# EMPLOYEES' RETIREMENT SYSTEM OF THE STATE OF HAWAII

# ANNUAL COMPREHENSIVE FINANCIAL REPORT

FOR THE FISCAL YEAR ENDED JUNE 30, 2023

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Prepared by the Staff of the:
Employees' Retirement System of the State of Hawaii
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THOMAS WILLIAMS, Executive Director
Vacant, Deputy Executive Director
KRISTIN VARELA, Chief Investment Officer

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Employees' Retirement System

of the State of Hawaii

# INTRODUCTORY SECTION

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## *Letter of Transmittal*

JOSH GREEN, M.D.
GOVERNOR

SYLVIA LUKE
LIEUTENANT GOVERNOR

THOMAS WILLIAMS
EXECUTIVE DIRECTOR

**STATE OF HAWAII**
EMPLOYEES' RETIREMENT SYSTEM

October 25, 2024

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

Dear Board Members:

We present the Annual Comprehensive Financial Report (ACFR) of the Employees' Retirement System for the fiscal year ended June 30, 2023. 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, 2023, the ERS' total membership of 155,513 was comprised of 64,243 active members, 54,973 retirees and beneficiaries 8,997 inactive vested members and 26,900 inactive non-vested members. This compares to 128,213 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 provides a report of the Social Security Contribution Fund for the State of Hawaii (Contribution Fund) as part of Other Information. The Social Security contributions (employer and amounts withheld from employees) are remitted directly to the Internal Revenue Service (IRS) by the State.

**MAJOR ACCOMPLISHMENTS AND INITIATIVES IN FY 2023**

"On and On and On" is the major theme and results for ERS during FY 2023; with our board, staff and other stakeholders continued pursuit of excellence working to accomplish ERS's strategic plan long-term goals that guides our every activity—from customer service to cyber-security and business continuity, to legislation and investments. While fiscal year 2023 was a challenging time during the broader investment market turmoil with volatility and inflation, the ERS continues to make progress on our long term financial and operational goals with assistance from processes and procedures put in place, and more importantly with cooperation and assistance from our partners – our members, employers, board of trustees, employees, and other stakeholders.

During FY 2023 the Employees' Retirement System portfolio earned a 2.4% investment returns, with the fiduciary net position increasing to $22.4 billion as of June 30, 2023. As a long-term investor, the multi-year numbers, reflect continued progress in our plans to become fully funded with our ERS achieving investment returns in excess of the ERS 7% percent annualized long-term Policy Benchmark return target over the past 3 and 5 year periods, with annualized returns of 10.5% and 7.7%, respectively.

Since 2014, the ERS utilizes two high-level strategic classes (Broad Growth and Diversifying Strategies) for allocating assets and managing risk within the total portfolio. Both of these strategic classes contain sub-components that in-turn utilize asset classes and/or specific strategies for implementation. During FY 2023 the ERS continued utilizing its long-term strategic allocation plan implemented in FY 2020 regarding asset allocation, investment types, etc.. The Broad Growth class utilizes three sub-components (Public Growth, Private Growth, and Real Assets) which are ultimately invested in public equity, options-based equity, credit fixed income, private real assets, and private equity. The Diversifying Strategies class is designed to be uncorrelated to the Broad Growth class and it utilizes three sub-components (Liquid Defensive, Liquid Diversifying, and Illiquid Diversifying). The Diversifying Strategies class utilizes a multitude of asset classes and strategies, including US treasury and agency bonds, inflation-linked treasury bonds, systematic trend following, alternative risk premia, global macro, insurance-linked securities, relative value strategies, and niche private assets, among others. The ERS may also hold opportunities and other investments if they are determined to be additive to the portfolio's risk/return posture. Please refer to the *Investment Section* for more information on ERS's investments.

While our Investment Team deserves and receives a good amount of recognition for generating positive investment returns, year in and out, it's our Retirement Benefits, Accounting, Information Services and Staff Support Services branches that serve as the structural foundation for our organization and are responsible for overall service delivery. Our successful operations depend on these units, which interface with many of our members, and represent the invisible players who work behind the scenes.

Our members' need for service has never been greater. We respond to ever increasing numbers of requests for information, counsel, estimates and retirement applications. We have been working

## *Letter of Transmittal (continued)*

intently with employers to improve the accuracy and timeliness of information submittal necessary to calculate and pay benefits.

There was no significant legislative actions or pension benefit changes passed in 2023 Legislative Session that impacts the ERS pension trust.

We want to thank our participating employers – the Governor, State Legislature, and County employers – for their continued support and funding of employer contributions, that in combination with ERS's risk-based investment allocation strategy initiated in FY 2014, is helping us continue progress to achieve our funding and operational goals on our path to full funding.

### 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. Capital assets are recorded at cost less accumulated depreciation.

The *Management Discussion and Analysis* (MD&A) in the Financial Section provides an overview and analysis on the ERS and financial statements. This letter of transmittal is intended to complement the MD&A and should be read in conjunction with it. 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. As discussed above, in October 2014 ERS first adopted the risk-based, functional framework for allocating capital within the investment portfolio. This framework, with updates effective July 1, 2020, continues to use strategic/functional classes that in-turn utilize underlying asset classes and strategies that ERS was largely implemented in several phases through June 30, 2023. A subsequent asset liability study was completed in FY 2023 that will impact the strategic allocation in future fiscal years. 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 https://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, 2023 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 gain of $824 million in a challenging FY2023. This translates to an investment return of approximately 2.4% for the year, using rate of return methodologies that are generally accepted by the Global Investment Performance Standards (GIPS).

### FUNDING AND ACTUARIAL OVERVIEW

As of June 30, 2023 report of the Fund's valuation our actuaries, Gabriel Roeder Smith & Company noted that that our unfunded actuarial accrued liability (UAAL) for funding purposes increased to $13.7 billion from $13.5 billion on June 30, 2022 based on the pre-2015 GASB reporting standards. Under the current market-based GASB standards effective in FY 2015, the Net Pension Liability increased to $13.8 billion on June 30, 2023 from $13.0 billion on June 30, 2022. On the market basis, this represents a decrease in funded position to 61.9% for FY 2023 from 62.8% for FY 2022. The ERS full funding period decreased to 23 years as of June 30, 2023 from 24 years as of June 30, 2022, primarily from the deferred investment gains of FY 2021 under the 4-year smoothing methodology used by ERS.

### 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 KKDLY LLC, the auditors for the ERS, and the actuary, Gabriel, Roeder, Smith & Company, are included in this report. Meketa Group is the ERS' investment consultant, and their report on the ERS' investment program and performance results are 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

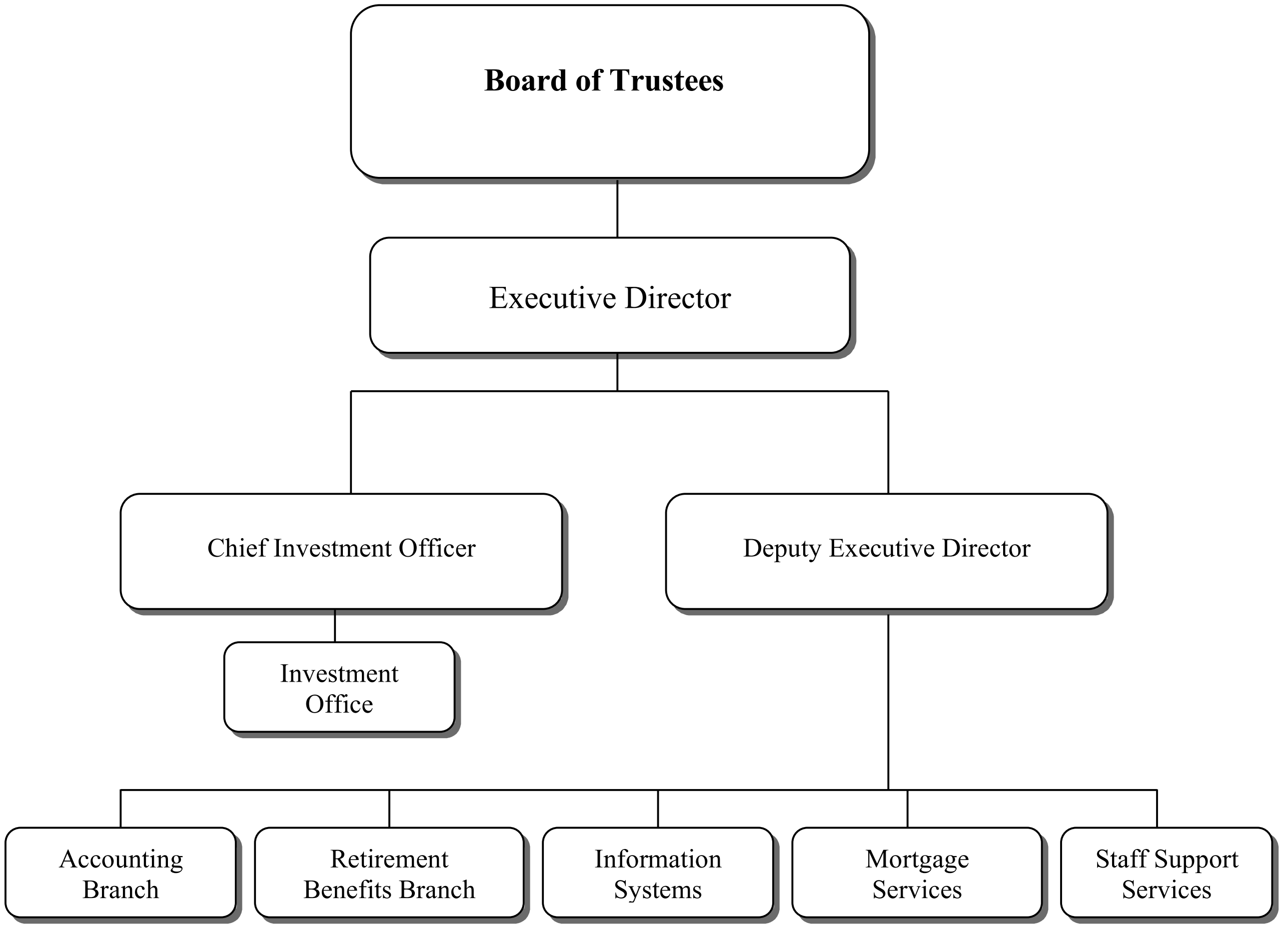
# Board of Trustees

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:** | | |
| Ms Genevieve Ley, Board Chair ................................ | January 2, 2024 | January 1, 2030 |
| Mr. Emmit A. Kane .................................................... | January 2, 2020 | January 1, 2026 |
| Mr. Bennett Yap.......................................................... | January 2, 2020 | January 1, 2026 |
| Ms. Catherine Chan .................................................. | January 2, 2022 | January 1, 2028 |
| **Appointed:** | | |
| Mr. Vincent Barfield.................................................. | May 9, 2024 | June 30, 2030 |
| Mr. Lance Mizumoto ................................................. | July 27, 2021 | January 1, 2026 |
| **Ex-Officio:** | | |
| Ms. Luis Salaveria ..................................................... | December 5, 2022 | December 7, 2026 |

## *Organizational Structure*




| | |
|---|---|
| **Executive Director** | Thomas Williams |
| Deputy **Executive Director** | Gail Strohl |
| **Chief Investment Officer** | Kristin Varela |

**Actuary**
Gabriel, Roeder, Smith and Company

**Auditors**
State of Hawaii, Office of the Auditor
KKDLY LLC

**Legal Advisor**
Attorney General of the State of Hawaii

**Medical Board**
Dr. Patricia L. Chinn, Chair
Dr. Howman Lam, Member
Dr. Bernard Chun, Member

** The *Investment Section* of this ACFR contains a list of investment professionals on pages 109-111; a schedule investment fees on page 114; and a schedule of broker commissions on pages 115-120.

# 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, 2023, 5,264 active employees were enrolled in the Contributory Class, or about 8.2% 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, 2023, the Hybrid Class had 50,279 members or about 78.3% 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, 2023, there were 8,700 active employees in the Noncontributory Class, which represents over 13.5% 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 https://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<br>** 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<br>** 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***<br>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***<br>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***<br>Option 2 (100% Joint and Survivor) lifetime pension if member was eligible for retirement at the time of death and one beneficiary designated; ***or***<br>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***<br>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***<br>Option 2 (100% Joint Survivor) lifetime pension if member was eligible for retirement at the time of death, and one beneficiary designated; ***or***<br>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).<br>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).<br>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.<br>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).<br>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.<br>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, water safety officers and emergency medical technicians 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.

[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***<br>Age 55 and 30 years credited service | Age 60 and 10 years credited service | Age 65 and 10 years credited service; ***or***<br>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.

# *Summary of Retirement Benefit Plan Provisions (continued)*

**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<br>(Minimum is 12.5% of AFC) | 1-3/4% of AFC times years of credited service, unreduced for age<br>(Minimum is 30% of AFC) | 1-3/4% of AFC times years of credited service, unreduced for age<br>(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***<br>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***<br>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***<br>Option 2 (100% Joint and Survivor) lifetime pension if member was eligible for retirement at the time of death and one beneficiary designated; ***or***<br>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***<br>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***<br>Option 2 (100% Joint Survivor) lifetime pension if member was eligible for retirement at the time of death, and one beneficiary designated; ***or***<br>If less than 10 years of service, return of member's contributions and accrued interest. |

[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 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).<br>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).<br>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.<br>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).<br>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.<br>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.

## *Summary of Retirement Benefit Plan Provisions (continued)*

**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

*Summary of Retirement Benefit Plan Provisions (continued)*

**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 https://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:

**(a) 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.

**(b) 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.

**(c) 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)**

**(d) 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.

<u>Option Restriction</u>: Option Four and Option Five are restricted to those members with at least ten years of credited service excluding unused sick leave credit.

<u>Death within a year</u>: 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.

<u>Death within a year:</u> Regardless of the option selected, should death of the Noncontributory member 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 2023

The following legislation (Acts) passed during the 2023 Legislative Session (including Special Sessions) and approved by the Governor that impacts the ERS For more information on the 2023 Legislative Session, please refer to the capitol website at https://www.capitol.hawaii.gov/.

**Act 46 (SB211) Retirement Benefits; Relating to the Employees' Retirement System**

Ensures that employment, work, and pay eligibility for the purpose of calculating retirement benefits includes retroactive reinstatement, retroactive rescission of suspension, and retroactive payments that are restored to an employee as part of a judicial, administrative, or arbitral proceeding, or pursuant to a settlement of claims.

- The Act requires the employer to meet the employer reporting requirements for personnel and payroll data, and also provide lump sum payment to the system of the actuarial present value of the employee and employer contributions of the retroactive service being granted, which shall include compound interest thereon at the system's assumed rate of return.
- Requires terminated members that received any benefit payments from the system, as part of their retroactive reinstatement, to make lump sum repayment to the system of the actuarial present value of all benefits received , which shall include compound interest thereon at the system's assumed rate of return.

Effective: June 1, 2023

Employees' Retirement System

of the State of Hawaii

**Submitted by**

# THE AUDITOR
## STATE OF HAWAII

# FINANCIAL SECTION

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# *Independent Auditor's Report*

KDLY LLC
CERTIFIED PUBLIC ACCOUNTANTS

The Auditor
State of Hawaii

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

**Report on the Audit of the Financial Statements**

***Opinion***

We have audited the statement of fiduciary net position of the Employees' Retirement System of the State of Hawaii (the ERS) as of June 30, 2023, and the related statement of changes in fiduciary net position for the year then ended, and the related notes to financial statements, which collectively comprise the ERS' basic financial statements as listed in the table of contents.
In our opinion, the accompanying financial statements referred to above present fairly, in all material respects, the fiduciary net position of the ERS as of June 30, 2023, and the changes in fiduciary net position for the year then ended in accordance with accounting principles generally accepted in the United States of America.

***Basis for Opinion***

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 (*Government Auditing Standards*). Our responsibilities under those standards are further described in the *Auditors' Responsibilities for the Audit of the Financial Statements* section of our report. We are required to be independent of the ERS and to meet our other ethical responsibilities, in accordance with the relevant ethical requirements relating to our audit. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

***Responsibilities of Management for the Financial Statements***

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

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

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***Auditor's Responsibilities for the Audit of the Financial Statements***

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

In performing an audit in accordance with auditing standards generally accepted in the United States of America and *Government Auditing Standards*, we:

- Exercise professional judgment and maintain professional skepticism throughout the audit.

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, and design and perform audit procedures responsive to those risks. Such procedures include examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements.

- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the ERS' internal control. Accordingly, no such opinion is expressed.

- Evaluate the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluate the overall presentation of the financial statements.

- Conclude whether, in our judgment, there are conditions or events, considered in the aggregate, that raise substantial doubt about the ERS' ability to continue as a going concern for a reasonable period of time.

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

***Other Matters***

*Required Supplementary Information*

Accounting principles generally accepted in the United States of America require that the management's discussion and analysis, the schedule of changes in the employers' net pension liability and related ratios, schedule of the employers' net pension liability, and schedule of investment returns (collectively the required the supplementary information) be presented to supplement the basic financial statements.

## Independent Auditors' Report (continued)

Such information is the responsibility of management and, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

*Other Supplementary 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 included in Schedules 1 through 4 as listed in the table of contents is presented for purposes of additional analysis and is not a required part of the basic financial statements. Such information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the basic financial statements. The information included in Schedules 1 through 3 has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the supplementary information included in Schedules 1 through 3 is fairly stated, in all material respects, in relation to the basic financial statements as a whole.

The information included in Schedule 4 has not been subjected to the auditing procedures applied in the audit of the financial statements, and accordingly, we do not express an opinion or provide any assurance on it.

***Other Reporting Required by Government Auditing Standards***

In accordance with Government Auditing Standards, we have also issued our report dated October 22, 2024, 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 solely to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the ERS' 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.

KKDLY LLC

Honolulu, Hawaii
October 22, 2024

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, 2023. 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 Annual Comprehensive Financial Report (the ACFR). For more detailed information pertaining to the ERS' financial activities, the reader should also review the actual financial statements, including the notes and supplementary information.

**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' 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. 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.

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, 2023, and the related statement of changes in fiduciary net position during the fiscal year from July 1, 2022 to June 30, 2023 (FY 2023). 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 Information, which includes schedules of changes in the employers' net pension liability and related ratios, employers' net pension liability 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 Other Supplementary Information is derived from and relates 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. The Other Supplementary Information also includes a report on employer social security contribution amounts for the State that are paid directly to the Internal Revenue Service (IRS). This information is separate from the financial information of the Pension Trust Fund..

**Financial Highlights**

- The fiduciary net position increased to $22.4 billion as of June 30, 2023, with a decrease in funded status during the fiscal year to 61.9%. The ERS's fiduciary net position was $21.9 billion, for a 62.8% funded status as of June 30, 2022.

- The ERS investment return (net and gross of fees, and contains lagged and non-lagged components) was 2.4% for the 2023 fiscal year compared to 4.0% for the 2022 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 ACFR). The investment program underperformed its actuarial and investment goal of 7.0% that was effective June 30, 2023 Under Governmental Accounting Standards Board (GASB) Statement No. 67, *Financial Reporting for Pension Plans – an amendment of GASB Statement No. 25*, the annual money-weighted return on ERS' pension plan investments, net of pension plan investment expense, was 3.8% and 0.8% for FY 2023 and FY 2022, respectively.

  Effective October 1, 2014, the Board of Trustees of the ERS (the Board) approved the adoption of a change in its asset allocation policy from the asset-class policy to a new risk-based asset allocation framework. Following the completion of the 2019 Asset Liability Study the Board adopted a new long-term strategic allocation policy that established two major asset classes of Broad Growth and Diversifying Strategies (rather than four: Broad Growth, Principal Protection, Real Return and Crisis Risk Offset) that was completed during the 2022 fiscal year. Please refer to Note E.1, Investment Policy, for more detailed information on the asset allocation policy.

- During 2023 and 2022, there was no significant legislation passed that significantly affects the operations or provisions of the pension trust.

- Total pension liability as of June 30, 2023 increased to $36.2 billion from $34.8 billion on June 30, 2022, while the corresponding net pension liability increased to $13.8 billion as of June 30 2023 from $13.0 billion as of June 30, 2022. Covered payroll for the ERS increased in FY 2023 to $4.7 billion compared to FY 2022 of $4.5 billion for a 4.3% increase.

- The fiduciary net position as a percentage of total pension liability decreased to 61.9% from 62.8% as of June 30, 2023 and June 30, 2022, respectively, while the funded ratio on an actuarial basis increased to 62.2% from 61.2%, 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 $48.8 million during FY 2023, or 3.2% from FY 2022. The increase is primarily an increase in covered payroll from member pay increases, more active members being required to contribute, and 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 of the ACFR.

- Total benefit payments increased by $56.6 million, or 3.3% in FY 2023 from FY 2022. Pension benefits continue to increase due to 1.8% more retirees and beneficiaries (54,973 in 2023 compared to 53,990 in 2022), an increase in the average pension benefit for new retirees, and the annual 2.5% postretirement increase paid to most retirees.

- Administrative expenses increased by $1.0 million to $18.5 million in FY 2023 from $17.5 million in FY 2022. The increase in administrative expenses is primarily the result of an increase in pay raises and fringe benefit assessment costs and to a lesser extent an increase in legal and computer related (equipment, cloud and maintenance) costs. These costs were offset by a decrease in depreciation and other miscellaneous costs. Administrative expenses for all years were within the ERS' budgeted amounts.

## Analysis of Fiduciary Net Position

**Summary of Fiduciary Net Position**
**June 30, 2023 and 2022**
*(Dollars in millions)*

| | 2023 | 2022 | FY 2023 % change |
|---|---|---|---|
| **Assets:** | | | |
| Cash and cash equivalents and short-term investments | $ 497.9 | $ 1,008.3 | (50.6) % |
| Receivables | 199.9 | 155.9 | 28.2 |
| Investments | 21,959.0 | 20,821.5 | 5.5 |
| Invested securities lending collateral | 491.5 | 735.9 | (33.2) |
| Equipment, net | 4.0 | 5.0 | (20.0) |
| Total assets | 23,152.3 | 22,726.6 | 1.9 |
| **Liabilities** | | | |
| Securities lending liability | 491.5 | 735.9 | (33.2) |
| Investment accounts and other payables | 235.4 | 135.9 | 73.2 |
| Total liabilities | 726.9 | 871.8 | (16.6) |
| **Fiduciary net position restricted for pensions** | $ 22,425.4 | $ 21,854.8 | 2.6 |

**Summary of Changes in Fiduciary Net Position**
June 30, 2023 and 2022
*(Dollars in millions)*

| | 2023 | 2022 | FY 2023 % change |
|---|---|---|---|
| **Additions:** | | | |
| Contributions | $ 1,584.0 | $ 1,535.2 | 3.2 % |
| Net investment income | 826.9 | 164.6 | 402.4 % |
| Total additions,net | 2,410.9 | 1,699.8 | 41.8 % |
| **Deductions:** | | | |
| Benefit payments | 1,795.4 | 1,738.8 | 3.3 % |
| Refund of member contributions | 26.4 | 24.5 | 7.8 % |
| Administrative expenses | 18.5 | 17.5 | 5.7 % |
| Total deductions | 1,840.3 | 1,780.8 | 3.3 % |
| Increase (decrease) in fiduciary net position restricted for pensions | $ 570.6 | $ (81.0) | 804.4 % |
| **Fiduciary net position restricted for pensions:** | | | |
| Beginning | 21,854.8 | 21,935.8 | |
| Ending | $ 22,425.4 | $ 21,854.8 | |

## 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.

Investments for the risk-based allocation policy approved in FY 2015, as revised, based on the type of security for financial reporting are listed below. In 2016, the ERS began using this framework with four major asset classes that 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. Following a 2019 Asset Liability Study that was completed in FY 2020, the Board adopted a new long-term strategic allocation policy. As part of the long-term strategic policy, the portfolio transitioned to two major asset classes (rather than four). Prevailing classes and sub-classes were remapped to the two major strategic classes where applicable. During FY 2023 the ERS continued utilizing its long-term strategic allocation plan that was consistent with the FY 2022 allocation regarding asset allocation, investment types, etc. A subsequent asset liability study was completed in FY 2023 that will impact the strategic allocation in future fiscal years. Information about ERS's investment program is available on the ERS website at https://ers.ehawaii.gov/investments/program.

The asset distribution of the ERS' investment securities for the pension trust, excluding pending trade settlements and securities lending collateral, at June 30, 2023 and 2022 are presented below at fair value. Fluctuations will occur based on the trading activity and timing of the settlements. Investment balances between the asset classes will change over time based on market sectors' performance and our rebalancing efforts to maintain asset allocation targets. Please refer to the Investment Section of the ACFR for a discussion on the risk-based methodology, asset allocation plan targets, and investments by investment strategy.

**Asset Class**
June 30, 2023 and 2022
*(Dollars in millions)*

| | 2023 | % | 2022 | % |
|---|---|---|---|---|
| Short term investments and cash | $ 497.9 | 2.2 % | $ 1,008.3 | 4.6 % |
| Equity securities | 5,288.9 | 23.6 | 5,360.4 | 24.6 |
| Fixed income | 3,525.7 | 15.7 | 3,263.0 | 14.9 |
| Real assets | 3,774.8 | 16.8 | 3,372.2 | 15.4 |
| Alternative investments | 9,369.6 | 41.7 | 8,825.9 | 40.5 |
| Total investment assets | 22,456.9 | 100.0 | 21,829.8 | 100.0 |

The rate of return (gross of fees time-weighted rate of returns) on the ERS investment portfolio was 2.4% from the challenging investment markets in FY 2023, underperforming the overall ERS investment target of 7.0%. The Broad Growth asset class returned 3.6% during the fiscal year while the Diversifying Strategies asset class had a negative return of -0.6%. This compares to an overall return on the portfolio of 4.0% in FY 2022. Total net investment income increased to $826.9 million in FY 2023 from $164.6 million in FY 2022.

The ERS had positive returns of 3.6% in the Broad Growth asset class including positive returns in public growth (+10.6%) offset by negative returns in private growth (-3.8%) and real assets (-1.1%) During FY 2023 the Diversifying Strategies returned a loss of -0.6% lead by positive returns in liquid diversifying (+4.4%), offset by negative returns in illiquid diversifying (-1.8%) and liquid defensive (-5.5%) segments. A summary of investment returns (by sub-component of the risk-based allocation) is included within the *Report on Investment Activity by Investment Consultant* that is located in Investment Section of this ACFR.

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.

Investment expenses includes investment management fees paid to external investment advisor firms that oversee the ERS' investment portfolio.

Total investment management fees earned by external investment advisors decreased slightly in FY 2023 from FY 2022 due to the elimination of incentive investment fees that were accrued in previous fiscal years with the reduction of cumulative excess earnings on certain private market investments above the corresponding investment benchmark for those investments. Investment advisor fees include incentive fees for superior investment returns by the manager above their corresponding benchmark, while maintaining an acceptable level of investment risk. Incentive fees for certain investment managers are recognized on the accrual basis of accounting for 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.

**Contributions**

Contributions from employers and employees totaled $1,584.0 million and $1,535.2 million in FY 2023 and FY 2022, respectively. During FY 2023, total contributions increased by $48.8 million, or 3.2%, primarily from pay raises that resulted in an increase in covered payroll that contributions are assessed on.

**Pension Plan Benefits and Expenses**

Pension benefit payments continue to be the primary deduction of the ERS with payments increasing to $1,795.4 in FY 2023 from $1,738.8 in FY 2022. 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 to $26.4 million in FY 2023 from $24.5 million in FY 2022.

Administrative expenses increased to $18.5 million in FY 2023 from $17.5 million in FY 2022 due primarily from pay raises and related fringe benefit assessment costs and to a lesser extent the increase in legal computer related (cloud, equipment, and repairs) costs, which was partially offset by a decrease in depreciation expense.

**Pension Plan Changes**

There was no significant legislation passed in 2023 and 2022 that affects pension plan provisions. Pension plan changes, including legislative and the Board's actions, are summarized in the Introductory Section and Actuarial Section of the ACFR.

**Actuarial Valuations and Measurement of Net Pension Liability**

The funding status decreased during FY 2023 on the fiduciary net position (market asset basis) to 61.9% as of June 30, 2023 from 62.8% as of June 30, 2022, as a result of lower than expected investment returns.

During FY 2023, the ERS's investment portfolio earned 2.4% based on the market value of assets. This compares to rate of return for the actuarial value of 3.8% in FY 2023, which is different than the market return calculation due to the smoothing methodology used in the determination of the actuarial value of assets.

The total pension liability for fiscal year ended June 30, 2023 is based on the actuarial valuation performed as of June 30, 2023 and a measurement date of June 30, 2023.

Per the valuation as of June 30, 2023, the ERS' total pension liability was $36.2 billion, covered payroll was $4.7 billion and the ERS' fiduciary net position was $22.4 billion resulting in a net pension liability of $13.8 billion. The ERS' fiduciary net position as a percentage of total pension liability was 61.9% and 62.8% as of June 30, 2023 and 2022, resulting in the net pension liability as a percentage of covered payrolls of 295.2% and 289.2%, respectively. The increase in pension liabilities is the result of overall payroll growth and individual salary increases.

Based on the results of the actuarial valuation as of June 30, 2023, including existing statutory employer contribution rates, the ERS actuary determined that the funding period for paying off the unfunded actuarial accrued liability (UAAL) of the ERS Pension Trust decreased to 23 years from 24 years as of June 30, 2022. Because this period is less than the 30 years, the objectives set in Hawaii Revised Statutes (HRS) are currently 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.

The actuarial assumptions and changes to the assumptions are discussed in the Note F., Pension Liability and in the Required Supplementary Information – Unaudited section. The Actuarial Section of the ACFR contains for more information on changes to the Actuarial Assumptions.

**Requests for Information**

This financial report is designed to provide a general overview of the ERS'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.

## Statement of Fiduciary Net Position

June 30, 2023

| | | |
|---|---|---|
| **Assets:** | | |
| Cash and cash equivalents and short-term investments: | | |
| Cash and cash equivalents | $ | 92,041,414 |
| Short-term investments | | 405,865,095 |
| | | 497,906,509 |
| Receivables: | | |
| Employer and member contributions | | 151,378,373 |
| Accrued investment income | | 28,989,788 |
| Investment sales proceeds | | 15,982,313 |
| Accounts receivable and others | | 3,589,353 |
| | | 199,939,827 |
| Investments, at fair value: | | |
| Equity securities | | 5,288,938,937 |
| Fixed income securities | | 3,525,645,635 |
| Real assets investments | | 3,774,821,802 |
| Alternative investments | | 9,369,579,364 |
| | | 21,958,985,738 |
| Other: | | |
| Invested securities lending collateral | | 491,507,300 |
| Equipment, at cost, net of depreciation | | 4,010,465 |
| | | 495,517,765 |
| Total assets | | 23,152,349,839 |
| **Liabilities:** | | |
| Accounts and other payables | | 202,903,305 |
| Payable for securities purchased | | 32,554,259 |
| Securities lending collateral | | 491,507,300 |
| Total liabilities | | 726,964,864 |
| **Fiduciary net position restricted for pensions** | $ | 22,425,384,975 |

See accompanying notes to financial statements.

*Financial Statements (continued)*

## Statement of Changes in Fiduciary Net Position

### Year Ended June 30, 2023

| | | |
|---|---|---|
| **Additions:** | | |
| Contributions: | | |
| Employers contributions | $ | 1,274,221,056 |
| Members contributions | | 309,761,053 |
| Total contributions | | 1,583,982,109 |
| Investment income: | | |
| From investing activities: | | |
| Net appreciation in fair value of investments | | 473,600,753 |
| Interest on fixed income securities | | 165,069,675 |
| Alternative investment income | | 161,545,169 |
| Income on real asset investments | | 84,105,658 |
| Dividends on equity securities | | 81,301,818 |
| Interest on short-term investments | | 11,021,420 |
| Miscellaneous | | 918,073 |
| | | 977,562,566 |
| Less investment expenses | | 153,900,913 |
| Net investment income from investing activities | | 823,661,653 |
| From securities lending activities: | | |
| Securities lending income | | 27,760,929 |
| Less: securities lending expenses, net | | 24,519,707 |
| Net investment income from securities lending | | 3,241,222 |
| Total net investment income | | 826,902,875 |
| Total additions, net | | 2,410,884,984 |
| **Deductions:** | | |
| Benefit payments | | 1,795,410,787 |
| Refunds of member contributions | | 26,353,782 |
| Administrative expenses | | 18,549,472 |
| Total deductions | | 1,840,314,041 |
| Net increase in fiduciary net position | | 570,570,943 |
| **Fiduciary net position restricted for pensions:** | | |
| Beginning of year | | 21,854,814,032 |
| End of year | $ | 22,425,384,975 |

See accompanying notes to financial statements.

June 30, 2023

## 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. Since January 1, 1988, member contributions have been tax deferred under Section 414(h)(2) of the Internal Revenue Code, and Chapter 88 of the HRS (Chapter 88, HRS) 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.

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, 2023 are as follows:

| | |
|---|---|
| Employers: | |
| State | 1 |
| County | 4 |
| Total employers | 5 |
| Pensioners and beneficiaries currently receiving benefits: | |
| Pensioners currently receiving benefits: | |
| Police and firefighters | 4,280 |
| All other employees | 45,412 |
| Total pensioners | 49,692 |
| Beneficiaries currently receiving benefits: | |
| Police and firefighters | 407 |
| All other employees | 4,874 |
| Total beneficiaries | 5,281 |
| Total pensioners and beneficiaries | 54,973 |
| Terminated vested members entitled to benefits but not yet receiving benefits: | |
| Police and firefighters | 228 |
| All other employees | 8,769 |
| Total terminated vested members | 8,997 |
| Inactive members | |
| Police and firefighters | 1,001 |
| All other employees | 25,899 |
| Total inactive members | 26,900 |
| Total terminated vested and inactive members | 35,897 |
| Active members: | |
| Vested: | |
| Police and firefighters | 3,006 |
| All other employees | 30,722 |
| Total vested members | 33,728 |
| Nonvested: | |
| Police and firefighters | 1,826 |
| All other employees | 28,689 |
| Total nonvested members | 30,515 |
| Total active members | 64,243 |
| Total membership | 155,113 |

**Note A – Description of the ERS (continued)**

**2. The Financial Reporting Entity**

As required by accounting principles generally accepted in the United States of America (GAAP), 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, 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 Pension Trust's funded status or actuarial investigations. The ERS performs an actuarial investigation of the experience at least once every three years, plus an annual actuarial valuation of the assets and liabilities of the funds of the Pension Trust. The Board 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 on August 8, 2022 as recommended by Gabriel, Roeder, Smith and Company (GRS) (from the experience study as of June 30, 2021, with most of the assumptions based on the period from July 1, 2016, through June 30, 2021) while the investment return assumption was adopted beginning with the 2016 valuation. See the Actuarial Section in the Annual Comprehensive Financial Report (the ACFR) 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 Firefighters 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 Firefighters 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), employer contribution rates from the 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 Firefighters increased 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 increased 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.

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 a 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 Firefighters employees) are required to be contributory members.

**Note A – Description of the ERS (continued)**

**3. Class Descriptions and Funding Policy (continued)**

The three membership classes provide a monthly retirement allowance (maximum allowance) equal to the benefit multiplier % (generally 1.25% or 2.00%), multiplied by the average final compensation (the 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 2.50% 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 (2.50% of the original retirement allowance the first year, 5.00% the second year, 7.50% the third year, etc.). For new members hired after June 30, 2012, the postretirement annuity increase was decreased to 1.50% per year of the original retirement allowance without a ceiling (1.50% of the original retirement allowance the first year, 3.00% the second year, 4.50% the third year, etc.).

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.

## Note A – Description of the ERS (continued)

### 3. Class Descriptions and Funding Policy (continued)

All contributions, benefits, and eligibility requirements are governed by Chapter 88, HRS. 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 the ACFR. All of the statutory member contributions discussed in this section are classified as "member contributions" with the adoption of GASB Statement No. 82, *Pension Issues – an amendment of GASB Statements No. 67, No. 68, and No. 73*.

**Contributory**

Police officers, firefighters, and certain other members that are not covered by Social Security first hired prior to July 1, 2012 contribute 12.20% of their salary and receive a retirement benefit using the benefit multiplier of 2.50% for qualified service, up to a maximum of 80% of the 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 14.20% 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 the 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 5.00% per year under age 55 plus 4.00% per year under age 50. The benefit multiplier is 2.00% for employees covered by Social Security.

All other employees in the contributory class hired after June 30, 2012 are required to contribute 9.80% 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 5.00% 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. Class Descriptions and Funding Policy (continued)**

**Hybrid**

All other employees hired before July 1, 2012 are required to contribute 6.00% 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 5.00% per year under age 62. The benefit multiplier used to calculate retirement benefits is 2.00%. Hybrid members are covered by Social Security.

All other employees hired after June 30, 2012 are required to contribute 8.00% 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 5.00% 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 and are covered by Social Security. 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 6.00% 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 10 years of service, respectively. Ordinary death benefits for hybrid members require five years of service if hired prior to July 1, 2012 or 10 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 Chapter 87A, HRS, provide certain healthcare and life insurance benefits for State and county qualified employees and retirees. The Hawaii Employer-Union Health Benefits Trust Fund (the 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 10 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 10 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 10 and 15 years of credited service; (b) 75% of the base monthly contribution if the employee retired with between 15 and 25 years of credited service; and (c) 100% of the base monthly contribution if the employee retired with 25 or more years of credited service.

Under Section 87 A-36 of the HRS, 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 10 and 15 years of credited service; (b) 75% of the base monthly contribution for a self-only plan if the employee retired with between 15 and 25 years of credited service; and (c) 100% of the base monthly contribution for a self-only plan if the employee retired with 25 or more years of credited service.

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

## Note B – 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 other governments, and/or other funds. The fiduciary fund types used by the ERS is a Pension Trust Fund. 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.

The financial statements are prepared in conformity with GAAP using the accrual basis of accounting. Administrative expenses are financed exclusively with investment income.

### 2. Cash Equivalents

All highly liquid investments with an original maturity of three months or less when purchased are considered to be cash equivalents.

### 3. Investments

The ERS' investment policy, including the legal authority, is discussed in Note E.1, Investment Policy. Investments are reported at fair value. Refer to Note E.3, Investments, for the ERS' fair value disclosures.

Purchases and sales of securities are recorded on a trade-date basis. Interest income is recorded on a the accrual basis. Dividend income is recorded on the ex-dividend date.

Realized and unrealized gains and losses are recorded in the accompanying financial statements based on the difference between the fair value of assets at the beginning of the fiscal year, or at the time of purchase for assets purchased during the fiscal year, and the related fair value on the day investments are sold with respect to realized gains and losses, or on the last day of the fiscal year for unrealized gains and losses.

### 4. Revenue Recognition - Contributions

Contributions from employers and members are recognized in the period in which the contributions are legally due.

### 5. Payment of Benefits

Benefits and refunds are recognized when due and payable in accordance with the terms of the Pension Trust.

**Note B – Summary of Significant Accounting Policies (continued)**

**6. 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.

**7. 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, as follows:

a. Annuity Savings Reserves – Fixed at 4.50% regular interest rate for employees hired before July 1, 2011 and 2.00% regular interest rate for employees hired after June 30, 2011.

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

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

**8. Risk Management**

The ERS reports liabilities, as discussed in note G, Risk Management, 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.

**9. Use of Estimates**

In preparing financial statements in conformity with GAAP, 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 are 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 as of June 30, 2021, with most of the assumptions based on the period from July 1, 2016, through June 30, 2021.

## Note B – Summary of Accounting Policies (continued)

### 10. Recently Issued Accounting Policies

#### GASB Statement No. 96

In May 2020, the GASB issued Statement No. 96, *Subscription-Based Information Technology Arrangements*. This statement provides guidance on the accounting and financial reporting for subscription-based information technology arrangements (SBITAs) for government end users. This statement (1) defines a SBITA; (2) establishes that SBITA results in a right-to-use subscription asset – an intangible asset – and a corresponding subscription liability; (3) provides the capitalization criteria for outlays other than subscription payments, including implementation costs of a SBITA; and (4) requires note disclosures regarding a SBITA. Implementation of this statement, effective July 1, 2022, did not have a significant effect on the ERS' financial statements for the year ended June 30, 2023

#### GASB Statement No. 99

The GASB issued Statement No. 99, *Omnibus*. The primary objectives of this statement are to enhance comparability in accounting and financial reporting and to improve the consistency of authoritative literature by addressing practice issues that have been identified during implementation and application of certain GASB statements. Certain requirements of this statement were effective immediately while other requirements are effective for fiscal years beginning after June 15, 2022 and June 15, 2023, respectively. The requirements that were effective immediately and beginning after June 15, 2022 did not have a material effect on the ERS' financial statements. For the remaining requirements, the ERS is currently evaluating the impact that this statement will have on its financial statements.

#### GASB Statement No. 100

The GASB issued Statement No. 100, *Accounting Changes and Error Corrections – an amendment of GASB Statement No. 62*. The primary objective of this statement is to enhance accounting and financial reporting requirements for accounting changes and error corrections to provide more understandable, reliable, relevant, consistent, and comparable information for making decisions or assessing accountability. The requirements of this statement are effective for reporting periods beginning after June 15, 2023. The ERS is currently evaluating the impact that this statement will have on its financial statements.

#### GASB Statement No. 101

The GASB issued Statement No. 101, *Compensated Absences*. The primary objective of this statement is to better meet the information needs of financial statement users by updating the recognition and measurement guidance for compensated absences. The requirements of this statement are effective for reporting periods beginning after December 15, 2023. The ERS is currently evaluating the impact that this statement will have on its financial statements.

## Note C – 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 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 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, 2023 are as follows:

| | | 2023 |
|---|---|---|
| Pension accumulation reserves | $ | 18,685,002,497 |
| Annuity savings reserves | | 3,729,248,623 |
| Expense reserves | | 11,133,855 |
| Total fiduciary net position restricted for pensions | $ | 22,425,384,975 |

## Note D – 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, HRS. The actuarially determined contribution rates may differ from the statutory contribution rates.

**Note D – Contributions (continued)**

Employer rates are set by statute based on the recommendation of the ERS actuary resulting from an experience study conducted every three years. Employer contribution rates are a fixed percentage of compensation, including the normal cost plus amounts required to pay for the unfunded actuarial accrued liability. See Note A.3 Class Descriptions and Funding Policy for the effective statutory employer contribution rates.

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 AFC amount.

Member contributions rates are statutorily established in accordance with Chapter 88, HRS, and are discussed in Note A.3, Class Descriptions and Funding Policy. 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 E – Deposits 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 are limited to investment grade, short-term marketable securities.

The investment decisions are further dictated by the Investment Policy Statement, 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 with 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.

**Note E – Deposit and Investment Disclosures (continued)**

**1. Investment Policy (continued)**

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.

As of June 30, 2023, the ERS was strategically invested in the following classes:

| | Strategic Allocation (functional/risk-based classes)[1, 2, 3] |
|---|---|
| Broad Growth | 65.0% |
| Diversifying Strategies | 35.0% |
| Total | 100.0% |

[1] Uses an expected inflation of 2.6%.
[2] The strategic allocation is supported by a multitude of underlying sub-asset class.
[3] Actual allocations varied.

During FY 2023, the Broad Growth strategic asset class includes sub-asset classes or components of Public Growth (Traditional Equity, Stabilized Equity, and Global Credit), Private Growth, and Real Assets (Core Real Estate, Non-Core Real Estate, Other Real Assets, Infrastructure, Timber and Agriculture). The Diversifying Strategies asset class includes Illiquid Diversifying (Idiosyncratic Return Capture, and Insurance Linked), Liquid Defensive (Systematic Trend Following, Defensive Return Capture and Treasury Agency Duration Capture), and Liquid Diversifying (Relative Value Arbitrage and Alternative Return Capture Strategies). The ERS may also hold Opportunities and other investments.

As a result of the formal asset-liability study that began in fiscal year 2019 and was completed in fiscal year 2020, the Board adopted a new long-term strategic allocation policy. As part of this new long-term strategic policy, the portfolio transitioned to two major strategic classes (rather than four). Prevailing classes and sub-classes were remapped to the two major strategic classes where applicable. As planned, the final allocations across the new long-term strategic allocation policy was largely completed by the end of the 2023 fiscal year.

The ERS utilizes two high-level strategic classes (Broad Growth and Diversifying Strategies) for allocating assets and managing risk within the total portfolio. Both of these strategic classes contain sub-components that in-turn utilize asset classes and/or specific strategies for implementation. The Broad Growth class utilizes three sub-components (Public Growth, Private Growth, and Real Assets) which are ultimately invested in public equity, options-based equity, credit fixed income, private real assets, and private equity. The Diversifying Strategies class is designed to be uncorrelated to the Broad

**Note E – Deposit and Investment Disclosures (continued)**

**1. Investment Policy (continued)**

Growth class and it utilizes three sub-components (Liquid Defensive, Liquid Diversifying, and Illiquid Diversifying). The Diversifying Strategies class utilizes a multitude of asset classes and strategies, including US treasury and agency bonds, inflation-linked treasury bonds, systematic trend following, alternative risk premia, global macro, insurance-linked securities, relative value strategies, and niche private assets, among others. The ERS may also hold opportunities and other investments if they are determined to be additive to the portfolio's risk/return posture.

The Board manages the expected return/risk posture of the Plan as part of the formal asset-liability studies that are completed every three-to-five years. Based on the 2019 asset-liability study and updated capital markets assumptions (as of June 30, 2023), the Total Fund was positioned to achieve a long- term return of approximately 7.7% with an annualized volatility of approximately 10.2% over a horizon of 10-20 years. During fiscal year 2023, the Board initiated a new asset-liability study that was completed at the end of fiscal year 2023. The resulting new long-term strategic allocation policy came into effect in January 2024. The ERS will strategically invest in the following strategic asset classes:

| Strategic Allocation (risk-based classes) | Strategic Class Weights | Expected Long-term Geometric Average Return[1] | Expected Volatility |
|---|---|---|---|
| Broad Growth | 65.0% | 8.7% | 15.0% |
| Diversifying Strategies | 35.0% | 5.2% | 8.1% |
| Total Portfolio | 100.0% | 7.7% | 10.2% |

[1] Uses an expected inflation of 2.6%

The implementation plan for long-term strategic policy established in 2020 is expected to be completed by the end of the FY 2023 as follows.

| Implementation Plan for Long-term Strategic Policy | | | | |
|---|---|---|---|---|
| | (6/30/2020) | 7/1/2020 | Long-Term 7/1/2021 | Long-Term 7/1/2022 |
| Broad Growth | 68.0% | 72.0% | 67.5% | 65.0% |
| Principal Protection | 8.0% | -- | -- | -- |
| Real Return | 8.0% | -- | -- | -- |
| Crisis Risk Offset | 16.0% | -- | -- | -- |
| Diversifying Strategies | -- | 28.0% | 32.5% | 35.0% |
| Total Portfolio | 100.0% | 100.0% | 100.0% | 100.0% |

**Rate of Return**

For the year ended June 30, 2023, the annual money-weighted return on pension plan investments, net of pension plan investment expense, was 3.8%. The money-weighted rate of return expresses investment performance, net of investment expense, adjusted for changing amounts actually invested.

**Note E – Deposit and Investment Disclosures (continued)**

**2. Cash and Cash Equivalents**

Cash and cash equivalents include 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.

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, 2023, the carrying amount of deposits totaled $92,041,414 and the corresponding bank balance was $98,401,207, all of which was exposed to custodial credit risk.

## Note E – Deposit and Investment Disclosures (continued)

### 3. Investments

The following table shows the investments of the ERS by investment type as of June 30, 2023.

| | | |
|---|---|---|
| Short-term instruments: | | |
| Short-term bills and notes | $ | 2,948,529 |
| Pooled and others | | 402,913,935 |
| Equity securities: | | |
| Common stock | | 4,113,999,427 |
| Equity funds | | 1,146,328,799 |
| Preferred shares and other | | 28,610,711 |
| Fixed income securities: | | |
| U.S. Treasury bonds and notes | | 479,069,599 |
| U.S. government agencies bonds | | 14,445,750 |
| U.S. government agency mortgage backed | | 130,213,540 |
| U.S. government-sponsored agency mortgage backed | | 11,709,818 |
| U.S. corporate bonds | | 30,768,242 |
| Non-U.S. corporate bonds | | 252,801 |
| Convertible and Others | | 260,511,761 |
| Fixed income funds | | 2,595,657,833 |
| Derivatives financial investments: | | |
| Forwards - Cash and short-term instruments | | 2,631 |
| Futures - Debt securities | | 3,016,291 |
| Real assets investments: | | 3,774,821,802 |
| Alternative investments | | 9,369,579,364 |
| Total investments | $ | 22,364,850,833 |
| Short-term instruments for securities lending collateral pool | $ | 491,507,300 |

**Note E – Deposit and Investment Disclosures (continued)**

**3. Investments (continued)**

Investments are measured at fair value. The ERS categorizes its fair value measurements within the fair value hierarchy established by GAAP. 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.

Fair Value Hierarchy Levels

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. Short-term investments and fixed income securities classified as Level 1 include U.S. Treasuries. Derivative financial instruments classified in Level 1 include certain options and futures which are valued using prices quoted in active markets for those securities.

Preferred shares, 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.

**Note E – Deposit and Investment Disclosures (continued)**

**3. Investments (continued)**

Preferred shares classified in level 3 are private investments, thinly traded securities, 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 assets investments - real estate (direct investment) classified as Level 3 are individual properties 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). The valuation techniques vary based on investment type and involve a certain degree of expert judgment.

Investments Measured at the Net Asset Value (NAV)

Investments measured at NAV are not required to be categorized in the fair value hierarchy levels. The fair value of investments in certain fixed income funds, equity funds, real assets and alternative investments are based on the investments' net asset value (NAV) per share (or its equivalent).

Short-Term investment funds, equity funds (not publicly traded), and fixed income funds (not publicly traded) are reported on their respective net asset value (NAV). Fair value for these investments 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 of the investments include a review of compliance with the investment company's valuation policies.

Real assets and alternative investments (pooled or commingled funds) are 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.

## Note E – Deposit and Investment Disclosures (continued)

### 3. Investments (continued)

The following table shows the fair value hierarchy by investment type as of June 30, 2023.

| | | Fair Value Measurement Using | | |
|---|---|---|---|---|
| | Total | Active Markets for Identical Assets (Level 1) | Significant Other Observable Inputs (Level 2) | Significant Unobservable Inputs (Level 3) |
| **Investments by Fair Value Level 6/30/2023** | | | | |
| *Short-term investments* | | | | |
| Short-term bills and notes | $ 2,948,529 | $ 2,948,529 | $ - | $ - |
| *Equity securities* | | - | - | - |
| Common stocks | 4,113,999,427 | 4,113,999,427 | - | - |
| Preferred shares and other | 28,610,711 | 18,052,160 | 10,515,711 | 42,840 |
| Total equity securities | 4,142,610,138 | 4,132,051,587 | 10,515,711 | 42,840 |
| *Fixed income securities* | | | | |
| U.S. Treasury bonds and notes | 479,069,599 | 479,069,599 | - | - |
| U.S. government agencies bonds | 14,445,750 | 14,445,750 | - | - |
| U.S. government agency mortgage backed | 130,213,540 | 130,213,540 | - | - |
| U.S. government-sponsored agency mortgage | 11,709,818 | 11,709,818 | - | - |
| U.S. corporate bonds | 30,768,242 | - | 30,768,242 | - |
| Non-U.S. corporate bonds | 252,801 | - | 252,801 | - |
| Convertible and Others | 260,511,761 | - | 260,511,761 | - |
| Total fixed income securities | 926,971,511 | 635,438,707 | 291,532,804 | - |
| *Real asset - real estate (direct investment)* | 58,200,000 | - | - | 58,200,000 |
| Total investments (excluding derivatives), measured by fair value level | $ 1,912,143,022 | $ 1,270,877,414 | $ 583,065,608 | $ 58,200,000 |
| **Investment Derivative Instruments** | | | | |
| Currency purchases forwards | $ 2,631 | $ - | $ - | $ 2,631 |
| Index fixed income futures | 3,016,291 | 3,016,291 | - | - |
| Total investment derivative instruments | $ 3,018,922 | $ 3,016,291 | $ - | $ 2,631 |
| **Invested Securities Lending Collateral** | | | | |
| Short-term instruments | | | | |
| Certificate of Deposit | $ 186,136,735 | $ - | $ 186,136,735 | $ - |
| Repurchase agreements | 9,409,110 | - | 9,409,110 | - |
| Global corporate notes | 295,961,455 | - | 295,961,455 | - |
| Total invested securities lending collateral | $ 491,507,300 | $ - | $ 491,507,300 | $ - |

## Note E – Deposits and Investment Disclosures (continued)

### 3. Investments (continued)

| **Investments Measured at Net Asset Value (NAV)** | |
|---|---|
| *Short-term investments* | $ 402,913,935 |
| *Equity securities* | 1,146,328,799 |
| *Fixed income* | 2,595,657,833 |
| *Real assets - real estate* | 2,166,123,723 |
| *Real assets - other* | 1,550,498,079 |
| *Alternative investments - diversify strategy* | 4,878,726,355 |
| *Alternative investments - other* | 4,490,853,009 |
| Total investments measured at NAV | $ 17,231,101,733 |

| | June 30, 2023 | Unfunded Commitments | Redemption Frequency (If Currently Eligible) | Redemption Notice Period (Days) |
|---|---|---|---|---|
| *Short-term investments (a)* | $ 402,913,935 | $ - | Daily | 1 day |
| *Equity securities (b)* | 1,146,328,799 | - | Daily | 2 days |
| *Fixed income ( c)* | 2,595,657,833 | 380,328,000 | Various | Various |
| *Real assets - real estate (d )* | 2,166,123,723 | 742,120,000 | Not eligible | n/a |
| *Real assets - other (d )* | 1,550,498,079 | 547,428,000 | Not eligible | n/a |
| *Alternative investments - traditional (e)* | 4,878,726,355 | 2,056,028,000 | Not eligible | n/a |
| *Alternative investments - div. strategies (f)* | 4,490,853,009 | - | Daily | 1-2 days |
| Total investments measured at NAV | $ 17,231,101,733 | $ 3,725,904,000 | | |

(a) Short-term investments – pooled and other primarily consist of two pooled funds to invest excess cash at the ERS' custodian, The Bank of New York Mellon. 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.

(b) Equity funds consist of three funds, including 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) Fixed income funds consist of 15 private market limited partnerships or limited liability companies to capitalize in multiple strategies that target investments on a global basis including, but not limited to, obligations of leveraged, financially troubled, or liquidating businesses or entities, bank loans, high yield bonds, securitized credit (including debt issued by asset-backed security offerings), derivatives (such as swap agreements), etc. 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 E – Deposits and Investment Disclosures (continued)**

**3. Investments (continued)**

(d) Real assets investments (real estate and other) consist of limited partnerships, limited liability companies, or corporations, that are deemed to be investments, include 75 funds that primarily invest in U.S. real estate and 15 that invest in other real assets such as infrastructure, agriculture or other assets. 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.

(e) Alternative investments – diversifying strategies consist of 20 limited partnerships or limited liability companies to provide stability, diversification, and liquidity complements to the Broad Growth strategic class that produce uncorrelated returns during both crisis and non-crisis periods for Broad Growth assets. These investments focus on capital efficiency and employ certain financial mechanisms to target specific levels of volatility (e.g., derivatives-based leverage). This approach emphasizes capital efficiency thereby enabling the relatively small capital base of the DS strategic class to offset a meaningful level of volatility inherent in the Broad Growth strategic class. The most significant element of NAV is the fair value of the investment holdings. These holdings are valued 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. The ERS determines when redemptions and/or contributions are made.

(f) Alternative investments - traditional consist of 256 limited partnerships or limited liability companies that invest in venture capital, growth equity, corporate finance/buyout, special situations, mezzanine debt, distressed debt, co/direct investments or specialty 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. Redemptions are controlled by the general partner/investment manager.

## Note E – Deposits and Investment Disclosures (continued)

### 3. Investments (continued)

Reconciliation of Investments Measured by Fair Value Level and by NAV to the Statement of Fiduciary Net Position

| | Investments by Fair Value Level | Investments Measured by the NAV | Derivative Investments by Fair Value Level | Statement of Fiduciary Net Postion |
|---|---|---|---|---|
| Assets | | | | |
| Short-term investments | $ 2,948,529 | $ 402,913,935 | $ 2,631 | $ 405,865,095 |
| Equity securities | 4,142,610,138 | 1,146,328,799 | - | 5,288,938,937 |
| Fixed income securities | 926,971,511 | 2,595,657,833 | 3,016,291 | 3,525,645,635 |
| Real asset investments | 58,200,000 | 3,716,621,802 | - | 3,774,821,802 |
| Alternative investments | - | 9,369,579,364 | - | 9,369,579,364 |
| | $ 5,130,730,178 | $ 17,231,101,733 | $ 3,018,922 | $ 22,364,850,833 |
| Invested securities lending collateral | $ 491,507,300 | $ - | $ - | $ 491,507,300 |

### 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 for derivative financial instruments is discussed in Note E.10, Derivative Financial Instruments, while policies related to credit risk for securities lending program are discussed in Note E.9, Securities Lending.

**Risk Based Asset Class**

The credit portfolio consists of investment strategies and assets that are largely exposed and/or susceptible to various collateral types (corporate cash flows, mortgages, various credit receivables, etc.) that produce relatively high levels of income. These investments may be traded in public markets or sourced through private issuance. Such investments typically contain relatively lower levels of risk and exhibit lower volatility than other Broad Growth components but do have exposure to growth-related characteristics. In addition, periodic income will likely be a material portion of the credit portfolio's investment return. The overall objectives of the Diversifying Strategies strategic asset class are to provide stability, diversification, and liquidity complements to the Broad Growth strategic asset class. This class can help diversify the Broad Growth strategic asset class during challenging periods, such as material equity market drawdowns. Individual investment managers have specific investment policy guidelines, limits, and/or requirements for their portfolio, that may include limits on, but not limited to, security type, sectors, currency, duration, credit rating and issue amounts.

**Note E – Deposits and Investment Disclosures (continued)**

**4. Credit Risk (continued)**

The ERS may invest, across the Broad Growth and Diversifying Strategies asset classes, in directly held securities, Partnerships/Fund of Ones or commingled funds which invest in liquid and less liquid corporate credit across the capital structure as well as opportunistically provide private financing. Investment instruments and/or strategies include but are not limited to the purchase and/or origination of investment grade, broadly syndicated high yield bonds, broadly syndicated leveraged loans, narrowly syndicated private debt ("club deals"), collateralized loan obligations ("CLO") debt and equity, municipal securities, capital solutions and convertibles. Other investment instruments and/or strategies include but are not limited to U.S. Treasuries and government-backed, high-quality, very liquid agencies, the purchase and/or origination of legacy non-agency residential mortgage-backed securities, asset backed securities, agency risk transfer, FNMA/Freddie preferred equity, non-qualified mortgage, origination, re-performing loans, credit tenant leases, bridge financings, and other types. Derivative financial instruments may be used for managing interest rate, volatility, term structure, country, currency, sector exposures, etc. as authorized by their mandate.

## Note E – Deposits and Investment Disclosures (continued)

### 4. Credit Risk (continued)

A table of the ERS' fixed income securities as of June 30, 2023 is below. Securities below investment grade of Baa and non-rated issues (average rating by S&P, Moody's and/or Fitch) amounted to $231,927,848 or 25.0% of directly held fixed income investments (excluding funds). 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, 2023**

| Ratings | US Govt Agency | US Govt sponsored-agency mortgage-backed | US corporate bonds | Non-US corporate bonds | Convertible & others | Total |
|---|---|---|---|---|---|---|
| AAA | 14,445,750 | 130,132,296 | 216,665 | - | - | $ 144,794,711 |
| AA1 | - | 81,244 | 706,365 | - | - | 787,609 |
| AA3 | - | - | 2,413,926 | - | - | 2,413,926 |
| A1 | - | - | 1,963,270 | 252,801 | - | 2,216,071 |
| A2 | - | - | 6,982,014 | - | - | 6,982,014 |
| A3 | - | - | 9,140,289 | - | 4,908,570 | 14,048,859 |
| BAA1 | - | - | 5,527,846 | - | 1,528,083 | 7,055,929 |
| BAA2 | - | - | 3,301,029 | - | 10,789,567 | 14,090,596 |
| BAA3 | - | - | 516,838 | - | 11,357,693 | 11,874,531 |
| BA1 | - | - | - | - | 6,347,815 | 6,347,815 |
| BA2 | - | - | - | - | 8,104,685 | 8,104,685 |
| CAA1 | - | - | - | - | 1,565,662 | 1,565,662 |
| CAA2 | - | - | - | - | 1,620,503 | 1,620,503 |
| Not rated | - | - | - | - | 214,289,183 | 214,289,183 |
| | $ 14,445,750 | $ 130,213,540 | $ 30,768,242 | $ 252,801 | $ 260,511,761 | 436,192,094 |

| | |
|---|---|
| US Treasury Bonds and Notes | 479,069,599 |
| US Government agency - Government National Mortgage Association (GNMAs) mortgage-backed | 11,709,818 |
| Subtotal directly held investments | 926,971,511 |
| Fixed income funds | 2,595,657,833 |
| Derivatives (debt securities) | 3,016,291 |
| Total fixed income securities in Investments | $ 3,525,645,635 |

### 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 $98,401,207 in cash and securities exposed to custodial credit risk as of June 30, 2023.

**Note E – 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 in the Credit Risk section above.

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, 2023, 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, 2023, 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.

.

## Note E – Deposits and Investment Disclosures (continued)

### 7. Interest Rate Risk

The effective duration of fixed income investments by security type (excluding derivatives and fixed income funds) are as follows:

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

| | | Fair Value | Weighted Modified Duration (years) |
|---|---|---|---|
| Fixed Income Securities | | | |
| U.S. Treasury bonds and notes | $ | 479,069,599 | 13.5 |
| U.S. government agencies bonds | | 14,445,750 | 2.4 |
| U.S. government agency mortgage-backed | | 130,213,540 | 5.8 |
| U.S. government-sponsored agency mortgage-backed | | 11,709,818 | 5.6 |
| U.S. corporate bonds | | 30,768,242 | 5.2 |
| Non-U.S. corporate bonds | | 252,801 | 5.3 |
| Convertible and Others | | 260,511,761 | 2.8 |
| Total | $ | 926,971,511 | 8.9 |

**Note E – 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 derivative financial instruments must be rated A or equivalent. Derivative financial instruments are discussed in more detail in Note E.10, Derivative Financial Instruments.

The following table summarizes the ERS' exposure to foreign currency risk in U.S. dollars as of June 30, 2023 (securities denominated in U.S. dollars are not presented.)

| | Cash and Short Term Instruments | Derivatives | Equities | Grand Total |
|---|---|---|---|---|
| Australian dollar | $ 1,216 | $ - | $ 30,731,852 | $ 30,733,068 |
| Brazilian real | 4,025 | - | 15,708,072 | 15,712,097 |
| Canadian dollar | 312,353 | 103,134 | 57,842,291 | 58,257,778 |
| Chilean peso | 604 | - | 3,934,570 | 3,935,174 |
| Chinese Yuan Renminbi | - | - | 2,341,940 | 2,341,940 |
| Colombian peso | 32,226 | - | 19,793 | 52,019 |
| Czech koruna | 6,608 | - | 341,841 | 348,449 |
| Danish krone | 144,131 | 172,077 | 19,874,256 | 20,190,464 |
| Euro currency unit | 129,129 | (11,636) | 340,354,439 | 340,471,932 |
| Hong Kong dollar | 120,498 | 199,817 | 77,470,225 | 77,790,540 |
| Hungarian forint | - | - | 631,657 | 631,657 |
| Indian Rupee | 1,153 | - | 96,795,383 | 96,796,536 |
| Indonesian rupiah | 7,948 | (1,179) | 1,281,558 | 1,288,327 |
| Israeli shekel | 2,024 | - | 694,607 | 696,631 |
| Japanese yen | 651,716 | 3,489,715 | 197,982,731 | 202,124,162 |
| Malaysian ringgit | 3,583 | - | 4,583,432 | 4,587,015 |
| Mexican peso | 934 | 81,891 | 11,634,416 | 11,717,241 |
| New Taiwan dollar | 750,814 | - | 78,809,440 | 79,560,254 |
| New Zealand dollar | 6,799 | - | 2,126,822 | 2,133,621 |
| Norwegian krone | 903 | - | 4,683,350 | 4,684,253 |
| Philippine peso | 10,971 | - | 3,305,281 | 3,316,252 |
| Polish zloty | - | - | 522,428 | 522,428 |
| Pound sterling | 132,433 | 199,560 | 223,290,965 | 223,622,958 |
| Russian ruble | - | - | 383,168 | 383,168 |
| Singapore dollar | 12,922 | - | 3,699,451 | 3,712,373 |
| South African rand | 11,880 | - | 3,106,047 | 3,117,927 |
| South Korean won | 10 | - | 22,554,473 | 22,554,483 |
| Swedish krona | 65,901 | 336,543 | 23,703,200 | 24,105,644 |
| Swiss franc | 73,274 | 21,594 | 61,079,476 | 61,174,344 |
| Thai baht | - | - | 4,274,190 | 4,274,190 |
| Turkish lira | 1,236 | - | 1,018,189 | 1,019,425 |
| Total | $ 2,485,291 | $ 4,591,516 | $ 1,294,779,543 | $ 1,301,856,350 |

## Note E – 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, 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 in accordance with the ERS investment policies and procedures as discussed above in Note E.1, Investment Policy. 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, 2023 was 100 days.

At June 30, 2023, 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 | $ 215,069,926 | $ 197,164,958 | $ 24,233,065 |
| U.S. equities | 312,390,863 | 275,822,216 | 46,447,232 |
| International equities | 179,674,045 | 18,520,126 | 181,463,001 |
| | $ 707,134,834 | $ 491,507,300 | $ 252,143,298 |

## Note E – Deposits and Investment Disclosures (continued)

### 10. Derivative Financial Instruments

Derivatives are financial 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, as discussed below.

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, 2023 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.

## Note E – Deposits and Investment Disclosures (continued)

### 10. Derivative Financial Instruments (continued)

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, 2023 with the related maturity information:

| Asset categories | | Notional values | Market value | Maturity (Range from) |
|---|---|---|---|---|
| **Forwards** | Currency purchases | $ - | $ 2,631 | 0.0 yrs |
| **Futures** | Interest rate contracts | 592,821,122 | 2,179,390 | 0.3 yrs |
| | Grand Total | $ 592,821,122 | $ 2,182,021 | |

### 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/(depreciation) in fair value of securities in the statement of changes in fiduciary net position. Refer to the table above for the net notional value of futures contracts at June 30, 2023.

## Note E – 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. 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. 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. Gains and losses from swaps are determined on market values and are included in the net appreciation/(depreciation) in fair value of securities in the statement of changes in fiduciary net position.

Derivatives, such as interest rate swaps, total return swaps, and credit default swaps, are a tool or instrument used to manage 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.

On June 30, 2023, credit ratings of the counterparty for ERS' investments in derivatives were as follows:

| Counterparty | S&P's Rating | Fair Value |
|---|---|---|
| Exchange traded derivatives | n/a | $ 3,018,922 |

## Note F – Pension Liability

### 1. Net Pension Liability

The components of the net pension liability of the ERS at June 30, 2023 were as follows:

| | |
|---|---|
| Total pension liability | $36,224,617,253 |
| Less: plan fiduciary net position | 22,425,384,975 |
| Net pension liability | $13,799,232,278 |
| | |
| Plan fiduciary net position as a percentage of total pension liability | 61.91% |
| Net pension liability as a percentage of covered payroll | 295.20% |

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.*

### 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, 2023. These GASB rules only define pension liability for financial reporting purposes. The actuarial assumptions were based on the results of an experience study as of June 30, 2021, with most of the assumptions based on the period from July 1, 2016, through June 30, 2021.

Summary of Actuarial Valuation as of June 30, 2023 follows:

| | |
|---|---|
| Valuation date | June 30, 2023 |
| 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 Firefighters | 5.00% to 6.00% |
| - General Employees | 3.75% to 6.75% |
| - Teachers | 3.75% to 6.75% |
| | |
| 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% |

**Note F – Pension Liability (continued)**

**2. Summary of Actuarial Assumptions (continued)**

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

Pre-retirement mortality rates are:

Multiples of the Pub-2010 mortality table for active employees based on the occupation of the member as follows:

| | General Employees | Teachers | Police and Firefighters |
|---|---|---|---|
| Type | Male & Female | Male & Female | Male & Female |
| Ordinary | 94% | 92% | 80% |
| % of Ordinary Chosing Annuity | 41% | 52% | 24% |
| Duty Related | 6% | 8% | 20% |

Post-Retirement Mortality rates are:

Healthy Retirees: The 2022 Public Retirees of Hawaii mortality tables. The rates are projected on a fully generational basis by Scale MP from the year 2022 (with immediate convergence) and with multiplier and setbacks based on plan and group experience. The following are sample rates of the base table as of 2022 with the corresponding multipliers:

Healthy Annuitant Mortality Rates Before Projection (Multiplier Applied)

| | General Employees | | Teachers | | Police and Firefighters | |
|---|---|---|---|---|---|---|
| Age | Males | Females | Males | Females | Males | Females |
| 50 | 0.2094% | 0.1276% | 0.1698% | 0.0951% | 0.2421% | 0.1130% |
| 55 | 0.3215% | 0.1687% | 0.2883% | 0.1596% | 0.3473% | 0.1633% |
| 60 | 0.5570% | 0.3095% | 0.4672% | 0.2467% | 0.6179% | 0.2799% |
| 65 | 0.8041% | 0.4488% | 0.7256% | 0.4063% | 0.8426% | 0.4283% |
| 70 | 1.2621% | 0.7066% | 1.0762% | 0.6015% | 1.4172% | 0.6565% |
| 75 | 2.0700% | 1.0964% | 1.7879% | 0.9358% | 2.3227% | 1.0121% |
| 80 | 3.5996% | 2.1275% | 3.0429% | 1.6565% | 4.1824% | 1.8863% |
| 85 | 6.5891% | 4.1569% | 5.5564% | 3.2698% | 7.6513% | 3.6977% |
| 90 | 11.9340% | 8.3647% | 10.1056% | 6.5007% | 13.6689% | 7.3991% |
| Multiplier | 102% | 98% | 97% | 101% | 93% | 100% |
| Setback | --- | -1 | 1 | 1 | -2 | --- |

**Note F – Pension Liability (continued)**

**2. Summary of Actuarial Assumptions (continued)**

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 | 2025 | 2030 | 2035 | 2040 | 2045 |
| General Retirees | | | | | |
| Male | 22.8 | 23.2 | 23.5 | 23.9 | 24.2 |
| Female | 26.3 | 26.6 | 26.9 | 27.2 | 27.5 |
| Teachers | | | | | |
| Male | 24.1 | 24.5 | 24.9 | 25.2 | 25.5 |
| Female | 28.0 | 28.3 | 28.6 | 28.9 | 29.2 |
| Police and Firefighters | | | | | |
| Male | 21.8 | 22.1 | 22.4 | 22.8 | 23.1 |
| Female | 27.1 | 27.4 | 27.7 | 28.0 | 28.3 |

Disabled retirees: Base Table for healthy retiree's occupation, set forward three years, generational projection using the MP projection table from the year 2022 with immediate convergence. Minimum mortality rate of 3.5% for males and 2.5% for females.

**Note F – Pension Liability (continued)**

**2. Summary of Actuarial Assumptions (continued)**

The long-term expected rate of return on pension plan investments was determined using a "top down approach" of the Client-Constrained Simulation-based Optimization Model (a statistical technique known as "resampling with replacement" that directly keys in on specific plan-level risk factors as stipulated by the ERS Board) in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class. These ranges are then combined to produce the long-term expected rate of return by weighting the expected future nominal rates of return (real returns + inflation) by the target asset allocation percentage. The rate of returns based on ERS's investment consultant as of June 30, 2023, are summarized in the following table (a new asset/liability study for the ERS was completed in June 2023 that will be effective for FY 2024):

| Classes | Strategic Class Weights | Long-Term Expected Geometric Rate of Return | Volatility |
|---|---|---|---|
| Broad Growth: | | | |
| Private equity | 13.50% | 10.00% | 28.00% |
| Global equity | 20.0% | 7.90% | 18.00% |
| Low volatility equity | 4.00% | 7.10% | 14.40% |
| Global options | 4.00% | 5.80% | 13.00% |
| Credit | 6.00% | 8.00% | 12.50% |
| Core real estate | 6.00% | 6.00% | 12.00% |
| Non-core real estate | 4.50% | 7.90% | 22.40% |
| Timber/agriculture/infrastructure | 5.00% | 7.20% | 12.40% |
| Diversifying Strategies: | | | |
| TIPs | 2.00% | 3.20% | 7.00% |
| Global macro | 4.00% | 6.00% | 15.00% |
| Reinsurance | 4.00% | 7.00% | 12.00% |
| Alternative risk premia | 8.00% | 5.00% | 10.00% |
| Long treasuries | 5.00% | 3.80% | 12.00% |
| Intermediate government | 4.00% | 3.20% | 3.00% |
| Systematic trend following | 10.00% | 4.70% | 18.00% |
| | 100.00% | | |

## Note F – Pension Liability (continued)

### 2. Summary of Actuarial Assumptions (continued)

The ERS utilizes two high-level strategic classes (Broad Growth and Diversifying Strategies) for allocating assets and managing risk within the total portfolio. Both of these strategic classes contain sub-components that in-turn utilize asset classes and/or specific strategies for implementation. The Broad Growth class utilizes three sub-components (Public Growth, Private Growth, and Real Assets) which are ultimately invested in public equity, options-based equity, credit fixed income, private real assets, and private equity. The Diversifying Strategies class is designed to be uncorrelated to the Broad Growth class and it utilizes three sub-components (Liquid Defensive, Liquid Diversifying, and Illiquid Diversifying). The Diversifying Strategies class utilizes a multitude of asset classes and strategies, including US treasury and agency bonds, inflation-linked treasury bonds, systematic trend following, alternative risk premia, global macro, insurance-linked securities, relative value strategies, and niche private assets, among others. The ERS may also hold opportunities and other investments if they are determined to be additive to the portfolio's risk/return posture.

**Single Discount Rate**

A single discount rate of 7.00% was used to measure the total pension liability as of June 30, 2023. 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 discount rate.

| 1% Decrease (6.00%) | Current Discount Rate (7.00%) | 1% Increase (8.00%) |
|---|---|---|
| $18,551,927,406 | $13,799,232,278 | $9,863,182,556 |

## Note G – 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, 2023. 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 H – 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 $3,725,904,000 as of June 30, 2023, consisting of $380,328,000 for fixed income funds, $1,289,548,000 for real assets investments, and $2,056,028,000 for alternative investments.

## Note I – 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.

**Note J – Subsequent Events**

Between March 4, 2022, and March 25, 2022, State and county employers declared COVID-19 Emergencies (dates vary by employer agency) to control the spread of COVID-19 and provide for the health, safety, and welfare of the people of the State. Union and employee organizations, representing individuals employed by the State and county employers, requested Temporary Hazard Pay (THP) on behalf of State and county employees (Affected Employees) designated to perform essential functions during the COVID-19 pandemic. Subsequently, arbitration/litigation was initiated by these parties to settle claims for THP. In February, July and September 2024, some of the State and county employer agencies/employees reached settlement/arbitration agreements, that represents only a portion of total number of employees during COVID-19 Emergencies. THP claims/litigations for most State and county employer agencies/employees have not been settled.

Pursuant to HRS §88-21.5, only THP payments to Affected Employees whose ERS membership dates were before July 1, 2012, are considered ERS eligible compensation, that are subject to ERS employer and member contributions. (THP payments are not eligible compensation for individuals whose ERS membership date is after June 30, 2012.) The ERS is currently unable to predict with reasonable certainty the magnitude of (a) ERS' potential liability and (b) amount of contributions due to ERS as a result of these THP claims litigations.

The ERS has evaluated subsequent events through October 22, 2024, the date at which the financial statements were available to be issued, and determined there are no other items to disclose.

## Required Supplementary Information - Unaudited

### Schedule of Changes in the Employers' Net Pension Liability and Related Ratios

### As of and for the Years Ended June 30, 2014 to 2023

| | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|---|---|---|---|
| **A. Total pension liability** | | | | | | | | | | |
| 1. Service Cost | $421,956,129 | $437,901,029 | $484,278,499 | $576,724,568 | $584,470,193 | $619,504,278 | $626,699,489 | $642,140,242 | $613,550,345 | $662,262,225 |
| 2. Interest on the Total Pension Liability | 1,618,917,776 | 1,693,252,684 | 1,748,619,873 | 1,894,622,190 | 1,976,275,120 | 2,063,885,936 | 2,164,804,653 | 2,252,271,074 | 2,349,503,644 | 2,397,116,921 |
| 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 | 61,179,390 | 124,753,379 | 221,473,495 | 71,837,371 | 228,048,119 | (361,275,093) | 161,224,056 |
| 5. Changes of assumptions | - | 261,213,541 | 2,915,922,677 | - | - | 60,320,037 | - | - | (154,960,000) | - |
| 6. Benefit payments | (1,122,445,642) | (1,170,744,770) | (1,232,589,353) | (1,306,788,954) | (1,395,881,342) | (1,469,634,809) | (1,545,589,761) | (1,651,431,372) | (1,738,751,492) | (1,795,410,787) |
| 7. Refunds | (8,475,969) | (10,507,888) | (12,927,672) | (16,340,290) | (20,846,500) | (16,502,635) | (22,443,593) | (23,618,435) | (24,454,256) | (26,353,782) |
| **8. Net change in total pension liability** | $976,353,170 | $1,018,297,839 | $4,200,838,243 | $1,209,396,904 | $1,268,770,850 | $1,479,046,302 | $1,295,308,159 | $1,447,409,628 | $683,613,148 | $1,398,838,633 |
| **9. Total pension liability – beginning** | 21,243,744,377 | 22,220,097,547 | 23,238,395,386 | 27,439,233,629 | 28,648,630,533 | 29,917,401,383 | 31,396,447,685 | 32,691,755,844 | 34,139,165,472 | 34,822,778,620 |
| **10. Total pension liability – ending** | $22,220,097,547 | $23,238,395,386 | $27,439,233,629 | $28,648,630,533 | $29,917,401,383 | $31,396,447,685 | $32,691,755,844 | $34,139,165,472 | $34,822,778,620 | $36,221,617,253 |
| **B. Plan fiduciary net position** | | | | | | | | | | |
| 1. Contributions – employer | $653,127,697 | $717,792,981 | $756,558,222 | $781,244,218 | $847,595,466 | $922,635,334 | $1,098,589,013 | $1,281,558,696 | $1,242,139,095 | $1,274,221,056 |
| 2. Contributions – employer (picked-up employee contributions) | 204,821,010 | 221,909,859 | 235,079,968 | 249,211,751 | 257,294,033 | 270,764,670 | 284,142,994 | 299,473,128 | 292,422,087 | 309,509,309 |
| 2. Contributions – employee | 1,306,327 | 1,595,560 | 1,721,893 | 1,492,316 | 2,133,901 | 2,458,908 | 3,255,037 | 1,153,318 | 605,473 | 251,744 |
| 3. Net investment income | 2,175,479,960 | 556,436,475 | (169,368,110) | 1,934,512,507 | 1,225,572,599 | 932,696,412 | 358,282,664 | 4,662,225,761 | 164,559,035 | 826,902,875 |
| 4. Benefit payments | (1,122,445,642) | (1,170,744,770) | (1,232,589,353) | (1,306,788,954) | (1,395,881,342) | (1,469,634,809) | (1,545,589,761) | (1,651,431,372) | (1,738,751,492) | (1,795,410,787) |
| 5. Refunds | (8,475,969) | (10,507,888) | (12,927,672) | (16,340,290) | (20,846,500) | (16,502,635) | (22,443,593) | (23,618,435) | (24,454,256) | (26,353,782) |
| 6. Pension Plan Administrative Expense | (12,626,030) | (14,032,964) | (13,960,587) | (14,986,159) | (15,784,490) | (13,798,866) | (17,782,865) | (19,049,861) | (17,497,621) | (17,497,621) |
| 7. Other | - | - | - | - | - | - | - | - | - | - |
| **8. Net change in plan fiduciary net position** | $1,891,187,353 | $302,449,253 | ($435,485,639) | $1,628,345,389 | $900,083,667 | $628,619,014 | $158,453,489 | $4,550,311,235 | ($80,977,679) | $571,622,794 |
| **9. Fiduciary net position – beginning** | 12,311,827,950 | 14,203,015,303 | 14,505,464,556 | 14,069,978,917 | 15,698,324,306 | 16,598,407,973 | 17,227,026,987 | 17,385,480,476 | 21,935,791,711 | 21,935,791,711 |
| **10. Fiduciary net position – ending** | $14,203,015,303 | $14,505,464,556 | $14,069,978,917 | $15,698,324,306 | $16,598,407,973 | $17,227,026,987 | $17,385,480,476 | $21,935,791,711 | $21,854,814,032 | $22,507,414,505 |
| **C. Net pension liability ending (A10 - B10)** | $8,017,082,244 | $8,732,930,830 | $13,369,254,712 | $12,950,306,227 | $13,318,993,410 | $14,169,420,698 | $15,306,275,368 | $12,203,373,761 | $12,967,964,588 | $13,714,202,748 |
| **D. Fiduciary net position as a percentage of the total pension liability** | 63.92% | 62.42% | 51.28% | 54.80% | 55.48% | 54.87% | 53.18% | 64.25% | 62.76% | 62.76% |
| **E. Covered payroll** | $3,829,002,983 | $3,995,447,345 | $4,112,227,306 | $4,243,521,876 | $4,256,052,840 | $4,376,216,753 | $4,481,443,808 | $4,667,346,006 | $4,483,686,505 | $4,483,686,505 |
| **F. Net pension liability as a percentage of covered payroll** | 209.38% | 218.57% | 325.11% | 305.18% | 312.94% | 323.78% | 341.55% | 261.46% | 289.23% | 305.87% |

See accompanying notes to required supplementary information and independent auditors' report.

## Schedule of the Employers' Net Pension Liability

### June 30, 2014 to June 30, 2023

| 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 |
|---|---|---|---|---|---|---|
| 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% |
| 2017 | $28,648,630,533 | $15,698,324,306 | $12,950,306,227 | 54.80% | $4,243,521,876 | 305.18% |
| 2018 | $29,917,401,383 | $16,598,407,973 | $13,318,993,410 | 55.48% | $4,256,052,840 | 312.94% |
| 2019 | $31,396,447,685 | $17,227,026,987 | $14,169,420,698 | 54.87% | $4,376,216,753 | 323.78% |
| 2020 | $32,691,755,844 | $17,385,480,476 | $15,306,275,368 | 53.18% | $4,481,443,808 | 341.55% |
| 2021 | $34,139,165,472 | $21,935,791,711 | $12,203,373,761 | 64.25% | $4,667,346,006 | 261.46% |
| 2022 | $34,822,778,620 | $21,854,814,032 | $12,967,964,588 | 62.76% | $4,483,686,505 | 289.23% |
| 2023 | $36,224,617,253 | $22,425,384,975 | $13,799,232,278 | 61.91% | $4,674,478,467 | 295.20% |

See accompanying notes to required supplementary information and independent auditors' report.

Schedule of Investment Returns

Years Ended June 30, 2014 to 2023

| Fiscal Year | Annual Money-Weighted Rate of Return |
|---|---|
| 2014 | 17.9% |
| 2015 | 4.0% |
| 2016 | -1.2% |
| 2017 | 13.7% |
| 2018 | 7.8% |
| 2019 | 5.7% |
| 2020 | 2.1% |
| 2021 | 26.9% |
| 2022 | 0.8% |
| 2023 | 3.8% |

See accompanying notes to required supplementary information and independent auditors' report.

June 30, 2023

**Note A - Description**

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

**Note B – Significant Factors Affecting Trends in Actuarial Information**

***2022 Changes in Actuarial Assumptions***

The following changes were made to the actuarial assumptions as of June 30, 2021 to June 30, 2022:

- The administrative expenses assumption was increased from 0.35% to 0.40 %.

- The general wage inflation assumption represents the average increase in wages in the general economy and is used to index salaries for each cohort of new entrants in projections. The general productivity component of the general wage inflation assumption for General Employees and Teachers decreased from 1.00% to 0.50%, that now yields a nominal assumption of 3.00%. There was no change to the assumption for Police and Firefighters employees.

- The assumed salary increase schedules increased for all employees. These schedules include an ultimate component for general wage inflation that may add on additional increases for individual merit (which would include promotions) and then an additional component for step rates based on service. The schedules of assumed salary increase, that are the same, for General Employees and Teachers increased to 4.66%, from 4.41% for General Employees and from 4.37% for Teachers; while Police and Firefighters Employees schedules increased to 5.78% from 5.57%.

- Pre-retirement mortality rates increased for Police and Firefighters Employees.

- Retiree mortality is updated to the 2022 Public Retirees of Hawaii mortality tables. The rates are projected on a fully generational basis by the long-term rates of scale UMP from the year 2022 and with multiplier and setbacks based on plan and group experience.

    - While there no change to the assumption that mortality rates will continue to improve in the future using a fully generational approach, the improvement scale used to project future improvement is updated to the ultimate values of the most recently published Scale MP2021. Further adjustments are applied to this set of base tables based on occupation (General Employees, Teachers, and Public Safety).

## Note B – Significant Factors Affecting Trends in Actuarial Information (Continued)

### *2019 Changes in Actuarial Assumptions*

The following changes were made to the actuarial assumptions as of June 30, 2018 to June 30, 2019:

- The assumed salary increase schedules continues to include an ultimate component for general wage inflation that may add on additional increases for individual merit (which would include promotions) and then an additional component for step rates based on service. There were no changes for General Employees and Teachers. The overall impact increased for salary rate increase rates received for most Police and Firefighters over their career due to extending the 2-year step schedule to 25-years.

- Mortality rates generally decreased due to the continued improvements in using a fully generational approach and Scale BB (published by the Society of Actuaries), although mortality rates increased in certain age groups across all employment groups.

- The rates of disability of active employees increased for all General Employees and Teachers, and for Police and Firefighters from duty-related reasons.

- There were minor increases in the retirement rates for members in certain groups based on age, employment group and/or membership class.

### *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 and Firefighters. The service based component generally increased for most General Employees, decreased for most Teachers, and remain unchanged for most Police and Firefighters. The overall impact decreased assumed salary rate increase rates for all General Employees and Teachers, while remaining unchanged for almost all Police and Firefighters.

## Note B – Significant Factors Affecting Trends in Actuarial Information (Continued)

### *2016 Changes in Actuarial Assumptions (continued)*

- 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 Firefighters 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 and Firefighters 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 and Firefighters. 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.

**Note B – Significant Factors Affecting Trends in Actuarial Information (Continued)**

***2011 Changes in Plan Provisions Since 2010 (continued)***

- 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, 2023

| | 2023 | | | |
|---|---|---|---|---|
| | **Pension Accumulation Reserves** | **Annuity Savings Reserves** | **Expense Reserves** | **Total** |
| Additions | | | | |
| Appropriations and contributions: | | | | |
| Employers | $ 1,274,221,056 | $ - | $ - | $ 1,242,139,095 |
| Members | - | 309,761,053 | - | 309,761,053 |
| Net investment income | 826,902,875 | - | - | 826,902,875 |
| Total additions | 2,101,123,931 | 309,761,053 | - | 2,410,884,984 |
| Deductions | | | | |
| Benefit payments | 1,795,410,787 | - | - | 1,795,410,787 |
| Refunds of member contributions | - | 26,353,782 | - | 26,353,782 |
| Administrative expenses | - | - | 18,549,472 | 18,549,472 |
| Total deductions | 1,795,410,787 | 26,353,782 | 18,549,472 | 1,840,314,041 |
| Other changes in net position restricted for pension benefits: | | | | |
| Transfer due to retirement of members | 183,476,757 | (183,476,757) | - | - |
| Transfer of interest allocation | (122,663,484) | 122,663,484 | - | - |
| Transfer to pay administrative expenses | (20,102,490) | - | 20,102,490 | - |
| Return of unrequired funds due to savings in administrative expenses | 4,901,393 | - | (4,901,393) | - |
| | 45,612,176 | (60,813,273) | 15,201,097 | - |
| Net increase/(decrease) | 351,325,320 | 222,593,998 | (3,348,375) | 570,570,943 |
| Fiduciary net position restricted for pensions: | | | | |
| Beginning of year | 18,333,677,177 | 3,506,654,625 | 14,482,230 | 21,854,814,032 |
| End of year | $ 18,685,002,497 | $ 3,729,248,623 | $ 11,133,855 | $ 22,425,384,975 |

See accompanying independent auditor’s report.

## *Other Supplementary Information (continued)*

**Schedule 2**

### Schedule of Administrative Expenses
### Year ended June 30, 2023

| | | 2023 |
|---|---|---|
| Personnel services | | |
| Salaries and wages | $ | 7,866,623 |
| Fringe benefits | | 4,003,873 |
| Net change in unused vacation credits | | 51,252 |
| Total personnel services | | 11,921,748 |
| Professional services | | |
| Actuarial | | 133,900 |
| Auditing and tax consulting | | 595,907 |
| Disability hearing expenses | | 21,735 |
| Legal services | | 697,979 |
| Medical | | 390,289 |
| Other services | | 141,594 |
| Total professional services | | 1,981,404 |
| Communication | | |
| Postage | | 285,701 |
| Printing and binding | | 69,006 |
| Telephone | | 95,668 |
| Travel | | 93,841 |
| Total communication | | 544,216 |
| Rentals | | |
| Rental of equipment | | 85,125 |
| Rental of premises | | 25,093 |
| Total rentals | | 110,218 |
| Other | | |
| Equipment and cloud costs | | 471,133 |
| Repairs and maintenance | | 2,337,817 |
| Office and other administrative costs | | 209,178 |
| Total other | | 3,018,128 |
| Depreciation | | 973,758 |
| | $ | 18,549,472 |

See accompanying independent auditor's report.

## Other Supplementary Information (continued)

**Schedule 3**

### Schedule of Investment Expenses

### Year ended June 30, 2023

| | | 2023 |
|---|---|---|
| Real estate and alternative investment expenses | | |
| Operating expenses | $ | 5,634,706 |
| Total real estate and alternative investment expenses | | 5,634,706 |
| Investment expenses | | |
| Investment manager/advisor fees | | 104,893,751 |
| Bank custodian fees | | 312,169 |
| Other investment expenses | | 43,060,287 |
| Total investment expenses | | 148,266,207 |
| Securities lending expenses | | |
| Borrower rebates | | 24,008,189 |
| Management fees | | 511,518 |
| Total securities lending expenses | | 24,519,707 |
| | $ | 178,420,620 |

See accompanying independent auditor's report.

*Other Information*

**Schedule 4**

Social Security Contribution Fund

Statement of Changes in Assets and Liabilities

Year ended June 30, 2023

| | 2023 | | | |
|---|---|---|---|---|
| | **Beginning Balance** | **Additions** | **Deductions** | **Ending Balance** |
| **Assets:** | | | | |
| Receivable from employers | $ - | $ 261,221,640 | $ 261,221,640 | $ - |
| Total assets | $ - | $ 261,221,640 | $ 261,221,640 | $ - |
| **Liabilities:** | | | | |
| Due to employers | $ - | $ 261,221,640 | $ 261,221,640 | $ - |
| Total liabilities | $ - | $ 261,221,640 | $ 261,221,640 | $ - |

**Note A - Social Security Contribution Fund (Other Information)**

The Social Security Contribution Fund (Contribution Fund), reported in Other Information Schedule 4, 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. At June 30, 2023, the ERS held no amounts in the Contribution Fund as all employer contribution amounts from the State were paid directly to the IRS.

See accompanying independent auditor's report.

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Employees' Retirement System
of the State of Hawaii

# INVESTMENT SECTION

# Letter from Chief Investment Officer



**STATE OF HAWAII**
EMPLOYEES' RETIREMENT SYSTEM

October 25, 2024

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

Aloha Kākou,

It is my privilege to present to you the investment results and outlook for the fiscal year ended June 30, 2023. As the Chief Investment Officer of the ERS, I am pleased to report that despite significant global economic challenges, our risk-aware investment strategy continues to drive consistent results, ensuring the long-term sustainability of the ERS for our members, both current and future. In this letter, I will outline the key events that impacted the markets this year, our strategic response, and our long-term vision for the portfolio.

**Fiscal Year Market Challenges**

The fiscal year presented a range of significant challenges for institutional investors, and the ERS was no exception. Among the most prominent headwinds was persistently high global inflation. During the first two quarters of the fiscal year, we observed inflation levels that had not been seen since the early 1980s. Global supply chains continued to recover from the effects of the pandemic, but demand for goods and services far outpaced supply. This imbalance was exacerbated by geopolitical tensions and labor shortages, which together pushed the U.S. inflation rate to a high of 8% in October 2022. For perspective, the U.S. Federal Reserve targets an inflation rate of 2%, so the inflationary pressures we faced were well beyond expectations.

In response, the U.S. Federal Reserve took aggressive action to curb inflation, embarking on a series of interest rate hikes, raising the federal funds rate from near-zero to more than 5% over the course of the fiscal year. This marked the fastest tightening cycle in over four decades. Additionally, the Fed implemented a policy of quantitative tightening, reducing the size of its balance sheet by selling bonds and reducing bank reserves. These measures, while necessary to cool economic activity, created challenges for both consumers and investors. Higher interest rates raised borrowing costs for individuals and businesses alike, leading to slower economic growth and greater uncertainty in the financial markets.

One of the more dramatic events of the fiscal year was the collapse of Silicon Valley Bank (SVB) in the third quarter. This regional bank, heavily concentrated in the venture capital and technology sectors, was unable to meet the liquidity demands of its clients, resulting in a rapid and historic bank run. The ripple effects of SVB's collapse were felt throughout the financial system, as several other banks experienced similar liquidity challenges. While these disruptions did not have a direct impact on the ERS portfolio, they serve as a reminder of the importance of liquidity management and the need to carefully assess the risks posed by concentrated exposures.

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**Fiscal Year Market Review and Results**

Despite these challenges, global equity markets demonstrated remarkable resilience over the fiscal year. After a period of significant volatility—where we saw losses as high as 9.7% in September 2022 followed by gains of 7.6% two months later—global equity markets ended the year on a positive note. U.S. equities, in particular, were buoyed by strong earnings growth in large technology companies and investor confidence in the relative stability of the U.S. economy. Over the course of the fiscal year, the U.S. stock market delivered a 16% gain, reflecting the robust performance of key growth sectors.

Meanwhile, the bond market experienced a more challenging year. Rising interest rates weighed heavily on fixed-income securities, as bond prices move inversely to interest rates. The core bond market saw a slight decline of 0.9% for the fiscal year, a rare outcome for an asset class traditionally viewed as a safe haven during times of market volatility. This year marked an unprecedented time for bonds, with negative returns recorded in seven out of the twelve months, undermining their ability to act as a diversifier in a portfolio that also contains equities.

Commodities, which often serve as a hedge against inflation, had a mixed year. While safe-haven assets like gold and silver demonstrated stable performance, other commodities, particularly oil, experienced significant volatility. The overall commodity market closed the year with a 9.6% loss, highlighting the ongoing challenges of global supply chain disruptions and uneven demand recovery.

Despite the broader market turmoil, the ERS portfolio delivered steady and consistent results. Our total fund generated a 2.4% return for the fiscal year, ending with a net asset value of $22.4 billion. While this result may appear modest in comparison to the equity market's highs, it is important to remember that our investment strategy is designed to prioritize risk management and long-term growth over short-term gains. By maintaining a diversified asset allocation, we were able to navigate the highs and lows of the market, achieving a steady path toward our long-term goals.

**Investment Strategy and Long-Term Measurement**

Our investment strategy at ERS is rooted in a disciplined, risk-aware approach. We focus on generating returns that are consistent over time, rather than chasing short-term gains that may expose the fund to undue risk. Central to our philosophy is the importance of diversification. By allocating capital across a range of asset classes—equities, fixed income, real assets, private equity, and more—we aim to minimize the volatility of returns while maximizing risk-adjusted growth. This approach is particularly critical given the nature of the ERS fund, which must meet the retirement needs of a growing number of beneficiaries over an extended time horizon.

Our strategic asset allocation targets a 65% allocation to growth assets, including equities, credit, and real assets (public and private), and a 35% allocation to diversifying assets, including duration, systematic trend following, liquid diversifying and liquid defensive strategies. This allocation is designed to strike a balance between capturing growth opportunities and mitigating downside risks, particularly during periods of market instability. While the high returns of the equity markets in the past year may look attractive on their own, it is crucial to recognize the volatility that accompanied them. Our diversification strategy ensures that we are not overly reliant on any single asset class, allowing us to maintain steady progress even during times of market turbulence.

Despite this turbulence, the fund generated nearly half a billion in capital appreciation. When measuring success in implementation, the ERS continues to keep pace with long-term strategic goals. First, absolute returns did not meet the assumed rate of return (7%) for the 1-year period but continues to outpace this benchmark over all longer time horizons. Second, results relative to our market benchmark did not

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exceed expectations for the 1-year period, underperforming our benchmark by about 2.1%, driven by the defensive nature of our portfolio positioning. However, all long-term horizons continue to display results that exceed broad market benchmarks. And finally, when measuring results compared to national peers, risk-adjusted returns continue to rank in the top decile for all long-term time horizons.

**Future Focus and Initiatives**

As we move into the next fiscal year, our focus will remain on further strengthening our risk management processes and enhancing our operational capabilities. This includes continuing to build out our liquidity management program, improving our reporting and monitoring systems, and increasing transparency across all aspects of our investment operations. By maintaining a clear, risk-based approach, we ensure that the ERS remains well-positioned to weather market fluctuations, while steadily growing the assets needed to meet our multi-generational liabilities.

The most notable contributor to our current and future success is the cohesive and dedicated investment team that works daily to prudently implementing our strategies. At the heart of everything we do is a shared set of core values that guide our decision-making and execution. These values include a commitment to excellence, a focus on integrity, and a deep sense of responsibility to the ERS membership. Every member of our team understands that the work we do is about more than just financial performance—it's about securing the futures of thousands of employees who have dedicated their careers to public service.

As we strive to uphold these values, I also want to take this opportunity to acknowledge and thank our members for the trust they have placed in us. We understand that trust is not given lightly, and it is something we earn through diligent, transparent, and thoughtful management of the assets entrusted to us. The ERS's mission is to provide long-term financial security for every generation of public employees, and this mission is at the center of every decision we make. Our members can be assured that we remain fully committed to achieving sustainable growth and protecting the fund's long-term health, even in the face of market volatility.

Finally, I would like to extend a heartfelt thank you to the broader ERS community—our staff, Executive Director, Board of Trustees, consultants, and external partners. It is through the dedicated efforts of our partners that the ERS remains strong and well-positioned for the future. Our investment team is deeply grateful for the ongoing support, and we look forward to continuing to work together in the years ahead.

As we enter this new fiscal year, we do so with a sense of optimism and determination. While we recognize that challenges will continue to arise, we are confident in our ability to navigate them effectively. By staying true to our mission, adhering to our core values, and working collaboratively as a team, we are well-equipped to meet our long-term goals and continue delivering strong outcomes for our members.

Thank you once again for your trust, your dedication, and your commitment to public service. Together, we will continue to build a secure and prosperous future for the system and it's beneficiaries.

Mahalo Nui Loa,

Kristin Varela
Chief Investment Officer
Employees' Retirement System of the State of Hawaii

# Letter from Investment Consultant

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April 15, 2024

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, 2023, as requested by the Government Financial Officers' Association (GFOA).

**Hawaii ERS - Total Fund Performance**

The total assets of the Retirement System were approximately $22.4 billion as of June 30, 2022, an decrease of roughly $571.0 million for the fiscal year. The ERS Total Fund generated positive investment returns for the fiscal year though most segments of the portfolio, however, portions of the ERS portfolio experienced negative relative returns in comparison to their respective benchmarks.

The investment return for the Total Fund, expressed as a gross-of-fees time-weighted total rate of return, was +2.4% for the 2023 fiscal year compared to the benchmark's return of +4.5% and the Investment Metrics Public Defined Benefit (DB) Plans Greater than $1 billion database (which includes the previously utilized BNY Mellon Total Public Funds >$1B Database) peer median return of +7.9%.

For the three-year period ending June 30, 2023, the Total Fund returned +10.5% per annum versus the benchmark's return of +8.3% and the Investment Metrics Public DB Plans Greater than $1 billion database peer median return of +8.6%.

For the trailing five-year period ending June 30, 2023, the Total Fund returned +7.7% per annum versus the benchmark's return of +6.0% and the Investment Metrics Public DB Plans Greater than $1 billion database peer median return of +6.7%.

BOSTON CHICAGO LONDON MIAMI NEW YORK PORTLAND SAN DIEGO

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The Total Fund's returns over all examined periods were consistent with the global capital markets. In particular, the Total Fund's return for the fiscal year 2023 was primarily driven by the public equity markets within the Board Growth segment while private equity and defensive elements within the Diversifying Strategies segment detracted from absolute returns. The ERS has deliberately constructed a more risk-focused, diversified, and globally oriented portfolio compared to peers. Considering the market environment of recent years, the ERS's benchmark- and peer-relative performance is entirely in-line with expectations.

**Strategic Class Performance**

In 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. During the 2018 fiscal year, the ERS completed the remapping of all of the prior asset classes to various risk-based, functional strategic classes. There were slight revisions to the naming conventions of the classes and their components during the 2021 fiscal year as well. Based on these changes, the verbiage below highlights the performance of the ERS's risk-based strategic classes.

As calculated by BNY Mellon, the ERS's custodial bank, the Broad Growth strategic class produced a +3.6% return for the fiscal year versus the Broad Growth benchmark's return of +5.7%. At fiscal year-end, the Broad Growth class utilized three components: 1) Public Growth, 2) Private Growth, and 3) Real Assets. The Public Growth component generated a +10.6% return, the Private Growth component produced a (-3.8%) return, and the Real Assets component generated a (-1.1%) return for the fiscal year.

The Diversifying Strategies strategic class produced a (-0.6%) return for the fiscal year versus the Diversifying Strategies benchmark's return of +1.9%. At fiscal year-end, the Diversifying Strategies class contained three components: 1) Illiquid Diversifying, 2) Liquid Defensive, and 3) Liquid Diversifying. The Illiquid Diversifying component generated a (-1.8%) return, the Liquid Defensive component produced a (-5.5%) return, and the Liquid Diversifying component generated a +4.4% return for the fiscal year.

The major strategic classes above utilize a variety of underlying asset classes and strategies. The performance tables in the Investment Results section of this letter provide additional granularity with respect to the various strategic classes and their underlying components and sub-components.

Furthermore, the ERS's long-term strategic allocation that was adopted as a result of the 2019 Asset-Liability Study was largely completed by the end of the 2023 fiscal year. A subsequent 2022/2023 Asset-Liability Study was completed in June 2023 which resulted in a new long-term strategic allocation policy that took effect in January 2024.

*Letter from Investment Consultant (continued)*

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**Market Conditions**[1]

Global investors began fiscal year 2023 with positive performance across global markets, especially in the US. Investors' optimism at the time was driven by a decline in inflation measures, as the CPI ticked down from 9.1% to 8.5% and came in below expectations. This led to longer-dated yields falling as investors reconsidered economic growth prospects and the possibility that yields had reached their peak for this economic cycle. Shorter dated yields rose on near-term monetary policy actions and messaging that policy officials intended to remain aggressive in fighting inflation pressures.

It was also at the start of July 2022 when we first saw an inversion in the US yield curve. The yield spread between two-year and ten-year Treasuries finished July at (-0.23%). Inversions in the yield curve have historically signaled building recessionary pressures, although the intricacies of the most recent inflation/interest rate cycle have put this historical indicator in question, particularly as it relates to its timing.

The Federal Reserve raised interest rates by an additional 75 basis points in July 2022, and again by the same amount in September. The European Central Bank also notably started increasing rates, moving off 0%. They increased rates by 50 basis points in July 2022, followed by a surprise 75 basis point increase in September.

Federal Reserve messaging about policy going forward, combined with outsized interest rate hikes due to the slow rate of decline in inflation and a strong labor market, resulted in significant equity market declines in both August and September 2022. The September CPI release showed prices that increased 8.2% over the trailing twelve months, which was lower than the peak of 9.1% but still above the pace of market expectations at the time. The US bond market (Bloomberg Aggregate) declined in the first fiscal quarter (-4.8%) as did the US Equity Market (Russell 3000), which returned (-4.5%) fiscal year-to-date through September.

The second quarter of fiscal year 2023 started very strong for developed market equities on returned signs that inflation may be peaking, monetary policy tightening may relatedly slow, and hopes for a soft-landing of major economies. However, as the quarter progressed, results were mixed by month and region as the world received differing signals on inflation. Overall, US equities finished the second fiscal quarter of 2023 up (Russell 3000: +7.2%). Equities outside the US (MSCI ACWI ex. US: +14.3%) increased even more versus domestic stocks due in part to the weakening US dollar. The US bond market also finished the calendar quarter in positive territory (Bloomberg Aggregate: +1.9%).

Inflation, as measured by CPI, declined to 6.5% by December of 2022. While progress had been made since the 2022 peak of 9.1%, there was still much work to be done to bring the pace of price increases down to the Federal Reserve's preferred range. Except for Japan, inflation impacted the rest of the developed world as well. Inflation in the Eurozone came in at 9.2% in December, down from a peak of 10.6%. Similarly, inflation in the UK was at 9.2% in December 2022, down from a peak of 9.6%.

[1] Economic and market data sources in this section include OECD, Bloomberg, Bureau of Economic Analysis, Eurostat, and S&P Dow Jones Indices.

The US labor market remained extraordinarily strong throughout the first two quarters of fiscal year 2023, with the unemployment rate declining to 3.5% by December from a starting point of 3.6%. The labor force participation rate remained slightly above 62% as of December. This was an increase from the lows of the pandemic but still below the 63.4% level from before the pandemic. Average hourly earnings declined in December, finishing the calendar year at 4.8%. The strength of the labor market in the US contributed to the Federal Reserve's continued hawkish stance. In Europe and Japan, increases in unemployment were less during the pandemic compared to the US but also improved.

Economic growth in the US rebounded in the first half of fiscal year 2023. The GDP release for the first fiscal quarter of 2022 came in at an annualized rate of 3.2%, and the second quarter growth rate was 2.6%. Outside the US, Eurozone growth was positive but below levels in the US, coming in at 2.5% and 1.6%, respectively, over the same two quarters. UK growth was nearly flat at (-0.2%) and 0.0%, and Japan grew by (-0.3%) and 0.2%, respectively, over those same two quarters.

Financial markets were volatile in the third quarter of the fiscal year, driven by investors continuing to adjust their interest rate and inflation expectations and the failure of Silicon Valley Bank and a few other regional banks. Ultimately, however, the swift emergency actions taken by the Federal Reserve, the Treasury, and other government agencies helped alleviate some of the concerns connected to the banking sector. This, and a focus on slowing inflation and potentially peaking rates, led to most asset classes experiencing positive results for the quarter with riskier assets leading the way.

In the third fiscal quarter, the US equity market (Russell 3000) returned 7.2%, and international developed market equities (MSCI EAFE) returned 8.5%. Emerging market equities (MSCI Emerging Markets) were also positive for the quarter, returning 4.0%. Chinese equities (MSCI China) rose 4.7% but generally lagged developed markets as reopening optimism was balanced by increased tensions with the US.

Fixed income markets also posted gains for the quarter, but it was a volatile period for interest rates, particularly for shorter maturities. Overall, the change in monetary policy expectations and anecdotal reports of flight-to-quality flows during the height of the concerns surrounding the banking sector drove most interest rates lower. The broad US investment grade bond market (Bloomberg US Aggregate) and high yield bonds (Bloomberg High Yield) respectively rose 3.0% and 3.6% for the quarter. High yield bonds particularly benefited from the positive risk sentiment.

Financial markets were mixed in the final quarter of fiscal year 2023 as investors continued to contend with the track of inflation, the path of monetary policy, lingering fears from the regional banking crisis, and an uncertain economic outlook. Most equity markets posted positive returns for the quarter while fixed income markets fell slightly, as rates rose, reflecting expectations for the Federal Reserve to continue tightening policy rates.

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Of the major asset classes, the US equity market (Russell 3000) led the way, returning 8.4% for the quarter with most of the gains (+6.8%) coming just in the month of June 2023. Notably, relatively few stocks (mainly large technology companies) accounted for most of the gains in the third and fourth quarter of fiscal year 2023 driven by optimism over artificial intelligence ("AI") technology. Looking at the S&P 500, the index was up 16.9% in the final two quarters of fiscal 2023. Without the top performing 44 stocks, the index would have been negative over the same period.

Developed international equities (MSCI EAFE) returned 3.0% for the final quarter of fiscal year 2023 while emerging market equities (MSCI Emerging Markets) lagged, returning just 0.9%. Continued signaling from the central banks in Europe and the UK along with an overall stronger US dollar weighed on relative results in developed markets. Chinese equities weighed on overall results in emerging markets with the MSCI China index falling (-9.7%) for the quarter. Chinese equities suffered due to a lackluster economic reopening, weak economic data, and heightened tensions with the US.

The broad US investment grade bond market (Bloomberg US Aggregate) fell (-0.8%) as the Federal Reserve indicated additional rate hikes were needed to combat persistent inflation. High yield bonds (Bloomberg High Yield) benefited from the "risk-on" sentiment, returning 1.7% in the quarter ending June 30th. Commodities (Bloomberg Commodity Index) continued to soften on weakening global growth expectations and developments with China, declining (-2.6%) for the quarter.

Over the full fiscal year developed market equities posted strong returns with US stocks slightly outperforming developed markets outside the US. Emerging market equities significantly trailed develop market equities over the period. The Russell 3000 (US equities) returned 19.0% for the fiscal year, compared to the MSCI EAFE at 18.8% (developed market equities), and a return of 1.8% for the MSCI Emerging Markets index. The MSCI Emerging Markets index was greatly influenced by returns from China, as the MSCI China index declined by (-16.8%) over the 12 months ending on June 30th. Within fixed income, declining inflation, and a slightly longer relative duration for the index hurt TIPS' full year relative results. The Bloomberg TIPS index decreased (-1.4%) over the full year, while the Bloomberg Aggregate index declined by (-0.9%). Riskier bonds held up well in the fiscal year, as the Bloomberg High Yield index increased 9.1% over the period.

Remarkably, despite a fiscal year where a recession was forecasted by many economists, GDP growth and unemployment remained unexpectedly robust, and inflation continued to decline. GDP growth in the US was 3.2%, 2.6%, 2.0% and 2.4% for the first, second, third, and fourth quarter, respectively, for fiscal year 2023. Unemployment ticked up to 3.7% during the fiscal year but ultimately settled where it started at 3.6%. All of this occurred while the headline inflation number decreased from 9.1% in June 2022 to 3.0% in June 2023. Finally, the yield curve remained inverted for almost the entire fiscal year, eventually deepening the inversion as the year went on. The yield spread between two-year and ten-year Treasuries finished June 2023, at (-1.06%).

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Outside the US, unemployment and inflation painted a more mixed picture. The Eurozone ended fiscal year 2023 with unemployment numbers at 6.5%, down from 6.6% at the beginning of the fiscal year. Japan ended with an unemployment figure where it started at 2.6%. Inflation in the Eurozone ended the fiscal year at 6.1%, down from 8.6% a year earlier. Inflation increased in Japan for the first time in many years, ending at 3.2% versus 2.5% at the beginning of the fiscal year. China notably had inflation levels at the end of the fiscal year close to 0% given the weak economic reopening.

Sincerely,

Colin Bebee, CFA
Managing Principal

Mika Malone, CAIA
Managing Principal

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**Report on Investment Activity for the Employees' Retirement System of the State of Hawaii**
Prepared by Meketa Investment Group, Inc. June 2023
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 Plan. Although pure speculation is to be avoided, the Board recognizes that a return in-line with the actuarial rate 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 Plan.

*Strategic Allocation Policy*

A formal asset-liability 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 are pursued primarily by cash flow on a long-term basis and 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 an asset-liability study during fiscal year 2019 that was completed during fiscal year 2020. As a result of the 2019 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. In addition, the strategic class framework has experienced modest naming convention changes. The ERS's implementation of the 2019 long-term strategic allocation was largely completed by the end of the 2023 fiscal year.

During fiscal year 2023, the Board of Trustees initiated a new asset-liability study that was completed at the end of fiscal year 2023. The resulting new long-term strategic allocation policy came into effect in January 2024 during fiscal year 2024.

*Strategic Allocation Policy (as of 6/30/2023)*[1]

At the end of the fiscal year, the Plan was strategically invested in the following classes:

**Strategic Allocation**[2]
**(functional/risk-based classes)**

| | |
|---|---|
| Broad Growth | **65%** |
| Diversifying Strategies | **35%** |
| Opportunities | **0%** |
| Other | **0%** |
| Total | **100%** |

[1] The above strategic allocation is supported by a multitude of underlying sub-asset class (see supporting pages).

[2] Actual allocations varied.

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*Long-Term Strategic Allocation Policy*

As a result of the formal asset-liability study that began in fiscal year 2019 and was completed in fiscal year 2020, the Board adopted a new long-term strategic allocation policy. As part of this new long-term strategic policy, the portfolio transitioned to two major strategic classes (rather than four). Prevailing classes and sub-classes were remapped to the two major strategic classes where applicable. As expected, the implementation and allocations across the new long-term strategic allocation policy were largely completed by the end of the 2023 fiscal year.

*Expected Annualized Return and Risk*

The Board manages the expected return/risk posture of the Plan as part of the formal asset-liability studies that are completed every three-to-five years. Based on the 2019 Asset-Liability Study and updated capital markets assumptions (as of 6/30/23), the Total Fund was positioned to achieve a long-term return of approximately 7.7% with an annualized volatility of approximately 10.2% over a horizon of 10-20 years.

***Evolving Strategic Allocation Policy***

| Implementation Plan for Long-term Strategic Policy | | | | |
|---|---|---|---|---|
| | 6/30/2020 | 7/1/2020 | Long-Term 7/1/2021 | Long-Term 7/1/2022 |
| Broad Growth | 68% | 72% | 67.5% | 65% |
| Principal Protection | 8% | -- | -- | -- |
| Real Return | 8% | -- | -- | -- |
| Crisis Risk Offset | 16% | -- | -- | -- |
| Diversifying Strategies | -- | 28% | 32.5% | 35% |
| Total Portfolio | ***100%*** | ***100%*** | ***100%*** | ***100%*** |

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*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 to serve as a guide for the investment manager to understand the risk/reward posture of their portfolio. Private and/or specialized markets managers are measured against public market proxies, relevant peer groups, and/or specialized indices (when applicable).

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*

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

Subsequent to the end of the 2020 fiscal year, a major revision occurred to this document, and it has been reconstituted as an Investment Policy Statement ("IPS"). This modification occurred in order to update the document to align with industry best practices and to better reflect the current governance structure of the system's investment portfolio. A current version of the IPS is located on the ERS's website.

All rates of return are calculated using methodologies that are generally in-line with 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. The ERS's custodian bank is the primary entity responsible for performance reporting.

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## Investment Results as of June 30, 2023 (Risk-based Classes):

| | Performance - Year Ended June 30, (%) | | | | | Trailing | Trailing |
|---|---|---|---|---|---|---|---|
| | 2023 (%) | 2022 (%) | 2021 (%) | 2020 (%) | 2019 (%) | 3 Years (%) | 5 Years (%) |
| **Broad Growth** [1] | **3.6** | **0.9** | **34.8** | **(-0.4)** | **6.1** | **12.1** | **8.3** |
| *Broad Growth Benchmark*[2] | *5.7* | *(-3.3)* | *31.5* | *(1.8)* | *4. 8* | *10.4* | *6.7* |
| **Diversifying Strategies** [1] | **(0.6)** | **11.4** | **1.8** | **6.6** | **6.8** | **4.1** | **5.1** |
| *Diversifying Strategies Benchmark*[3] | *1.9* | *2.7* | *4.1* | *5.5* | *5.0* | *2.9* | *3.8* |
| **Other** [1] | **---** | **---** | **---** | **---** | **---** | **---** | **---** |
| **Total Fund** | **2.4** | **4.0** | **26.6** | **1.3** | **6.0** | **10.5** | **7.7** |
| *Total Fund Policy Benchmark*[4] | *4.5* | *(-1.3)* | *23.3* | *0.6* | *4.7* | *8.3* | *6.0* |
| *Median Fund*[1] | *7.9* | *(-7.5)* | *27.4* | *1.2* | *5.4* | *8.6* | *6.7* |

The following notes pertain to the table on this page.

[1] **Notes on Composites and Peer Universe**: Per BNY Mellon data, the **Broad Growth** composite was incepted 10/01/2014, and contains lagged and non-lagged components. The **Diversified Strategies** composite was incepted 04/01/2017. Performance prior to 07/01/2020 largely represents that of the **Crisis Risk Offset** composite. Class-specific performance is not provided or is not meaningful for **Other**, but their accounts roll-up to the **Total Fund** market value and performance. . Peer group median fund universe is the **Public Defined Benefit Plans with Greater than $1 Billion in AUM**, constructed using the data from Investment Metrics (IM) which include the aggregated data of its clients on the PARis reporting platform supplemented by plan sponsor peer group data from BNY Mellon as IM's data vendor .

[2] **Broad Growth Benchmark** is composed of 45% MSCI ACWI IMI Index, 45% Stabilized Growth Benchmark, and 10% Private Growth Benchmark from 07/01/2016 through 12/31/2017; 43% MSCI ACWI IMI Index, 43% Stabilized Growth Benchmark, and 14% Private Growth Benchmark from 01/01/2018 through 06/30/2020; 70% Public Growth Benchmark, 16% Private Growth Benchmark, and 14% Real Assets Benchmark from 07/01/2020 through 06/30/2021; 66% Public Growth Benchmark, 20% Private Growth Benchmark, and 14% Real Assets Benchmark from 07/01/2021 through 06/30/2022; 50% Public Growth Benchmark, 28% Private Growth Benchmark, and 22% Real Assets Benchmark from 07/01/2022 through 06/30/2023.
**Stabilized Growth Benchmark** is composed of 17% CBOE S&P 500 Buy Write Index, 17% CBOE S&P 500 Put Write Index, 17% MSCI ACWI Minimum Volatility Index, 15% NCREIF Blended Benchmark , 8.5% Bloomberg Global Credit Index (Hedged), 8.5% MSCI ACWI ex US Index, 8.5% 90-Day T-Bill Index, 5.7% Bloomberg Global High Yield Index (Hedged), and 2.8% S&P LSTA Leveraged Loan Index since 07/01/2016.
**NCREIF Blended Benchmark** is NCREIF Property Index (Quarter Lag) through 12/31/2017 and NCREIF ODCE Index (Quarter Lag) thereafter.
Both Stabilized Growth Benchmark and its component NCREIF Blended Benchmark were discontinued as part of the Broad Growth Benchmark after 06/30/2020.
Please refer to the following pages for Public Growth Benchmark, Private Growth Benchmark, and Real Assets Benchmark definitions.

[3] **Diversifying Strategies Benchmark is composed of 55.5% Liquid Defensive Benchmark and 44.5% Liquid Diversifying Benchmark from 04/01/2017 through 06/30/2020; 50% Liquid Defensive Benchmark, 40% Liquid Diversifying Benchmark, and 10% Illiquid Diversifying Benchmark from 07/01/2020 through 06/30/2022; 45% Liquid Defensive Benchmark, 40% Liquid Diversifying Benchmark, and 15% Illiquid Diversifying Benchmark from 07/01/2022 through 06/30/2023**.
Please refer to the following pages for Liquid Defensive Benchmark, Liquid Diversifying Benchmark, and Illiquid Diversifying Benchmark definitions.

[4] **Total Fund Policy Benchmark** is composed of 76% Broad Growth Benchmark, 10% Crisis Risk Offset Benchmark, 9% Principal Protection Benchmark, and 5% CPI +3% from 04/01/2017 through 12/31/2017; 72% Broad Growth Benchmark, 13% Crisis Risk Offset Benchmark, 8% Principal Protection Benchmark, and 7% CPI +3% from 01/01/2018 through 12/31/2018; 68% Broad Growth Benchmark, 16% Crisis Risk Offset Benchmark, 8% Principal Protection Benchmark, and 8% CPI +3% from 01/01/2019 through 6/30/2020; 72% Broad Growth Benchmark and 28% Diversifying Strategies Benchmark from 07/01/2020 through 06/30/2021; 67.5% Broad Growth Benchmark and 32.5% Diversifying Strategies Benchmark from 07/01/2021 through 06/30/2022; 65% Broad Growth Benchmark and 35% Diversifying Strategies Benchmark from 07/01/2022 through 06/30/2023.
**Principal Protection Benchmark** is composed of 100% Bloomberg Global Intermediate ex Credit (Hedged) through 12/31/2017; 55% Bloomberg US Intermediate ex Credit and 45% Bloomberg Global Intermediate ex Credit (Hedged) thereafter.
**Crisis Risk Offset Benchmark** is composed of 25% Bloomberg US Treasury Long Index, 45% MLM Global Index 15V, and 30% 90-Day T-Bill +5% through 03/31/2019; 25% Bloomberg US Treasury Long Index, 45% MLM Global Index 15V, and 30% 90-Day T-Bill +2.5% thereafter.
Both Principal Protection Benchmark and Crisis Risk Offset Benchmark were discontinued as part of the Total Fund Policy Benchmark after 06/30/2020.

## Report on Investment Activity by Investment Consultant (continued)

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**Investment Results as of June 30, 2023 (Risk-Based Classes – Sub-Components):**

| | Performance - Year Ended June 30, | | | | | Trailing | Trailing |
|---|---|---|---|---|---|---|---|
| | 2023 (%) | 2022 (%) | 2021 (%) | 2020 (%) | 2019 (%) | 3 Years (%) | 5 Years (%) |
| **Broad Growth**[1] | **3.6** | **0.9** | **34.8** | **(-0.4)** | **6.1** | **12.1** | **8.3** |
| *Broad Growth Benchmark*[2] | *5.7* | *(-3.3)* | *31.5* | *(-1.8)* | *4.8* | *10.4* | *6.7* |
| **Public Growth** | **10.6** | **(-13.3)** | **33.8** | **(-0.3)** | **4.6** | **8.7** | **6.0** |
| *Public Growth Benchmark*[3] | *13.7* | *(-11.6)* | *31.8* | *0.9* | *5.4* | *9.8* | *7.1* |
| **Traditional Equity** | **15.3** | **(-16.7)** | **42.9** | **1.8** | **4. 8** | **11.1** | **7.9** |
| *MSCI ACWI IMI Index* | *16.1* | *(-16.5)* | *40.9* | *1.2* | *4.6* | *11.0* | *7.6* |
| **Stabilized Equity** | **4.3** | **(-11.8)** | **23.8** | **(-2.3)** | **3.8** | **4.5** | **2.9** |
| *Stabilized Equity Benchmark*[4] | *7.6* | *(-6.0)* | *23.3* | *(-5.1)* | *5.5* | *7.6* | *4.5* |
| **Global Credit** | **1.9** | **0.8** | **22.0** | **(-1.1)** | **8.2** | **7.9** | **6.1** |
| *Global Credit Benchmark*[5] | *6.8* | *(-5.8)* | *13.8* | *2.1* | *8.3* | *4.8* | *4.9* |
| **Private Growth**[1] | **(-3.8)** | **29.7** | **55.5** | **(-0.6)** | **16.6** | **24.7** | **17.6** |
| *Private Growth Benchmark*[6] | *(-5.7)* | *8.3* | *59.6* | *(-10.7)* | *3.9* | *17.7* | *8.6* |
| **Real Assets**[1] | **(-1.1)** | **18.0** | **13.3** | **2.9** | **6.7** | **9.8** | **7.8** |
| *Real Assets Benchmark*[7] | *0.3* | *22.9* | *2.6* | --- | --- | *8.1* | --- |
| **Core Real Estate** | **(-4.2)** | **28.3** | **18.0** | **2.3** | **4.1** | **13.2** | **9.1** |
| *NCREIF ODCE (Qtr Lag)* | *(-3.9)* | *27.3* | *1.5* | *3.9* | *6.6* | *7.5* | *6.6* |
| **Non-Core Real Estate** | **(-4.5)** | **22.9** | **12.0** | **2.4** | **9.5** | **9.6** | **8.1** |
| *NCREIF ODCE +1% (Qtr Lag)* | *(-3.0)* | *28.6* | *2.5* | *5.0* | *7.6* | *8.5* | *7.6* |
| **Infrastructure** | **8.8** | **8.4** | **20.9** | **19.5** | **17.4** | **12.6** | **14.9** |
| *CPI + 4%* | *7.2* | *13.3* | *9.7* | *4.8* | *5.9* | *10.0* | *8.1* |
| **Agriculture**[1] | ***1.4*** | --- | --- | --- | --- | --- | --- |
| *NCREIF Farmland (Qtr Lag)* | *9.1* | --- | --- | --- | --- | --- | --- |
| **Timber** | **12.5** | **12.0** | **(-2.2)** | **(-0.7)** | **3.8** | **7.2** | **4.9** |
| *NCREIF Timberland (Qtr Lag)* | *11.3* | *11.8* | *1.5* | *1.3* | *2.4* | *8.1* | *5.5* |
| **Other Real Assets**[1] | --- | --- | --- | --- | --- | --- | --- |

The following notes pertain to the table on this page.

1 **Notes on Composites:** Per BNY Mellon data, the **Broad Growth** composite was incepted 10/01/2014, and contains lagged and non-lagged components. **Private Growth** and **Real Assets** composites contain lagged components. **Agriculture** composite was incepted 10/01/2021; **Other Real Assets** composite was incepted 04/01/2022. Changes to composite constructions between fiscal year reports may result in updates to historical data over time at the composite level.

2 Please refer to the preceding page for the **Broad Growth Benchmark** definition.

3 **Public Growth Benchmark** is composed of 82% MSCI ACWI IMI Index, 7.2% CBOE S&P 500 Buy Write Index, 5.4% Bloomberg Global Credit Index (Hedged), 3.6% Bloomberg Global High Yield Index (Hedged), and 1.8% S&P LSTA Leveraged Loans Index through 06/30/2020; 55.5% MSCI ACWI IMI Index, 20% Options-Based Equity Benchmark, 15.5% Global Credit Benchmark, and 9% MSCI ACWI Minimum Volatility Index from 07/01/2020 through 06/30/2021; 55.5% MSCI ACWI IMI Index, 16% Options- Based Equity Benchmark, 15.5% Global Credit Benchmark, 9% MSCI ACWI Minimum Volatility Index, and 4% ICE BofA All US Convertibles Index from 07/01/2021 through 06/30/2022; 66.5% MSCI ACWI IMI Index, 20% Global Credit Benchmark, 8% MSCI ACWI Minimum Volatility Index, and 5.5% ICE BofA All US Convertibles Index from 07/01/2022 through 06/30/2023.
**Options-Based Equity Benchmark** is composed of 33.3% CBOE S&P 500 Buy Write Index, 33.3% CBOE S&P 500 Buy Write Index, 16.7% MSCI ACWI ex US Index, and 16.7% 90-Day T-Bill Index from 10/31/2016 through 06/30/2020; 50% CBOE S&P 500 Put Write Index, 35% CBOE MSCI EAFE Put Write Index (PXEA), and 15% CBOE MSCI Emerging Markets Put Write Index (PXEF) thereafter.

4 **Stabilized Equity Benchmark** is composed of 66.7% Options-Based Equity Benchmark and 33.3% MSCI ACWI Minimum Volatility Index through 06/30/2020; 69% Options-Based Equity Benchmark and 31% MSCI ACWI Minimum Volatility Index from 07/01/2020 through 04/30/2021; 55% Options-Based Equity Benchmark, 31% MSCI ACWI Minimum Volatility Index, and 14% ICE BofA All US Convertibles Index thereafter.

5 **Global Cred Benchmark** is composed of 37.5% Bloomberg Global High Yield Index (Hedged) +1% (Month Lag), 37.5% S&P LSTA Leveraged Loan Index +1% (Month Lagged), 12.5% Bloomberg Global High Yield Index (Hedged), and 12.5% S&P LSTA Leveraged Loan Index from 07/01/2020 through 06/30/2021; 25% Bloomberg Global High Yield Index (Hedged), 25% S&P LSTA Lev Loan 100 Index, 12.5% Bloomberg Global High Yield Index (Hedged) +1% (Month Lag), 12.5% S&P LSTA Lev Loan 100 Index +1% (Month Lag), 12.5% Bloomberg Global High Yield Index (Hedged) +1% (Quarter Lag), and 12.5% S&P LSTA Lev Loan 100 Index +1% (Quarter Lag) thereafter.

6 **Private Growth Benchmark** is MSCI ACWI IMI Index (Quarter Lag) +2% since 10/01/2014.

7 **Real Assets Benchmark** began on 07/01/2020 as part of the long-term strategic allocation policy change. It is composed of 40% NCREIF ODCE Index (Quarter Lag), 35% NCREIF ODCE Index +1% (Quarter Lag), 12.5% NCREIF Timberland Index (Quarter Lag), 5% NCRIEF Farmland Index (Quarter Lag), and 7.5% CPI +4% from 07/01/2020 through 06/30/2021; 39% NCREIF ODCE Index (Quarter Lag), 31% NCREIF ODCE Index +1% (Quarter Lag), 12% NCREIF Timberland Index (Quarter Lag), 8% NCRIEF Farmland Index (Quarter Lag), and 10% CPI +4% from 07/01/2021 through 06/30/2022; 40% NCREIF ODCE Index (Quarter Lag), 30% NCREIF ODCE Index +1% (Quarter Lag), 10% NCREIF Timberland Index (Quarter Lag), 10% NCRIEF Farmland Index (Quarter Lag), and 10% CPI +4% from 07/01/2022 through 06/30/2023.

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**Investment Results as of June 30, 2023 (Risk-Based Classes – Sub-Components) [continued]:**

| | Performance - Year Ended June 30, | | | | | Trailing | Trailing |
|---|---|---|---|---|---|---|---|
| | 2023 (%) | 2022 (%) | 2021 (%) | 2020 (%) | 2019 (%) | 3 Years (%) | 5 Years (%) |
| **Diversifying Strategies[1]** | **(-0.6)** | **11.4** | **1.8** | **6.6** | **6.8** | **4.1** | **5.1** |
| *Diversifying Strategies Benchmark[2]* | *1.9* | *2.7* | *4.1* | *5.5* | *5.0* | *2.9* | *3.8* |
| **Illiquid Diversifying[1]** | **(-1.8)** | **2.1** | **4.9** | **---** | **---** | **1.7** | **---** |
| *Illiquid Diversifying Benchmark[3]* | *7.7* | *3.1* | *4.4* | --- | --- | *5.1* | --- |
| **Idiosyncratic Return Capture[1]** | **3.7** | **3.8** | **2.4** | **---** | **---** | **3.3** | **---** |
| *90 Day T-Bill +3.5%* | *7.2* | *3.7* | *3.6* | --- | --- | *4.8* | --- |
| **Insurance Linked[1]** | **(-8.4)** | **1.2** | **7.7** | **---** | **---** | **0.0** | **---** |
| *Swiss RE Global Catastrophe Bond Hedge* | *8.3* | *2.6* | *5.9* | --- | --- | *5.6* | --- |
| **Liquid Defensive[1]** | **(-5.5)** | **17.3** | **1.1** | **10.7** | **4.3** | **3.9** | **5.3** |
| *Liquid Defensive Benchmark[4]* | *(-3.7)* | *2.7* | *5.2* | *6.3* | *3.4* | *1.3* | *2.7* |
| **Defensive Return Capture[1]** | **(-7.3)** | **22.6** | **(-32.3)** | --- | --- | **(-8.4)** | --- |
| *90 Day T-Bill +2.5%* | *6.2* | *2.7* | *2.6* | --- | --- | *3.8* | --- |
| **Systematic Trend Following[1]** | **(-5.1)** | **38.2** | **20.9** | **1.7** | **0.2** | **16.6** | **10.1** |
| *MLM Global Index LT 15V* | *(-13.3)* | *23.6* | *22.9* | *(-6.0)* | *(-2.1)* | *9.6* | *3.9* |
| **Treasury Agency Duration Capture[1]** | **(-3.8)** | **(-10.1)** | **(-3.3)** | **25.1** | **11.9** | **(-5.8)** | **3.2** |
| *Treasury Agency Duration Benchmark[5]* | *(-3.9* | *(-13.1)* | *(-5.6)* | *25.4* | *12.3* | *(-7.6)* | *2.1* |
| **Liquid Diversifying[1]** | **4.4** | **6.7** | **4.1** | **4.1** | **(0.61)** | **5.1** | **3.8** |
| *Liquid Diversifying Benchmark[6]* | *6.2* | *2.7* | *2.6* | *4.2* | *6.8* | *3.8* | *4.5* |
| **Alternative Return Capture[1]** | **(-0.3)** | **16.8** | **4.2** | **(-0.6)** | **15.4** | **6.7** | **6.8** |
| *Liquid Diversifying Benchmark[6]* | *6.2* | *2.7* | *2.6* | *4.2* | *6.8* | *3.8* | *4.5* |
| **Relative Value Arbitrage[1]** | **8.1** | **(-1.9)** | **---** | **---** | **---** | **---** | **---** |
| *Liquid Diversifying Benchmark[6]* | *6.2* | *2.7* | --- | --- | --- | --- | --- |

The following notes pertain to the table on this page.

[1] **Notes on Composites:** Per BNY Mellon data, the **Diversifying Strategies, Liquid Defensive, Systematic Trend Following, Treasury Agency Duration Capture, Liquid Diversifying, and Alternative Return Capture** were incepted 04/01/2017. Performance of **Diversifying Strategies** prior to 07/01/2020 represents that of the **Crisis Risk Offset** composite. Performance of **Treasury Agency Duration Capture** prior to 07/01/2020 represents that of **Treasury Duration Capture** composite. **Illiquid Diversifying**, **Idiosyncratic Return Capture**, **Insurance Linked**, and **Defensive Return Capture** were incepted 07/01/2020. **Relative Value Arbitrage** was incepted 11/01/2020. Changes to composite constructions between fiscal year reports may result in updates to historical data over time at the composite level.

[2] **Diversifying Strategies Benchmark** is composed of 55.5% Liquid Defensive Benchmark and 44.5% Liquid Diversifying Benchmark from 04/01/2017 through 06/30/2020; 50% Liquid Defensive Benchmark, 40% Liquid Diversifying Benchmark, and 10% Illiquid Diversifying Benchmark from 07/01/2020 through 06/30/2022; 45% Liquid Defensive Benchmark, 40% Liquid Diversifying Benchmark, and 15% Illiquid Diversifying Benchmark from 07/01/2022 through 06//30/2023.

[3] **Illiquid Diversifying Benchmark** is composed of 65% 90-Day T-Bill +3.5% and 35% Swiss RE Global Catastrophe Bond Index (Hedged) from 07/01/2020 through 06/30/2021; 50% 90-Day T-Bill +3.5% and 50% Swiss RE Global Catastrophe Bond Index (Hedged) thereafter.

[4] **Liquid Defensive Benchmark** is composed of 64.3% MLM Global Index 15V and 35.7% Treasury Agency Duration Benchmark since inception through 03/31/2019; 58.33% MLM Global Index 15V and 41.67% Treasury Agency Duration Benchmark from 04/01/2019 through 06/30/2020; 40% MLM Global Index 15V, 30% Bloomberg US Treasury Long Index, and 30% Bloomberg US Intermediate Aggregate ex Credit Index from 07/01/2020 through 06/30/2021; 35% MLM Global Index 15V, 20% 90-Day T-Bill +2.5%, 15% Bloomberg US Treasury Long Index, 15% Bloomberg US Intermediate Aggregate ex Credit Index, and 15% Bloomberg US TIPS 5+ Year Index from 07/01/2020 through 06/30/2022; 40% MLM Global Index 15V, 40% 90-Day T-Bill +2.5%, 15% Bloomberg US Treasury Long Index, and 5% Bloomberg US Intermediate Aggregate ex Credit Index from 07/01/2022 through 06/30/2023.

[5] **Treasury Agency Duration Benchmark** is Bloomberg US Treasury Long Index prior to 06/30/2020; 50% Bloomberg US Treasury Long Index and 50% Bloomberg US Intermediate Aggregate ex Credit Index thereafter.

[6] **Liquid Diversifying Benchmark** is 90-Day T-Bill +2.5% since 07/01/2020.

Please refer to the preceding pages for the **Broad Growth Benchmark** definition.

*Investment Professionals*

## INVESTMENT MANAGERS

**BROAD GROWTH**

**PRIVATE GROWTH**
Builders VC
Hamilton Lane
Landmark
Stafford Partners

**PUBLIC GROWTH**
**– GLOBAL CREDIT**
Avenue Asia
Carval Credit
Fortress Lending
Jefferies Direct Lending
HPS Credit
Lafayette Square USA
Oak Hill Advisors
Pacific Investment Management Company
Silver Rock Credit

**PUBLIC GROWTH**
**– TRADITIONAL EQUITY**
Alliance Bernstein
Blackrock
Hillhouse
Legal and General Investment Management
Longview
Wasatch
Wellington

**PUBLIC GROWTH**
**- STABILIZED EQUITY**
Lord Abbett
Robeco

**REAL ASSETS**
**- AGRICULTURE**
Fiera Comox Global
PGIM Agricultural Investments
UBS Realty Investors

**REAL ASSETS**
**- OTHER REAL ASSETS**
Morgan Stanley

**REAL ASSETS**
**- CORE REAL ESTATE**
Heitman Capital Management
Invesco Realty Advisors
Prime Properties
RREEF AMERICA

**REAL ASSETS**
**- NON-CORE REAL ESTATE**
Angelo Gordon
Almanac
Blackrock
Blacksand Capital
Blackstone Realty
CB Richard Ellis
Cerebus
DRA
EJF
Fortress Japan
GLP Capital
Kayne Anderson
Kohlberg Kravis Roberts
LaSalle Investment Management
Lone Star
Mesa West Capital
Prudential
Starwood
Torchlight

**REAL ASSETS**
**- TIMBER**
Hancock Timber Resource Group

**REAL ASSETS**
**- INFASTRUCTURE**
I Squared
IFM Investors (US) Advisor
Kohlberg Kravis Roberts

*Continued on next page*

*Investment Professionals (continued)*

## INVESTMENT MANAGERS *(CONTINUED)*

### DIVERSIFYING STRATEGIES

**LIQUID DEFENSIVE**
**– DEFENSIVE RETURN CAPTURE**

AHL
Lombard Odier
P E Global
Saba
36 South Capital

**LIQUID DEFENSIVE**
**– SYSTEMATIC TREND FOLLOWING**

AlphaSimplex
Aspect Capital
Crabel Capital Management
Mount Lucas Management

**LIQUID DEFENSIVE**
**– TREASURY AGENCY DURATION CAPTURE**

Bank of Hawaii
First Hawaiian Bank
Sun Life Capital

**ILLIQUID DIVERSIFYING**
**– INSURANCE LINKED**

Nephila
Pillar ENSO

**LIQUID DIVERSIFYING**
**– ALTERNALATIVE RETURN CAPTURE**

Brevan Howard
Broad Reach
Credit Suisse
Graham Capital Management

**LIQUID DIVERSIFYING**
**– RELATIVE VALUE ARBITRAGE**

Aequim
Aristesia
Melquart
Monashee
Shaolin
UBS O'Connor
Weiss

**ILLIQUID DIVERSIFYING**
**– IDIOSYNCRATIC RETURN CAPTURE**

Blackstone
Cloverlay
Common Fund
MY Alpha Management
Parabellum Partners
Petershill

### OTHER ASSETS

Parametric

*Continued on next page*

# *Investment Professionals (continued)*

## OTHER SERVICE PROVIDERS

**INVESTMENT ADVISOR**
Meketa Investment Group
AON Hewitt
Hamilton Lane

**CUSTODIAL BANK**
Bank of New York Mellon

**PLATFORM SERVICE MANAGER (CRO)**
FRM Investment Management (USA) LLC

## List of Assets Directly Held (by fair value)*

as of June 30, 2023 (excludes investments in pooled vehicles, investment companies, limited partnerships, limited liability companies, 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 | 51,740,000 | U S TREASURY BOND | 1.125% | 5/15/2040 | AAA | $ 33,477,332 |
| 2 | 24,370,000 | U S TREASURY BOND | 4.000% | 11/15/2052 | AAA | 24,990,704 |
| 3 | 29,375,000 | U S TREASURY BOND | 2.250% | 8/15/2046 | AAA | 21,413,788 |
| 4 | 28,640,000 | U S TREASURY BOND | 2.000% | 11/15/2041 | AAA | 20,927,248 |
| 5 | 31,400,000 | U S TREASURY BOND | 1.125% | 8/15/2040 | AAA | 20,150,008 |
| 6 | 23,250,000 | U S TREASURY BOND | 2.875% | 5/15/2052 | AAA | 19,236,585 |
| 7 | 23,010,000 | U S TREASURY BOND | 2.500% | 2/15/2045 | AAA | 17,779,827 |
| 8 | 19,190,000 | U S TREASURY BOND | 3.000% | 2/15/2049 | AAA | 16,201,349 |
| 9 | 16,200,000 | U S TREASURY BOND | 3.875% | 8/15/2040 | AAA | 16,051,932 |
| 10 | 18,810,000 | U S TREASURY BOND | 3.000% | 8/15/2052 | AAA | 15,965,740 |
| **International Fixed Income** | | | | | | |
| | | NONE | | | | |
| **Domestic Equities** | | | | | | |
| 1 | 421,170 | MICROSOFT CORP | | | | $ 143,425,232 |
| 2 | 288,689 | VISA INC | | | | 68,557,863 |
| 3 | 478,429 | ALPHABET INC | | | | 57,875,556 |
| 4 | 318,452 | AMERICAN EXPRESS CO | | | | 55,474,338 |
| 5 | 97,567 | UNITEDHEALTH GROUP INC | | | | 46,894,603 |
| 6 | 379,445 | ORACLE CORP | | | | 45,188,105 |
| 7 | 499,956 | MEDTRONIC PLC | | | | 44,046,124 |
| 8 | 353,440 | ALPHABET INC | | | | 42,306,768 |
| 9 | 126,027 | HCA HEALTHCARE INC | | | | 38,246,674 |
| 10 | 13,591 | BOOKING HOLDINGS INC | | | | 36,700,185 |
| **International Equities** | | | | | | |
| 1 | 399,648 | SANOFI SA | | | | $ 42,816,768 |
| 2 | 1,454,479 | COMPASS GROUP PLC | | | | 40,718,324 |
| 3 | 683,630 | DIAGEO PLC | | | | 29,368,004 |
| 4 | 282,849 | HEINEKEN NV | | | | 29,062,842 |
| 5 | 215,358 | WOLTERS KLUWER NV | | | | 27,325,334 |
| 6 | 567,927 | ASAHI GROUP HOLDINGS LTD | | | | 21,902,134 |
| 7 | 2,321,870 | AU SMALL FINANCE BANK LTD | | | | 21,330,537 |
| 8 | 694,415 | SHELL PLC | | | | 20,680,633 |
| 9 | 544,455 | BAYCURRENT CONSULTING INC | | | | 20,220,945 |
| 10 | 300,825 | VOLTRONIC POWER TECHNOLOGY COR | | | | 18,979,952 |

# 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, 2023** | **Percentage** |
|---|---|---|---|
| Equity securities | | | |
| Common stock | $ | 4,113,999,427 | 18.73% |
| Equity funds | | 1,146,328,799 | 5.22% |
| Convertible and equities | | 28,610,711 | 0.13% |
| | | 5,288,938,937 | 24.08% |
| Fixed income securities | | | |
| US treasury / government / agencies | | 493,515,349 | 2.25% |
| US mortgage-backed | | 141,923,340 | 0.65% |
| US corporate | | 30,768,242 | 0.14% |
| Non-US corporate | | 252,801 | 0.00% |
| Fixed income funds | | 2,595,657,833 | 11.82% |
| Convertible and other fixed income | | 263,528,052 | 1.20% |
| | | 3,525,645,617 | 16.06% |
| Others | | | |
| Real estate investments | | 3,774,821,802 | 17.19% |
| Alternative investments | | 9,369,579,364 | 42.67% |
| | | 13,144,401,166 | 59.86% |
| Total, investments at fair value | $ | 21,958,985,720 | 100.00% |

## Investment Schedules (continued)

### Schedule of Investment Fees
*by Asset Class Allocation*

*(Dollar values expressed in thousands)*

| | Fair value as of June 30, 2023 | Total FY 2023 Investment Fees | Basis Points |
|---|---|---|---|
| Broad Growth | | | |
| Public Growth Equity | | | |
| Traditional Equity | $ 4,894,050 | $ 18,583 | 38 bp |
| Stabilized Equity | 569,860 | 2,195 | 39 |
| Global Credit | 1,840,961 | 11,827 | 64 |
| Private Growth | 4,143,331 | 2,071 | 5 |
| Real Assets | | | |
| Agriculture | 198,815 | 1,282 | 64 |
| Core Real Estate | 1,212,056 | (3,833) | (32) |
| Non-Core Real Estate | 998,000 | - | - |
| Infrastructure | 463,483 | - | - |
| Other Real Assets | 574,171 | 660 | 11 |
| Timber | 201,862 | 1,695 | 84 |
| | 15,096,589 | 34,480 | 23 |
| Diversifying Strategies | | | |
| Illiquid Diversifying | | | |
| Idiosyncratic Return | 672,986 | 10,526 | 156 |
| Insurance Linked | 401,873 | 1,315 | 33 |
| Liquid Defensive | | | |
| Defensive Return Capture | 954,369 | 10,535 | 110 |
| Systematic Trend Following | 1,081,499 | 5,294 | 49 |
| Treasury Agency Duration | 684,471 | 316 | 5 |
| Liquid Diversifying | | | |
| Alteranative Return | 1,101,071 | 12,320 | 112 |
| Relative Value Arbitrage | 1,802,938 | 28,346 | 157 |
| | 6,699,207 | 68,652 | 102 |
| Other | 435,421 | 218 | 5 |
| Subtotal on investments | 22,231,217 | 103,350 | 46 |
| Other Investment Services | | | |
| Custodian fees | - | 312 | n/a |
| Investment consultant fees | - | 1,544 | n/a |
| Total including consultant and custodian | $ 22,231,217 | $ 105,206 | 47 |

Investment Schedules (continued)

## Schedule of Broker Commissions

The following is a list of brokers who received commissions from equity trades for securities directly held during Fiscal Year 2023.

| Brokerage Firms | Shares Traded | Dollar Volume of Trades | Commission Dollar Amount | Commission Per Share |
|---|---|---|---|---|
| ABN AMRO CLEARING BANK N.V, AMSTERDAM | 66,843 | $ 1,830,293 | $ 544 | $ 0.008 |
| ALLEN & COMPANY LLC, JERSEY CITY | 89,912 | 10,574,757 | 2,697 | 0.030 |
| AMBIT CAPITAL PRIVATE LTD, MUMBAI | 178,603 | 7,444,545 | 11,181 | 0.063 |
| BAIRD, ROBERT W & CO INC, MILWAUKEE | 349,728 | 25,724,356 | 9,341 | 0.027 |
| BANCO BTG PACTUAL SA, RIO DE JANEIRO | 160,700 | 370,620 | 533 | 0.003 |
| BANCO ITAU, SAO PAULO | 158,100 | 476,244 | 516 | 0.003 |
| BANCO SANTANDER, NEW YORK | 44,580 | 142,708 | 271 | 0.006 |
| BANQUE PARIBAS, PARIS | 492,356 | 11,751,940 | 3,993 | 0.008 |
| BARCLAYS BANK IRELAND PLC, DUBLIN | 184,154 | 6,586,811 | 1,604 | 0.009 |
| BARCLAYS CAPITAL INC, WHIPPANY | 728,729 | 66,804,708 | 6,884 | 0.009 |
| BARCLAYS CAPITAL LE, NEW YORK | 727,145 | 78,125,595 | 20,207 | 0.028 |
| BARCLAYS CAPITAL, LONDON (BARCGB33) | 958,933 | 36,696,104 | 17,230 | 0.018 |
| BARRENJOEY MARKETS PTY LIMITED, SYDNEY | 550,063 | 4,065,173 | 5,699 | 0.010 |
| BERENBERG GOSSLER & CIE, HAMBURG | 1,137,414 | 21,266,011 | 7,163 | 0.006 |
| BERNSTEIN SANFORD C & CO, NEW YORK | 2,756,667 | 179,557,169 | 16,468 | 0.006 |
| BMO CAPITAL MARKETS CORP, NEW YORK | 584,546 | 29,071,703 | 19,790 | 0.034 |
| BNP PARIBAS PEREGRINE SEC LTD, HONG KONG | 1,867,043 | 2,457,650 | 1,671 | 0.001 |
| BNP PARIBAS PRIME BRKRGE INC,NEW YORK | 65,470 | 2,608,967 | 380 | 0.006 |
| BNP PARIBAS PRIME BROKERAGE, JERSEY CITY | 22,500 | 2,087,135 | 259 | 0.012 |
| BNP PARIBAS PRIME BROKERAGE,INC,NEW YORK | 662,466 | 63,404,059 | 4,183 | 0.006 |
| BNP PARIBAS SEC SRVS SA, SINGAPORE | 1,973,129 | 7,761,457 | 6,308 | 0.003 |
| BNP PARIBAS SEC SVCS, LONDON (PARBGB2L) | 793,149 | 2,403,634 | 1,633 | 0.002 |
| BNP PARIBAS SECS SERVS, SYDNEY | 684,461 | 2,767,155 | 1,132 | 0.002 |
| BNP PARIBAS SECURITIES SVCS, HONG KONG | 2,042,600 | 2,325,896 | 1,241 | 0.001 |
| BNY CONVERGEX EXECUTION SOL, NEW YORK | 574,692 | 15,193,603 | 3,687 | 0.006 |
| BNYMELLON/RE BARCLAYS BANK IRE, NEW YORK | 856,229 | 44,981,755 | 8,999 | 0.011 |
| BOFA SECURITIES EUROPE S.A., PARIS | 18,645,022 | 48,799,880 | 14,762 | 0.001 |
| BOFA SECURITIES, INC, NEW YORK | 4,175,981 | 43,592,522 | 30,712 | 0.007 |
| BRADESCO S.A. CTVM, SAO PAULO | 462,669 | 2,286,743 | 2,499 | 0.005 |
| BRASIL PLURAL CCTVM SA, SAO PAULO | 1,089,472 | 4,294,317 | 3,450 | 0.003 |
| BROADCORT CAPITAL CORP, NEW YORK | 73,842 | 2,398,381 | 1,477 | 0.020 |
| BTG PACTUAL CASA DE BOLSA, MEXICO CITY | 6,934 | 27,548 | 17 | 0.002 |
| BTIG LLC, NEW YORK | 608,868 | 37,325,752 | 22,016 | 0.036 |
| CACEIS BANK, PARIS | 58,271 | 1,343,596 | 202 | 0.003 |
| Amounts carried forward | 43,831,271 | 766,548,787 | 228,749 | |

## Schedule of Broker Commissions (continued)

| Brokerage Firms | Shares Traded | Dollar Volume of Trades | Commission Dollar Amount | Commission Per Share |
|---|---|---|---|---|
| Amounts brought forward | 43,831,271 | $ 766,548,787 | $ 228,749 | |
| CANTOR FITZGERALD & CO INC, NEW YORK | 307,631 | 11,339,268 | 7,443 | $ 0.024 |
| CANTOR FITZGERALD EUROPE, LONDON | 12,618 | 579,191 | 76 | 0.006 |
| CARNEGIE SECS LTD, HELSINKI (CASFFIH1) | 16,281 | 194,981 | 214 | 0.013 |
| CASTLEOAK SECURITIES LP, JERSEY CITY | 500 | 24,487 | 4 | 0.008 |
| CHINA INTL CAP CORP HK SECS, HONG KONG | 252,100 | 872,340 | 1,002 | 0.004 |
| CIBC MELLON GSS, TORONTO (COMO) | 10,677 | 552,295 | 80 | 0.007 |
| CIBC WORLD MKTS INC, TORONTO | 14,979 | 505,127 | 451 | 0.030 |
| CIBC WORLD MKTS INC, TORONTO (WGDB) | 46,443 | 2,030,490 | 252 | 0.005 |
| CITATION GROUP BCC CLRG, NEW YORK | 41,814 | 4,221,820 | 209 | 0.005 |
| CITIBANK, NY | 105,215 | 1,943 | 1 | 0.000 |
| CITIGROUP GBL MKTS AUSTRALIA PTY, SYDNEY | 902,612 | 2,036,605 | 1,971 | 0.002 |
| CITIGROUP GBL MKTS INC, NEW YORK | 8,834,252 | 25,674,356 | 13,952 | 0.002 |
| CITIGROUP GBL MKTS INC, TAIPEI | 3,122,000 | 5,368,605 | 2,153 | 0.001 |
| CITIGROUP GBL MKTS INDIA, MUMBAI | 126,123 | 1,472,816 | 1,324 | 0.010 |
| CITIGROUP GLOBAL MARKETS EURO, FRANKFURT | 1,329,133 | 20,944,812 | 3,848 | 0.003 |
| CITIGROUP GLOBAL MARKETS INC., NEW YORK | 399,005 | 3,235,768 | 1,922 | 0.005 |
| CITIGROUP GLOBAL MARKETS LTD, LONDON | 2,971,477 | 35,018,145 | 7,623 | 0.003 |
| CITIGROUP GLOBAL MARKETS, INC., NEW YORK | 855,195 | 96,848,877 | 10,202 | 0.012 |
| CLSA AUSTRALIA PTY LTD, SYDNEY | 557,124 | 7,267,445 | 1,512 | 0.003 |
| CLSA INDIA LTD, MUMBAI | 172,605 | 1,777,999 | 1,996 | 0.012 |
| CONVERGEX EXECUTION SOLUTION, NEW YORK | 158,187 | 33,026,276 | 1,195 | 0.008 |
| COWEN AND CO LLC, NEW YORK | 1,566,468 | 110,407,470 | 21,018 | 0.013 |
| COWEN AND COMPANY LLC, NEW YORK | 7,704 | 405,290 | 116 | 0.015 |
| COWEN AND COMPANY, LLC, JERSEY CITY | 89,770 | 16,228,161 | 680 | 0.008 |
| CREDIT LYONNAIS SEC, SEOUL | 39,111 | 1,746,865 | 497 | 0.013 |
| CREDIT LYONNAIS SECS (ASIA), HONG KONG | 5,970,301 | 5,493,595 | 7,301 | 0.001 |
| CREDIT LYONNAIS SECS ASIA LTD, TAIPEI | 60,000 | 667,776 | 188 | 0.003 |
| CREDIT LYONNAIS SECS, SINGAPORE | 731,165 | 15,381,317 | 3,790 | 0.005 |
| CREDIT SUISSE (DEUTSCHLAND), FRANKFURT | 102 | 37,234 | 7 | 0.069 |
| CREDIT SUISSE (EUROPE), SEOUL | 9,275 | 256,073 | 70 | 0.008 |
| CREDIT SUISSE (HK) LIMITED, HONG KONG | 299,000 | 2,977,112 | 895 | 0.003 |
| CREDIT SUISSE, LONDON (CSFPGB2L) | 1,419,184 | 33,869,618 | 9,837 | 0.007 |
| CREDIT SUISSE, NEW YORK (CSUS) | 5,812,331 | 85,967,366 | 16,421 | 0.003 |
| CREDIT SUISSE, SAO PAULO | 237,717 | 448,681 | 477 | 0.002 |
| CREDIT SUISSE, TAIPEI | 53,000 | 93,677 | 29 | 0.001 |
| D CARNEGIE AB, STOCKHOLM | 195,398 | 4,185,424 | 3,324 | 0.017 |
| DAIWA SEC SMBC SINGAPORE LTD, SINGAPORE | 1,237,121 | 8,786,514 | 8,510 | 0.007 |
| DAIWA SECS (HK) LTD, HONG KONG | 280,320 | 648,394 | 1,030 | 0.004 |
| DAIWA SECS AMER INC, NEW YORK | 713,557 | 15,063,021 | 17,499 | 0.025 |
| DAVIDSON(D A) & CO INC, NEW YORK | 42,448 | 314,811 | 849 | 0.020 |
| DEN DANSKE BANK, COPENHAGEN | 49 | 7,316 | 6 | 0.122 |
| DSP MERRILL LYNCH LTD, MUMBAI | 4,842,519 | 6,981,250 | 4,078 | 0.001 |
| Amounts carried forward | 87,673,782 | 1,329,509,398 | 382,801 | |

## 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 | 87,673,782 | $ 1,329,509,398 | $ 382,801 | |
| EXANE, PARIS (EXANFRPP) | 3,045,118 | 63,536,476 | 18,508 | $ 0.006 |
| GOLDMAN SACHS & CO, NY | 13,052,309 | 355,486,058 | 103,471 | 0.008 |
| GOLDMAN SACHS (ASIA) LLC, TAIPEI | 417,000 | 6,962,251 | 2,624 | 0.006 |
| GOLDMAN SACHS (INDIA), MUMBAI | 344,902 | 3,625,559 | 6,748 | 0.020 |
| GOLDMAN SACHS AUSTRALIA PTY LTD,MELBOURN | 162,430 | 3,263,759 | 3,870 | 0.024 |
| GOLDMAN SACHS BANK EUROPE SE, FRANKFURT | 8,024 | 646,630 | 66 | 0.008 |
| GOLDMAN SACHS DO BRASIL, SAO PAULO | 1,589,143 | 4,429,214 | 5,396 | 0.003 |
| GOLDMAN SACHS INTL, LONDON | 218,800 | 11,182,945 | 873 | 0.004 |
| GOLDMAN SACHS INTL, LONDON (GSILGB2X) | 3,300,135 | 41,318,169 | 20,342 | 0.006 |
| GOODMORNING SHINHAN SECS CO LTD, SEOUL | 39,646 | 1,077,346 | 551 | 0.014 |
| GUGGENHEIM CAPITAL MARKETS LLC, NEW YORK | 219,342 | 5,068,680 | 4,399 | 0.020 |
| GUZMAN & COMPANY, CORAL GABLES | 1,628 | 56,410 | 8 | 0.005 |
| HAITONG INTL SEC CO LTD, HONG KONG | 524,682 | 278,613 | 95 | 0.000 |
| HEIGHT SECURITIES LLC, JERSEY CITY | 9,132 | 1,377,947 | 183 | 0.020 |
| HONG KONG & SHANGHAI BKG CORP, HONG KONG | 77,348 | 272,101 | 55 | 0.001 |
| HSBC BANK PLC (MIDLAND BK)(JAC), LONDON | 12,084 | 309,979 | 62 | 0.005 |
| HSBC SECS INC, NEW YORK | 1,285,795 | 3,539,128 | 2,529 | 0.002 |
| HSBC SECURITIES (USA) INC, NEW YORK | 45,750 | 4,306,592 | 329 | 0.007 |
| HYUNDAI SECURITIES, SEOUL | 65,113 | 3,553,209 | 1,864 | 0.029 |
| ICBC FINCL SVCS, NEW YORK | 219,677 | 5,397,297 | 2,197 | 0.010 |
| ICICI BROKERAGE SERVICES LTD, MUMBAI | 4,699 | 277,648 | 415 | 0.088 |
| INSTINET AUSTRALIA CLEARING SERV, SYDNEY | 593,149 | 5,545,204 | 1,922 | 0.003 |
| INSTINET CLEARING SER INC, NEW YORK | 308,072 | 15,869,037 | 5,176 | 0.017 |
| INSTINET CORP, NEW YORK | 558,103 | 52,545,535 | 4,938 | 0.009 |
| INSTINET EUROPE LIMITED, LONDON | 3,077,194 | 47,680,021 | 17,477 | 0.006 |
| INSTINET PACIFIC LTD, HONG KONG | 7,528,813 | 7,294,291 | 4,390 | 0.001 |
| INSTINET, SINGAPORE | 94,600 | 537,556 | 188 | 0.002 |
| INVESTMENT TECHNOLOGY GROUP LTD,DUBLIN | 1,390,262 | 21,764,796 | 9,936 | 0.007 |
| ISI GROUP INC, NEW YORK | 475,583 | 29,137,357 | 11,848 | 0.025 |
| ITG AUSTRALIA LTD, MELBOURNE | 354,551 | 1,521,354 | 650 | 0.002 |
| ITG CANADA CORP, TORONTO | 11,257 | 483,479 | 75 | 0.007 |
| J P MORGAN SEC LTD/STOCK LENDING, LONDON | 88,970 | 2,965,437 | 670 | 0.008 |
| J P MORGAN SEC, SYDNEY | 338,067 | 4,030,773 | 3,578 | 0.011 |
| J P MORGAN SECS LTD, LONDON | 2,910,214 | 46,286,573 | 19,390 | 0.007 |
| J P MORGAN SECURITIES INC, BROOKLYN | 11,518 | 620,861 | 201 | 0.017 |
| J.P MORGAN SECURITIES INC, NEW YORK | 1,661,740 | 142,835,462 | 38,176 | 0.023 |
| J.P. MORGAN SECURITIES LLC, NEW YORK | 2,963,493 | 200,415,500 | 23,642 | 0.008 |
| J.P. MORGAN SECURITIES, HONG KONG | 16,531,718 | 29,524,081 | 8,737 | 0.001 |
| J.P.MORGAN AG, FRANKFURT | 6,022,232 | 83,792,867 | 15,244 | 0.003 |
| JANNEY MONTGOMERY SCOTT, PHILADELPHIA | 2,300 | 122,974 | 46 | 0.020 |
| JEFFERIES & CO INC, NEW YORK | 3,056,657 | 149,851,396 | 31,679 | 0.010 |
| JEFFERIES & CO LTD, LONDON | 1,486,931 | 35,370,828 | 10,745 | 0.007 |
| Amounts carried forward | 161,781,963 | 2,723,670,791 | 766,094 | |

## Schedule of Broker Commissions (continued)

| Brokerage Firms | Shares Traded | Dollar Volume of Trades | Commission Dollar Amount | Commission Per Share |
|---|---|---|---|---|
| Amounts brought forward | 161,781,963 | $ 2,723,670,791 | $ 766,094 | |
| JEFFERIES AUSTRALIA PTY LIMITED, SYDNEY | 235,795 | 713,546 | 607 | $ 0.003 |
| JEFFERIES GMBH, FRANKFURT | 16,464 | 1,604,762 | 1,046 | 0.064 |
| JEFFERIES HONG KONG LIMITED, HONG KONG | 450,100 | 1,664,377 | 1,130 | 0.003 |
| JEFFERIES INDIA PRIVATE LTD, MUMBAI | 54,497 | 504,993 | 700 | 0.013 |
| JM MORGAN STANLEY SECURITIES, MUMBAI | 2,804,139 | 9,860,347 | 6,867 | 0.002 |
| JMP SECURITIES, SAN FRANCISCO | 106,228 | 4,708,379 | 2,124 | 0.020 |
| JONESTRADING INST SVCS LLC, NEW YORK | 318,889 | 9,541,532 | 6,838 | 0.021 |
| JP MORGAN INDIA PRIVATE LTD, MUMBAI | 63,989 | 1,008,427 | 546 | 0.009 |
| JP MORGAN SECS (FAR EAST) LTD, SEOUL | 44,396 | 2,178,801 | 1,813 | 0.041 |
| JP MORGAN SECS (TAIWAN) LTD, TAIWAN | 133,000 | 1,446,575 | 416 | 0.003 |
| JP MORGAN SECS, SINGAPORE | 466,100 | 851,791 | 425 | 0.001 |
| JPMORGAN SECURITIES INC, NEW YORK | 615,202 | 12,666,199 | 4,999 | 0.008 |
| KEB SALOMON SMITH BARNEY SECS, SEOUL | 42,557 | 1,513,181 | 1,047 | 0.025 |
| KEEFE BRUYETTE + WOODS INC, NEW YORK | 49,678 | 4,215,487 | 1,447 | 0.029 |
| KEPLER EQUITIES, PARIS | 18,679 | 1,950,224 | 1,615 | 0.086 |
| KEYBANC CAPITAL MARKETS INC, NEW YORK | 233,832 | 12,991,519 | 7,358 | 0.031 |
| KNIGHT SECS, NEW JERSEY | 6,902 | 318,309 | 36 | 0.005 |
| KOTAK SECURITIES,MUMBAI | 4,792 | 87,249 | 152 | 0.032 |
| LARRAIN VIAL, SANTIAGO | 10,291,515 | 716,238 | 359 | 0.000 |
| LEERINK SWANN AND COMPANY, NEW YORK | 14,800 | 428,076 | 444 | 0.030 |
| LIQUIDNET ASIA LTD, HONG KONG | 44,000 | 437,112 | 171 | 0.004 |
| LIQUIDNET CANADA INC, TORONTO | 69,683 | 1,751,823 | 1,108 | 0.016 |
| LIQUIDNET EUROPE LIMITED, LONDON | 613,235 | 11,784,736 | 5,026 | 0.008 |
| LIQUIDNET INC, NEW YORK | 705,634 | 59,977,842 | 7,260 | 0.010 |
| LOOP CAPITAL MARKETS, JERSEY CITY | 13,806 | 1,304,938 | 101 | 0.007 |
| LUMINEX TRADING AND ANALYTICS, BOSTON | 379,260 | 58,829,811 | 1,919 | 0.005 |
| MACQUARIE BANK LIMITED, SYDNEY | 20,196 | 212,160 | 57 | 0.003 |
| MACQUARIE BANK LTD, HONG KONG | 627,636 | 23,761,185 | 28,705 | 0.046 |
| MACQUARIE SECS (INDIA) PVT LTD, MUMBAI | 19,104 | 225,632 | 258 | 0.014 |
| MACQUARIE SECS USA INC, NEW YORK | 16,500 | 849,622 | 588 | 0.036 |
| MACQUARIE SECURITIES LTD, SEOUL | 10,246 | 250,795 | 73 | 0.007 |
| MACQUARIE SECURITIES LTD, TAIPEI | 156,000 | 179,241 | 53 | 0.000 |
| MACQUARIES SECURITIES AUSTRALIA, SYDNEY | 3,160,440 | 4,359,067 | 3,337 | 0.001 |
| MAXIM GROUP, JERSEY CITY | 3,500 | 285,063 | 140 | 0.040 |
| MERRILL LYNCH & CO INC ATLAS GLOBAL, NY | 14,138 | 118,459 | 177 | 0.013 |
| MERRILL LYNCH BROADCOURT CAP, NEW YORK | 5,232 | 448,881 | 105 | 0.020 |
| MERRILL LYNCH CANADA (MLCT), TORONTO | 44,800 | 1,884,062 | 548 | 0.012 |
| MERRILL LYNCH GILTS LTD, LONDON | 1,467,740 | 13,381,316 | 3,514 | 0.002 |
| MERRILL LYNCH INTL LONDON EQUITIES | 5,628,858 | 83,592,432 | 35,916 | 0.006 |
| MERRILL LYNCH PIERCE FENNER SMITH INC NY | 6,208,758 | 411,713,803 | 77,914 | 0.013 |
| MERRILL LYNCH PROFESSIONAL CLRG, PURCHAS | 156,158 | 5,295,045 | 4,684 | 0.030 |
| MIRAE ASSET SEC USA, NEW YORK | 67,096 | 1,076,991 | 1,342 | 0.020 |
| Amounts carried forward | 197,185,537 | 3,474,360,819 | 979,059 | |

*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 | 197,185,537 | $ 3,474,360,819 | $ 979,059 | |
| MIRAE ASSET SECURITIES, SEOUL | 5,106 | 1,417,013 | 357 | $ 0.070 |
| MISCHLER FINANCIAL GROUP INC, NEW YORK | 3,200 | 203,479 | 26 | 0.008 |
| MITSUBISHI UFJ SECURITIES, NEW YORK | 2,000 | 72,636 | 44 | 0.022 |
| MIZUHO SECURITIES USA INC. NEW YORK | 195,100 | 2,888,691 | 2,829 | 0.015 |
| MIZUHO SECURITIES USA, INC., NEW YORK | 226,712 | 7,490,404 | 6,940 | 0.031 |
| MKM PARTNERS LLC, GREENWICH | 12,578 | 2,926,620 | 252 | 0.020 |
| MORGAN INTL/MSBAG, NEW YORK | 950,365 | 66,911,301 | 13,389 | 0.014 |
| MORGAN STANLEY & CO INTL LTD, SEOUL | 131,361 | 4,146,015 | 2,132 | 0.016 |
| MORGAN STANLEY & CO INTL LTD, TAPEI | 2,887,800 | 16,133,021 | 11,736 | 0.004 |
| MORGAN STANLEY & CO, LONDON (MSLNGB2X) | 1,626,422 | 38,051,160 | 9,510 | 0.006 |
| MORGAN STANLEY AND CO LLC, NEW YORK | 391,491 | 2,400,259 | 627 | 0.002 |
| MORGAN STANLEY AND CO., LLC, NEW YORK | 11,538,459 | 303,926,197 | 54,752 | 0.005 |
| MORGAN STANLEY ASIA LTD, HONG KONG | 48,360 | 150,431 | 75 | 0.002 |
| MORGAN STANLEY EUROPE SE, FRANKFURT | 20,213,754 | 72,442,028 | 14,748 | 0.001 |
| MOTILAL OSWAL, INDIA | 84,427 | 1,394,880 | 2,098 | 0.025 |
| NATIONAL FINL SVCS CORP, NEW YORK | 227,016 | 20,492,817 | 2,521 | 0.011 |
| NEEDHAM & CO, NEW YORK | 3,683 | 749,677 | 74 | 0.020 |
| NEEDHAM AND CO LLC, NEW YORK | 24,393 | 2,160,812 | 712 | 0.029 |
| NESBITT BURNS, TORONTO (NTDT) | 334,765 | 9,109,924 | 5,861 | 0.018 |
| NOMURA FINANCIAL & INVESTMENT, SEOUL | 707 | 34,010 | 11 | 0.016 |
| NOMURA FINL ADV & SEC PVT, MUMBIA | 3,712 | 43,838 | 39 | 0.011 |
| NOMURA SECS CO LTD, TAIPEI | 65,000 | 1,064,406 | 321 | 0.005 |
| NUVAMA WEALTH MANAGEMENT LTD, MUMBAI | 195,479 | 2,264,828 | 3,383 | 0.017 |
| OPPENHEIMER & CO INC, NEW YORK | 312,909 | 12,933,061 | 10,335 | 0.033 |
| OPTIVER VOF, AMSTERDAM | 3,714 | 572,824 | 573 | 0.154 |
| PAREL, PARIS | 37,022 | 27,115 | 22 | 0.001 |
| PAREL, PUTEAUX | 60,117 | 2,737,716 | 1,227 | 0.020 |
| PENSERRA SECURITIES, NEW YORK | 70,027 | 2,789,164 | 1,127 | 0.016 |
| PERSHING LLC, JERSEY CITY | 861,644 | 47,653,956 | 12,981 | 0.015 |
| PERSHING SECURITIES LTD, LONDON | 655,728 | 11,424,172 | 9,427 | 0.014 |
| PETERS & CO, CALGARY (PECC) | 174,938 | 2,625,740 | 3,954 | 0.023 |
| PIPER JAFFRAY & CO., JERSEY CITY | 116,415 | 7,576,883 | 3,074 | 0.026 |
| RAYMOND JAMES & ASSOC INC, ST PETERSBURG | 206,248 | 15,614,315 | 5,583 | 0.027 |
| RBC CAPITAL MARKETS GMBH, FRANKFURT | 6,068 | 719,460 | 18 | 0.003 |
| RBC CAPITAL MARKETS LLC, NEW YORK | 3,225,932 | 96,921,741 | 27,185 | 0.008 |
| RBC DOMINION SECS INC, TORONTO (DOMA) | 182,565 | 7,307,763 | 1,242 | 0.007 |
| REDBURN PARTNERS LLP, LONDON | 10,376 | 246,225 | 105 | 0.010 |
| ROTH CAPITAL PARTNERS LLC, NEW YORK | 44,515 | 864,985 | 890 | 0.020 |
| ROYAL BANK OF CANADA EUROPE LTD, LONDON | 468,256 | 6,605,967 | 1,323 | 0.003 |
| S G WARBURG, SEOUL | 116,647 | 3,137,064 | 2,295 | 0.020 |
| SAMSUNG SECS, SEOUL | 176,052 | 3,312,016 | 3,576 | 0.020 |
| SANFORD C BERNSTEIN & CO INC, LONDON | 240,918 | 9,554,057 | 2,366 | 0.010 |
| Amounts carried forward | 243,327,518 | 4,263,459,490 | 1,198,799 | |

## Schedule of Broker Commissions (continued)

| Brokerage Firms | Shares Traded | Dollar Volume of Trades | Commission Dollar Amount | Commission Per Share |
|---|---|---|---|---|
| Amounts brought forward | 243,327,518 | $ 4,263,459,490 | $ 1,198,799 | |
| SCOTIA CAPITAL (USA) INC, NEW YORK | 197,629 | 11,358,067 | 1,469 | $ 0.007 |
| SCOTIA CAPITAL MKTS, TORONTO | 71,165 | 2,480,346 | 1,779 | 0.025 |
| SG SECURITIES, HONG KONG | 612 | 58,376 | 12 | 0.020 |
| SKANDINAVISKA ENSKILDA BANKEN, STOCKHOLM | 408,413 | 9,511,176 | 8,793 | 0.022 |
| SMBC SECURITIES, INC NEW YORK | 87,700 | 1,473,638 | 1,134 | 0.013 |
| SOCIETE GENERALE, PARIS | 185,513 | 3,609,437 | 2,238 | 0.012 |
| STIFEL NICOLAUS | 130,373 | 10,061,068 | 4,088 | 0.031 |
| STUART FRANKEL & CO. INC, JERSEY CITY | 151,340 | 12,344,721 | 1,513 | 0.010 |
| SUNTRUST CAPITAL MARKETS INC, NEW YORK | 91,103 | 1,284,053 | 1,842 | 0.020 |
| TORONTO DOMINION SEC, TORONTO | 430,009 | 7,561,378 | 11,593 | 0.027 |
| UBS AG LONDON BRANCH, LONDON | 81,363 | 5,414,889 | 1,466 | 0.018 |
| UBS EQUITIES, LONDON | 2,570,366 | 56,215,369 | 18,245 | 0.007 |
| UBS EUROPE SE, FRANKFURT AM MAIN | 35,390,779 | 57,789,025 | 14,485 | 0.000 |
| UBS SECURITIES CANADA, TORONTO (BWIT) | 200,977 | 7,972,532 | 1,172 | 0.006 |
| UBS SECURITIES LLC, STAMFORD | 4,083,137 | 174,998,666 | 40,633 | 0.010 |
| UBS WARBURG ASIA LTD, HONG KONG | 10,957,524 | 18,736,179 | 12,866 | 0.001 |
| UBS WARBURG AUSTRALIA EQUITIES, SYDNEY | 20,134 | 308,649 | 77 | 0.004 |
| UBS WARBURG SEC,TAIWAN | 4,159,705 | 7,894,166 | 4,393 | 0.001 |
| UNION BANK OF SWITZERLAND, ZURICH | 2,825 | 292,541 | 156 | 0.055 |
| UOB KAY HIAN PRIVATE LTD, SINGAPORE | 14,530 | 125,080 | 187 | 0.013 |
| VIRTU AMERICAS LLC, NEW YORK | 626,443 | 67,231,651 | 3,853 | 0.006 |
| WARBURG DILLON READ SEC, MUMBAI | 1,387,650 | 10,577,561 | 7,565 | 0.005 |
| WELLS FARGO SECURITIES LLC, CHARLOTTE | 154,427 | 12,013,095 | 1,002 | 0.006 |
| WELLS FARGO SECURITIES, LLC, NEW YORK | 143,025 | 11,279,990 | 4,241 | 0.030 |
| WILLIAM BLAIR & CO, CHICAGO | 80,502 | 3,803,765 | 1,698 | 0.021 |
| WILLIAMS CAPITAL GROUP LP, JERSEY CITY | 13,939 | 1,095,847 | 133 | 0.010 |
| WINTERFLOOD SECS, LONDON | 329,620 | 866,890 | 603 | 0.002 |
| XP INVESTIMENTOS CCTVM SA,RIO DE JANEIRO | 232,416 | 587,059 | 778 | 0.003 |
| Total trades | 305,530,737 | $ 4,760,404,704 | $ 1,346,813 | $ 0.004 |

Employees' Retirement System

of the State of Hawaii

# ACTUARIAL SECTION

# GASB STATEMENT NO. 67 REPORT

P: 469.524.0000 | www.grsconsulting.com

April 30, 2024

The 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 and 68. 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 Nos. 67 and 68 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 ACFR.

- 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.
- Actuarial components of Governmental Accounting and Standards Board (GASB) 67 requirements.

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**Gabriel Roeder Smith & Company**

## *GASB STATEMENT NO. 67 REPORT (continued)*

Certain tables included in the Required Supplementary Information include a 10-year history of information as measured in conformity with the requirements of GASB No. 67, from fiscal year ending June 30, 2014.

This report complements the actuarial valuation report, issued on December 29, 2023, 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, 2023 (located later in this section of the ERS' ACFR) 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 GASB Statement No. 67 report and actuarial valuation report, as of June 30, 2023, are 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

Lewis Ward
Consultant

By

Joseph P. Newton, FSA, EA
Pension Market Leader & Actuary

**Gabriel Roeder Smith & Company**

## *GASB STATEMENT NO. 67 REPORT (continued)*

EXECUTIVE SUMMARY ***
as of June 30, 2023

| | **2023** | **2022** |
|---|---|---|
| Actuarial Valuation Date | June 30, 2023 | June 30, 2022 |
| Pension Plan's Fiscal Year Ending Date (Measurement Date & Reporting Date) | June 30, 2023 | June 30, 2022 |
| **Membership** | | |
| Number of | | |
| - Retirees and beneficiaries | 54,973 | 53,990 |
| - Inactive, nonretired members ** | 35,897 | 33,903 |
| - Active members | 64,243 | 64,234 |
| - Total | 155,113 | 152,127 |
| Reported Payroll for Fiscal Year | $4,674,478,467 | $4,483,686,505 |
| **Net Pension Liability** | | |
| Total Pension Liability | $36,224,617,253 | $34,822,778,620 |
| Plan Fiduciary Net Position | 22,425,384,975 | 21,854,814,032 |
| Net Pension Liability | $13,799,232,278 | $12,967,964,588 |
| Plan Fiduciary Net Position as a Percentage of Total Pension Liability | 61.91% | 62.76% |
| Net Pension Liability as a Percentage of Covered Payroll | 295.20% | 289.23% |
| **Development of the Single Discount Rate** | | |
| Single Discount Rate | 7.00% | 7.00% |
| Long-Term Expected Rate of Return | 7.00% | 7.00% |
| Long-Term Municipal Bond Rate* | 3.86% | 3.69% |
| Last year ending June 30 in the 2023 to 2122 projection period for which projected benefit payments are fully funded (and 2022 to 2121) | None | None |

*Source: Fixed-income municipal bonds with 20 years to maturity that include only federally tax-exempt municipal bonds as reported in Fidelity's Index's "20-year Municipal GO AA Index" as of June 30, 2023 and June 30, 2022. In describing this index, Fidelity notes that the municipal curves are constructed using option-adjusted analytics of a diverse population of over 10,000 tax exempt securities.

** Inactive, nonretired members for GASB 67 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, 2023 Actuarial Valuation Report information that follows this section beginning on page 127.

**Gabriel Roeder Smith & Company**

## *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 ACFR. 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.

**Gabriel Roeder Smith & Company**

GASB STATEMENT NO. 67 REPORT (continued)

**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, 2023 and a measurement date of June 30, 2023.

**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 3.86% (based on the daily rate closest to but not later than the measurement date of the Fidelity "20-Year Municipal GO AA Index"); and the resulting single discount rate is 7.00%.

## Letter from the Actuary

P: 469.524.0000 | www.grsconsulting.com

December 29, 2023

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, 2023**

We certify that the information contained in the 2023 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, 2023. 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 (ASOP) 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 and consultants. 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.

This report was prepared at the request of the Board and is intended for use by ERS and those designated or approved by the Board. This report may be provided to parties other than ERS only in its entirety and only with the permission of the Board. GRS is not responsible for unauthorized use of this report. (The entire GASB Statement No. 67 report and actuarial valuation report, as of June 30, 2022, are available on the ERS website at ers.ehawaii.gov.)

***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 Numbers 67 and 68 (GASB Nos. 67 and 68) will be provided in a separate report. (A summary of the GASB Statement No. 67 is presented immediately before this section.)

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

***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 costs of the ERS and to amortize the unfunded actuarial accrued liability (UAAL) over a reasonable amount of time, which will ensure benefit security and intergenerational equity. 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.

***Progress toward realization of financing objectives***

The actuarial accrued liability (AAL), the unfunded actuarial accrued liability (UAAL), and the determination of the resulting funding period illustrate the progress toward the realization of financing objectives. ERS had a liability experience loss which was caused by individual salary increases being more than expected by the assumptions. On the asset side, ERS experienced an actuarial loss as well. This result was due to shortfall in returns in 2023 which completely offset deferred investment gains from previous years. In addition to these changes, ERS currently experiences negative amortization (interest on the UAAL is greater than the contributions towards the elimination of the UAAL). As a result, the UAAL increased (in dollars) based on this actuarial valuation as of June 30, 2023 and ERS's underfunded status as measured by the UAAL is now $13.71 billion.

The 2017 Legislature passed legislation that made significant changes to the future employer contribution rates. The employer contribution rate for Police and Fire employees increased to 41% and the employer contribution rate for All Other Employees increased to 24%. The funding period assumes that these contribution rates will remain in effect throughout the funding period. Under current law, the contribution rates are expected to stay at these levels until ERS is fully funded. These increases have improved the outlook of ERS. As long as the contributions are made, ERS's funded status should improve and ERS should be able to absorb moderate adverse experience without a need to further increase the contribution rates.

The 2011 Legislature 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 would instead assume that all amortization payments in the future will be the same percentage of pay as in the current year.

We have determined that the funding period for paying off the UAAL of ERS (in aggregate) is 23 years. Normally, we would expect the funding period to decrease by one each year if all assumptions are exactly met. Since the prior year's funding period was 24 years, we are at the expected funding period from last year. Given that the System experienced actuarial losses on both its assets and its liabilities, this result may

Gabriel Roeder Smith & Company

## *Letter from the Actuary (continued)*

Board of Trustees
December 29, 2023
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be surprising. However, the UAAL was expected to increase slightly during this portion of the financing process and since the contributions to the System are a fixed percentage of payroll, an increase in the covered payroll that is larger than assumed implies a larger contribution stream in future years, which means larger payments towards the unfunded liabilities of ERS.
Hence, even though the total unfunded liabilities increased from last year, the end period (fiscal year) over which the unfunded liabilities are to be paid off did not change and the funding period decreased to 23 years. Because this period is less than 30 years, the minimum objectives set in State statute are currently being realized. In addition, when the current contribution rates were passed by the Legislature in 2017, it was expected that the funding period would be 23 years as of the 2023 valuation, thus ERS remains on track to achieve full funding in the same timeframe as originally set by the legislation.

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 62.2% compared with the 61.2% funded ratio in the previous valuation. The funded ratio improved due to the sizeable contributions towards the unfunded liabilities of the system as well as the contributions related to the excess pension costs.

Given the plan's current and future 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 value 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 UAAL will increase in nominal dollars until the net amount for amortization is large enough to cover the interest charges, or approximately 2025, and then begin to decrease,
5. The UAAL will be fully amortized after 23 years, and
6. In the absence of benefit improvements and in consistent financial markets, the funded ratio should increase steadily until it reaches 100%.

The current projections expect the UAAL to begin to decline in FY 2026 (three years from the valuation date) with the annual amount of decline accelerating year over year thereafter. We believe three years is a reasonable amount of time as defined under the ASOP No. 4 (especially given that the UAAL has decreased in two of the last three valuation reports). All other parameters and methods used in the valuation also meet the requirements of a Reasonable Actuarially Determined Contribution (RADC) under the ASOP.

Thus, the employer contribution rates of 41% of payroll for Police and Fire and 24% for All Other Employees meet the requirements of a RADC.

Gabriel Roeder Smith & Company

Board of Trustees
December 29, 2023
Page 4

However, it is important to again note that these statements are based on the actual experience meeting the current assumptions. Also, these statements depend upon the employers meeting the contribution requirements established by the 2017 Legislature. Future changes to the actuarial assumptions or future changes to reduce the contribution requirements could significantly change the outlook of ERS and the expectation on when ERS will reach a 100% funded level.

This valuation assumed the continuing ability of the plan sponsors to make the contributions necessary to fund this plan. A determination regarding whether or not the plan sponsor is actually able to do so is outside our scope of expertise and was not performed.

***Benefit provisions and Legislative changes***

This is the eleventh 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 ACFR for more details on the benefit provisions for members of the ERS.

***Assumptions and methods***

The actuarial assumptions used in this valuation were adopted by the Board in August of 2022 based on the recommendations provided by an Experience Study performed by GRS. There were no changes to the actuarial assumptions or methods since the prior valuation.

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

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.

This report was prepared using our proprietary valuation model and related software which in our professional judgment has the capability to provide results that are consistent with the purposes of the valuation and has no material limitations or known weaknesses. We performed tests to ensure that the model reasonably represents that which is intended to be modeled.

## Letter from the Actuary (continued)

Board of Trustees
December 29, 2023
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***Data***

Member data for retired, active, and inactive participants was supplied as of March 31, 2023, 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 (ACFR). Information with respect to years prior to 2000 was supplied by ERS.

Tables and schedules in the Actuarial Section of the ACFR 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

Lewis Ward

Joe Newton, FSA, EA
Pension Market Leader & Actuary

Lewis Ward
Consultant

Gabriel Roeder Smith & Company

## *Executive Summary*

The following table summarizes the key results of the June 30, 2023 actuarial valuation of the Employees' Retirement System of the State of Hawaii (ERS).

| Item | **2023** | **2022** |
|---|---|---|
| Membership | | |
| • Number of | | |
| - Active members | 64,243 | 64,234 |
| - Retirees and beneficiaries | 54,973 | 53,990 |
| - Inactive, vested | 8,997 | 9,031 |
| - Total | 128,213 | 127,255 |
| • Covered payroll for active members | $4,663 million | $4,537 million |
| • Actual benefit payments and refunds | $1,822 million | $1,763 million |
| Assets | | |
| • Actuarial (smoothed) value | $22,515 million | $21,318 million |
| • Market value | $22,425 million | $21,855 million |
| • Return on actuarial value | 6.9% | 8.4% |
| • Return on market value | 3.8% | 0.8% |
| • Employer contributions during fiscal year | $1,274 million | $1,242 million |
| • External cash flow % | (1.1%) | (1.1%) |
| Actuarial Information | | |
| • Total normal cost % (employee + employer) | 14.57% | 14.60% |
| • Unfunded actuarial accrued liability (UAAL) | $13,710 million | $13,505 million |
| • Funded ratio (based on smoothed assets) | 62.2% | 61.2% |
| • Funded ratio (based on market assets) | 61.9% | 62.8% |
| • Funding period (years) * | 23 | 24 |
| • Employer contribution rate % of projected payroll for FY beginning July 1 | | |
| Police and Firefighters | 41.00% | 41.00% |
| All Other Employees | 24.00% | 24.00% |

* 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.

# *Actuarial Certification Statement*

| | | Police and Firefighters June 30, 2023 | All Other Employees June 30, 2023 | All Employees June 30, 2023 |
|---|---|---|---|---|
| 1. Gross normal cost as a percentage of pay | | 27.21% | 12.94% | 14.60% |
| 2. Present value of future benefits | | | | |
| a. Active employees | $ | 4,196,690,846 | 16,524,202,275 | 20,720,893,121 |
| b. Inactive members | | 64,449,644 | 1,121,036,873 | 1,185,486,517 |
| c. Pensioners and beneficiaries | | 4,239,927,507 | 16,188,715,864 | 20,428,643,371 |
| d. Total | $ | 8,501,067,997 | 33,833,955,012 | 42,335,023,009 |
| 3. Present value of future employee and employer contributions | | | | |
| a. Present value of future normal costs | $ | 1,340,847,911 | 4,769,557,845 | 6,110,405,756 |
| b. Present value of future employee contributions | | 694,547,730 | 2,463,119,269 | 3,157,666,999 |
| c. Present value of future employer normal cost (Item 3a - Item 3b) | $ | 646,300,181 | 2,306,438,576 | 2,952,738,757 |
| 4. Actuarial accrued liability (Item 2d - Item 3a) | $ | 7,160,220,086 | 29,064,397,167 | 36,224,617,253 |
| 5. Actuarial value of assets | | | | |
| a. Annuity Savings Fund | $ | 1,524,966,323 | 2,204,282,300 | 3,729,248,623 |
| b. Pension Accumulation Fund | | 3,402,942,425 | 15,382,740,645 | 18,785,683,070 |
| c. Total | $ | 4,927,908,748 | 17,587,022,945 | 22,514,931,693 |
| 6. Unfunded actuarial accrued liability | $ | 2,232,311,338 | 11,477,374,222 | 13,709,685,560 |
| 7. Adequacy of contribution rates | | | | |
| a. Statutory Contribution Rate for Fiscal Year 2024 | | 41.00% | 24.00% | 25.89% |
| B. Funding period in years as of June 30, 2023 * | | 22 | 23 | 23 |

* 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. It also assumes the current employer contribution rates will remain in place until the System is fully funded.

Gabriel Roeder Smith & Company

## *Actuarial Certification Statement (continued)*

The actuarial valuation as of June 30, 2023 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 in August of 2022 based on the actuary's actuarial experience investigation report for the period ending June 30, 2021. 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
Pension Market Leader & Actuary

# Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions

The determination of the accrued liability and an actuarially determined contribution (or funding period) requires the use of assumptions regarding future economic and demographic experience. Risk measures, as illustrated in this report, are intended to aid in the understanding of the effects of future experience differing from the assumptions used in the course of the actuarial valuation. Risk measures may also help with illustrating the potential volatility in the accrued liability and an actuarially determined contribution (or funding period) that result from the differences between actual experience and the actuarial assumptions.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions due to changing conditions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period, or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. The scope of an actuarial valuation does not include an analysis of the potential range of such future measurements.

Examples of risk that may reasonably be anticipated to significantly affect the plan's future financial condition include:

1. Investment risk – actual investment returns may differ from the expected returns;

2. Contribution risk – actual contributions may differ from expected future contributions. For example, actual contributions may not be made in accordance with the plan's funding policy or material changes may occur in the anticipated number of covered employees, covered payroll, or other relevant contribution base;

3. Salary and Payroll risk – actual salaries and total payroll may differ from expected, resulting in actual future accrued liability and contributions differing from expected ;

4. Longevity risk – members may live longer or shorter than expected and receive pensions for a period of time other than assumed;

5. Other demographic risks – members may terminate, retire or become disabled at times or with benefits other than assumed resulting in actual future accrued liability and contributions differing from expected.

# *Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions (continued)*

The effects of certain trends in experience can generally be anticipated. For example if the investment return since the most recent actuarial valuation is less (or more) than the assumed rate, the cost of the plan can be expected to increase (or decrease). Likewise if longevity is improving (or worsening), increases (or decreases) in cost can be anticipated.

ERS SPECIFIC RELATIONSHIP TO CERTAIN RISKS

While ERS has various levels of exposure to all of the risks listed above, in our opinion the three that warrant the most observation for the ERS Board specifically are assumption change risk and affordability risk.

Assumption Change Risk is the potential for the environment to change such that future valuation assumptions are adjusted to be different than the current assumptions. For example, declines in interest rates or increases in earnings multiples over time may result in a change in the assumed rates of return used in the valuation. A healthier workforce may result in changes in employee behavior such that retirement rates are adjusted to reflect employees working longer. And the difference in changing an assumption versus the other experience related risks listed above is instead of the loss slowly building over time, there is the immediate recognition of the change. Over the past decade, the changing of assumptions has increased the liabilities of ERS more than any other source. While those changes were warranted and put ERS on a stronger path going forward, it did cause a setback in many of the actuarial measurements and at least gives the appearance of a weaker System. We do not currently anticipate any significant changes to assumptions in the future and will continue to communicate with the Board if any issues beginning to show.

Affordability Risk is the simple fact that the contributions into ERS are quite large and in order to achieve the benefit security desired by the Board and the beneficiaries of ERS, they must remain high for quite a number of years. State Law requires the actuarial contribution occur and there has been no requests or attempts to lower the amounts, but it will always be a risk a future decision maker does attempt to do so.

This is also risk in a continued contraction in the headcount of active members. As clearly seen in the 2022 valuation, the contributions into ERS are directly tied to the covered payroll of the active membership and the projection of that payroll is used in determining the funding period. If the headcount were to decline, it would be difficult for the amount of future revenue to meet the current expectations and thus it would likely take more than 23 years to fully amortize the UAAL.

PLAN MATURITY MEASURES

Risks facing a pension plan evolve over time. A young plan with virtually no investments and paying few benefits may experience little investment risk. An older plan with a large number of members in pay status and a significant trust may be much more exposed to investment risk. Several generally accepted plan maturity measures are described below and are followed by a table showing a 10-year history of the measurements for ERS.

# *Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions (continued)*

RATIO OF MARKET VALUE OF ASSETS TO PAYROLL

The relationship between assets and payroll is a useful indicator of the potential volatility of contributions. For example, if the market value of assets is 2.0 times the payroll, a return on assets 5% different than assumed would equal 10% of payroll. A higher/lower or increasing/decreasing level of this maturity measure generally indicates a higher/lower or increasing/decreasing volatility in plan sponsor contributions as a percentage of payroll.

RATIO OF ACTUARIAL ACCRUED LIABILITY TO PAYROLL

The relationship between actuarial accrued liability and payroll is a useful indicator of the potential volatility of contributions for a fully funded plan. A funding policy that targets a funded ratio of 100% is expected to result in the ratio of assets to payroll and the ratio of liability to payroll converging over time.

The ratio of liability to payroll may also be used as a measure of sensitivity of the liability itself. For example, if the actuarial accrued liability is 2.5 times the payroll (5 to 2 ratio), a change in liability 2% other than assumed would equal 5% of payroll. A higher/lower or increasing/decreasing level of this maturity measure generally indicates a higher/lower or increasing/decreasing volatility in liability (and also plan sponsor contributions) as a percentage of payroll.

RATIO OF ACTIVES TO RETIREES AND BENEFICIARIES

A young plan with many active members and few retirees will have a high ratio of active to retirees. A mature open plan may have close to the same number of actives to retirees resulting in a ratio near 1.0. A super-mature or closed plan may have significantly more retirees than actives resulting in a ratio below 1.0.

RATIO OF NET CASH FLOW TO MARKET VALUE OF ASSETS

A positive net cash flow means contributions exceed benefits and expenses. A negative cash flow means existing funds are being used to make payments. A certain amount of negative net cash flow is generally expected to occur when benefits are prefunded through a qualified trust. Large negative net cash flows as a percent of assets may indicate a super-mature plan or a need for additional contributions.

DURATION OF ACTUARIAL ACCRUED LIABILITY

The duration of the actuarial accrued liability may be used to approximate the sensitivity to a 1% change in the assumed rate of return. For example, duration of 10 indicates that the liability would increase approximately 10% if the assumed rate of return were lowered 1%.

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# *Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions (continued)*

ADDITIONAL RISK ASSESSMENT

Additional assessment may include scenario tests, sensitivity tests, stochastic modeling, stress tests, and a comparison of the present value of accrued benefits at low-risk discount rates with the actuarial accrued liability. While a robust measurement of additional risk assessment is outside the scope of the annual actuarial valuation, some scenario tests and sensitivity tests are included in the valuation summary PowerPoint presentation presented to the Board at the Board's January Board Meeting (is available on the ERS website at: https://ers.ehawaii.gov/resources/financials).

In addition, an annual stress test as prescribed by state law is conducted each year. Please see the stress test report dated December 18, 2023, which was conducted in conjunction with this valuation (is available on the ERS website at: https://ers.ehawaii.gov/resources/reports-to-legislature).

LOW-DEFAULT RISK OBLIGATION MEASURE

ASOP No. 4 was revised and reissued in December 2021 by the ASB. It includes a new calculation called a low-default-risk obligation measure (LDROM) to be prepared and issued annually for defined benefit pension plans. The transmittal memorandum for ASOP No. 4 includes the following explanation:

*"The ASB believes that the calculation and disclosure of this measure provides appropriate, useful information for the intended user regarding the funded status of a pension plan. The calculation and disclosure of this additional measure is not intended to suggest that this is the "right" liability measure for a pension plan. However, the ASB does believe that this additional disclosure provides a more complete assessment of a plan's funded status and provides additional information regarding the security of benefits that members have earned as of the measurement date."*

The LDROM estimates the amount of money the plan would need to invest in low risk securities to provide the benefits with greater certainty. The traditional model based on expected portfolio returns expects lower costs but with higher risk, which creates less certainty and a possibility of higher costs. The LDROM model creates higher expected costs but more predictability when compared to the traditional model. Thus, the difference between the two measures (Valuation and LDROM) is one illustration of the possible costs the sponsor could incur if there was a reduction in the investment risk in comparison to the current diversified portfolio. However, the downside risk would be limited in the scenarios where the current portfolio would fail to achieve returns in excess of the low-default-risk discount, in this case 4.90%.

The following information has been prepared in compliance with this new requirement. Unless otherwise noted, the measurement date, actuarial cost methods, and assumptions used are the same as for the funding valuation covered in this actuarial valuation report.

| | | |
|---|---|---|
| A. | LDROM measure of benefits earned as of the measurement date: | $47,397 million |
| B. | Valuation liability at 7% on measurement date: | 36,225 million |
| C. | Cost to mitigate investment risk in the System's portfolio: | $ 11,172 million |

# Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions (continued)

Disclosures: Discount rate used to calculate LDROM: 4.90% Intermediate FTSE Pension Discount Curve as of June 30, 2023. This measure may not be appropriate for assessing the need for or amount of future contributions as the current portfolio is expected to generate significantly more investment earnings than the low-default-risk portfolio. This measure is also not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligation as this measure includes projections of salary increases and the ability for current members to continue to accrue eligibility and vesting service.

| | 2023 | 2022 | 2021 | 2020 | 2019 | 2018 | 2017 | 2016 | 2015 | 2014 |
|---|---|---|---|---|---|---|---|---|---|---|
| Ratio of the market value of assets to payroll | 4.67 | 4.74 | 4.59 | 3.75 | 3.81 | 3.79 | 3.68 | 3.30 | 3.48 | 3.56 |
| Ratio of actuarial accrued liability to payroll | 7.54 | 7.55 | 7.14 | 7.06 | 6.95 | 6.82 | 6.72 | 6.44 | 5.57 | 5.57 |
| Ratio of actives to retirees and beneficiaries | 1.17 | 1.19 | 1.25 | 1.30 | 1.33 | 1.36 | 1.40 | 1.48 | 1.52 | 1.56 |
| Ratio of net cash flow to market value of assets | -1.1% | -1.1% | -0.5% | -1.1% | -1.8% | -2.0% | -2.0% | -1.9% | -1.8% | -2.0% |
| Duration of the actuarial accrued liability* | 14.77 | 14.88 | 14.95 | 15.03 | 15.11 | NA | NA | NA | NA | NA |

*Duration measure not available prior to 2019

*Summary of 2023 Actuarial Valuation*

## Exhibit 1
## Development of Employer Cost

| | | Police and Firefighters June 30, 2023 | All Other Employees June 30, 2023 | All Employees June 30, 2023 |
|---|---|---|---|---|
| 1. | Projected FY 2024 payroll for contribution purposes | $ 535,221,890 | $ 4,270,054,764 | $ 4,805,276,654 |
| 2. | Gross normal cost (Exhibit 3) | 27.21% | 12.94% | 14.57% |
| 3. | Employer normal cost rate (Exhibit 3) | 14.43% | 7.02% | 7.86% |
| 4. | Present value future benefits (Exhibit 2) | $ 8,501,067,997 | $ 33,833,955,012 | $ 42,335,023,009 |
| 5. | Present value future employer normal cost | $ 646,300,181 | $ 2,306,438,576 | $ 2,952,738,757 |
| 6. | Present value future employee contributions | $ 694,547,730 | $ 2,463,119,269 | $ 3,157,666,999 |
| 7. | Actuarial accrued liability (Item 4 - Item 5 - Item 6) | $ 7,160,220,086 | $ 29,064,397,167 | $ 36,224,617,253 |
| 8. | Actuarial value of assets | $ 4,927,908,748 | $ 17,587,022,945 | $ 22,514,931,693 |
| 9. | Unfunded actuarial accrued liability (UAAL) | | | |
| | (Item 7 - Item 8) | $ 2,232,311,338 | $ 11,477,374,222 | $ 13,709,685,560 |
| 10. | Funding period * | 22 | 23 | 23 |

| | | Police and Firefighters June 30, 2022 | All Other Employees June 30, 2022 | All Employees June 30, 2022 |
|---|---|---|---|---|
| 1. | Projected FY 2023 payroll for contribution purposes | $ 521,695,052 | $ 4,092,295,884 | $ 4,613,990,936 |
| 2. | Gross normal cost (Exhibit 3) | 27.31% | 12.96% | 14.60% |
| 3. | Employer normal cost rate (Exhibit 3) | 14.56% | 7.17% | 8.01% |
| 4. | Present value future benefits (Exhibit 2) | $ 8,181,257,954 | $ 32,634,402,467 | $ 40,815,660,421 |
| 5. | Present value future employer normal cost | $ 655,487,850 | $ 2,307,400,158 | $ 2,962,888,008 |
| 6. | Present value future employee contributions | $ 686,362,784 | $ 2,343,631,009 | $ 3,029,993,793 |
| 7. | Actuarial accrued liability (Item 4 - Item 5 - Item 6) | $ 6,839,407,320 | $ 27,983,371,300 | $ 34,822,778,620 |
| 8. | Actuarial value of assets | $ 4,612,721,060 | $ 16,705,114,593 | $ 21,317,835,653 |
| 9. | Unfunded actuarial accrued liability (UAAL) | | | |
| | (Item 7 - Item 8) | $ 2,226,686,260 | $ 11,771,976,606 | $ 13,998,662,866 |
| 10. | Funding period * | 23 | 24 | 24 |

*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.

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# Summary of 2023 Actuarial Valuation (continued)

## Exhibit 2
## Actuarial Present Value of Future Benefits

| | Police and Firefighters June 30, 2023 | All Other Employees June 30, 2023 | All Employees June 30, 2023 |
|---|---|---|---|
| 1. Active members | | | |
| a. Service retirement benefits | $ 4,058,457,708 | $ 15,330,680,665 | $ 19,389,138,373 |
| b. Termination benefits | 82,911,291 | 691,105,278 | 774,016,569 |
| c. Survivor benefits | 16,630,910 | 128,256,064 | 144,886,974 |
| d. Disability retirement benefits | 38,690,937 | 374,160,268 | 412,851,205 |
| e. Total | $ 4,196,690,846 | $ 16,524,202,275 | $ 20,720,893,121 |
| 2. Retired members | | | |
| a. Service retirement | $ 3,973,678,601 | $ 14,905,264,452 | $ 18,878,943,053 |
| b. Disability retirement | 40,607,581 | 322,047,806 | 362,655,387 |
| c. Beneficiaries | 225,641,325 | 960,403,606 | 1,186,044,931 |
| d. Total | $ 4,239,927,507 | $ 16,187,715,864 | $ 20,427,643,371 |
| 3. Inactive members | | | |
| a. Vested terminations | $ 55,695,619 | $ 912,548,153 | $ 968,243,772 |
| b. Nonvested terminations | 8,754,025 | 208,488,720 | 217,242,745 |
| c. Total | $ 64,449,644 | $ 1,121,036,873 | $ 1,185,486,517 |
| 4. Total actuarial present value of future benefits | $ 8,501,067,997 | $ 33,832,955,012 | $ 42,334,023,009 |

| | Police and Firefighters June 30, 2022 | All Other Employees June 30, 2022 | All Employees June 30, 2022 |
|---|---|---|---|
| 1. Active members | | | |
| a. Service retirement benefits | $ 3,936,986,502 | $ 14,869,296,751 | $ 18,806,283,253 |
| b. Termination benefits | 83,650,920 | 676,018,881 | 759,669,801 |
| c. Survivor benefits | 16,513,834 | 125,525,955 | 142,039,789 |
| d. Disability retirement benefits | 38,197,571 | 359,403,154 | 397,600,725 |
| e. Total | $ 4,075,348,827 | $ 16,030,244,741 | $ 20,105,593,568 |
| 2. Retired members | | | |
| a. Service retirement | $ 3,786,345,877 | $ 14,383,298,870 | $ 18,169,644,747 |
| b. Disability retirement | 40,176,603 | 310,853,955 | 351,030,558 |
| c. Beneficiaries | 212,510,419 | 900,592,640 | 1,113,103,059 |
| d. Total | $ 4,039,032,899 | $ 15,594,745,465 | $ 19,633,778,364 |
| 3. Inactive members | | | |
| a. Vested terminations | $ 59,848,063 | $ 862,323,648 | $ 922,171,711 |
| b. Nonvested terminations | 7,028,165 | 146,788,613 | 153,816,778 |
| c. Total | $ 66,876,228 | $ 1,009,112,261 | $ 1,075,988,489 |
| 4. Total actuarial present value of future benefits | $ 8,181,257,954 | $ 32,634,102,467 | $ 40,815,360,421 |

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*Summary of 2023 Actuarial Valuation (continued)*

## Exhibit 3
## Analysis of Normal Cost

| | Police and Firefighters June 30, 2023 | All Other Employees June 30, 2023 | All Employees June 30, 2023 |
|---|---|---|---|
| 1. Normal cost as a percent of pay | | | |
| a. Service retirement benefits | 24.43% | 9.90% | 11.55% |
| b. Deferred termination benefits | 0.88% | 0.61% | 0.65% |
| c. Refunds | 0.84% | 1.38% | 1.32% |
| d. Disability retirement benefits | 0.48% | 0.53% | 0.52% |
| e. Survivor benefits | 0.18% | 0.12% | 0.13% |
| f. Administrative expenses | 0.40% | 0.40% | 0.40% |
| g. Total | 27.21% | 12.94% | 14.57% |
| 2. Employee contribution rate | 12.78% | 5.92% | 6.71% |
| 3. Effective employer normal cost rate (Item 1g – Item 2) | 14.43% | 7.02% | 7.86% |

| | Police and Firefighters June 30, 2022 | All Other Employees June 30, 2022 | All Employees June 30, 2022 |
|---|---|---|---|
| 1. Normal cost as a percent of pay | | | |
| a. Service retirement benefits | 24.53% | 9.92% | 11.59% |
| b. Deferred termination benefits | 0.88% | 0.63% | 0.66% |
| c. Refunds | 0.84% | 1.36% | 1.30% |
| d. Disability retirement benefits | 0.48% | 0.52% | 0.52% |
| e. Survivor benefits | 0.18% | 0.13% | 0.13% |
| f. Administrative expenses | 0.40% | 0.40% | 0.40% |
| g. Total | 27.31% | 12.96% | 14.60% |
| 2. Employee contribution rate | 12.75% | 5.79% | 6.59% |
| 3. Effective employer normal cost rate (Item 1g – Item 2) | 14.56% | 7.17% | 8.01% |

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*Summary of 2023 Actuarial Valuation (continued)*

## Exhibit 4
## Development of Actuarial Value of Assets

| | | |
|---|---|---|
| 1. Actuarial value of assets, beginning of year | $ | 21,317,835,653 |
| 2. Net new investments | | |
| a. Contributions | $ | 1,583,982,109 |
| b. Benefits paid and Refunds | $ | (1,821,764,569) |
| c. Administrative expenses | $ | (18,549,472) |
| d. Subtotal | $ | (256,331,932) |
| 3. Market value of assets at end of year | $ | 22,425,384,975 |
| 4. Expected return on actuarial value of assets | $ | 1,483,276,878 |
| 5. Expected actuarial value of assets, end of year | $ | 22,544,780,599 |
| 6. Excess/(shortfall) return (Item 3-Item 5) | $ | (119,395,624) |

7. Development of amounts to be recognized as of June 30, 2023:

| 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) |
| 2020 | - | - | - | 1 | - | - |
| 2021 | 536,978,379 | (536,978,379) | - | 2 | - | - |
| 2022 | - | - | - | 3 | - | - |
| 2023 | (656,374,003) | 536,978,379 | | 4 | (29,948,906) | (89,546,718) |
| Total | $ (119,395,624) | $ - | $ - | | $ (29,948,906) | $ (89,546,718) |

| | | |
|---|---|---|
| 8. Actuarial value of assets as of June 30, 2023 (Item 3 - Item 7) | $ | 22,514,931,693 |
| 9. Ratio of actuarial value to market value | | 100.4% |
| 10. Asset gain/(loss) for year (Item 8 - Item 5) | $ | (29,848,906) |

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## Summary of 2023 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, 2022 | $ 2,226,686,260 | $ 11,278,256,707 | $ 13,504,942,967 |
| 2. Normal cost for the year (employer and employee) | $ 144,238,270 | $ 539,573,427 | $ 683,811,697 |
| 3. Less: contributions and assessments for the year | $ (319,544,526) | $ (1,264,437,583) | $ (1,583,982,109) |
| 4. Interest at 7.00% | | | |
| a. On UAAL | $ 155,868,038 | $ 789,477,969 | $ 945,346,007 |
| b. On normal cost | 5,048,339 | 18,885,070 | 23,933,409 |
| c. On contributions | (11,184,058) | (44,255,315) | (55,439,373) |
| d. Total | $ 149,732,319 | $ 764,107,724 | $ 913,840,043 |
| 5. Expected UAAL as of June 30, 2022 (Sum of Items 1– 4) | $ 2,201,112,323 | $ 11,317,500,275 | $ 13,518,612,598 |
| 6. Actual UAAL as of June 30, 2022 | $ 2,232,311,338 | $ 11,477,374,222 | $ 13,709,685,560 |
| 7. Total gain (loss) for the year (Item 5 – Item 6) | $ (31,199,015) | $ (159,873,947) | $ (191,072,962) |
| B. Source of gains and losses | | | |
| 8. Asset gain (loss) for the year (Exhibit 6) | $ (6,533,117) | $ (23,315,789) | $ (29,848,906) |
| 9. Gain (loss) due to change in payment timing | - | - | - |
| 10. Other liability gain (loss) | $ (24,665,898) | $ (136,558,158) | $ (161,224,056) |
| 11. Change in benefit provisions | - | - | - |
| 12. Total gain (loss) for the year | $ (31,199,015) | $ (159,873,947) | $ (191,072,962) |

*Summary of 2023 Actuarial Valuation (continued)*

## Exhibit 6
## Investment Experience Gain or Loss

| Item | June 30, 2023 | June 30, 2022 |
|---|---|---|
| 1. Actuarial assets, beginning of year | $ 21,317,835,653 | $ 19,909,791,554 |
| 2. Total contributions during year | $ 1,583,982,109 | $ 1,535,166,655 |
| 3. Benefits and refunds paid | $ (1,821,764,569) | $ (1,763,205,748) |
| 4. Administrative expenses paid | $ (18,549,472) | $ (17,497,621) |
| 5. Assumed net investment income at 7.00% | | |
| a. Beginning of year assets | $ 1,492,248,496 | $ 1,393,685,409 |
| b. Contributions | $ 55,439,374 | $ 53,730,833 |
| c. Benefits and refunds paid | $ (63,761,760) | $ (61,712,201) |
| d. Benefits and refunds paid | $ (649,232) | $ (612,417) |
| e. Total | $ 1,483,276,878 | $ 1,385,091,624 |
| 6. Expected actuarial assets, end of year (Sum of Items 1 through 5) | $ 22,544,780,599 | $ 21,049,346,464 |
| 7. Actual actuarial assets, end of year | $ 22,514,931,693 | $ 21,317,835,653 |
| 8. Asset gain (loss) for year (Item 7– Item 6) | $ (29,848,906) | $ 268,489,189 |
| 9. Asset gain (loss) as a percent of actuarial value of assets, end of year (Item 8 / Item 7) | (0.13%) | 1.26% |

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*Summary of 2023 Actuarial Valuation (continued)*

## Exhibit 7
## Projection Results Based on June 30, 2023 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) |
| 2023 | 25.89% | 4,805 | 1,244 | 36,225 | 22,515 | $ 13,710 | 62.2% |
| 2024 | 25.89% | 4,924 | 1,275 | 37,481 | 23,710 | $ 13,771 | 63.3% |
| 2025 | 25.88% | 5,061 | 1,330 | 38,729 | 24,926 | $ 13,803 | 64.4% |
| 2026 | 25.87% | 5,202 | 1,346 | 39,973 | 26,171 | $ 13,802 | 65.5% |
| 2027 | 25.86% | 5,349 | 1,383 | 41,212 | 27,448 | $ 13,764 | 66.6% |
| 2028 | 25.86% | 5,501 | 1,422 | 42,448 | 28,762 | $ 13,686 | 67.8% |
| 2029 | 25.85% | 5,657 | 1,462 | 43,682 | 30,116 | $ 13,566 | 68.9% |
| 2030 | 25.84% | 5,819 | 1,504 | 44,912 | 31,517 | $ 13,395 | 70.2% |
| 2031 | 25.84% | 5,987 | 1,547 | 46,138 | 32,968 | $ 13,170 | 71.5% |
| 2032 | 25.84% | 6,160 | 1,592 | 47,361 | 34,473 | $ 12,888 | 72.8% |
| 2033 | 25.84% | 6,338 | 1,638 | 48,580 | 36,039 | $ 12,541 | 74.2% |
| 2034 | 25.84% | 6,523 | 1,686 | 49,795 | 37,671 | $ 12,124 | 75.7% |
| 2035 | 25.84% | 6,715 | 1,735 | 51,009 | 39,377 | $ 11,632 | 77.2% |
| 2036 | 25.84% | 6,912 | 1,786 | 52,220 | 41,166 | $ 11,054 | 78.8% |
| 2037 | 25.84% | 7,117 | 1,839 | 53,432 | 43,045 | $ 10,387 | 80.6% |
| 2038 | 25.84% | 7,329 | 1,894 | 54,646 | 45,024 | $ 9,622 | 82.4% |
| 2039 | 25.84% | 7,551 | 1,951 | 55,867 | 47,117 | $ 8,750 | 84.3% |
| 2040 | 25.84% | 7,782 | 2,011 | 57,099 | 49,337 | $ 7,762 | 86.4% |
| 2041 | 25.84% | 8,022 | 2,073 | 58,347 | 51,698 | $ 6,649 | 88.6% |
| 2042 | 25.84% | 8,270 | 2,137 | 59,616 | 54,216 | $ 5,400 | 90.9% |
| 2043 | 25.84% | 8,258 | 2,203 | 60,909 | 56,905 | $ 4,004 | 93.4% |
| 2044 | 25.84% | 8,794 | 2,272 | 62,233 | 59,784 | $ 2,449 | 96.1% |
| 2045 | 25.84% | 9,070 | 2,343 | 63,591 | 62,869 | $ 722 | 98.9% |
| 2046 | 25.84% | 9,355 | 2,417 | 64,989 | 66,178 | $ (1,189) | 101.8% |
| 2047 | 25.84% | 9,650 | 2,493 | 66,432 | 69,732 | $ (3,300) | 105.0% |
| 2048 | 25.84% | 9,955 | 2,572 | 67,927 | 73,551 | $ (5,624) | 108.3% |
| 2049 | 25.84% | 10,270 | 2,654 | 69,480 | 77,661 | $ (8,181) | 111.8% |
| 2050 | 25.84% | 10,593 | 2,737 | 71,094 | 82,081 | $ (10,987) | 115.5% |
| 2051 | 25.84% | 10,927 | 2,823 | 72,773 | 86,835 | $ (14,062) | 119.3% |
| 2052 | 25.84% | 11,269 | 2,912 | 74,520 | 91,945 | $ (17,425) | 123.4% |

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

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*Summary of 2023 Actuarial Valuation (continued)*

# Exhibit 8
## Highlights of Last Five Annual Actuarial Valuations
### 2019 through 2023

| Item | Valuation Date: June 30 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|
| Number of active members | 66,383 | 66,750 | 65,561 | 64,234 | 64,243 |
| Number of inactive members | 9,321 | 9,204 | 9,011 | 9,031 | 8,997 |
| Number of pensioners | 45,440 | 46,486 | 47,724 | 48,913 | 49,692 |
| Number of beneficiaries | 4,445 | 4,667 | 4,894 | 5,077 | 5281 |
| Average monthly contributory member pension amount | $ 3,136 | $ 3,293 | $ 3,458 | $ 3,632 | $ 3,807 |
| Average monthly noncontributory member pension amount | $ 1,736 | $ 1,773 | $ 1,813 | $ 1,861 | $ 1,909 |
| Average monthly hybrid member pension amount | $ 2,285 | $ 2,345 | $ 2,416 | $ 2,495 | $ 2,555 |
| Average monthly beneficiary amount | $ 1,558 | $ 1,610 | $ 1,668 | $ 1,713 | $ 1,771 |
| Total actuarial value of assets ($millions) | $ 17,322 | $ 18,084 | $ 19,910 | $ 21,318 | $ 22,515 |
| Unfunded actuarial accrued liability ($millions) | $ 14,074.3 | $ 14,607.4 | $ 14,229.4 | $ 13,504.9 | $ 13,709.7 |
| Funding Period (in years) (1) | 26 | 26 | 24 | 24 | 23 |

| Item (Dollar amounts in millions (2)) | Fiscal Year 2018-2019 | 2019-2020 | 2020-2021 | 2021-2022 | 2022-2023 |
|---|---|---|---|---|---|
| Employer contributions (2) | $ 922.6 | $ 1,098.6 | $ 1,281.6 | $ 1,242.1 | $ 1,274.2 |

(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 July 1, 2016, the employer contribution rate was 25.0% for Police and Fire, 17.0% for All Others.
Beginning July 1, 2017, the employer contribution rate was 28.0% for Police and Fire, 18.0% for All Others.
Beginning July 1, 2018, the employer contribution rate was 31.0% for Police and Fire, 19.0% for All Others.
Beginning July 1, 2019 the employer contribution rate was 36.0% for Police and Fire, 22.0% for All Others.
Beginning July 1, 2020, the employer contribution rate was 41.0% for Police and Fire, 24.0% for All Others.

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# *Summary of Actuarial Methods and Assumptions (Adopted on August 8, 2022)*

Basis for assumption setting: The actuarial assumptions were adopted by the Board on August 8, 2022. Rationale for the recommendations are in the most recent experience study dated June 14, 2022.

## 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 this table for a description of the new entrant profile used in the open group projection.

## Summary of Actuarial Methods and Assumptions (continued)

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 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 |
| 15-19 | 2 | $61,913 |
| 20-24 | 264 | 72,559 |
| 25-29 | 431 | 71,096 |
| 30-34 | 300 | 69,566 |
| 35-39 | 136 | 70,215 |
| 40-44 | 39 | 72,298 |
| 45-49 | 17 | 70,072 |
| 50-54 | 6 | 115,096 |
| 55-59 | 6 | 83,734 |
| 60+ | 2 | 64,229 |
| Total | 1,203 | $71,235 |

It is assumed that 90% of new hires will be male.

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# *Summary of Actuarial Methods and Assumptions (continued)*

| New Entrant Profile for All Other Employees | | |
|---|---|---|
| Entry Age | # of Employees | Average Salary |
| 15-19 | 15 | $42,719 |
| 20-24 | 1,598 | 50,318 |
| 25-29 | 3,343 | 53,262 |
| 30-34 | 2,890 | 55,488 |
| 35-39 | 2,561 | 56,834 |
| 40-44 | 2,176 | 55,894 |
| 45-49 | 1,794 | 55,474 |
| 50-54 | 1,420 | 55,254 |
| 55-59 | 1,208 | 54,008 |
| 60-64 | 615 | 58,171 |
| 65-69 | 91 | 56,625 |
| Total | 17,711 | $54,813 |

It is assumed that 40% of new hires will be male and Teachers replace Teachers and Non-Teachers replace Non-Teachers.

*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: (used to index each year's group of new entrants in the open group projection) 3.50% per annum for Police and Fire Employees and 3.00% per annum for General Employees and Teachers.

## Summary of Actuarial Methods and Assumptions (continued)

3. Salary increase rates: As shown below

| | General Employees | | Teachers | |
|---|---|---|---|---|
| Years of Service | Service-related Component | Total Rate Including 2.50% Inflation Component and 1.25% Productivity Component | Service-Related Component | Total Rate Including 2.50% Inflation Component and 1.25% Productivity Component |
| 1 | 3.00% | 6.75% | 3.00% | 6.75% |
| 2 | 3.00% | 6.75% | 3.00% | 6.75% |
| 3 | 2.00% | 5.75% | 2.00% | 5.75% |
| 4 | 1.50% | 5.25% | 1.50% | 5.25% |
| 5 | 1.50% | 5.25% | 1.50% | 5.25% |
| 6 | 1.25% | 5.00% | 1.25% | 5.00% |
| 7 | 1.25% | 5.00% | 1.25% | 5.00% |
| 8 | 1.00% | 4.75% | 1.00% | 4.75% |
| 9 | 1.00% | 4.75% | 1.00% | 4.75% |
| 10 | 1.00% | 4.75% | 1.00% | 4.75% |
| 11 | 0.75% | 4.50% | 0.75% | 4.50% |
| 12 | 0.75% | 4.50% | 0.75% | 4.50% |
| 13 | 0.50% | 4.25% | 0.50% | 4.25% |
| 14 | 0.50% | 4.25% | 0.50% | 4.25% |
| 15 | 0.50% | 4.25% | 0.50% | 4.25% |
| 16 | 0.50% | 4.25% | 0.50% | 4.25% |
| 17 | 0.50% | 4.25% | 0.50% | 4.25% |
| 18 | 0.50% | 4.25% | 0.50% | 4.25% |
| 19 | 0.50% | 4.25% | 0.50% | 4.25% |
| 20 | 0.25% | 4.00% | 0.25% | 4.00% |
| 21 | 0.25% | 4.00% | 0.25% | 4.00% |
| 22 | 0.25% | 4.00% | 0.25% | 4.00% |
| 23 | 0.25% | 4.00% | 0.25% | 4.00% |
| 24 | 0.25% | 4.00% | 0.25% | 4.00% |
| 25 or more | 0.00% | 3.75% | 0.00% | 3.75% |

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## Summary of Actuarial Methods and Assumptions (continued)

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 | 1.00% | 6.00% |
| 2 | 1.00% | 6.00% |
| 3 | 1.00% | 6.00% |
| 4 | 1.00% | 6.00% |
| 5 | 1.00% | 6.00% |
| 6 | 1.00% | 6.00% |
| 7 | 1.00% | 6.00% |
| 8 | 1.00% | 6.00% |
| 9 | 1.00% | 6.00% |
| 10 | 1.00% | 6.00% |
| 11 | 1.00% | 6.00% |
| 12 | 1.00% | 6.00% |
| 13 | 1.00% | 6.00% |
| 14 | 1.00% | 6.00% |
| 15 | 1.00% | 6.00% |
| 16 | 0.75% | 5.75% |
| 17 | 0.75% | 5.75% |
| 18 | 0.75% | 5.75% |
| 19 | 0.50% | 5.50% |
| 20 | 0.50% | 5.50% |
| 21 | 0.50% | 5.50% |
| 22 | 0.25% | 5.25% |
| 23 | 0.25% | 5.25% |
| 24 | 0.25% | 5.25% |
| 25 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 $31^{st}$ to the June $30^{th}$ valuation date, the reported pay for each member is increased by 1%.

B. Demographic Assumptions

1. Mortality rates

Active Members: Multiples of the Pub-2010, Employee Table for active employees based on the occupation of the member as follows:

| Type | General Employees Male & Female | Teachers Male & Female | Police and Fire Male & Female |
|---|---|---|---|
| Ordinary | 94% | 92% | 80% |
| % of Ordinary Chosing Annuity | 41% | 52% | 24% |
| Duty Related | 6% | 8% | 20% |

Healthy Retirees: The 2022 Public Retirees of Hawaii mortality tables. The rates are projected on a fully generational basis by Scale MP from the year 2022 (with immediate convergence) and with multiplier and setbacks based on plan and group experience. The following are sample rates of the base table as of 2022 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 | 0.2094% | 0.1276% | 0.1698% | 0.0951% | 0.2421% | 0.1130% |
| 55 | 0.3215% | 0.1687% | 0.2883% | 0.1596% | 0.3473% | 0.1633% |
| 60 | 0.5570% | 0.3095% | 0.4672% | 0.2467% | 0.6179% | 0.2799% |
| 65 | 0.8041% | 0.4488% | 0.7256% | 0.4063% | 0.8426% | 0.4283% |
| 70 | 1.2621% | 0.7066% | 1.0762% | 0.6015% | 1.4172% | 0.6565% |
| 75 | 2.0700% | 1.0964% | 1.7879% | 0.9358% | 2.3227% | 1.0121% |
| 80 | 3.5996% | 2.1275% | 3.0429% | 1.6565% | 4.1824% | 1.8863% |
| 85 | 6.5891% | 4.1569% | 5.5564% | 3.2698% | 7.6513% | 3.6977% |
| 90 | 11.9340% | 8.3647% | 10.1056% | 6.5007% | 13.6689% | 7.3991% |
| Multiplier | 102% | 98% | 97% | 101% | 93% | 100% |
| Setback | 0 | -1 | 1 | 1 | -2 | 0 |

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## Summary of Actuarial Methods and Assumptions (continued)

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 | 2025 | 2030 | 2035 | 2040 | 2045 |
| **General Retirees** | | | | | |
| Male | 22.8 | 23.2 | 23.5 | 23.9 | 24.2 |
| Female | 26.3 | 26.6 | 26.9 | 27.2 | 27.5 |
| **Teachers** | | | | | |
| Male | 24.1 | 24.5 | 24.9 | 25.2 | 25.5 |
| Female | 28.0 | 28.3 | 28.6 | 28.9 | 29.2 |
| **Police and Fire** | | | | | |
| Male | 21.8 | 22.1 | 22.4 | 22.8 | 23.1 |
| Female | 27.1 | 27.4 | 27.7 | 28.0 | 28.3 |

Disabled retirees: Base Table for healthy retiree's occupation, set forward 3 years, generational projection using the MP projection table from the year 2022 with immediate convergence. 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:

| | General Employees | Teachers | Police & Fire |
|---|---|---|---|
| Type | Male & Female | Male & Female | Male & Female |
| Ordinary | 200% | 100% | 50% |
| Accidental | 60% | 8% | 120% |

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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:

| Years of Service | Expected Terminations per 1000 Lives (Male & Female) General Employees | Teachers | Police & Fire |
|---|---|---|---|
| 0 | 177.2 | 0.0 | 140.0 |
| 1 | 142.2 | 197.9 | 52.4 |
| 2 | 114.2 | 165.2 | 41.3 |
| 3 | 92.0 | 134.8 | 34.8 |
| 4 | 74.8 | 108.2 | 30.2 |
| 5 | 61.7 | 86.3 | 26.6 |
| 6 | 51.9 | 69.4 | 23.7 |
| 7 | 44.7 | 57.3 | 21.3 |
| 8 | 39.6 | 49.4 | 19.1 |
| 9 | 35.8 | 44.5 | 17.2 |
| 10 | 32.8 | 41.0 | 15.6 |
| 11 | 30.3 | 35.8 | 10.6 |
| 12 | 27.9 | 32.4 | 10.0 |
| 13 | 22.6 | 29.1 | 9.4 |
| 14 | 19.8 | 26.1 | 8.8 |
| 15 | 17.7 | 23.2 | 8.2 |
| 16 | 16.1 | 20.6 | 7.6 |
| 17 | 14.8 | 18.1 | 7.0 |
| 18 | 13.7 | 15.8 | 6.4 |
| 19 | 12.8 | 13.6 | 5.8 |
| 20 | 11.9 | 11.7 | 5.2 |
| 21 | 11.1 | 10.0 | 4.6 |
| 22 | 10.2 | 8.4 | 4.0 |
| 23 | 9.3 | 7.0 | 3.4 |
| 24 | 8.3 | 5.8 | 2.8 |
| 25 | 7.1 | 4.8 | 0.0 |
| 26 | 6.0 | 4.0 | 0.0 |
| 27 | 4.7 | 3.3 | 0.0 |
| 28 | 3.5 | 2.8 | 0.0 |
| 29 | 2.4 | 2.6 | 0.0 |
| 30 and more | 0.0 | 0.0 | 0.0 |

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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 | 15.5 |
| 46 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15.5 |
| 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15.5 |
| 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15.5 |
| 49 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15.5 |
| 50 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 18.0 |
| 51 | 0 | 0 | 2 | 1 | 0 | 0 | 1 | 1 | 18.0 |
| 52 | 0 | 0 | 2 | 1 | 0 | 0 | 1 | 1 | 18.0 |
| 53 | 0 | 0 | 2 | 1 | 0 | 0 | 2 | 2 | 18.0 |
| 54 | 0 | 0 | 3 | 2 | 0 | 0 | 3 | 3 | 18.0 |
| 55 | 25 | 20 | | | 20 | 18 | | | 22.0 |
| 56 | 25 | 20 | | | 15 | 16 | | | 22.0 |
| 57 | 16 | 13 | | | 15 | 16 | | | 22.0 |
| 58 | 16 | 13 | | | 15 | 16 | | | 24.0 |
| 59 | 13 | 13 | | | 15 | 16 | | | 27.0 |
| 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)

Noncontributory Members

Expected Retirements per 100 Lives

| | General Employees | | | | | | Teachers | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Unreduced Retirement | | 25 & Out | | Reduced Retirement | | Unreduced Retirement | | Reduced Retirement | |
| Age | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female |
| 55 | 20 | 11 | 15 | 11 | 1 | 1 | 10 | 13 | 1 | 2 |
| 56 | 18 | 11 | 23 | 11 | 1 | 1 | 10 | 7 | 1 | 2 |
| 57 | 13 | 11 | 18 | 11 | 1 | 1 | 10 | 8 | 1 | 2 |
| 58 | 10 | 11 | 15 | 11 | 2 | 2 | 10 | 10 | 2 | 2 |
| 59 | 10 | 11 | 15 | 11 | 2 | 2 | 10 | 20 | 3 | 3 |
| 60 | 10 | 14 | 15 | 14 | 4 | 4 | 10 | 11 | 5 | 5 |
| 61 | 11 | 18 | 16 | 18 | 4 | 4 | 10 | 16 | 7 | 5 |
| 62 | 20 | 20 | 25 | 20 | | | 16 | 25 | | |
| 63 | 20 | 20 | 25 | 20 | | | 12 | 20 | | |
| 64 | 12 | 20 | 17 | 20 | | | 10 | 15 | | |
| 65 | 14 | 20 | 19 | 20 | | | 20 | 25 | | |
| 66 | 20 | 20 | 25 | 20 | | | 15 | 25 | | |
| 67 | 20 | 20 | 25 | 20 | | | 15 | 25 | | |
| 68 | 20 | 20 | 25 | 20 | | | 15 | 25 | | |
| 69 | 20 | 20 | 25 | 20 | | | 15 | 25 | | |
| 70 | 20 | 20 | 25 | 20 | | | 15 | 25 | | |
| 71 | 20 | 20 | 25 | 20 | | | 15 | 25 | | |
| 72 | 20 | 20 | 25 | 20 | | | 15 | 25 | | |
| 73 | 20 | 20 | 25 | 20 | | | 15 | 25 | | |
| 74 | 20 | 20 | 25 | 20 | | | 15 | 25 | | |
| 75 | 100 | 100 | 100 | 100 | | | 100 | 100 | | |

Note: Retirement rates for the 25 & out group prior to age 55 are 15% for male and 11% for female.

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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 | 18 | 18 | 1 | 1 | 20 | 16 | 2 | 2 |
| 56 | 12 | 13 | 1 | 1 | 13 | 10 | 2 | 2 |
| 57 | 12 | 13 | 1 | 1 | 13 | 10 | 2 | 2 |
| 58 | 16 | 13 | 2 | 2 | 13 | 12 | 2 | 2 |
| 59 | 16 | 13 | 2 | 2 | 13 | 12 | 3 | 3 |
| 60 | 14 | 13 | 4 | 4 | 14 | 14 | 3 | 5 |
| 61 | 14 | 15 | 4 | 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: For the 25&out group with membership dates before July 1, 2012, the retirement rates prior to age 55 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)

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 0.40% 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 | 3.25% |
| Teachers | 3.75% |
| Police and Fire | 5.00% |

Gabriel Roeder Smith & Company

## Summary of Actuarial Methods and Assumptions (continued)

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.

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.

# *Summary of Actuarial Methods and Assumptions (continued)*

*VIII. Dates of Adoption of Assumptions and Methods*

The actuarial assumptions and methods were adopted by the Board of Trustees on August 8, 2022 as recommended by Gabriel, Roeder, Smith & Company (GRS)

*IX. Changes in Assumptions and Methods since Prior Valuation*

The actuarial assumptions have been revised since the prior valuation. Please see our Experience Study report dated June 14, 2022 for a more extensive discussion of the changes in the actuarial assumptions and the rationale for the current assumptions.

*Summary of Actuarial Methods and Assumptions (continued)*

## 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.

## Summary of Plan Changes (continued)

**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.

**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%

*Summary of Actuarial Methods and Assumptions (continued)*

## Summary of Plan Changes (continued)

**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.

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.

## Summary of Plan Changes (continued)

**Act 152, 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.

**Act 153, 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 017, effective July 1, 2017**

Legislation was enacted that increased the future employer contribution rates to ERS. Employers of Police and Fire employees will contribute 28% of pay in FY 2018, 31% in FY 2019, 36% in FY 2020, and 41% in FY 2021 and beyond. Employers of All Other Employees will contribute 18% of pay in FY 2018, 19% in FY 2019, 22% in FY 2020, and 24% in FY 2021 and beyond.

**Ten Year Actuarial Schedules**
**2013 to 2022**

- Retirement System Membership **
  - 2023 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 2013-2014 to 2022-2023 **

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

## Summary of ERS Funding

The ERS is governed by Chapter 88, Hawaii Revised Statutes (HRS), plus the administrative rules, policies, and procedures of the Board of Trustees. The ERS is funded by investment earnings, employer contributions, and member contributions. (Refer to the Investment Section for more information on investment policies and procedures.)

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 costs (which pays the current year's cost) of the ERS and to amortize the unfunded actuarial accrued liability (UAAL) over a reasonable amount of time, which will ensure benefit security and intergenerational equity.

As required by Law the ERS performs an actuarial investigation of the experience at least once every 3 (three) years, and an annual actuarial valuation of the assets and liabilities of the funds of the pension trust. 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. Since the State statutes governing the ERS establish the employee and employer contribution rates, the actuarial valuation determines the number of years required to amortize (or fund) the UAAL.

The actuary uses the entry age normal cost funding method in valuations as required by Law. The Board of Trustees adopts economic, mortality, service, and other assumptions, factors, and tables as deemed appropriate and necessary, based on the actuarial investigation and actuary recommendation.

Employer contribution rates are subject to adjustment (per HRS§88-122(e)(1)) when the funding period is in excess of 30 years, or there is no unfunded accrued liability. The actuary through the Board recommends based on the actuarial investigation, the appropriate adjustments to the employer contribution rates discussed above.

# Ten-Year Actuarial Schedules (continued)

## Retirement System Membership **
**2014 to 2023**

| March 31, | Active Members | Terminated Vested Members | Inactive Nonvested Members (a) | Pensioners & Beneficiaries | Total Membership |
|---|---|---|---|---|---|
| 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 |
| 2017 | 65,911 | 9,241 | 16,482 | 46,927 | 138,561 |
| 2018 | 66,271 | 9,249 | 17,819 | 48,569 | 141,908 |
| 2019 | 66,383 | 9,321 | 19,533 | 49,885 | 145,122 |
| 2020 | 66,750 | 9,204 | 20,985 | 51,153 | 148,092 |
| 2021 | 65,561 | 9,011 | 22,226 | 52,618 | 149,416 |
| 2022 | 64,234 | 9,031 | 24,872 | 53,990 | 152,127 |
| 2023 | 64,243 | 8,997 | 26,900 | 54,973 | 155,113 |

** 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

## 2023 Membership Data

| | Police and Firefighters | | All Other Employees | | All Employees | |
|---|---|---|---|---|---|---|
| | June 30, 2023 | June 30, 2022 | June 30, 2023 | June 30, 2022 | June 30, 2023 | June 30, 2022 |
| 1. Active members | | | | | | |
| a. Number | 4,832 | 4,870 | 59,411 | 59,364 | 64,243 | 64,234 |
| b. Total payroll | $ 517,122,519 | $ 504,053,191 | $4,146,359,643 | $4,033,103,615 | $4,663,482,242 | $4,537,156,806 |
| c. Average salary | $ 107,020 | $ 103,502 | $ 69,791 | $ 67,939 | $ 72,591 | $ 70,635 |
| d. Average age | 42.5 | 42.1 | 48.4 | 48.5 | 48.0 | 48.0 |
| e. Average service | 14.0 | 13.7 | 13.0 | 13.1 | 13.1 | 13.2 |
| 2. Inactive members | | | | | | |
| a. Number | 228 | 242 | 8,769 | 8,789 | 8,997 | 9,031 |
| b. Total annual deferred benefits | $ 5,331,907 | $ 5,794,515 | $ 107,547,445 | $ 103,824,257 | $ 112,879,352 | $ 109,618,772 |
| c. Average annual deferred benefit | $ 23,386 | $ 23,944 | $ 12,265 | $ 11,813 | $ 12,546 | $ 12,138 |
| 3. Service retirees | | | | | | |
| a. Number | 4,156 | 4,103 | 43782 | 43,064 | 47,938 | 47,167 |
| b. Total annual benefits | $ 293,231,396 | $ 278,238,588 | $1,315,364,185 | $1,264,013,343 | $1,608,595,581 | $1,542,251,931 |
| c. Average annual benefit | $ 70,556 | $ 67,813 | $ 30,043 | $ 29,352 | $ 33,556 | $ 32,698 |
| 4. Disabled retirees | | | | | | |
| a. Number | 124 | 128 | 1,630 | 1,618 | 1,7454 | 1,746 |
| b. Total annual benefits | $ 3,573,996 | $ 3,528,613 | $ 26,638,064 | $ 25,629,578 | $ 30,212,060 | $ 29,158,191 |
| c. Average annual benefit | $ 28,823 | $ 27,567 | $ 16,342 | $ 15,840 | $ 17,225 | $ 16,700 |
| 5. Beneficiaries | | | | | | |
| a. Number | 407 | 389 | 4,874 | 4,688 | 5,281 | 5,077 |
| b. Total annual benefits | $ 18,958,831 | $ 17,660,517 | $ 93,297,190 | $ 86,687,801 | $ 112,256,021 | $ 104,348,318 |
| c. Average annual benefit | $ 46,582 | $ 45,400 | $ 19,142 | $ 18,491 | $ 21,257 | $ 20,553 |

(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). As of June 30, 2017, there were 16,482 (641 Police and firefighters plus 15,841 All other employees). As of June 30, 2018, there were 17,819 (666 Police and firefighters plus 17,153 All other employees). As of June 30, 2019, there were 19,533 (721 Police and firefighters plus 18,812 All other employees). As of June 30, 2020, there were 20,985 (788 Police and firefighters plus 20,197 All other employees). As of June 30, 2021, there were 21,226 (869 Police and firefighters plus 21,357 All other employees). As of June 30, 2022, there were 24,872 (1001 Police and firefighters plus 23,903 All other employees). As of June 30, 2023, there were 26,900 (969 Police and firefighters plus 25,899 All other employees).

## Historical Summary of Active Member Data

| Year Ending June 30, | Active Members | | Covered Payroll | | Average Salary | | | |
|---|---|---|---|---|---|---|---|---|
| | Number | Percent Change | Amount in $ Millions | Percent Change | $ Amount | Percent Change | Average Age | Average Service |
| 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 |
| 2017 | 65,911 | -2.2% | 4,134.2 | 0.4% | 62,723 | 2.6% | 48.0 | 13.3 |
| 2018 | 66,271 | 0.5% | 4,257.2 | 3.0% | 64,240 | 2.4% | 47.9 | 13.2 |
| 2019 | 66,383 | 0.2% | 4,393.0 | 3.2% | 66,176 | 3.0% | 47.9 | 13.1 |
| 2020 | 66,750 | 0.6% | 4,523.4 | 3.0% | 67,766 | 2.4% | 47.9 | 13.1 |
| 2021 | 65,561 | -1.8% | 4,622.0 | 2.2% | 70,499 | 4.0% | 48.0 | 13.2 |
| 2022 | 64,234 | -2.0% | 4,537.2 | -1.8% | 70,635 | 0.2% | 48.0 | 13.2 |
| 2023 | 64,243 | 0.0% | 4,663.5 | 2.8% | 72,591 | 2.8% | 48.0 | 13.1 |

## Ten-Year Actuarial Schedules (continued)

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

**2014 to 2023**

| March 31, | Number of Pensioners | Average Annual Pension (1) | Ratio of Active Members per Pensioner |
|---|---|---|---|
| 2014 | 39,680 | $26,032 | 1.7 |
| 2015 | 40,657 | $26,671 | 1.7 |
| 2016 | 41,654 | $27,260 | 1.6 |
| 2017 | 42,857 | $27,946 | 1.5 |
| 2018 | 44,305 | $28,745 | 1.5 |
| 2019 | 45,440 | $29,847 | 1.5 |
| 2020 | 46,486 | $30,312 | 1.4 |
| 2021 | 47,724 | $31,766 | 1.4 |
| 2022 | 48,913 | $32,127 | 1.3 |
| 2023 | 49,692 | $33,556 | 1.3 |

** Schedule compiled by ERS Staff from actuary reports.

(1) Pension amount includes base pension plus 2.5% (if membership date is before July 1, 2012) or 1.5% (if membership date is after June 30, 2012) post-retirement increases (excludes other bonuses and cost-of-living adjustments).

### Number of Retirants and Beneficiaries**

**2014 to 2023**

| As of Mar 31, | Added | Average Added to Rolls | Removed | Average Removed from Rolls | Total | Average Pension | % Chg |
|---|---|---|---|---|---|---|---|
| **Retirants** | | | | | | | |
| 2014 | 2,027 | $22,585 | 1,088 | $19,456 | 39,680 | $26,032 | 2.15% |
| 2015 | 2,229 | $22,997 | 1,252 | $19,820 | 40,657 | $26,671 | 2.45% |
| 2016 | 2,237 | $23,785 | 1,240 | $20,694 | 41,654 | $27,260 | 2.21% |
| 2017 | 2,402 | $28,043 | 1,199 | $21,286 | 42,857 | $27,946 | 2.52% |
| 2018 | 2,709 | $28,712 | 1,261 | $21,995 | 44,305 | $28,745 | 2.86% |
| 2019 | 2,448 | $28,248 | 1,313 | $23,323 | 45,440 | $29,487 | 2.58% |
| 2020 | 2,430 | $29,555 | 1,384 | $23,269 | 46,486 | $30,312 | 2.80% |
| 2021 | 2,608 | $31,438 | 1,370 | $25,041 | 47,724 | $31,191 | 2.90% |
| 2022 | 2,636 | $32,304 | 1,447 | $24,946 | 48,913 | $32,127 | 3.00% |
| 2023 | 2,387 | $30,821 | 1,608 | $26,137 | 49,692 | $32,979 | 2.65% |
| **Beneficiaries** | | | | | | | |
| 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% |
| 2017 | 333 | $19,992 | 115 | $13,012 | 4,070 | $17,663 | 3.77% |
| 2018 | 336 | $19,355 | 142 | $15,036 | 4,264 | $18,177 | 2.91% |
| 2019 | 326 | $19,807 | 148 | $15,282 | 4,445 | $18,699 | 2.87% |
| 2020 | 373 | $21,025 | 151 | $15,493 | 4,667 | $19,316 | 3.30% |
| 2021 | 381 | $23,159 | 154 | $16,835 | 4,894 | $20,014 | 3.61% |
| 2022 | 364 | $22,702 | 181 | $19,702 | 5,077 | $20,553 | 2.69% |
| 2023 | 401 | $20,553 | 197 | $18,192 | 5,281 | $21,257 | 3.43% |

** Schedule compiled by ERS staff from actuary reports.

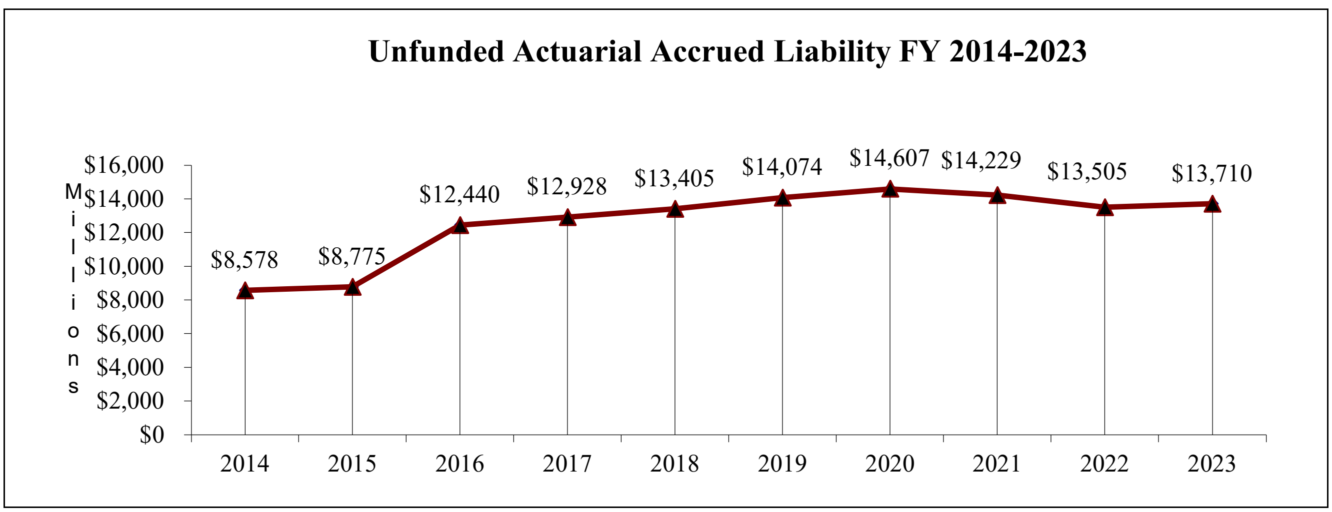
## *Ten-Year Actuarial Schedules (continued)*

### Solvency Test**
**2014 to 2023**

| June 30, | Actuarial Accrued Liabilities (AAL): Active Member Contributions | Actuarial Accrued Liabilities (AAL): Retirees, Beneficiaries, and Inactive Vested Members | Actuarial Accrued Liabilities (AAL): Active and Inactive Members Employer Financed Portion | Actuarial Value of Assets | Cumulative Portion of Actuarial Accrued Liabilities Covered by Assets: Column (1) | Cumulative Portion of Actuarial Accrued Liabilities Covered by Assets: Column (2) | Cumulative Portion of Actuarial Accrued Liabilities Covered by Assets: Column (3) |
|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| 2014 | 1,812.9 | 11,673.0 | 8,734.2 | 13,641.8 | 100% | 100% | 2% |
| 2015 | 1,981.8 | 12,321.8 | 8,934.8 | 14,463.7 | 100% | 100% | 2% |
| 2016 | 2,150.4 | 14,228.2 | 11,060.6 | 14,998.7 | 100% | 90% | 0% |
| 2017 | 2,183.2 | 15,020.6 | 11,444.8 | 15,720.6 | 100% | 90% | 0% |
| 2018 | 2,181.3 | 16,008.8 | 11,727.3 | 16,512.7 | 100% | 90% | 0% |
| 2019 | 2,202.2 | 16,871.1 | 12,323.1 | 17,322.2 | 100% | 90% | 0% |
| 2020 | 2,231.4 | 17,720.9 | 12,739.5 | 18,084.4 | 100% | 89% | 0% |
| 2021 | 2,243.2 | 18,728.9 | 13,167.0 | 19,909.8 | 100% | 94% | 0% |
| 2022 | 2,249.4 | 19,633.8 | 12,939.6 | 21,317.8 | 100% | 97% | 0 % |
| 2023 | 2,290.4 | 20,428.6 | 13,505.5 | 22,514.9 | 100% | 99% | 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 **

**2014 to 2023**

| 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 |
| 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% |
| 2017 * | 13.13% | 11.87% | 25.00% | 7.33% | 9.67% | 17.00% | 8.02% | 9.89% | 17.91% |
| 2018 * | 12.97% | 15.03% | 28.00% | 7.14% | 10.86% | 18.00% | 7.82% | 11.34% | 19.16% |
| 2019 * | 14.02% | 16.98% | 31.00% | 7.07% | 11.93% | 19.00% | 7.89% | 12.47% | 20.36% |
| 2020 * | 13.78% | 22.22% | 36.00% | 6.90% | 15.10% | 22.00% | 7.73% | 15.88% | 23.61% |
| 2021 * | 13.53% | 27.47% | 41.00% | 6.77% | 17.23% | 24.00% | 7.57% | 18.37% | 25.94% |
| 2022 * | 14.56% | 26.44% | 41.00% | 7.17% | 16.83% | 24.00% | 8.01% | 17.91% | 25.92% |
| 2023 * | 14.43% | 26.57% | 41.00% | 7.02% | 16.98% | 24.00% | 7.86% | 17.93% | 25.89% |

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.

Per Act 017/2017 SLH, the statutory employer contribution rates for Police and Fire employees will be 28% of pay in FY 2018, 31% in FY 2019, 36% in FY 2020, and 41% in FY 2021 and thereafter, and the rate for All Other Employees will be 18% of pay in FY 2018, 19% in FY 2019, 22% in FY 2020, and 24% in FY 2021 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.

## *Ten-Year Actuarial Schedules (continued)*

# Employer Appropriations to Pension Accumulation Fund**

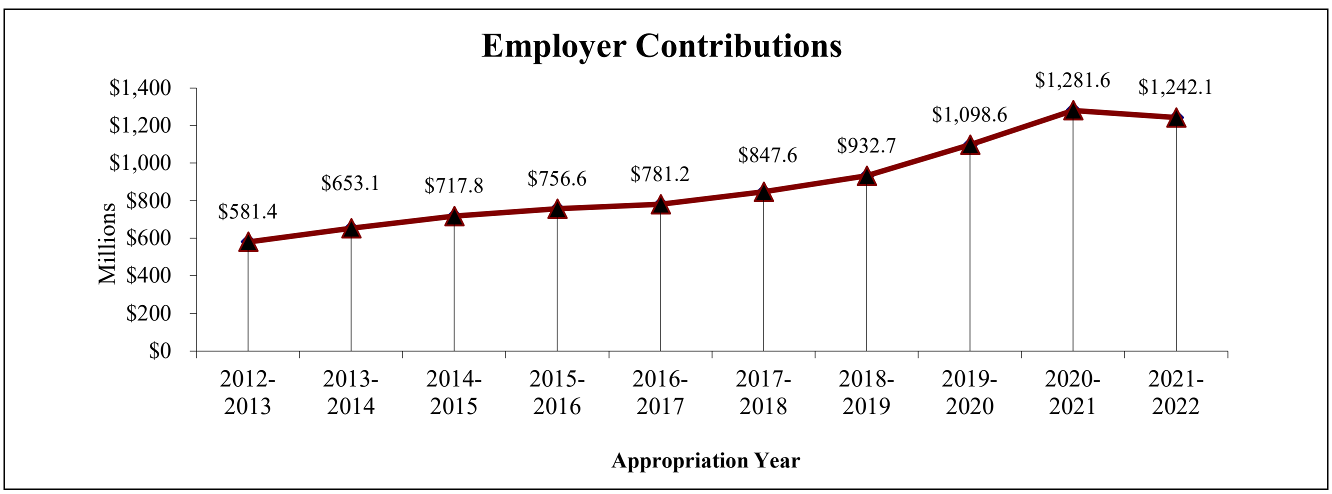
| | Investment Yield Rate | |
|---|---|---|
| Fiscal Year | Assumed for Actuarial Valuation | Actuarial Investment Return |
| 2013-2014 | 7.75% | 9.23% |
| 2014-2015 | 7.65% | 7.85% |
| 2015-2016 | 7.00% | 5.59% |
| 2016-2017 | 7.00% | 6.92% |
| 2017-2018 | 7.00% | 7.18% |
| 2018-2019 | 7.00% | 6.81% |
| 2019-2020 | 7.00% | 5.59% |
| 2020-2021 | 7.00% | 10.75% |
| 2021-2022 | 7.00% | 8.36% |
| 2022-2023 | 7.00% | 6.86% |

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) 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.

Pursuant to Act 017/2017 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: 25.00% in FY2018, 31.00% in FY 2019, 36.00% in FY 2020, and 41.00% in FY 2021 and beyond. The employer contribution rates for All Other Employees increased according to the following schedule: 18.00% in FY2018, 19.00% in FY 2019, 22.00% in FY 2020, and 24.00% in FY 2021 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).

*Ten-Year Actuarial Schedules (continued)*

## 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 | 100.1% | Wisconsin | 100.0% |
| 90% to 99% | 6 | New York | 99.6% | Washington | 95.0% |
| | | Nebraska | 98.4% | Utah | 93.1% |
| | | Tennessee | 97.3% | North Carolina | 90.2% |
| 80% to 89% | 14 | Iowa | 89.1% | Oklahoma | 82.5% |
| | | Minnesota | 88.5% | Florida | 82.4% |
| | | Delaware | 88.2% | Arkansas | 82.0% |
| | | Oregon | 86.4% | Virginia | 81.4% |
| | | Maine | 85.3% | Missouri | 81.1% |
| | | West Virginia | 84.8% | Ohio | 80.7% |
| | | Idaho | 82.6% | Texas | 80.0% |
| 70% to 79% | 11 | Georgia | 79.2% | Montana | 73.6% |
| | | California | 79.1% | Kansas | 71.6% |
| | | Maryland | 77.5% | Alaska | 71.4% |
| | | Wyoming | 77.2% | Arizona | 70.6% |
| | | Nevada | 74.7% | Indiana | 70.3% |
| | | Louisiana | 73.9% | | |
| 60% to 69% | 12 | North Dakota | 68.7% | Massachusetts | 65.1% |
| | | Colorado | 68.6% | Vermont | 64.7% |
| | | New Mexico | 66.7% | Rhode Island | 64.4% |
| | | Alabama | 66.5% | Pennsylvania | 64.3% |
| | | Michigan | 66.0% | **Hawaii** | 61.9% |
| | | New Hampshire | 65.6% | Mississippi | 61.3% |
| Less than 60% | 5 | South Carolina | 57.9% | New Jersey | 52.6% |
| | | Connecticut | 53.8% | Kentucky | 48.4% |
| | | Illinois | 53.8% | | |

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,: | 2014 ** | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|
| Additions | | | | | |
| Employer contributions | $ 653,127,697 | $ 717,792,981 | $ 756,558,222 | $ 781,244,218 | $ 847,595,466 |
| Member contributions | 206,127,337 | 223,505,419 | 236,801,861 | 250,704,067 | 259,427,934 |
| Investment income (net of expense) | 2,175,479,961 | 556,436,475 | (169,368,110) | 1,934,512,507 | 1,225,572,599 |
| Total additions to plan net position | 3,034,734,995 | 1,497,734,875 | 823,991,973 | 2,966,460,792 | 2,332,595,999 |
| Deductions | | | | | |
| Benefits | 1,122,445,642 | 1,170,744,770 | 1,232,589,353 | 1,306,788,954 | 1,395,881,342 |
| Refunds | 8,475,969 | 10,507,888 | 12,927,672 | 16,340,290 | 20,846,500 |
| Administrative expenses | 12,626,030 | 14,032,964 | 13,960,587 | 14,986,159 | 15,784,490 |
| Total deductions from plan net position | 1,143,547,641 | 1,195,285,622 | 1,259,477,612 | 1,338,115,403 | 1,432,512,332 |
| Net increase (decrease) in net position | 1,891,187,354 | 302,449,253 | (435,485,639) | 1,628,345,389 | 900,083,667 |
| Net position restricted for pension benefits | | | | | |
| Beginning of year | 12,311,827,949 | 14,203,015,303 | 14,505,464,556 | 14,069,978,917 | 15,698,324,306 |
| End of year | $ 14,203,015,303 | $ 14,505,464,556 | $14,069,978,917 | $15,698,324,306 | $ 16,598,407,973 |

| Fiscal Year Ended June 30,: | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|
| Additions | | | | | |
| Employer contributions | $ 922,635,334 | $ 1,098,589,013 | $ 1,281,558,696 | $ 1,242,139,095 | $ 1,274,221,056 |
| Member contributions | 273,223,578 | 287,398,031 | 300,626,446 | 293,027,560 | 309,761,053 |
| Investment income (net of expense) | 932,696,412 | 358,282,664 | 4,662,225,761 | 164,559,035 | 826,902,875 |
| Total additions to plan net position | 2,128,555,324 | 1,744,269,708 | 6,244,410,903 | 1,699,725,690 | 2,410,884,984 |
| Deductions | | | | | |
| Benefits | 1,469,634,809 | 1,545,589,761 | 1,651,431,372 | 1,738,751,492 | 1,795,410,787 |
| Refunds | 16,502,635 | 22,443,593 | 23,618,435 | 24,454,256 | 26,353,782 |
| Administrative expenses | 13,798,866 | 17,782,865 | 19,049,861 | 17,497,621 | 18,549,472 |
| Total deductions from plan net position | 1,499,936,310 | 1,585,816,219 | 1,694,099,668 | 1,780,703,369 | 1,840,314,041 |
| Net increase (decrease) in net position | 628,619,014 | 158,453,489 | 4,550,311,235 | (80,977,679) | 570,570,943 |
| Net position restricted for pension benefits | | | | | |
| Beginning of year | 16,598,407,973 | 17,227,026,987 | 17,385,480,476 | 21,935,791,711 | 21,854,814,032 |
| End of year | $ 17,227,026,987 | $ 17,385,480,476 | $ 21,935,791,711 | $ 21,854,814,032 | $ 22,425,384,975 |

** 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

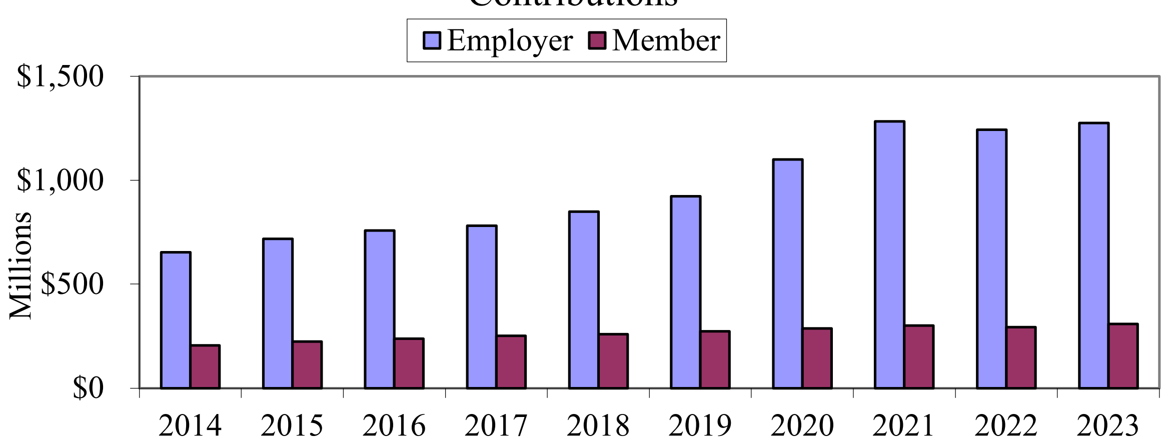
## Schedule of Employer Contributions
(In thousands)

| Fiscal year ended June 30,: | | Statutory Contributions | Covered Employee Payroll | Contributions as a Percentage of Covered Payroll |
|---|---|---|---|---|
| 2014 | ** | $653,128 | $3,829,003 | 17.1% |
| 2015 | | 717,793 | 3,995,447 | 18.0% |
| 2016 | | 756,558 | 4,112,227 | 18.4% |
| 2017 | | 781,244 | 4,243,522 | 18.4% |
| 2018 | | 847,595 | 4,256,053 | 19.9% |
| 2019 | | 922,635 | 4,376,217 | 21.1% |
| 2020 | | 1,098,589 | 4,481,444 | 24.5% |
| 2021 | | 1,281,559 | 4,667,346 | 27.5% |
| 2022 | | 1,242,139 | 4,483,687 | 27.7% |
| 2023 | | 1,274,221 | 4,674,478 | 27.3% |

## Employer Contribution Rates as a Percentage of Payroll **

| Fiscal Year | | Police & Firefighters | All Other Employees | Composite Rate |
|---|---|---|---|---|
| 2014 | ** | 23.00% | 16.00% | 16.76% |
| 2015 | | 24.00% | 16.50% | 17.28% |
| 2016 | | 25.00% | 17.00% | 17.89% |
| 2017 | | 25.00% | 17.00% | 17.91% |
| 2018 | | 28.00% | 18.00% | 19.16% |
| 2019 | | 31.00% | 19.00% | 20.36% |
| 2020 | | 36.00% | 22.00% | 23.61% |
| 2021 | | 41.00% | 24.00% | 25.94% |
| 2022 | | 41.00% | 24.00% | 25.92% |
| 2023 | | 41.00% | 24.00% | 25.89% |

## Contributions **




** 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

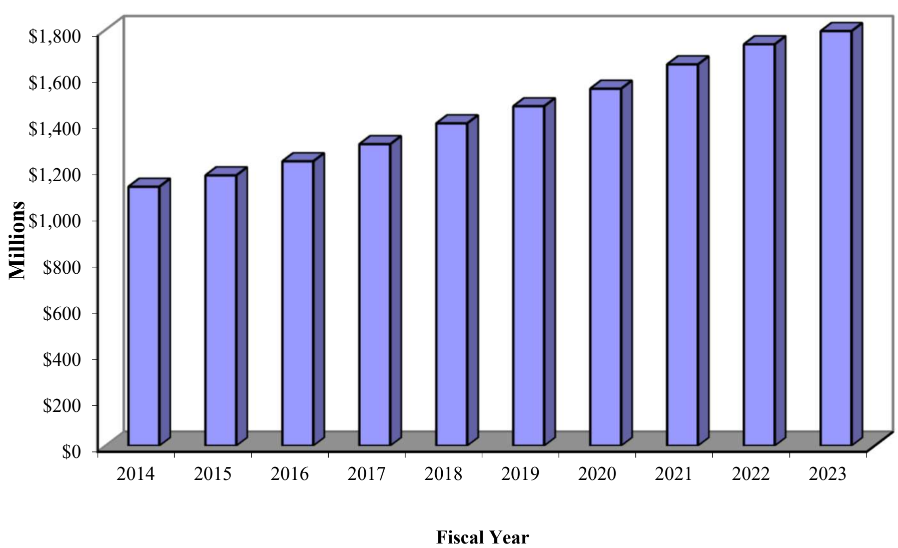
Last Ten Fiscal Years

| Fiscal Year Ended June 30,: | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|
| Recurring benefit payments | | | | | |
| Service | $ 1,016,912,124 | $ 1,058,688,356 | $ 1,111,416,262 | $ 1,175,380,410 | $ 1,241,819,373 |
| Disability | 19,835,520 | 20,732,259 | 21,437,486 | 22,303,070 | 23,739,337 |
| Death | 53,324,252 | 59,238,051 | 65,568,232 | 71,889,117 | 77,507,539 |
| subtotal | 1,090,071,896 | 1,138,658,666 | 1,198,421,980 | 1,269,572,597 | 1,343,066,249 |
| Refund Option payments (one-time) | 32,373,746 | 32,086,104 | 34,167,373 | 37,216,357 | 52,815,093 |
| Total benefit payments | $ 1,122,445,642 | $ 1,170,744,770 | $ 1,232,589,353 | $1,306,788,954 | $ 1,395,881,342 |

| Fiscal Year Ended June 30,: | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|
| Recurring benefit payments | | | | | |
| Service | $ 1,306,624,918 | $ 1,373,747,686 | $ 1,449,789,546 | $ 1,535,941,473 | $ 1,602,867,518 |
| Disability | 25,035,782 | 26,793,410 | 28,111,724 | 29,158,191 | 30,212,060 |
| Death | 83,117,245 | 90,145,618 | 97,946,864 | 104,348,318 | 112,256,021 |
| subtotal | 1,414,777,945 | 1,490,686,714 | 1,575,848,134 | 1,669,447,982 | 1,745,335,599 |
| Refund Option payments (one-time) | 54,856,864 | 54,903,047 | 75,583,238 | 69,303,510 | 50,075,188 |
| Total benefit payments | $ 1,469,634,809 | $ 1,545,589,761 | $ 1,651,431,372 | $ 1,738,751,492 | $ 1,795,410,787 |

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

## Benefit Payments



# Participating Employers and Membership in ERS

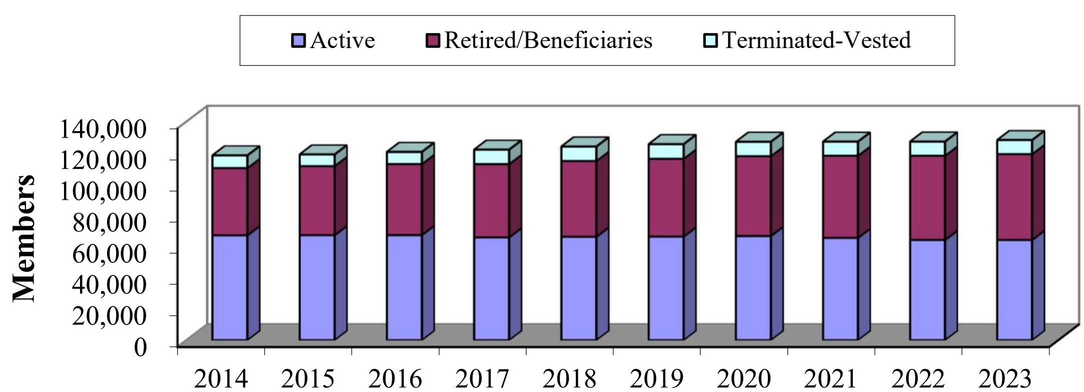
Last Ten Fiscal Years

## ERS Membership

| As of March 31,: | Active | Retired/ Beneficiaries | Terminated- Vested | Inactive- Non-Vested | Totals |
|---|---|---|---|---|---|
| 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 |
| 2017 | 65,911 | 46,927 | 9,241 | 16,482 | 138,561 |
| 2018 | 66,271 | 48,569 | 9,249 | 17,819 | 141,908 |
| 2019 | 66,383 | 49,885 | 9,321 | 19,533 | 145,122 |
| 2020 | 66,750 | 51,153 | 9,204 | 20,985 | 148,092 |
| 2021 | 65,561 | 52,618 | 9,011 | 22,226 | 149,416 |
| 2022 | 64,234 | 53,990 | 9,031 | 24,872 | 152,127 |
| 2023 | 64,243 | 54,973 | 8,997 | 26,900 | 155,113 |

** For FYE June 30, 2014, ERS implemented GASB Statement No. 67.

**ERS Membership**




# Participating Employers and Active Members

| As of March 31,: | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|---|---|---|---|
| State of Hawaii | 51,875 | 51,791 | 51,723 | 50,288 | 50,719 | 50,788 | 51,008 | 49,852 | 48,753 | 48,755 |
| City & County of Honlulu | 8,625 | 8,727 | 8,807 | 8,740 | 8,709 | 8,713 | 8,757 | 8,739 | 8,518 | 8,532 |
| - Board of Water Supply | 551 | 558 | 558 | 572 | 570 | 581 | 574 | 576 | 557 | 549 |
| Hawaii County | 2,489 | 2,550 | 2,596 | 2,561 | 2,553 | 2,579 | 2,649 | 2,647 | 2,650 | 2,656 |
| Kauai County | 1,244 | 1,234 | 1,244 | 1,246 | 1,247 | 1,248 | 1,276 | 1,260 | 1,269 | 1,255 |
| Maui County | 2,422 | 2,450 | 2,449 | 2,504 | 2,473 | 2,474 | 2,486 | 2,487 | 2,487 | 2,496 |
| Total | 67,206 | 67,310 | 67,377 | 65,911 | 66,271 | 66,383 | 66,750 | 65,561 | 64,234 | 64,243 |

# Benefit Payments by Retirement Type and Option

As of March 31, 2023

## Retired Contributory Members

| Monthly Benefit | Number of Recipients | Type of Retirement * 1 | 2 | 3 | 4 | 5 | Retirement Option Max | Opt. 1 | Opt. 2 | Opt. 3 | Opt. 4 | Opt. 5 | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $ 1 - 500 | 752 | 540 | 10 | 6 | 1 | 195 | 159 | 132 | 129 | 46 | 141 | 145 | - |
| 500 - 1,000 | 1,251 | 893 | 45 | 12 | 7 | 294 | 135 | 70 | 99 | 54 | 517 | 375 | 1 |
| 1,000 - 1,500 | 1,373 | 1,024 | 25 | 45 | 14 | 265 | 162 | 77 | 129 | 53 | 575 | 375 | 2 |
| 1,500 - 2,000 | 1,583 | 1,241 | 16 | 36 | 7 | 283 | 162 | 57 | 122 | 57 | 775 | 408 | 2 |
| 2,000 - 2,500 | 1,540 | 1,274 | 9 | 29 | 9 | 219 | 123 | 51 | 129 | 49 | 723 | 462 | 3 |
| 2,500 - 3,000 | 1,733 | 1,517 | 3 | 22 | 6 | 185 | 148 | 48 | 113 | 45 | 748 | 627 | 4 |
| 3,000 - 3,500 | 1,906 | 1,722 | 4 | 17 | 10 | 153 | 158 | 41 | 111 | 56 | 896 | 637 | 7 |
| 3,500 - 4,000 | 1,755 | 1,596 | 1 | 12 | 6 | 140 | 183 | 42 | 108 | 51 | 958 | 409 | 4 |
| 4,000 - 4,500 | 1,430 | 1,314 | - | 11 | 2 | 103 | 159 | 38 | 82 | 58 | 853 | 240 | - |
| 4,500 - 5,000 | 1,064 | 995 | - | 10 | 1 | 58 | 159 | 33 | 84 | 49 | 602 | 136 | 1 |
| 5,000 | 4,429 | 4,237 | - | 3 | 11 | 178 | 557 | 104 | 477 | 285 | 2,642 | 362 | 2 |
| | 18,816 | 16,353 | 113 | 203 | 74 | 2,073 | 2,105 | 693 | 1,583 | 803 | 9,430 | 4,176 | 26 |

## Retired Hybrid Members

| Monthly Benefit | Number of Recipients | Type of Retirement * 1 | 2 | 3 | 4 | 5 | Retirement Option Max | Opt. 1 | Opt. 2 | Opt. 3 | Opt. 4 | Opt. 5 | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $ 1 - 500 | 718 | 624 | 4 | 1 | 23 | 66 | 291 | 79 | 156 | 93 | 45 | 54 | - |
| 500 - 1,000 | 2,435 | 2,156 | 66 | 17 | 67 | 129 | 876 | 176 | 542 | 283 | 279 | 279 | - |
| 1,000 - 1,500 | 2,546 | 2,200 | 124 | 62 | 35 | 125 | 890 | 130 | 613 | 293 | 345 | 275 | - |
| 1,500 - 2,000 | 1,993 | 1,752 | 83 | 43 | 19 | 96 | 666 | 127 | 497 | 228 | 275 | 200 | - |
| 2,000 - 2,500 | 1,601 | 1,463 | 43 | 20 | 17 | 58 | 515 | 93 | 414 | 236 | 232 | 110 | 1 |
| 2,500 - 3,000 | 1,455 | 1,373 | 32 | 7 | 15 | 28 | 488 | 86 | 359 | 225 | 197 | 98 | 2 |
| 3,000 - 3,500 | 1,299 | 1,242 | 21 | 5 | 8 | 23 | 473 | 59 | 285 | 215 | 179 | 88 | - |
| 3,500 - 4,000 | 1,144 | 1,106 | 5 | 1 | 9 | 23 | 399 | 53 | 287 | 198 | 143 | 64 | - |
| 4,000 - 4,500 | 848 | 832 | - | - | 3 | 13 | 331 | 43 | 173 | 152 | 101 | 48 | - |
| 4,500 - 5,000 | 591 | 583 | - | 1 | 3 | 4 | 232 | 34 | 134 | 114 | 47 | 30 | - |
| 5,000 | 1,405 | 1,371 | 5 | - | 7 | 22 | 486 | 77 | 339 | 292 | 144 | 67 | - |
| | 16,035 | 14,702 | 383 | 157 | 206 | 587 | 5,647 | 957 | 3,799 | 2,329 | 1,987 | 1,313 | 3 |

## Retired Noncontributory Members

| Monthly Benefit | Number of Recipients | Type of Retirement * 1 | 2 | 3 | 4 | 5 | Retirement Option Max | Opt. A | Opt. B | Opt. C | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|
| $ 1 - 500 | 2,290 | 1,528 | 89 | 38 | 114 | 521 | 876 | 585 | 632 | 92 | 105 |
| 500 - 1,000 | 4,535 | 3,516 | 280 | 47 | 97 | 595 | 2,106 | 921 | 1,228 | 202 | 78 |
| 1,000 - 1,500 | 3,338 | 2,717 | 146 | 82 | 37 | 356 | 1,524 | 692 | 931 | 168 | 23 |
| 1,500 - 2,000 | 2,436 | 2,081 | 105 | 31 | 20 | 199 | 1,056 | 509 | 759 | 108 | 4 |
| 2,000 - 2,500 | 1,964 | 1,768 | 34 | 10 | 10 | 142 | 901 | 412 | 537 | 114 | - |
| 2,500 - 3,000 | 1,893 | 1,775 | 20 | 3 | 6 | 89 | 979 | 375 | 415 | 123 | 1 |
| 3,000 - 3,500 | 1,476 | 1,405 | 3 | 1 | 9 | 58 | 852 | 282 | 261 | 81 | - |
| 3,500 - 4,000 | 904 | 863 | 5 | 1 | 5 | 30 | 514 | 179 | 178 | 33 | - |
| 4,000 - 4,500 | 515 | 493 | 1 | 1 | 3 | 17 | 291 | 115 | 86 | 23 | - |
| 4,500 - 5,000 | 302 | 287 | 1 | - | 1 | 13 | 167 | 65 | 59 | 11 | - |
| 5,000 | 469 | 450 | - | - | 4 | 15 | 255 | 103 | 97 | 14 | - |
| | 20,122 | 16,883 | 684 | 214 | 306 | 2,035 | 9,521 | 4,238 | 5,183 | 969 | 211 |

* 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, | | Years of Credited Service 0-9 | 10-14 | 15-19 | 20-24 | 25-29 | 30-34 | 35+ | All |
|---|---|---|---|---|---|---|---|---|---|
| 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 |
| 2017 | Average Monthly Benefit | $553 | $687 | $1,150 | $1,563 | $2,753 | $3,278 | $3,824 | $2,375 |
| | Number of Active Retirants | 1,450 | 4,854 | 4,515 | 5,629 | 8,688 | 10,457 | 5,655 | 41,248 |
| 2018 | Average Monthly Benefit | $589 | $713 | $1,182 | $1,608 | $2,848 | $3,366 | $3,929 | $2,441 |
| | Number of Active Retirants | 1,534 | 5,076 | 4,699 | 5,772 | 8,938 | 10,765 | 5,878 | 42,662 |
| 2019 | Average Monthly Benefit | $615 | $739 | $1,208 | $1,644 | $2,940 | $3,446 | $4,034 | $2,504 |
| | Number of Active Retirants | 1,577 | 5,247 | 4,884 | 5,868 | 9,110 | 11,048 | 6,031 | 43,765 |
| 2020 | Average Monthly Benefit | $637 | $768 | $1,233 | $1,674 | $3,029 | $3,515 | $4,144 | $2,567 |
| | Number of Active Retirants | 1,614 | 5,407 | 5,014 | 5,922 | 9,266 | 11,339 | 6,194 | 44,756 |
| 2021 | Average Monthly Benefit | $658 | $795 | $1,278 | $1,718 | $3,126 | $3,604 | $4,260 | $2,641 |
| | Number of Active Retirants | 1,625 | 5,581 | 5,214 | 6,033 | 9,411 | 11,725 | 6,386 | 45,975 |
| 2022 | Average Monthly Benefit | $691 | $826 | $1,326 | $1,762 | $3,235 | $3,691 | $4,387 | $2,722 |
| | Number of Active Retirants | 1,634 | 5,725 | 5,386 | 6,158 | 9,582 | 12,133 | 6,549 | 47,167 |
| 2023 | Average Monthly Benefit | $706 | $855 | $1,372 | $1,813 | $3,338 | $3,772 | $4,478 | $2,792 |
| | Number of Active Retirants | 1,619 | 5,837 | 5,557 | 6,221 | 9,620 | 12,407 | 6,677 | 47,938 |

# Retirees and Beneficiaries

(Recurring Benefit Payments)

Tabulated by Fiscal Year that Payments Started as of March 31, 2023

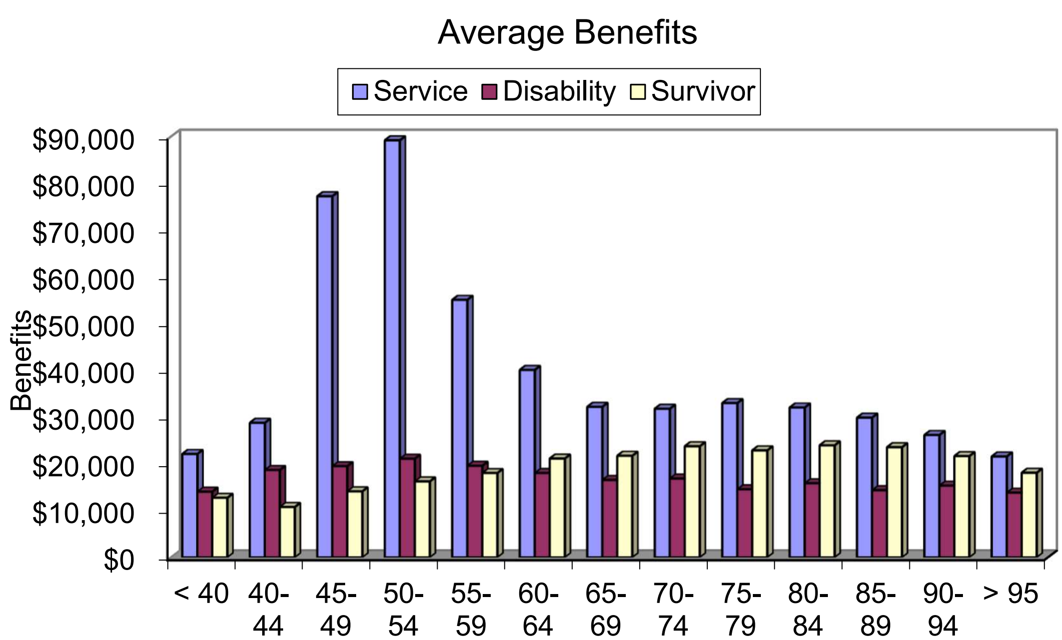
| Valuation Year | Number | Total Annual Benefits | Monthly Average Benefit | Valuation Year | Number | Total Annual Benefits | Monthly Average Benefit |
|---|---|---|---|---|---|---|---|
| 1959 | 1 | $ 4,698 | $392 | 1995 | 1,210 | $ 45,367,955 | $3,125 |
| 1962 | 1 | 6,254 | $521 | 1996 | 1,270 | 45,868,016 | $3,010 |
| 1967 | 2 | 25,466 | $1,061 | 1997 | 458 | 12,249,536 | $2,229 |
| 1968 | 2 | 21,417 | $892 | 1998 | 475 | 13,287,734 | $2,331 |
| 1969 | 1 | 7,325 | $610 | 1999 | 746 | 23,082,022 | $2,578 |
| 1970 | 1 | 5,790 | $483 | 2000 | 946 | 30,297,080 | $2,669 |
| 1971 | 2 | 23,245 | $969 | 2001 | 1,137 | 36,432,429 | $2,670 |
| 1972 | 4 | 41,330 | $861 | 2002 | 986 | 31,686,050 | $2,678 |
| 1973 | 4 | 39,410 | $821 | 2003 | 1,326 | 46,602,309 | $2,929 |
| 1974 | 2 | 7,245 | $302 | 2004 | 1,307 | 42,942,578 | $2,738 |
| 1975 | 4 | 28,201 | $588 | 2005 | 1,391 | 47,217,798 | $2,829 |
| 1976 | 7 | 97,022 | $1,155 | 2006 | 1,395 | 44,254,000 | $2,644 |
| 1977 | 13 | 166,316 | $1,066 | 2007 | 1,507 | 47,322,431 | $2,617 |
| 1978 | 20 | 291,135 | $1,213 | 2008 | 1,504 | 45,862,213 | $2,541 |
| 1979 | 28 | 469,071 | $1,396 | 2009 | 1,441 | 43,878,059 | $2,537 |
| 1980 | 43 | 755,217 | $1,464 | 2010 | 2,096 | 76,077,828 | $3,025 |
| 1981 | 62 | 1,025,721 | $1,379 | 2011 | 1,933 | 70,806,299 | $3,053 |
| 1982 | 84 | 1,451,946 | $1,440 | 2012 | 1,907 | 61,714,109 | $2,697 |
| 1983 | 88 | 1,887,970 | $1,788 | 2013 | 1,908 | 58,132,551 | $2,539 |
| 1984 | 128 | 2,630,903 | $1,713 | 2014 | 2,004 | 59,752,621 | $2,485 |
| 1985 | 170 | 4,003,216 | $1,962 | 2015 | 2,249 | 65,080,135 | $2,411 |
| 1986 | 228 | 5,758,243 | $2,105 | 2016 | 2,326 | 67,163,272 | $2,406 |
| 1987 | 386 | 10,223,116 | $2,207 | 2017 | 2,503 | 78,273,318 | $2,606 |
| 1988 | 243 | 5,045,837 | $1,730 | 2018 | 2,823 | 93,210,946 | $2,752 |
| 1989 | 319 | 7,842,567 | $2,049 | 2019 | 2,608 | 83,008,825 | $2,652 |
| 1990 | 392 | 10,786,711 | $2,293 | 2020 | 2,661 | 86,544,947 | $2,710 |
| 1991 | 486 | 13,277,056 | $2,277 | 2021 | 2,875 | 97,585,677 | $2,829 |
| 1992 | 497 | 15,104,247 | $2,533 | 2022 | 2,943 | 98,431,490 | $2,787 |
| 1993 | 543 | 18,200,720 | $2,793 | 2023 | 2,707 | 81,737,030 | $2,516 |
| 1994 | 570 | 17,967,123 | $2,627 | | | | |
| | | | | Total | 54,973 | $ 1,751,063,776 | $2,654 |

# Total Benefits Payable

(Recurring Benefit Payments)

Tabulated by Attained Ages of Benefit Recipients as of March 31, 2023

| Attained Ages | Service Retirement No. | Service Retirement Annual Benefits | Disability Retirement No. | Disability Retirement Annual Benefits | Survivors and Beneficiaries No. | Survivors and Beneficiaries Annual Benefits | Total No. | Total Annual Benefits |
|---|---|---|---|---|---|---|---|---|
| Under 20 | - | - | - | - | 31 | 321,355 | 31 | 321,355 |
| 20-24 | - | - | - | - | 16 | 181,361 | 16 | 181,361 |
| 25-29 | - | - | - | - | 30 | 341,578 | 30 | 341,578 |
| 30-34 | - | - | 1 | 18,236 | 62 | 817,468 | 63 | 835,704 |
| 35-39 | 1 | 22,097 | 1 | 9,841 | 80 | 1,124,867 | 82 | 1,156,805 |
| 40-44 | 2 | 57,529 | 14 | 261,402 | 114 | 1,226,304 | 130 | 1,545,235 |
| 45-49 | 33 | 2,548,471 | 23 | 448,262 | 151 | 2,130,369 | 207 | 5,127,102 |
| 50-54 | 313 | 27,915,018 | 100 | 2,108,793 | 213 | 3,457,886 | 626 | 33,481,697 |
| 55-59 | 1,670 | 91,971,269 | 203 | 3,974,345 | 274 | 4,937,369 | 2,147 | 100,882,983 |
| 60-64 | 4,373 | 175,247,234 | 360 | 6,492,545 | 417 | 8,807,090 | 5,150 | 190,546,869 |
| 65-69 | 8,934 | 287,544,532 | 389 | 6,435,423 | 647 | 14,050,593 | 9,970 | 308,030,548 |
| 70-74 | 10,915 | 346,850,196 | 297 | 5,006,851 | 803 | 19,072,143 | 12,015 | 370,929,190 |
| 75-79 | 9,643 | 318,090,699 | 216 | 3,144,160 | 854 | 19,528,837 | 10,713 | 340,763,696 |
| 80-84 | 5,699 | 182,558,680 | 91 | 1,441,533 | 631 | 15,110,380 | 6,421 | 199,110,593 |
| 85-89 | 3,529 | 105,432,392 | 24 | 344,564 | 479 | 11,279,112 | 4,032 | 117,056,068 |
| 90-94 | 2,048 | 53,577,645 | 28 | 429,337 | 339 | 7,337,115 | 2,415 | 61,344,097 |
| 95-99 | 675 | 14,975,967 | 5 | 81,018 | 123 | 2,233,070 | 803 | 17,290,283 |
| 100 & over | 103 | 1,803,852 | 2 | 15,750 | 17 | 299,124 | 122 | 2,118,726 |
| Total | 47,938 | $ 1,608,595,581 | 1,754 | $ 30,212,060 | 5,281 | $ 112,256,021 | 54,973 | $ 1,751,063,890 |



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