 For The Fiscal Year Ended
June 30, 2017

NEW HAMPSHIRE RETIREMENT SYSTEM

## Introductory Section

Cover Design and Layout: Christine Basha, NHRS Public Information Office Board and Staff Photos: Bogacz Photography/Digital Media, Concord, NH 603.228.1229 Design and Layout: Debbie K Graphics, Hillsborough, NH 603.344.9812

To mark our 50th anniversary in 2017, NHRS asked members and retirees to share photos of New Hampshire public employees at work through the years. For information about the photos printed in this report, along with additional photos, please visit https://www.nhrs.org/about-nhrs/nhrs-50-years/photo-gallery

# Comprehensive Annual Financial Report For The Fiscal Year Ended June 30, 2017 

A Component Unit of the State of New Hampshire

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Concord, New Hampshire 03301-8507
www.nhrs.org


Hersh Sosnoff
In Memoríam
Trustee 2011-2017
INTRODUCTORY SECTION
Letter From the Chair ..... 6
Board of Trustees .....  8
Independent Investment Committee ..... 9
Certificate of Achievement ..... 10
Administrative Organization ..... 11
Professional Managers, Advisors and Service Providers ..... 12
Letter of Transmittal ..... 13
FINANCIAL SECTION
Independent Auditors' Report ..... 18
Management's Discussion and Analysis - Required Supplementary Information (Unaudited) ..... 21
Basic Financial Statements:
Combining Statements of Fiduciary Net Position - Pension and Other Postemployment Medical Plan (OPEB) ..... 26
Combining Statements of Changes in Fiduciary Net Position - Pension and Other Postemployment Medical Plan (OPEB) ..... 27
Notes to the Financial Statements ..... 28
Required Supplementary Information (Unaudited):
Schedule of Changes in the Employers' Net Pension Liability and Related Ratios ..... 48
Schedule of Employer Contributions - Pension Plan. ..... 48
Schedule of Changes in the Employers' Net OPEB Liability and Related Ratios ..... 49
Schedule of Employer Contributions - OPEB Plan ..... 49
Schedule of Investment Returns ..... 49
Notes to Required Supplementary Information - Last Ten Fiscal Years ..... 50
Supporting Schedules:
Real Estate Investments by Type and by Location ..... 52
Alternative Investments ..... 53
Net Appreciation (Depreciation) in Fair Value of Investments ..... 53
Real Estate Investments-Income and Expenses ..... 54
Investment Activity Fees and Other Investment Related Expenses ..... 54
Interest Income ..... 55
Dividend Income ..... 55
Alternative Investment Income (Loss) ..... 55
Contributions ..... 56
Benefits ..... 57
Refunds of Contributions ..... 57
Administrative Expenses ..... 58
Professional Fees ..... 58
Membership Composition ..... 59
INVESTMENT SECTION Investment Consultant's Letter ..... 62
Investment Reports:
Annualized Investment Returns-Actual Versus Indices ..... 64
Ten Year History of Time-Weighted Total NHRS Fund Annual Returns ..... 64
Actual Asset Allocation Versus Target Asset Allocation ..... 65
Ten Largest Stock Holdings by Fair Value ..... 66
Ten Largest Fixed Income Holdings by Fair Value ..... 66
Schedule of Investment Management and Service Fees ..... 67
Schedule of Brokerage Commissions Paid ..... 67
Net Position Held in Trust for Benefits ..... 68
Summary of Investments. ..... 68
ACTUARIAL SECTION
Actuarial Certification ..... 70
Summary of Actuarial Assumptions and Methods ..... 73
Historical Membership Data-Active and Retired ..... 81
Solvency Test ..... 85
Analysis of Past Financial Experience ..... 87
Summary of Principal Plan Provisions as Interpreted for Valuation Purposes ..... 89
STATISTICAL SECTION
Statistical Section Summary ..... 96
Schedule of Changes in Net Position ..... 98
Schedule of Benefit and Refund Deductions by Type ..... 100
Schedule of Retired and Vested Members by Type of Benefit. ..... 102
Schedules of Average Benefit Payment Amounts ..... 106
Principal Participating Employers ..... 116
Listing of Participating Employers ..... 117

## Letter From <br> The Chair



NHRS
New Hampshire Retirement System


Richard A. Gustafson, PhD Chair Board of Trustees

December 12, 2017
To the Members and Beneficiaries of the New Hampshire Retirement System:
On behalf of the Board of Trustees of the New Hampshire Retirement System (NHRS, the retirement system), I am pleased to present NHRS' Comprehensive Annual Financial Report (CAFR) for the fiscal year ended June 30, 2017. This report describes the financial conditions of both the Pension Plan and the Other Post Employment Benefit (OPEB) Plan. The report also describes various changes that occurred during Fiscal Year 2017.

This year, NHRS marked its 50th anniversary, and throughout this report readers will see images of current and former members. Governor Christopher Sununu in July commended NHRS for providing "stable, secure pension benefits to those who serve the citizens of New Hampshire."

NHRS realized a $13.5 \%$ return on investments in the fiscal year ended June 30, 2017, exceeding the retirement system's assumed rate of investment return of 7.25\%. It is important to note that these investment returns are for a single year, and need to be considered within the context of the portfolio's performance over time as compared to the assumed rate of return. The three-year, five-year, 10-year, 20-year, and 25-year returns for the periods ended June 30, 2017, were 5.8\%, $9.8 \%, 5.7 \%, 6.8 \%$, and $8.2 \%$, respectively. All returns are net of fees.

The relative performance of our investments has been strong. Compared to the members in the InvestorForce Public Defined Benefit Net Universe, which represents 283 public plans totaling more than $\$ 599$ billion in assets, NHRS performed better than $90 \%$ of its peers over the three and five-year periods and better than $80 \%$ of its peers over the one-, 10-, 20, and 25-year periods. In addition, NHRS' investment and administrative expenses remain below the average expenses reported in the most recent of survey of public pension plans compiled by the National Conference on Public Employee Retirement Plans.

NHRS pursues a long-term investment strategy designed to meet its funding requirements. The Board sets the assumed rate of investment return; approves an investment policy, including asset allocation; and selects an investment consultant to advise the Independent Investment Committee (IIC). The IIC works closely with the consultant and staff to review and change, as appropriate, strategies, external asset managers, and selection of specific investments.

In addition to the information on investments contained in this report, more detailed information on NHRS-specific investment activities and current economic and market climate is provided in the Comprehensive Annual Investment Report for Fiscal Year 2017, issued separately by the IIC.

At June 30, 2017, the funded ratio of the Pension Plan stood at $61.8 \%$ and the OPEB Plan at $5.6 \%$, versus $60.0 \%$ and $3.7 \%$ in the previous year, respectively. Funding status is measured by comparing the actuarial value of assets to the cost of accrued benefits owed now and in the future.

The OPEB plan provides a post-employment medical subsidy benefit to qualified Group I and Group II members. Because the OPEB plan is closed to new members and, as required by statute, is essentially funded on a pay-as-you-go basis, it does not, for the most part, have substantial assets set aside for future funding and benefits are paid from annual employer contributions.

At the close of the fiscal year, the retirement system's net position held in trust was $\$ 8.29$ billion, an increase of approximately $\$ 832$ million over the prior fiscal year, and an all-time high for the plan. The increase is mainly the result of positive investment performance.

In addition to actuarial funding data noted above, the CAFR also includes financial accounting information required under Governmental Accounting Standards Board (GASB) statement No. 67, which deals with financial reporting for pension plans, and GASB statement 74, which deals with financial reporting of OPEB plans, i.e. the Medical Subsidy. This information is for accounting purposes only and does not impact employer contribution rates or the statutory funding plan in place to pay down the NHRS unfunded liability.

The Board of Trustees has a fiduciary responsibility to ensure that the interests of members and beneficiaries are properly safeguarded over the long term. This responsibility is embodied in the law and supported by New Hampshire Constitution (Part I, Article 36-a), which protects trust fund assets for the exclusive purpose of providing benefits, requires Trustees to set actuarially sound employer contribution rates, and requires employers to annually pay those rates in full.

In the past decade, a number of legislative and policy changes have put NHRS on a path to financial health, including a closed 30-year amortization period for the retirement system's unfunded actuarial accrued liability (UAAL) through 2039. This year, a statutorily created Decennial Commission charged to make recommendations to ensure the long-term viability of the retirement system met throughout the fall to review the status of the plan. This 17-member commission will issue its report by the end of the calendar year.

Through a number of recent and ongoing initiatives, NHRS has continued to strengthen its operations, efficiency, and stakeholder outreach. These efforts include expanded employer education efforts, targeted outreach to new members, and ongoing cyber-security efforts, including authentication enhancements to My Account, the retirement system's online member and retiree portal. In addition, NHRS revised and refined its Mission, Vision, and Values statement to be more concise, memorable and forward-focused - "To provide secure retirement benefits and superior service."

This year, Board and staff mourned the passing of Trustee Herschel Sosnoff, who died July 1, 2017, after a long illness. Trustee Sosnoff had served on the Board since November 2011, and was also a member of the Independent Investment Committee since January 2012.

In other board transitions, Stephen Marro joined the Board in January as the county employer representative, and John Beardmore resigned in October as the state employer representative.

Another noteworthy transition was the retirement of former state Sen. Harold Janeway as the Chair of the IIC, a position he held since the committee was created in 2009. Also a former Trustee, Sen. Janeway chaired the investments subcommittee of the 2007 retirement commission that developed the initial recommendation to create the IIC, and as a state senator, he shepherded the bill through the legislative process. Trustee Maureen Kelliher, who has served on the IIC since June, 2014, was elected to chair the committee.

We are pleased with the continued progress that has been made toward improving internal operational efficiencies and controls, delivering timely and professional services, and implementing the necessary changes to support the sustainability and stability of NHRS. Our primary areas of focus moving forward are improving the funded ratio of the pension trust, generating investment returns at or above the actuarially assumed rate, and continuously working to improve the efficiency of our processes. The Board and staff are committed to proactively meeting these challenges for the benefit of the retirement system's members and beneficiaries.

Sincerely,


## Board of <br> Trustees

BOARD OF TRUSTEES

J. David McCrillis

Public Member
August 2012 to July 2018


Donald M. Roy, Jr.
Employer Member
July 2011 to July 2017


Germano Martins
Employee Member
May 2013 to July 2018


William Hart
Police Officer Member August 2016 to July 2018


Stephen Marro
Employer Member
December 2016 to July 2019


Maureen Kelliher
Public Member June 2014 to July 2017


Michael R. Milligan Employer Member
November 2017 to July 2018


Tonya J. Angwin Teacher Member October 2014 to July 2018


William Dwyer
State Treasurer March 2014 ex officio


Keith Quinton April 2017-Present

## INDEPENDENT MEMBERS



David A. Jensen
January 2009-December 2010 December 2011-Present


Patrick O'Donnell
May 2009-December 2010
July 2011-Present

TRUSTEE MEMBERS


Maureen Kelliher, Chair June 2014-Present


Hershel Sosnoff January 2012-June 2017

In Memoriam

## Certificate of Achievement

Government Finance Officers Association

# Certificate of Achievement for Excellence in Financial Reporting 

Presented to

## New Hampshire Retirement System

For its Comprehensive Annual
Financial Report
for the Fiscal Year Ended
June 30, 2016


Executive Director/CEO


## NHRS MANAGEMENT TEAM



Seated left to right: Cynthia Peterson, Timothy J. Crutchfield, George P. Lagos, Lawrence A. Johansen, Mark Cavanaugh, Nancy Cone. Standing left to right: Nancy Miller, Carolyn Madden, Nina Calkins, Heather Fritzky, Tracey Horner, Marty Karlon, Rosamond Cain, Margaret Astles, and Tamre McCrea. Absent when photo was taken: Frank Clough and Cecile Merrill.

## Professional Managers, Advisors and Service Providers

DOMESTIC EQUITY MANAGERS
AB
Blackrock Institutional Trust Company, N.A.
Boston Trust \& Investment Management Company
Institutional Capital LLC
LSV Asset Management
Segall, Bryant and Hamill
Thompson, Siegel \& Walmsley LLC
Wellington Management Company, LLP

NON-U.S. EQUITY MANAGERS
Aberdeen Asset Management Inc.
Artisan Partners
Causeway Capital Management
Fisher Investments
Grantham, Mayo, Van Otterloo \& Co. LLC
LSV Asset Management
Neuberger Berman
Segall, Bryant and Hamill
Walter Scott \& Partners Limited
Wellington Trust Company, N.A.

FIXED INCOME MANAGERS
Brandywine Global Investment
Management, LLC
DoubleLine Capital
GAM
Income Research \&
Management
Loomis Sayles \&
Company, L.P.
Manulife Asset Management

PRIVATE DEBT \& EQUITY
MANAGERS
Actis
Alcentra
Apax Partners
Apollo Global Management
Avenue Capital Group
BlackRock Private Equity Partners
BlueBay Asset Management
Carlyle Group
CarVal Investors
CCMP Capital
Comvest Partners
Coller Capital
Crescent Capital Group
Edgewater Growth Capital Partners
Gramercy
HarbourVest Partners
Industry Ventures
Ironwood Capital
Kayne Anderson Capital Advisors
Lexington Capital Partners
MatlinPatterson Global Advisers
Monroe Capital
NGP Energy Capital Management
Paul Capital
Pine Brook Capital Partners
Riverstone Holdings
RFE Investment Partners
Siguler Guff \& Co.
SL Capital Partners
Standard Life Investments
Tennenbaum Capital Partners
Thoma Bravo
Top Tier Capital Partners
VSS
Warburg Pincus
REAL ESTATE MANAGERS
The Townsend Group

TRANSITION MANAGERS
Abel/Noser, LLC
BlackRock Institutional Trust Company, N.A.
Pavillion Global Markets
Russell Implementation Services
State Street Bank and Trust Company

## INDEPENDENT AUDITORS

KPMG LLP

INVESTMENT ADVISOR
NEPC, LLC
ACTUARIAL CONSULTANT
Gabriel, Roeder, Smith \& Company
LEGAL ADVISORS
Foster Pepper PLLC
Getman, Stacey, Schulthess \& Steere, P.A.
Groom Law Group
Peter T. Foley, Esquire
Sulloway \& Hollis PLLC
McLane Middleton, P.A.

CUSTODIANS
Citizens Bank-NH
(In-state Custodian)
BNY Mellon (Master Custodian)

## CORPORATE GOVERNANCE

SERVICES
Institutional Shareholder Services, Inc.

TRADING COST ADVISOR
Abel/Noser, LLC

New Hampshire Retirement System<br>54 Regional Drive, Concord, NH 03301<br>Phone: (603) 410-3500 - Fax: (603) 410-3501<br>Website: www.nhrs.org - Email: info@nhrs.org



George P. Lagos
Executive Director

December 12, 2017
Dear Chair and Members of the Board of Trustees:
We are pleased to submit the Comprehensive Annual Financial Report (CAFR) of the New Hampshire Retirement System (NHRS) for the fiscal year ended June 30, 2017. This comprehensive report is designed to comply with the provisions of the Revised Statutes Annotated (RSA) 100-A:15, VI of the State of New Hampshire.

The management at NHRS is responsible for the complete and fair presentation of financial information and the accompanying disclosures in this report. This report fairly presents the combined assessment of the investment results and the financial condition of the Pension Plan and the Post-Employment Medical Plan.

The Pension Plan was established in 1967 to consolidate and replace four separate pension plan systems: the New Hampshire Teachers' Retirement System, the New Hampshire State Employees Retirement System, the New Hampshire Policemen's Retirement System, and the New Hampshire Permanent Firemen's Retirement System. The Pension Plan provides service retirement, disability retirement, early and vested retirement, and survivor benefits for all full-time state employees, public school teachers and administrators, permanent police officers, and permanent firefighters. Full-time employees of political subdivisions (such as county, municipal or school district employees) are also eligible to become members if the local governing body elects participation. At the close of the fiscal year, there were 47,886 active members and 35,694 retirees or beneficiaries.

The Pension Plan is a qualified governmental plan within the meaning of section 414(d) of the United States Internal Revenue Code and has a separately appointed governing body. Based on financial reporting guidelines, the Pension Plan is deemed to be a single pension plan. In addition, NHRS administers a post-employment medical plan (OPEB Plan) for qualified Group I and Group II members.

## BUDGET CONTROLS AND NHRS ADMINISTRATION

The administrative budget for fiscal year 2017 was proposed by management, approved by the Board of Trustees, submitted under the budget preparation guidelines of the State of New Hampshire, and passed into law by the New Hampshire Legislature. For financial reporting purposes, NHRS is considered a component unit of the State of New Hampshire.

NHRS is administered by a 13-member Board of Trustees, which includes the State Treasurer as an ex officio member, one employee member, one teacher member, one firefighter member, one police officer member, four public nonmembers, and four employer representatives. The Board of Trustees sets the investment policy, formulates administrative policies, and authorizes benefit payments to members and their beneficiaries. The NHRS Independent Investment Committee is responsible for investing in accordance with policies established by the Board; selecting investment managers, agents, and custodial banks; reviewing performance; and making recommendations to the Board regarding investment consultants, asset allocation, and other investment policy matters. Administrative functions are directed by the Executive Director and are carried out by the administrative staff.

## ACCOUNTING SYSTEM AND INTERNAL CONTROL

The CAFR has been prepared in conformity with U.S. generally accepted accounting principles (GAAP). The financial statements are prepared on the accrual basis of accounting. Contributions are recognized as revenue in the period when they become due pursuant to statutory requirements. Investment income is recognized as it is earned. Benefits, refunds, and investment expenses are recognized when they become due and payable. Net appreciation (depreciation) in the fair value of investments is recorded as an increase (decrease) to investment income based on the valuation of investments as of the date of the financial statements. Trade commissions and related transaction costs are netted against the fair value of investments. Capital assets are recognized in the financial statements in accordance with NHRS's established capital asset policy.

The management at NHRS is responsible for maintaining a system of internal controls which is designed to provide reasonable assurance that the assets are adequately safeguarded and the financial reports and financial statements are fairly stated. There is not an expectation from management that the internal controls will prevent or detect all errors and fraud.

A control system, no matter how well designed and operated, can provide reasonable, not absolute, assurance that the objectives of the control system are met. The concept of reasonable assurance recognizes that: (1) The cost of a control should not exceed the benefits likely to be derived; and (2) The evaluation of costs and benefits requires estimates and judgments by management. Management believes its internal control structure meets these objectives.

## FINANCIAL PERFORMANCE

For the fiscal year ended June 30, 2017, plan net position increased $\$ 832.3$ million to $\$ 8,293.3$ billion compared to a $\$ 69.1$ million net position decrease for the prior year. Positive investment returns for the five years ended June 30, 2017, contributed to a modest improvement in the retirement system's funded ratio. While the economy is showing slow but incremental signs of improvement, the retirement system still has significant financial challenges ahead of it. A detailed discussion of investment performance, the sources of additions and deductions, and results of operations is covered in the Management's Discussion and Analysis beginning on page 21.

## FUNDING STATUS

In order to ensure that current and future retirement benefits are safeguarded and available to members at retirement, NHRS evaluates the actuarial value of the Plans' assets compared to the actuarial value of the Plans' liabilities as an indication of the extent to which the Plans are funded each year. This measure is called the plan funded ratio. Significant legislation was enacted in the 2008 and 2011 legislative sessions aimed at improving the funded ratios of the Plans.

The Pension Plan funded ratio at June 30, 2017, based on the June 30, 2017 actuarial valuation was $61.8 \%$. The comparable funded ratio at June 30, 2016, based on the June 30, 2016 interim actuarial valuation was $60.0 \%$. The funded ratio of the OPEB Plan at June 30, 2017, based on the June 30, 2017 actuarial valuation, was $5.6 \%$. The comparable funded ratio at June 30, 2016, based on the June 30, 2016 interim actuarial valuation was $3.7 \%$. The ratio of Plan net position to the Plan liability under GAAP is separately determined for both the Pension and OPEB plan and is discussed in the financial statements. A comprehensive analysis of funding progress for the Plans is provided in the Required Supplementary Information beginning on page 48.

NHRS adopted an actuarial funding policy in FY 2014 which defines the actuarial method and assumptions used to determine the employer contribution rates necessary to fund the plan. For more details on NHRS' actuarial funding policy, go to www.nhrs.org/about-nhrs/policies.

## NET PENSION LIABILITY

The total pension liability is the accrued liability for benefits owed now and in the future based on the Entry Age Normal funding method. The fiduciary net position is the fair value of plan net assets. The net pension liability is the total pension liability, less the amount of the pension plan's fiduciary net position. These disclosures are accounting measurements, not actuarial measurements of the funded status of the plan, and are not used to develop employer contribution rates.

## INVESTMENTS

RSA 100-A:15 grants the New Hampshire Retirement System Board of Trustees the authority to adopt the investment policy for NHRS. Effective January 1, 2009, an Independent Investment Committee (IIC) was established by statute granting it authority to invest and reinvest NHRS funds in accordance with the investment policy adopted by the Board of Trustees. Prior to January 1, 2009, the Board of Trustees had the authority to invest and reinvest NHRS funds.

The Independent Investment Committee consists of not more than five members, three of whom are not members of the Board of Trustees and up to two of whom are members of the Board of Trustees appointed by the chairperson of the Board of Trustees. The Trustees and Independent Investment Committee members are fiduciaries and discharge their duties solely in the interest of the Plans' participants and beneficiaries. In the management of the Plans' assets, the Board of Trustees and the Independent Investment Committee members must exercise the care, skill, and caution under the circumstances then prevailing that a prudent person acting in a like capacity would use in the conduct of an activity of like character and purpose.

The annualized total fund investment returns for the one-year, three-year, five-year, ten-year, and twenty-year periods ended June 30, 2017, were $13.5 \%, 5.8 \%, 9.8 \%, 5.7 \%$, and $6.8 \%$, respectively. A discussion about comparative annualized returns and related benchmark indices for fiscal years 2017 and 2016 is presented in the Management's Discussion and Analysis beginning on page 21.

For the five, six, seven and eight years ending June 30, 2017, a period during which the Independent Investment Committee made the investment decisions, total fund performance was in the top decile.

The outperformance of 150 bps relative to the median of the InvestorForce Public Defined Benefit Net Universe for the eight years ending June 30, 2017 represents approximately $\$ 508$ million.

The underperformance of 60 bps relative to the median of the same index for the eight years ending June 30, 2009 represents approximately $\$ 198$ million.

## MAJOR INITIATIVES

NHRS faces many issues common to other public employee retirement plans. As part of its proactive response to these challenges, the retirement system strives to create a culture of constant improvement. Some of the significant accomplishments during fiscal year 2017 were:

- Achieved investment performance for FY 2017 of $13.5 \%$ which placed NHRS in the top $18 \%$ of the peer universe of public pension plans; the three-, five-, 10-, 20-, and 25-year returns for the periods ended June 30, 2017, were $5.8 \%, 9.8 \%, 5.7 \%, 6.8 \%$, and $8.2 \%$, respectively. NHRS performed better than $90 \%$ of its peers over the threeand five-year periods and better than $80 \%$ of its peers over the one-, $10-, 20-$, and 25 -year periods.
- Developed and documented a comprehensive business continuity plan to ensure continuity of core services in the event of disruptive events.
- Made several upgrades to My Account, the retirement system's secure online member portal, including enhanced security for enrollment and the capability for registered users to file for retirement electronically.
- Revised and refined Mission, Vision, and Values statement to be more concise, memorable, forward-focused "To provide secure retirement benefits and superior service."
- Developed educational presentations and online materials for new members as part of a multi-year effort to expand education and outreach to members, retirees, and employers.
- Successfully implemented requirements of GASB 74 (Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans).
- Earned a Certificate of Achievement for Excellence in Financial Reporting for both the Comprehensive Annual Financial Report (CAFR) and Summary CAFR.
- Developed a Fraud Policy that provides a framework for the responsible and professional conduct by all NHRS employees and members of the Board of Trustees who may find themselves in a position of suspecting or identifying potentially fraudulent activities related to NHRS.
- Marked the 50th anniversary on the retirement system throughout FY 2017.


## INDEPENDENT AUDIT

RSA 100-A:15 VI. (a) requires the Audit Committee of the Board of Trustees to engage the services of a qualified independent auditor to perform an annual audit each fiscal year. For fiscal year 2017, the Audit Committee designated KPMG LLP to conduct the annual audit. The independent auditors' report, audited financial statements, required supplementary information, and supporting schedules are included in the Financial Section of this report.

## ACTUARIAL REVIEW AND VALUATION

An actuarial review, commonly called an experience study, of the mortality, service, withdrawals, and compensation experience of members is required by statute at least once during each five-year period. The last actuarial review was performed during fiscal year 2016 by NHRS' current actuary, Gabriel, Roeder, Smith and Company and was based on the information available as of June 30, 2015. An actuarial valuation of the assets and liabilities is required by statute at least once during each two-year period. The June 30, 2017 actuarial valuation will be used to determine employer contribution rates for fiscal years 2020 and 2021. The actuarial certification and supporting statistics are included in the Actuarial and Statistical Sections of this report.

## CERTIFICATE OF ACHIEVEMENT FOR EXCELLENCE IN FINANCIAL REPORTING

The NHRS Comprehensive Annual Financial Report for the fiscal year ended June 30, 2016, was awarded the Certificate of Achievement for Excellence in Financial Reporting by the Government Finance Officers Association of the United States and Canada (GFOA). The Certificate of Achievement is the highest form of recognition in the area of state and local governmental accounting and financial reporting, and attaining it represents a significant accomplishment by a government and its management. We are gratified that NHRS has received this award for 25 of the past 26 years. A copy of the fiscal year 2016 award is presented on page 10.

## ACKNOWLEDGMENTS

The compilation of this report reflects the combined efforts of the NHRS administrative staff under the direction of the Board of Trustees. It is intended to provide extensive and reliable information as a basis for making management decisions, determining compliance with legal provisions, and for determining responsible stewardship for the investment and accounting for assets of plan participants. We would like to take this opportunity to express our gratitude to the Board of Trustees for its guidance and support and to the administrative staff for their dedication and commitment to the mission, vision and values of the New Hampshire Retirement System. We would also like to note our appreciation for the professional and diligent work of the Independent Investment Committee whose efforts have consistently generated superior returns in accordance with the Board's investment policy.

Respectfully submitted,


# FINANCIAL section 

NHRS paid out $\$ 706$ million in pension benefits in Fiscal Year 2017. The average annual pension benefit is just under \$20,000.


## Independent <br> Auditors' <br> Report

KPMG LLP<br>Two Financial Center<br>60 South Street<br>Boston, MA 02111

The Board of Trustees<br>New Hampshire Retirement System:

## REPORT ON THE FINANCIAL STATEMENTS

We have audited the accompanying financial statements of the New Hampshire Retirement System (the System), a component unit of the State of New Hampshire, as of and for the year ended June 30, 2017, and the related notes to the financial statements, which collectively comprise the System's basic financial statements as listed in the table of contents.

## MANAGEMENT'S RESPONSIBILITY FOR THE FINANCIAL STATEMENTS

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

## AUDITORS' RESPONSIBILITY

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

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

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

## OPINION

In our opinion, the financial statements referred to above present fairly, in all material respects, the fiduciary net position of the System as of June 30, 2017, and the changes in its fiduciary net position for the year then ended in accordance with U.S. generally accepted accounting principles.

## EMPHASIS OF MATTER

As discussed in Note 2 to the financial statements, in 2017 the System adopted Governmental Accounting Standards Board Statement No. 74, Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans. Our opinion is not modified with respect to this matter.

## OTHER MATTERS

## Report on Summarized Comparative Information

We have previously audited the System's 2016 financial statements, and we expressed an unmodified opinion on those audited financial statements in our report dated December 20, 2016. In our opinion, the summarized comparative information presented herein as of and for the year ended June 30, 2016 is consistent, in all material respects, with the audited financial statements from which it has been derived.

## Required Supplementary Information

U.S. generally accepted accounting principles require that management's discussion and analysis on pages 21-25, the schedules of changes in the employers' net pension liability and related ratios, employer contributions - pension plan, changes in employers' net OPEB liability and related ratios, employer contributions - OPEB plan, investment returns and the related notes to required supplementary information on pages 48-51, be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board who consider it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

## Supplementary and Other Information

Our audit for the year ended June 30, 2017 was conducted for the purpose of forming an opinion on the financial statements that collectively comprise the System's basic financial statements. The Supporting Schedules as detailed in the accompanying table of contents, and the Introductory, Investment, Actuarial, and Statistical Sections are presented for purposes of additional analysis and are not a required part of the basic financial statements.

The Supporting Schedules as of and for the year ended June 30, 2017 are the responsibility of management and were derived from and relate directly to the underlying accounting and other records used to prepare the basic financial statements. Such information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the Supporting Schedules are fairly stated, in all material respects, in relation to the basic financial statements as a whole for the year ended June 30, 2017.

We also previously audited, 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, the basic financial statements of the System as of and for the year ended June 30, 2016 (not presented herein), and have issued our report thereon dated December 20, 2016, which contained an unmodified opinion on those financial statements. The Supporting Schedules as of and for the year ended June 30, 2016 are presented for purposes of additional analysis and are not a required part of the basic financial statements. Such information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the 2016 financial statements. Such information has been subjected to the auditing procedures applied in the audit of the 2016 basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare those financial statements or to those financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the Supporting Schedules are fairly stated, in all material respects, in relation to the basic financial statements as a whole for the year ended June 30, 2016.

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

## OTHER REPORTING REQUIRED BY GOVERNMENT AUDITING STANDARDS

In accordance with Government Auditing Standards, we have also issued our report dated December 12, 2017 on our consideration of the System's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the effectiveness of 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 System's internal control over financial reporting and compliance.
KPMG LLP

December 12, 2017

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# Management’s Discussion and Analysis - <br> Required Supplementary Information (UNAUDITED) 

This section presents management's discussion and analysis of the New Hampshire Retirement System's (NHRS) financial performance during the fiscal year ended June 30, 2017 and is presented as a narrative overview and analysis in conjunction with the Letter of Transmittal included in the Introductory Section of the System's Comprehensive Annual Financial Report. The report presents the combined assessment of the financial performance of the Pension Plan and the OPEB Plan.

The discussion and analysis is intended to serve as an introduction to the basic financial statements. These statements include the Combining Statements of Fiduciary Net Position and Changes in Fiduciary Net Position, and the related Notes to the Financial Statements for the fiscal year ended June 30, 2017 with summarized comparative information for fiscal year 2016. In addition, Required Supplementary Information is provided for the Pension and OPEB plan. The excess of assets over liabilities is reported as "Net Position Restricted for Pension and Other Post Employment Benefits (OPEB)."

## FINANCIAL HIGHLIGHTS

Net position increased by $\$ 832.3$ million (11.2\%) from the prior year's net position reflecting strong performance results across all asset classes.

Net investment income during fiscal year 2017 was $\$ 982.6$ million, a $\$ 920.6$ million ( $1,484.8 \%$ ) increase over the prior fiscal year. The net investment income for fiscal year 2017 reflects a time-weighted return for the total fund during the year of $13.5 \%$ compared to a time-weighted investment return of $1.0 \%$ for the fiscal year ended June 30, 2016.

The total contributions received during the fiscal year were $\$ 638.9$ million. For fiscal year 2016, total contributions received were $\$ 623.6$ million.

Employer contributions for fiscal year 2017 increased 2.4\%, to $\$ 425.8$ million, compared with employer contributions in fiscal year 2016 of $\$ 415.7$ million. The increase in employer contributions in fiscal year 2017 was primarily due to higher contribution rates.

Member contributions were $\$ 213.1$ million in fiscal year 2017, an increase of 2.5\% over fiscal year 2016 member contributions of $\$ 207.9$ million. The increase in member contributions is primarily due to an increase in pensionable wages for contributing members. Overall member normal contributions increased by $\$ 5.2$ million or $2.5 \%$ over the prior fiscal year. Voluntary member contributions decreased by \$0.1 million or $-6.4 \%$ over fiscal year 2016.

Benefits paid during fiscal year 2017 were $\$ 756.9$ million, an increase of $4.8 \%$ over benefits paid in fiscal year 2016 of $\$ 722.2$ million. The increase in benefits paid in fiscal year 2017 is primarily due to an increase in the number of retirees and increased average benefit levels for those new retirees.

## FINANCIAL ANALYSIS

The following schedules report the Condensed Net Position Information and the Condensed Changes in Net Position Information for the NHRS for the fiscal years ended June 30, 2017 and June 30, 2016.

## Condensed Comparative Plan Net Position - Combined Plans

(Dollar Values Expressed in Millions)

|  | $\begin{gathered} \text { As of } \\ \text { June 30, } 2017 \end{gathered}$ | As of June 30, 2016 | Amount Increase (Decrease) |  | Percentage Increase (Decrease) |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Cash | \$ 9.3 | \$ 6.7 | \$ | 2.6 | 38.8\% |
| Receivables | 107.3 | 122.9 |  | (15.6) | (12.7\%) |
| Investments | 8,205.2 | 7,372.7 |  | 832.5 | 11.3\% |
| Other Assets | 0.2 | 0.2 |  | - | 0.0\% |
| Total Assets | \$ 8,322.0 | \$ 7,502.5 | \$ | 819.5 | 10.9\% |
| Other Liabilities | 28.7 | 41.5 |  | (12.8) | (30.8\%) |
| Total Liabilities | \$ 28.7 | \$ 41.5 | \$ | (12.8) | (30.8\%) |
| Net Position Restricted for Pension and Other Post Employment Benefits | \$ 8,293.3 | \$ 7,461.0 | \$ | 832.3 | 11.2\% |

Total assets increased by $\$ 819.5$ million (10.9\%) in fiscal year 2017. Cash on hand at fiscal year end was $\$ 9.3$ million ( $38.8 \%$ ) higher than at fiscal year end 2016 reflecting lower draw downs of liquidity reserves necessary to meet operating obligations. Receivables decreased by $\$ 15.6$ million ( $12.7 \%$ ) over the prior fiscal year primarily due to a decrease in the pending sales of securities at fiscal year end. Investments increased by $\$ 832.5$ million (11.3\%) in fiscal year 2017. The increase in investments is attributable to the strong absolute and relative performance of all asset classes. Other assets remain unchanged at $\$ 0.2$ million for fiscal year 2017.

Total liabilities decreased by $\$ 12.8$ million (30.8\%) at the end of fiscal year 2017 primarily due to a decrease in the liabilities (due to) OPEB plan at fiscal year end.

Condensed Comparative Changes in Plan Net Position - Combined Plans (Dollar Values Expressed in Millions)

|  | Year Ended June 30, 2017 |  | Year Ended June 30, 2016 |  | Amount Increase (Decrease) |  | Percentage Increase (Decrease) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ADDITIONS: |  |  |  |  |  |  |  |
| Employer Contributions | \$ | 425.8 | \$ | 415.7 | \$ | 10.1 | 2.4\% |
| Member Contributions |  | 213.1 |  | 207.9 |  | 5.2 | 2.5\% |
| Net Investment Income |  | 982.6 |  | 62.0 |  | 920.6 | 1,484.8\% |
| Other Income |  | 0.2 |  | 0.8 |  | (0.6) | (75.0\%) |
| Total Additions to Plan Net Position | \$ | 1,621.7 | \$ | 686.4 | \$ | 935.3 | 136.3\% |
| DEDUCTIONS: |  |  |  |  |  |  |  |
| Benefits Paid | \$ | 756.9 | \$ | 722.2 | \$ | 34.7 | 4.8\% |
| Refunds of Contributions |  | 23.4 |  | 24.2 |  | (0.8) | (3.3\%) |
| Administrative Expense |  | 7.7 |  | 7.1 |  | 0.6 | 8.5\% |
| Other Deductions |  | 1.4 |  | 2.0 |  | (0.6) | (30.0\%) |
| Total Deductions from Plan Net Position | \$ | 789.4 | \$ | 755.5 | \$ | 33.9 | 4.5\% |
| Total Changes in Plan Net Position | \$ | 832.3 | \$ | (69.1) | \$ | 901.4 | 1,304.5\% |

## ADDITIONS TO NET POSITION

For fiscal year 2017, the combined total of employer and member contributions increased by $\$ 15.3$ million or 2.5\%. Employer contributions increased from $\$ 415.7$ million in fiscal year 2016 to $\$ 425.8$ million or $2.4 \%$ in fiscal year 2017. The increase in employer contributions is primarily due to higher earnable compensation rates. Member contributions for fiscal year 2017 were $\$ 213.1$ million, an increase of $\$ 5.2$ million or $2.5 \%$ from fiscal year 2016. Member normal contributions increased $\$ 5.2$ million or $2.6 \%$ in fiscal year 2017 and voluntary member contributions decreased by $\$ 0.1$ million or $1.5 \%$.

Over the long term, the Plan's investment portfolio has been a major source for additions to plan net position. There was a net investment income gain in fiscal year 2017 of $\$ 982.6$ million compared with a net investment income gain in fiscal year 2016 of $\$ 62.0$ million. The net change from year-to-year was $\$ 920.6$ million or $1,484.8 \%$, a significant increase from fiscal year 2016. The increase in investment income was driven by strong performance across all asset classes but particularly within the equity component as U.S. and Non-U.S. equity accounted for the majority of the increase returning

19.3\% and 20.1\% for the fiscal year, respectively. Alternative investments (primarily private debt and equity) and real estate also enhanced returns, generating $11.9 \%$ and $9.1 \%$, respectively. These asset classes benefited from the continued economic expansion in the U.S. combined with an uptick in global growth outside the U.S. which lead to the significant returns mentioned above.

## DEDUCTIONS FROM NET POSITION

Total benefits paid in fiscal year 2017 were $\$ 756.9$ million, an increase of $\$ 34.7$ million or $4.8 \%$ over the fiscal year 2016 level of $\$ 722.2$ million. Pension benefits paid in fiscal year 2017 were $\$ 706.3$ million, an increase of $\$ 35.9$ million or $5.4 \%$ compared with the pension benefits paid in fiscal year 2016 of $\$ 670.4$ million. The increase in pension benefits paid in fiscal year 2017 is primarily due to an increase in the number of retirees and increased average benefit levels for those new retirees. OPEB benefits paid in fiscal year 2017 were $\$ 50.6$ million, which was slightly lower than the benefits paid in 2016. Future OPEB benefit payments will remain flat or go down over time since there is a very small population of active members that can still qualify for this benefit. Refunds of contributions were $\$ 23.4$ million, a decrease of $\$ 0.8$ million or $3.3 \%$ over the 2016 level of $\$ 24.2$ million. The decrease reflects a decrease in the number and dollar value of refund requests from terminated members in 2017.

Administrative expenses increased by $\$ 0.6$ million or $8.5 \%$ in fiscal year 2017 to a level of $\$ 7.7$ million compared with $\$ 7.1$ million in 2016. Administrative expenses increased primarily due to increased technology, wage, and benefit cost.


## PLAN FUNDING STATUS

Funded ratios are a useful measurement that can be used in conjunction with many other factors to assess the financial soundness of a pension or OPEB plan. The Pension Plan's funded ratio is calculated by dividing the plan fiduciary value of assets available to pay pension benefits by the total pension accrued liability. The OPEB Plan's funded ratio is calculated by dividing its actuarial value of assets at year end ( 5 -year smoothing of fair values) by its actuarial accrued liability at year end. The liabilities that were used to determine the funded ratios for both the Pension and OPEB plan were determined using the entry age normal actuarial cost method for both fiscal year 2017 and 2016.

The total pension liability under GAAP at June 30, 2017, was $\$ 13,172.0$ million. The fiduciary net position available to pay pension benefits at June 30, 2017 was $\$ 8,254.0$ million, resulting in a net pension liability of $\$ 4,918.0$ million and a total pension liability of 62.7\% of the plan fiduciary net position at June 30, 2017, as of June 30, 2016, it was $\$ 12,751.9$ million.

The plan fiduciary value of assets available to pay pension benefits at June 30, 2016 was $\$ 7,434.3$ million, resulting in a net pension liability of $\$ 5,317.6$ million and a funded ratio of $58.3 \%$.

The total OPEB liability under GAAP at June 30 , 2017, was $\$ 496.5$ million. The fiduciary net position available to pay postemployment medical benefits at June 30, 2017 was $\$ 39.3$ million resulting in a net OPEB liability of $\$ 457.2$ million and an OPEB liability of $7.9 \%$ at June 30, 2017. As of June 30, 2016, the total OPEB liability was $\$ 510.7$ million. The fiduciary net position available to pay OPEB benefits at June 30, 2016 was $\$ 26.6$ million resulting in a net OPEB liability of $\$ 484.1$ million and a net OPEB liability of 5.2\%.

## NEW ACCOUNTING PRONOUNCEMENT

In fiscal year 2017, the System adopted the provisions of GASB Statement No. 74, Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans (GASB 74), which is effective for all state and local governments OPEB plans for periods beginning after June 15, 2016. More information can be found in note 2 beginning on page 32.

## INVESTMENT PERFORMANCE

NHRS recognizes that it operates in a dynamic economic environment. The challenges of investing the Plans' funds strategically to achieve the actuarial rate of return while controlling risk are greater than ever. As such, NHRS has allocated assets to a broad range of asset classes.

Equity (50\%), fixed income investments (22\%), and cash equivalents (2\%) comprise approximately $75 \%$ of invested assets at June 30, 2017. The remaining 25\% of assets are invested in real estate ( $10 \%$ ) and alternative investments (15\%), which include private equity, private debt and absolute return strategies. These illiquid assets are expected to earn enhanced returns and manage risk through further diversification.

Investment performance results are measured by the relationship of the Plans' portfolio returns for equity and fixed income investments against widely-accepted market indices. For the fiscal year ended June 30, 2017, the Plans' total fund timeweighted rate of return was $13.5 \%$ compared to $1.0 \%$ for the fiscal year ended June 30, 2016. The difference in year-over-year performance was due to the strength of the global capital markets across all asset classes.

**Performance returns are calculated on a net-of-fees time-weighted rate of return basis.

The total NHRS fund time-weighted rate of return of $13.5 \%$ for fiscal year 2017 outperformed the total fund custom index (a blended composition of major market indices in proportion to the NHRS' asset allocation), which returned 11.9\%, by 160 basis points. The NHRS outperformed relative to the benchmark, the NHRS also outperformed $82 \%$ of its peers. Domestic Equity generated a return of $19.3 \%$, outperforming the Russell 3000 Index return of $17.9 \%$ by 140 basis points. The non-U.S. equity portfolio returned $20.1 \%$ during fiscal year 2017, underperforming the MSCI ACWI (ex U.S.) benchmark return of $20.5 \%$ by 40 basis points. Fixed income returned $3.9 \%$ and outperformed the Barclays Capital Universal Bond Index benchmark return of $0.9 \%$ by 300 basis points. The real estate portfolio gained $9.1 \%$ and outperformed the NCREIF Property Index $+50 \%$ benchmark return of $6.9 \%$ by 220 basis points. The alternative investment class provided a $11.9 \%$ return and outperformed the blended benchmark return of $11.3 \%$ by 60 basis points. The benchmark for this asset class is the S\&P $500+3.0 \%$ weighted to the allocation of private equity and private debt weighted to the allocation of absolute return strategies.

## CONTACTING NHRS

The Comprehensive Annual Financial Report is designed to provide a general overview of NHRS investment results and financial condition of the Pension and OPEB Plan for the year ended June 30, 2017. Detailed information regarding NHRS' investments as of June 30, 2017 can be found in the Comprehensive Annual Investment Report which is published by the Independent Investment Committee of the NHRS. Please contact the NHRS office at 603.410.3500 for additional financial information or for questions related to this report, or the Comprehensive Annual Investment Report. Additional information can also be obtained from the NHRS website at www.nhrs.org.

## Basic Financial <br> Statements

COMBINING STATEMENTS OF FIDUCIARY NET POSITION
PENSION AND OTHER POSTEMPLOYMENT MEDICAL PLAN (OPEB)
AS OF JUNE 30, 2017 (with summarized financial information as of June 30, 2016) (in thousands)

|  | PENSION PLAN 2017 | OPEB PLAN 2017 | $\begin{gathered} \text { TOTAL } \\ 2017 \end{gathered}$ | $\begin{gathered} \text { TOTAL } \\ 2016 \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: |
| ASSETS: |  |  |  |  |
| Cash | \$ 9,345 | \$ 37 | \$ 9,382 | \$ 6,747 |
| Receivables: |  |  |  |  |
| Due from Employers | 40,606 | 7,152 | 47,758 | 46,545 |
| Due from Plan Members | 23,038 | - | 23,038 | 22,389 |
| Due from Brokers for Securities Sold | 15,746 | 62 | 15,808 | 29,961 |
| Interest and Dividends | 17,416 | 68 | 17,484 | 17,857 |
| Other | 3,150 | 12 | 3,162 | 1,675 |
| TOTAL RECEIVABLES | 99,956 | 7,294 | 107,250 | 118,427 |
| Investments at Fair Value: |  |  |  |  |
| Cash and Cash Equivalents | 184,444 | 723 | 185,167 | 140,787 |
| Equity Investments: |  |  |  |  |
| Domestic | 2,923,484 | 11,466 | 2,934,950 | 2,590,619 |
| Non-U.S. | 1,203,362 | 4,719 | 1,208,081 | 1,102,962 |
| Fixed Income Investments: |  |  |  |  |
| Domestic | 1,590,758 | 6,239 | 1,596,997 | 1,518,076 |
| Non-U.S. | 216,658 | 850 | 217,508 | 247,336 |
| Real Estate | 812,108 | 3,185 | 815,293 | 787,937 |
| Alternative Investments | 1,242,313 | 4,872 | 1,247,185 | 984,973 |
| TOTAL INVESTMENTS | 8,173,127 | 32,054 | 8,205,181 | 7,372,690 |
| Other Assets | 170 | 1 | 171 | 189 |
| TOTAL ASSETS | 8,282,598 | 39,386 | 8,321,984 | 7,498,053 |


| LIABILITIES: |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: |
| Management Fees and Other Payables | 9,594 | 38 | 9,632 | 8,456 |
| Due to Brokers for Securities Purchased | 19,016 | 75 | 19,091 | 28,652 |
| TOTAL LIABILITIES | 28,610 | 113 | 28,723 | 37,108 |
| NET POSITION RESTRICTED FOR PENSION AND |  |  |  |  |
| OTHER POST EMPLOYMENT BENEFITS (OPEB) | $\$ 8,253,988$ | $\$ 39,273$ | $\$ 8,293,261$ | $\$ 7,460,945$ |

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

COMBINING STATEMENTS OF CHANGES IN FIDUCIARY NET POSITION PENSION AND OTHER POSTEMPLOYMENT MEDICAL PLAN (OPEB)
FOR THE YEAR ENDED JUNE 30, 2017
(with summmarized financial information for the year ended June 30, 2016)
(in thousands)

|  | PENSION |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | PLAN | OPEB PLAN | TOTAL | TOTAL |
| 2017 | 2017 | 2017 | 2016 |  |

ADDITIONS:

| Contributions: | $\$ 366,487$ | $\$ 59,197$ | $\$ 425,684$ | $\$ 415,508$ |
| :--- | ---: | ---: | ---: | ---: | ---: |
| Employer - Normal | 166 | - | 166 | 148 |
| Employer - Other | 366,653 | 59,197 | 425,850 | 415,656 |
| Total Employer Contributions | 213,061 | - | 213,061 | 207,949 |
| Plan Member | 579,714 | 59,197 | 638,911 | 623,605 |
| Total Contributions |  |  |  |  |


| Investment Income (Loss) |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From Investment Activities: |  |  |  |  |
| Net Appreciation (Depreciation) in Fair Value of Investments | 831,995 | 3,440 | 835,435 | ( 73,079) |
| Interest | 55,205 | 228 | 55,433 | 53,979 |
| Dividends | 73,184 | 303 | 73,487 | 74,165 |
| Net Real Estate Income | 16,450 | 68 | 16,518 | 8,361 |
| Alternative Investment Income | 27,270 | 113 | 27,383 | 22,576 |
| Total Income from Investment Activities | 1,004,104 | 4,152 | 1,008,256 | 86,002 |
| Less: Investment Expenses: |  |  |  |  |
| Investment Management Fees | 23,538 | 97 | 23,635 | 22,007 |
| Custodial Fees | 611 | 3 | 614 | 624 |
| Investment Advisor Fees | 737 | 3 | 740 | 735 |
| Investment Administrative Expense | 624 | 3 | 627 | 610 |
| Total Investment Expenses | 25,510 | 106 | 25,616 | 23,976 |
| Total Net Investment Income | 978,594 | 4,046 | 982,640 | 62,026 |
| TOTAL ADDITIONS | 1,558,308 | 63,425 | 1,621,551 | 685,631 |
| DEDUCTIONS: |  |  |  |  |
| Benefits Paid | 706,304 | 50,560 | 756,864 | 722,165 |
| Refunds of Contributions | 23,408 | - | 23,408 | 24,233 |
| Administrative Expense | 7,671 | 32 | 7,703 | 7,078 |
| Professional Fees | 992 | 4 | 996 | 952 |
| Other | 263 | 1 | 264 | 314 |
| TOTAL DEDUCTIONS | 738,638 | 50,597 | 789,235 | 754,742 |
| CHANGE IN NET POSITION | \$ 819,670 | \$12,646 | \$ 832,316 | (\$ 69,111) |
| NET POSITION RESTRICTED FOR PENSIO BENEFITS AND OPEB |  |  |  |  |
| Beginning of the Year | \$7,434,318 | \$26,627 | \$7,460,945 | \$7,530,056 |
| End of the Year | \$8,253,988 | \$39,273 | \$8,293,261 | \$7,460,945 |

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

## Notes to <br> Financial Statements

NOTE 1 - NEW HAMPSHIRE RETIREMENT SYSTEM ..... 29

- Plan Description ..... 29
- Pension Plan ..... 29
- Other Postemployment Benefit Plans (OPEB Plan) ..... 31
NOTE 2 - SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES AND PLAN ASSET MATTERS ..... 32
NOTE 3 - INVESTMENTS \& DEPOSITS. ..... 33
- Custodial Credit Risk - Deposits ..... 34
- Custodial Credit Risk - Investments ..... 34
- Concentration of Credit Risk ..... 34
- Interest Rate Risk - Fixed Income Investments ..... 35
- Effective Duration - Fixed Income Investments ..... 35
- Credit Risk - Fixed Income Securities. ..... 36
- Credit Quality Risk - Fixed Income Securities ..... 36
- Foreign Currency Risk - Investments ..... 37
- Foreign Currency Risk - Non U.S. Investments ..... 37
- Derivatives ..... 38
- Open Foreign Currency Exchange Contracts ..... 39
NOTE 4 - FAIR VALUE MEASUREMENTS OF INVESTMENTS ..... 40
NOTE 5 - NET LIABILITY OF EMPLOYERS - PENSION AND OPEB PLANS ..... 42
NOTE 6 - CONTRIBUTIONS AND RESERVES. ..... 45
- Pension Plan ..... 45
- OPEB Plan ..... 46
- Total Amounts Contributed ..... 46
- Total Amounts Contributed as a Percentage of Covered Payroll ..... 47
NOTE 7 - ADMINISTRATIVE EXPENSES ..... 47
NOTE 8 - CONTINGENT MATTERS ..... 47


## NOTE 1 - NEW HAMPSHIRE RETIREMENT SYSTEM

The New Hampshire Retirement System (NHRS) is a public employee retirement system that administers one cost-sharing multiple-employer defined benefit pension plan (Pension Plan) and one separate cost-sharing multiple-employer postemployment medical subsidy healthcare plan (OPEB Plan). Collectively the Pension Plan and the postemployement medical subsidy healthcare plan are hereafter referred to as the Plans.

NHRS is administered by a 13-member Board of Trustees that includes one employee member, one teacher member, one firefighter member, one police officer member, four employer representatives, four public members, and the State Treasurer. Trustees are fiduciaries bound by law to act solely in the interest of the participants and beneficiaries of the pension plan.

All trustees - with the exception of the State Treasurer, who serves as an ex officio member - are nominated by the governor for two-year terms and must be confirmed by a vote of the Executive Council. Any newly appointed or reappointed trustee must have familiarity with or experience in finance or business management.

The New Hampshire State Employees' Association, the New Hampshire Education Association, the New Hampshire Police Association, and the New Hampshire State Permanent Firemen's Association each submit a list of five active members of the retirement system from which the governor chooses a nominee to represent each of the four member groups.

The New Hampshire Municipal Association, the New Hampshire School Boards Association, and the New Hampshire Association of Counties each put forth a name to the governor for nomination as an employer trustee. The Governor also identifies and nominates one person to represent management of state employees.

The governor identifies and nominates the public member trustees, all of whom must be qualified persons with investment and/or financial experience who are not members of the retirement system. The public trustees must also have substantial experience in the field of institutional investment or finance such as educational background, business experience, and/or professional licensure and designations.

The governor is responsible to designate one of the public trustees to serve as chair of the board.
Although the assets of the Plans are commingled for investment purposes, each plan's assets may be used only for the payment of benefits to the members of that plan, in accordance with the plan's individual terms. Accordingly, the results of each plan are presented separately in the accompanying financial statements.

The administrative office of NHRS, which functions as a self-sustaining governmental entity, operates under a budget which is proposed by management, approved by the Board of Trustees, submitted under the budget preparation guidelines of the State of New Hampshire (State), and passed into law by the New Hampshire Legislature. NHRS participates as an employer in the Plans and its employees are members of the Plans.

In accordance with Governmental Accounting Standards Board (GASB) No. 14, as amended, the New Hampshire Retirement System is a component unit of the State. This determination was made on the basis of fiscal dependence on the State solely for budget oversight over certain administrative expenses. A copy of the State of New Hampshire's CAFR may be viewed at www.admin.state.nh.us/accounting/.

## PENSION PLAN

The Pension Plan was established in 1967 by RSA 100-A:2 and is qualified as a tax-exempt organization under Sections 401(a) and 501(a) of the Internal Revenue Code. The Pension Plan is a contributory, defined benefit plan providing service, disability, death and vested retirement benefits to members and their beneficiaries. Substantially all full-time state employees, public school teachers and administrators, permanent firefighters and permanent police officers within the State are eligible and required to participate in the Pension Plan. Full-time employees of political subdivisions, including counties, municipalities and school districts, are also eligible to participate as a group if the governing body of the political subdivision has elected participation.

The type and number of employers contributing to the Pension Plan during the years ended June 30, 2017 and 2016 are presented below.

For GASB 67 disclosure purposes all State entities contributing to the pension plan are considered one employer.

| EMPLOYERS CONTRIBUTING | 2017 | $\mathbf{2 0 1 6}$ |
| :--- | ---: | ---: |
| State Government | 1 | 1 |
| City Governments | 13 | 13 |
| Town Governments and Related Entities | 244 | 12 |
| County Governments and Related Entities | 242 |  |
| School Districts and School Administrative Units | 201 | 12 |
| Total Employers | 471 | $\mathbf{2 0 3}$ |
|  | $\mathbf{4 7 1}$ |  |
| MEMBERSHIP DATA | 2017 | $\mathbf{2 0 1 6}$ |
| Retired plan members (or their beneficiaries) currently receiving benefits | 35,694 | 12,758 |
| Inactive members entitled to but not yet receiving benefit payments | 47,886 | $\mathbf{3 2 , 7 7 6}$ |
| Active plan members | 96,338 | 11,313 |
| Total Membership |  | $\mathbf{4 8 , 0 6 9}$ |

The Pension Plan is divided into two membership groups. State and local employees and teachers belong to Group I. Police officers and firefighters belong to Group II. All assets are held in a single trust and are available to pay retirement benefits to all members. Benefits available to each membership group are summarized below.

Group I Members at age 60 qualify for a normal service retirement allowance based on years of creditable service and average final salary for the highest three years. Members commencing service on or after July 1, 2011 qualify for a normal service retirement allowance at age 65 based on years of creditable service and average final compensation for the highest five years. Members hired prior to July 1, 2011 with a non-vested status as of January 1, 2012 qualify for a normal service retirement allowance at age 60 based on years of creditable service and average final compensation for the highest five years. The yearly pension amount is $1 / 60$ or $1.667 \%$ of average final compensation (AFC), multiplied by years of creditable service. AFC is defined as the average of the three or five highest salary years, and for benefit calculation purposes only, the final year's compensation cannot exceed by more than $150 \%$ the higher of the previous year's compensation or the compensation for the highest year used in the calculation of AFC (not including the final year's compensation). At age 65, the yearly pension amount is recalculated at $1 / 66$ or $1.515 \%$ of AFC multiplied by years of creditable service. Members in service with 10 or more years of creditable service who are between age 50 and 60 or members in service with at least 20 years of creditable service, whose age plus service is equal to or greater than 70, are entitled to a retirement allowance with the appropriate graduated reduction based on years of creditable service. Members commencing service on or after July 1, 2011 at age 60 with 30 years of creditable service are entitled to a retirement allowance with the appropriate graduated reduction based on years of creditable service.

Group II Members who are age 60, or members who are at least age 45 with at least 20 years of creditable service, can receive a retirement allowance at a rate of $2.5 \%$ of AFC for each year of creditable service, not to exceed 40 years. Members commencing service on or after July 1, 2011 or members who have a non-vested status as of January 1, 2012 can receive a retirement allowance at age 52.5 with 25 years of service or age 60 . The benefit shall be equal to $2 \%$ of AFC times creditable service up to 42.5 years. However, a member who commenced service on or after July 1, 2011 shall not receive a retirement allowance until attaining the age of 52.5 , but may receive a reduced allowance after age 50 if the member has at least 25 years of creditable service where the allowance shall be reduced, for each month by which the benefit commencement date precedes the month after which the member attains 52.5 years of age by $1 / 4$ of $1 \%$ or age 60.

Members of both groups may qualify for vested deferred allowances, disability allowances and death benefit allowances subject to meeting various eligibility requirements. Benefits are based on AFC or earnable compensation and/or service.

Members are required to contribute a percentage of gross earnings to the Pension Plan as more fully described in Note 8. The percentage rates, established by state statute, are dependent upon member group classification. The deductions are made from member wages and are remitted by the employer to the Pension Plan on a monthly basis. If a member leaves employment prior to retirement or vesting, accumulated member contributions plus earned interest are refunded to the withdrawing member or to the designated beneficiary in the case of death. However, accumulated contributions plus interest of a non-vested, non-contributing member may remain in the Pension Plan and continue to earn interest. The interest credited to the inactive member's accumulated contributions will be 2 percentage points less than the assumed rate of return or the actual rate of return, whichever is less as reported in the preceding fiscal year's comprehensive annual financial report, but will not be less than zero.

Employers make monthly contributions to the Pension Plan based on rates determined by periodic actuarial valuations as more fully described in Note 8.

## OTHER POSTEMPLOYMENT BENEFIT PLAN (OPEB)

Pursuant to RSA 100-A:52, RSA 100-A:52-a and RSA 100-A:52-b, the NHRS administers a cost-sharing multiple employer defined benefit postemployment medical subsidy healthcare plan designated in statute by membership type. The four membership groups are Group II Police Officer and Firefighters, Group I Teachers, Group I Political Subdivision Employees and Group I State Employees. Collectively, they are referred to as the OPEB Plan.

The OPEB Plan provides a medical insurance subsidy to qualified retired members. The medical subsidy is a payment made by NHRS to the former employer or their insurance administrator toward the cost of health insurance for a qualified retiree, his/her qualified spouse, and his/her certifiably dependent children with a disability who are living in the household and being cared for by the retiree. Under specific conditions, the qualified beneficiaries of members who die while in service may also be eligible for the medical subsidy. The eligibility requirements for receiving OPEB Plan benefits differ for Group I and Group II members.

The following Group I members and their qualified spouses are eligible for coverage under the postemployment medical plan if they are receiving health coverage under the group plan offered by their former employer:

- Employee and teacher members of political subdivisions who were eligible to retire as of July 1, 2008 and who actually retired on or before July 1, 2009, on Service, Early Service, Vested Deferred or Ordinary Disability retirement after completing at least 20 years of creditable service and who subsequently attain age 60 or after completing at least 30 years of creditable service and who subsequently attain age 55.
- Employee and teacher members of political subdivisions who retired on Accidental Disability Retirement on or before July 1, 2004.
- Employee members of the State who retired on or before July 1, 2004, on Service, Ordinary Disability or Vested Deferred Retirement become eligible for the medical subsidy at age 60 with at least 20 years of creditable service; or as early as age 55 with at least 30 years of creditable service.
- Surviving spouses of deceased employee and teacher members of political subdivisions who die while in service, provided that such surviving spouse was covered as the member's spouse in the employer-sponsored plan before the member's death and is entitled to a monthly allowance under Accidental Death, Ordinary Death, or an Optional Allowance.
- Surviving spouses and children of employee and teacher members of political subdivisions and employee members of the State who die as the natural and proximate result of injuries suffered while in the performance of duty. Eligibility for the medical subsidy ceases when the dependent child attains age 18 or age 23, if attending school on a full-time basis, or upon the spouse's remarriage.
- Vested terminated employee members of the State (and spouses) who completed at least 20 years of creditable service and as of July 1, 2004 received an allowance and who subsequently attain age 60.
- Employee members of the State (and spouses) who retired on or before July 1, 2004 after completing at least 20 years of creditable service and who subsequently attained age 60; or after completing at least 30 years of creditable service and who subsequently attained age 55.
- Surviving spouses of deceased employee members of the State who died while in service on or before July 1, 2004, provided that such surviving spouse was covered as the member's spouse in the employer-sponsored plan before the member's death and is entitled to a monthly allowance under Accidental Death, Ordinary Death, or an Optional Allowance.

The following Group II members are eligible for the postemployment medical plan:

- Group II police officer members (or beneficiaries) who are active or retired as of June 30, 2000.
- Group II firefighter members (or beneficiaries) who are active or retired as of June 30, 2000.
- Persons who prior to July 1, 1988, had completed at least 20 years of Group II service and were eligible as of July 1, 1993 for a vested deferred retirement benefit.
- Group II members retired as of July 1, 1991 with a split benefit under RSA 100-A:19-c who had at least 10 years of Group II service.
- Group II members as of June 30, 2005 who subsequently became disabled while in the performance of duty at any time in the future.
- Surviving spouses of deceased Group II members who retired prior to April 1, 1987 and who are not receiving a monthly allowance.
The OPEB plan is closed to new entrants.
The OPEB Plan is funded by allocating to the $401(\mathrm{~h})$ subtrust the lesser of:
a.) $25 \%$ of all employer contributions made in accordance with RSA 100-A:16; or
b.) the percentage of employer contributions determined by the actuary to be the minimum rate necessary to maintain the benefits provided under RSA 100-A:53, RSA 100-A:53-b, RSA 100-A:53-c and RSA 100-A:53-d.

For fiscal year 2017, the minimum rates determined by the actuary to maintain benefits were the lesser of the two options and were used to determine the employer contributions due to the 401 (h) subtrust.

The State Legislature has the authority to establish, amend and discontinue the contribution requirements of the OPEB Plan. Administrative costs are allocated to the OPEB Plan based on fund balances.

The type and number of employers contributing to the OPEB plan during the years ended June 30, 2017 and June 30, 2016 are presented below.

| EMPLOYERS CONTRIBUTING | $\mathbf{2 0 1 7}$ | $\mathbf{2 0 1 6}$ |
| :--- | ---: | ---: |
| State Government | 1 | 1 |
| City Governments | 13 | 13 |
| Town Governments and Related Entities | 244 | 12 |
| County Governments and Related Entities | 201 | 12 |
| School Districts and School Administrative Units | 471 | 203 |
| Total Employers | $\mathbf{4 7 1}$ |  |

Membership of the OPEB plan consisted of the following eligible retirees receiving benefits as of June 30, 2017 and 2016:

| MEMBERSHIP DATA | 2017 | $\mathbf{2 0 1 6}$ |
| :--- | ---: | ---: |
| Inactive plan members of beneficiaries currently receiving benefit payments | 9,965 | 10,104 |
| Inactive plan members entitled to but not yet receiving benefit payments | 2,937 | 2,912 |
| Active plan members | 1,382 | 1,527 |
| Total Membership | $\mathbf{1 4 , 2 8 4}$ | $\mathbf{1 4 , 5 4 3}$ |

The maximum monthly subsidy amounts paid during fiscal year 2017 and 2016 were as follows:
For qualified retirees not eligible for Medicare the amounts were $\$ 375.56$ for a single-person plan and $\$ 751.12$ for a twoperson plan. For those qualified retirees eligible for Medicare, the amounts were $\$ 236.84$ for a single-person plan and $\$ 473.68$ for a two-person plan. There have been no increases in the monthly maximum subsidy amounts payable since July 1, 2007.

Benefit provisions of the OPEB Plan can be amended only by legislative action taken by the New Hampshire State Legislature pursuant to the authority granted them under the New Hampshire State Constitution. The Legislature may cease providing the medical subsidy benefits under the OPEB Plan, for any reason, at any time.

## NOTE 2 - SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES AND PLAN ASSET MATTERS

## BASIS OF ACCOUNTING

The System's financial statements are prepared using the accrual basis of accounting. Both plan member and employer contributions are recognized in the period in which the contributions are legally due. Benefits and refunds are recognized when due and payable in accordance with the terms of the plan.

The financial statements include prior-year summarized comparative financial information in total but not on a combining plan basis. Such summarized information is not intended to constitute sufficient detail to establish a presentation in accordance with GAAP and, accordingly, should be read in conjunction with the System's financial statements for the year ended June 30, 2016, from which the summarized information was derived.

## PRIOR YEAR RECLASSIFICATIONS

Certain 2016 information has been reclassified to conform to the 2017 presentation. These reclassifications had no impact to the Net Position Held in Trust for Pensions and Other Post Employment Benefits.

## INVESTMENTS

Investments are reported at fair value.
Investments in both domestic and non-U.S. marketable securities are valued at current market prices and expressed in U.S. dollars. NHRS uses a trade-date accounting basis for these investments. Investments in non-registered commingled funds are valued at net asset value (NAV) as a practical expedient to estimate fair value.

Real estate includes investments in commingled funds. The NAVs for real estate investments recorded in this report were obtained from statements provided by the general partners of commingled funds. Real estate commingled funds are selected by the System's discretionary real estate manager.

Alternative investments include investments in private equity, private debt and absolute return strategies. The NAVs for alternative investments recorded in this report were obtained from statements provided by the investment managers.

Cash and cash equivalents are valued at cost, which approximates fair value. Cash and cash equivalents primarily represent investments in the pooled short-term investment fund managed by NHRS' master custodian. This fund invests mainly in high-grade money market instruments with maturities averaging less than three months. The fund provides daily liquidity.

The Plans hold no investments, either directly or indirectly, nor participates in any loans or leases, nor other party-ininterest transactions with any NHRS officials, New Hampshire State Government officials, or parties related to these officials.

## MONEY WEIGHTED RATE OF RETURN

The annual money-weighted rate of return at June 30, 2017 was $13.4 \%$ and $0.9 \%$ for June 30, 2016. The return shows the investment performance net of fees and is adjusted for the timing of cash flows and the changing amounts actually invested.

## NEW ACCOUNTING PRONOUNCEMENT

In fiscal year 2017, the System implemented the provisions of GASB Statement No. 74, Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans (GASB 74). GASB 74 supersedes the requirements of GASB Statements No. 43, Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans, as amended; No. 57, OPEB Measurements by Agent Employer and Agent Multiple-Employer Plans and Note Disclosures for Defined Contribution Plans; and No. 50, Pension Disclosures. For cost-sharing multiple-employer postemployment benefit plans, GASB 74 requires disclosures of the total OPEB liability, fiduciary net position, net OPEB liability, and annual money-weighted rate of return on plan investments, among other disclosures. GASB 74 requires the net OPEB liability to be measured as the total OPEB liability, less the amount of the OPEB plan's fiduciary net position. GASB 74 also revises reporting requirements for required supplementary information to include, among other information, trend information regarding (1) components and sources of changes in the net OPEB liability, and related ratios; and (2) actuarially and contractually determined contributions of employer contributing entities.

In conjunction with the implementation of GASB 74, the System, with guidance from counsel, determined that because the OPEB obligations of more than one employer are pooled and the OPEB plan assets can be used to pay benefits of the retirees of any employer that provides OPEB through the OPEB plan, regardless of retiree class, the OPEB plan is considered a single plan for purposes of reporting in accordance with GASB 74. Accordingly, the summarized 2016 information has been reclassified to reflect the OPEB as one plan.

## USE OF ESTIMATES

Management of the System has made a number of estimates and assumptions relating to the reporting of assets and liabilities and in the disclosure of contingencies to prepare these financial statements in conformity with U.S. generally accepted accounting principles (GAAP). The System's most significant estimates relate to assumptions made about future events as part of the annual actuarial valuation process, and the valuation of alternative investments. Due to the inherent nature of these estimates, actual results could differ from those estimates.

## NOTE 3 - INVESTMENTS AND DEPOSITS

RSA 100-A:15, I, provides separate and specific authorities to the Board of Trustees and the Independent Investment Committee for the management of the funds of the Plans and charges them with exercising the judgment and care under the circumstances then prevailing, which persons of prudence, discretion and intelligence, acting in a like capacity and familiar with such matters, would use in the conduct of a pension plan of like character and with like aims of the Plans.

To aid in the prudent investment of the Plans' assets, NHRS has adopted an Investment Manual which includes an investment policy. Primary components of the investment policy include the delineation of roles and responsibilities of the Board of Trustees, Independent Investment Committee, staff, and service providers; investment objectives; asset allocation policy; and asset class performance measurement and monitoring policy. This policy may be modified by the Board of Trustees as deemed necessary. In addition, the Investment Manual includes asset class guidelines which provide parameters for investment management.

Professional investment managers are bound by policy and contract to a standard of care that establishes a fiduciary relationship, to the extent permitted by law, requiring the manager to act prudently and solely in the best interest of the Plans and beneficiaries. Investment guidelines provide portfolio-level standards for separate account management including permissible investment types; security concentration thresholds; investment restrictions; and benchmarks for performance measurement and monitoring. NHRS utilizes a custodial bank compliance system to monitor the marketable investment portfolios against their respective guidelines.

The System's asset allocation as of June 30, 2017 and 2016, as recommended by the Independent Investment Committee and adopted by the Board of Trustees, is as follows:

| ASSET ALLOCATION | 2017 |  | 2016 | Range |  |
| :--- | ---: | ---: | ---: | :--- | :--- |
| Asset Class: | Target | Range | Target | Rang | $22.5 \%$ |
| Large Cap Equities | $22.50 \%$ |  | $7.5 \%$ |  |  |
| Small/Mid Cap Equities | $7.50 \%$ |  | $30.0 \%$ | $20-50 \%$ |  |
| Total Domestic Equity | $30.00 \%$ | $20-50 \%$ | $13.0 \%$ |  |  |
| Int'I Equities (Unhedged) | $13.00 \%$ |  | $7.0 \%$ |  |  |
| Emerging Int'I Equities | $7.00 \%$ |  | $20.0 \%$ | $15-25 \%$ |  |
| Total International Equity | $20.00 \%$ | $15-25 \%$ | $5.0 \%$ |  |  |
| Core Bonds | $5.00 \%$ |  | $11.0 \%$ |  |  |
| Short Duration | $2.00 \%$ |  | $7.0 \%$ |  |  |
| Global Multi-Sector Fixed Income | $11.00 \%$ |  | $25.0 \%$ | $20-30 \%$ |  |
| Absolute Return Fixed Income | $7.00 \%$ |  | $5.0 \%$ |  |  |
| Total Fixed Income | $25.00 \%$ | $20-30 \%$ | $5.0 \%$ |  |  |
| Private Equity | $5.00 \%$ |  | $5.0 \%$ |  |  |
| Private Debt | $5.00 \%$ |  | $15.0 \%$ | $0-25 \%$ |  |
| Opportunistic | $5.00 \%$ |  | $10.0 \%$ |  |  |
| Total Alternative Investments | $15.00 \%$ | $0-25 \%$ | $10.0 \%$ | $5-20 \%$ |  |
| Real Estate | $10.00 \%$ |  | $100.0 \%$ |  |  |
| Total Real Estate | $10.00 \%$ | $5-20 \%$ |  |  |  |
| TOTAL | $100 \%$ |  |  |  |  |

## CUSTODIAL CREDIT RISK - DEPOSITS

Custodial credit risk for deposits is the risk that in an event of a bank failure, deposits may not be recovered. NHRS does not have a deposit policy to manage custodial credit risk on deposits

At June 30, 2017 and 2016, NHRS held deposits of $\$ 9.4$ million and $\$ 6.7$ million, respectively, in the local custodian bank. These deposits are fully insured or collateralized and are used to support the daily working capital needs of NHRS.

## CUSTODIAL CREDIT RISK - INVESTMENTS

Investment securities are exposed to custodial credit risk if the investment securities are uninsured, are not registered in the name of the Plans, and are held by either:
a. The counterparty to a transaction or
b. The counterparty's trust department or agent but not in the Plans' name.

All of the System's securities are held by the System's bank in the System's name.

## CONCENTRATION OF CREDIT RISK

Concentration of credit risk is the risk of loss attributable to the magnitude of the Plans' investments in a single issuer. NHRS policy is expressed through individual separate account manager guidelines which limit investments in a single issuer to $10 \%$, or less, of the portfolio value in order to control the overall risk of loss on a total portfolio level. This threshold is set as an upper limit, and in actual practice, managers generally do not reach this limit. Certain securities may be excluded from this limitation due to the nature of the investments (such as U.S. government securities, government-sponsored enterprise obligations, and supranational debt). NHRS fixed income managers have consistently adhered to the established guidelines for issuer concentration. The fixed income commingled fund managers have established investment guidelines regarding concentration of credit risk. The total portfolio is broadly-diversified across equities, fixed income, cash equivalent securities, real estate and alternative investments. Due to this diversification, the concentration of credit risk in a single issuer is below $5 \%$ at the total portfolio level.

## INTEREST RATE RISK - FIXED INCOME INVESTMENTS

Interest rate risk is the effect on the fair value of fixed income investments from changes in interest rates. Duration measures a debt investment's change in fair value arising from a change in interest rates.

Interest rate risk is illustrated below using the effective duration or option-adjusted methodology. This methodology is widely-used in the management of fixed income portfolios to quantify the risk associated with interest rate changes. The effective duration methodology takes into account the most likely timing and magnitude of variable cash flows, such as callable options, prepayments and other factors, and scales the risk of price changes on bonds depending upon the degree of change in rates and the slope of the yield curve.

The NHRS policy on duration is expressed through individual portfolio guidelines with each investment manager in lieu of a broad, plan-level policy. Duration guidelines have been established with each fixed income manager in order to manage interest rate risk within the separate account portfolios. The fixed income commingled fund managers also have established investment guidelines regarding duration. These provisions specify that the duration of each individual fixed income portfolio will be managed within a specified percentage or number of years relative to its benchmark index. NHRS fixed income managers follow the established guidelines for duration. If there is an occasional exception, the manager prudently remedies the guideline breach.

The following effective duration tables quantify the interest rate risk of the Plans' fixed income assets at June 30, 2017 and 2016:

EFFECTIVE DURATION - FIXED INCOME INVESTMENTS
(dollars in thousands)
AT JUNE 30, 2017

| Investment Type | $\begin{gathered} \text { Fair } \\ \text { Value } \\ \text { June 30, } 2017 \end{gathered}$ | Percentage of Fixed Income Investments | Effective Duration in Years | Weighted Average Effective Duration in Years |
| :---: | :---: | :---: | :---: | :---: |
| Collateralized/Asset Backed Obligations | \$ 145,486 | 8.0\% | 4.5 | 0.4 |
| Corporate Bonds | 590,951 | 32.6 | 5.5 | 1.8 |
| Government and Agency Bonds | 643,823 | 35.5 | 6.2 | 2.2 |
| Commingled Fund | 222,500 | 12.2 | (0.4) | (0.04) |
| Commingled Fund | 211,745 | 11.7 | 2.4 | 0.3 |
| Totals | \$ 1,814,505 | 100.0\% |  | 4.7 |

EFFECTIVE DURATION - FIXED INCOME INVESTMENTS
(dollars in thousands)
AT JUNE 30, 2016

| Investment Type | $\begin{gathered} \text { Fair } \\ \text { Value } \\ \text { June 30, } 2016 \end{gathered}$ | Percentage of Fixed Income Investments | Effective Duration in Years | Weighted Average Effective Duration in Years |
| :---: | :---: | :---: | :---: | :---: |
| Collateralized/Asset Backed Obligations | \$ 172,043 | 9.7\% | 4.4 | 0.4 |
| Corporate Bonds | 622,956 | 35.3 | 5.7 | 2.0 |
| Government and Agency Bonds | 559,737 | 31.7 | 5.8 | 1.8 |
| Commingled Fund | 204,997 | 11.6 | 4.5 | 0.52 |
| Commingled Fund | 205,679 | 11.7 | 3.5 | 0.4 |
| Totals | \$ 1,765,412 | 100.0\% |  | 5.2 |

## CREDIT RISK - FIXED INCOME SECURITIES

Credit risk is the risk that an issuer or other counterparty to an investment will not fulfill its obligations.
NHRS controls credit risk on debt securities by establishing requirements for average credit quality at the separate account portfolio level and through credit quality standards for individual securities. The NHRS policy on credit quality is expressed through individual portfolio guidelines with each investment manager in lieu of a broad, plan-level policy. The investment guidelines are customized to the individual manager's strategy. NHRS fixed income managers follow established guidelines for credit quality. If there is an occasional exception, the manager prudently remedies the guideline breach. NHRS applies standards with regard to securities rated by nationally recognized statistical rating organizations ("NRSRO") and uses the lowest agency ratings for evaluating the credit quality of a specific security. The fixed income commingled fund managers have established investment guidelines regarding credit risk.

The following schedules illustrate the Plans' fixed income investments as of June 30, 2017 and 2016, including the distribution of those investments by Standard \& Poor's quality credit ratings:

| CREDIT QUALITY RISK - FIXED INCOME SECURITIES AT JUNE 30, 2017 |  |  |  |  |  | (in thousands) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Quality Ratings ${ }^{1}$ |  |  |  |  |  |  |
| Investment Type | Fair Value June 30, 2017 | 7 AAA | AA | A | $\begin{aligned} & \text { BBB } \\ & \text { or Lower } \end{aligned}$ | Unrated |
| Collateralized/Asset Backed Obligations | \$ 145,486 | \$103,914 | \$ 2,455 | \$ 6,317 | \$ 17,692 | \$15,108 |
| Corporate Bonds | 590,951 | 5,323 | 46,638 | 123,602 | 413,399 | 1,989 |
| Government and Agency Bonds ${ }^{2}$ | 152,631 | 13,374 | 25,186 | 65,352 | 48,719 | - |
| Commingled Fund ${ }^{3}$ | 222,500 | - | - | 222,500 | - | - |
| Commingled Fund ${ }^{3}$ | 211,745 | - | 211,745 | - | - | - |
| Totals | \$1,323,313 | \$122,611 | \$286,024 | \$417,771 | \$479,810 | \$17,097 |
| Percent of Total Fair Value | 100.00\% | 9.27\% | 21.61\% | 31.57\% | 36.26\% | 1.29\% |

${ }^{1}$ Ratings were derived primarily from Standard \& Poor's (S\&P). In instances where S\&P did not rate a security, the Moody's rating was used.
${ }^{2}$ Government and Agency Bonds exclude U.S. government securities and securities explicitly guaranteed by the U.S. government (\$491,192) because these securities are not considered to have credit risk.
${ }^{3}$ Average credit quality rating for the commingled funds was provided by GAM and Manulife respectively.

CREDIT QUALITY RISK - FIXED INCOME SECURITIES AT JUNE 30, 2016
(in thousands)

| Quality Ratings ${ }^{1}$ |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Investment Type | Fair Value June 30, 201 | 6 AAA | AA | A | $\begin{gathered} \text { BBB } \\ \text { or Lower } \end{gathered}$ | Unrated |
| Collateralized/Asset Backed Obligations | \$ 172,043 | \$ 89,585 | \$ 27,801 | \$ 15,725 | \$ 25,483 | \$13,449 |
| Corporate Bonds | 622,956 | 8,973 | 55,529 | 123,373 | 433,634 | 1,447 |
| Government and Agency Bonds ${ }^{2}$ | 273,424 | 45,116 | 64,101 | 76,576 | 70,672 | 16,959 |
| Commingled Fund ${ }^{3}$ | 204,997 | - | - | 204,997 | - | - |
| Commingled Fund ${ }^{3}$ | 205,679 | - | 205,679 | - | - | - |
| Totals | \$1,479,099 | \$143,674 | \$353,110 | \$420,671 | \$529,789 | \$31,855 |
| Percent of Total Fair Value | 100.00\% | 9.71\% | 23.87\% | 28.44\% | 35.82\% | 2.16\% |

[^0]Investments in asset-backed and mortgage-backed securities are reported at fair value. Although not generally considered to be derivatives, asset-backed and mortgage-backed securities receive cash flows from interest and principal payments on the underlying assets and mortgages. As a result, they are exposed to prepayment risk. As of June 30, 2017 and 2016, the Plans' combined investment in asset-backed and mortgage-backed securities held in separate account portfolios totaled $\$ 131.0$ million and $\$ 129.9$ million, respectively.

## FOREIGN CURRENCY RISK - INVESTMENTS:

Foreign currency risk is the risk that changes in exchange rates will adversely affect the fair value of an investment.
NHRS manages its foreign currency risk primarily through its strategic asset allocation policy. As of June 30, 2017, investments in non-U.S. equity securities have a target asset allocation of $20 \%$ of total investments with a target range of $15-25 \%$. As of June 30, 2017, non-U.S. fixed income securities represent $2.7 \%$ of the total investments as a result of the managers' security selection process. Non-U.S. investments are permitted in the alternative investment asset class, which includes private equity, private debt and absolute return strategy investments. The target allocation for alternative investments is $15 \%$ and the NHRS investment policy does not set limits for foreign investments in this asset class. The target allocation for real estate investments is $10 \%$, and up to $35 \%$ of the Plans' real estate allocation may be invested in nonU.S. investments.

In addition, foreign currency risk is mitigated through the investment guidelines. NHRS manages its foreign exposure by requiring that separate account managers diversify their non-U.S. portfolios by country, sector and issuer to limit both foreign currency risk and security risk. Managers of commingled funds have discretion over their respective investment guidelines which must be consistent with strategies approved by the NHRS. In certain instances, where permitted in the investment guidelines, investment managers may also use foreign currency forward contracts to hedge against foreign currency risk.

The Plans' exposure to foreign currency risk at June 30, 2017 and 2016 is presented on the following schedules:

| FOREIGN CURRENCY RISK - NON-U.S. INVESTMENTS | (in thousands) |
| :--- | :--- | AS OF JUNE 30, 2017


| Currency | Equity* | Fixed Income | Real Estate \& Alternative Investments |  | sh and Cash ivalents | Totals |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Australian dollar | \$ 14,543 | \$ 23,791 | - | \$ | - | \$ | 38,334 |
| Brazilian real | 1,489 | 19,500 | - |  | - |  | 20,989 |
| British pound sterling | 113,267 | 20,382 | 6,522 |  | 6 |  | 140,177 |
| Canadian dollar | 27,985 | 5,195 | - |  | 127 |  | 33,307 |
| Danish krone | 12,866 | - | - |  | - |  | 12,866 |
| Euro | 238,581 | 14,588 | 71,114 |  | 82 |  | 324,365 |
| Hong Kong dollar | 49,631 | - | - |  | - |  | 49,631 |
| Indonesian rupiah | 4,853 | 15,175 | - |  | - |  | 20,028 |
| Japanese yen | 95,178 | - | 21,247 |  | 64 |  | 116,489 |
| Malaysian ringgit | - | 17,981 | - |  | - |  | 17,981 |
| Mexican peso | 3,340 | 56,667 | - |  | - |  | 60,007 |
| New Taiwan Dollar | 3,838 | - | - |  | - |  | 3,838 |
| New Zealand dollar | - | 6,984 | - |  | - |  | 6,984 |
| Norwegian krone | - | 389 | - |  | - |  | 389 |
| Polish zloty | - | 20,095 | - |  | - |  | 20,095 |
| South African rand | - | 15,804 | - |  | - |  | 15,804 |
| South Korean won | 22,540 | - | - |  | 19 |  | 22,559 |
| Swedish krona | 5,909 | - | - |  | - |  | 5,909 |
| Swiss franc | 70,368 | - | - |  | - |  | 70,368 |
| Turkish lira | - | 957 | - |  | - |  | 957 |
| Total investments subject to foreign currency risk | \$664,388 | \$ 217,508 | \$ 98,883 | \$ | 298 | \$ | 981,077 |

[^1]FOREIGN CURRENCY RISK - NON-U.S. INVESTMENTS
(in thousands)
AS OF JUNE 30, 2016

|  | Equity* |  | Fixed <br> Income |  <br> Alternative <br> Investments | Cash and <br> Cash <br> Equivalents | Totals |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Currency | $\$$ | - | $\$$ | - | $\$$ | - |

*NHRS also invests in commingled funds where foreign currency risk information is not available. As a result, totals for equity shown on this schedule will not match the total non-U.S. equity shown on the Combining Statements of Fiduciary Net Position.

## DERIVATIVES

Derivative instruments are contracts whose values are based on the valuation of an underlying asset, reference rate or index. Derivatives include futures, options, forward contracts and forward foreign currency exchanges. NHRS managers may enter into certain derivative instruments primarily to enhance the efficiency and reduce the volatility of the portfolio. As of June 30, 2017 and June 30, 2016 the System had outstanding equity futures with a notional value of $\$ 3.8$ million and $\$ 2.6$ million respectively. There were no investments in options within the separate account portfolios. The NHRS investment policy and certain investment manager guidelines allow for the use of derivative instruments. The use of futures, options, or forward contracts is not permitted for any speculative hedging or leveraging of the portfolios and is prohibited in separate account mandates. Managers of commingled funds have discretion over their respective investment guidelines which may allow for the use of derivative instruments.

The Plans could be exposed to risk if the counterparties to the contracts are unable to meet the terms of the contracts. To mitigate this risk, investment managers conduct assessments of their counterparties and utilize exchanges which have trading standards.

NHRS managers may use futures, options, and foreign currency exchange contracts in order to manage currency risk or initiate transactions in non-U.S. investments. NHRS may be positively or negatively impacted by foreign currency risk due to fluctuations in the value of different currencies. The Plans could be exposed to risk if the counterparties to the contracts are unable to meet the terms of the contracts. To mitigate this risk, investment managers conduct assessments of their counterparties and utilize exchanges which have trading standards. The fair value of open foreign currency exchange contracts including unrealized appreciation or depreciation is recorded on the Statements of Net Plan Assets as Due from Brokers for Securities Sold and as Due to Brokers for Securities Purchased.

Foreign currency exchange contracts open at June 30, 2017 and 2016 are shown below and on the following page:

| OPEN FOREIGN CURRENCY EXCHANGE CONTRACTS AT JUNE 30, 2017 |  |  |  |  | (in thousands) |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Local Currency Amount | Effective Date | Maurity Date | Original Foreign Exchange Rate | Unrealized Appreciation (USD) | Unrealized (Depreciation) (USD) |
| Foreign currency exchange contracts purchased: |  |  |  |  |  |  |
| Australian Dollar | 11,520 | 5/12/17 | 8/17/17 | . 738276 AUD/USD | 327 | - |
| Canadian Dollar | 381 | 6/29/17 | 7/5/17 | 0.769231 CAD/USD | - | - |
| Canadian Dollar | 85 | 6/30/17 | 7/6/17 | 1.296200 CAD/USD | - | - |
| Canadian Dollar | 13,980 | 6/13/17 | 8/4/17 | 1.321460 CAD/USD | 192 | - |
| Chilean Peso | 4,300,000 | 2/28/17 | 7/14/17 | 653.300000 CLP/USD | - | (115) |
| Euro | 43 | 6/29/17 | 7/3/17 | 1.1438000 EUR/USD | - | - |
| Euro | 836 | 6/27/17 | 7/10/17 | 1.134120 EUR/USD | 6 | - |
| Euro | 3,410 | 5/5/17 | 8/10/17 | 1.101720 EUR/USD | 140 | - |
| Hong Kong Dollar | 1,966 | 6/29/17 | 7/3/17 | 0.1281130 HKD/USD | - | - |
| Hong Kong Dollar | 1,303 | 6/30/17 | 7/3/17 | 7.8064000 HKD/USD | - | - |
| Indian Rupee | 1,034,000 | 6/15/17 | 9/20/17 | 65.264000 INR/USD | 15 | - |
| Japanese Yen | 24,410 | 6/27/17 | 7/3/17 | 111.8335000 JPY/USD | - | (1) |
| Japanese Yen | 1,779,000 | 4/27/17 | 8/2/17 | 110.716500 JPY/USD | - | (215) |
| Norwegian Krone | 76,900 | 4/5/17 | 7/10/17 | 8.584450 NWK/USD | 224 | - |
| Norwegian Krone | 62,800 | 5/10/17 | 8/15/17 | 8.602410 NWK/USD | 203 | - |
| Norwegian Krone | 56,600 | 5/11/17 | 8/15/17 | 8.581440 NWK/USD | 167 | - |
| Pound Sterling | 7 | 6/29/17 | 7/3/17 | 1.3000000 GBP/USD | - | - |
| Pound Sterling | 24,870 | 6/6/17 | 9/15/17 | 1.293490 GBP/USD | 208 | - |
| Swedish Krona | 105,400 | 4/19/17 | 7/21/17 | 8.931900 SWK/USD | 708 | - |
| Swedish Krona | 82,800 | 5/31/17 | 9/12/17 | 8.63095 SWK/USD | 262 | - |
| Turkish Lira | 3,504 | 6/29/17 | 7/5/17 | 3.523700 YTL/USD | - | - |
| Foreign currency exchange contracts sold: |  |  |  |  |  |  |
| Australian Dollar | 205 | 6/29/17 | 7/3/17 | 0.7670500 USD/AUD | - | - |
| Australian Dollar | 322 | 6/30/17 | 7/5/17 | 0.7670430 USD/AUD | - | - |
| Chilean Peso | 4,727 | 3/30/17 | 7/14/17 | 0.001504 USD/CLP | - | (11) |
| Chilean Peso | 1,720 | 3/31/17 | 7/14/17 | 0.001504 USD/CLP | - | (10) |
| Danish Krone | 13 | 6/29/17 | 7/3/17 | 0.1534020 USD/DKK | - | - |
| Danish Krone | 6 | 6/30/17 | 7/5/17 | 0.1534110 USD/DKK | - | - |
| Euro | 125 | 6/29/17 | 7/3/17 | 1.1405500 USD/EUR | - | - |
| Euro | 48 | 6/30/17 | 7/5/17 | 1.1406090 USD/EUR | - | - |
| Euro | 4 | 6/30/17 | 7/5/17 | 1.1406090 USD/EUR | - | - |
| Euro | 6,562 | 5/11/17 | 8/10/17 | 1.142811 USD/EUR | - | (307) |
| Euro | 11,070 | 6/16/17 | 8/10/17 | 1.142811 USD/EUR | - | (233) |
| Japanese Yen | 136 | 6/28/17 | 7/3/17 | 0.0089000 USD/JPY | - | - |
| Japanese Yen | 122 | 6/28/17 | 7/3/17 | 0.0089000 USD/JPY | - | - |
| Japanese Yen | 258 | 6/29/17 | 7/5/17 | 0.0089000 USD/JPY | - | (1) |
| Japanese Yen | 64 | 6/29/17 | 7/5/17 | 0.0089000 USD/JPY | - | (1) |
| Japanese Yen | 245 | 6/30/17 | 7/5/17 | 0.0089000 USD/JPY | - | - |
| Japanese Yen | 91 | 6/30/17 | 7/5/17 | 0.0089000 USD/JPY | - | - |
| Japanese Yen | 16,053 | 6/16/17 | 8/2/17 | 0.008911 USD/JPY | 200 | - |
| Pound Sterling | 112 | 6/30/17 | 7/3/17 | 1.2989500 USD/GBP | - | - |
| Pound Sterling | 56 | 6/30/17 | 7/5/17 | 1.298993 USD/GBP | - | - |
| South African Rand | 985 | 6/29/17 | 7/5/17 | 0.076308 USD/ZAR | 8 | - |
| Swiss Franc | 160 | 6/29/17 | 7/3/17 | 1.0442230 USD/CHF | - | - |
| Swiss Franc | 125 | 6/30/17 | 7/5/17 | 1.044287 USD/CHF | - | - |
| Totals |  |  |  |  | \$2,660 | \$(893) |

OPEN FOREIGN CURRENCY EXCHANGE CONTRACTS (in thousands)
AT JUNE 30, 2016

|  | Local Currency Amount | Effective Date | Maurity Date | Original Foreign Exchange Rate | Unrealized Appreciation (USD) | Unrealized (Depreciation) (USD) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Foreign currency exchange contracts purchased: |  |  |  |  |  |  |
| Chilean Peso | 3,498,200 | 3/4/16 | 7/8/16 | 689.4000000 CLP / USD | 208 | - |
| Chilean Peso | 1,266,000 | 5/11/16 | 8/19/16 | 684.9000000 CLP / USD | 56 | - |
| Chilean Peso | 2,720,000 | 5/24/16 | 9/26/16 | 700.9000000 CLP / USD | 198 | - |
| Chilean Peso | 3,010,000 | 6/8/19 | 10/21/16 | 679.9200000 CLP / USD | 76 | - |
| Chilean Peso | 3,719,000 | 6/21/16 | 11/7/16 | 683.8700000 CLP / USD | 117 | - |
| Euro | 12,030 | 5/6/16 | 8/10/16 | 1.1457150 EUR / USD | - | (401) |
| Euro | 390 | 5/9/16 | 8/10/16 | 1.141540 EUR / USD | - | (11) |
| Euro | 2,030 | 5/10/16 | 8/10/16 | 1.140195 EUR / USD | - | (56) |
| Euro | 1,570 | 5/12/16 | 8/10/16 | 1.141040 EUR / USD | - | (45) |
| Euro | 640 | 6/28/16 | 8/10/16 | 1.110820 EUR / USD | - |  |
| Euro | 60 | 6/29/16 | 7/1/16 | 0.900576 EUR / USD | - | - |
| Euro | 206 | 6/30/16 | 7/1/16 | 0.904857 EUR / USD | 1 | - |
| Euro | 7 | 6/30/16 | 7/5/16 | 0.904756 EUR / USD | - | - |
| Japanese Yen | 55,561 | 6/28/16 | 7/1/16 | 102.337500 JPY / USD | - | (1) |
| Japanese Yen | 22,149 | 6/29/16 | 7/1/16 | 102.672000 JPY / USD | - | ( |
| Japanese Yen | 3,301 | 6/30/16 | 7/5/16 | 102.764000 JPY / USD | - | - |
| Indian Rupee | 1,034,000 | 6/9/16 | 9/21/16 | 67.771000 INR / USD | - | (137) |
| Norwegian Krone | 74,900 | 4/14/16 | 7/13/16 | 8.23065 NWK /USD | - | (149) |
| Swedish Krona | 824 | 6/30/16 | 7/1/16 | 8.492420 SWK / USD | - | - |
| Swedish Krona | 53,200 | 4/28/16 | 7/14/16 | 8.043700 SWK / USD | - | (332) |
| Swedish Krona | 50,100 | 4/15/16 | 7/14/16 | 8.103800 SWK / USD | - | (267) |
| Swedish Krona | 82,800 | 5/17/16 | 8/22/16 | 8.205350 SWK / USD | - | (298) |
| Swiss Franc | 46 | 6/30/16 | 7/1/16 | 0.9785880 CHF / USD | - | - |
| Foreign currency exchange contracts sold: |  |  |  |  |  |  |
| Japanese Yen | 112 | 6/29/16 | 7/5/16 | 0.009748 USD / JPY | - | - |
| Japanese Yen | 110 | 6/28/16 | 7/1/16 | 0.009748 USD / JPY | - | - |
| Japanese Yen | 929 | 6/30/16 | 7/5/16 | 0.009748 USD / JPY | - | (6) |
| Japanese Yen | 113 | 6/30/16 | 7/5/16 | 0.009748 USD / JPY | - | ) |
| Pound Sterling | 264 | 6/29/16 | 7/1/16 | 1.336800 USD / GBP | 2 | - |
| Pound Sterling | 827 | 6/29/16 | 7/1/16 | 1.336800 USD / GBP | 4 | - |
| Pound Sterling | 454 | 6/30/16 | 7/5/16 | 1.336806 USD / GBP | - | (4) |
| Pound Sterling | 1,293 | 6/30/16 | 7/5/16 | 1.336806 USD / GBP | - | (14) |
| Totals |  |  |  |  | \$662 | \$(1,721) |

## NOTE 4 FAIR VALUE MEASUREMENTS OF INVESTMENTS

In accordance with GASB 72, except for investments measured using NAV as a practical expedient to estimate fair value, the System categorizes the fair value measurements of its investments within the fair value hierarchy established by U.S. GAAP. The fair value hierarchy categorizes the inputs to valuation techniques used for fair value measurement into three levels as follows:

- Level 1 - Inputs that reflect quoted prices (unadjusted) in active markets for identical assets or liabilities that the fund has the ability to access at the measurement date. Most of the System's directly held marketable equity securities would be examples of Level 1 investments.
- Level 2 - Inputs other than quoted prices that are observable for an asset of liability either directly or indirectly, including inputs in markets that are not considered to be active. Because they must often be priced on the basis of transactions involving similar but not identical securities or do not trade with sufficient frequency, certain directly held fixed income securities are categorized in Level 2.
- Level 3 - Unobservable inputs based on the best information available, using assumptions in determining the fair value of investments and derivative financial instruments. The System had no level 3 investments as of June 30, 2017 and 2016.

Investments are reported at fair value and categorized within the fair value hierarchy established by generally accepted accounting principles. 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 ) and the lowest priority to unobservable inputs (level 3).

- 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.

Investments that are measured at fair value using the net asset value (NAV) as a practical expedient are not classified in the fair value hierarchy. At June 30, 2017 and 2016 the System had no plans or intentions to sell investments at amounts different from NAV.

The categorization of investments within the hierarchy is based on the pricing transparency of the investment and should not be perceived as the particular investment's risk.

Following is a summary of investments as of June 30, 2017 and 2016.

|  | June 30, 2017 |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
|  | Fair Value Measurements Using |  |  |  |  |  |

(1) Fiscal 2017 rates range from $0.750 \%$ to $6.000 \%$, and maturities from 2017 to 2046 . Fiscal 2016 rates range from $0.625 \%$ to $6.770 \%$, and maturities from 2017 to 2046.
(2) Fiscal 2017 rates range from $0.00 \%$ to $11.000 \%$, and maturities from 2016 to 2057 . Fiscal 2016 rates range from $0.000 \%$ to $10.500 \%$, and maturities from 2016 to 2057.
(3) This represents investments in two commingled fixed income funds that invest globally in both developed and emerging markets with investments consisting primarily of corporate bonds (investment grade and high yield), sovereign bonds and securitized bonds. These funds may also invest in convertible bonds and currencies. The redemption frequency for these investments range from daily to monthly with one to 30 business days' prior written notice.
(4) Fiscal 2017 rates range from $1.250 \%$ to $10.600 \%$, and maturities from 2017 to 2064 . Fiscal 2016 rates range from $0.250 \%$ to $10.250 \%$, and maturities from 2016 to 2064.
(5) This represents investments in five commingled equity funds that invest primarily in common stock of companies located outside the U.S., including emerging markets. These investments have daily liquidity and require up to 10 business days' notice for redemption.
(6) This represents investments in 45 real estate funds consisting of 10 strategic core open-end funds and 35 opportunistic/tactical non-core closed-end funds. The open-end funds can be redeemed on a quarterly basis with 45-90 days' notice periods. The closed-end funds are not redeemable. NHRS has no direct property investments as of June 30, 2017.
(7) This represents 30 investments in private partnerships focused primarily on the following strategies: buyouts, growth equity, secondaries and energy. These private partnerships typically have 10 to 15 year life cycles during which limited partners are unable to redeem their positions, but instead, receive distributions as the partnerships liquidate their underlying assets.
(8) This represents 16 investments in private partnerships focused primarily on the following strategies: direct lending, mezzanine and distressed debt. These private partnerships typically have 6 to 10 year life cycles during which limited partners are unable to redeem their positions, but instead, receive distributions from coupon payments and/or as the partnerships liquidate their underlying assets.
(9) SLI GARS is held within the Opportunistic sleeve of the Alternative Investments asset allocation as SLI GARS is an "unconstrained/go anywhere" manager that invests across various geographies and asset classes including equity, credit, interest rates, currencies and real estate. This manager invests on an opportunistic basis to take advantage of market dislocations.

| Investments at Fair Value | June 30, 2016 |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Fair Value Measurements Using |  |  |  | (in thousands) |  |
|  | Total | Quoted Prices in Active Markets for Identical Assets (Level 1) | Significant Other Observable Inputs (Level 2) | Significant Unobservable Inputs (Level 3) | Net Asset Value (NAV) | Unfunded Commitments |
| Short-term: <br> Cash and Cash Equivalents | \$ 140,787 | \$ 140,787 | \$ | \$- | \$ | \$ |
| Fixed Income: |  |  |  |  |  |  |
| U.S Government Obligations (1) | 286,313 | 246,469 | 39,844 | - | - | - |
| Domestic Fixed Income (2) | 821,087 | 5,904 | 815,183 | - | - | - |
| Commingled Funds (3) | 410,676 |  | - | - | 410,676 | - |
| International Fixed Income (4) | 247,336 | - | 247,336 | - | - | - |
| Equity: |  |  |  |  |  |  |
| Domestic Equity Securities | 2,590,619 | 2,587,812 | 2,807 | - | 54, - | - |
| Commingled Funds (5) | 544,447 | 15 | - | - | 544,447 |  |
| International Equity Securities | 558,515 | 558,515 | - | - | - | - |
| Real Estate: |  |  |  |  |  |  |
| Real Estate Funds (6) | 787,937 | - | - | - | 787,937 | 111,172 |
| Alternative Investments: |  |  |  |  |  |  |
| Private Equity (7) | 453,602 | - | - | - | 453,602 | 615,073 |
| Private Debt (8) | 324,961 | - | - | - | 324,961 | 194,325 |
| Opportunistic (9) | 206,410 | - | - | - | 206,410 | - |
| Total Investments | \$7,372,690 | \$3,539,487 | \$1,105,170 | \$- | \$2,728,033 | \$920,570 |

(1) Fiscal 2016 rates range from $0.625 \%$ to $6.770 \%$, and maturities from 2017 to 2046 . Fiscal 2015 rates range from $0.250 \%$ to $6.770 \%$, and maturities from 2015 to 2045.
(2) Fiscal 2016 rates range from $0.00 \%$ to $10.500 \%$, and maturities from 2016 to 2057 . Fiscal 2015 rates range from $0.875 \%$ to $11.000 \%$, and maturities from 2015 to 2066.
(3) This represents investments in two commingled fixed income funds that invest globally in both developed and emerging markets with investments consisting primarily of corporate bonds (investment grade and high yield), sovereign bonds and securitized bonds. These funds may also invest in convertible bonds and currencies. The redemption frequency for these investments range from daily to monthly with one to 30 business days' prior written notice.
(4) Fiscal 2016 rates range from $0.250 \%$ to $10.250 \%$, and maturities from 2016 to 2064 . Fiscal 2015 rates range from $0.250 \%$ to $10.250 \%$, and maturities from 2015 to 2050.
(5) This represents investments in four commingled equity funds in fiscal 2016 and five in fiscal 2015 that invest primarily in common stock of companies located outside the U.S., including emerging markets. These investments have daily liquidity and require up to 10 business days' notice for redemption.
(6) This represents investments in 45 funds consisting of 10 open-end funds and 35 closed-end funds. The open-end funds can be redeemed on a quarterly basis with 45-90 days' notice periods. The closed-end funds are not redeemable and are expected to be liquidated between 2016 and 2025 . Beginning in 2010, the System's real estate portfolio was restructured from direct property holdings to a diversified portfolio of funds. As such, 40 of the 45 fund investments have been made during the period from 2010 to 2016.
(7) This represents 30 investments in private partnerships focused primarily on the following strategies: buyouts, growth equity, secondaries and energy. These private partnerships typically have 10 to 15 year life cycles during which limited partners are unable to redeem their positions, but instead, receive distributions as the partnerships liquidate their underlying assets.
(8) This represents 16 investments in private partnerships focused primarily on the following strategies: direct lending, mezzanine and distressed debt. These private partnerships typically have 10 to 15 year life cycles during which limited partners are unable to redeem their positions, but instead, receive distributions from coupon payments and/or as the partnerships liquidate their underlying assets.
(9) SLI GARS is held within the Opportunistic sleeve of the Alternative Investments asset allocation as SLI GARS is an "unconstrained/go anywhere" manager that invests across various geographies and asset classes including equity, credit, interest rates, currencies and real estate. This manager invests on an opportunistic basis to take advantage of market dislocations.

## NOTE 5 - NET LIABILITY OF EMPLOYERS - PENSION AND OPEB

## PENSION

The net pension labillity of employers as of June 30 is shown below:

| SCHEDULE OF NET PENSION LIABILITY OF EMPLOYERS |  | (\$ in thousands) |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  |  | (a) | (d) |
|  | (a) | (b) | Net | Plan Net Position |
| Fiscal | Total | Plan | Pension | as a \% of Total |
| Year | Pension | Net | Liability | Pension Liability |
| Ended | Liability | Position | (a-b) | (b/a) |
| $6 / 30 / 2017$ | $\$ 13,171,981$ | $\$ 8,253,988$ | $\$ 4,917,993$ | $62.7 \%$ |
| $6 / 30 / 2016$ | $\$ 12,751,913$ | $\$ 7,434,318$ | $\$ 5,317,595$ | $58.3 \%$ |

## ACTUARIAL ASSUMPTIONS

The total pension liability as of June 30, 2017 is based on an actuarial valuation performed as of June 30, 2016 rolled forward to June 30, 2017. The roll-forward procedure increases the June 30, 2016 actuarial accrued liability with normal cost and interest and decreases it with actual benefit payments and administrative expenses paid.

A single discount rate of $7.25 \%$ was used to measure the total pension liability. This single discount rate was based on the expected rate of return on pension plan investments of $7.25 \%$, which is not reported net of the inflation assumption used to obtain the real weighted returns shown on pg. 45. The projection of cash flows used to determine this single discount rate assumed that employer contributions will be made under the current statute RSA 100-A:16 and that plan member contributions will be made under RSA 100-A:16. Based on these assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments to current plan members. Therefore, the longterm expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

The following table provides the sensitivity of the net pension liability to changes in the discount rate. In particular, the table presents the plan's net pension liability, if it were calculated using a single discount rate that is one-percentagepoint lower or one-percentage-point higher than the single discount rate:

## SENSITIVITY OF THE NET PENSION LIABILITY TO THE SINGLE

DISCOUNT RATE ASSUMPTION
(\$ in thousands)

| Fiscal Year Ended | 1\% Decrease to 6.25\% | Current Single Rate Assumption 7.25\% | 1\% Increase to 8.25\% |
| :---: | :---: | :---: | :---: |
| 6/30/2017 | \$6,479,209 | \$4,917,993 | \$3,638,638 |
| 6/30/2016 | \$6,832,748 | \$5,317,595 | \$4,061,017 |

The June 30, 2016 actuarial valuation rolled forward to June 30, 2017 used the following actuarial assumptions:

| Price Inflation | $2.5 \%$ per year |
| :--- | :--- |
| Wage Inflation | $3.25 \%$ per year |
| Salary Increases | $5.6 \%$ average, including inflation |
| Investment Rate of Return | $7.25 \%$ per year, net of investment expenses, including inflation |
| Retirement Age | Experience-based table of rates that is specific to the type of eligibility <br> condition. Last updated for the 2015 valuation pursuant to an <br> experience study of the period 2011-2015. |
| Mortality | RP-2014 mortality tables, generationally projected with Scale MP-2015. |

## OPEB

The net OPEB liability of employers as of June 30, 2017 and 2016 is shown below:
SCHEDULE OF NET OPEB LIABILITY OF EMPLOYERS (\$ in thousands)

| Fiscal |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Year |  |  |  |  |
| Ended | (a) <br> Total OPEB <br> Liability | (b) <br> Plan Net <br> Position | (c) <br> Net OPEB <br> Liability <br> (a-b) | (d) <br> Plan Net Position as a \% <br> of Total Pension Liability <br> (b/a) |
| $6 / 30 / 17$ | $\$ 496,507$ | $\$ 39,273$ | $\$ 457,234$ | $7.9 \%$ |
| $6 / 30 / 16$ | $\$ 510,733$ | $\$ 26,627$ | $\$ 484,106$ | $5.2 \%$ |

## ACTUARIAL ASSUMPTIONS

The total OPEB liability as of June 30, 2017 is based on an actuarial valuation performed as of June 30, 2016 rolled forward to June 30, 2017. The roll-forward procedure increases the June 30, 2016 actuarial accrued liability with normal cost and interest and decreases it with actual benefit payments and administrative expenses paid.

A single discount rate of $7.25 \%$ was used to measure the total OPEB liability. This single discount rate was based on the expected rate of return on OPEB plan investments of $7.25 \%$, which is not reported net of the inflation assumption used to obtain the real weighted returns shown on pg. 45. The projections of cash flows used to determine this single discount
rate assumed that employer contributions will be made under the current statutes RSA 100-A:16 and 100-A:53. Based on this assumption, the OPEB plan's fiduciary net position was projected to be available to make all projected future benefit payments to current plan members. Therefore, the long-term expected rate of return on OPEB plan investments was applied to all period of projected benefit payments to determine the total OPEB liability.

The following table provides the sensitivity of the net OPEB liability to changes in the discount rate. In particular, the table presents the plan's net OPEB liability, if it were calculated using a single discount rate that is one-percentage point lower or one-percentage point higher than the single discount rate.

GASB 74 requires the sensitivity of the net OPEB liability to the healthcare cost trend assumption. Since the medical subsidy benefits are a fixed stipend, there is no sensitivity to change in the healthcare cost trend assumption.

| SENSITIVITY OF THE NET OPEB LIABILITY TO THE |  | (\$ in thousands) |  |
| :---: | :---: | :---: | :---: |
| SINGLE DISCOUNT RATE ASSUMPTION |  | Current Single Rate | $1 \%$ Increase |
| Fiscal Year | $1 \%$ Decrease | to 8.25\% |  |
| Ended | to $6.25 \%$ | Assumption $7.25 \%$ | $\$ 422,254$ |
| $6 / 30 / 17$ | $\$ 497,607$ | $\$ 457,234$ | $\$ 447,489$ |
| $6 / 30 / 16$ | $\$ 526,463$ | $\$ 484,105$ |  |

The June 30, 2016 actuarial valuation folled forward to June 30, 2017 used the following actuarial assumptions:

| Price Inflation | $2.5 \%$ per year |
| :--- | :--- |
| Wage Inflation | $3.25 \%$ per year |
| Salary Increases | $5.6 \%$ average, including inflation |
| Investment Rate of Return | $7.25 \%$ net of OPEB plan investment expense, including inflation |
| Retirement Age | Experience-based table of rates that is specific to the type of eligibility con- <br> dition. Last updated for the 2015 valuation pursuant to an experience study <br> of the period 2010-2015. |
| Mortality | RP-2014 Healthy Annuitant and Employee generational mortality tables for <br> males and females with creditable adjustments, adjusted for fully genera- <br> tional mortality improvements using Scale MP-2015, based on the last ex- <br> perience study. |
| Health Care Trend Rates | N/A - Benefits are fixed stipends |
| Aging Factors | N/A - Benefits are fixed stipends |

The asset allocation is recommended by the Independent Investment Committee and approved by the Board of Trustees. Plan assets are managed on a total return basis with a long-term objective of achieving and maintaining a fully funded status for the benefits provided. The following table displays the approved asset allocation for 2017 and the geometric real rates of return for each asset class:

## LONG-TERM EXPECTED REAL RATE OF RETURN

|  |  | Weighted Average Long-Term <br> Expected Real Rate of Return* |
| :--- | :---: | :---: |
| Asset Class | Target Allocation | 2017 |
| Large Cap Equities | $22.50 \%$ | $4.25 \%$ |
| Small/Mid Cap Equities | $7.50 \%$ | $4.50 \%$ |
| Total Domestic Equity | $\mathbf{3 0 . 0 0 \%}$ |  |
| Int'I Equities (unhedged) | $\mathbf{1 3 . 0 0 \%}$ | $4.50 \%$ |
| Emerging Int'l Equities | $7.00 \%$ | $6.25 \%$ |
| Total International Equity | $\mathbf{2 0 . 0 0 \%}$ |  |
| Core Bonds | $5.00 \%$ | $0.75 \%$ |
| Short Duration | $2.00 \%$ | $(0.25 \%)$ |
| Global Multi-Sector Fixed Income | $\mathbf{1 1 . 0 0 \%}$ | $2.11 \%$ |
| Absolute Return Fixed Income | $7.00 \%$ | $1.26 \%$ |
| Total Fixed Income | $\mathbf{2 5 . 0 0 \%}$ |  |
| Private Equity | $5.00 \%$ | $6.25 \%$ |
| Private Debt | $5.00 \%$ | $4.75 \%$ |
| Opportunistic | $5.00 \%$ | $2.84 \%$ |
| Total Alternative Investments | $\mathbf{1 5 . 0 0 \%}$ |  |
| Real Estate | $\mathbf{1 0 . 0 0 \%}$ | $3.25 \%$ |
| TOTAL | $\mathbf{1 0 0 . 0 0 \%}$ |  |

*Real rates of return are presented net of the inflation assumption, which was $3.25 \%$ for 2017.

## NOTE 6-CONTRIBUTIONS

## PENSION PLAN

As a condition of participation, members are required to contribute a set percentage of their salary to the Pension Plan. The percentage rates, as outlined below, are set by statute under RSA 100-A:16 and depend on the member's group affiliation.
RSA 100-A:16 outlines the employer contributions made to the Pension Plan. Employer contributions to the Pension Plan since fiscal year 2007 have been determined on an actuarial basis using the entry age normal cost method.
The annual covered payroll for the year ended June 30, 2017 is $\$ 2,667.6$ million and the annual covered payroll for the fiscal year ended June 30, 2016 was $\$ 2,601.4$ million.
The following tables show the percentages of gross payroll contributed by the State, other contributing employers, and members to the pension plan and the OPEB plan.

TOTAL CONTRIBUTION RATES - PENSION PLAN

| Member Category | Member Share | (FY 2017) |  |  | Member Normal Sha | (FY 2016) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | $\begin{array}{cc} \text { State } & \text { Employer Normal Share } \\ \text { Local } \end{array}$ |  |  |  |  | Employer Normal Share | re Total |
| Employees |  |  |  |  |  |  |  |  |
| State | 7.00\% | 10.86\% | - | 10.86\% | 7.00\% | 10.86\% | - | 10.86\% |
| Local | 7.00\% | - | 10.86\% | 10.86\% | 7.00\% | - | 10.86\% | 10.86\% |
| Teachers | 7.00\% | - | 12.72\% | 12.72\% | 7.00\% | - | 12.72\% | 12.72\% |
| Police Officers |  |  |  |  |  |  |  |  |
| State | 11.55\% | 22.54\% | - | 22.54\% | 11.55\% | 22.54\% | - | 22.54\% |
| Local | 11.55\% | - | 22.54\% | 22.54\% | 11.55\% | - | 22.54\% | 22.54\% |
| Firefighters |  |  |  |  |  |  |  |  |
| State | 11.80\% | 25.32\% | 25.32- | 25.32\% | 11.80\% | 25.32\% | 25.32\% | 25.32\% |
| Local | 11.80\% | - | 25.32\% | 25.32\% | 11.80\% | - | 25.32\% | 25.32\% |

## OPEB PLAN

In accordance with RSA 100-A:53, RSA 100-A:53-b, RSA 100-A:53-c and RSA 100-A:53-d, benefits are provided by a 401 (h) subtrust of the Pension Plan.

The OPEB Plan is funded by allocating to the $401(\mathrm{~h})$ subtrust the lesser of:
a.) $25 \%$ of all employer contributions made in accordance with RSA 100-A:16; or
b.) the percentage of employer contributions determined by the actuary to be the minimum rate necessary to maintain the benefits provided under RSA 100-A:53, RSA 100-A:53-b, RSA 100-A:53-c and RSA 100-A:53-d.

For fiscal year 2017 and 2016, the minimum rates determined by the actuary to maintain benefits were the lesser of the two options and were used to determine the employer contributions due to the 401(h) subtrust.

The State Legislature has the authority to establish, amend and discontinue the contribution requirements of the OPEB Plan. Administrative costs are allocated to the OPEB Plan based on fund balances.

## TOTAL CONTRIBUTION RATES - OPEB PLAN

| Member Category | Member NormalShare | (FY 2017) |  |  | $\begin{aligned} & \text { Member } \\ & \text { Normal } \\ & \text { Share } \end{aligned}$ | (FY 2016) |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | $\begin{aligned} & \text { yer Normal } \\ & \text { Local } \end{aligned}$ | Total |  | State | Employer Normal Share Local |  |
| Employees |  |  |  |  |  |  |  |  |
| State | - | 1.64\% | - | 1.64\% | - | 1.64\% | - | 1.64\% |
| Local | - | - | 0.31\% | 0.31\% | - | - | 0.31\% | 0.31\% |
| Teachers | - | - | 2.95\% | 2.95\% | - | - | 2.95\% | 2.95\% |
| Police Officers |  |  |  |  |  |  |  |  |
| State | - | 3.84\% | ${ }^{-}$ | 3.84\% | - | 3.84\% | - | 3.84\% |
| Local | - | - | 3.84\% | 3.84\% | - | - | 3.84\% | 3.84\% |
| Firefighters |  |  |  |  |  |  |  |  |
| State | - | 3.84\% | - | 3.84\% | - | 3.84\% | - | 3.84\% |
| Local | - | - | 3.84\% | 3.84\% | - | - | 3.84\% | 3.84\% |

The following tables show the amounts contributed by participating employers and members and these contributions expressed as a percentage of the respective covered payrolls.

TOTAL AMOUNTS CONTRIBUTED - PENSION AND OPEB PLAN (in thousands)

| Member Category | Member Normal Share** | (FY 2017) <br> Employer Normal Share |  |  | Member | (FY 2016) <br> Employer Normal Share |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Pension Plan* | OPEB Plan* | Total Contributions | Normal Share** | Pension Plan ${ }^{\star}$ | OPEB Plan $^{*}$ | Total Contributions |
| Employees | \$ 85,393 | \$129,027 | \$10,919 | \$225,339 | \$ 82,661 | \$124,484 | \$10,529 | \$217,674 |
| Teachers | 77,957 | 138,575 | 32,030 | 248,562 | 76,681 | 136,335 | 31,791 | 244,807 |
| Police Officers | 34,748 | 66,926 | 11,407 | 113,081 | 34,031 | 65,589 | 11,166 | 110,786 |
| Firefighters | 14,963 | 31,959 | 4,841 | 51,763 | 14,576 | 30,926 | 4,688 | 50,190 |
| Total Contributed | \$213,061 | \$366,487 | \$59,197 | \$638,745 | \$207,949 | \$357,334 | \$58,174 | \$623,457 |

[^2]TOTAL AMOUNTS CONTRIBUTED EXPRESSED AS A PERCENTAGE OF COVERED PAYROLL FOR PENSION AND OPEB PLANS

| Member Category | (FY 2017) Employer Normal Share |  |  |  | Member | (FY 2016) $\underset{\text { Employer Normal Share }}{ }$ |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Normal Share** | Pension Plan* | $\begin{aligned} & \text { OPEB } \\ & \text { Plan } \end{aligned}$ | Total Contributions | Normal Share | Pension Plan* | OPEB Plan* $^{*}$ | Total Contributions |
| Employees | 7.24\% | 10.94\% | 0.93\% | 19.10\% | 7.27\% | 10.95\% | 0.93\% | 19.15\% |
| Teachers | 7.26\% | 12.91\% | 2.98\% | 23.16\% | 7.20\% | 12.79\% | 2.98\% | 22.97\% |
| Police Officers | 11.94\% | 23.00\% | 3.92\% | 38.86\% | 12.13\% | 23.38\% | 3.98\% | 39.49\% |
| Firefighters | 12.10\% | 25.85\% | 3.91\% | 41.86\% | 12.27\% | 26.04\% | 3.95\% | 42.26\% |
| Total Contributed | 7.99\% | 13.74\% | 2.22\% | 23.94\% | 7.99\% | 13.74\% | 2.24\% | 23.97\% |

As a matter of practice, actual contribution rates are determined by the previous valuation. Using the forecast rates delays implementation of the rates proposed by the actuary until the beginning of the subsequent biennium, allowing employers to budget for changes in employer rates. The employer normal contribution rates for the fiscal year 2017 and 2016 were based on the June 30, 2013 actuarial valuation.

## NOTE 7 - ADMINISTRATIVE EXPENSES

Certain expenses related to the administration of the Plans are budgeted and approved by the Board of Trustees, and were subject to appropriation biennially by the State Legislature. Total administrative expenses of $\$ 7.7$ million and $\$ 7.1$ million for June 30, 2017 and 2016, respectively, are included in the accompanying Combining Statements of Changes in Fiduciary Net Position.

Administrative expenses consist primarily of salaries and benefits for 58 full-time and part-time employees, the costs associated with operating and maintaining computer systems, and other administrative costs.

## NOTE 8 - CONTINGENT MATTERS

The System may have legal matters or claims that arise from time to time through the normal course of business. However, in the opinion of management and legal counsel, such matters are not expected to have an adverse effect on NHRS's financial status.

## Required Supplementary <br> Information (Unaudited)

SCHEDULE OF CHANGES IN THE EMPLOYERS' NET PENSION LIABILITY
AND RELATED RATIOS (\$ in thousands)

| Fiscal Year Ended Ju | June 30, 2017 | June 30, 2016 | June 30, 2015 | June 30, 2014 |
| :---: | :---: | :---: | :---: | :---: |
| Total Pension Liability |  |  |  |  |
| Service Cost | \$ 262.626 | \$ 266,379 | \$ 243,965 | \$ 245,828 |
| Interest on the Total Pension Liability | 906,201 | 875,247 | 847,646 | 815,214 |
| Benefit Changes | - | - | - | - |
| Difference Between Expected and Actual |  |  |  |  |
| Experience of the Total Pension Liability | ity ( 19,047) | 18,404 | 106,715) | - |
| Assumption Changes | - - | 815,023 | - | ( - |
| Benefit Payments | 706,304) | 670,360) | 631,312) | 599,476 ) |
| Refunds | ( 23,408) | ( 24,233) | ( 26,345) | 26,120 ) |
| Net Changes in Total Pension Liability | 420,068 | 1,280,460 | 327,239 | 435,446 |
| Total Pension Liability - Beginning | 12,751,913 | 11,471,453 | 11,144,214 | 10,708,768 |
| Total Pension Liability - Ending | \$13,171,981 | \$12,751,913 | \$11,471,453 | \$11,144,214 |


| Plan Fiduciary Net Position |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Contributions - Employer | \$ 366,653 | \$ | 357,482 | \$ | 332,294 | \$ | 328,444 |
| Contributions - Member | 213,061 |  | 207,949 |  | 204,063 |  | 199,033 |
| Pension Plan Net Investment Income | 978,594 |  | 61,878 |  | 249,806 |  | 1,092,586 |
| Benefit Payments | 706,304) | ( | 670,360) |  | 631,312) |  | 599,476 ) |
| Refunds | 23,408) | ( | 24,233) |  | 26,345) |  | 26,120) |
| Pension Plan Administrative Expense | 7,671) | ( | 7,061) |  | 7,582) |  | 7,377 ) |
| Other Custodial, Professional and Non-Investment Expenses | 1,255) | ( | 1,263) | $($ | 1,626) | ( | 1,446 ) |
| Net Change in Plan Fiduciary Net Position | 819,670 | ( | 75,608) |  | 119,298 |  | 985,644 |
| Plan Fiduciary Net Position - Beginning | 7,434,318 |  | 7,509,926 |  | 7,390,628 |  | 6,404,984 |
| Plan Fiduciary Net Position - Ending | \$8,253,988 | \$ | 7,434,318 | \$ | 7,509,926 | \$ | 7,390,628 |
| Net Pension Liability | \$4,917,993 | \$ | 5,317,595 | \$ | 3,961,527 | \$ | 3,753,586 |
| Plan Fiduciary Net Position as a Percentage of Total Pension Liability | 62.7\% |  | 58.3\% |  | 65.5\% |  | 66.3\% |
| Covered Employee Payroll | \$2,667,612 | \$ | 2,601,404 |  | 2,575,031 | \$ | 2,507,899 |
| Net Pension Liability as a Percentage of Covered Employee Payroll | 184.4\% |  | 204.4\% |  | 153.8\% |  | 149.7\% |

Schedule is intended to show information for 10 years. GASB 67 was adopted in 2014, and additional years will be added as they become available.

| SCHEDULE OF EMPLOYER CONTRIBUTIONS - PENSION PLAN |  |  |  | (\$ in thousands) |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Fiscal Year <br> Ended | Actuarially Determined Contribution | Actual Contribution | Contribution Deficiency (Excess) | Covered Payroll | Actual Contribution as a \% of Covered Payroll |
| 6/30/2017 | \$366,653 | \$366,653 | - | \$2,667,612 | 13.7\% |
| 6/30/2016 | \$357,482 | \$357,482 | - | \$2,601,404 | 13.7\% |
| 6/30/2015 | \$332,294 | \$332,294 | - | \$2,575,031 | 12.9\% |
| 6/30/2014 | \$328,444 | \$328,444 | - | \$2,507,899 | 13.1\% |
| 6/30/2013 | \$249,836 | \$249,836 | - | \$2,501,742 | 10.0\% |
| 6/30/2012 | \$254,557 | \$254,557 | - | \$2,487,757 | 10.2\% |
| 6/30/2011 | \$274,582 | \$274,582 | - | \$2,517,779 | 10.9\% |
| 6/30/2010 | \$269,677 | \$269,677 | - | \$2,481,384 | 10.9\% |
| 6/30/2009 | \$261,230 | \$261,230 | - | \$2,448,287 | 10.7\% |
| 6/30/2008 | \$250,520 | \$250,520 | - | \$2,308,321 | 10.9\% |

SCHEDULE OF CHANGES IN THE EMPLOYERS' NET OPEB LIABILITY
AND RELATED RATIOS (\$ in thousands)

| Fiscal Year Ended J | June 30, 2017 | June 30, 2016 |
| :---: | :---: | :---: |
| Total OPEB Liability |  |  |
| Service Cost | \$ 1,099 | \$ 1,218 |
| Interest on the Total OPEB Liability | 35,235 | 36,542 |
| Benefit Changes | - | - |
| Difference between expected and actual experience of the Total OPEB Liability | - | ( 4,538) |
| Assumption Changes | ( - | ( |
| Benefit Payments | ( 50,560) | $(51,805)$ |
| Refunds | - | - |
| Net Changes in Total OPEB Liability | ( 14,226) | $(18,583)$ |
| Total OPEB Liability - Beginning | 510,733 | 529,316 |
| Total OPEB Liability - Ending | \$496,507 | \$510,733 |
| Plan Fiduciary Net Position |  |  |
| Contributions - Employer | \$59,197 | \$58,174 |
| Contributions - Member | - | - |
| OPEB Plan Net Investment Income | 4,046 | 149 |
| Benefit Payments | ( 50,560) | $(51,805)$ |
| Refunds | - | ( |
| OPEB Plan Administrative Expense | 32) | ( 17) |
| Other custodial, professional and non-investment expenses | ( 5) | ( 3) |
| Net Change in Plan Fiduciary Net Position | 12,646 | 6,498 |
| Plan Fiduciary Net Position - Beginning | 26,627 | 20,129 |
| Plan Fiduciary Net Position - Ending | \$39,273 | \$26,627 |
| Plan Fiduciary Net Position as a Percentage of of Total OPEB Liability | ity 7.9\% | 5.2\% |
| Covered Employee Payroll* ${ }^{*}$ | \$2,667,612 | \$2,601,404 |
| Net OPEB Liability as a Percentage of Covered Employee Payroll | 17.1\% | 18.6\% |


| SCHEDULE OF EMPLOYER CONTRIBUTIONS - OPEB PLAN |  | (\$ in thousands) |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Fiscal Year <br> Ended | Actuarially <br> Determined <br> Contribution | Actual <br> Contribution | Contribution <br> Deficiency (Excess) | Covered <br> Payroll | as a $\%$ \% of Covered <br> Payroll |
| $6 / 30 / 17$ | $\$ 59,197$ | $\$ 59,197$ | - | $\$ 2,667,612$ | $2.2 \%$ |
| $6 / 30 / 16$ | 58,174 | 58,174 | - | $2,601,404$ | $2.2 \%$ |
| $6 / 30 / 15$ | 48,915 | 48,915 | - | $2,575,031$ | $1.9 \%$ |
| $6 / 30 / 14$ | 48,881 | 48,881 | - | $2,507,899$ | $1.9 \%$ |
| $6 / 30 / 13$ | 49,712 | 49,712 | - | $2,501,742$ | $2.0 \%$ |
| $6 / 30 / 12$ | 48,964 | 48,964 | - | $2,487,757$ | $2.0 \%$ |
| $6 / 30 / 11$ | 32,901 | 32,560 | - | $2,517,779$ | $1.3 \%$ |
| $6 / 30 / 10$ | 32,560 | 32,560 | - | $2,481,384$ | $1.3 \%$ |
| $6 / 30 / 09$ | 65,236 | 65,236 | - | $2,448,287$ | $2.7 \%$ |
| $6 / 30 / 08$ | 61,706 | 61,706 | - | $2,308,321$ | $2.7 \%$ |

## SCHEDULE OF INVESTMENT RETURNS

| Fiscal Year Ended | Annual Money Weighted Rate of Return — Net of Investment Expenses |
| :--- | ---: |
| $6 / 30 / 2017$ | $13.4 \%$ |
| $6 / 30 / 2016$ | $0.9 \%$ |
| $6 / 30 / 2015$ | $3.4 \%$ |
| $6 / 30 / 2014$ | $17.6 \%$ |

[^3] supplementary information and independent auditor's report.

## NOTES TO REQUIRED SUPPLEMENTARY INFORMATION - LAST TEN FISCAL YEARS

## CHANGES OF BENEFIT TERMS

- Modified the calculation of Average Final Compensation (AFC) for members not vested prior to Jan. 1, 2012, by changing the "compensation over base pay" factor used in the AFC formula from a dollar average to a percentage average.
- Clarifies the date from which NHRS must begin calculating a 7 -year average of Extra or Special Duty Pay for Group II (Police and Fire) members vested prior to Jan. 1, 2012. This change excludes from the calculation any months prior to July 1, 2009, which is when ESDP began to be separately reported to NHRS.
- Clarifies the number of years of creditable service Group II (Police and Fire) members in service prior to July 1, 2011, but not vested prior to Jan. 1, 2012, must have in order to qualify for the supplemental disability benefit available to eligible Accidental Disability retirees.
- Clarifies that the maximum benefit limit for members hired before July 1, 2009, is 100 percent of Earnable Compensation and the maximum benefit limit for members hired after that date, and not vested by Jan. 1, 2012, is the lesser of 85 percent of AFC or \$120,000 per year.
- Changes the definition of Earnable Compensation for active members who begin service on or after July 1, 2011 or who are not in vested status as of January 1, 2012.
- For active members who commenced service on or after July 1, 2011 or who have non-vested status as of January 1, 2012 Average Final Compensation (AFC) equals the average annual Earnable Compensation during the highest five years of creditable service.
- For members who commenced service on or after July 1, 2009 or are not vested as of January 1, 2012, a member's retirement benefit shall not exceed the lesser of 85 percent of the member's highest AFC or \$120,000.
- Group I members commencing service on or after July 1, 2011 are eligible to retire at age 65 and are eligible for a reduced annuity at age 60 with 30 years of creditable service. Prior to age 65 , the state annuity, together with the member annuity, shall be equal to $1 / 66$ th of AFC multiplied by creditable service reduced for each month prior to the month after the member attains age 65 by $1 / 4$ of 1 percent. After age 65, the state annuity, together with the member annuity, shall be equal to 1/66th of AFC multiplied by creditable service, reduced for each month prior to the month after the member attains age 65 by $1 / 4$ of 1 percent.
- Group II members commencing service on or after July 1, 2011 are eligible to retire at age 52.5 with 25 years of creditable service or age 60. The benefit shall be equal to 2 percent of AFC multiplied by creditable service up to 42.5 years. However, a member who commenced service on or after July 1, 2011 shall not receive a Service Retirement allowance until attaining the age of 52.5 , but may receive a reduced allowance after age 50 if the member has at least 25 years of creditable service where the allowance shall be reduced, for each month by which the benefit commencement date precedes the month after which the member attains 52.5 years of age, by $1 / 4$ of 1 percent.
- Group II members hired prior to July 1, 2011 who have non-vested status as of January 1, 2012 shall be subject to transition provisions for years of service required for regular Service Retirement, the minimum age for regular Service Retirement, and the multiplier used to calculate the retirement annuity, which shall be applicable on January 1, 2012.

| Years of Creditable Service as of <br> January 1, 2012 | Minimum <br> Age | Minimum <br> Service | Benefit <br> Multiplier |
| :--- | :---: | :---: | :---: |
| At least 8 but less than 10 years | 46 | 21 | $2.4 \%$ |
| At least 6 but less than 8 years | 47 | 22 | $2.3 \%$ |
| At least 4 but less than 6 years | 48 | 23 | $2.2 \%$ |
| Less than 4 years | 49 | 24 | $2.1 \%$ |
| Hired on or after July 1, 2011 | $52.5^{\star}$ | 25 | $2.0 \%$ |

*These members are eligible for a reduced service retirement pension at age 50.

- Member Contribution changes
(a) Group I (Employee and Teacher) members: 7.0 percent of Earnable Compensation.
(b) Group II Fire members: 11.80 percent of Earnable Compensation.
(c) Group II Police members: 11.55 percent of Earnable Compensation.
(d) Group II (Police and Fire) member contributions cease for members who are in vested status before January 1, 2012 with creditable service in excess of 40 years. Member contributions cease for all other Group II (Police and Fire) members with creditable service in excess of 42.5 years.
- Redefines Extra or Special Duty Pay (ESDP) as a component of a member's Earnable Compensation to mean member work activities or details for which the employer bills or charges another entity for the work activities provided.
- Requires that for fiscal years beginning on or after July 1, 2009, political subdivision employers must report monthly to NHRS all ESDP paid to Group II (Police and Fire) members. Employers are also required to include in their billing to the entity for whom the ESDP is provided, the full amount of employer contributions required under RSA 100-A:16, Il(b), which are applicable to the ESDP paid to Group II members. If the contributions are not paid by the entity, employers are required to pay 100 percent of the employer contributions attributable to all ESDP paid to Group II members.
- Repeals RSA 457-A regarding civil unions and amends RSA 457 to allow same gender couples to marry in New Hampshire. Because NHRS must follow the federal definition of marriage when administering pension plan benefits, certain retirement benefits for same gender married couples will be limited, as is currently the case with civil union partners.
- In accordance with the federal Heroes Earnings Assistance and Relief Tax (HEART) Act of 2008, provides that Ordinary Death benefits paid to a surviving spouse in the form of an annuity will not terminate upon the remarriage of such surviving spouse. Further, the law defines "qualified military service and provides Ordinary Death benefits for beneficiaries of NHRS members who die on or after January 1, 2007 while performing qualified military service.
- Establishes that the maximum retirement benefit granted under RSA 100-A:5 or RSA 100-A:6 for members hired after June 30, 2009 shall not exceed \$120,000 annually.
- Permits a member of the New Hampshire Retirement System to purchase up to two years of service credit for the period of time in which a member served in the Peace Corps or Americorps, subject to certain specified eligibility requirements.
- Establishes that the maximum retirement benefit granted under RSA 100-A:5 or RSA 100-A:6 shall not exceed 100 percent of the member's highest year of Earnable Compensation.


## CHANGES OF ASSUMPTIONS

An actuarial review, commonly called an experience study, of the mortality, service, withdrawals, and compensation experience of members is required by statute at least once during each five-year period. The last actuarial review was performed during fiscal year 2016 and was based on the information available as of June 30, 2015.
There were many assumption changes adopted by the Board based on the study in 2010. Two changes of particular importance were:

- The investment rate of return assumption was reduced from $8.5 \%$ to $7.75 \%$
- The wage inflation assumption was reduced from $4.50 \%$ to $3.75 \%$

Assumption changes adopted as a reults of the 2015 experience study are:

## Economic Assumptions:

- The assumed investment rate of return was reduced from $7.75 \%$ to $7.25 \%$
- The wage inflation rate was reduced from $3.75 \%$ to $3.25 \%$
- The price inflation assumption was reduced from $3.00 \%$ to $2.50 \%$


## Demographic Assumptions were changed in the following categories:

- Rates of Disability
- Rates of Retirement
- Rates of Withdrawal
- Mortality

The full experience study results can be viewed at www.nhrs.org/docs/default-source/actuarial/july-1-2010---june-30-2015-experience-study.pdf

## Supporting Schedules

| REAL ESTATE INVESTMENTS BY TYPE | (in thousands) |  |
| :--- | ---: | ---: |
|  | $\mathbf{J U N E ~ 3 0}$ |  |
|  | $\mathbf{2 0 1 7}$ | $\mathbf{2 0 1 6}$ |
| Office Buildings | $\$ 269,092$ | $\$ 259,758$ |
| Multi-Family Apartment Buildings | 190,895 | 205,361 |
| Retail Property | 137,876 | 124,050 |
| Industrial/Research \& Development Property | 122,874 | 109,068 |
| Other | 94,556 | 89,700 |
| TOTAL REAL ESTATE INVESTMENTS BY TYPE | $\$ 815,293$ | $\$ 787,937$ |



| REAL ESTATE INVESTMENTS BY LOCATION | (in thousands) |  |
| :--- | ---: | ---: |
|  | JUNE 30 |  |
|  | $\mathbf{2 0 1 7}$ | $\mathbf{2 0 1 6}$ |
| West | $\$ 258,571$ | $\$ 246,382$ |
| East | 255,846 | 249,682 |
| South | 129,972 | 143,648 |
| Midwest | 58,713 | 58,047 |
| Non-U.S. | 112,191 | $\mathbf{9 0}, 178$ |
| TOTAL REAL ESTATE INVESTMENTS BY LOCATION | $\$ 815,293$ | $\$ 787,937$ |



| ALTERNATIVE INVESTMENTS | (in thousands) |  |
| :---: | :---: | :---: |
|  | JUNE 30 |  |
|  | 2017 | 2016 |
| Venture Capital | \$ 542 | \$ 542 |
| Growth Equity | 167,507 | 107,074 |
| Buyouts | 204,243 | 123,305 |
| Secondaries | 135,696 | 125,098 |
| Mezzanine | 12,754 | 12,732 |
| Distressed | 194,416 | 162,585 |
| Absolute Return Strategies | 1,624 | 1,808 |
| Opportunistic | 214,392 | 206,410 |
| Direct Lending Strategies | 238,009 | 211,134 |
| Energy | 78,002 | 34,285 |
| TOTAL ALTERNATIVE INVESTMENTS | \$1,247,185 | \$984,973 |
| NET APPRECIATION (DEPRECIATION) IN FAIR VALUE OF INVESTMENTS | (in thousands) |  |
|  | YEAR ENDED JUNE 30 |  |
|  | 2017 | 2016 |
| Equity Investments: |  |  |
| Domestic | \$ 406,326 | \$( 59,465) |
| Non-U.S. | 251,669 | $(127,878)$ |
| Fixed Income Investments | 21,840 | 23,877 |
| Temporary Investments | 11 | - |
| Real Estate | 51,650 | 86,240 |
| Growth Equity | 26,006 | 2,244 |
| Buyouts | 21,583 | 7,014 |
| Secondaries | 18,399 | 4,631 |
| Mezzanine | 979) | 35 |
| Distressed | 12,897 | $(2,188)$ |
| Absolute Return Strategies | 184) | ( 220) |
| Opportunistic | 7,453 | ( 8,969) |
| Direct Lending | 29 | 1,140 |
| Energy | 18,735 | 460 |
| TOTAL NET APPRECIATION (DEPRECIATION) IN FAIR VALUE OF INVESTMENTS | \$ 835,435 | \$( 73,079) |


| REAL ESTATE INVESTMENTS INCOME AND EXPENSES |  |  | (in thousands) |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | INCOME <br> YEAR ENDED JUNE 30 |  | EXPENSE <br> YEAR ENDED JUNE 30 |  |  | NET INCOMEYEAR ENDED JUNE 30 |  |  |
|  | 2017 | 2016 | 2017 |  | 16 |  | 2017 | 2016 |
| Office Buildings | \$ 5,599 | \$ 3,240 | \$ | \$ | - | \$ | 5,599 | \$ 3,240 |
| Multi-Family Apartment Buildings | 5,782 | 2,722 | - |  | - |  | 5,782 | 2,722 |
| Retail Property | 2,696 | 416 | - |  | 3 |  | 2,696 | 413 |
| Industrial/Research \& Development Property | 186 | 645 | - |  | - |  | 186 | 645 |
| Hotels | 860 | - | - |  | 57 |  | 860 | ( 57) |
| Other | 1,395 | 1,398 | - |  | - |  | 1,395 | 1,398 |
| TOTAL | \$ 16,518 | \$ 8,421 | \$ - | \$ | 60 |  | 16,518 | \$ 8,361 |


| INVESTMENT ACTIVITY FEES AND |  |  |
| :--- | ---: | ---: |
| OTHER INVESTMENT RELATED EXPENSES | (in thousands) |  |
|  | YEAR ENDED JUNE 30 |  |
|  | 2017 | $\mathbf{2 0 1 6}$ |
| INVESTMENT ACTIVITY FEES: |  |  |
| Equity Investments: |  |  |
| Domestic | 8,669 | $\$ 8,174$ |
| Non-U.S. | 8,790 | 8,022 |
| Fixed Income Investments | 4,211 | 3,990 |
| Real Estate | 1,965 | 1,821 |
| Custodial Fees | 614 | 624 |
| Investment Advisor Fees | 740 | 735 |
| Investment Staff Administrative Expense | 627 | 610 |
| TOTAL INVESTMENT ACTIVITY FEES | $\mathbf{\$ 2 5 , 6 1 6}$ | $\mathbf{\$ 2 3 , 9 7 6}$ |


| INTEREST INCOME | (in thousands) |  |
| :--- | ---: | ---: |
|  | YEAR ENDED JUNE 30 |  |
|  | $\mathbf{2 0 1 7}$ | $\mathbf{2 0 1 6}$ |
| Fixed Income Investments | $\$ 54,024$ | $\$ 53,017$ |
| Cash and Cash Equivalents | 1,409 | $\mathbf{9 6 2}$ |
| TOTAL INTEREST INCOME | $\$ 55,433$ | $\mathbf{5 3 , 9 7 9}$ |


| DIVIDEND INCOME | (in thousands) |  |  |
| :--- | :---: | :---: | :---: |
|  | YEAR ENDED JUNE 30 |  |  |
|  | 2017 | $\mathbf{2 0 1 6}$ |  |
| Equity Investments: | $\$ 48,113$ |  |  |
| Domestic | 25,374 | 51,216 |  |
| Non-U.S. | $\$ 73,487$ | $\mathbf{\$ 2}$ | $\mathbf{7 4 , 1 6 5}$ |
| TOTAL DIVIDEND INCOME |  |  |  |


| ALTERNATIVE INVESTMENT INCOME (LOSS) | (in thousands) |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | YEAR ENDED JUNE 30 |  |  |  |
|  | 2017 |  |  | 2016 |
| Distressed | \$ | 870 | \$ | 3,574 |
| Secondaries |  | 819 |  | 487 |
| Direct Lending |  | 22,399 |  | 16,546 |
| Opportunistic |  | 530 |  | 539 |
| Energy |  | 232 | ( | 51) |
| Mezzanine |  | 1,301 |  | 832 |
| Buyouts |  | 582 |  | 380 |
| Growth Equity |  | 650 |  | 269 |
| TOTAL ALTERNATIVE INVESTMENT INCOME* | \$ | 27,383 | \$ | 22,576 |


| CONTRIBUTIONS | (in thousands) |
| :--- | ---: | :---: |
|  | YEAR ENDED JUNE 30 |


| BENEFITS | (in thousands) |  |
| :--- | ---: | ---: |
|  | YEAR ENDED JUNE 30 |  |
| 2016 |  |  |
| PENSION BENEFITS AND ADDITIONAL ALLOWANCES: |  |  |
| Employees | $\$ 2017$ |  |
| Teachers | 278,413 | $\$ 218,678$ |
| Police Officers | 131,767 | 266,566 |
| Firefighters | 62,655 | 59,567 |
| TOTAL PENSION BENEFITS AND ADDITIONAL ALLOWANCES | $\$ 706,304$ | $\mathbf{\$ 6 7 0 , 3 6 0}$ |
|  |  |  |
| POSTEMPLOYMENT MEDICAL BENEFITS: |  |  |
| Group II Police and Fire | 16,837 | 16,528 |
| Group I Teachers | 20,923 | 21,772 |
| Group I Political Subdivision Employees | 5,344 | 5,681 |
| Group I State Employees | 7,456 | 7,824 |
| TOTAL POSTEMPLOYMENT MEDICAL BENEFITS | $\$ 50,560$ | $\mathbf{\$ 5 1 , 8 0 5}$ |
| TOTAL BENEFITS | $\$ 756,864$ | $\mathbf{\$ 7 2 2 , 1 6 5}$ |


| REFUNDS OF CONTRIBUTIONS | (in thousands) |  |
| :--- | ---: | ---: |
|  | YEAR ENDED JUNE 30 |  |
|  | 2017 | $\mathbf{2 0 1 6}$ |
| Employees | $\$ 12,890$ | $\$ 14,346$ |
| Teachers | 5,927 | 6,421 |
| Police Officers | 3,638 | 3,032 |
| Firefighters | 953 | 434 |
| TOTAL REFUNDS OF CONTRIBUTIONS | $\$ 23,408$ | $\mathbf{\$ 2 4 , 2 3 3}$ |


| ADMINISTRATIVE EXPENSE FOR THE YEARS ENDED |
| :--- | ---: | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| JUNE 30, 2017 AND 2016 |

*The New Hampshire biennial budget is composed of the initial operating budget and supplemented by additional appropriations. These appropriations are generated by Governor and Council action, annual session laws, and existing statutes which require appropriations under certain circumstances. The budget therefore is a flexible budget. It is a biennial budget which consists of balances brought forward plus current year appropriations, less balances carried forward into the following fiscal year. The balances carried forward into the following fiscal year are composed of encumbrances and non-lapsing appropriations.

| PROFESSIONAL FEES | (in thousands) |  |
| :--- | ---: | ---: |
| YEAR ENDED JUNE 30 |  |  |
|  | 2017 | $\mathbf{2 0 1 6}$ |
| Legal Fees | $\$ 496$ | 554 |
| Actuarial Fees | 213 | 176 |
| Audit Fees | 287 | 222 |
| TOTAL PROFESSIONAL FEES | $\$ 996$ | $\mathbf{\$}$ |


| MEMBERSHIP COMPOSITION - PENSION PLAN |  |  |
| :--- | ---: | ---: |
|  |  | JUNE 30 |
|  | $\mathbf{2 0 1 7}$ |  |
| ACTIVE CONTRIBUTING MEMBERS: |  |  |
| Employees | 24,478 | 24,520 |
| Teachers | 17,617 | 17,784 |
| Police Officers | 4,151 | 4,139 |
| Firefighters | 1,640 | 1,626 |
| TOTAL ACTIVE CONTRIBUTING MEMBERS* | 47,886 | $\mathbf{4 8 , 0 6 9}$ |
| Excludes inactives |  |  |
|  |  |  |
| RETIRED MEMBERS: |  |  |
| Employees | 17,573 |  |
| Teachers | 12,696 | 16,142 |
| Police Officers | 3,786 | 3,410 |
| Firefighters | 1,639 | $\mathbf{1 , 5 9 5}$ |
| TOTAL RETIRED MEMBERS | 35,694 | $\mathbf{3 2 , 7 7 6}$ |

TERMINATED MEMBERS ENTITLED TO BUT NOT YET RECEIVING BENEFITS:
Employees
Teachers
Police Officers
Firefighters
TOTAL TERMINATED MEMBERS ENTITLED TO BUT
NOT YET RECEIVING BENEFITS:

INACTIVE MEMBERS:

| Non-Vested Inactive Members | 10,477 | 9,528 |
| :--- | ---: | ---: |
| TOTAL TERMINATED AND INACTIVE MEMBERS | 10,477 | $\mathbf{1 1 , 3 1 3}$ |


| MEMBERSHIP COMPOSITION - OPEB PLAN |  |  |
| :---: | :---: | :---: |
|  | JUNE 30 |  |
|  | 2017 | 2016 |
| ACTIVE CONTRIBUTING MEMBERS: OPEB Plan | 1,382 | 1,527 |
| TOTAL ACTIVE CONTRIBUTING MEMBERS | 1,382 | 1,527 |
| RETIRED MEMBERS: OPEB Plan | 9,965 | 10,104 |
| TOTAL RETIRED MEMBERS | 9,965 | 10,104 |


| TERMINATED MEMBERS ENTITLED TO BUT NOT YET RECEIVING BENEFITS: |
| :--- |
| OPEB Plan |
| TOTAL TERMINATED MEMBERS ENTITLED TO BUT NOT |
| YET RECEIVING BENEFITS: |

INACTIVE MEMBERS:

| Non-Vested Inactive Members | - | - |
| :--- | ---: | ---: |
| TOTAL TERMINATED AND INACTIVE MEMBERS | 2,937 | $\mathbf{2 , 9 1 2}$ |

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## INVESTMENT section

Investment income has historically provided the majority of the funding for pension benefits. Over the past 25 years, NHRS investments
have achieved an average annual return of 8.2 percent.


Investment
Consultant's
Letter


## NEPC, LLC

Kevin M. Leonard
Senior Consultant

October 9, 2017 Board of Trustees
Investment Committee
Executive Director
The New Hampshire Retirement System
54 Regional Drive
Concord, NH 03301-8507 Dear NHRS Fiduciaries:
NEPC, LLC (NEPC) is pleased to introduce this overview of the New Hampshire Retirement System (NHRS) investment program for the fiscal year ended June 30, 2017.
The overall objective of NHRS is to provide service, disability, death and vested retirement benefits, and other postemployment benefits to members and their beneficiaries. To ensure a solid foundation for the future of the System, NHRS plans and implements an investment program designed to achieve the maximum rate of return over the long term, while prudently managing the risk of the portfolio. Additionally, the NHRS investment program is administered in accordance with sound governance practices and applicable statutes. The Board of Trustees (Trustees) established an Investment Policy which includes asset allocation targets and acceptable ranges as well as asset class benchmarks for performance measurement. The Trustees retain the services of actuaries and consultants to provide guidance regarding actuarial matters, asset allocation, and investment policy. The Independent Investment Committee (Committee) manages the investment program pursuant to the investment policy, develops asset class guidelines, monitors and evaluates performance, and makes determinations regarding the retention of managers. Professional investment managers are selected by the Committee to manage portfolios in accordance with investment management agreements. The investment manual includes all investment policies and asset class guidelines and may be obtained from the NHRS website at www.nhrs.org. The following pages report on the performance and attributes of the investment program for fiscal year 2017.

Capital markets remained largely driven by a dovish, yet tightening, U.S. Central Bank and international Central Bank stimulative actions, resulting in the continuation of an over eight year valuation expansion of growth assets (equities) in the U.S. Results for U.S. equity investments lagged international investments although both markets ended the year with very strong gains. Anti-establishment political movements globally, the U.S. election outcome, divergent Central Bank policies, historically low and broadly negative real interest rates and concerns over growth in China contributed to higher levels of volatility in the first half of the year. Post U.S. election, volatility around global risk factors were largely shrugged off by markets resulting in U.S. equities posting their eighth consecutive positive year with a $+17.9 \%$ return as measured by the S\&P 500 Index. U.S. high quality fixed income investments produced a negative return ( $-0.3 \%$ ), measured by the Bloomberg Barclays U.S. Aggregate Bond Index, driven lower by 10 year U.S. Treasury yields spiking post U.S. election near the end of 2016. International developed markets equities returned $+20.3 \%$, as measured by the MSCI EAFE Index, and outperformed domestic equities by $2.4 \%$ as European nations returns shrugged off political uncertainty and showed signs of relative economic strength. Emerging markets equities returned $+23.7 \%$, as measured by the MSCI Emerging Markets Index, and outperformed U.S. and developed international equities by $5.8 \%$ and $3.4 \%$ respectively.

For the fiscal year ended June 30, 2017, the NHRS Total Fund returned $+13.5 \%$ on a net- of-fees basis, outperforming the Total Fund custom benchmark return of $+11.9 \%$ and ranking in the 18 th percentile ( $1 \%$ being the highest, $100 \%$ being the lowest) relative to other investors in the InvestorForce Public Defined Benefit Net Universe (universe). During the following periods the NHRS Total Fund provided strong annualized net-of-fees returns relative to the universe: For the trailing three years ending June 30, 2017, the NHRS Total Fund return of $+5.8 \%$ ranked in the 10th percentile of the universe; For the trailing five years ending June 30, 2017 the NHRS Total Fund return of $+9.8 \%$ ranked in the 6th percentile of the universe; For the trailing ten year period ending June 30, 2017, the NHRS Total Fund returned $+5.7 \%$ and ranked in the 16th percentile of the universe; For the trailing twenty-five year period ending June 30, 2017, the NHRS Total Fund returned $+8.2 \%$, exceeding the current assumed rate of return of $7.25 \%$, and ranking in the 17th percentile of the universe.

During fiscal year 2017, the Committee continued to implement the expansion of the alternative investment portfolio.

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One Main Street | Cambridge, MA 02142 | TEL: 617.374.1300 | www.nepc.com
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CAMBRIDGE \| ATLANTA \| CHARLOTTE \| DETROIT \| LAS VEGAS | SAN FRANCISCO

NEPC provides NHRS with quarterly economic and investment market updates and performance reviews, investment manager monitoring and selection advice, and related investment services for traditional and non-traditional asset classes. Investment performance analysis and comparisons produced by NEPC have been calculated using standard performance evaluation methodologies and are consistent with industry standards. Performance results are calculated using a timeweighted return methodology and are reported on a net-of-fees basis.

Sincerely,


## Investment

Reports

ANNUALIZED INVESTMENT RETURNS-ACTUAL VERSUS INDICES

|  | Current Year <br> 2017 | 3 Year | Annualized <br> $\mathbf{5 ~ Y e a r ~}$ | $\mathbf{1 0}$ Year |
| :--- | :---: | :---: | :---: | :---: |
| Total NHRS Fund | $13.5 \%$ | $5.8 \%$ | $9.8 \%$ | $5.7 \%$ |
| Total Fund Custom Index* | 11.9 | 6.1 | 9.9 | 5.9 |
| Domestic Equity | 19.3 | 8.3 | 14.4 | 6.5 |
| Total Domestic Equity Blended Benchmark* | 17.9 | 9.6 | 14.9 | 7.4 |
| Non-U.S. Equity | 20.1 | 2.3 | 7.2 | 2.1 |
| Total Non-U.S. Equity Blended Benchmark* | 20.5 | 0.8 | 7.2 | 1.1 |
| Fixed Income | 3.9 | 2.5 | 3.4 | 5.8 |
| Total Fixed Income Blended Benchmark* | 0.9 | 2.8 | 2.7 | 4.7 |
| Real Estate | 9.1 | 12.0 | 13.1 | 5.8 |
| Total Real Estate Blended Benchmark* | 6.9 | 10.4 | 10.8 | 6.8 |
| Alternative Investments | 11.9 | 6.4 | 8.1 | 1.0 |
| Total Alternative Investments Blended |  |  | 15.7 | 11.7 |
| Benchmark* | 11.3 | 9.5 | 0.2 | 0.6 |
| Cash Equivalents | 0.8 | 0.3 | 0.2 | 0.4 |
| 90 Day T-Bills | 0.5 |  |  |  |

Performance returns are calculated on a net-of-fees time-weighted rate of return basis.
*In a dynamic market, strategies and objectives evolve over time. Consequently, these benchmarks are blended due to historical investment strategy decisions. Detailed descriptions of the benchmarks above are available by contacting NHRS.

Ten Year History of Time-Weighted Total NHRS Fund Annual Returns


## ACTUAL ASSET ALLOCATION VERSUS TARGET ASSET ALLOCATION

|  | As of June 30, 2017 |  |  |
| :--- | :---: | :---: | ---: |
|  | Actual $\%$ | Target $\%$ | Target Range \% |
| Domestic Equity | $33.9 \%$ | $30.0 \%$ | $20-50$ |
| Non-U.S. Equity | 17.9 | 20.0 | $15-25$ |
| Fixed Income | 23.1 | 25.0 | $20-30$ |
| Real Estate | 9.9 | 10.0 | $5-20$ |
| Alternative Investments | 15.2 | 15.0 | $5-25$ |
| TOTAL FUND | $100.0 \%$ | $\mathbf{1 0 0 . 0 \%}$ |  |

## Actual Asset Allocation as of June 30, 2017



Target Asset Allocation as of June 30, 2017


| TEN LARGEST STOCK HOLDINGS BY FAIR VALUE* |  |  |  | (in thousands) |
| :---: | :---: | :---: | :---: | :---: |
|  | Shares | Stock | June 30, 2017 Fair Value |  |
| 1 | 283,131 | Apple Inc | \$40,777 |  |
| 2 | 522,252 | Microsoft Corp | 35,999 |  |
| 3 | 265,685 | Johnson \& Johnson | 35,147 |  |
| 4 | 286,430 | JPMorgan Chase \& Co | 26,180 |  |
| 5 | 298,099 | Exxon Mobil Corp | 24,065 |  |
| 6 | 24,454 | Amazon.com Inc | 23,671 |  |
| 7 | 656,221 | Cisco Systems Inc | 20,540 |  |
| 8 | 21,618 | Alphabet Inc | 19,645 |  |
| 9 | 128,360 | Facebook Inc | 19,380 |  |
| 10 | 749,925 | Bank of America Corp | 18,193 |  |

TEN LARGEST FIXED INCOME HOLDINGS BY FAIR VALUE* (in thousands)

|  | Par** | Security | June 30, 2017 Fair Value |
| :---: | :---: | :---: | :---: |
| 1 | 22,850,000 | U.S. Treasury Bond - 4.500\%, 2036 | \$29,494 |
| 2 | 26,507,000 | U.S. Treasury Note - 0.750\%, 2019 | 26,147 |
| 3 | 25,618,000 | U.S. Treasury Note - 1.125\%, 2021 | 24,919 |
| 4 | 22,288,000 | U.S. Treasury Note - 1.625\%, 2020 | 22,358 |
| 5 | 21,373,000 | U.S. Treasury Note - 1.875\%, 2022 | 21,400 |
| 6 | 19,939,000 | U.S. Treasury Bond - 3.000\%, 2045 | 20,546 |
| 7 | 15,275,000 | United Kingdom Gilt Regs - 1.250\%, 2018 | 20,034 |
| 8 | 20,000,000 | U.S. Treasury Note - 0.750\%, 2018 | 19,859 |
| 9 | 20,041,000 | U.S. Treasury Note - 1.250\%, 2021 | 19,709 |
| 10 | 305,000,000 | Mexican Bonos - 7.750\%, 2042 | 17,818 |

*A complete listing of separate account portfolio holdings is available by contacting the NHRS offices. NHRS also invests in various commingled investment vehicles, which are custodied outside of The Bank of NY Mellon (Master Custodian for NHRS), as reported on the Summary of Investments schedule.
**Par value is denoted in local currency.

## SCHEDULE OF INVESTMENT MANAGEMENT AND SERVICE FEES

|  | YEAR ENDED JUNE 30, 2017 |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | Assets Under Management (in thousands) |  |  | Fees housands) | Average Basis Points |
| INVESTMENT MANAGEMENT FEES |  |  |  |  |  |
| Equity Portfolios: |  |  |  |  |  |
| Domestic |  | 2,594,028 | \$ | 8,669 | 33 |
| Non-U.S. |  | 1,601,190 |  | 8,790 | 55 |
| Fixed Income Portfolios |  | 1,874,023 |  | 4,211 | 22 |
| Alternative Investments* |  | 1,247,185 |  | - | - |
| Real Estate |  | 815,293 |  | 1,965 | 24 |
| Cash and Cash Equivalents** |  | 73,462 |  | - | - |
| TOTAL INVESTMENT MANAGEMENT FEES | \$ | 8,205,181 |  | 23,635 | 29 |
| INVESTMENT SERVICE FEES |  |  |  |  |  |
| Custodial Fees | \$ | 8,205,181 | \$ | 614 | 1 |
| Investment Advisor Fees - External |  | 8,205,181 |  | 740 | 1 |
| Investment Administrative Expenses - Internal |  | 8,205,181 |  | 627 | 1 |
| TOTAL INVESTMENT MANAGEMENT AND SERVICE FEES |  | 8,205,181 |  | 25,616 | 31 |

*The custodian records all transactions on a net of fee basis.
**Does not include cash and cash equivalents held in manager portfolios, only in designated cash portfolios.

| SCHEDULE OF BROKERAGE COMMISSIONS PAID |  |  |  |
| :--- | ---: | ---: | ---: |
|  | Number of <br> Shares Traded <br> (in thousands) | YEAR ENDED JUNE 30, 2017 <br> Total <br> Commissions <br> (in thousands) | Commissions <br> Per |
| Brokerage Firm | 15,321 | $\$ 253$ | Share |

[^4]Net Position Held In Trust For Benefits (in millions)


## SUMMARY OF INVESTMENTS

|  | June 30, 2017 |  |
| :---: | :---: | :---: |
| TYPE OF INVESTMENT | Fair Value (in millions) | Percent of Total Fair Value |
| FIXED INCOME |  |  |
| Collateralized/Asset Backed Securities | \$ 145.5 | 1.8\% |
| Corporate Bonds | 591.0 | 7.2\% |
| Government and Agency Bonds | 636.5 | 7.8\% |
| Doubleline Capital Floating Rate Fund | 5.2 | 0.1\% |
| Doubleline Capital Global Bond | 2.1 | 0.0\% |
| GAM | 222.5 | 2.7\% |
| Manulife | 211.7 | 2.6\% |
| TOTAL FIXED INCOME | \$1,814.5 | 22.1\% |
| EQUITY |  |  |
| Consumer Discretionary | \$ 484.6 | 5.9\% |
| Consumer Staples | 204.3 | 2.5\% |
| Energy | 180.2 | 2.2\% |
| Financial Services | 757.2 | 9.2\% |
| Health Care | 487.9 | 5.9\% |
| Producer Durables | 452.9 | 5.5\% |
| Information Technology | 563.4 | 6.9\% |
| Materials | 173.8 | 2.1\% |
| Utilities | 167.8 | 2.0\% |
| Aberdeen Emerging Markets Smaller Companies Fund | 91.2 | 1.1\% |
| Russell 2000 Index Fund iShares | 8.7 | 0.1\% |
| Neuberger Berman Emerging Markets Equity Fund | 120.2 | 1.5\% |
| Segall Bryant \& Hamill Int'I Small Cap | 132.2 | 1.6\% |
| Wellington Emerging Markets Local Equity Fund | 105.6 | 1.3\% |
| LSV International Value Fund | 213.0 | 2.6\% |
| TOTAL EQUITY | \$4,143.0 | 50.5\% |
| OTHER INVESTMENTS |  |  |
| Alternative Investments | \$1,247.2 | 15.2\% |
| Real Estate | 815.3 | 9.9\% |
| Cash and Cash Equivalents | 185.2 | 2.3\% |
| TOTAL INVESTMENTS | \$8,205.2 | 100.0\% |

## ACTUARIAL section

NHRS has 47,886 active members, who, along with their participating employers, contribute into the retirement system.


HRTH|Tा


## Actuarial Certification

800.521.0498| P: 248.799.9000|F:.248.799.9020|www.grsconsulting.com

October 31, 2017
Board of Trustees
New Hampshire Retirement System 54 Regional Drive
Concord, New Hampshire 03301-8509 Attention: Mr. George Lagos

## Dear Board Members:

This report was prepared at the request of the Board and is intended for use by the Retirement System and those designated or approved by the Board. This report may be provided to parties other than the System only in its entirety and only with the permission of the Board. GRS is not responsible for unauthorized use of this report. This report should not be relied on for any purpose other than the purposes described below.

The purposes of this report are:

- To provide information in connection with Governmental Accounting Standards Board (GASB) Statement No. 67 "Financial Reporting for Pension Plans" as of June 30, 2017.
- To provide information in connection with Governmental Accounting Standards Board (GASB) Statement No. 74 "Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans" as of June 30, 2017.
- To provide supporting schedules for the Comprehensive Annual Financial Report (CAFR) for the System's use in the Actuarial Section, the Statistical Section, Notes to the Financial Statements, and Required Supplementary Information.

The report was based upon information, furnished by New Hampshire Retirement System (NHRS) staff, concerning Retirement System benefits, financial transactions, and active members, terminated members, retirees and beneficiaries as of June 30, 2017. We checked for internal and year-to-year consistency, but did not audit the data. We are not responsible for the accuracy or completeness of the data provided by NHRS.

We prepared the following supporting schedules for the Comprehensive Annual Financial Report for the System's use in the Actuarial Section, the Statistical Section, Notes to the Financial Statements and Required Supplementary Information:

- Summary of Actuarial Assumptions and Methods
- Percent Retiring Within Next Year
- Probabilities of Becoming Disabled Within Next Year
- Percent Separating Within Next Year
- Individual Employee Pay Increases
- Retirees and Beneficiaries Age Distribution
- Active Members by Valuation Division
- Active Members Age and Service Distribution
- Historical Membership Data - Active and Retired
- Summary of Membership Data by Category
- Schedule of Average Benefit Payment Amounts
- Schedule of Retired and Vested Members by Type of Benefit
- Solvency Test
- Schedule of Employer Contributions - Pension and OPEB
- Schedule of Changes in the Employers' Net Pension Liability, Net OPEB Liability and Related Ratios
- Sensitivity of Net Pension Liability and Net OPEB Liability to the Single Discount Rate Assumption

The schedules include information regarding pension plan funding under the New Hampshire Statute RSA 100-A:16. The basic financial objective of the New Hampshire Retirement System (NHRS) is to establish and receive pension contributions which:

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

The financial objective for medical subsidy benefits under RSA 100-A:53, 53-b, 53-c and 53-d is to contribute the lesser of 25 percent of the total employer contribution or the minimum amount necessary to maintain the benefit. RSA 100-A:16 requires biennial actuarial valuations on June 30 of odd years. The Board has adopted an Actuarial Funding Policy which requires annual actuarial valuations. The financial objectives are addressed within the statutory biennial actuarial valuation. The valuation process develops pension contribution rates that are sufficient to fund the plan's current pension cost (i.e., the costs assigned by the valuation method to the year of service about to be rendered), as well as to fund pension unfunded actuarial accrued liabilities as a level percent of active member payroll over a closed 30-year period beginning with the fiscal year ending June 30, 2010.

The actuarial calculations for funding purposes as of June 30, 2017 in this report are based on the assumptions adopted by the Board pursuant to the June 30, 2015 experience study and the census information as of June 30, 2017. The actuarial accrued liability as of June 30, 2017 differs from the total pension (OPEB) liability as of June 30, 2017 under GASB Nos. 67 and 74 because the total pension (OPEB) liability is based on a roll-forward of the June 30, 2016 actuarial valuation under the System's accounting procedures.

For funding purposes, assets are valued on a market related basis that recognizes each year's difference between actual and assumed investment return over a closed five-year period. For GASB Nos. 67 and 74 purposes, assets are reported and used on a market basis.

The valuation results summarized in this report involve actuarial calculations that require assumptions about future events. The actuarial assumptions are established by the Board after consulting with the actuary under New Hampshire Statute RSA 100-A:14 IX. We believe that the assumptions and methods used in this report are reasonable and appropriate for the purposes for which they have been used.

However, other assumptions and methods could also be reasonable and could result in materially different results. In addition, because it is not possible or practical to consider every possible contingency, we may use summary information, estimates or simplifications of calculations to facilitate the modeling of future events. We may also exclude factors or data that are deemed to be immaterial. The actuarial funding method is the Individual Entry Age Actuarial Cost Method, in compliance with NHRS State Statutes. The assumptions and the methods comply with the requirements of Statements Nos. 67 and 74 of the Governmental Accounting Standards Board. Each actuarial valuation takes into account all prior differences between actual and assumed experience in each risk area and adjusts the contribution rates as needed. Actuarial methods and assumptions were adopted by the Board pursuant to the June 30, 2015 Experience Study.

We certify that the information contained in this June 30, 2017 accounting report of the NHRS is accurate and fairly presents the actuarial position of the New Hampshire Retirement System as of June 30, 2017 under the current actuarial assumptions. All calculations have been made in conformity with generally accepted actuarial principles and practices, with the Actuarial Standards of Practice issued by the Actuarial Standards Board and with applicable statutes RSA 100-A:16, 100-A:53, 100-A:53-b, 100- A:53-c, and 100-A:53-d.


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 assumptons; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law.

The actuaries submitting this report are independent of the plan sponsor, are Members of the American Academy of Actuaries (MAAA), and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

Respectfully submitted,


David T. Kusch, FSA, EA, FCA, MAAA, PhD

## Heidi I Gary

Heidi G. Barry, ASA, FCA, MAAA DTK/HGB: sc

## VALUATION METHODS

## PENSION

Actuarial Cost Methods - Normal cost and the allocation of benefit values between service rendered before and after the valuation date were determined using an Individual Entry-Age Actuarial Cost Method having the following characteristics:
(i) the annual normal cost for each individual active member, payable from the date of employment to the date of retirement, is sufficient to accumulate the value of the member's benefit at the time of retirement;
(ii) each annual normal cost is a constant percentage of the member's year by year projected covered pay.

Actuarial gain/(losses), as they occur, reduce (increase) the unfunded actuarial accrued liability.
Financing of Unfunded Actuarial Accrued Liabilities - unfunded actuarial accrued liabilities are amortized by level (principal and interest combined) percent-of-payroll contributions over 22 years from the contribution effective date of July 1, 2017 (FY 2018).

## OPEB

(i) Liabilities are determined under the entry-age actuarial cost method.
(ii) Contribution rates to the 401 (h) sub-trust are determined as the lesser of $25 \%$ of the employers' contributions or the actuarial required contribution rate that keeps the medical subsidy sub-trust solvent (the "solvency rate").
Actuarial Value of Assets - The actuarial value of assets recognizes assumed investment income fully each year. Differences between actual and assumed investment income are phased in over a closed 5 year period. During periods when investment performance exceeds the assumed rate, funding value of assets will tend to be less than market value. During periods when investment performance is less than the assumed rate, funding value of assets will tend to be greater than market value. The funding value of assets is unbiased with respect to market value. At any time it may be either greater or less than market value. If assumed rates are exactly realized for 4 consecutive years, it will become equal to market value. Funding value was limited to a $20 \%$ corridor around the market value.

The actuarial value of assets allocated to the pension and medical subsidy plan is based on the market value of those plans. The actuarial value of assets was then further allocated to each fund (either pension or medical subsidy) based on the market value of those funds.

For purposes of determining the medical subsidy solvency rate, the Market Value of assets was used for all group funds due to the short time horizon before these closed group funds are expected to become pay-as-you-go.

## DEVELOPMENT OF AMORTIZATION PAYMENT

The employer contribution rate determined by the June 30, 2015 interim valuation is illustrative for the 2018-19 biennium. The unfunded actuarial accrued liability (UAAL) was determined using the funding value of assets and actuarial accrued liability calculated as of the valuation date. The UAAL amortization payment (one component of the contribution requirement), is the level percent of pay required to fully amortize the UAAL over a 22 year period beginning on July 1, 2017. This UAAL payment reflects any payments expected to be made and interest to be accrued between the valuation date and the date contributions determined by this report are scheduled to begin. It was assumed that the entire pension contribution determined by the June 30, 2013 valuation effective from July 1, 2015 to June 30, 2017 would be contributed to the net pension position.

## ECONOMIC ASSUMPTIONS

The investment return rate assumed in the valuation is $7.25 \%$ per year, compounded annually (net after investment expenses). The investment return rate assumed in the medical subsidy valuations is $3.25 \%$ per year, compounded annually (net after investment expenses) for purposes of computing accrued liabilities and other disclosures required by GASB Statement No. 74. However, for determining the solvency contribution rate for the medical subsidy account, the investment return rate assumption was $7.25 \%$ on the market value of assets.

The wage inflation rate assumed in this valuation was $3.25 \%$ per year. The wage inflation rate is defined to be the portion of total pay increases for an individual that are due to macro economic forces including productivity, price inflation, and labor market conditions. The wage inflation rate does not include pay changes related to individual merit and seniority effects.

No specific price inflation assumption is required to perform this valuation, since there are no benefits that are linked to price increases. However, a price inflation assumption on the order of $3.0 \%$ would be consistent with the other economic assumptions.

The assumed real rate of return over wage inflation is defined to be the portion of total investment return that is more than the assumed total wage growth rate. Considering other economic assumptions, the $7.25 \%$ investment return rate translates to an assumed real rate of return over wage inflation of $4.00 \%$. The assumed real rate of return over price inflation would be higher - on the order of $4.75 \%$, with a $2.50 \%$ price inflation assumption.

The active member population is assumed to remain constant. For purposes of financing the unfunded liabilities, total payroll is assumed to grow at the wage inflation rate $-3.75 \%$ per year.

Pay increase assumptions for individual active members are shown for sample ages on pages 76-80. Part of the assumption for each age is for merit and/or seniority increase, and the other $3.25 \%$ recognizes wage inflation, including price inflation, productivity increases, and other macro economic forces.

## TECHNICAL ASSUMPTIONS

Administrative \& Investment Expenses

Benefit Service
COLA
Decrement Operation
Decrement Timing

Eligibility Testing

Forfeitures

Incidence of Contributions

Liability Adjustments

## Marriage Assumption

Normal Form of Benefit

Pay Increase Timing

New Entrant Profile

## Service Credit Accruals

Data Adjustments
Medical Subsidy

The investment return assumption is intended to be the return net of investment expenses. Annual administrative expenses are assumed to be equal to the prior year's administrative expenses. Assumed administrative expenses are added to the Normal Cost, and were $0.35 \%$ of payroll in the June 30, 2017 valuation.
Exact fractional service is used to determine the amount of benefit payable.
None assumed.
Disability and withdrawal do not operate during normal retirement eligibility.
Normal and early retirement decrements for the Teachers group are assumed to occur at the beginning of the year. All other decrements were assumed to occur mid-year.
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.
The percent of vested members who quit before retirement who elect to refund and forfeit their pension is assumed to be $25 \%$ at first vesting eligibility, grading to $0 \%$ at first retirement eligibility.
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 at the time contributions are made.

Normal, early, and vesting retirement liabilities are increased by $7.5 \%, 5.0 \%, 11.5 \%$, and $11.5 \%$ for Employees, Teachers, Police, and Fire respectively to account for lump sum payments. Members hired after July 1, 2011 or who have non-vested status as of January 1, 2012 are assumed to have no adjustment for end of career payments.
Group I: $60 \%$ of males and $60 \%$ of females are assumed to be married for purposes of death-in-service benefits. Group II: 60\% of males and 60\% of females are assumed to be married for purposes of death-in-service and death after retirement benefits. Male spouses are assumed to be three years older than female spouses for active member valuation purposes.
This valuation assumes that members will elect the normal form of payment. Alternate forms of payment are available and are actuarially adjusted based on the valuation interest and mortality.
Group I: The assumed normal form of benefit is a straight life benefit.
Group II: The assumed normal form of benefit is straight life for single members and joint and $50 \%$ survivor for married members.

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.
For purposes of projecting the normal cost to the beginning of the rate setting biennium,. the new entrant profile is based on actual members with 3-8 years of service on the valuation date.

It is assumed that members accrue one year of service credit per year.
For the June 30, 2017 valuation, new active member pays were annualized.
The solvency rate for the medical subsidy benefits were determined to provide an estimated margin of 20\% of the benefits payable by June 30, 2017.

## GROUP I-EMPLOYEES

SEPARATIONS FROM ACTIVE SERVICE: Representative values of the assumed annual rates of withdrawal and vesting, death, disability, and normal retirement are as follows:

*98\% are assumed to be ordinary death and $2 \%$ are assumed to be accidental death.
${ }^{* *} 50 \%$ are assumed to be ordinary disability and $50 \%$ are assumed to be accidental disability.
SALARY INCREASES: Representative values of the assumed rates of future salary increases are as follows:

| Service <br> Index |  <br> Seniority | Base | Annual Rate of <br> Salary Increases |
| :---: | :---: | :---: | :---: |
| 1 | $10.00 \%$ | $3.25 \%$ | $13.25 \%$ |
| 2 | 6.00 | 3.25 | 9.25 |
| 3 | 2.50 | 3.25 | 5.75 |
| 4 | 2.00 | 3.25 | 5.25 |
| 5 | 1.50 | 3.25 | 4.75 |
| 6 | 1.25 | 3.25 | 4.50 |
| $7-9$ | 1.00 | 3.25 | 4.25 |
| $10-25$ | 0.50 | 3.25 | 3.75 |

DEATHS AFTER RETIREMENT:

|  | MORTALITY RATE |  | MORTALITY RATE |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- |
| AGE | MEN | WOMEN | AGE | MEN | WOMEN |
| 35 | $.13 \%$ | $.13 \%$ | 60 | $.89 \%$ | $.65 \%$ |
| 40 | .19 | .19 | 65 | 1.24 | .98 |
| 45 | .28 | .24 | 70 | 1.90 | 1.56 |
| 50 | .43 | .32 | 75 | 3.10 | 2.57 |
| 55 |  |  | 80 | 5.22 | 4.37 |

## GROUP I-TEACHERS

SEPARATIONS FROM ACTIVE SERVICE: Representative values of the assumed annual rates of withdrawal and vesting, death, disability, and normal retirement are as follows:

| Annual Rate of |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Withdrawal and Vesting |  |  |  | Death* |  | Disability** |  |
| Age | Years of Service | Men | Women | Men | Women | Men | Women |
|  | 0 | 35.00\% | 31.00\% |  |  |  |  |
|  | 1 | 17.00 | 16.00 |  |  |  |  |
|  | 2 | 14.00 | 13.00 |  |  |  |  |
|  | 3 | 10.00 | 11.00 |  |  |  |  |
|  | 4 | 8.00 | 8.00 |  |  |  |  |
| 25 | $5+$ | 4.00 | 6.00 | .04\% | .01\% | .01\% | .00\% |
| 30 |  | 4.00 | 6.00 | . 04 | . 02 | . 01 | . 00 |
| 35 |  | 2.80 | 4.20 | . 05 | . 03 | . 02 | . 01 |
| 40 |  | 2.80 | 4.20 | . 06 | . 04 | . 04 | . 04 |
| 45 |  | 2.80 | 4.20 | . 09 | . 05 | . 07 | . 06 |
| 50 |  | 2.20 | 3.30 | . 16 | . 09 | . 17 | . 11 |
| 55 |  | 2.00 | 3.00 | . 27 | . 15 | . 38 | . 35 |
| 60 |  | 2.00 | 3.00 | - | - | - | - |

*98\% are assumed to be ordinary death and $2 \%$ are assumed to be accidental death.
**50\% are assumed to be ordinary disability and $50 \%$ are assumed to be accidental disability.

| Annual Rate of Normal Retirement |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| For Members Hired Prior to July 1, 2011 |  |  | For Members Hired On or After July 1, 2011 |  |
| Age | Men | Women | Men | Women |
| 60 | 18.00\% | 13.00\% | - | - |
| 61 | 19.00 | 15.00 | - | - |
| 62 | 20.00 | 19.00 | - | - |
| 63 | 21.00 | 19.00 | - | - |
| 64 | 22.00 | 21.00 | - | - |
| 65 | 23.00 | 25.00 | 58.00\% | 56.00\% |
| 66 | 30.00 | 32.00 | 58.00 | 56.00 |
| 67 | 25.00 | 27.00 | 25.00 | 27.00 |
| 68 | 25.00 | 27.00 | 25.00 | 27.00 |
| 69 | 25.00 | 27.00 | 25.00 | 27.00 |
| 70 | 100.00 | 100.00 | 100.00 | 100.00 |

SALARY INCREASES: Representative values of the assumed rates of future salary increases are as follows:

|  | $\begin{aligned} & \text { Service } \\ & \text { Index } \end{aligned}$ | Merit \& Seniority | Base | Annual Salary |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | 1 | 10.00\% | 3.25\% |  |  |
|  | 2 | 6.00 | 3.25 |  |  |
|  | 3 | 3.25 | 3.25 |  |  |
|  | 4 | 2.75 | 3.25 |  |  |
|  | 5 | 2.50 | 3.25 |  |  |
|  | 6 | 2.25 | 3.25 |  |  |
|  | 7 | 2.00 | 3.25 |  |  |
|  | 8 | 1.75 | 3.25 |  |  |
|  | 9 | 1.50 | 3.25 |  |  |
|  | 10 | 1.25 | 3.25 |  |  |
|  | 11-25 | 1.00 | 3.25 |  |  |
| DEATHS AFTER RETIREMENT: |  |  |  |  |  |
|  | MORTALITY RATE |  | MORTALITY RATE |  |  |
| AGE | MEN | WOmen | AGE | MEN | Women |
| 35 | .11\% | .09\% | 60 | .76\% | .46\% |
| 40 | . 17 | . 13 | 65 | 1.07 | . 69 |
| 45 | . 24 | . 17 | 70 | 1.64 | 1.09 |
| 50 | . 37 | . 23 | 75 | 2.67 | 1.81 |
| 55 | . 52 | . 32 | 80 | 4.50 | 3.07 |

GROUP II - POLICE OFFICERS
SEPARATIONS FROM ACTIVE SERVICE: Representative values of the assumed annual rates of withdrawal, vesting, death, disability, and retirement are as follows:

| Annual Rate of |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Withdrawal and Vesting |  |  |  | Death* |  | Disability** |  |
| Age | Years of Service | Men | Women | Men | Women | Men | Women |
|  | 0 | 25.00\% | 30.00\% |  |  |  |  |
|  | 1 | 15.00 | 20.00 |  |  |  |  |
|  | 2 | 10.00 | 13.00 |  |  |  |  |
|  | 3 | 7.00 | 11.50 |  |  |  |  |
|  | 4 | 5.00 | 10.00 |  |  |  |  |
| 25 | 5+ | 5.88 | 5.88 | .04\% | .02\% | .03\% | .03\% |
| 30 |  | 4.93 | 4.93 | . 04 | . 02 | . 03 | . 03 |
| 35 |  | 4.13 | 4.13 | . 05 | . 03 | . 07 | . 07 |
| 40 |  | 3.45 | 3.45 | . 06 | . 04 | . 16 | . 16 |
| 45 |  | 2.83 | 2.83 | . 09 | . 06 | . 28 | . 28 |
| 50 |  | 2.40 | 2.40 | . 15 | . 11 | . 45 | . 45 |
| 55 |  | 1.98 | 1.98 | . 27 | . 18 | . 67 | . 67 |
| 60 |  | 1.60 | 1.60 | - | - | - | - |

SALARY INCREASES: Representative values of the assumed rates of future salary increases are as follows:

| Service <br> Index |  <br> Seniority | Base | Annual Rate of <br> Salary Increases |
| :---: | :---: | :---: | :---: |
| 1 | $22.00 \%$ | $3.25 \%$ | $25.25 \%$ |
| 2 | 15.00 | 3.25 | 18.25 |
| 3 | 7.00 | 3.25 | 10.25 |
| 4 | 5.00 | 3.25 | 8.25 |
| 5 | 3.75 | 3.25 | 7.00 |
| 6 | 2.50 | 3.25 | 5.75 |
| 7 | 2.00 | 3.25 | 5.25 |
| 8 | 1.50 | 3.25 | 4.75 |
| $9-25$ | 1.00 | 3.25 | 4.25 |

## DEATHS AFTER RETIREMENT:

|  | MORTALITY RATE |  | MORTALITY RATE |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- |
| AGE | MEN | WOMEN | AGE | MEN | WOMEN |
| 35 | $.11 \%$ | $.11 \%$ | 60 | $.76 \%$ | $.59 \%$ |
| 40 | .16 | .16 | 65 | 1.06 | .83 |
| 45 | .24 | .21 | 70 | 1.62 | 1.33 |
| 50 | .37 | .28 | 75 | 2.64 | 2.20 |
| 55 |  | 39 | 80 | 4.47 | 3.74 |


| NORMAL RETIREMENT |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| For Members Hired Prior to July 1, 2011 Who Have Vested Status as of January 1, 2012 |  |  | For Members Hired on or After July 1, 2011 and for Members Hired Prior to July 1, 2011 Who Have Non-Vested Status as of January 1, 2012 |  |  |  |
| Retirement Ages | \% of Active Members Retiring Within Next Year | Age 46 with 21 years | Age 47 with 22 years | Age 48 with 23 years | Age 49 with 24 years | Age 50 with 25 years |
| 45 | 22\% |  |  |  |  |  |
| 46 | 22\% | 27\% |  |  |  |  |
| 47 | 22\% | 27\% | 31\% |  |  |  |
| 48 | 22\% | 25\% | 31\% | 34\% |  |  |
| 49 | 22\% | 25\% | 31\% | 34\% | 38\% |  |
| 50 | 22\% | 25\% | 27\% | 34\% | 38\% | 40\% |
| 51 | 22\% | 22\% | 27\% | 31\% | 38\% | 40\% |
| 52 | 22\% | 22\% | 22\% | 31\% | 33\% | 40\% |
| 53 | 22\% | 22\% | 22\% | 22\% | 33\% | 38\% |
| 54 | 22\% | 22\% | 22\% | 22\% | 22\% | 38\% |
| 55 | 22\% | 22\% | 22\% | 22\% | 22\% | 22\% |
| 56 | 22\% | 22\% | 22\% | 22\% | 22\% | 22\% |
| 57 | 22\% | 22\% | 22\% | 22\% | 22\% | 22\% |
| 58 | 22\% | 22\% | 22\% | 22\% | 22\% | 22\% |
| 59 | 22\% | 22\% | 22\% | 22\% | 22\% | 22\% |
| 60 | 22\% | 22\% | 22\% | 22\% | 22\% | 22\% |
| 61 | 22\% | 20\% | 20\% | 20\% | 20\% | 20\% |
| 62 | 22\% | 22\% | 22\% | 22\% | 22\% | 22\% |
| 63 | 22\% | 22\% | 22\% | 22\% | 22\% | 22\% |
| 64 | 20\% | 20\% | 20\% | 20\% | 20\% | 20\% |
| 65 | 25\% | 25\% | 25\% | 25\% | 25\% | 25\% |
| 66 | 50\% | 50\% | 50\% | 50\% | 50\% | 50\% |
| 67 | 50\% | 50\% | 50\% | 50\% | 50\% | 50\% |
| 68 | 50\% | 50\% | 50\% | 50\% | 50\% | 50\% |
| 69 | 50\% | 50\% | 50\% | 50\% | 50\% | 50\% |
| 70 | 100\% | 100\% | 100\% | 100\% | 100\% | 100\% |

GROUP II - FIREFIGHTERS
SEPARATIONS FROM ACTIVE SERVICE: Representative values of the assumed annual rates of withdrawal and vesting, death, disability, and retirement are as follows:

| Annual Rate of |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Withdrawal and Vesting |  |  |  | Death* |  | Disability** |  |
| Age | Years of Service | Men | Women | Men | Women | Men | Women |
|  | 0 | 7.75\% | 7.75\% |  |  |  |  |
|  | 1 | 4.50 | 4.50 |  |  |  |  |
|  | 2 | 3.00 | 3.00 |  |  |  |  |
|  | 3 | 2.75 | 2.75 |  |  |  |  |
|  | 4 | 2.25 | 2.25 |  |  |  |  |
| 25 | 5+ | 1.25 | 1.25 | .04\% | .01\% | .06\% | .06\% |
| 30 |  | 1.25 | 1.25 | . 04 | . 02 | . 07 | . 07 |
| 35 |  | 1.25 | 1.25 | . 05 | . 03 | . 09 | . 09 |
| 40 |  | 1.25 | 1.25 | . 06 | . 04 | . 12 | . 12 |
| 45 |  | 1.25 | 1.25 | . 09 | . 06 | . 18 | . 18 |
| 50 |  | 1.25 | 1.25 | . 16 | . 11 | . 27 | . 27 |
| 55 |  | 1.25 | 1.25 | . 27 | . 17 | . 40 | . 40 |
| 60 |  | 1.25 | 1.25 | - | - | - | - |

SALARY INCREASES: Representative values of the assumed rates of future salary increases are as follows:

| Service <br> Index |  <br> Seniority | Base | Annual Rate of <br> Salary Increases |
| :---: | :---: | :--- | :---: |
| 1 | $22.00 \%$ | $3.25 \%$ | $25.25 \%$ |
| 2 | 15.00 | 3.25 | 18.25 |
| 3 | 7.00 | 3.25 | 10.25 |
| 4 | 5.00 | 3.25 | 8.25 |
| 5 | 3.75 | 3.25 | 7.00 |
| 6 | 2.50 | 3.25 | 5.75 |
| 7 | 2.00 | 3.25 | 5.25 |
| 8 | 1.50 | 3.25 | 4.75 |
| $9-25$ | 1.00 | 3.25 | 4.25 |

DEATHS AFTER RETIREMENT:

|  | MORTALITY RATE |  | MORTALITY RATE |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- |
| AGE | MEN | WOMEN | AGE | MEN | WOMEN |
| 35 | $.11 \%$ | $.11 \%$ | 60 | $.76 \%$ | $.53 \%$ |
| 40 | .17 | .16 | 65 | 1.07 | .80 |
| 45 | .24 | .20 | 70 | 1.64 | 1.27 |
| 50 | .37 | .26 | 75 | 2.67 | 2.10 |
| 55 |  | .37 | 80 | 4.50 | 3.56 |


| NORMAL RETIREMENT |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| For Members Hired Prior to July 1, 2011 Who Have Vested Status as of January 1, 2012 |  |  | For Members Hired on or After July 1, 2011 and for Members Hired Prior to July 1, 2011 <br> Who Have Non-Vested Status as of January 1, 2012 |  |  |  |
| $\begin{aligned} & \text { Retirement } \\ & \text { Ages } \end{aligned}$ | $\begin{aligned} & \text { \% of Active } \\ & \text { Members } \\ & \text { Retiring Within } \\ & \text { Next Year } \end{aligned}$ | Age 46 with 21 years | Age 47 with 22 years | Age 48 with 23 years | Age 49 with 24 years | Age 50 with 25 years |
| 45 | 12\% |  |  |  |  |  |
| 46 | 12\% | 15\% |  |  |  |  |
| 47 | 12\% | 15\% | 18\% |  |  |  |
| 48 | 12\% | 15\% | 18\% | 22\% |  |  |
| 49 | 12\% | 15\% | 18\% | 22\% | 26\% |  |
| 50 | 17\% | 15\% | 18\% | 21\% | 26\% | 30\% |
| 51 | 17\% | 17\% | 18\% | 21\% | 26\% | 30\% |
| 52 | 17\% | 17\% | 17\% | 21\% | 21\% | 30\% |
| 53 | 17\% | 17\% | 17\% | 17\% | 21\% | 22\% |
| 54 | 17\% | 17\% | 17\% | 17\% | 17\% | 22\% |
| 55 | 22\% | 22\% | 22\% | 22\% | 22\% | 22\% |
| 56 | 22\% | 22\% | 22\% | 22\% | 22\% | 22\% |
| 57 | 22\% | 22\% | 22\% | 22\% | 22\% | 22\% |
| 58 | 22\% | 22\% | 22\% | 22\% | 22\% | 22\% |
| 59 | 22\% | 22\% | 22\% | 22\% | 22\% | 22\% |
| 60 | 28\% | 28\% | 28\% | 28\% | 22\% | 28\% |
| 61 | 28\% | 28\% | 28\% | 28\% | 28\% | 28\% |
| 62 | 28\% | 28\% | 28\% | 28\% | 28\% | 28\% |
| 63 | 28\% | 28\% | 28\% | 28\% | 28\% | 28\% |
| 64 | 28\% | 28\% | 28\% | 28\% | 28\% | 28\% |
| 65 | 28\% | 28\% | 28\% | 28\% | 28\% | 28\% |
| 66 | 28\% | 28\% | 28\% | 28\% | 28\% | 28\% |
| 67 | 28\% | 28\% | 28\% | 28\% | 28\% | 28\% |
| 68 | 28\% | 28\% | 28\% | 28\% | 28\% | 28\% |
| 69 | 28\% | 28\% | 28\% | 28\% | 28\% | 28\% |
| 70 | 100\% | 100\% | 100\% | 100\% | 100\% | 100\% |

The following 4 tables summarize the actuarial valuation data for the period from 2009 through 2013. Valuations are prepared biennially. An interim valuation was prepared in fiscal year 2008, 2010 and in fiscal year 2012.

| EMPLOYEES (aggregate compensation and annual allowance dollars in thousands) <br> ACTIVE MEMBERSHIP DATA |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |
| $\underset{\text { YEAR }}{\text { FISCAL }}$ | NUMBER OF ACTIVES*** | AGGREGATE COMPENSATION | AVERAGE COMPENSATION | \% INCREASE IN AVERAGE COMPENSATION |
| 2017 | 24,478 | \$1,179,518 | \$ 48,187 | 3.97\% |
| 2016 | 24,520 | 1,136,451 | 46,348 | (0.14\%) |
| 2015 | 24,298 | 1,127,766 | 46,414 | 4.66\% |
| 2014 | 25,545 | 1,088,508 | 44,347 | 1.94\% |
| 2013 | 24,809 | 1,079,245 | 43,502 | (0.03\%) |
| 2012 | 24,747 | 1,076,831 | 43,514 | (0.23\%) |
| 2011 | 25,539 | 1,113,867 | 43,614 | 3.68\% |
| 2010 | 25,987 | 1,093,147 | 42,065 | 2.72\% |
| 2009 | 26,352 | 1,079,157 | 40,952 | 7.47\% |
| 2008 | 26,507 | 1,010,032 | 38,104 | 7.05\% |


| RETIRED MEMBERSHIP DATA |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ADDED TO ROLLS |  |  | REMOVED FROMROLLS |  | $\begin{aligned} & \text { ROLLS END OF } \\ & \text { YEAR } \end{aligned}$ |  |  |
| $\begin{gathered} \text { FISCAL } \\ \text { YEAR } \\ \hline \end{gathered}$ | NO.* | ANNUAL** <br> ALLOWANCES (IN DOLLARS) | NO.* | ANNUAL** ALLOWANCES (IN DOLLARS) | NO.* | ANNUAL** ALLOWANCES | $\begin{gathered} \hline \text { \% INCREASE } \\ \text { ANNUAL } \\ \text { ALLOWANCES } \\ \hline \end{gathered}$ |
| 2017 | 1,950 | \$22,224 | 519 | \$ 8,977 | 17,573 | \$236,377 | 5.94\% |
| 2016 | 1,134 | 19,332 | 475 | 4,636 | 16,142 | 223,130 | 7.05\% |
| 2015 | 1,504 | 21,357 | 1,335 | 10,968 | 15,483 | 208,434 | 5.25\% |
| 2014 | 1,094 | 15,784 | 492 | 5,431 | 15,314 | 198,045 | 5.52\% |
| 2013 | 1,110 | 16,335 | 539 | 6,699 | 14,712 | 187,692 | 5.41\% |
| 2012 | 1,111 | 14,711 | 457 | 4,890 | 14,141 | 178,056 | 5.84\% |
| 2011 | 1,113 | 16,521 | 428 | 4,578 | 13,487 | 168,235 | 7.64\% |
| 2010 | 1,070 | 18,300 | 460 | 4,624 | 12,802 | 156,292 | 9.59\% |
| 2009 | 934 | 14,703 | 322 | 3,864 | 12,192 | 142,616 | 8.23\% |
| 2008 | 1,083 | 17,897 | 362 | 4,199 | 11,580 | 131,777 | 11.60\% |


| TEACHERS (aggregate compensation and annual allowance dollars in thousands)ACTIVE MEMBERSHIP DATA |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |
| FISCAL | NUMBER OF ACTIVES*** | AGGREGATE COMPENSATION | AVERAGE COMPENSATION | \% INCREASE IN AVERAGE COMPENSATION |
| 2017 | 17,617 | \$1,073,447 | \$ 60,932 | 1.69\% |
| 2016 | 17,784 | 1,065,621 | 59,920 | 1.15\% |
| 2015 | 17,732 | 1,050,447 | 59,240 | 3.06\% |
| 2014 | 17,986 | 1,033,867 | 57,482 | (0.04\%) |
| 2013 | 18,084 | 1,039,934 | 57,506 | 0.75\% |
| 2012 | 18,161 | 1,036,605 | 57,079 | 1.70\% |
| 2011 | 18,466 | 1,036,376 | 56,123 | 2.28 \% |
| 2010 | 18,603 | 1,020,745 | 54,870 | 2.30 \% |
| 2009 | 18,709 | 1,003,514 | 53,638 | 3.73 \% |
| 2008 | 18,509 | 957,068 | 51,708 | 3.59 \% |

## RETIRED MEMBERSHIP DATA

| ADDED TO ROLLS |  |  | $\begin{gathered} \hline \text { REMOVED FROM } \\ \text { ROLLS } \\ \hline \end{gathered}$ |  | $\begin{aligned} & \text { ROLLS END OF } \\ & \hline \end{aligned}$ |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { FISCAL } \\ & \text { YEAR } \end{aligned}$ | NO.* | ANNUAL** <br> ALLOWANCES (IN DOLLARS) | NO.* | ANNUAL** ALLOWANCES (IN DOLLARS) | NO.* | ANNUAL** ALLOWANCES | $\begin{gathered} \% \text { INCREASE } \\ \text { INANUAL } \\ \text { ALLOWANCES } \end{gathered}$ |
| 2017 | 1,523 | \$21,713 | 237 | \$8,847 | 12,696 | \$276,830 | 4.87\% |
| 2016 | 760 | 19,954 | 209 | 5,325 | 11,410 | 263,964 | 5.87\% |
| 2015 | 840 | 21,653 | 946 | 6,891 | 10,859 | 249,335 | 6.25\% |
| 2014 | 744 | 17,222 | 186 | 4,802 | 10,965 | 234,663 | 5.59\% |
| 2013 | 698 | 15,844 | 247 | 5,860 | 10,407 | 222,243 | 4.70\% |
| 2012 | 712 | 16,420 | 183 | 5,150 | 9,956 | 212,259 | 5.61\% |
| 2011 | 504 | 10,402 | 164 | 3,644 | 9,427 | 200,989 | 3.48\% |
| 2010 | 849 | 22,231 | 269 | 5,199 | 9,087 | 194,231 | 9.61\% |
| 2009 | 1,001 | 26,668 | 148 | 3,214 | 8,507 | 177,199 | 15.26\% |
| 2008 | 891 | 23,743 | 165 | 4,238 | 7,654 | 153,745 | 14.53\% |

*Includes beneficiaries in receipt but excludes deferred vested terminations.
${ }^{* *}$ Includes additional COLA allowances. The benefit amounts shown are the monthly benefits as of the valuation date annualized and are not the actual benefits paid during the fiscal year.
***Excludes temporary inactive members.

| POLICE OFFICERS (aggregate compensation and annual allowance dollars in thousands) |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ACTIVE MEMBERSHIP DATA |  |  |  |  |  |  |  |
| $\begin{gathered} \text { FISCAL } \\ \text { YEAR } \\ \hline \end{gathered}$ | NUMBER OF ACTIVES*** |  |  | REGATE ENSATION |  | ERAGE ENSATION | \% INCREASE IN AVERAGE COMPENSATIO COMPENSATIO |
| 2017 | 4,151 |  |  | 91,004 |  | 0,105 | 3.42\% |
| 2016 | 4,139 |  |  | 80,577 |  | 7,789 | 1.22\% |
| 2015 | 4,174 |  |  | 79,555 |  | 6,975 | 3.15\% |
| 2014 | 4,166 |  |  | 70,497 |  | 4,930 | 1.91\% |
| 2013 | 4,187 |  |  | 66,775 |  | 3,715 | 0.20\% |
| 2012 | 4,118 |  |  | 61,865 |  | 3,590 | 1.20\% |
| 2011 | 4,130 |  |  | 59,509 |  | 2,835 | 2.86 \% |
| 2010 | 4,231 |  |  | 58,472 |  | 1,090 | 2.27 \% |
| 2009 | 4,318 |  |  | 57,934 |  | 9,735 | 5.92 \% |
| 2008 | 4,332 |  |  | 44,314 |  | 6,398 | 3.03 \% |
| RETIRED MEMBERSHIP DATA |  |  |  |  |  |  |  |
|  | ADDED TO ROLLS |  | REMOVED FROMROLLS |  | $\begin{gathered} \hline \text { ROLLS END OF } \\ \text { YEAR } \\ \hline \end{gathered}$ |  |  |
| $\begin{aligned} & \text { FISCAL } \\ & \text { YEAR } \end{aligned}$ | NO.* | ANNUAL** <br> ALLOWANCES (IN DOLIARS) (IN DOLLARS) | NO.* | ANNUAL** ALLOWANCES (IN DOLLARS) | NO.* | ANNUAL** ALLOWANCES | $\begin{gathered} \text { \% INCREASE } \\ \text { ANNUAL } \\ \text { ALLOWANES } \\ \hline \end{gathered}$ |
| 2017 | 233 | \$ 7,985 | 76 | \$1,745 | 3,786 | \$135,930 | 4.81\% |
| 2016 | 239 | 10,027 | 67 | 1,339 | 3,629 | 129,690 | 7.18\% |
| 2015 | 282 | 7,303 | 107 | 1,675 | 3,457 | 121,002 | 4.88\% |
| 2014 | 178 | 6,420 | 59 | 1,304 | 3,282 | 115,374 | 4.64\% |
| 2013 | 247 | 8,189 | 65 | 1,464 | 3,163 | 110,258 | 6.50\% |
| 2012 | 171 | 6,977 | 70 | 1,008 | 2,981 | 103,533 | 6.12\% |
| 2011 | 237 | 10,370 | 59 | 1,133 | 2,880 | 97,564 | 10.46\% |
| 2010 | 189 | 7,711 | 52 | 1,413 | 2,702 | 88,327 | 7.68\% |
| 2009 | 157 | 7,235 | 28 | 627 | 2,565 | 82,029 | 8.76\% |
| 2008 | 179 | 8,504 | 36 | 1,376 | 2,436 | 75,421 | 10.44\% |


| FIREFIGHTERS |  | (aggregate compensatio | al allowance | thousands) |
| :---: | :---: | :---: | :---: | :---: |
| ACTIVE MEMBE | RSHIP DATA |  |  |  |
| $\begin{gathered} \text { FISCAL } \\ \text { YEAR } \\ \hline \end{gathered}$ | NUMBER OF ACTIVES*** | AGGREGATE COMPENSATION | AVERAGE COMPENSATION | \% INCREASE IN AVERAGE COMPENSATION |
| 2017 | 1,640 | \$ 123,643 | \$ 75,392 | 3.23\% |
| 2016 | 1,626 | 118,754 | 73,034 | 0.15\% |
| 2015 | 1,608 | 117,263 | 72,925 | 2.07\% |
| 2014 | 1,610 | 115,027 | 71,445 | (0.78\%) |
| 2013 | 1,608 | 115,788 | 72,007 | 2.39\% |
| 2012 | 1,599 | 112,456 | 70,329 | 4.36\% |
| 2011 | 1,603 | 108,028 | 67,391 | 1.75 \% |
| 2010 | 1,646 | 109,020 | 66,233 | 1.67 \% |
| 2009 | 1,653 | 107,682 | 65,144 | 10.25 \% |
| 2008 | 1,640 | 96,907 | 59,090 | (3.63)\% |


| RETIRED MEMBERSHIP DATA |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | ADDED TO ROLLS |  | REMOVED FROMROLLS |  | $\begin{aligned} & \text { ROLLS END OF } \\ & \text { YEAR } \end{aligned}$ |  |  |
| $\underset{\text { YEAR }}{\substack{\text { FICAL }}}$ | No.* | ANNUAL** ALLOWANCES (IN DOLLARS) | No.* | ANNUAL** ALLOWANCES (NDOLLARS | No.* | ANNUAL** ALLOWANCES | $\begin{gathered} \% \text { INCREASE } \\ \text { ANAUAL } \\ \text { ALLOWANES } \end{gathered}$ |
| 2017 | 88 | \$3,697 | 44 | \$1,213 | 1,639 | \$63,976 | 4.04\% |
| 2016 | 75 | 4,177 | 31 | 936 | 1,595 | 61,492 | 5.56\% |
| 2015 | 105 | 4,546 | 47 | 882 | 1,551 | 58,251 | 6.71\% |
| 2014 | 89 | 2,774 | 43 | 1,139 | 1,493 | 54,587 | 3.09\% |
| 2013 | 98 | 3,497 | 27 | 715 | 1,447 | 52,952 | 5.55\% |
| 2012 | 79 | 3,105 | 39 | 495 | 1,376 | 50,170 | 5.49\% |
| 2011 | 111 | 5,051 | 29 | 696 | 1,336 | 47,560 | 10.08\% |
| 2010 | 53 | 2,490 | 36 | 766 | 1,254 | 43,205 | 4.16\% |
| 2009 | 60 | 2,628 | 23 | 644 | 1,237 | 41,481 | 5.02\% |
| 2008 | 63 | 3,456 | 31 | 1,110 | 1,200 | 39,497 | 6.31\% |

*Includes beneficiaries in receipt but excludes deferred vested terminations.
${ }^{* *}$ Includes additional COLA allowances. The benefit amounts shown are the monthly benefits as of the valuation date annualized and are not the actual benefits paid during the fiscal year.
***Excludes temporary inactive members.

Test


| TEACHERS |  |  |  |  | (dollars in thousands) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Projected Liabilities For |  |  |  |  |  |
| $\begin{aligned} & \text { Fiscal } \\ & \text { Year } \end{aligned}$ | $\begin{gathered} (1) \\ \text { Aggregate } \\ \text { Member } \\ \text { Contributions } \end{gathered}$ | ${ }^{(2)}$ Retrent Beneficiaries | (3) <br> Active \& Inactive Members (Employer Financed Portion) | Net Position Held For Benefits | (1) | Percentage of Accrued Liabilities Covered By Net Position Held for Benefits (2) | (3) |
| 2017 | \$ 1,132,876 | \$2,819,228 | \$1,211,560 | \$ 2,979,005 | 100.00\% | 70.00\% | 0.00\% |
| 2016 | \$1,171,831 | \$2,692,037 | \$1,156,821 | \$2,799,863 | 100.00\% | 60.00\% | 0.00\% |
| 2015 | \$1,127,439 | \$2,323,302 | \$ 988,870 | \$2,682,083 | 100.00\% | 67.00\% | 0.00\% |
| 2014 | \$1,113,650 | \$2,198,892 | \$ 966,511 | \$2,482,496 | 100.00\% | 62.00\% | 0.00\% |
| 2013 | \$1,107,192 | \$2,087,926 | \$ 977,937 | \$2,255,011 | 100.00\% | 55.00\% | 0.00\% |
| 2012 | \$1,101,262 | \$ 1,999,152 | \$ 949,670 | \$2,173,315 | 100.00\% | 50.00\% | 0.00\% |
| 2011 | \$1,041,699 | \$ 1,893,862 | \$ 973,407 | \$2,153,182 | 100.00\% | 59.00\% | 0.00\% |

*Liabilities for active members are based on service as of the valuation date and projected compensation at the member's expected retirement date. Also includes terminated vested members.
NOTE: Based on a $7.75 \%$ interest rate for fiscal years prior to 2015 and $7.25 \%$ after that.

| POLICE OFFICERS |  |  |  |  | (dollars in thousands) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Fiscal } \\ & \text { Year } \end{aligned}$ | $\begin{gathered} (1) \\ \text { Agregate } \\ \text { Member } \\ \text { Contributions } \end{gathered}$ | ected Liabilities F <br> (2) <br> Current Retirees \& Beneficiaries $\qquad$ | Active ${ }^{(3)}$ Inactive Members (Employer Financed Portion)* | Net Position Held For Benefits | (1) | Percentage of Accrued Liabilities Covered By Net Position Held for Benefits (2) | (3) |
| 2017 | \$ 426,606 | \$1,526,761 | \$570,755 | \$1,650,908 | 100.00\% | 80.00\% | 0.00\% |
| 2016 | \$ 430,490 | \$1,460,840 | \$535,225 | \$1,546,665 | 100.00\% | 76.00\% | 0.00\% |
| 2015 | \$ 429,115 | \$1,266,591 | \$463,902 | \$1,477,517 | 100.00\% | 83.00\% | 0.00\% |
| 2014 | \$ 422,972 | \$1,209,741 | \$454,133 | \$1,361,280 | 100.00\% | 78.00\% | 0.00\% |
| 2013 | \$ 417,630 | \$1,160,173 | \$438,580 | \$1,236,579 | 100.00\% | 71.00\% | 0.00\% |
| 2012 | \$411,672 | \$1,092,005 | \$949,670 | \$1,189,308 | 100.00\% | 71.00\% | 0.00\% |
| FIREFIGHTERS |  |  |  |  | (dollars in thousands) |  |  |
| (1) Projected Liabilities For ${ }^{\text {a }}$ (3) |  |  |  |  |  |  |  |
| $\begin{aligned} & \text { Fiscal } \\ & \text { Year } \end{aligned}$ | $\begin{gathered} (1) \\ \text { Aggregate } \\ \text { Member } \\ \text { Contributions } \\ \hline \end{gathered}$ | $\begin{gathered} \text { Current } \\ \text { Retireses } \\ \text { Beneficiaries } \end{gathered}$ | (3) <br> Active $\&$ Inactive Members (EmployerFinanced Portion) | Net Position Held For Benefits | (1) | Percentage of Accrued Liabilities Coverea By (2) | (3) |
| 2017 | \$223,258 | \$697,015 | \$260,320 | \$ 801,214 | 100.00\% | 83.00\% | 0.00\% |
| 2016 | \$ 223,568 | \$671,801 | \$240,428 | \$ 750,975 | 100.00\% | 79.00\% | 0.00\% |
| 2015 | \$221,776 | \$592,362 | \$210,708 | \$718,867 | 100.00\% | 84.00\% | 0.00\% |
| 2014 | \$221,840 | \$556,902 | \$208,701 | \$ 661,493 | 100.00\% | 79.00\% | 0.00\% |
| 2013 | \$214,076 | \$541,860 | \$208,430 | \$ 601,612 | 100.00\% | 72.00\% | 0.00\% |
| 2012 | \$208,041 | \$514,489 | \$203,805 | \$ 577,864 | 100.00\% | 72.00\% | 0.00\% |

*Liabilities for active members are based on service as of the valuation date and projected compensation at the member's expected retirement date. Also includes terminated vested members.
NOTE: Based on a $7.75 \%$ interest rate for fiscal years prior to 2015 and $7.25 \%$ after that.

## Analysis of <br> Past Financial Experience

This presentation shows the experience of actual financial results relative to expected results. It is an analysis which focuses on actuarial gains and losses over the most recent five actuarial valuations and reconciles the difference in the actuarial normal contribution rates from the expected to actual values.

## RECONCILIATION OF EMPLOYER NORMAL RATE *

## EMPLOYEES

| YEAR ENDED | June 30, 2015 |  | June 30, 2013 |  | $\begin{gathered} \text { June } 30 \\ 2011 \end{gathered}$ | $\begin{gathered} \text { June } 30 \\ 2009 \end{gathered}$ | $\begin{gathered} \text { June } 30 \\ 2007 \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | State Employees | Political Subdivision Employees | State Employees | Political Subdivision Employees |  |  |  |
| Projected Normal Rate* | 10.34\% | 10.34\% | 10.51\% | 10.44\% | 10.71\% | 9.09\% | 8.74\% |
| Decremental Experience | - | - | - | - | - | - | - |
| Pensioner's Experience | - | - | - | - | - | - | - |
| Excess Salary Increases | - | - | - | - | - | - | - |
| Method Change | - | - | - | - | - | - | 0.98 |
| Effect of Legislation | - | - | - | - | (1.95) | (0.15) | (0.57) |
| Asset (Gains)/Losses | (0.44) | (0.44) | 0.52 | 0.52 | 0.31 | 1.18 | (0.36) |
| Current New Entrants | - | - | - | - | - | - | - |
| Amendments | - | - | - | - | - | - | - |
| Target Rate System Experience | - | - | - | - | - | - | - |
| Assumption Changes | 1.18 | 1.18 | - ${ }^{-}$ | - | 1.01 | - | 0.41 |
| Other (Gains)/Losses | - | - | ( 0.17) | ( 0.10) | 0.36 | 0.59 | (0.11) |
| ACTUAL NORMAL RATE | 11.08\% | 11.08\% | 10.86\% | 10.86\% | 10.44\% | 10.71\% | 9.09\% |


| TEACHERS |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| YEAR ENDED | $\begin{gathered} \text { June } 30 \\ 2015 \end{gathered}$ | $\begin{gathered} \text { June } 30 \\ 2013 \end{gathered}$ | $\begin{gathered} \text { June } 30 \\ 2011 \end{gathered}$ | $\begin{gathered} \text { June } 30 \\ 2009 \end{gathered}$ | $\begin{gathered} \text { June } 30 \\ 2007 \end{gathered}$ | $\begin{gathered} \text { June } 30 \\ 2005 \end{gathered}$ |
| Projected Normal Rate * | 12.09\% | 11.96\% | 11.51\% | 9.38\% | 8.93\% | 4.67\% |
| Decremental Experience | - | - | - | - | - | (.01) |
| Pensioner's Experience | - | - | - | - | - | - |
| Excess Salary Increases | - | - | - | - | - | . 09 |
| Method Change | - | - | - | - | 0.82 | - |
| Effect of Legislation | - | - | (2.27) | - | (0.72) | - |
| Asset (Gains)/Losses | (0.30) | 0.61 | 0.39 | 1.55 | (0.46) | 1.52 |
| Current New Entrants | - | - | - | - | - | . 02 |
| Amendments | - | - | - | - | - | - |
| Target Rate System Experience | - | - | - | - | - | 1.14 |
| Assumption Changes | 3.91 | - | 2.05 | - | 0.80 | . 90 |
| Other (Gains)/Losses | - | 0.15 | 0.28 | 0.58 | 0.01 | . 60 |
| ACTUAL NORMAL RATE | 15.70\% | 12.72\% | 11.96\% | 11.51\% | 9.38\% | 8.93\% |

*Based on forecast valuations.

This presentation shows the experience of actual financial results relative to expected results. It is an analysis which focuses on actuarial gains and losses over the most recent five actuarial valuations and reconciles the difference in the actuarial normal contribution rates from the expected to actual values.

## RECONCILIATION OF EMPLOYER NORMAL RATE *

## POLICE OFFICERS

| YEAR ENDED | June 30, 2015 |  | June 30, 2013 |  | $\begin{gathered} \text { June } 30 \\ 2011 \end{gathered}$ | $\begin{gathered} \text { June } 30 \\ 2009 \end{gathered}$ | $\begin{gathered} \text { June } 30 \\ 2007 \end{gathered}$ | $\begin{gathered} \text { June } 30 \\ 2005 \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | State Police Officers | Political <br> Subdivision <br> Police <br> Officers | State Police Officers | Political Subdivision Police Officers |  |  |  |  |
| Projected Normal Rate * | 20.88\% | 20.88\% | 21.45\% | 21.35\% | 22.92\% | 17.34\% | 18.21\% | 12.33\% |
| Decremental Experience | - | - | - | - | - | - | - | . 38 |
| Pensioner's Experience | - | - | - | - | - | - | - | . 01 |
| Excess Salary Increases | - | - | - | - | - | - | - | (.12) |
| Method Change | - | - | - | - | - | - | 1.11 | - |
| Effect of Legislation | - | - | - | - | (7.15) | - | (2.17) | - |
| Asset (Gains)/Losses | (1.57) | (1.57) | 1.31 | 1.31 | 0.85 | 2.89 | (0.90) | 1.85 |
| Current New Entrants | - | - | - | - | - | - | - | . 16 |
| Amendments | - | - | - | - | - | - | - | - |
| Target Rate System Experience | - | - | - | - | - | - | - | 1.47 |
| Assumption Changes | 6.02 | 6.02 | - | - | 4.00 | - | 0.31 | 2.08 |
| Other Asset (Gains)/Losses | - | - | ( 0.22) | ( 0.12) | 0.73 | 2.69 | 0.78 | . 05 |
| ACTUAL NORMAL RATE | 25.33\% | 25.33\% | 22.54\% | 22.54\% | 21.35\% | 22.92\% | 17.34\% | 18.21\% |

## FIREFIGHTERS

| YEAR ENDED |  |  | June 30, 2013 |  | $\begin{gathered} \text { June } 30 \\ 2011 \end{gathered}$ | $\begin{gathered} \text { June } 30 \\ 2009 \end{gathered}$ | $\begin{gathered} \hline \text { June } 30 \\ 2007 \end{gathered}$ | $\begin{gathered} \text { June } 30 \\ 2005 \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | State Firefighters | Political Subdivision Firefighters | State Firefighters | Political Subdivision Firefighters |  |  |  |  |
| Projected Normal Rate * | 23.38\% | 23.38\% | 23.90\% | 23.79\% | 28.25\% | 22.52\% | 24.49\% | 16.31\% |
| Decremental Experience | - | - | - | - | - | - | - | . 04 |
| Pensioner's Experience | - | - | - | - | - | - | - | (.06) |
| Excess Salary Increases | - | - | - | - | - | - | - | . 17 |
| Method Change | - | - | - | - | - | - | 2.48 | - |
| Effect of Legislation | - | - | - | - | (8.58) | - | (2.61) | - |
| Asset (Gains)/Losses | (1.39) | (1.39) | - | - | 0.99 | 3.24\% | (1.05) | 2.23 |
| Current New Entrants | - | - | - | - | - | - | - | . 14 |
| Amendments | - | - | - | - | - | - | - | - |
| Target Rate System Experience | - | - | - | - | - | - | - | 6.22 |
| Assumption Changes | 5.80 | 5.80 | - | - | 3.39 | - | 0.21 | (.32) |
| Other Asset (Gains)/Losses | - | - | - | - | (0.26) | 2.49\% | (1.00) | (.24) |
| ACTUAL NORMAL RATE | 27.79 | 27.79 | 25.32\% | 25.32\% | 23.79\% | 28.25\% | 22.52\% | 24.49\% |

[^5]
## 1-GENERAL

| Legal Plan Name | New Hampshire Retirement System. |
| :--- | :--- |
| Effective Date | July 1, 1967. <br> Prospectively, any employee or teacher becomes a Group I member as a condition <br> of employment. Any employee appointed to an unclassified position with no fixed <br> term on or after July 1, 2011 will also become a member of the retirement system <br> as a condition of employment. Membership is optional for elected officials, officials <br> appointed for fixed terms, unclassified state employees with no fixed term prior <br> to July 1, 2011 or employees of the general court. |
| Average Final Compensation (AFC) | Average annual earnable compensation during highest 3 years of creditable serv- <br> ice. For active members who commenced service on or after July 1, 2011 or who <br> have non-vested status on or after January 1, 2012 - Average annual earnable <br> compensation during the highest 5 years of creditable service. |
| NOTE: | A more detailed description of the plan provisions is available from the System's <br> administrative office or by visiting www.nhrs.org. |

2-BENEFITS
Service Retirement

## Eligibility

## Amount of Benefit

Age 60 years (age 65 for members commencing service on or after July 1, 2011).
A member annuity equal to the actuarial equivalent of the member's accumulated contributions plus a state annuity.

Prior to the member's attainment of age 65, the state annuity, together with the member annuity, shall be equal to $1 / 60$ of AFC multiplied by years of service. (1/66 of AFC times creditable service for members commencing service on or after July 1, 2011.)

After attainment of age 65, the state annuity, together with the member annuity, shall be equal to $1 / 66$ of AFC multiplied by years of service.

## Reduced Service Retirement

Eligibility

## Amount of Benefit

Age plus service of at least 70, provided the member has at least 20 years of service or age 50 with at least 10 years of service (age 60 with 30 years of creditable service for members commencing service on or after July 1, 2011).

Service retirement benefit is reduced by the following percents for each month that benefits commence prior to age 60 .

|  | Years of <br> Service at Retirement | Monthly <br> Percent <br> Reduction |
| :---: | :---: | :---: |
| 35 or more | $1 / 8$ of $1 \%$ |  |
| $10-35$ | $1 / 4$ of $1 \%$ |  |
| $1 / 3$ of $1 \%$ |  |  |
| $25-30$ | $5 / 12$ of $1 \%$ |  |
| $5 / 9$ of $1 \%$ |  |  |

For members commencing service on or after July 1, 2011, normal retirement benefit is reduced $1 / 4$ or $1 \%$ for each month prior to age 65.

## Ordinary Disability Retirement

Eligibility

## Amount of Benefit

10 years of service and permanent disability.
Service retirement benefit if normal retirement age. Under age 60 a member annuity plus a state annuity which together equals $1.5 \%$ of AFC multiplied by the
number of years of creditable service at the time of disability; provided that the benefit shall not be less than 25\% of AFC.

Accidental Disability Retirement

Eligibility

## Amount of Benefit

Permanently disabled due to accident occurring while in the performance of duty.
Service retirement benefit if age 60, otherwise a member annuity plus a state annuity which together equals $50 \%$ of AFC; provided that the benefit shall not be less than $50 \%$ of AFC.

## Ordinary Death Benefit

## Eligibility <br> Death, other than accidental death.

## Amount of Benefit

(a) If 10 years of service or if eligible for service retirement and,
(i) if survived by a spouse, $50 \%$ of the service retirement benefit payable until death or remarriage;
(ii) if no surviving spouse or member designated a beneficiary other than a spouse, a lump sum equal to the greater of $\$ 3,600$ or the member's annual compensation.
(b) If less than 10 years of service and if not eligible for service retirement, a lump sum equal to the greater of $\$ 3,600$ or the member's annual compensation.

## Accidental Death Benefit

Eligibility Accidental death occurring while in the performance of duty.
Amount of Benefit Benefit equal to $50 \%$ of AFC.

## Vested Deferred Retirement

## Eligibility

## Amount of Benefit

10 years of service, if no withdrawal of contributions.
Payable at age 60, a member annuity plus a state annuity which together equals the service retirement benefit that would be payable after age 60. The benefit changes at age 65 as for service retirement. At any time after attainment of age 50 (age 60 for members hired on or after July 1, 2011), a member may have his benefit commence early, however, the benefit will be reduced for early commencement using the same early retirement reduction factors as described under reduced service retirement.

## Return of Members' Contributions

(a) Upon termination of service other than for retirement or death, and if vested deferred retirement benefit has not been elected, the member's accumulated contributions are returned to him.
(b) Upon accidental death or upon other death for which no surviving spouse's benefit is payable, the member's accumulated contributions will be paid to the member's beneficiary or estate.
(c) Upon death prior to age 60 of a member on deferred vested retirement, the member's accumulated contributions will be paid to the member's beneficiary or estate.
(d) Upon death of a retired member (or the survivor of a retired member, if an optional benefit was elected), the excess of his accumulated contributions at retirement over the benefits received by the retired member (and, in the case of election of an optional benefit, the benefits received by the survivor) will be paid to the beneficiary or estate of the member.

Special Provisions Applicable to Certain Members Transferred from the Employees' Retirement System of the State of New Hampshire

Certain employee members transferred to the New Hampshire Retirement System effective January 1, 1976 have elected to have their benefits calculated on the basis of the provisions of the Predecessor System.

## GROUP II MEMBERS (POLICE OFFICERS AND FIREFIGHTERS)

## Service Retirement

## Eligibility

## Amount of Benefit

Age 45 and 20 years of creditable service or age 60 (age 52.5 with 25 years of creditable service or age 60 for members commencing service on or after July 1, 2011).

A member annuity that is the actuarial equivalent of the member's accumulated contributions plus a state annuity.

The state annuity, together with the member annuity, shall be equal to $2-1 / 2 \%$ of AFC times creditable service up to 40 years ( $2 \%$ of AFC times creditable service up to 42.5 years for members commencing service on or after July 1, 2011). However, a member who commenced service on or after July 1, 2011 shall not receive a service retirement allowance until attaining the age of 52.5.

Members hired prior to July 1, 2011 who have non-vested status as of January 1, 2012 shall be subject to the following transition provisions for years of service required for regular service retirement, the minimum age for regular service retirement, and the multiplier used to calculate the retirement annuity, which shall be applicable on January 1, 2012 according to the following table:

| Creditable Service <br> on January 1, 2012 | Minimum Years <br> of Service | Minimum Age <br> Attained | Annuity <br> Multiplier |
| :--- | :--- | :--- | :--- |
| (1) Less than 4 years <br> (2) At least 4 years but <br> Iess than 6 years | 24 Years | Age 49 | $2.1 \%$ |
| (3) At least 6 years but <br> less than 8 years | 23 Years | Age 48 | $2.2 \%$ |
| (4) At least 8 years but <br> less than 10 years | 22 Years | Age 47 | $2.3 \%$ |

Effective July 1, 1992, if a member retires on a full service retirement, the minimum annual benefit (prior to reduction for optional form of payment) is $\$ 10,000$.

## Reduced Service Retirement

## Eligibility

## Amount of Benefit

Members commencing service on or after July 1, 2011 after attaining age 52.5 with at least 25 years of creditable service.

The allowance shall be reduced for each month by which the benefit commencement date precedes the month after which the member attains 52.5 years of age, by $1 / 4$ of $1 \%$.

## Ordinary Disability Retirement

Eligibility

## Amount of Benefit

10 years service and permanent disability.
A member annuity plus a state annuity which together equals the service retirement benefit; provided that the benefit shall not be less than $25 \%$ of the member's annual compensation.

## Accidental Disability Retirement

Eligibility

## Amount of Benefit

Permanent disability occurring while in the performance of duty.
Members hired prior to July 1, 2011 who have vested status as of January 1, 2012 are eligible for an accidental disability benefit and shall receive a benefit equal to $2 / 3$ of AFC. If a member has more than 26-2/3 years of service, the member will
receive a supplemental disability benefit equal to $2-1 / 2 \%$ of AFC times years of creditable service in excess of 26-2/3 years but not in excess of 40 years. Members commencing service on or after July 1, 2011 are eligible for an accidental disability benefit and shall receive a benefit equal to $2 / 3$ of AFC. If a member has more than $33-1 / 3$ years of service, the member will receive a supplemental disability benefit equal to $2 \%$ of AFC times years of creditable service in excess of $33-1 / 3$ years but not in excess of 42.5 years. Members hired prior to July 1, 2011 who have non-vested status as of January 1, 2012 are eligible for an accidental disability benefit and shall receive a benefit equal to $2 / 3$ of AFC. The calculation of the supplemental allowance shall be as provided in the transition provisions with the number of years for the supplement adjusted proportionally.

## Ordinary Death Benefit

## Eligibility

Death other than accidental death.

## Amount of Benefit

(a) If 10 years service or if eligible for service retirement and,
(i) if survived by a spouse, $50 \%$ of the service retirement benefit payable until death or remarriage.
(ii) if no surviving spouse or member designated a beneficiary other than a spouse, a lump sum equal to the greater of $\$ 3,600$ or member's annual compensation.
(b) If less than 10 years service and not eligible for service retirement, a lump sum equal to the greater of $\$ 3,600$ or the member's annual compensation.
Accidental Death Benefit

| Eligibility | Accidental death occurring while in the performance of duty. <br> Amount of Benefit |
| :--- | :--- |
| $50 \%$ of the annual rate of compensation payable first to spouse until death or re- <br> marriage, then to children under age 18 or if no spouse or children, to dependent <br> parent. |  |
| Death after Retirement | Retirement Prior to April 1, 1987 |
|  | Lump sum of $\$ 3,600$ unless accidental disability retirement, then surviving spouse <br> receives $50 \%$ of the retired member's disability benefits payable until death or re- | marriage.

## Retirement on or after April 1, 1987

Benefit payable to surviving spouse until death or remarriage equal to $50 \%$ of the member's service, ordinary disability or accidental disability retirement allowance if member was married on the date of retirement plus a lump sum. The lump sum shall be equal to:
If retired prior to July 1, 1988: \$ 3,600
If retired on or after July 1, 1988:
If Group II member as of June 30, 1988
\$10,000
If becomes a Group II member after June 30, 1988 and prior to July 1, 1993 \$ 3,600

## Special Death Benefit - Old Firefighter's System

Continuance of duty-connected disability benefits to spouse of deceased retired member payable until death or remarriage.

## Vested Deferred Retirement

## Eligibility

## Amount of Benefit

10 years of service, if no withdrawal of contributions.
A benefit determined as for service retirement payable when the member would be age 45 with 20 years of service or age 60 if earlier.
(a) Upon termination of service other than for retirement or death, and if vested deferred retirement has not been elected, the member's accumulated contributions are returned to the member.
(b) Upon accidental death or upon other death for which no surviving spouse's benefit is payable, the member's accumulated contributions will be paid to the member's beneficiary or estate.
(c) Upon death of a member on vested deferred retirement prior to the time benefits commence, the member's accumulated contributions will be paid to the member's beneficiary or estate.
(d) Upon death of the survivor of a member retired on accidental disability and his spouse in receipt of the accidental disability survivor benefit, the excess of the member's accumulated contributions at retirement over the benefits received by the member and the spouse will be paid to the beneficiary or estate.
(e) Upon death of a retired member (or the survivor of a retired member, if an optional benefit was elected), the excess of accumulated contributions at retirement over the benefits received by the retired member (and, in the case of election of an optional benefit, the benefits received by the survivor) will be paid to the beneficiary or estate of the member.

## 3-CONTRIBUTIONS

## GROUP I MEMBERS (EMPLOYEES AND TEACHERS)

By Members

By Local Employer
For Employee Members

For Teacher Members

By the State
For Employee Members

For Teacher Members
7.0\% of earnable compensation. Interest on member contributions shall be 2 percentage points less than either the most recent Board of Trustees approved assumed rate of return determined under RSA 100-A:16, $\mathrm{ll}(\mathrm{h})$ or the actual rate of return, whichever is lower.
$100 \%$ of the normal contribution rate for their employees, plus accrued liability contributions, if any.
$100 \%$ of the normal contribution rate for their employees, plus accrued liability contributions, if any.
$100 \%$ of the normal contribution rate for its employees, plus accrued liability contributions, if any.
$100 \%$ of the normal contribution rate for teachers employed by local employers, plus accrued liability contributions, if any.

## GROUP II MEMBERS (POLICE OFFICERS AND FIREFIGHTERS)

By Members Firefighters
$11.80 \%$ of earnable compensation.
Police Officers
$11.55 \%$ of earnable compensation.
By Local Employer
$100 \%$ of the normal contribution rate for their employees, plus accrued liability contributions, if any.

By the State
$100 \%$ of both the normal and accrued liability contributions, if any.

## OPEB PLAN PROVISIONS

Medical subsidy benefits provided under the OPEB plan as of July 1, 2007 are as follows:

| Monthly Amounts |  |  |
| :--- | :---: | :---: |
|  | Pre-65 | Post-65 |
| Single | $\$ 375.56$ | $\$ 236.84$ |
| Couple | $\$ 751.12$ | $\$ 473.68$ |

The amounts above will not increase.

The following Group I members and their qualified spouses are eligible for coverage under the postemployment medical plan if they are receiving health coverage under the group plan offered by their former employer:

- Employee and teacher members of political subdivisions who were eligible to retire as of July 1, 2008 and who actually retired on or before July 1, 2009, on Service, Early Service, Vested Deferred or Ordinary Disability retirement after completing at least 20 years of creditable service and who subsequently attain age 60 or after completing at least 30 years of creditable service and who subsequently attain age 55 .
- Employee and teacher members of political subdivisions who retired on Accidental Disability Retirement on or before July 1, 2004.
- Employee members of the State who retired on or before July 1, 2004, on Service, Ordinary Disability or Vested Deferred Retirement become eligible for the medical subsidy at age 60 with at least 20 years of creditable service; or as early as age 55 with at least 30 years of creditable service.
- Surviving spouses of deceased employee and teacher members of political subdivisions who die while in service, provided that such surviving spouse was covered as the member's spouse in the employer-sponsored plan before the member's death and is entitled to a monthly allowance under Accidental Death, Ordinary Death, or an Optional Allowance.
- Surviving spouses and children of employee and teacher members of political subdivisions and employee members of the State who die as the natural and proximate result of injuries suffered while in the performance of duty. Eligibility for the medical subsidy ceases when the dependent child attains age 18 or age 23 , if attending school on a full-time basis, or upon the spouse's remarriage.
- Vested terminated employee members of the State (and spouses) who completed at least 20 years of creditable service and as of July 1, 2004 received an allowance and who subsequently attain age 60.
- Employee members of the State (and spouses) who retired on or before July 1, 2004 after completing at least 20 years of creditable service and who subsequently attained age 60; or after completing at least 30 years of creditable service and who subsequently attained age 55.
- Surviving spouses of deceased employee members of the State who died while in service on or before July 1, 2004, provided that such surviving spouse was covered as the member's spouse in the employer-sponsored plan before the member's death and is entitled to a monthly allowance under Accidental Death, Ordinary Death, or an Optional Allowance.

The following Group II members are eligible for the postemployment medical plan:

- Group II police officer members (or beneficiaries) who are active or retired as of June 30, 2000.
- Group II firefighter members (or beneficiaries) who are active or retired as of June 30, 2000.
- Persons who prior to July 1, 1988, had completed at least 20 years of Group II service and were eligible as of July 1, 1993 for a vested deferred retirement benefit.
- Group II members retired as of July 1, 1991 with a split benefit under RSA 100-A:19-c who had at least 10 years of Group II service.
- Group II members as of June 30, 2005 who subsequently became disabled while in the performance of duty at any time in the future.
- Surviving spouses of deceased Group II members who retired prior to April 1, 1987 and who are not receiving a monthly allowance.


# STATISTICAL section 

NHRS has 471 participating employers the State of New Hampshire, individual communities, school districts, counties, and other political subdivisions.


## Statistical <br> Section <br> Summary

The schedules that follow in this Statistical Section contain statistical and historical data that is considered useful in assessing the economic condition of the Pension and OPEB plan and for evaluating financial and demographic trends over longer periods of time. Included in this section are the following schedules:

- Schedules of Changes in Net Position for both plans for the past ten years
- Schedules of Benefit and Refund Deductions for both plans over the past ten years
- Schedules of Retired Members by Type of Benefit for both plans
- Schedules of Average Benefit Payment Amounts for both plans
- Schedules of the Principal Participating Employers for both plans
- A Listing of Participating Employers

The NHRS has prepared the data presented for the Changes in Net Position schedules, Benefit and Refund Deduction schedules, the Principal Participating Employers schedules and the Listing of Participating Employers. The schedules of Retired Members by Type of Benefit and the Schedules of Average Benefit Payments Amounts were prepared by the NHRS's actuary. Due to changes in accounting systems, some data is not available or is limited for the full ten year periods but data for the full ten year periods will be added prospectively.

The investment climate over the past decade has been volatile. Investment returns for fiscal year 2017 (13.5\%), fiscal year 2016 (1.0\%), fiscal year 2015 (3.5\%), and fiscal year 2014 (17.6\%) have offset the losses experienced during the economic crisis and recession of fiscal years 2008-2009. Investment returns were positive overall for the decade and net investment income was able to achieve results above the assumed investment return assumption for that period. In absolute dollars, employer contributions to the pension plan have risen $95 \%$ over the decade, member contributions to the pension plan were $35 \%$ lower a decade ago. Pension benefits rose $80 \%$ over the decade. Similar increases have been experienced in OPEB contributions and benefits.

The number of NHRS retirees continues to grow along with the average annual benefits amounts paid out. The active membership rolls have remained fairly static throughout the decade but have decreased slightly in fiscal year 2017. The number of participating employers remains stable.

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## Schedule of

Changes in Net
Position

| CHANGES IN NET POSITION - PENSION PLAN LAST TEN FISCAL YEARS |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\begin{gathered} \text { FY } \\ 2017 \end{gathered}$ |  | $\begin{gathered} \text { FY } \\ 2016 \end{gathered}$ |  | $\begin{gathered} \text { FY } \\ 2015 \end{gathered}$ |  | $\begin{gathered} \text { FY } \\ 2014 \end{gathered}$ |  |
| Additions: |  |  |  |  |  |  |  |  |
| Employer Contributions | \$ | 366,653 | \$ | 357,482 | \$ | 332,294 | \$ | 328,444 |
| Member Contributions |  | 213,061 |  | 207,949 |  | 204,063 |  | 199,033 |
| Net Investment Income (Loss) |  | 978,594 |  | 61,878 |  | 249,806 |  | 1,092,585 |
| Net Position Transfers |  | - |  | - |  | - |  | - |
| Other |  | - |  | - |  | - |  | - |
| Total Additions to Net Position | \$ | 1,558,308 | \$ | 627,309 | \$ | 786,163 | \$ | 1,620,062 |
| Deductions: |  |  |  |  |  |  |  |  |
| Pension Benefits | \$ | 706,304 | \$ | 670,360 | \$ | 631,312 | \$ | 599,476 |
| Refunds of Contributions |  | 23,408 |  | 24,233 |  | 26,345 |  | 26,120 |
| Administrative Expense |  | 7,671 |  | 7,061 |  | 7,582 |  | 7,377 |
| Professional Fees |  | 992 |  | 950 |  | 1,318 |  | 1,080 |
| Other |  | 263 |  | 313 |  | 308 |  | 366 |
| Total Deductions from Net Position | \$ | 738,638 | \$ | 702,917 | \$ | 666,865 | \$ | 634,419 |
| Change in Net Position | \$ | 819,670 | \$ | $(75,608)$ | \$ | 119,298 | \$ | 985,643 |


| CHANGES IN NET POSITION OPEB PLAN - LAST TEN FISCAL YEARS |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\begin{gathered} \text { FY } \\ 2017 \end{gathered}$ |  | $\begin{gathered} \text { FY } \\ 2016 \end{gathered}$ |  | $\begin{gathered} \text { FY } \\ 2015 \end{gathered}$ |  | $\begin{gathered} \text { FY } \\ 2014 \end{gathered}$ |  |
| Additions: |  |  |  |  |  |  |  |  |
| Employer Contributions | \$ | 59,197 | \$ | 58,174 | \$ | 48,915 | \$ | 48,881 |
| Net Investment Income (Loss) |  | 4,046 |  | 148 |  | 1,119 |  | 5,381 |
| Net Position Transfers |  | - |  | - |  | - |  | - |
| Interest Income |  | 181 |  | 778 |  | 1,113 |  | 1,051 |
| Other |  | - |  | - |  | - |  | - |
| Total Additions to Net Position | \$ | 63,424 | \$ | 59,100 | \$ | 51,147 | \$ | 55,313 |
| Deductions: |  |  |  |  |  |  |  |  |
| Benefits Paid | \$ | 50,560 | \$ | 51,805 | \$ | 53,297 | \$ | 53,811 |
| Net Position Transfers |  | - |  | - |  | - |  | - |
| Administrative Expense |  | 32 |  | 17 |  | 34 |  | 36 |
| Professional Fees |  | 4 |  | 2 |  | 5 |  | 5 |
| Interest Expense |  | 181 |  | 778 |  | 1,113 |  | 1,051 |
| Other |  | 1 |  | 1 |  | 2 |  | 1 |
| Total Deductions from Net Position | \$ | 50,778 | \$ | 52,603 | \$ | 54,451 | \$ | 54,904 |
| Change in Net Position | \$ | 12,646 | \$ | 6,497 | \$ | $(3,304)$ | \$ | 409 |

\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|}
\hline \& \& \& \& \multicolumn{7}{|c|}{(in thousands)} \\
\hline \[
\begin{gathered}
\text { FY } \\
2013
\end{gathered}
\] \& \& \[
\begin{gathered}
\text { FY } \\
2012
\end{gathered}
\] \& \& \[
\begin{gathered}
\text { FY } \\
2011
\end{gathered}
\] \& \& \[
\begin{gathered}
\text { FY } \\
2010
\end{gathered}
\] \& \& \[
\begin{gathered}
\text { FY } \\
2009
\end{gathered}
\] \& \& \[
\begin{gathered}
\text { FY } \\
2008
\end{gathered}
\] \\
\hline \[
\begin{array}{r}
\$ \quad 249,835 \\
196,489 \\
813,671
\end{array}
\] \& \$ \& \begin{tabular}{l}
254,557 \\
199,593 \\
19,811
\end{tabular} \& \& \[
\begin{array}{r}
274,582 \\
152,412 \\
1,121,460
\end{array}
\] \& \$ \& \begin{tabular}{l}
269,677 \\
149,512 \\
546,492
\end{tabular} \& \$ \& 196,214 142,528 \(962,057)\) \& \(\$\)
(\$ \& \[
\begin{aligned}
\& 188,197 \\
\& 157,985 \\
\& 284,095)
\end{aligned}
\] \\
\hline - 111 \& \& - \& \& 13,399 \& \((\) \& \[
\begin{array}{r}
89,505 \\
1,292) \\
\hline
\end{array}
\] \& \& \[
\overline{62}
\] \& \& \[
1,7 \overline{21}
\] \\
\hline \$ 1,260,106 \& \$ \& 473,961 \& \& 1,561,853 \& \$ \& 1,053,894 \& (\$ \& 622,693) \& \$ \& 63,808 \\
\hline \$
573,469
23,191
6,999
972

818 \& \$ \& $$
\begin{array}{r}
547,051 \\
26,535 \\
6,261 \\
1,162 \\
50
\end{array}
$$ \& \$ \& \[

$$
\begin{array}{r}
519,970 \\
22,830 \\
7,312 \\
1,425 \\
743
\end{array}
$$

\] \& \$ \& \[

$$
\begin{array}{r}
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21,851 \\
6,391 \\
1,205 \\
1,776
\end{array}
$$

\] \& \$ \& \[

$$
\begin{array}{r}
452,380 \\
24,204 \\
6,968 \\
1,372 \\
2,331
\end{array}
$$

\] \& \$ \& \[

$$
\begin{array}{r}
391,929 \\
32,297 \\
6,691 \\
1,382 \\
1,910
\end{array}
$$
\] <br>

\hline \$ 605,449 \& \$ \& 581,059 \& \$ \& 552,280 \& \$ \& 521,298 \& \$ \& 487,255 \& \$ \& 434,209 <br>
\hline \$ 654,657 \& (\$ \& 107,098) \& \& 1,009,573 \& \$ \& 532,596 \& (\$ \& 1,109,948) \& (\$ \& 370,401) <br>
\hline
\end{tabular}



## Schedule of <br> Benefit and Refund <br> Deductions By Type



| BENEFIT AND REFUND DEDUCTIONS BY TYPE - OPEB PLAN LAST TEN FISCAL YEARS |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\begin{gathered} \hline \text { FY } \\ 2017 \end{gathered}$ |  | $\begin{gathered} \text { FY } \\ 2016 \end{gathered}$ |  | $\begin{gathered} \hline \text { FY } \\ 2015 \end{gathered}$ |  | $\begin{gathered} \text { FY } \\ 2014 \end{gathered}$ |  |
| OPEB PLAN |  |  |  |  |  |  |  |  |
| Type of Benefit |  |  |  |  |  |  |  |  |
| Total Benefits | \$ | 50,560 | \$ | 51,805 | \$ | 53,298 | \$ | 53,145 |


| $\begin{gathered} \text { FY } \\ 2013 \end{gathered}$ |  |  |  | (in thousands) |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | $\begin{gathered} \text { FY } \\ 2012 \end{gathered}$ |  | $\begin{gathered} \hline \text { FY } \\ 2011 \end{gathered}$ |  | $\begin{gathered} \hline \text { FY } \\ 2010 \end{gathered}$ |  | $\begin{gathered} \hline \text { FY } \\ 2009 \end{gathered}$ |  | $\begin{gathered} \hline F Y \\ 2008 \end{gathered}$ |  |
| \$ | 325,542 | \$ | 308,230 | \$ | 287,736 | \$ | 270,523 | \$ | 249,909 | \$ | 216,344 |
|  | 154,821 |  | 150,023 |  | 145,483 |  | 138,643 |  | 125,471 |  | 101,286 |
|  | 30,738 |  | 29,128 |  | 28,986 |  | 27,079 |  | 25,160 |  | 21,961 |
|  | 20,730 |  | 19,446 |  | 19,217 |  | 18,063 |  | 17,042 |  | 18,573 |
|  | 8,800 |  | 7,826 |  | 6,803 |  | 5,882 |  | 5,040 |  | 5,546 |
|  | 1,719 |  | 1,800 |  | 1,654 |  | 1,326 |  | 2,000 |  | 2,396 |
|  | 20,674 |  | 20,374 |  | 19,769 |  | 18,682 |  | 18,043 |  | 16,869 |
|  | 8,787 |  | 8,581 |  | 8,676 |  | 8,312 |  | 8,261 |  | 7,567 |
|  | 1,658 |  | 1,643 |  | 1,646 |  | 1,565 |  | 1,454 |  | 1,387 |
| \$ | 573,469 | \$ | 547,051 | \$ | 519,970 | \$ | 490,075 | \$ | 452,380 | \$ | 391,929 |
| \$ | $\begin{array}{r} 18,133 \\ 5,058 \end{array}$ | \$ | $\begin{array}{r} 20,299 \\ 6,236 \end{array}$ | \$ | $\begin{array}{r} 18,362 \\ 4,468 \end{array}$ | \$ | $\begin{array}{r} 18,580 \\ 3,271 \end{array}$ | \$ | $\begin{array}{r} 20,364 \\ 3,840 \end{array}$ | \$ | $\begin{array}{r} 29,613 \\ 2,684 \end{array}$ |
| \$ | 23,191 | \$ | 26,535 | \$ | 22,830 | \$ | 21,851 | \$ | 24,204 | \$ | 32,297 |
|  |  |  |  | (in thousands) |  |  |  |  |  |  |  |
|  | $\begin{gathered} \hline F Y \\ 2013 \end{gathered}$ |  | $\begin{gathered} \text { FY } \\ 2012 \end{gathered}$ |  | $\begin{gathered} \hline \text { FY } \\ 2011 \end{gathered}$ |  | $\begin{gathered} \hline F Y \\ 2010 \end{gathered}$ |  | $\begin{gathered} \hline \text { FY } \\ 2009 \end{gathered}$ |  | $\begin{gathered} \hline \text { FY } \\ 2008 \end{gathered}$ |
| \$ | 55,145 | \$ | 58,599 | \$ | 59,863 | \$ | 59,978 | \$ | 57,930 | \$ | 54,035 |
| \$ | 55,145 | \$ | 58,599 | \$ | 59,863 | \$ | 59,978 | \$ | 57,930 | \$ | 54,035 |

## Schedule of Retired and

Vested Members By
Type of Benefit

SCHEDULE OF RETIRED AND VESTED MEMBERS BY TYPE OF BENEFITS AS OF JUNE 30, 2017 PENSION PLAN

| Type of Retirement* |  |  |  |  |  |  |  |  |
| :---: | :---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| Amount of <br> Monthly Benefit | Number of <br> Retirees | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| EMPLOYEES |  |  |  |  |  |  |  |  |
| $\$ 1-500$ | 5,314 | 4,222 | 48 | 2 | 13 | - | 555 | 474 |
| $501-1,000$ | 5,373 | 4,075 | 255 | 114 | 10 | 2 | 445 | 472 |
| $1,001-1,500$ | 3,197 | 2,523 | 86 | 233 | 13 | 4 | 169 | 169 |
| $1,501-2,000$ | 1,853 | 1,558 | 25 | 95 | 6 | 2 | 109 | 58 |
| $2,001-2,500$ | 1,112 | 992 | 6 | 25 | - | 2 | 69 | 18 |
| $2,501-3,000$ | 712 | 650 | 6 | 6 | 1 | 1 | 41 | 7 |
| $3,001-3,500$ | 466 | 436 | - | 4 | - | - | 22 | 4 |
| $3,501-4,000$ | 319 | 300 | 1 | 1 | - | - | 15 | 2 |
| Over 4,000 | 434 | 417 | 1 | 2 | 2 | - | 9 | 3 |
| Totals | 18,780 | 15,173 | 428 | 482 | 45 | 11 | 1,434 | 1,207 |

## TEACHERS

| $\$ 1-500$ | 1,554 | 1,213 | 1 | - | - | - | 78 | 262 |
| ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| $501-1,000$ | 2,170 | 1,616 | 37 | - | 5 | - | 134 | 378 |
| $1,001-1,500$ | 1,936 | 1,600 | 74 | 3 | 5 | - | 98 | 156 |
| $1,501-2,000$ | 1,955 | 1,738 | 28 | 6 | 6 | - | 94 | 83 |
| $2,001-2,500$ | 1,955 | 1,825 | 18 | 8 | - | 1 | 72 | 31 |
| $2,501-3,000$ | 1,538 | 1,454 | 7 | 3 | - | - | 53 | 21 |
| $3,001-3,500$ | 1,243 | 1,190 | 3 | 2 | - | - | 42 | 6 |
| $3,501-4,000$ | 701 | 679 | - | - | 1 | - | 19 | 2 |
| Over 4,000 | 585 | 568 | - | - | - | - | 15 | 2 |
| Totals | 13,637 | 11,883 | 168 | 22 | 17 | 1 | 605 | 941 |


| POLICE OFFICERS |  |  |  |  |  |  |  |  |
| ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| $\$ 1-500$ | 222 | 179 | - | - | - | 2 | 39 | 2 |
| $501-1,000$ | 360 | 188 | 12 | 1 | - | - | 147 | 12 |
| $1,001-1,500$ | 408 | 188 | 23 | 6 | 2 | 1 | 141 | 47 |
| $1,501-2,000$ | 349 | 210 | 20 | 32 | 2 | 1 | 61 | 23 |
| $2,001-2,500$ | 388 | 286 | 8 | 56 | 1 | 1 | 23 | 13 |
| $2,501-3,000$ | 417 | 286 | 1 | 89 | - | - | 31 | 10 |
| $3,001-3,500$ | 385 | 325 | - | 44 | 2 | 3 | 9 | 2 |
| $3,501-4,000$ | 316 | 279 | 1 | 25 | 1 | - | 8 | 2 |
| Over 4,000 | 1,056 | 987 | 1 | 52 | 1 | 1 | 10 | 4 |
| Totals | 3,901 | 2,928 | 66 | 305 | 9 | 9 | 469 | 115 |


| FIREFIGHTERS |  |  |  |  |  |  |  |  |
| ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| $\$ 1-500$ | 47 | 26 | - | - | - | 2 | 19 | - |
| $501-1,000$ | 107 | 39 | 1 | - | - | - | 66 | 1 |
| $1,001-1,500$ | 171 | 66 | 8 | 5 | 1 | 5 | 78 | 8 |
| $1,501-2,000$ | 160 | 68 | 9 | 11 | - | 1 | 65 | 6 |
| $2,001-2,500$ | 171 | 104 | 7 | 20 | 1 | 3 | 35 | 1 |
| $2,501-3,000$ | 163 | 126 | 1 | 24 | - | - | 11 | 1 |
| $3,001-3,500$ | 164 | 138 | 1 | 18 | - | 2 | 5 | - |
| $3,501-4,000$ | 141 | 128 | - | 9 | - | 1 | 2 | 1 |
| Over 4,000 | 533 | 507 | - | 15 | 1 | - | 10 | - |
| Totals | 1,657 | 1,202 | 27 | 102 | 3 | 14 | 291 | 18 |

* Type of Retirement: 1-Service and early retirement. 2-Ordinary disability retirement. 3-Accidental disability retirement. 4-Ordinary death in active service. 5-Accidental death in active service. 6-Beneficiaries of deceased members who retired on a service or disability allowance. 7 -Vested member with future benefit.

| Option Selected \# |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| No Option | Option 1 | Option 2 | Option | Option 4 | Option 5 | $\begin{gathered} \text { Option } \\ 6 \end{gathered}$ | Option 7 | $\begin{gathered} \hline \text { Option } \\ 8 \end{gathered}$ | $\begin{gathered} \hline \text { Option } \\ 9 \end{gathered}$ | Other* |
| 3,030 | 135 | 339 | 127 | 884 | 301 | 13 | 11 | - | - | 474 |
| 2,964 | 103 | 365 | 119 | 969 | 359 | 15 | 7 | - | - | 472 |
| 1,645 | 73 | 276 | 100 | 655 | 270 | 6 | 3 | - | - | 169 |
| 919 | 34 | 175 | 74 | 428 | 156 | 6 | 3 | - | - | 58 |
| 474 | 12 | 132 | 50 | 312 | 108 | 2 | 4 | - | - | 18 |
| 282 | 16 | 97 | 35 | 189 | 84 | 1 | 1 | - | - | 7 |
| 181 | 6 | 80 | 23 | 124 | 47 | 1 | - | - | - | 4 |
| 111 | 6 | 54 | 19 | 89 | 37 | 1 | - | - | - | 2 |
| 137 | 5 | 69 | 37 | 118 | 63 | 1 | 1 | - | - | 3 |
| 9,743 | 390 | 1,587 | 584 | 3,768 | 1,425 | 46 | 30 | - | - | 1,207 |
|  |  |  |  |  |  |  |  |  |  |  |
| 665 | 31 | 105 | 41 | 343 | 97 | 5 | 5 | - | - | 262 |
| 1,114 | 54 | 122 | 34 | 372 | 88 | 6 | 2 | - | - | 378 |
| 936 | 47 | 159 | 56 | 447 | 127 | 4 | 4 | - | - | 156 |
| 887 | 51 | 156 | 50 | 522 | 196 | 2 | 8 | - | - | 83 |
| 859 | 36 | 158 | 71 | 565 | 226 | 3 | 6 | - | - | 31 |
| 644 | 39 | 137 | 57 | 442 | 193 | 1 | 4 | - | - | 21 |
| 521 | 23 | 116 | 49 | 393 | 127 | 2 | 6 | - | - | 6 |
| 297 | 18 | 80 | 25 | 186 | 92 | - | 1 | - | - | 2 |
| 269 | 7 | 70 | 21 | 145 | 71 | - | - | - | - | 2 |
| 6,192 | 306 | 1,103 | 404 | 3,415 | 1,217 | 23 | 36 | - | - | 941 |
|  |  |  |  |  |  |  |  |  |  |  |
| 148 | 1 | 9 | 15 | 22 | 25 | - | - | - | - | 2 |
| 263 | 5 | 16 | 10 | 20 | 30 | 2 | 2 | - | - | 12 |
| 266 | 10 | 16 | 15 | 16 | 38 | - | - | - | - | 47 |
| 199 | 11 | 8 | 27 | 17 | 64 | - | - | - | - | 23 |
| 189 | 18 | 12 | 51 | 14 | 89 | - | 2 | - | - | 13 |
| 177 | 22 | 10 | 68 | 15 | 115 | - |  | - | - | 10 |
| 133 | 15 | 7 | 96 | 9 | 123 | - | - | - | - | 2 |
| 104 | 8 | 2 | 70 | 8 | 122 | - | - | - | - | 2 |
| 261 | 17 | 11 | 311 | 15 | 435 | 2 | - | - | - | 4 |
| 1,740 | 107 | 91 | 663 | 136 | 1,041 | 4 | 4 | - | - | 115 |
|  |  |  |  |  |  |  |  |  |  |  |
| 40 | - | 2 | - | 1 | 4 | - | - | - | - | - |
| 102 | - | 1 | - | 1 | 2 | - | - | - | - | 1 |
| 129 | 6 | 7 | 7 | 8 | 6 | - | - | - | - | 8 |
| 115 | 8 | 5 | 8 | 7 | 11 | - | - | - | - | 6 |
| 95 | 10 | 8 | 20 | 7 | 30 | - | - | - | - | 1 |
| 60 | 8 | 4 | 29 | 9 | 52 | - | - | - | - | 1 |
| 48 | 7 | 3 | 41 | 2 | 63 | - | - | - | - | - |
| 44 | 5 | 2 | 29 | 1 | 59 | - | - | - | - | 1 |
| 142 | 11 | 2 | 139 | 5 | 232 | 1 | 1 | - | - | - |
| 775 | 55 | 34 | 273 | 41 | 459 | 1 | 1 | - | - | 18 |

\# Option Selected: No option—Straight life. Option 1-Cash refund. Option 2-100\% Joint \& Survivorship. Option 350\% Joint \& Survivorship. Option 4-100\% Pop-Up. Option 5-50\% Pop-Up. Option 6-Other \% Joint \& Survivorship. Option 7-Other \% Pop-Up. Option 8-Fixed amount to Beneficiaries. Option 9-Widow's benefit (accidental disability) $50 \%$

* Elections for vested members with future benefits are made at commencement of benefits.

| SCHEDULE OF RETIRED MEMBERS BY TYPE OF BENEFITS AS OF JUNE 30, 2017 OPEB PLAN |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | One Person |  | Two Person |  |
| Amount of Monthly Benefit | Number of Retirees | $\begin{gathered} \hline \text { Pre } \\ 65 \end{gathered}$ | $\begin{gathered} \text { Post } \\ 65 \end{gathered}$ | $\begin{aligned} & \hline \text { Pre } \\ & 65 \end{aligned}$ | $\begin{gathered} \text { Post } \\ 65 \end{gathered}$ |
| TOTAL - OPEB PLAN |  |  |  |  |  |
| \$1-500 | 8,231 | 633 | 7,468 | 18 | 112 |
| 501-1,000 | 1,726 | 76 | 531 | 740 | 379 |
| 1,001-1,500 | 37 | 4 | 12 | 11 | 10 |
| 1,501-2,000 | 11 | 2 | 1 | 8 | - |
| Over \$2,000 | - | - | - | - | - |
| Total | 10,005 | 715 | 8,012 | 777 | 501 |

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## Schedule of Average

## Benefit Payment

## Amounts

## SCHEDULE OF AVERAGE BENEFIT PAYMENT AMOUNTS

PENSION PLAN - EMPLOYEES

| 2017 |  | Years |  |  |  |  |  | Credited Service |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| Service | $\mathbf{0 - 4 .}$ | $\mathbf{5 - 9}$ | $\mathbf{1 0 - 1 4}$ | $\mathbf{1 5 - 1 9}$ | $\mathbf{2 0 - 2 4}$ | $\mathbf{2 5 - 2 9}$ | $\mathbf{3 0}$ or | (10) |
|  | yrs. | yrs. | yrs. | yrs. | yrs. | yrs. | more yrs. | Total |
| Average monthly benefit | $\$ 313$ | $\$ 453$ | $\$ 618$ | $\$ 919$ | $\$ 1,197$ | $\$ 1,636$ | $\$ 2,443$ | $\$ 1,121$ |
| Average annual benefit | $\$ 3,758$ | $\$ 5,442$ | $\$ 7,415$ | $\$ 11,030$ | $\$ 14,364$ | $\$ 19,637$ | $\$ 29,321$ | $\$ 13,451$ |
| Average final average salary | $\$ 43,797$ | $\$ 42,845$ | $\$ 41,884$ | $\$ 47,851$ | $\$ 50,369$ | $\$ 56,958$ | $\$ 66,591$ | $\$ 50,123$ |
| Number of retired members | $1,264^{*}$ | 1,779 | 4,275 | 2,833 | 2,793 | 1,740 | 2,889 | $17,573^{* *}$ |

* Includes 310 members who did not have service reported.
** Includes 6,504 members who did not have FAS reported.

| 2016 |  | Years Credited Service |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| Service | $\mathbf{0 - 4 .}$ | $\mathbf{5 - 9}$ | $\mathbf{1 0 - 1 4}$ | $\mathbf{1 5 - 1 9}$ | $\mathbf{2 0 - 2 4}$ | $\mathbf{2 5 - 2 9}$ | $\mathbf{3 0}$ or |  |
|  | yrs. | yrs. | yrs. | yrs. | yrs. | yrs. | more yrs. | Total |
| Average monthly benefit | $\$ 310$ | $\$ 460$ | $\$ 634$ | $\$ 957$ | $\$ 1,253$ | $\$ 1,757$ | $\$ 2,575$ | $\$ 1,152$ |
| Average annual benefit | $\$ 3,724$ | $\$ 5,516$ | $\$ 7,613$ | $\$ 11,481$ | $\$ 15,038$ | $\$ 21,084$ | $\$ 30,898$ | $\$ 13,823$ |
| Average final average salary | $\$ 42,832$ | $\$ 42,359$ | $\$ 41,637$ | $\$ 47,544$ | $\$ 49,410$ | $\$ 52,267$ | $\$ 65,846$ | $\$ 49,468$ |
| Number of retired members | $1,260^{*}$ | 1,706 | 4,007 | 2,573 | 2,520 | 1,514 | 2,562 | $16,142^{* *}$ |
| *Includes 292 members who did not have service |  |  |  |  |  |  |  |  |

* Includes 292 members who did not have service reported.
** Includes 5,892 members who did not have FAS reported.

| 2015 |  | Years Credited Service |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| Service | $\mathbf{0 - 4 .}$ | $\mathbf{5 - 9}$ | $\mathbf{1 0 - 1 4}$ | $\mathbf{1 5 - 1 9}$ | $\mathbf{2 0 - 2 4}$ | $\mathbf{2 5 - 2 9}$ | $\mathbf{3 0}$ or | Total |
|  | yrs. | yrs. | yrs. | yrs. | yrs. | yrs. | more yrs. |  |
| Average monthly benefit | $\$ 299$ | $\$ 451$ | $\$ 622$ | $\$ 941$ | $\$ 1,234$ | $\$ 1,718$ | $\$ 2,519$ | $\$ 1,122$ |
| Average annual benefit | $\$ 3,592$ | $\$ 5,409$ | $\$ 7,466$ | $\$ 11,288$ | $\$ 14,811$ | $\$ 20,622$ | $\$ 30,227$ | $\$ 13,462$ |
| Average final average salary | $\$ 44,554$ | $\$ 43,186$ | $\$ 41,904$ | $\$ 47,573$ | $\$ 49,030$ | $\$ 55,589$ | $\$ 64,928$ | $\$ 49,559$ |
| Number of retired members | $1,227^{*}$ | 1,638 | 3,881 | 2,457 | 2,448 | 1,419 | 2,413 | $15,483^{* *}$ |

* Includes 273 members who did not have service reported.
** Includes 6,453 members who did not have FAS reported.

| 2014 | Years Credited Service |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\begin{gathered} \text { 0-4. } \\ \text { yrs. } \end{gathered}$ | $\begin{aligned} & \text { 5-9 } \\ & \text { yrs. } \\ & \hline \end{aligned}$ | $\begin{array}{r} 10-14 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 15-19 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 20-24 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 25-29 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 30 \text { or } \\ \text { more yrs. } \\ \hline \end{array}$ | Total |
| Average monthly benefit | \$326 | \$418 | \$591 | \$878 | \$1,158 | \$1,568 | \$2,319 | \$1,078 |
| Average annual benefit | \$3,911 | \$5,019 | \$7,088 | \$10,532 | \$13,902 | \$18,812 | \$27,833 | \$12,932 |
| Average final average salary | \$35,623 | \$41,017 | \$41,061 | \$46,293 | \$48,678 | \$55,009 | \$64,041 | \$48,488 |
| Number of retired members | 992* | 1,497 | 3,835 | 2,426 | 2,546 | 1,475 | 2,543 | 15,314** |

* Includes 192 members who did not have service reported.
** Includes 7,334 members who did not have FAS reported.

| 2013 |  | Years Credited Service |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| Service | $\mathbf{0 - 4 .}$ | $\mathbf{5 - 9}$ | $\mathbf{1 0 - 1 4}$ | $\mathbf{1 5 - 1 9}$ | $\mathbf{2 0 - 2 4}$ | $\mathbf{2 5 - 2 9}$ | $\mathbf{3 0}$ or | yrs. |
|  | yrs. | yrs. | yrs. | yrs. | yrs. | more yrs. | Total |  |
| Average monthly benefit | $\$ 324$ | $\$ 409$ | $\$ 584$ | $\$ 863$ | $\$ 1,150$ | $\$ 1,558$ | $\$ 2,303$ | $\$ 1,063$ |
| Average annual benefit | $\$ 3,883$ | $\$ 4,906$ | $\$ 7,013$ | $\$ 10,359$ | $\$ 13,801$ | $\$ 18,691$ | $\$ 27,633$ | $\$ 12,758$ |
| Average final average salary | $\$ 35,604$ | $\$ 39,229$ | $\$ 40,738$ | $\$ 45,238$ | $\$ 47,897$ | $\$ 54,324$ | $\$ 63,541$ | $\$ 47,906$ |
| Number of retired members | $968^{*}$ | 1,444 | 3,705 | 2,345 | 2,434 | 1,394 | 2,422 | $14,712^{* *}$ |

* Includes 172 members who did not have service reported.
** Includes 7,506 members who did not have FAS reported.

| 2012 |  | Years Credited Service |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| Service | $\mathbf{0 - 4 .}$ | $\mathbf{5 - 9}$ | $\mathbf{1 0 - 1 4}$ | $\mathbf{1 5 - 1 9}$ | $\mathbf{2 0 - 2 4}$ | $\mathbf{2 5 - 2 9}$ | $\mathbf{3 0}$ or |  |
|  | yrs. | yrs. | yrs. | yrs. | yrs. | yrs. | more yrs. | Total |
| Average monthly benefit | $\$ 343$ | $\$ 400$ | $\$ 576$ | $\$ 854$ | $\$ 1,142$ | $\$ 1,535$ | $\$ 2,274$ | $\$ 1,049$ |
| Average annual benefit | $\$ 4,114$ | $\$ 4,804$ | $\$ 6,911$ | $\$ 10,243$ | $\$ 13,706$ | $\$ 18,421$ | $\$ 27,284$ | $\$ 12,591$ |
| Average final average salary | $\$ 34,356$ | $\$ 38,505$ | $\$ 39,797$ | $\$ 44,567$ | $\$ 46,998$ | $\$ 52,948$ | $\$ 62,444$ | $\$ 47,037$ |
| Number of retired members | $992^{*}$ | 1,389 | 3,511 | 2,261 | 2,340 | 1,323 | 2,325 | $14,141^{* *}$ |
| * Includes 194 members who did not have service reported. |  |  |  |  |  |  |  |  |

* Includes 194 members who did not have service reported.
** Includes 7,748 members who did not have FAS reported.


SCHEDULE OF AVERAGE BENEFIT PAYMENT AMOUNTS PENSION PLAN - TEACHERS

| 2017 |  |  | Years Credited Service |  |  |  | 30 or more yrs. | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Service | $\begin{gathered} \text { 0-4. } \\ \text { yrs. } \end{gathered}$ | $\begin{aligned} & 5-9 \\ & \text { yrs. } \\ & \hline \end{aligned}$ | $\begin{array}{r} 10-14 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} \text { 15-19 } \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 20-24 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 25-29 \\ \text { yrs. } \\ \hline \end{array}$ |  |  |
| Average monthly benefit | \$504 | \$573 | \$733 | \$1,140 | \$1,502 | \$1,927 | \$2,765 | \$1,817 |
| Average annual benefit | \$6,051 | \$6,870 | \$8,799 | \$13,679 | \$18,018 | \$23,127 | \$33,176 | \$21,804 |
| Average final average salary | \$52,263 | \$57,449 | \$50,750 | \$59,866 | \$63,691 | \$68,520 | \$72,099 | \$65,211 |
| Number of retired members | 292* | 360 | 1,556 | 1,557 | 2,437 | 2,165 | 4,329 | 12,696** |

* Includes 135 members who did not have service reported.
** Includes 4,808 members who did not have FAS reported.

| 2016 | Years Credited Service |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Service | $\begin{gathered} \text { 0-4. } \\ \text { yrs. } \end{gathered}$ | $\begin{aligned} & \text { 5-9 } \\ & \text { yrs. } \\ & \hline \end{aligned}$ | $\begin{array}{r} 10-14 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 15-19 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 20-24 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 25-29 \\ \text { yrs. } \\ \hline \end{array}$ | 30 or more yrs. | Total |
| Average monthly benefit | \$499 | \$586 | \$755 | \$1,193 | \$1,626 | \$2,097 | \$2,905 | \$1,928 |
| Average annual benefit | \$5,986 | \$7,029 | \$9,065 | \$14,316 | \$19,508 | \$25,166 | \$34,860 | \$23,134 |
| Average final average salary | \$51,934 | \$56,982 | \$49,999 | \$59,017 | \$62,964 | \$67,641 | \$72,517 | \$64,533 |
| Number of retired members | 278* | 333 | 1,422 | 1,375 | 2,161 | 1,897 | \$3,944 | \$11,410** |

* Includes 125 members who did not have service reported.
** Includes 4,080 members who did not have FAS reported.

| 2015 | Years Credited Service |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\begin{gathered} \text { 0-4. } \\ \text { yrs. } \end{gathered}$ | $\begin{aligned} & 5-9 \\ & \text { yrs. } \\ & \hline \end{aligned}$ | $\begin{array}{r} 10-14 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 15-19 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 20-24 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 25-29 \\ \text { yrs. } \\ \hline \end{array}$ | 30 or more yrs. | Total |
| Average monthly benefit | \$485 | \$570 | \$743 | \$1,172 | \$1,603 | \$2,072 | \$2,883 | \$1,913 |
| Average annual benefit | \$5,825 | \$6,840 | \$8,919 | \$14,059 | \$19,239 | \$24,868 | \$34,595 | \$22,961 |
| Average final average salary | \$52,242 | \$56,107 | \$49,238 | \$58,293 | \$62,540 | \$67,126 | \$71,943 | \$64,076 |
| Number of retired members | 259* | 307 | 1,346 | 1,280 | 2,079 | 1,808 | 3,780 | 10,859** |

* Includes 108 members who did not have service reported.
** Includes 4,203 members who did not have FAS reported.

| 2014 |  | Years Credited Service |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| Service | $\mathbf{0 - 4 .}$ | $\mathbf{5 - 9}$ | $\mathbf{1 0 - 1 4}$ | $\mathbf{1 5 - 1 9}$ | $\mathbf{2 0 - 2 4}$ | $\mathbf{2 5 - 2 9}$ | $\mathbf{3 0}$ or | Total |
|  | yrs. | yrs. | yrs. | yrs. | yrs. | yrs. | more yrs. |  |
| Average monthly benefit | $\$ 457$ | $\$ 531$ | $\$ 702$ | $\$ 1,081$ | $\$ 1,459$ | $\$ 1,872$ | $\$ 2,702$ | $\$ 1,783$ |
| Average annual benefit | $\$ 5,480$ | $\$ 6,367$ | $\$ 8,419$ | $\$ 12,976$ | $\$ 17,506$ | $\$ 2,467$ | $\$ 32,419$ | $\$ 21,401$ |
| Average final average salary | $\$ 51,979$ | $\$ 56,039$ | $\$ 48,107$ | $\$ 57,182$ | $\$ 61,625$ | $\$ 66,117$ | $\$ 71,311$ | $\$ 63,299$ |
| Number of retired members | $239 *$ | 289 | 1,342 | 1,241 | 2,126 | 1,889 | 3,839 | $10,965^{* *}$ |
| * Includes 100 members who did not have service reported. |  |  |  |  |  |  |  |  |

** Includes 4,974 members who did not have FAS reported.

| 2013 | Years Credited Service |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Service | $\begin{gathered} \text { 0-4. } \\ \text { yrs. } \end{gathered}$ | $\begin{aligned} & 5-9 \\ & \mathrm{yrs} . \\ & \hline \end{aligned}$ | $\begin{gathered} 10-14 \\ \text { yrs. } \end{gathered}$ | $\begin{array}{r} 15-19 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 20-24 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 25-29 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 30 \text { or } \\ \text { more yrs. } \end{array}$ | Total |
| Average monthly benefit | \$433 | \$526 | \$691 | \$1,051 | \$1,454 | \$1,862 | \$2,686 | \$1,780 |
| Average annual benefit | \$5,200 | \$6,315 | \$8,295 | \$12,615 | \$17,451 | \$22,347 | \$32,229 | \$21,355 |
| Average final average salary | \$51,604 | \$55,373 | \$47,276 | \$55,688 | \$60,708 | \$64,999 | \$70,712 | \$62,669 |
| Number of retired members | 214* | 255 | 1,260 | 1,155 | 2,045 | 1,795 | 3,683 | 10,407** |


| 2012 | Years Credited Service |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Service | $\begin{gathered} \text { 0-4. } \\ \text { yrs. } \end{gathered}$ | $\begin{aligned} & 5-9 \\ & \text { yrs. } \\ & \hline \end{aligned}$ | $\begin{array}{r} \text { 10-14 } \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 15-19 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 20-24 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 25-29 \\ \text { yrs. } \\ \hline \end{array}$ | 30 or more yrs. | Total |
| Average monthly benefit | \$434 | \$491 | \$684 | \$1,039 | \$1,447 | \$1,856 | \$2,673 | \$1,777 |
| Average annual benefit | \$5,203 | \$5,892 | \$8,214 | \$12,473 | \$17,363 | \$22,272 | \$32,080 | \$21,320 |
| Average final average salary | \$51,428 | \$53,206 | \$46,917 | \$54,779 | \$59,762 | \$64,214 | \$70,113 | \$62,128 |
| Number of retired members | 207* | 236 | 1,190 | 1,100 | 1,951 | 1,703 | 3,569 | 9,956 ** |

* Includes 88 members who did not have service reported.
** Includes 5,098 members who did not have FAS reported.

| 2011 | Years Credited Service |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Service | $\begin{gathered} \text { 0-4. } \\ \text { yrs. } \end{gathered}$ | $\begin{aligned} & 5-9 \\ & \text { yrs. } \\ & \hline \end{aligned}$ | $\begin{array}{r} 10-14 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} \text { 15-19 } \\ \text { yrs. } \end{array}$ | $\begin{array}{r} 20-24 \\ \text { yrs. } \end{array}$ | $\begin{array}{r} 25-29 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 30 \text { or } \\ \text { more yrs. } \end{array}$ | Total |
| Average monthly benefit | \$432 | \$484 | \$670 | \$1,023 | \$1,439 | \$1,848 | \$2,664 | \$1,777 |
| Average annual benefit | \$5,185 | \$5,804 | \$8,044 | \$12,271 | \$17,272 | \$22,178 | \$31,972 | \$21,321 |
| Average final average salary | \$50,528 | \$53,243 | \$45,371 | \$53,207 | \$58,790 | \$63,226 | \$69,426 | \$61,398 |
| Number of retired members | 188* | 214 | 1,111 | 1,021 | 1,859 | 1,608 | 3,426 | 9,427** |

* Includes 79 members who did not have service reported.
** Includes 5,148 members who did not have FAS reported.


| 2009 | Years Credited Service |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Service | $\begin{aligned} & 0-4 \\ & \text { vrs } \end{aligned}$ | $\begin{aligned} & 5-9 \\ & \text { yrs. } \\ & \hline \end{aligned}$ | $\begin{array}{r} 10-14 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 15-19 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 20-24 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 25-29 \\ \text { yrs. } \\ \hline \end{array}$ | 30 or more yrs. | Total |
| Average monthly benefit | \$422 | \$477 | \$653 | \$984 | \$1,409 | \$1,817 | \$2,591 | \$1,736 |
| Average annual benefit | \$5,069 | \$5,729 | \$7,838 | \$11,805 | \$16,910 | \$21,804 | \$31,096 | \$20,830 |
| Average final average salary | \$49,132 | \$52,820 | \$43,328 | \$50,592 | \$57,660 | \$61,404 | \$67,107 | \$59,692 |
| Number of retired members | 155* | 179 | 986 | 931 | 1,702 | 1,477 | 3,077 | 8,507** |

** Includes 5,217 members who did not have FAS reported.

| 2008 | Years Credited Service |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Service | $\begin{aligned} & \text { 0-4 } \\ & \text { yrs. } \end{aligned}$ | $\begin{aligned} & 5-9 \\ & \text { yrs. } \\ & \hline \end{aligned}$ | $\begin{array}{r} 10-14 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 15-19 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 20-24 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 25-29 \\ \text { yrs. } \\ \hline \end{array}$ | 30 or more yrs. | Total |
| Average monthly benefit | \$418\$457 | \$636 | \$966 | \$1,381 | \$1,789 | \$2,528 | \$1,674 |  |
| Average annual benefit | \$5,015 | \$5,478 | \$7,633 | \$11,590 | \$16,568 | \$21,470 | \$30,334 | \$20,087 |
| Average final average salary | \$48,040\$53,1 | 161\$42, | 990\$50,213 | \$56,717 | \$60,162 | \$65,739 | \$58,253 |  |
| Number of retired members | 137* | 171 | 929 | 886 | 1,531 | 1,347 | 2,653 | 7,654** |

- Includes 59 members who did not have service reported.
** Includes 5,208 members who did not have FAS reported.


## SCHEDULE OF AVERAGE BENEFIT PAYMENT AMOUNTS

 PENSION PLAN - POLICE OFFICERS| 2017 | Years Credited Service |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Service | $\begin{gathered} \text { 0-4. } \\ \text { yrs. } \end{gathered}$ | $\begin{aligned} & \text { 5-9 } \\ & \text { yrs. } \\ & \hline \end{aligned}$ | $\begin{array}{r} 10-14 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 15-19 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 20-24 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 25-29 \\ \text { yrs. } \\ \hline \end{array}$ | 30 or more yrs. | Total |
| Average monthly benefit | \$979 | \$1,368 | \$1,623 | \$2,230 | \$3,135 | \$4,611 | \$6,184 | \$2,992 |
| Average annual benefit | \$11,744 | \$16,412 | \$19,473 | \$26,759 | \$37,625 | \$55,333 | \$74,205 | \$35,903 |
| Average final average salary | \$52,922 | \$56,688 | \$55,024 | \$66,556 | \$81,206 | \$95,886 | \$108,399 | \$79,145 |
| Number of retired members | 404* | 206 | 437 | 354 | 1,499 | 653 | 233 | 3,786** |

* Includes 263 members who did not have service reported.
** Includes 1,801 members who did not have FAS reported.

| 2016 | Years Credited Service |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Service | $\begin{gathered} \text { 0-4. } \\ \text { yrs. } \end{gathered}$ | $\begin{aligned} & \text { 5-9 } \\ & \text { yrs. } \\ & \hline \end{aligned}$ | $\begin{array}{r} 10-14 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 15-19 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 20-24 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 25-29 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 30 \text { or } \\ \text { more yrs. } \end{array}$ | Total |
| Average monthly benefit | \$966 | \$1,424 | \$6,619 | \$2,253 | \$3,089 | \$4,554 | \$6,144 | \$2,978 |
| Average annual benefit | \$11,828 | \$17,092 | \$19,428 | \$27,032 | \$37,065 | \$54,651 | \$73,724 | \$35,737 |
| Average final average salary | \$52,067 | \$56,071 | \$54,163 | \$65,196 | \$80,290 | \$95,097 | \$107,758 | \$78,292 |
| Number of retired members | 384* | 188 | 418 | 326 | 1,458 | 633 | 232 | 3,629** |
| * Includes 245 members wh <br> ** Includes 1,771 members | not have ser not have F | vice report AS reported |  |  |  |  |  |  |


| 2015 | Years Credited Service |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Service | $\begin{gathered} \text { 0-4. } \\ \text { yrs. } \end{gathered}$ | $\begin{aligned} & 5-9 \\ & \text { yrs. } \\ & \hline \end{aligned}$ | $\begin{array}{r} 10-14 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 15-19 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 20-24 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 25-29 \\ \text { yrs. } \\ \hline \end{array}$ | 30 or more yrs. | Total |
| Average monthly benefit | \$929 | \$1,380 | \$1,607 | \$2,256 | \$3,032 | \$4,501 | \$5,999 | \$2,917 |
| Average annual benefit | \$11,149 | \$16,561 | \$19,287 | \$27,067 | \$36,380 | \$54,010 | \$71,987 | \$35,002 |
| Average final average salary | \$53,397 | \$57,211 | \$53,878 | \$64,646 | \$78,872 | \$94,266 | \$107,053 | \$77,621 |
| Number of retired members | 362* | 188 | 396 | 314 | 1,395 | 599 | 203 | 3,457** |

* Includes 222 members who did not have service reported.
** Includes 1,785 members who did not have FAS reported.

| 2014 | Years Credited Service |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Service | $\begin{aligned} & 0-4 . \\ & \text { yrs. } \end{aligned}$ | $\begin{aligned} & 5-9 \\ & \text { yrs. } \end{aligned}$ | $\begin{array}{r} 10-14 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{gathered} 15-19 \\ \text { yrs. } \\ \hline \end{gathered}$ | $\begin{array}{r} 20-24 \\ \text { yrs. } \end{array}$ | $\begin{array}{r} 25-29 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 30 \text { or } \\ \text { more yrs. } \end{array}$ | Total |
| Average monthly benefit | \$1,003 | \$1,380 | \$1,519 | \$2,111 | \$2,964 | \$4,362 | \$5,623 | \$2,929 |
| Average annual benefit | \$12,039 | \$16,555 | \$18,226 | \$25,335 | \$35,571 | \$52,347 | \$67,472 | \$35,154 |
| Average final average salary | \$42,303 | \$51,636 | \$49,456 | \$60,358 | \$76,729 | \$90,857 | \$99,377 | \$77,381 |
| Number of retired members | 286* | 160 | 355 | 270 | 1,383 | 601 | 227 | 3,282** |
| * Includes 190 members wh ** Includes 1,816 members | not have se d not have | vice report AS reporte |  |  |  |  |  |  |


| 2013 | Years Credited Service |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 0-4. | $\begin{aligned} & 5-9 \\ & \text { yrs. } \end{aligned}$ | $\begin{array}{r} 10-14 \\ \mathrm{yrs} . \end{array}$ | $\begin{gathered} 15-19 \\ \text { yrs. } \\ \hline \end{gathered}$ | $\begin{array}{r} 20-24 \\ \mathrm{yrs} . \end{array}$ | $\begin{array}{r} 25-29 \\ \mathrm{yrs} . \\ \hline \end{array}$ | $\begin{array}{r} 30 \text { or } \\ \text { more yrs. } \end{array}$ | Total |
| Average monthly benefit | \$989 | \$1,402 | \$1,525 | \$2,096 | \$2,937 | \$4,304 | \$5,557 | \$2,905 |
| Average annual benefit | \$11,867 | \$16,827 | \$18,305 | \$25,149 | \$35,240 | \$51,642 | \$66,680 | \$34,859 |
| Average final average salary | \$43,717 | \$51,752 | \$49,166 | \$60,656 | \$76,404 | \$90,096 | \$98,639 | \$77,294 |
| Number of retired members | 273* | 159 | 336 | 271 | 1,319 | 584 | 221 | 3,163** |

* Includes 177 members who did not have service reported.
** Includes 1,825 members who did not have FAS reported.

|  <br> 2012 <br> Service | Years Credited Service |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\begin{aligned} & \text { 0-4. } \\ & \text { yrs. } \end{aligned}$ | $\begin{aligned} & \begin{array}{c} \text { 5-9 } \\ \text { yrs. } \end{array} . \end{aligned}$ | $\begin{array}{r} 10-14 \\ \text { yrs. } \end{array}$ | $\begin{gathered} 15-19 \\ \text { yrs. } \end{gathered}$ | $\begin{array}{r} 20-24 \\ \text { yrs. } \end{array}$ | $\begin{array}{r} 25-29 \\ \text { yrs. } \end{array}$ | $\begin{array}{r} 30 \text { or } \\ \text { more yrs. } \end{array}$ | Total |
| Average monthly benefit | \$986 | \$1,414 | \$1,520 | \$2,101 | \$2,936 | \$4,235 | \$5,469 | \$2,894 |
| Average annual benefit | \$11,835 | \$16,968 | \$18,238 | \$25,218 | \$35,230 | \$50,824 | \$65,631 | \$34,731 |
| Average final average salary | \$43,717 | \$51,792 | \$48,430 | \$59,074 | \$75,343 | \$89,117 | \$98,085 | \$76,294 |
| Number of retired members | 238* | 151 | + 325 | 255 | 1,255 | + 547 | 210 | 2,981 ** |

* Includes 145 members who did not have service reported.
** Includes 1,766 members who did not have FAS reported.

| 2011 |  |  | Years | Credite | Servic |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Service | $\begin{aligned} & 0-4 . \\ & \text { yrs. } \end{aligned}$ | $\begin{aligned} & 5-9 \\ & \text { yrs. } \end{aligned}$ | $\begin{array}{r} 10-14 \\ \text { yrs. } \end{array}$ | $\begin{gathered} 15-19 \\ \text { yrs. } \end{gathered}$ | $\begin{array}{r} 20-24 \\ \text { yrs. } \end{array}$ | $\begin{array}{r} 25-29 \\ \mathrm{yrs} . \end{array}$ | $\begin{array}{r} 30 \text { or } \\ \text { more yrs. } \end{array}$ | Total |
| Average monthly benefit | \$957 | \$1,386 | \$1,482 | \$2,072 | \$2,893 | \$4,082 | \$5,432 | \$2,823 |
| Average annual benefit | \$11,485 | \$16,635 | \$17,788 | \$24,867 | \$34,719 | \$48,981 | \$65,188 | \$33,876 |
| Average final average salary | \$47,377 | \$52,498 | \$46,123 | \$58,423 | \$74,403 | \$87,050 | \$97,076 | \$75,213 |
| Number of retired members | 230* | 149 | 314 | 251 | 1,218 | 523 | 195 | 2,880** |

**Includes 1,794 members who did not have FAS reported.

| 2010 | Years Credited Service |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\begin{aligned} & 0-4 . \\ & \text { yrs. } \end{aligned}$ | $\begin{aligned} & 5-9 \\ & \text { yrs. } \end{aligned}$ | $\begin{array}{r} 10-14 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{gathered} 15-19 \\ \text { yrs. } \end{gathered}$ | $\begin{gathered} 20-24 \\ \mathrm{yrs} . \end{gathered}$ | $\begin{array}{r} 25-29 \\ \mathrm{yrs} . \\ \hline \end{array}$ | $\begin{array}{r} 30 \text { or } \\ \text { more yrs. } \end{array}$ | Total |
| Average monthly benefit | \$942 | \$1,352 | \$1,483 | \$2,034 | \$2,845 | \$3,940 | \$5,114 | \$2,724 |
| Average annual benefit | \$11,310 | \$16,222 | \$17,792 | \$24,413 | \$34,137 | \$47,277 | \$61,371 | \$32,689 |
| Average final average salary | \$44,656 | \$50,016 | \$45,342 | \$57,278 | \$70,960 | \$85,452 | \$93,848 | \$72,439 |
| Number of retired members | 218* | 145 | 305 | 241 | 1,140 | 482 | 171 | 2,702** |


| 2009 | Years Credited Service |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Service | $\begin{gathered} \mathrm{oyr} \\ \text { vrs } \end{gathered}$ | $\underset{\text { vic }}{5-9}$ | 10-14 | 15-19 | $20-24$ | 25-29 | $\begin{aligned} & 30 \text { or } \\ & \text { more yrs. } \end{aligned}$ | Total |
| Average monthly benefit | \$931 | \$1,337 | \$1,453 | \$2,026 | \$2,816 | \$3,768 | \$5,068 | \$2,665 |
| Average annual benefit | \$11,166 | \$16,048 | \$17,438 | \$24,309 | \$33,797 | \$45,213 | \$60,811 | \$31,980 |
| Average final average salary | \$42,229 | \$50,574 | \$44,919 | \$56,748 | \$70,720 | \$82,705 | \$91,617 | \$71,464 |
| Number of retired members | 200* | 139 | 293 | 232 | 1,093 | 455 | 153 | 2,565** |
| * Includes 115 members who did not have service reported. <br> ** Includes 1,808 members who did not have FAS reported. |  |  |  |  |  |  |  |  |
| 2008 |  |  | Years Credited Service |  |  |  | $\begin{array}{r} 30 \text { or } \\ \text { more yrs. } \\ \hline \end{array}$ | Total |
| Service | $\begin{aligned} & 0-4 \\ & \text { yrs. } \end{aligned}$ | $\underset{\text { ve9 }}{5-9}$ | $\begin{gathered} \text { 10-14 } \\ \text { yrs. } \end{gathered}$ | $\begin{array}{r} 15-19 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 20-24 \\ \mathrm{yrs} . \end{array}$ | $\begin{array}{r} 25-29 \\ \mathrm{yrs} . \\ \hline \end{array}$ |  |  |
| Average monthly benefit | \$904\$1,319\$1,447 |  | \$2,012 | \$2,757 | \$3,631 | \$4,802 | \$2,580 | \$30,961 |
| Average annual benefit | \$10,847 | \$15,829 | \$17,362 | \$24,149 | \$33,081 | \$43,574 | \$57,628 |  |
| Average final average salary | \$42,170\$ | 50,113\$45,0 | 63\$57,239 | \$69,092 | \$80,884 | \$87,128 | \$69,835 |  |
| Number of retired members | $\frac{191^{*}}{\text { hot have ser }}$ | 137 | 281 | 221 | 1,044 | 424 | 138 | 2,436** |
| * Includes 106 members wis <br> ** Includes 1,806 members |  | vice reported AS reported. |  |  |  |  |  |  |

SCHEDULE OF AVERAGE BENEFIT PAYMENT AMOUNTS PENSION PLAN - FIREFIGHTERS

| 2017Service | Years Credited Service |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\begin{gathered} \text { 0-4. } \\ \text { yrs. } \end{gathered}$ | $\begin{aligned} & \text { 5-9 } \\ & \text { yrs. } \\ & \hline \end{aligned}$ | $\begin{array}{r} 10-14 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 15-19 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 20-24 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 25-29 \\ \text { yrs. } \\ \hline \end{array}$ | 30 or more yrs. | Total |
| Average monthly benefit | \$1,154 | \$1,407 | \$1,830 | \$2,189 | \$2,788 | \$4,165 | \$6,055 | \$3,253 |
| Average annual benefit | \$13,843 | \$16,879 | \$21,957 | \$26,625 | \$33,456 | \$49,985 | \$72,654 | \$39,033 |
| Average final average salary | \$55,226 | \$59,323 | \$61,155 | \$69,692 | \$79,089 | \$91,311 | \$101,821 | \$85,145 |
| Number of retired members | 150* | 31 | 96 | 129 | 625 | 406 | 202 | 1,639** |

* Includes 131 members who did not have service reported.
** Includes 931 members who did not have FAS reported.

| 2016 |  |  | Years Credited Service |  |  |  | 30 or more yrs. | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Service | $\begin{gathered} \text { 0-4. } \\ \text { yrs. } \end{gathered}$ | $\begin{aligned} & \text { 5-9 } \\ & \text { yrs. } \\ & \hline \end{aligned}$ | $\begin{array}{r} 10-14 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 15-19 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 20-24 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 25-29 \\ \text { yrs. } \\ \hline \end{array}$ |  |  |
| Average monthly benefit | \$1,147 | \$1,353 | \$1,789 | \$2,185 | \$2,765 | \$4,138 | \$5,965 | \$3,213 |
| Average annual benefit | \$13,768 | \$16,230 | \$21,466 | \$26,218 | \$33,174 | \$49,655 | \$71,577 | \$38,553 |
| Average final average salary | \$55,226 | \$57,997 | \$60,126 | \$70,005 | \$78,510 | \$91,235 | \$100,861 | \$84,646 |
| Number of retired members | 143* | 30 | 96 | 125 | 617 | 391 | 193 | 1,595** |


| 2015Service | Years Credited Service |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\begin{gathered} \text { 0-4. } \\ \text { yrs. } \end{gathered}$ | $\begin{aligned} & 5-9 \\ & \text { yrs. } \\ & \hline \end{aligned}$ | $\begin{array}{r} 10-14 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 15-19 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 20-24 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 25-29 \\ \text { yrs. } \\ \hline \end{array}$ | 30 or more yrs. | Total |
| Average monthly benefit | \$1,132 | \$1,417 | \$1,750 | \$2,114 | \$2,735 | \$4,101 | \$5,681 | \$3,130 |
| Average annual benefit | \$13,579 | \$17,007 | \$20,997 | \$25,371 | \$32,821 | \$49,215 | \$68,168 | \$37,557 |
| Average final average salary | \$55,075 | \$59,425 | \$61,768 | \$68,985 | \$77,441 | \$90,785 | \$96,758 | \$83,520 |
| Number of retired members | 139* | 30 | 91 | 119 | 611 | 389 | 172 | 1,551** |

* Includes 120 members who did not have service reported.
** Includes 949 members who did not have FAS reported.

| 2014 | Years Credited Service |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Service | $\begin{aligned} & 0-4 . \\ & \text { yrs. } \end{aligned}$ | $\begin{aligned} & 5-9 \\ & \text { yrs. } \end{aligned}$ | $\begin{array}{r} 10-14 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{gathered} 15-19 \\ \text { yrs. } \\ \hline \end{gathered}$ | $\begin{array}{r} 20-24 \\ \text { yrs. } \end{array}$ | $\begin{array}{r} 25-29 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 30 \text { or } \\ \text { more yrs. } \end{array}$ | Total |
| Average monthly benefit | \$1,068 | \$1,450 | \$1,724 | \$2,004 | \$2,687 | \$3,997 | \$5,494 | \$3,047 |
| Average annual benefit | \$12,812 | \$17,405 | \$20,686 | \$24,051 | \$32,249 | \$47,960 | \$65,932 | \$35,562 |
| Average final average salary | \$45,602 | \$64,928 | \$56,150 | \$65,849 | \$75,732 | \$89,221 | \$93,573 | \$81,886 |
| Number of retired members | 128* | 29 | 87 | 119 | 589 | 383 | 158 | 1,493** |
| * Includes 106 members wh <br> ** Includes 958 members who | not have se not have FAS | vice report reported. |  |  |  |  |  |  |


| 2013 | Years Credited Service |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Service | $\begin{aligned} & 0-4 . \\ & \text { yrs. } \end{aligned}$ | $\begin{aligned} & 5-9 \\ & \text { yrs. } \end{aligned}$ | $\begin{array}{r} 10-14 \\ \text { yrs. } \end{array}$ | $\begin{array}{r} 15-19 \\ \text { yrs. } \end{array}$ | $\begin{array}{r} 20-24 \\ \mathrm{yrs} . \end{array}$ | $\begin{array}{r} 25-29 \\ \mathrm{yrs} . \\ \hline \end{array}$ | $\begin{array}{r} 30 \text { or } \\ \text { more yrs. } \end{array}$ | Total |
| Average monthly benefit | \$1,050 | \$1,513 | \$1,720 | \$2,007 | \$2,685 | \$4,053 | \$5,336 | \$3,050 |
| Average annual benefit | \$12,597 | \$18,154 | \$20,640 | \$24,080 | \$32,216 | \$48,683 | \$64,036 | \$36,595 |
| Average final average salary | \$49,479 | \$64,928 | \$55,062 | \$62,052 | \$75,328 | \$90,016 | \$93,076 | \$81,986 |
| Number of retired members | 120* | 30 | 82 | 116 | 577 | 364 | 158 | 1,447** |
| * Includes 99 members who did not have service reported. |  |  |  |  |  |  |  |  |


| 2012 | Years Credited Service |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Service | 0-4. | $\begin{aligned} & 5-9 \\ & \text { yrs. } \end{aligned}$ | $\begin{array}{r} 10-14 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 15-19 \\ \mathrm{yrs} . \\ \hline \end{array}$ | $\begin{array}{r} 20-24 \\ \mathrm{yrs} . \\ \hline \end{array}$ | $\begin{array}{r} 25-29 \\ \mathrm{yrs} . \\ \hline \end{array}$ | $\begin{array}{r} 30 \text { or } \\ \text { more yrs. } \end{array}$ | Total |
| Average monthly benefit | \$1,062 | \$1,523 | \$1,701 | \$2,072 | \$2,672 | \$3,956 | \$5,192 | \$3,038 |
| Average annual benefit | \$12,740 | \$18,280 | \$20,416 | \$24,865 | \$32,067 | \$47,475 | \$62,306 | \$36,461 |
| Average final average salary | \$50,146 | \$51,114 | \$53,705 | \$64,002 | \$74,611 | \$88,513 | \$92,039 | \$80,981 |
| Number of retired members | 96* | 29 | 78 | 110 | 564 | 343 | 156 | 1,376** |
| * Includes 77 members who <br> ** Includes 931 members who | thave serv not have FAS | ce reporte reported. |  |  |  |  |  |  |


**Includes 942 members who did not have FAS reported.

| 2010 | Years Credited Service |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Service | $\begin{gathered} \text { 0-4. } \\ \text { yrs. } \end{gathered}$ | $\begin{aligned} & \text { 5-9 } \\ & \text { yrs. } \end{aligned}$ | $\begin{array}{r} \text { 10-14 } \\ \text { yrs. } \end{array}$ | $\begin{array}{r} \text { 15-19 } \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 20-24 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 25-29 \\ \text { yrs. } \\ \hline \end{array}$ | 30 or more yrs. | Total |
| Average monthly benefit | \$1,020 | \$1,487 | \$1,607 | \$2,041 | \$2,592 | \$3,770 | \$4,749 | \$2,871 |
| Average annual benefit | \$12,244 | \$17,846 | \$19,283 | \$24,493 | \$31,109 | \$45,240 | \$56,983 | \$34,454 |
| Average final average salary | \$55,668 | \$47,729 | \$50,024 | \$62,405 | \$71,694 | \$86,042 | \$89,392 | \$78,232 |
| Number of retired members | 80* | 28 | 73 | 109 | 530 | 304 | 130 | 1,254** |


| 2009 |  |  | Years Credited Service |  |  |  | $\begin{array}{r} 30 \text { or } \\ \text { more yrs. } \\ \hline \end{array}$ | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Service | $\begin{aligned} & 0-4 \\ & \text { vrs } \end{aligned}$ | $\begin{aligned} & 5-9 \\ & \text { yrs. } \\ & \hline \end{aligned}$ | $\begin{array}{r} 10-14 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 15-19 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 20-24 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 25-29 \\ \text { yrs. } \\ \hline \end{array}$ |  |  |
| Average monthly benefit | \$967 | \$1,439 | \$1,585 | \$1,998 | \$2,537 | \$3,707 | \$4,592 | \$2,794 |
| Average annual benefit | \$11,607 | \$17,274 | \$19,025 | \$23,973 | \$30,440 | \$44,489 | \$55,102 | \$33,533 |
| Average final average salary | \$55,668 | \$46,372 | \$48,616 | \$63,891 | \$70,685 | \$83,078 | \$88,852 | \$76,730 |
| Number of retired members | 78* | 28 | 72 | 107 | 534 | 295 | 123 | 1,237 |


| 2008 | Years Credited Service |  |  |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Service | $\begin{array}{ll} 0-4 & 5-9 \\ \text { yrs. } & \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 10-14 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 15-19 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 20-24 \\ \text { yrs. } \\ \hline \end{array}$ | $\begin{array}{r} 25-29 \\ \mathrm{yrs} . \\ \hline \end{array}$ | 30 or more yrs. |  |
| Average monthly benefit | \$958\$1,438\$1,545 | \$1,958 | \$2,488 | \$3,661 | \$4,526 | \$2,743 |  |
| Average annual benefit | \$11,495 \$17,254 | \$18,541 | \$23,499 | \$29,857 | \$43,934 | \$54,311 | \$32,914 |
| Average final average salary | \$55,668\$42,455\$46,30 | 01\$64,705 | \$69,420 | \$83,187 | \$87,553 | \$76,307 |  |
| Number of retired members | 74* 27 | 70 | 105 | 523 | 287 | 114 | 1,200** |

* Includes 56 members who did not have service reported.
** Includes 966 members who did not have FAS reported.

| SCHEDULES OF AVERAGE BENEFIT PAYMENT AMOUNTS - OPEB PLAN |  |  |  |  |
| :--- | ---: | ---: | ---: | :---: |
|  |  |  |  |  |
| Average Monthly Benefit | Service | 2017 | $0-4$ yrs*** |  |


|  | Service |  | 2016 |
| :--- | ---: | ---: | ---: |
| Average Monthly Benefit | $0-4$ yrs.** | $5-9$ yrs. |  |
| Annual Benefits | $\$ 366$ | $\$ 393$ |  |
| Number of retired members | $\$ 776,997$ | $\$ 749,533$ |  |
| **Includes 44 members who did not have service reported | 177 | 159 |  |


|  |  | 2015 |  |
| :---: | :---: | :---: | :---: |
|  | Service | 0-4 yrs.** | 5-9 yrs. |
| Average Monthly Benefit |  | \$373 | \$392 |
| Annual Benefits |  | \$805,749 | \$789,827 |
| Number of retired members |  | 180 | 168 |
| **Includes 43 members who |  |  |  |


|  |  | 2014 |  |
| :---: | :---: | :---: | :---: |
|  | Service | 0-4 yrs.** | 5-9 yrs. |
| Average Monthly Benefit |  | \$415 | \$424 |
| Annual Benefits |  | \$811,354 | \$804,819 |
| Number of retired members |  | 163 | 158 |
| **Includes 35 members who did not have service reported |  |  |  |
|  | Service | 2013 0-4 yrs.** | 5-9 yrs. |
| Average Monthly Benefit |  | \$433 | \$448 |
| Annual Benefits |  | \$941,225 | \$934,509 |
| Number of retired members |  | 181 | 174 |
| **Includes 37 members who did not have service reported |  |  |  |
|  | Service | $2012 \quad 0-4 \text { yrs.t* }$ | 5-9 yrs. |
| Average Monthly Benefit |  | \$395 | \$446 |
| Annual Benefits |  | \$1,074,690 | \$904,456 |
| Number of retired members |  | 227 | 169 |
| **Includes 94 members who did not have service reported |  |  |  |
|  | Service | 2011 0-4 yrs.** | 5-9 y rs. |
| Average Monthly Benefit |  | \$406 | \$451 |
| Annual Benefits |  | \$1,158,273 | \$941,454 |
| Number of retired members |  | 238 | 174 |
| ${ }^{* *}$ Includes 103 members who did not have service reported |  |  |  |
|  | Service | $2010 \quad \text { 0-4 yrs."* }$ | 5-9 yrs. |
| Average Monthly Benefit |  | \$415 | \$467 |
| Annual Benefits |  | \$1,226,420 | \$964,536 |
| Number of retired members |  | 246 | 172 |
| ${ }^{* *}$ Includes 108 members who did not have service reported |  |  |  |


|  | Service | 2009 0-4 yrs.** | 5-9 yrs. |
| :---: | :---: | :---: | :---: |
| Average Monthly Benefit |  | \$413 | \$478 |
| Annual Benefit |  | \$1,269,340 | \$987,552 |
| Number of retired members |  | 256 | 172 |
| **Includes 116 members who did not have service reported |  |  |  |
|  | Service | 2008 0-4 yrs.** | 5-9 yrs. |
| Average Monthly Benefit |  | \$406 | \$480 |
| Annual Benefit |  | \$1,311,656 | \$985,767 |
| Number of retired members |  | 269 | 171 |
| **Includes 132 members who did not have service reported |  |  |  |


| 10-14 yrs | 15-19 yrs | $20-24$ yrs | $\begin{gathered} 2017 \\ 25-29 \mathrm{yrs} \end{gathered}$ | 30 or more yrs | Total |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{array}{r} \hline \$ 405 \\ \$ 1,264,225 \\ 260 \end{array}$ | $\begin{array}{r} \$ 406 \\ \$ 1,076,033 \\ 221 \end{array}$ | $\begin{array}{r} \hline \$ 407 \\ \$ 16,063,911 \\ 3,289 \end{array}$ | $\begin{array}{r} \hline \$ 420 \\ \$ 11,095,969 \\ 2,204 \end{array}$ | $\begin{array}{r} \hline \$ 420 \\ \$ 18,677,378 \\ 3,703 \end{array}$ | $\begin{array}{r} \hline \$ 413 \\ \$ 49,635,957 \\ 10,005 \end{array}$ |
| 10-14 yrs. | 15-19 yrs. | 20-24 yrs. | $\begin{aligned} & 2016 \\ & 25-29 \text { yrs. } \end{aligned}$ | 30 or more yrs. | Total |
| $\begin{array}{r} \hline \$ 408 \\ \$ 1,302,304 \\ 266 \end{array}$ | $\begin{array}{r} \$ 410 \\ \$ 1,131,240 \\ 230 \end{array}$ | $\begin{array}{r} \hline \$ 411 \\ \$ 16,480,299 \\ 3,345 \end{array}$ | $\begin{array}{r} \hline \$ 423 \\ \$ 11,351,956 \\ 2,237 \end{array}$ | $\begin{array}{r} \hline \$ 430 \\ \$ 19,325,316 \\ 3,746 \end{array}$ | $\begin{array}{r} \$ 419 \\ \$ 51,117,645 \\ 10,160 \end{array}$ |
| 10-14 yrs. | 15-19 yrs. | 20-24 yrs. | $\begin{aligned} & 2015 \\ & 25-29 \mathrm{yrs} . \\ & \hline \end{aligned}$ | 30 or more yrs. | Total |
| $\begin{array}{r} \hline \$ 426 \\ \$ 1,375,276 \\ 269 \end{array}$ | $\begin{array}{r} \$ 416 \\ \$ 1,112,003 \\ 223 \end{array}$ | $\begin{array}{r} \$ 415 \\ \$ 16,906,473 \\ 3,396 \end{array}$ | $\begin{array}{r} \hline \$ 425 \\ \$ 11,528,248 \\ 2,259 \end{array}$ | $\begin{array}{r} \hline \$ 436 \\ \$ 19,732,252 \\ 3,770 \end{array}$ | $\begin{array}{r} \$ 424 \\ \$ 52,249,828 \\ 10,265 \end{array}$ |
| 10-14 yrs. | 15-19 yrs. | 20-24 yrs. | ${ }_{2}^{2014} 29$ yrs. | 30 or more yrs. | Total |
| $\begin{array}{r} \hline \$ 442 \\ \$ 1,426,682 \\ 269 \end{array}$ | $\begin{array}{r} \$ 424 \\ \$ 1,103,825 \\ 217 \end{array}$ | $\begin{array}{r} \hline \$ 427 \\ \$ 17,210,363 \\ 3,360 \end{array}$ | $\begin{array}{r} \$ 434 \\ \$ 11,720,646 \\ 2,252 \end{array}$ | $\begin{array}{r} \hline \$ 451 \\ \$ 20,711,693 \\ 3,824 \end{array}$ | $\begin{array}{r} \hline \$ 438 \\ \$ 53,789,382 \\ 10,243 \end{array}$ |
| 10-14 yrs. | 15-19 yrs. | 20-24 yrs. | $\begin{aligned} & 2013 \\ & 25-29 \text { yrs. } \end{aligned}$ | 30 or more yrs. | Total |
| $\begin{array}{r} \hline \$ 446 \\ \$ 1,488,868 \\ 278 \end{array}$ | $\begin{array}{r} \$ 428 \\ \$ 1,124,533 \\ 219 \end{array}$ | $\begin{array}{r} \hline \$ 434 \\ \$ 17,352,821 \\ 3,332 \end{array}$ | $\begin{array}{r} \$ 440 \\ \$ 11,824,268 \\ 2,241 \end{array}$ | $\begin{array}{r} \$ 467 \\ \$ 21,523,385 \\ 3,839 \end{array}$ | $\begin{array}{r} \$ 448 \\ \$ 55,189,609 \\ 10,264 \end{array}$ |
| 10-14 yrs. | 15-19 yrs. | 20-24 yrs. | $\begin{aligned} & 2012 \\ & 25-29 \mathrm{yrs} . \\ & \hline \end{aligned}$ | 30 or more yrs. | Total |
| $\begin{array}{r} \$ 449 \\ \$ 1,509,858 \\ 280 \end{array}$ | $\begin{array}{r} \$ 438 \\ \$ 1,181,439 \\ 225 \end{array}$ | $\begin{array}{r} \$ 445 \\ \$ 18,133,415 \\ 3,394 \end{array}$ | $\begin{array}{r} \$ 446 \\ \$ 12,107,889 \\ 2,264 \end{array}$ | $\begin{array}{r} \$ 481 \\ \$ 22,532,887 \\ 3,902 \end{array}$ | $\begin{array}{r} \$ 458 \\ \$ 57,444,634 \\ 10,461 \end{array}$ |
| 10-14 yrs. | 15-19 yrs. | 20-24 yrs. | $\begin{aligned} & 2011 \\ & 25-29 \mathrm{yrs} . \end{aligned}$ | 30 or more yrs. | Total |
| $\begin{array}{r} \$ 458 \\ \$ 1,555,067 \\ 283 \end{array}$ | $\begin{array}{r} \$ 445 \\ \$ 1,221,548 \\ 229 \end{array}$ | $\begin{array}{r} \$ 457 \\ \$ 18,843,776 \\ 3,434 \end{array}$ | $\begin{array}{r} \$ 456 \\ \$ 12,433,418 \\ 2,273 \end{array}$ | $\begin{array}{r} \$ 497 \\ \$ 23,543,318 \\ 3,946 \end{array}$ | $\begin{array}{r} \$ 470 \\ \$ 59,696,854 \\ 10,577 \end{array}$ |
| 10-14 yrs. | 15-19 yrs. | 20-24 yrs. | $\begin{aligned} & 2010 \\ & 25-29 \text { yrs. } \end{aligned}$ | 30 or more yrs. | Total |
| $\begin{array}{r} \$ 464 \\ \$ 1,607,489 \\ 289 \end{array}$ | $\begin{array}{r} \$ 450 \\ \$ 1,229,834 \\ 228 \end{array}$ | $\begin{array}{r} \$ 463 \\ \$ 18,996,737 \\ 3,416 \end{array}$ | $\begin{array}{r} \$ 461 \\ \$ 12,510,895 \\ 2,264 \end{array}$ | $\begin{array}{r} \$ 503 \\ \$ 24,025,062 \\ 3,977 \end{array}$ | $\begin{array}{r} \$ 476 \\ \$ 60,560,973 \\ 10,592 \end{array}$ |
| 10-14 yrs. | 15-19 yrs. | 20-24 yrs. | $\begin{aligned} & 2009 \\ & 25-29 \mathrm{yrs} . \end{aligned}$ | 30 or more yrs. | Total |
| $\begin{array}{r} \$ 469 \\ \$ 1,652,986 \\ 294 \end{array}$ | $\begin{array}{r} \$ 456 \\ \$ 1,257,711 \\ 230 \end{array}$ | $\begin{array}{r} \$ 464 \\ \$ 18,526,187 \\ 3,324 \end{array}$ | $\begin{array}{r} \$ 459 \\ \$ 12,131,928 \\ 2,202 \end{array}$ | $\begin{array}{r} \$ 499 \\ \$ 22,354,408 \\ 3,731 \end{array}$ | $\begin{array}{r} \$ 475 \\ \$ 58,180,112 \\ 10,209 \end{array}$ |
| 10-14 yrs. | 15-19 yrs. | 20-24 yrs. | $\begin{aligned} & 2008 \\ & 25-29 \text { yrs. } \end{aligned}$ | 30 or more yrs. | Total |
| $\begin{array}{r} \$ 473 \\ \$ 1,653,381 \\ 291 \end{array}$ | $\begin{array}{r} \$ 458 \\ \$ 1,236,512 \\ 225 \end{array}$ | $\begin{array}{r} \$ 463 \\ \$ 17,462,097 \\ 3,145 \end{array}$ | $\begin{array}{r} \$ 459 \\ \$ 11,340,174 \\ 2,058 \end{array}$ | $\begin{array}{r} \$ 491 \\ \$ 20,168,567 \\ 3,425 \end{array}$ | $\begin{array}{r} \$ 471 \\ \$ 54,158,154 \\ 9,584 \end{array}$ |

## Principal

PRINCIPAL PARTICIPATING EMPLOYERS - PENSION PLAN CURRENT YEAR AND NINE YEARS AGO

|  | As Of June 30, 2017 |  |  | As Of June 30, 2008 |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | \# of Covered |  | Percentage of Total | \# of Covered |  | Percentage of Total |
| Participating Government | Employees | Rank | Pension Plan | Employees | Rank | Pension Plan |
| State of New Hampshire | 10,776 | 1 | 22.50\% | 12,245 | 1 | 24.28\% |
| SAU 42 (Nashua School District) | 1,281 | 2 | 2.68\% | 1,341 | 3 | 2.66\% |
| Manchester School District | 1,252 | 3 | 2.61\% | 1,428 | 2 | 2.83\% |
| Timberlane School District | 652 | 4 | 1.36\% | 660 | 4 | 1.31\% |
| City of Dover | 633 | 5 | 1.32\% | - | - | - |
| City of Nashua | 618 | 6 | 1.29\% | 587 | 9 | 1.16\% |
| Merrimack School District | 608 | 7 | 1.27\% | 654 | 5 | 1.30\% |
| Concord School District | 577 | 8 | 1.20\% | 607 | 6 | 1.20\% |
| SAU 54 (Rochester School District) | 575 | 9 | 1.20\% | 588 | 8 | 1.17\% |
| Merrimack County | 563 | 10 | 1.18\% | 583 | 10 | 1.16\% |
| All Other* | 30,351 |  | 63.39\% | 31,727 |  | 62.93\% |
| Total (471 Governments) | 47,886 |  | 100.00\% | 50,420 |  | 100.00\% |
| *As of June 30, 2017, "All Other" consisted of: |  |  |  |  |  |  |
| Type |  |  |  | Number |  | Employees |
| City Governments |  |  |  | 11 |  | 2,392 |
| Town Governments \& Related Entities |  |  |  | 244 |  | 5,571 |
| County Governments \& Related Entities |  |  |  | 11 |  | 2,666 |
| School Districts \& School Administrative Units |  |  |  | 195 |  | 19,722 |
| Total |  |  |  | 461 |  | 30,351 |


|  | As Of June 30, 2017 |  |  | As Of June 30, 2008 |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | \# of Covered |  | Percentage of Total | \# of Covered |  | Percentage of Total |
| Participating Government | Employees | Rank | OPEB Plan | Employees | Rank | OPEB Plan |
| State of New Hampshire | 2,511 | 1 | 25.10\% | 2,970 | 1 | 30.99\% |
| Manchester School District | 486 | 2 | 4.86\% | 467 | 2 | 4.87\% |
| SAU 42 (Nashua School District) | 406 | 3 | 4.06\% | 322 | 3 | 3.36\% |
| City of Nashua | 300 | 4 | 3.00\% | 262 | 5 | 2.73\% |
| City of Manchester | 299 | 5 | 2.99\% | 315 | 4 | 3.29\% |
| Concord School District | 211 | 6 | 2.11\% | 209 | 6 | 2.18\% |
| City of Concord | 189 | 7 | 1.89\% | 190 | 7 | 1.98\% |
| Keene School District | 182 | 8 | 1.82\% | 170 | 8 | 1.77\% |
| Portsmouth School District | 148 | 9 | 1.48\% | 157 | 9 | 1.64\% |
| Town of Salem | 130 | 10 | 1.30\% | 117 | 10 | 1.22\% |
| All Other* | 5,143 |  | 51.39\% | 4,406 |  | 45.97\% |
| Total (145 Governments) | 10,005 |  | 100.00\% | 9,585 |  | 100.00\% |
| *As of June 30, 2017, "All Other" consisted of: |  |  |  |  |  |  |
| Type |  |  |  | Number |  | Employees |
| City Governments |  |  |  | 13 |  | 597 |
| Town Governments \& Related Entities |  |  |  | 132 |  | 863 |
| County Governments \& Related Entities |  |  |  | 12 |  | 302 |
| School Districts \& School Administrative Units |  |  |  | 191 |  | 3,381 |
| Total |  |  |  | 348 |  | 5,143 |

A full list of participating employers as of June 30, 2017 begins on page 117.

| STATE GOVERNMENT |
| :---: |
| State of New Hampshire E, P, F |
| Community College System of New Hampshire E |
| Community Development Finance Authority E |
| Land \& Community Heritage Investment Program E |
| New Hampshire Retirement System E |
| Pease Development Authority E |
| CITIES AND TOWNS (AND RELATED ENTITIES) |
| Albany E |
| Alexandria E, P |
| Allenstown E, P, F |
| Alstead P |
| Alton E, P |
| Amherst P, F |
| Andover P |
| Androscoggin Valley Regional Refuse Disposal Dist. E |
| Antrim E, P |
| Ashland E, P |
| Ashland Electric Department E |
| Atkinson E, P |
| Auburn E, P, F |
| Baker Free Library E |
| Barnstead E, P, F |
| Barrington E, P, F |
| Bartlett P, F |
| BCEP Solid Waste District E |
| Bedford E, P, F |
| Belmont E, P, F |
| Bennington $\mathrm{E}, \mathrm{P}$ |
| Berlin E, P, F |
| Berlin Housing Authority E |
| Berlin Water Works E |
| Bethlehem E, P, F |
| Boscawen E, P |
| Bow E, P, F |
| Bradford P |
| Brentwood E, P, F |

Bristol E, P, F
Brookline E, P, F
Brookline Public Library E
Campton E, P
Campton-Thornton Fire
Department E, F
Canaan E, P
Candia P
Canterbury E, P
Carroll E, P, F
Center Conway Fire Precinct F
Center Harbor P
Central Hooksett Water Precinct E
Charlestown E, P
Chester E, P, F
Chesterfield $E, P$
Chichester E, P
Claremont E, P, F
Clarksville E
Colebrook E, P
Concord E, P, F
Concord Regional Solid Waste Resource Recovery Facility E
Conway E, P
Conway Village Fire District E, F
Cook Memorial Library E
Cornish E
Danville P
Deerfield E, P
Deering $P$
Derry E, P, F
Derry Housing Authority E
Dorchester E
Dover E, T, P, F
Dover Housing Authority E
Dublin E, P
Dunbarton E, P
Durham E, P, F
East Kingston E, P
Effingham $P$
Eidelweiss Village District E
Enfield E, P

Epping E, P, F
Epsom E, P, F
Exeter E, P, F
Farmington $P, F$
Fitzwilliam E, P
Francestown E, P
Franconia $P$
Franklin E, P, F
Freedom P
Fremont $P$
Gilford E, P, F
Gilmanton E, P, F
Goffstown E, P, F
Goffstown Village Water Precinct E
Gorham E, P, F
Goshen E
Grafton E, P
Grantham E, P
Greenfield E, P
Greenland E, P
Greenville E, P
Groton E, P
Hampstead E, P, F
Hampton E, P, F
Hampton Falls E, P, F
Hancock P
Hanover E, P, F
Harrisville $P$
Haverhill E, P
Hebron E, P
Henniker E, P, F
Hillsborough P, F
Hinsdale E, P
Holderness E, P
Hollis E, P, F
Hooksett E, P, F
Hooksett Public Library E
Hooksett Sewer Commission E
Hooksett Village Water Precinct E
Hopkinton E, P, F
Hudson E, P, F

| Jackson E, P, F | Monroe E |
| :---: | :---: |
| Jaffrey E, P, F | Mont Vernon E, P |
| Jefferson E | Moultonborough E, P, F |
| Keene E, P, F | Nashua E, P, F |
| Kensington $P$ | Nashua Airport Authority E |
| Kingston E, F, P | Nashua Housing Authority E |
| Laconia E, P, F | Nelson E |
| Laconia Housing \& Redevelopment E | New Boston P |
| Laconia Water Works E | New Castle E, P, F |
| Lakes Region Mutual Fire Aid E, F | New Durham E, P |
| Lakes Region Planning Commission E | New England Interstate Water <br> Pollution Control Commission E |
| Lancaster E, P, F |  |
| Langdon P | New Hampton E, P |
| Lebanon E, P, F | New Ipswich E, P |
| Lee E, P, F | New London E, P, F |
| Lempster E | New London-Springfield Water Precinct E |
| Lincoln E, P | Newbury P |
| Lisbon P | Newfields E, P |
| Litchfield E, P, F | Newington E, P, F |
| Littleton E, P, F | Newmarket E, P, F |
| Littleton Public Library E | Newport E, P, F |
| Littleton Water \& Light Department E | Newton E, P |
| Londonderry E, P, F | New Hampshire Municipal |
| Loudon E, P, F | Bond Bank E |
| Lyme E, P | North Conway Water Precinct/ Fire Department E, F |
| Lyndeborough P | North Hampton E, P, F |
| Madison E, P | Northfield E, P |
| Manchester P, F | Northumberland E |
| Marlborough E, P | Northwood E, P, F |
| Marlow E | No |
| Mason P | Orford |
| Maxfield Public Library E |  |
| Meredith E, P, F | Pelham E, P F |
| Meriden Village Water District E |  |
| Merrimack E, P, F | Pembroke |
| Merrimack Village District E | Precinct E |
| Middleton P | Peterborough E, P, F |
| Milford E, P, F | Piermont P |
| Milford Area Communication Center E | Pittsburg E, P |
| Milton E, F, P | Pittsfield E, P, F |
| Miton E, F, P | Plainfield E, P |

Plaistow E, P, F
Plaistow Public Library E
Plymouth E, P, F
Plymouth Village Water \& Sewer E
Portsmouth E, P, F
Portsmouth Housing Authority E
Raymond E, P, F
Rindge E, P, F
Rochester E, P, F
Rockingham Planning Commission E
Rollinsford E, P
Rumney E, P
Rye E, P, F
Rye Water District E
Salem E, P, F
Salem Housing Authority E
Salisbury E
Sanbornton E, P, F
Sanbornton Public Library E
Sandown E, P, F
Sandown Public Library E
Sandwich P
Seabrook P, F
Shelburne E
Somersworth E, P, F
Somersworth Housing Authority E
South Hampton P
Southern NH Planning Commission E
Springfield E, P
Stark E
Stewartstown E
Strafford P, F
Stratford E
Stratham E, P
Sugar Hill E, P
Sunapee E, P
Sutton $P$
Swanzey P, F
SWNH District Fire Mutual Aid E, F
Tamworth E, P, F
Thornton E, P

| Thornton Public Library E |
| :---: |
| Tilton E, P |
| Tilton/Northfield Fire District E, F |
| Troy E, P |
| Troy Water \& Sewer E |
| Tuftonboro E, P, F |
| Unity E |
| Village District of Eastman E |
| Wakefield E, P, F |
| Walpole E, P |
| Warner E, P |
| Warner Village Water District E |
| Warren P |
| Washington E, P |
| Waterville Estates Village District E |
| Waterville Valley E, P, F |
| Weare E, P |
| Webster E, P |
| Weeks Public Library E |
| Westmoreland E |
| Whitefield E, P, F |
| Wilmot E, P |
| Wilton P |
| Winchester E, P |
| Windham E, P, F |
| Wolfeboro E, P, F |
| Woodstock E, P |
| Woodsville Fire District E |
| Woodsville Water \& Light Department E |
| COUNTY GOVERNMENTS (AND RELATED ENTITIES) |
| Belknap County E, P |
| Belknap County Conservation District E |
| Carroll County E, P |
| Cheshire County E, P |
| Coos County E, P |
| Coos County Nursing Home E |
| Grafton County E, P |
| Hillsborough County E, P |

Thornton Public Library E
Tilton E, P
Tilton/Northfield Fire District E, F
Troy E, P
Troy Water \& Sewer E
Tuftonboro E, P, F
Unity E
Village District of Eastman E
Wakefield E, P, F
Walpole E, P
Warner E, P
Warner Village Water District E
Warren P
Washington E, P
Waterville Estates Village District E
Waterville Valley E, P, F
Weare E, P
Webster E, P
Weeks Public Library E
Westmoreland E
Whitefield E, P, F
Wilmot E, P
Wilton P
Winchester E, P
Windham E, P, F
Wolfeboro E, P, F
Woodstock E, P
Woodsville Fire District E
Woodsville Water \& Light
Department E
COUNTY GOVERNMENTS
Belknap County E, P
Belknap County Conservation
District E
Carroll County E, P
Cheshire County E, P
Coos County E, P
Coos County Nursing Home E
Hillsborough County E, P

Merrimack County E, P
Rockingham County E, P
Strafford County E, P
Sullivan County E, P

## SCHOOL DISTRICTS

Allenstown School District T
Alton School District E, T
Amherst School District E, T
Andover School District E, T
Ashland School District E, T
Auburn School District E, T
Barnstead School District E, T
Barrington School District E, T
Bartlett School District E, T
Bath School District E, T
Bedford School District E, T
Bethlehem School District E, T
Bow School District E, T
Brentwood School District E, T
Brookline School District E, T
Campton School District E, T
Candia School District E, T
Chester School District E, T
Chesterfield School District T
Chichester School District E, T
Claremont School District E, T
Cocheco Arts \& Technology
Academy T
Colebrook School District T
Concord School District E, T
Contoocook Valley Regional
School District E, T
Conway School District E, T
Cornish School District E, T
Croydon School District T
Deerfield School District T
Dresden School District E, T
Dunbarton School District T
East Kingston School District E, T
Epping School District E, T
Epsom School District T

Errol School District T
Exeter School District E, T
Exeter Regional Co-Op School District E, T

Fall Mountain Regional School District E, T
Farmington School District E, T Franklin School District E, T

Freedom School District E, T
Fremont School District E, T
Gilford School District E, T
Gilmanton School District E, T
Goffstown School District E, T
Governor Wentworth Regional School District E, T
Grantham School District E, T
Great Bay eLearning Charter School T

Greenland School District E, T
GRS Cooperative School District E, T
Hampstead School District E, T
Hampton Falls School District E, T

Hampton School District E, T
Hanover School District E, T
Harrisville School District E, T
Haverhill Coop School
District E, T
Henniker School District E, T
Hill School District E, T
Hillsboro-Deering School District E, T
Hinsdale School District E, T
Holderness School District E, T
Hollis School District E, T
Hollis/Brookline Coop School District E, T
Hooksett School District E, T
Hopkinton School District E, T
Hudson School District E, T
Inter-Lakes School District E, T
Jackson School District E, T
Jaffrey-Rindge Coop School District E, T

| John Stark Regional School | Newington School District E, T | Strafford School District E, T |
| :---: | :---: | :---: |
|  | Newmarket School District E, T | Stratford School District E, T |
| Kearsarge Regional Cooperative School District E, T | Newport School District E, T | Stratham School District E, T |
| Keene School District E, T | Next Charter School T | Sunapee School District E, T |
| Kensington School District E, T | North Country Charter Academy T | Tamworth School District E, T |
| Laconia School District E, T | North Country Education Service E, T | Thornton School District E, T |
| Lafayette Regional Cooperative School District E, T | North Hampton School District E, T Northumberland School District E, T | Timberlane Regional School District E, T |
| Landaff School District T | Northwood School District E, T | Unity School District E, T |
| Lebanon School District E, T | Nottingham School District E, T | Virtual Learning Academy Charter School T |
| Lempster School District E, T | Oyster River Coop School District E, T | Wakefield School District E, T |
| Lincoln Woodstock Coop School District E, T | Pelham School District E, T | Warren School District E, T |
| Lisbon Regional School District E, T | Pembroke School District E, T | Washington School District E, T |
| Litchfield School District E, T | Pemi-Baker Regional School District E, T | Waterville Valley School District E, T |
| Littleton School District E, T | Piermont School District E, T | Weare School District T |
| Londonderry School District E, T | Pittsburg School District E, T | Wentworth School District E, T |
| Lyme School District E, T | Pittsfield School District E, T | Westmoreland School District E, T |
| Madison School District E, T | Plainfield School District E, T | White Mountains Regional School District E, T |
| Manchester School District E, T | Plymouth School District E, T | Wilton-Lyndeborough |
| Marlborough School District E, T | Portsmouth School District E, T | School District E, T |
| Marlow School District E, T | Portsmouth-Josie F. Prescott E | Winchester School District E, T |
| Mascenic Regional School District E, T | Profile Coop School District E, T | Windham School District E, T |
| Mascoma Valley School District E, T | Propsect Mountain High School E, T | Winnacunnet Coop School District $\mathrm{E}, \mathrm{T}$ |
| Mason School District E, T | Raymond School District E, T | Winnisquam Regional School |
| Merrimack School District E, T | Rivendell Interstate School District T | District E, T |
| Merrimack Valley School District E, T | Rollinsford School District E, T | SCHOOL ADMINISTRATIVE |
| Middleton School District E, T | Rumney School District E, T | UNITS |
| Milan School District E, T | Rye School District E, T | SAU 2 E |
| Milford School District E, T | Salem School District E, T | SAU $3 \mathrm{E}, \mathrm{T}$ |
| Milton School District E, T | Sanborn Regional School District E, T | SAU 6 E |
| Monadnock Regional School District E, T | Seabrook School District E, T | SAU $7 \mathrm{E}, \mathrm{T}$ SAU $9 \mathrm{E}, \mathrm{T}$ |
| Monroe School District E, T | Seacoast Charter School T | SAU 10 E, T |
| Mont Vernon School District E, T | Shaker Regional School District E, T | SAU 13 E, T |
| Moultonborough School District E, T | Somersworth School District E, T | SAU 15 E |
| Nelson School District T | Souhegan Cooperative School District E, T | SAU $16 \mathrm{E}, \mathrm{T}$ |
| New Boston School District T | South Hampton School District E, T | SAU 18 E, T |
| New Castle School District E, T | Stark School District E, T | SAU 19 E , T |
| Newfields School District E, T | Stewartstown School District T | SAU 20 E |
| Newfound Area School District E, T | Stoddard School District E, T | SAU 21 E |

SAU 23 E, T
SAU 24 E, T
SAU 29 E, T
SAU 34 E
SAU 35 E, T
SAU 39 E
SAU 41 E
SAU 42 E, T
SAU 44 E , T
SAU 46 E
SAU 48 E, T
SAU $50 \mathrm{E}, \mathrm{T}$
SAU 53 E, T
SAU $54 \mathrm{E}, \mathrm{T}$
SAU 55 E
SAU 56 E, T
SAU 58 E
SAU 64 E, T
SAU 67 E, T
SAU 70 E, T
SAU 71 E, T

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[^0]:    ¹Ratings were derived primarily from Standard \& Poor's (S\&P). In instances where S\&P did not rate a security, the Moody's rating was used.
    ${ }^{2}$ Government and Agency Bonds exclude U.S. government securities and securities explicitly guaranteed by the U.S. government $(\$ 286,313)$ because these securities are not considered to have credit risk.
    ${ }^{3}$ Average credit quality rating for the commingled funds was provided by GAM and Manulife respectively.

[^1]:    *NHRS also invests in commingled funds where foreign currency risk information is not available. As a result, totals for equity shown on this schedule will not match the total non-U.S. equity shown on the Combining Statements of Fiduciary Net Position.

[^2]:    *Includes contributions made by both State and local employers
    ${ }^{* *}$ Includes voluntary member contributions of \$4.5 million in FY 2017 and \$4.6 million in FY 2016.

[^3]:    Schedule is intended to show information for 10 years. Additional years will be added as they become available. See accompanying notes to the required

[^4]:    Commission detail is not included in the schedule above for the commingled funds in which NHRS invests.

[^5]:    *Based on forecast valuations.

