30, 2016
1.	Actuarial value of assets at beginning of year	$	14,463,670,277
2.	Net new investments		
	a. Contributions	$	993,360,083
	b. Benefits paid		(1,232,589,353)
	c. Refunds		(12,927,672)
	d. Subtotal		(252,156,942)
3.	Market value of assets at end of year	$	14,069,978,917
4.	Expected return	$	1,096,825,773
5.	Expected actuarial value of assets, end of year	$	15,308,339,108
6.	Excess/(shortfall) return (Item 3-Item 5)	$	(1,238,360,191)
7.	Development of amounts to be recognized as of June 30, 2016		

Fiscal Year End	Remaining Deferrals of Excess (Shortfall) of Investment Income	Offsetting of Gains/(Losses)	Net Deferrals Remaining	Years Remaining	Recognized for this valuation	Remaining after this valuation
	(1)	(2)	(3) = (1) + (2)	(4)	(5) = (3) / (4)	(6) = (3) - (5)
2013	$ 0	$ 0	$ 0	1	$ 0	$ 0
2014	0	0	0	2	0	0
2015	41,794,279	(41,794,279)	0	3	0	0
2016	(1,280,154,470)	41,794,279	(1,238,360,191)	4	(309,590,048)	(928,770,143)
Total	$ (1,238,360,191)	$ 0	$ (1,238,360,191)		$ (309,590,048)	$ (928,770,143)

8.	Actuarial value of assets as of June 30, 2016 (Item 3 - Item 7)	$	14,998,749,060
9.	Ratio of actuarial value to market value		106.6%
10.	Asset gain (loss) for year (Item 8 - Item 5)	$	(309,590,048)

Summary of 2016 Actuarial Valuation (continued)

Exhibit 5
Total Experience Gain or Loss

Item	Police and Firefighters	All Other Employees	All Employees
A. Calculation of total actuarial gain or loss			
1. Unfunded actuarial accured liability (UAAL), as of June 30, 2015	$ 1,366,957,151	$ 7,407,767,958	$ 8,774,725,109
2. Normal cost for the year (employer and employee)	$ 96,382,956	$ 387,895,543	$ 484,278,499
3. Less: contributions and assessments for the year	$ (181,517,115)	$ (811,842,968)	$ (993,360,083)
4. Interest at 7.65%			
a. On UAAL	$ 104,572,222	$ 566,694,249	$ 671,266,471
b. On normal cost	3,686,648	14,837,005	18,523,653
c. On contributions	(6,943,030)	(31,052,994)	(37,996,024)
d. Total	$ 101,315,840	$ 550,478,260	$ 651,794,100
5. Expected UAAL as of June 30, 2016 (Sum of Items 1– 4)	$ 1,383,138,832	$ 7,534,298,793	$ 8,917,437,625
6. Actual UAAL as of June 30, 2016	$ 2,093,207,014	$ 10,347,277,555	$ 12,440,484,569
7. Total gain (loss) for the year (Item 5 – Item 6)	$ (710,068,182)	$ (2,812,978,762)	$ (3,523,046,944)
B. Source of gains and losses			
8. Asset gain (loss) for the year (Exhibit 6)	$ (60,244,038)	$ (249,346,010)	$ (309,590,048)
9. Gain (loss) due to change in actuarial assumptions	(558,258,724)	(2,357,663,953)	(2,915,922,677)
10 Gain (loss) due to change in actuarial method	-	-	-
11 Other liability gain (loss)	$ (91,565,420)	$ (205,968,799)	$ (297,534,219)
12 Change in benefit provisions	-	-	-
13 Total gain (loss) for the year	$ (710,068,182)	$ (2,812,978,762)	$ (3,523,046,944)

Summary of 2016 Actuarial Valuation (continued)

Exhibit 6
Investment Experience Gain or Loss

Item	June 30, 2016	June 30, 2015
1. Actuarial assets, beginning of year	$ 14,463,670,277	$ 13,641,755,300
2. Total contributions during year	$ 993,360,083	$ 941,298,400
3. Benefits and refunds paid	$ (1,245,517,025)	$ (1,181,252,658)
4. Assumed net investment income at 7.65% and 7.75%, respectively		
a. Beginning of year assets	$ 1,106,596,855	$ 1,057,236,035
b. Contributions	$ 38,492,703	$ 36,475,313
c. Benefits and refunds paid	$ (48,263,785)	$ (45,773,540)
d. Total	$ 1,096,825,773	$ 1,047,937,808
5. Expected actuarial assets, end of year (Sum of Items 1 through 4)	$ 15,308,339,108	$ 14,449,738,850
6. Actual actuarial assets, end of year	$ 14,998,749,060	$ 14,463,670,277
7. Asset gain (loss) for year (Item 6 – Item 5)	$ (309,590,048)	$ 13,931,427
8. Asset gain (loss) as a percent of actuarial value of assets, end of year (Item 7 / Item 6)	(2.06%)	0.10%

Summary of 2016 Actuarial Valuation (continued)

Exhibit 7
Projection Results Based on June 30, 2016 Actuarial Valuation

Valuation as of June 30,	Employer Contribution Rate for Fiscal Year Following Valuation Date	Compensation (in Millions)	Employer Contributions (in Millions)	Actuarial Accrued Liability (AAL, in Millions)	Actuarial Value of Assets (AVA, in Millions)	Unfunded Actuarial Accrued Liability (UAAL, in Millions)	Funded Ratio
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
2016	17.91%	$ 4,258.9	$ 763	$ 27,439	$ 14,997	$ 12,443	54.7%
2017	17.91%	4,348.5	779	28,504	15,626	12,878	54.8%
2018	17.91%	4,449.4	797	29,643	16,318	13,325	55.0%
2019	17.91%	4,557.6	816	30,785	17,002	13,783	55.2%
2020	17.90%	4,672.8	837	31,929	17,676	14,252	55.4%
2021	17.90%	4,793.9	858	33,074	18,341	14,733	55.5%
2022	17.90%	4,920.0	881	34,220	18,995	15,224	55.5%
2023	17.90%	5,052.4	904	35,365	19,639	15,726	55.5%
2024	17.89%	5,190.1	929	36,510	20,271	16,239	55.5%
2025	17.89%	5,333.8	954	37,651	20,889	16,763	55.5%
2026	17.88%	5,484.6	981	38,788	21,492	17,296	55.4%
2027	17.88%	5,642.6	1,009	39,921	22,081	17,840	55.3%
2028	17.87%	5,807.9	1,038	41,051	22,658	18,393	55.2%
2029	17.87%	5,981.2	1,069	42,179	23,223	18,956	55.0%
2030	17.87%	6,162.1	1,101	43,307	23,779	19,528	54.9%
2031	17.86%	6,351.0	1,134	44,436	24,328	20,108	54.7%
2032	17.86%	6,547.3	1,169	45,565	24,869	20,696	54.6%
2033	17.86%	6,750.8	1,205	46,694	25,404	21,290	54.4%
2034	17.85%	6,963.1	1,243	47,827	25,935	21,891	54.2%
2035	17.85%	7,184.2	1,282	48,964	26,466	22,498	54.1%
2036	17.85%	7,414.0	1,323	50,108	26,999	23,109	53.9%
2037	17.85%	7,653.7	1,366	51,261	27,538	23,723	53.7%
2038	17.85%	7,904.3	1,411	52,429	28,088	24,340	53.6%
2039	17.85%	8,165.8	1,458	53,614	28,656	24,959	53.4%
2040	17.85%	8,438.4	1,506	54,823	29,246	25,577	53.3%
2041	17.85%	8,722.4	1,557	56,060	29,866	26,194	53.3%
2042	17.86%	9,017.3	1,610	57,331	30,523	26,808	53.2%
2043	17.86%	9,324.0	1,665	58,642	31,225	27,417	53.2%
2044	17.86%	9,643.1	1,722	59,998	31,977	28,021	53.3%
2045	17.86%	9,974.2	1,781	61,406	32,790	28,616	53.4%

Projection assumes all assumptions exactly met, including a 7.00% annual return on the current actuarial value of assets.

Summary of 2016 Actuarial Valuation (continued)

Exhibit 8
Highlights of Last Five Annual Actuarial Valuations
2012 through 2016

Item	Valuation Date: June 30 2012	2013	2014	2015	2016
Number of active members	65,599	66,226	67,206	67,310	67,377
Number of inactive members	6,909	7,312	8,105	7,413	7,741
Number of pensioners	37,830	38,741	39,680	40,657	41,654
Number of beneficiaries	2,944	3,071	3,407	3,626	3,852
Average monthly contributory plan pension amount	$ 2,315	$ 2,414	$ 2,508	$ 2,621	$ 2,730
Average monthly noncontributory plan pension amount	$ 1,538	$ 1,562	$ 1,585	$ 1,611	$ 1,637
Average monthly hybrid plan pension amount	$ 2,090	$ 2,092	$ 2,088	$ 2,114	$ 2,139
Average monthly beneficiary amount	$ 1,219	$ 1,247	$ 1,304	$ 1,361	$ 1,419
Total actuarial value of assets ($millions)	$ 12,242	$ 12,749	$ 13,642	$ 14,464	$ 14,999
Unfunded actuarial accrued liability ($millions)	$ 8,440,9	$ 8,494.9	$ 8,578.3	$ 8,774.7	$ $12,440.5
Funding Period (in years) (1)	30.0	28.0	26.0	26.0	66.0

Item (Dollar amounts in millions(2))	Fiscal Year 2011-2012	2012-2013	2013-2014	2014-2015	2015-2016
Employers contributions(2)	$ 548.4	$ 581.4	$ 653.1	$ 717.8	$ 756.6

(1) Beginning with the 2011 valuation, the funding period was determined using and open group projection. Prior valuations determined the remaining amortization based on the assumption that the amortization payment would remain constant as a percentage of pay.

(2) Beginning with the fiscal year beginning July 1, 2005, a dollar contribution amount is not determined under the provisions of Act 181/2004. Instead a fixed percentage of payroll is contributed (15.75% for Police and Fire, 13.75% for All Others).
Beginning July 1, 2008, the percentages increased to 19.70% for Police and Fire, 15.00% for All Others.
Beginning July 1, 2012, the percentages increased to 22.0% for Police and Fire, 15.5% for All Others.
Beginning July 1, 2013, the percentages increased to 23.0% for Police and Fire, 16.0% for All Others.
Beginning July 1, 2014, the percentages increased to 24.0% for Police and Fire, 16.5% for All Others.
Beginning July 1, 2015, the percentages increased to 25.0% for Police and Fire, 17.0% for All Others.

Summary of Actuarial Methods and Assumptions
(Adopted on December 12, 2016)

Basis for assumption setting: The actuarial assumptions were adopted by the Board on December 12, 2016. Rationale for the recommendations are in the most recent experience study dated July 5, 2016.

I. *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.

II. *Actuarial Cost Method*

The normal cost and actuarial accrued liability are determined using the Entry Age Actuarial Cost Method. The actuarial accrued liability is assigned to years prior to the valuation, and the normal cost is assigned to the year following the valuation. The remaining costs are assigned to future years. The normal cost and accrued liability are determined on an individual basis.

The normal cost is the level percentage of payroll contribution required to accumulate the needed funds to pay all expected benefits. This percentage of payroll is then applied to the total compensation for the prior year for all active members, and is then adjusted for the payroll growth assumption.

The actuarial accrued liability is the difference between the total present value of future benefits and the actuarial present value of future normal costs. The unfunded actuarial accrued liability (UAAL) is the excess of the actuarial accrued liability over the actuarial value of assets.

III. *Funding of Unfunded Actuarial Accrued Liability*

Since the State statutes governing the System establish the employee and employer contribution rates, the actuarial valuation determines the number of years required to amortize (or fund) the UAAL. Because of the legislated increases in future employer contribution rates and the new tier of benefits for employees hired after June 30, 2012, an open group projection of liabilities and assets was used to determine the length of time until the UAAL is eliminated. The open group projection assumed that the number of active members would remain static (i.e. each active employee who leaves employment due to termination, retirement, death or disability, would be replaced by exactly one new employee.

Because of this methodology for determining the funding period, any change in the unfunded actuarial accrued liability due to (i) actuarial gains and losses, (ii) changes in actuarial assumptions, or (iii) amendments, affects the funding period.

Please see Section V of these *Assumptions* for a description of the new entrant profile used in the open group projection.

Summary of Actuarial Methods and Assumptions (continued)
(Adopted on December 12, 2016)

IV. Actuarial Value of Assets

The actuarial value of assets is based on the market value of assets with a four-year phase-in of actual investment return in excess of (less than) expected investment income. Offsetting unrecognized gains and losses are immediately recognized, with the shortest remaining bases recognized first and the net remaining bases continue to be recognized on their original timeframe. The expected actuarial value of assets is calculated net of investment expenses, and the expected investment return is equal to the assumed investment return rate multiplied by the prior year's actuarial value of assets, adjusted for contributions, benefits paid, and refunds.

V. New Entrant Profile

For the purposes of determining the funding period, an open group projection is used which replaces on a one-to-one basis each active member who leaves employment with an average new hire. The average new hire is determined based on a new entrant profile, which is created from the valuation data by determining the entry age and entry pay for anyone with seven or less years of service as of the valuation date. Each group of new hires' salaries is assumed to grow at the General Wage Inflation of 3.50% over the salaries of the previous year's group.

The new entrant profile for members assumed to be hired during the year following the valuation date for the Police and Fire Employees and the All Other Employees are shown in the table below.

New Entrant Profile for Police and Fire Employees

Entry Age	# of Employees	Average Salary
20-24	199	$42,080
25-29	421	41,841
30-34	286	41,807
35-39	136	42,273
40-44	47	42,310
45-49	17	43,503
50-54	6	45,708
55-59	1	40,632
Total	1,113	41,993

It is assumed that 92.7% of new hires will be male.

Summary of Actuarial Methods and Assumptions (continued)
(Adopted on December 12, 2016)

New Entrant Profile for All Other Employees

Entry Age	# of Employees	Average Salary
15-19	19	$26,410
20-24	1,433	37,250
25-29	3,459	40,108
30-34	2,759	42,208
35-39	2,388	43,097
40-44	1,954	41,537
45-49	1,785	40,980
50-54	1,449	42,278
55-59	1,169	45,146
60-64	484	46,511
65-69	52	47,971
Total	16,951	41,610

It is assumed that 40.0% of new hires will be male.

VI. Actuarial Assumptions

A. Economic Assumptions

1. Investment return: 7.00% per year, compounded annually, composed of an assumed 2.50% inflation rate and a 4.50% net real rate of return (net of investment expenses).
2. General Wage Inflation: 3.50% per annum.

Summary of Actuarial Methods and Assumptions (continued)
(Adopted on December 12, 2016)

3. Salary increase rates: As shown below

	General Employees		Teachers	
Years of Service	Service-related Component	Total Rate Including 2.50% Inflation Component and 1.00% Productivity Component	Service-Related Component	Total Rate Including 2.50% Inflation Component and 1.25% Productivity Component
1	3.00%	6.50%	2.00%	5.75%
2	3.00%	6.50%	1.75%	5.50%
3	2.00%	5.50%	1.75%	5.50%
4	1.50%	5.00%	1.50%	5.25%
5	1.50%	5.00%	1.00%	4.75%
6	1.25%	4.75%	1.00%	4.75%
7	1.25%	4.75%	0.75%	4.50%
8	1.00%	4.50%	0.75%	4.50%
9	1.00%	4.50%	0.50%	4.25%
10	1.00%	4.50%	0.50%	4.25%
11	0.75%	4.25%	0.50%	4.25%
12	0.75%	4.25%	0.50%	4.25%
13	0.50%	4.00%	0.25%	4.00%
14	0.50%	4.00%	0.25%	4.00%
15	0.50%	4.00%	0.25%	4.00%
16	0.50%	4.00%	0.25%	4.00%
17	0.50%	4.00%	0.25%	4.00%
18	0.50%	4.00%	0.25%	4.00%
19	0.50%	4.00%	0.25%	4.00%
20	0.25%	3.75%	0.25%	4.00%
21	0.25%	3.75%	0.25%	4.00%
22	0.25%	3.75%	0.25%	4.00%
23	0.25%	3.75%	0.25%	4.00%
24	0.25%	3.75%	0.25%	4.00%
25 or more	0.00%	3.50%	0.00%	3.75%

Summary of Actuarial Methods and Assumptions (continued)
(Adopted on December 12, 2016)

3. Salary increase rates (continued):

	Police & Firefighters	
Years of Service	Service-related Component	Total Annual Rate of Increase Including 2.50% Inflation Component and 2.50% General Increase Rate
1	2.00%	7.00%
2	2.00%	7.00%
3 or more	0.00%	5.00%

Salary increases are assumed to occur once a year, on July 1. Therefore the pay used for the period between the valuation date and the first anniversary of the valuation date is equal to the reported pay for the prior year, annualized if necessary, and then increased by the salary increase assumption. To adjust the pays received as of March 31st to the June 30th valuation date, the reported pay for each member is increased by 1%.

B. Demographic Assumptions

1. Mortality rates

Active Members: Multiples of the RP 2014 mortality table for active employees based on the occupation of the member as follows:

	General Employees	Teachers	Police and Fire
	Male & Female	Male & Female	Male & Female
Ordinary	75%	55%	58%
% of Ordinary Chosing Annuity	41%	52%	24%
Duty Related	5%	5%	12%

Healthy Retirees: The 2016 Public Retirees of Hawaii mortality table, generational projection using the BB projection table from the year 2016 and with multipliers based on plan and group experience. The following are sample rates of the base table as of 2016 with the corresponding multipliers:

Summary of Actuarial Methods and Assumptions (continued)
(Adopted on December 12, 2016)

Healthy Annuitant Mortality Rates Before Projection (Multiplier Applied)

	General Employees		Teachers		Police and Fire	
Age	Males	Females	Males	Females	Males	Females
50	0.1626%	0.1140%	0.1463%	0.1012%	0.1951%	0.1140%
55	0.3963%	0.1937%	0.3567%	0.1720%	0.4756%	0.1937%
60	0.6301%	0.2735%	0.5671%	0.2428%	0.7561%	0.2735%
65	0.9489%	0.3532%	0.8540%	0.3136%	1.1387%	0.3532%
70	1.3733%	0.7404%	1.2360%	0.6574%	1.6480%	0.7404%
75	2.1071%	1.3116%	1.8964%	1.1645%	2.5285%	1.3116%
80	3.6268%	2.2573%	3.2641%	2.0041%	4.3522%	2.2573%
85	6.6210%	4.1830%	5.9589%	3.7138%	7.9452%	4.1830%
90	12.1005%	8.2371%	10.8905%	7.3133%	14.5206%	8.2371%
Multiplier	100%	107%	90%	95%	120%	107%
Setback	0	0	0	0	0	0

The following table provides the life expectancy for individuals retiring in future years based on the assumption with full generational projection:

Life Expectancy for an Age 65 Retiree in Years

	Year of Retirement			
Gender	2020	2025	2030	2035
		General Retirees		
Male	23.2	23.7	24.2	24.7
Female	26.4	26.8	27.2	27.5
		Teachers		
Male	24.0	24.5	25.0	25.5
Female	27.3	27.7	28.0	28.3
		Police and Fire		
Male	21.8	22.3	22.8	23.3
Female	26.4	26.8	27.2	27.5

Disabled retirees: Base Table for healthy retiree's occupation, set forward 5 years, generational projection using the BB projection table from the year 2016. Minimum mortality rate of 3.5% for males and 2.5% for females.

2. Disability rates – The assumed total disability rates at select ages are multiples of the client specific table that follows:

Age	Male & Female
25	0.000%
30	0.001%
35	0.008%
40	0.026%
45	0.064%
50	0.146%
55	0.198%
60	0.217%

Note: The disability rates project the percentage of employees at each age that is assumed to become disabled before retiring. Multiples of the rates above are assumed to be ordinary disability or accidental disability, and varies by employee group as follows:

Gabriel Roeder Smith & Company

Summary of Actuarial Methods and Assumptions (continued)
(Adopted on December 12, 2016)

	General Employees	Teachers	Police & Fire
Type	Male & Female	Male & Female	Male & Female
Ordinary	210%	75%	70%
Accidental	30%	5%	75%

3. Termination Rates -Same male and female rates, based solely on the member's service. Rates reflect terminations for causes other than death, disability or retirement. Employees eligible for retirement are assumed to have no probability of termination. Sample rates are shown below:

	Expected Terminations per 1000 Lives (Male & Female)		
Years of Service	General Employees	Teachers	Police & Fire
0	185.9	243.6	110.0
1	152.5	200.8	95.0
2	124.6	164.7	37.0
3	101.6	134.4	30.1
4	82.9	109.4	26.1
5	67.9	89.0	23.3
6	56.1	72.5	21.0
7	47.0	59.5	19.2
8	40.1	49.4	17.7
9	35.1	41.7	16.4
10	31.5	36.0	15.2
11	29.1	31.9	14.1
12	27.6	29.0	13.2
13	26.6	27.0	12.3
14	25.9	25.7	11.5
15	25.5	24.8	10.8
16	25.1	24.0	10.1
17	24.5	23.2	9.5
18	23.9	22.4	8.9
19	23.0	21.4	8.3
20	22.0	20.2	7.7
21	20.8	18.7	7.2
22	19.5	17.1	6.8
23	18.3	15.4	6.3
24	17.4	13.6	5.8
25	16.8	12.1	0.0
26	16.8	10.9	0.0
27	16.8	10.4	0.0
28	16.8	10.7	0.0
29	16.8	10.0	0.0
30 and more	0.0	0.0	0.0

Summary of Actuarial Methods and Assumptions (continued)
(Adopted on December 12, 2016)

4. Retirement rates - Separate male and female rates, based on age. Sample rates are shown below:

<u>Contributory Members</u>

Expected Retirements per 100 Lives

	General Employees				Teachers				Police & Fire
	Unreduced Retirement		Reduced Retirement		Unreduced Retirement		Reduced Retirement		Unreduced Retirement
Age	Male	Female	Male	Female	Male	Female	Male	Female	Male & Female
45	0	0	0	0	0	0	0	0	12.5
46	0	0	0	0	0	0	0	0	12.5
47	0	0	0	0	0	0	0	0	12.5
48	0	0	0	0	0	0	0	0	12.5
49	0	0	0	0	0	0	0	0	12.5
50	0	0	0	0	0	0	1	0	15.0
51	0	0	2	1	0	0	1	1	15.0
52	0	0	2	1	0	0	1	1	15.0
53	0	0	2	1	0	0	2	2	15.0
54	0	0	3	2	0	0	3	3	15.0
55	25	20	3	2	20	18			20.0
56	25	20			15	16			20.0
57	16	13			15	16			20.0
58	16	13			15	16			22.0
59	13	13			15	16			25.0
60	13	15			14	18			30.0
61	13	15			14	18			30.0
62	28	25			14	25			30.0
63	20	20			14	20			30.0
64	20	20			14	15			30.0
65	20	20			20	25			100.0
66	18	20			15	25			
67	18	20			15	20			
68	18	20			15	20			
69	18	20			15	20			
70	20	20			15	20			
71	20	20			15	20			
72	20	20			15	20			
73	20	20			15	20			
74	20	20			15	20			
75	100	100			100	100			

Summary of Actuarial Methods and Assumptions (continued)
(Adopted on December 12, 2016)

<u>Noncontributory Members</u>

Expected Retirements per 100 Lives

	General Employees				Teachers			
	Unreduced Retirement		Reduced Retirement		Unreduced Retirement		Reduced Retirement	
Age	Male	Female	Male	Female	Male	Female	Male	Female
55	20	11	1	1	10	13	1	2
56	18	11	1	1	10	7	1	2
57	13	11	1	1	10	8	1	2
58	10	11	1	1	10	10	2	2
59	10	11	2	2	10	20	3	3
60	10	14	3	3	10	11	5	5
61	11	18	4	4	10	16	7	5
62	20	20			16	25		
63	20	20			12	20		
64	12	20			10	15		
65	14	20			20	25		
66	20	20			15	25		
67	20	20			15	25		
68	20	20			15	25		
69	20	20			15	25		
70	20	20			15	25		
71	20	20			15	25		
72	20	20			15	25		
73	20	20			15	25		
74	20	20			15	25		
75	100	100			100	100		

Note: Retirement rates for the 25 & out group ages 50-54 are 10% for male and 11% for female.

Summary of Actuarial Methods and Assumptions (continued)
(Adopted on December 12, 2016)

Hybrid Members

Expected Retirements per 100 Lives

	General Employees				Teachers			
	Unreduced Retirement		Reduced Retirement		Unreduced Retirement		Reduced Retirement	
Age	Male	Female	Male	Female	Male	Female	Male	Female
55	16	18	1	1	20	16	2	2
56	10	13	1	1	13	10	2	2
57	10	13	1	1	13	10	2	2
58	14	13	1	2	13	12	2	2
59	14	13	2	2	13	12	3	3
60	14	13	2	4	14	14	3	5
61	14	15	3	4	14	18	3	10
62	21	20			22	30		
63	18	20			14	20		
64	18	20			14	20		
65	21	20			20	25		
66	18	18			15	25		
67	18	18			15	25		
68	18	18			15	25		
69	18	18			15	25		
70	20	20			15	25		
71	20	20			15	25		
72	20	20			15	25		
73	20	20			15	25		
74	20	20			15	25		
75	100	100			100	100		

Note: Retirement rates for the 25 & out group ages 50-54 are 6% for both male and female.

For members hired after June 30, 2012 the retirement rates for members once they reach unreduced retirement eligibility are increased 10% (multiplicative) for each year the member is beyond the age the member would have been eligible under the Hybrid provisions for members hired prior to June 30, 2012.

Summary of Actuarial Methods and Assumptions (continued)
(Adopted on December 12, 2016)

C. *Other Assumptions*

1. Projected payroll for contributions: The aggregate projected payroll for the fiscal year following the valuation date is calculated by increasing the actual payroll paid during the previous fiscal year by the payroll growth rate and multiplying by the ratio of current active members to the average number of active members during the previous fiscal year.

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

3. Marriage Assumption: While not implicitly used in the valuation, 100% of active members are assumed to be married when setting other benefit election and eligibility assumptions.

4. Percent electing annuity on death for contributory participants (when eligible): All of the spouses of married participants who die after becoming eligible for a retirement benefit are assumed to elect an annuity or a refund, whichever is more valuable at time of participant's death.

5. Payment Option: Future healthy retirees are assumed to choose the life only payment option. 50% of future disabled retirees are assumed to choose the 100% Joint and Survivor option.

6. Percent electing deferred termination benefit: vested terminating members are assumed to elect a refund or a deferred benefit, whichever is more valuable at the time of termination.

7. Assumed age for commencement of deferred benefits: Members electing to receive a deferred benefit are assumed to commence receipt when eligible for early retirement.

8. Administrative expenses: Administrative expenses are assumed to be 0.35% of active member payroll.

9. Reemployment, purchase of service, transfers: No recognition is made of (i) future member reimbursements upon reemployment, (ii) future purchase of additional service, or (iii) special transfer provisions.

10. Sick Leave: It is assumed that all members will have their benefit service increased by sick leave and the following loads will be applied by group:

General Employees	3.75%
Teachers	4.25%
Police and Fire	5.00%

11. COLA delay: It is assumed that the first COLA will be received 9 months after retirement. Teachers are assumed to receive COLA 12 months after retirement.

Summary of Actuarial Methods and Assumptions (continued)
(Adopted on December 12, 2016)

12. There will be no recoveries once disabled.

13. No surviving spouse will remarry and there will be no children's benefit.

14. Pay increase timing: Beginning of (fiscal) year. This is equivalent to assuming that reported pays represent amounts paid to members during the year ended on the valuation date.

15. Decrement timing: Retirements and terminations of Teachers are assumed to occur at the beginning of the year. All other decrements are assumed to occur mid-year.

16. Eligibility testing: Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.

17. Decrement relativity: Decrement rates are used directly from the Experience Study, without adjustment for multiple decrement table effects.

18. Incidence of Contributions: Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in this report, and the actual payroll payable at the time contributions are made.

19. Benefit Service: All members are assumed to accrue 1 year of service each year. Exact fractional service is used to determine the amount of benefit payable.

20. Police officers, firefighters, investigators of the Department of the Prosecuting Attorney and the Attorney General, narcotic enforcement investigators, and public safety investigators hired prior to June 30, 2012 are not assumed to retire at age 55 unless they have 10 years of service.

VII. Participant Data

Participant data was supplied in electronic files for (i) active members, (ii) inactive vested members, who are entitled to a future deferred benefit, (iii) members and beneficiaries receiving benefits.

Salary supplied for the current year was based on the actual pensionable earnings for the 12-month period ending the March preceding the valuation date. This pay was increased by 1% to reflect the three month difference from March to June. For members with less than one year of service, the base pay rate provided in the data was used.

VIII. Dates of Adoption of Assumptions and Methods

The actuarial assumptions and methods were adopted by the Board of Trustees on December 12, 2016 as recommended by Gabriel, Roeder, Smith & Company (GRS).

Summary of Actuarial Methods and Assumptions (continued)
(Adopted on December 12, 2016)

IX. Changes in Assumptions and Methods since Prior Valuation

The actuarial assumptions have been materially revised since the prior valuation. The major changes were (i) a decrease in the investment return assumption from 7.65% to 7.00%, and (ii) the mortality assumption was modified to assume longer life expectancies as well as to reflect continuous mortality improvement (generational mortality improvement). Please see our Experience Study report dated July 5, 2016 for a more extensive discussion of the changes in the actuarial assumptions and the rationale for the current assumptions.

Summary of Plan Changes

Act 65, effective July 1, 1999

Requires judges who enter or re-enter service after June 30, 1999 to be at least 55 years old and five years of service or have 25 years of service to retire.

Act 100, effective June 30, 1999

Uses actuarial investment earnings in excess of a ten percent (10%) actuarial investment yield rate to reduce the employer's contribution requirements by $147.0 million and $50.6 million for fiscal years ending June 30, 2000 and 2001, respectively.

Act 284, effective June 30, 2001

Provide an increase in pension benefits for current retirees with military service who retired prior to July 2, 1989. A retirant who rendered honorable active military service could be granted up to 4 years of military service credits based upon his/her years of credited service under the ERS, not to exceed his/her actual years of military service. The years of military service credits granted are based on the following schedule:

- 0 years for retirants with less than 8 years of credited service
- Up to 2 years of retirants with 8 years or more of credited service
- Up to 3 years of retirants with 20 years or more of credited service
- Up to 4 years of retirants with 25 years or more of credited service

For each year of military service credits granted on the schedule above, the retirant will be provided a $36.00 increase is his/her monthly pension or retirement allowance.

Act 199, effective June 30, 2003

Emergency Medical Technicians (EMTs) are allowed to retire with an unreduced benefit after 25 years of service regardless of age, of which the last five or more years prior to retirement must be in that capacity. This feature is phased in one year at a time, July 1, 2003 through June 30, 2008.

Act 177, effective July 1, 2004

This Act allows police officers with a permanent service-connected disability to retain the 2-1/2% benefit multiplier for each year of service as a police officer.

Act 179, effective July 1, 2004

This Act increased the Noncontributory service-connected disability formula to 35% of average final compensation. The Act also changed the methodology for crediting interest on contributions for terminated members so that interest continues to accrue until the date of refund. The Act adds a "pop-up" feature to the joint & survivor benefit options if the beneficiary pre-deceases the retiree.

This Act also created the new Hybrid Plan which became effective July 1, 2006.

Summary of Plan Changes (continued)

Act 181, effective July 1, 2004

This Act establishes fixed employer contribution rates as a percentage of compensation effective July 1, 2005. Employers will contribute 15.75% for their police officers and firefighters and 13.75% for other employees.

Act 183, effective July 1, 2004

This Act amends the ERS statutes to comply with the federal tax limits on compensation retroactive to July 1, 1996.

Act 56, effective December 1, 2004

This Act amends the ERS statutes to allow the automatic cost-of-living-adjustment to be reflected when determining actuarial equivalent optional forms of payment.

Act 256, effective July 5, 2007

Legislation was enacted to remove the statutory salary increase assumption from the statutes and to grant the System's Board of Trustees the authority to set the salary increase assumption. As a result of that legislation, the Board has adopted effective with this valuation the salary increase assumption recommended by GRS as a result of the Experience Study performed in 2006.

Legislation was also enacted to increase the employer contribution rates to the System. Effective July 1, 2008, the employer contribution rate for Police and Fire employees will increase from 15.75% to 19.70% and the rate for All Other employees will increase from 13.75% to 15.00%

Act 163, effective June 23, 2011

Legislation was enacted that increased the future employer contribution rates to ERS. Employers of Police and Fire employees will contribute 22.0% of pay in FY 2013, 23.0% in FY 2014, 24.0% in FY 2015, and 25.0% in FY 2016 and beyond. Employers of All Other Employees will contribute 15.5% of pay in FY 2013, 16.0% in FY 2014, 16.5% in FY 2015, and 17.0% in FY 2016 and beyond.

Act 163 continued on next page

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Summary of Plan Changes (continued)

Act 163, effective June 23, 2011 (continued)

Legislation was enacted that made numerous changes to the benefits and member contribution rates for employees hired after June 30, 2012. Key changes are shown below:

Benefit Provision	Police & Fire Employees	All Other Employees
Benefit Multiplier	2.25%	1.75%
Normal Retirement	Age 55 with 25 years of service, or age 60 with 10 years of service	Age 60 with 30 years of service, or age 65 with 10years of service
Post-Retirement Increase	1.5%	1.5%
Hybrid Match	N/A	120%
Average Final Compensation	Highest 5 annual base salaries	Highest 5 annual base salaries
Eligibility for Deferred Benefit	10 years of service	10 years of service
Member Contribution Rate	14.20%	8.00%

Similar changes were also made to the benefits of Judges, Legislative Officers, etc.

Similar changes were also made to those employees in the All Other Employees group who are eligible to retire at 25 years of service including the addition of a minimum age requirement (55).

Finally, legislation was enacted that set the investment return assumption for the June 30, 2011 valuation at 7.75% (the rate recommended in the Experience Study presented to the Board in December of 2010). In addition, the legislation granted ERS's Board the authority to set this assumption for valuations after 2011.

Act 152, effective June 26, 2012

Legislation was enacted to require employers to pay additional contributions if a retiring employee, who was first employed prior to July 1, 2012 and who was last employed by the employer, has significant non-base pay increases included in their average final compensation. The additional contribution is equal to the actuarial present value of the additional benefits earned due to the "excessive" non-base pay increases.

Act 153, effective June 26, 2012

Legislation was enacted to eliminate most types of non-base pay from the definition of compensation for employees hired after June 30, 2012. For the impacted employees, non-base pay compensation will be excluded in determining both the contributions made by and on behalf of these employees and the benefits they will earn in the System.

Ten-Year Actuarial Schedules (continued)

Ten Year Actuarial Schedules
2007 to 2016

- Retirement System Membership **
    - 2016 Membership Data *
- Historical Summary of Active Member Data *
- Pensioners, Average Annual Pension and Active Member/Pensioner Comparison **
- Number of Retirants and Beneficiaries **
- Solvency Test **
- Employer Contribution Rates as a Percentage of Payroll **
- Employer Appropriations to Pension Accumulation Fund, Appropriation Years 2006-2007 to 2015-2016 **

Note: * Prepared by Gabriel, Roeder, Smith & Company
** Compiled by ERS Staff from actuary reports, or other data.

Retirement System Membership **
2007 to 2016

March 31,	Active Members	Terminated Vested Members	Inactive Nonvested Members (a)	Pensioners & Beneficiaries	Total Membership
2007	65,251	5,554	n/a	35,324	106,129
2008	66,589	5,847	n/a	36,260	108,696
2009	67,912	6,016	n/a	36,999	110,927
2010	65,890	6,895	n/a	38,441	111,226
2011	65,310	6,649	n/a	39,689	111,648
2012	65,599	6,909	n/a	40,774	113,282
2013	66,226	7,312	n/a	41,812	115,350
2014	67,206	8,105	11,247	43,087	129,645
2015	67,310	7,413	13,840	44,283	132,846
2016	67,377	7,741	14,554	45,506	135,178

** Schedule compiled by ERS Staff from actuary reports.
(a) Number not reported in prior years, included in counts for GASB Statement No. 68 reporting.
n/a = not available

Gabriel Roeder Smith & Company

Ten-Year Actuarial Schedules (continued)

2016 Membership Data

	Police and Firefighters		All Other Employees		All Employees	
	June 30, 2016	June 30, 2015	June 30, 2016	June 30, 2015	June 30, 2016	June 30, 2015
1. Active members						
a. Number	5,087	5,044	62,290	62,266	67,377	67,310
b. Total payroll	$ 458,092,919	$ 438,156,112	$3,660,258,732	$3,514,476,920	$4,118,351,651	$3,952,633,032
c. Average salary	$ 90,052	$ 86,867	$ 58,762	$ 56,443	$ 61,124	$ 58,723
d. Average age	42.5	42.3	48.3	48.3	47.9	47.8
e. Average service	14.3	14.2	13.2	13.1	13.3	13.2
2. Terminated vested members (a)						
a. Number	366	361	7,375	7,052	7,741	7,413
b. Total annual deferred benefits	$ 6,084,027	$ 5,620,538	$ 69,037,725	$ 67,095,426	$ 75,121,752	$ 72,715,964
c. Average annual deferred benefit	$ 16,623	$ 15,569	$ 9,361	$ 9,514	$ 9,704	$ 9,809
3. Service retirees						
a. Number	3,331	3,267	36,726	35,796	40,057	39,063
b. Total annual benefits	$ 173,883,842	$ 164,846,594	$ 940,185,518	$ 898,802,303	$1,114,069,360	$1,063,648,897
c. Average annual benefit	$ 52,202	$ 50,458	$ 25,600	$ 25,109	$ 27,812	$ 27,229
4. Disabled retirees						
a. Number	135	135	1,462	1,459	1,597	1,594
b. Total annual benefits	$ 2,852,210	$ 2,780,590	$ 18,585,276	$ 17,951,655	$ 21,437,486	$ 20,732,245
c. Average annual benefit	$ 21,127	$ 20,597	$ 12,712	$ 12,304	$ 13,424	$ 13,006
5. Beneficiaries						
a. Number	285	270	3,567	3,356	3,852	3,626
b. Total annual benefits	$ 10,053,859	$ 9,105,407	$ 55,514,373	$ 50,132,644	$ 65,568,232	$ 59,238,051
c. Average annual benefit	$ 35,277	$ 33,724	$ 15,563	$ 14,938	$ 17,022	$ 16,337

(a) As of June 30, 2014 - Terminated vested members does not include 11, 247 Inactive members that may return to service and earn additional service credits to become vested (612 Police and firefighters plus 10,635 All other employees). As of June 30, 2015, there were 13,840 (568 Police and firefighters plus 13,272 All other employees). As of June 30, 2016, there were 14,554 (599 Police and firefighters plus 13,955 All other employees).

Historical Summary of Active Member Data

Year Ending June 30,	Active Members		Covered Payroll		Average Salary			
	Number	Percent Increase	Amount in $ Millions	Percent Increase	$ Amount	Percent Increase	Average Age	Average Service
2007	65,251	1.8%	3,340.5	7.3%	51,194	5.3%	46.5	13.0
2008	66,589	2.1%	3,601.7	7.8%	54,089	5.7%	46.6	12.9
2009	67,912	2.0%	3,838.0	6.6%	56,514	4.5%	46.8	12.9
2010	65,890	-3.0%	3,713.6	-3.2%	56,360	-0.3%	47.1	13.2
2011	65,310	-0.9%	3,731.4	0.5%	57,133	1.4%	47.4	13.4
2012	65,599	0.4%	3,706.1	-0.7%	56,497	-1.1%	47.6	13.5
2013	66,226	1.0%	3,720.8	0.4%	56,184	-0.6%	47.7	13.5
2014	67,206	1.5%	3,871.0	4.0%	57,600	2.5%	47.8	13.5
2015	67,310	0.2%	3,952.6	2.1%	58,723	1.9%	47.8	13.2
2016	67,377	0.1%	4,118.4	4.2%	61,124	4.1%	47.9	13.3

Ten-Year Actuarial Schedules (continued)

Pensioners, Average Annual Pension and Active Member/Pensioner Comparison**

2007 to 2016

March 31,	Number of Pensioners	Average Annual Pension (1)	Ratio of Active Members per Pensioner
2007	33,117	$21,161	1.8
2008	33,893	$21,734	1.9
2009	34,429	$22,337	1.9
2010	35,763	$23,173	1.8
2011	36,871	$24,160	1.8
2012	37,830	$24,853	1.7
2013	38,741	$25,485	1.7
2014	39,680	$26,032	1.7
2015	40,657	$26,671	1.7
2016	41,654	$27,260	1.6

** Schedule compiled by ERS Staff from actuary reports.

(1) Pension amount includes base pension plus 2.5% post-retirement increases (excludes other bonuses and cost-of-living adjustments).

Number of Retirants and Beneficiaries**

2007 to 2016

As of Mar 31,	Added	Average Added to Rolls	Removed	Average Removed from Rolls	Total	Average Pension	% Chg
Retirants							
2007	1,785	$20,782	873	$14,697	33,117	$21,161	2.81%
2008	1,712	$20,715	936	$15,396	33,893	$21,734	2.71%
2009	1,531	$20,861	995	$16,053	34,429	$22,337	2.77%
2010	2,316	$25,153	982	$16,362	35,763	$23,173	3.74%
2011	2,056	$27,808	948	$18,154	36,871	$24,160	4.26%
2012	1,987	$24,680	1028	$17,958	37,830	$24,853	2.87%
2013	1,994	$23,503	1083	$18,144	38,741	$25,485	2.54%
2014	2,027	$22,585	1088	$19,456	39,680	$26,032	2.15%
2015	2,229	$22,997	1252	$19,820	40,657	$26,671	2.45%
2016	2,237	$23,785	1240	$20,694	41,654	$27,260	2.21%
Beneficiaries							
2007	179	$14,161	71	$10,132	2,213	$12,305	3.74%
2008	229	$14,244	75	$10,659	2,367	$12,749	3.61%
2009	298	$14,518	95	$9,772	2,570	$13,308	4.38%
2010	214	$14,803	106	$9,713	2,678	$13,814	3.80%
2011	212	$15,843	72	$12,107	2,818	$14,256	3.20%
2012	225	$14,798	99	$11,882	2,944	$14,628	2.61%
2013	238	$14,515	111	$11,790	3,071	$14,962	2.28%
2014	442	$17,964	106	$12,439	3,407	$15,651	4.60%
2015	310	$19,597	91	$12,530	3,626	$16,337	4.38%
2016	325	$20,598	99	$14,371	3,852	$17,022	4.19%

** Schedule compiled by ERS staff from actuary reports.

Ten-Year Actuarial Schedules (continued)

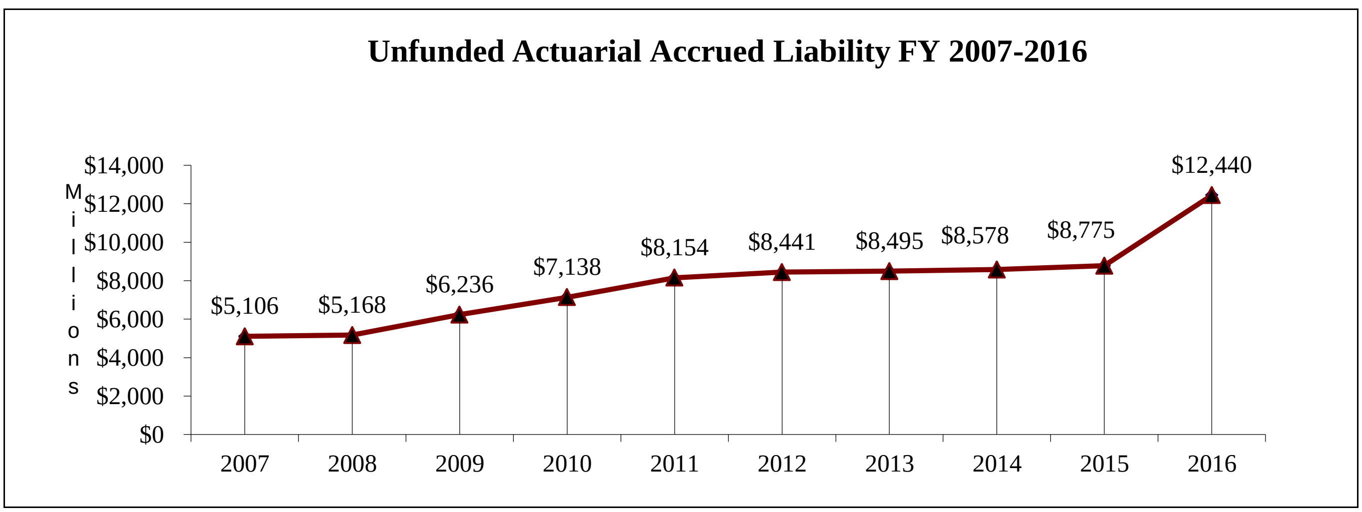
Solvency Test**

2007to 2016

June 30,	Actuarial Accrued Liabilities (AAL) Active Member Contributions	Retirees, Beneficiaries, and Inactive Vested Members	Active and Inactive Members Employer Financed Portion	Actuarial Value of Assets	Cumulative Portion of Actuarial Accrued Liabilities Covered by Assets Column (1)	Column (2)	Column (3)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
2007	914.1	7,856.1	6,926.4	10,589.8	100%	100%	26.3%
2008	1,029.5	8,230.3	7,289.2	11,381.0	100%	100%	29.1%
2009	1,168.9	8,584.0	7,883.4	11,400.1	100%	100%	20.9%
2010	1,265.0	9,259.4	7,959.2	11,345.6	100%	100%	10.3%
2011	1,364.2	10,183.7	8,549.0	11,942.8	100%	100%	4.6%
2012	1,485.1	10,707.2	8,491.1	12,242.5	100%	100%	0.6%
2013	1,658.2	11,182.5	8,403.0	12,748.8	100%	99%	0.0%
2014	1,812.9	11,673.0	8,734.2	13,641.8	100%	100%	1.8%
2015	1,981.8	12,321.8	8,934.8	14,463.7	100%	100%	1.8%
2016	2,150.4	14,228.2	11,060.6	14,998.7	100%	90%	0.0%

(Amounts in $millions)

** Schedule compiled by ERS Staff from actuary reports



Ten-Year Actuarial Schedules (continued)

Employer Contribution Rates as a Percentage of Payroll **

2007 to 2016

Actuarial Valuation as of June 30,	Police and Firefighters			All Other Employees			All Active Employees		
	Normal Cost Rate	Amortization Percent	Total Employer Rate	Normal Cost Rate	Amortization Percent	Total Employer Rate	Normal Cost Rate	Amortization Percent	Total Employer Rate
2007	4.69%	11.06%	15.75%	5.16%	8.59%	13.75%	5.11%	8.84%	13.95%
2008	6.56%	9.19%	15.75%	5.75%	8.00%	13.75%	5.85%	8.10%	13.95%
2009	6.58%	13.12%	19.70%	5.79%	9.21%	15.00%	5.89%	9.57%	15.46%
2010	6.59%	13.11%	19.70%	5.78%	9.22%	15.00%	5.88%	9.59%	15.47%
2011	6.60%	13.10%	19.70%	5.79%	9.21%	15.00%	5.90%	9.59%	15.49%
2012	8.09%	11.01%	19.70%	5.78%	9.22%	15.00%	6.06%	9.46%	15.52%
2013	7.98%	14.02%	22.00%	5.69%	9.81%	15.50%	5.97%	10.14%	16.11%
2014 *	7.17%	14.83%	23.00%	5.34%	10.66%	16.00%	5.54%	11.22%	16.76%
2015 *	8.04%	15.96%	24.00%	5.76%	10.74%	16.50%	6.02%	11.26%	17.28%
2016 *	13.32%	11.68%	25.00%	7.57%	9.43%	17.00%	8.23%	9.66%	17.89%

Note: Effective with the June 30, 2004 valuation, the employer contribution rate is statutorily changed to a percentage of pay of 15.75% of actual pay for Police and Fire and 13.75% of actual pay for All Other Employees, per Act 181/2004 SLH. Effective July 1, 2008, the employer contribution rate increased to 19.70% of actual pay for Police and Fire and 15.00% of actual pay for All Other Employees, per Act 256/2006 SLH.

Per Act 163/2011 SLH, the statutory employer contribution rate for Police and Fire employees will be 22.00% in FY 2013, 23.00% in FY 2014, 24.00% in FY 2015 and 25.00% in FY 2016 and thereafter, and the rate for All Other Employees will be 15.50% in FY 2013, 16.00% in FY 2014, 16.50% in FY 2015 and 17.00% in FY 2016 and thereafter.

* This chart does not include the effects of GASB Statement No 67 (implemented by the ERS only for FY 2014) that requires member contributions "picked up" as employer contributions pursuant to IRC section 414(h)(2) to be reported as Employer Contributions. ERS implemented GASB Statement No. 82 in FY 2015 that excludes these amounts from Employer Contributions.

** Schedule compiled by ERS Staff from actuary reports.

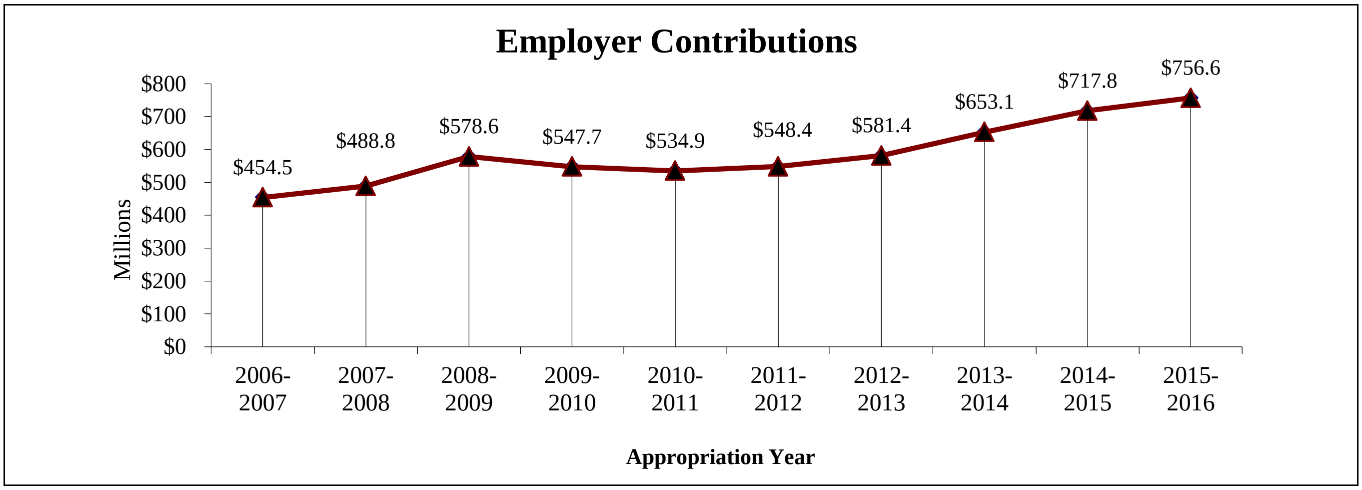
Employer Appropriations to Pension Accumulation Fund**

	Investment Yield Rate	
Fiscal Year	Assumed for Actuarial Valuation	Actuarial Investment Return
2006-2007	8.0%	12.98%
2007-2008	8.0%	8.89%
2008-2009	8.0%	0.87%
2009-2010	8.0%	(0.42)%
2010-2011	7.75%	7.10%
2011-2012	7.75%	5.05%
2012-2013	7.75%	6.67%
2013-2014	7.75%	9.23%
2014-2015	7.65%	7.85%
2015-2016	7.00%	5.59%

Notes: (1) Beginning with the valuation for fiscal year 1996-97 (appropriation fiscal year 1999-2000), the actuarial investment income is the sum of the expected net investment income based on the actuarial assumption of 8% and a four-year smoothing of the difference between the market value of assets at year-end and the expected actuarial value of assets. In prior years, the actuarial investment income was the sum of interest, dividends, and net realized gains less net realized losses and investment expenses.

(2) Beginning fiscal year 2005/2006 employers contributed 15.75% of actual payroll for Police and Fire and 13.75% for All Other Employees, per Act 181/2004 SLH. Effective July 1, 2008, the employer contribution rate increased to 19.70% of actual pay for Police and Fire and 15.00% of actual pay for All Other Employees, per Act 256/2006 SLH. Pursuant to Act 163,/2012 SLH, the employer rates increased over a four-year phase in period. The employer contribution rates for Police and Fire employees increased according to the following schedule: 22.00% in FY2013, 23.00% in FY 2014, and 24.00% in FY 2015, and 25.00% in FY 2016 and beyond. The employer contribution rates for All Other Employees increased according to the following schedule: 15.50% in FY2013, 16.00% in FY 2014, and 16.50% in FY 2015, and 17.00% in FY 2016 and beyond.

** Schedule compiled by ERS Staff from actuary reports.



*** This chart of Employer Contributions does not include Member contributions picked up as employer contributions per IRC section 414(h)(2) and Chapter 88, HRS (as required by GASB Statement No. 68 in FY 2014).

AGGREGATED FUNDED RATIOS FOR STATES

Funded Ratio		**Aggregated Statewide Retirement Systems (all statewide systems for state employees, teachers, school employees, or municipal employees)**			
100% or more	2	South Dakota	100.0%	Wisconsin	100.0%
90% to 99%	4	Tennessee	95.9%	North Carolina	93.7%
		New York	93.9%	Washington	90.3%
80% to 89%	10	Nebraska	89.6%	Iowa	83.7%
		Delaware	89.0%	Missouri	81.5%
		Utah	86.3%	Maine	81.5%
		Idaho	86.3%	Arkansas	80.8%
		Florida	85.4%	Texas	80.7%
70% to 79%	12	Oregon	78.7%	Georgia	74.4%
		Wyoming	78.1%	Nevada	74.1%
		Minnesota	78.1%	Ohio	74.0%
		Oklahoma	75.6%	Montana	73.7%
		Virginia	74.8%	Maryland	70.8%
		West Virginia	74.5%	Alaska	70.4%
60% to 69%	12	New Mexico	69.9%	Vermont	65.4%
		Arizona	69.5%	North Dakota	64.3%
		California	69.4%	Michigan	62.0%
		Alabama	68.0%	Indiana	61.1%
		Kansas	67.1%	Rhode Island	61.0%
		Louisiana	65.5%	South Carolina	60.4%
Less than 60%	10	New Hampshire	59.9%	New Jersey	56.5%
		Mississippi	59.9%	**Hawaii**	**54.7%**
		Pennsylvania	58.1%	Illinois	48.5%
		Massachusetts	57.5%	Kentucky	47.3%
		Colorado	57.0%	Connecticut	46.9%

Source: Compiled from most recent Public Funds Survey by Gabriel, Roeder, Smith & Company

Note: Funded Ratios are shown for all 50 states. Multiple statewide retirement systems are aggregated together to produce the overall funded ratio for the state.

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Employees' Retirement System

of the State of Hawaii

STATISTICAL SECTION

Summary

This section contains various statistical and historical data considered useful in evaluating the condition of the ERS. All non-accounting data is taken from ERS' internal sources except for that information which is derived from the actuarial valuations.

Changes in Fiduciary Net Position

Last Ten Fiscal Years

Fiscal Year Ended June 30,:	2007	2008	2009	2010	2011
Additions					
Employer Contributions	$ 454,494,286	$ 488,770,028	$ 578,672,058	$ 547,669,675	$ 538,692,849
Member contributions	144,658,185	163,375,639	177,781,610	360,047,068	232,880,063
Investment income (net of expense)	1,704,957,268	(461,063,080)	(1,937,317,469)	1,026,461,210	2,040,061,555
Total additions to plan net assets	2,304,109,739	191,082,587	(1,180,863,801)	1,934,177,953	2,811,634,467
Deductions					
Benefits	761,004,748	792,312,830	833,691,245	905,315,348	960,219,432
Refunds	3,497,590	3,668,857	3,937,464	7,573,619	7,901,509
Administrative expenses	9,601,756	10,728,801	13,011,283	12,406,339	13,325,781
Total deductions from plan net assets	774,104,094	806,710,488	850,639,992	925,295,306	981,446,722
Net increase (decrease) in net position	1,530,005,645	(615,627,901)	(2,031,503,793)	1,008,882,647	1,830,187,745
Net position restricted for pension benefits					
Beginning of year	9,932,411,221	11,462,416,866	10,846,788,965	8,815,285,172	9,824,167,819
End of year	$ 11,462,416,866	$ 10,846,788,965	$ 8,815,285,172	$ 9,824,167,819	$11,654,355,564

Fiscal Year Ended June 30,:	2012	2013	2014 **	2015	2016
Additions					
Employer Contributions	$ 548,353,394	$ 581,447,213	$ 857,948,707	$ 717,792,981	$ 756,558,222
Member contributions	182,401,324	185,837,186	1,306,327	223,505,419	236,801,861
Investment income (net of expense)	(57,798,410)	1,331,208,154	2,175,479,961	556,436,475	(169,368,110)
Total additions to plan net assets	672,956,308	2,098,492,553	3,034,734,995	1,497,734,875	823,991,973
Deductions					
Benefits	1,015,447,668	1,060,561,148	1,122,445,642	1,170,744,770	1,232,589,353
Refunds	7,187,606	7,204,411	8,475,969	10,507,888	12,927,672
Administrative expenses	11,634,197	11,941,446	12,626,030	14,032,964	13,960,587
Total deductions from plan net assets	1,034,269,471	1,079,707,005	1,143,547,641	1,195,285,622	1,259,477,612
Net increase (decrease) in net position	(361,313,163)	1,018,785,548	1,891,187,354	302,449,253	(435,485,639)
Net position restricted for pension benefits					
Beginning of year	11,654,355,564	11,293,042,401	12,311,827,949	14,203,015,303	14,505,464,556
End of year	$ 11,293,042,401	$ 12,311,827,949	$ 14,203,015,303	$ 14,505,464,556	$ 14,069,978,917

GASB Statement No. 68 - Employer contributions		2014
Employer contributions (statutory)	a	$ 653,127,697
Member contributions (picked up by employer)	b	$ 204,821,010
Member contributions (other)	c	$ 1,306,327
For Valuation Reporting		$ 859,255,034

** For FYE June 30, 2014, ERS implemented GASB Statement No. 67 that requires Member Contributions "picked up" per Internal Revenue Code section 414(h)(2) as employer contributions to be classified for financial statement purposes as "Employer Contributions". This was subsequently changed effective with FYE June 30, 2015 with the implementation of GASB Statement No. 82.

Contributions

Employer Contribution Rates as a Percentage of Payroll **

Fiscal Year		Police & Firefighters	All Other Employees	Composite Rate
2007		15.75%	13.75%	13.95%
2008		15.75%	13.75%	13.95%
2009		19.70%	15.00%	15.46%
2010		19.70%	15.00%	15.47%
2011		19.70%	15.00%	15.49%
2012		19.70%	15.00%	15.52%
2013		22.00%	15.50%	16.11%
2014	**	23.00%	16.00%	16.76%
2015		24.00%	16.50%	17.28%
2016		25.00%	17.00%	17.89%

** Excludes member contributions picked up as employer contributions per IRC section 414(h)(2) and Chapter 88, HRS for FY 2014.

*** Member contributions picked up as employer contributions per IRC section 414(h)(2) and Chapter 88, HRS are included in the Member Contributions for this chart, they are not included in Employer Contributions for FY 2014.

Deductions from Fiduciary Net Position for Benefit Payments by Type

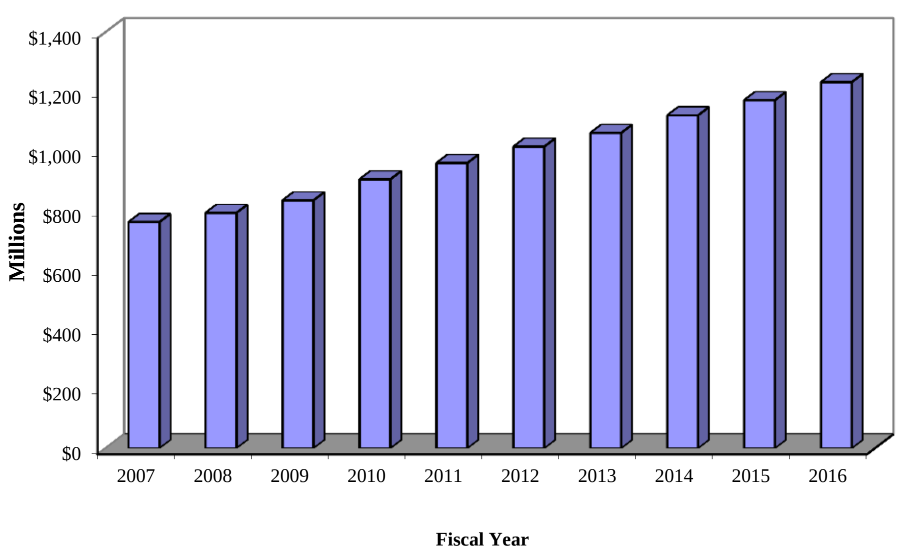
Last Ten Fiscal Years

Fiscal Year Ended June 30,:	2007	2008	2009 **	2010	2011
Recurring benefit payments					
Service	$ 712,580,450	$ 748,158,330	$ 754,432,615	$ 807,662,216	$ 859,915,959
Disability	13,432,834	13,707,170	15,619,011	16,470,042	17,355,973
Death	2,794,068	2,293,557	34,201,206	36,993,685	40,173,678
subtotal	728,807,352	764,159,057	804,252,832	861,125,943	917,445,610
Refund Option payments (one-time)	32,197,396	28,153,773	29,438,413	44,189,405	42,773,822
Total benefit payments	$ 761,004,748	$ 792,312,830	$ 833,691,245	$ 905,315,348	$ 960,219,432

Fiscal Year Ended June 30,:	2012	2013	2014	2015	2016
Recurring benefit payments					
Service	$ 917,840,937	$ 963,894,245	$ 1,016,912,124	$ 1,058,688,356	$ 1,111,416,262
Disability	17,877,572	18,987,509	19,835,520	20,732,259	21,437,486
Death	43,053,039	45,948,656	53,324,252	59,238,051	65,568,232
subtotal	978,771,548	1,028,830,410	1,090,071,896	1,138,658,666	1,198,421,980
Refund Option payments (one-time)	36,676,120	31,730,738	32,373,746	32,086,104	34,167,373
Total benefit payments	$1,015,447,668	$1,060,561,148	$ 1,122,445,642	$ 1,170,744,770	$ 1,232,589,353

** From FYE 6/30/2009, death benefits includes payments to continuing beneficiaries.

Benefit Payments

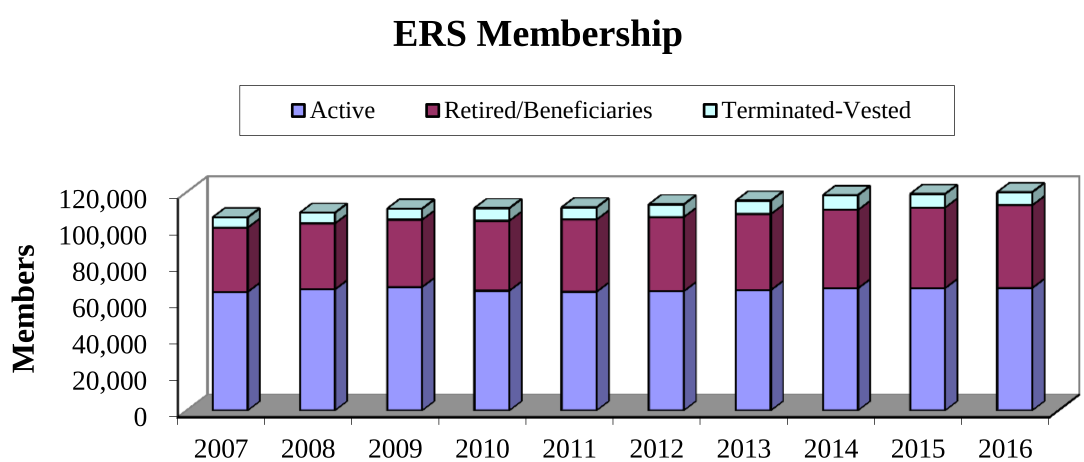


Participating Employers and Membership in ERS

Last Ten Fiscal Years

ERS Membership

As of March 31,:	Active	Retired/ Beneficiaries	Terminated- Vested	Inactive- Non-Vested	Totals
2007	65,251	35,324	5,554	na	106,129
2008	66,589	36,260	5,847	na	108,696
2009	67,912	36,999	6,016	na	110,927
2010	65,890	38,441	6,895	na	111,226
2011	65,310	39,689	6,649	na	111,648
2012	65,599	40,774	6,909	na	113,282
2013	66,226	41,812	7,312	na	115,350
2014	67,206	43,087	8,105	11,247	129,645
2015	67,310	44,283	7,413	13,840	132,846
2016	67,377	45,506	7,741	14,554	135,178



Participating Employers and Active Members

As of March 31,:	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
State of Hawaii	50,756	51,719	52,704	50,789	50,268	50,604	51,176	51,875	51,791	51,723
City & County of Honlulu	8,363	8,512	8,640	8,519	8,485	8,451	8,457	8,625	8,727	8,807
- Board of Water Supply	556	526	554	526	516	505	532	551	558	558
Hawaii County	2,315	2,459	2,527	2,501	2,459	2,427	2,446	2,489	2,550	2,596
Kauai County	1,109	1,125	1,160	1,129	1,158	1,201	1,227	1,244	1,234	1,244
Maui County	2,152	2,248	2,327	2,426	2,424	2,411	2,388	2,422	2,450	2,449
Total	65,251	66,589	67,912	65,890	65,310	65,599	66,226	67,206	67,310	67,377

Benefit Payments by Retirement Type and Option

As of March 31, 2016

Retired Contributory Members

Monthly Benefit	Number of Recipients	Type of Retirement *					Retirement Option						
		1	2	3	4	5	Max	Opt. 1	Opt. 2	Opt. 3	Opt. 4	Opt. 5	Other
$ 1 - 400	1,092	832	14	13	1	232	231	237	165	63	168	227	1
401 - 800	1,816	1,428	77	26	8	277	210	141	142	51	611	659	2
801 - 1,200	1,892	1,513	43	46	13	277	196	116	136	48	775	618	3
1,201 - 1,600	2,029	1,690	25	72	9	233	201	101	115	54	908	647	3
1,601 - 2,000	2,008	1,757	17	38	7	189	176	69	124	53	914	666	6
2,001 - 2,400	1,909	1,738	3	31	5	132	134	65	106	33	823	745	3
2,401 - 2,800	2,092	1,953	3	19	6	111	171	49	88	36	888	855	5
2,801 - 3,200	2,100	1,974	4	12	7	103	178	63	101	58	951	743	6
3,201 - 3,600	1,754	1,679	-	6	3	66	180	45	83	50	974	420	2
3,601 - 4,000	1,403	1,330	-	8	1	64	151	36	72	51	825	268	-
4,001	4,318	4,163	-	6	9	140	611	123	350	216	2,520	497	1
	22,413	20,057	186	277	69	1,824	2,439	1,045	1,482	713	10,357	6,345	32

Retired Hybrid Members

Monthly Benefit	Number of Recipients	Type of Retirement *					Retirement Option						
		1	2	3	4	5	Max	Opt. 1	Opt. 2	Opt. 3	Opt. 4	Opt. 5	Other
$ 1 - 400	341	310			14	17	154	40	84	35	11	17	-
401 - 800	1,052	929	52	1	37	33	424	89	254	126	81	78	-
801 - 1,200	1,079	925	74	14	22	44	408	63	247	136	114	111	-
1,201 - 1,600	910	798	49	16	10	37	314	64	252	96	109	75	-
1,601 - 2,000	703	638	38	2	9	16	234	34	191	109	86	48	1
2,001 - 2,400	641	605	13	1	5	17	217	43	164	97	78	41	1
2,401 - 2,800	581	559	12		4	6	221	35	124	95	69	37	-
2,801 - 3,200	462	444	2	1	5	10	194	20	103	72	55	18	-
3,201 - 3,600	396	392	2		2		153	28	74	83	32	26	-
3,601 - 4,000	301	298	1		1	1	125	17	52	63	30	14	-
4,001	793	778			5	10	282	48	172	174	85	32	-
	7,259	6,676	243	35	114	191	2,726	481	1,717	1,086	750	497	2

Retired Noncontributory Members

Monthly Benefit	Number of Recipients	Type of Retirement *					Retirement Option				
		1	2	3	4	5	Max	Opt. A	Opt. B	Opt. C	Other
$ 1 - 400	1,604	1,052	78	38	128	308	597	363	446	75	123
401 - 800	3,590	2,753	284	50	86	417	1,752	637	948	173	80
801 - 1,200	2,569	2,093	158	46	39	233	1,286	507	627	120	29
1,201 - 1,600	1,772	1,524	91	17	11	129	846	361	479	79	7
1,601 - 2,000	1,344	1,189	53	4	5	93	642	260	363	79	-
2,001 - 2,400	1,216	1,127	18	3	6	62	610	244	278	83	1
2,401 - 2,800	1,308	1,249	8	1	2	48	773	238	192	105	-
2,801 - 3,200	930	900	5		1	24	602	156	118	54	-
3,201 - 3,600	607	585	1	1	4	16	383	113	90	21	-
3,601 - 4,000	346	330			1	15	205	76	54	11	-
4,001	548	522			6	20	322	115	94	17	-
	15,834	13,324	696	160	289	1,365	8,018	3,070	3,689	817	240

* Type of Retirement
1 – Normal retirement for age & service
2 – Ordinary disability retirement
3 – Occupational disability retirement
4 – Survivor payment – death in service
5 – Survivor payment – normal or disability retirement

Note: Refer to Plan Summary in the Introductory Section for descriptions of the types of retirements and benefit options selected by the members.

Average Monthly Service Pensions

by Years of Credited Service

As of March 31,		0-9	10-14	15-19	20-24	25-29	30-34	35+	All
		Years of Credited Service							
2007	Average Monthly Benefit	$272	$504	$865	$1,240	$2,064	$2,509	$2,765	$1,773
	Number of Active Retirants	1,126	3,907	3,393	3,918	7,470	8,315	3,536	31,665
2008	Average Monthly Benefit	$291	$518	$882	$1,266	$2,119	$2,574	$2,853	$1,824
	Number of Active Retirants	1,137	3,981	3,481	4,034	7,560	8,511	3,737	32,441
2009	Average Monthly Benefit	$368	$548	$925	$1,319	$2,218	$2,672	$2,997	$1,906
	Number of Active Retirants	1,184	3,987	3,555	4,173	7,570	8,615	3,859	32,943
2010	Average Monthly Benefit	$336	$563	$948	$1,356	$2,289	$2,750	$3,097	$1,975
	Number of Active Retirants	1,143	4,062	3,719	4,373	7,775	8,926	4,268	34,266
2011	Average Monthly Benefit	$364	$583	$984	$1,397	$2,374	$2,849	$3,261	$2,059
	Number of Active Retirants	1,221	4,106	3,843	4,526	7,920	9,176	4,567	35,359
2012	Average Monthly Benefit	$388	$603	$1,012	$1,424	$2,446	$2,934	$3,361	$2,117
	Number of Active Retirants	1,292	4,222	3,929	4,705	8,030	9,361	4,769	36,308
2013	Average Monthly Benefit	$429	$622	$1,038	$1,449	$2,521	$3,009	$3,454	$2,171
	Number of Active Retirants	1,371	4,303	4,018	4,906	8,134	9,544	4,902	37,178
2014	Average Monthly Benefit	$451	$642	$1,061	$1,473	$2,574	$3,082	$3,531	$2,216
	Number of Active Retirants	1,478	4,430	4,080	5,092	8,216	9,675	5,133	38,104
2015	Average Monthly Benefit	$485	$650	$1,081	$1,487	$2,623	$3,141	$3,619	$2,269
	Number of Active Retirants	1,305	4,547	4,221	5,319	8,344	10,009	5,318	39,063
2016	Average Monthly Benefit	$522	$667	$1,111	$1,519	$2,680	$3,210	$3,725	$2,318
	Number of Active Retirants	1,383	4,676	4,379	5,483	8,467	10,195	5,474	40,057

Retirees and Beneficiaries

(Recurring Benefit Payments)

Tabulated by Fiscal Year that Payments Started as of March 31, 2016

Valuation Year	Number	Total Annual Benefits	Monthly Average Benefit	Valuation Year	Number	Total Annual Benefits	Monthly Average Benefit
1944	1	$ 380	$ 32	1987	810	$ 18,601,949	$ 1,914
1955	1	4,662	389	1988	491	9,497,653	1,612
1958	1	10,359	863	1989	642	13,639,440	1,770
1959	1	4,419	368	1990	698	16,513,346	1,972
1960	1	699	58	1991	826	19,829,200	2,001
1961	2	1,317	55	1992	787	20,547,951	2,176
1962	1	5,876	490	1993	827	23,426,046	2,361
1963	1	14,280	1,190	1994	866	24,004,430	2,310
1964	4	34,700	723	1995	1,684	55,403,678	2,742
1966	4	20,747	432	1996	1,660	52,353,206	2,628
1967	5	45,909	765	1997	656	15,494,847	1,968
1968	4	47,390	987	1998	678	16,282,760	2,001
1969	5	49,385	823	1999	963	25,248,626	2,185
1970	4	38,001	792	2000	1,199	32,960,919	2,291
1971	6	45,740	635	2001	1,408	38,152,755	2,258
1972	18	205,767	953	2002	1,190	32,598,703	2,283
1973	21	247,963	984	2003	1,557	46,664,498	2,498
1974	23	251,372	911	2004	1,533	42,827,371	2,328
1975	34	470,383	1,153	2005	1,622	46,272,118	2,377
1976	48	698,414	1,213	2006	1,610	43,980,605	2,276
1977	72	945,610	1,094	2007	1,746	46,597,239	2,224
1978	87	1,369,580	1,312	2008	1,734	44,789,483	2,153
1979	117	1,780,883	1,268	2009	1,646	42,062,589	2,130
1980	163	2,761,818	1,412	2010	2,370	72,192,847	2,538
1981	217	3,356,973	1,289	2011	2,165	66,871,342	2,574
1982	262	4,442,017	1,413	2012	2,110	57,288,418	2,263
1983	294	5,505,100	1,560	2013	2,137	54,180,802	2,113
1984	360	6,808,016	1,576	2014	2,222	55,286,162	2,073
1985	412	8,342,382	1,687	2015	2,464	59,663,945	2,018
1986	520	11,379,960	1,824	2016	2,516	58,952,048	1,953
				Total	45,506	$ 1,201,075,078	$ 2,199

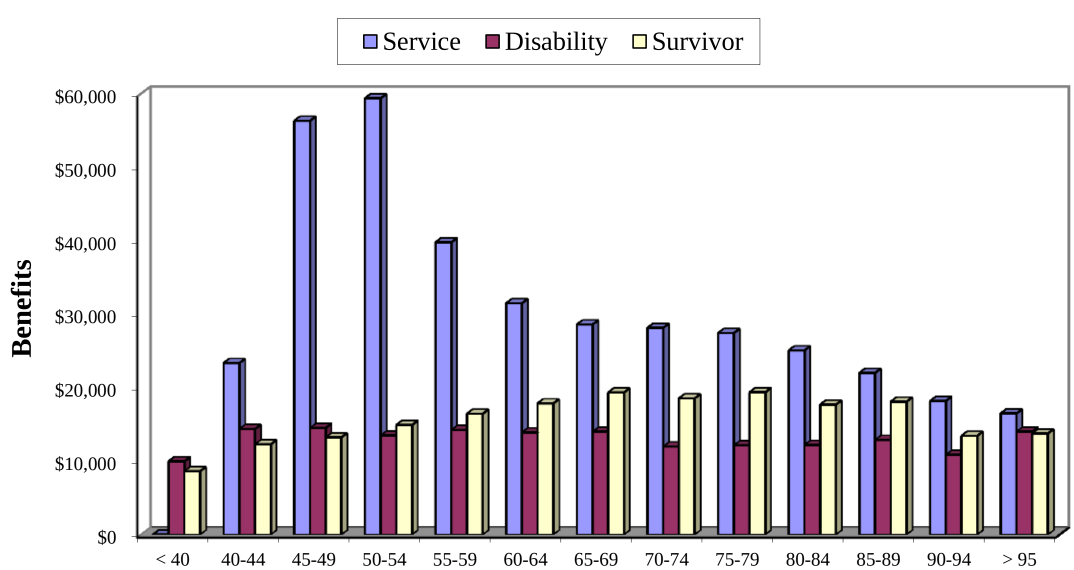
Total Benefits Payable

(Recurring Benefit Payments)

Tabulated by Attained Ages of Benefit Recipients as of March 31, 2016

	Service Retirement		Disability Retirement		Survivors and Beneficiaries		Total	
Attained Ages	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits
Under 20	-	-	-	-	59	$ 201,302	59	$ 201,302
20-24	-	-	-	-	13	158,413	13	158,413
25-29	-	-	-	-	31	274,691	31	274,691
30-34	-	-	1	4,386	47	604,444	48	608,830
35-39	-	-	1	$ 15,559	66	623,767	67	639,326
40-44	3	$ 70,016	8	114,889	93	1,141,694	104	1,326,599
45-49	42	2,363,900	39	565,399	128	1,693,239	209	4,622,538
50-54	242	14,361,190	126	1,700,191	181	2,697,874	549	18,759,255
55-59	1,375	54,670,091	244	3,471,722	263	4,322,840	1,882	62,464,653
60-64	4,893	153,971,351	383	5,327,345	379	6,765,203	5,655	166,063,899
65-69	9,587	273,983,345	329	4,606,189	523	10,110,815	10,439	288,700,349
70-74	8,546	240,397,168	221	2,648,447	566	10,485,586	9,333	253,531,201
75-79	5,710	156,543,342	108	1,312,026	457	8,846,129	6,275	166,701,497
80-84	4,577	114,689,526	61	744,702	416	7,354,816	5,054	122,789,044
85-89	3,144	69,179,459	46	593,104	400	7,233,743	3,590	77,006,306
90-94	1,512	27,463,057	23	249,547	172	2,311,119	1,707	30,023,723
95-99	387	5,888,491	6	73,621	54	727,994	447	6,690,106
100 & over	39	488,424	1	10,359	4	14,563	44	513,346
Total	40,057	$ 1,114,069,360	1,597	$ 21,437,486	3,852	$ 65,568,232	45,506	$ 1,201,075,078

Average Benefits



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