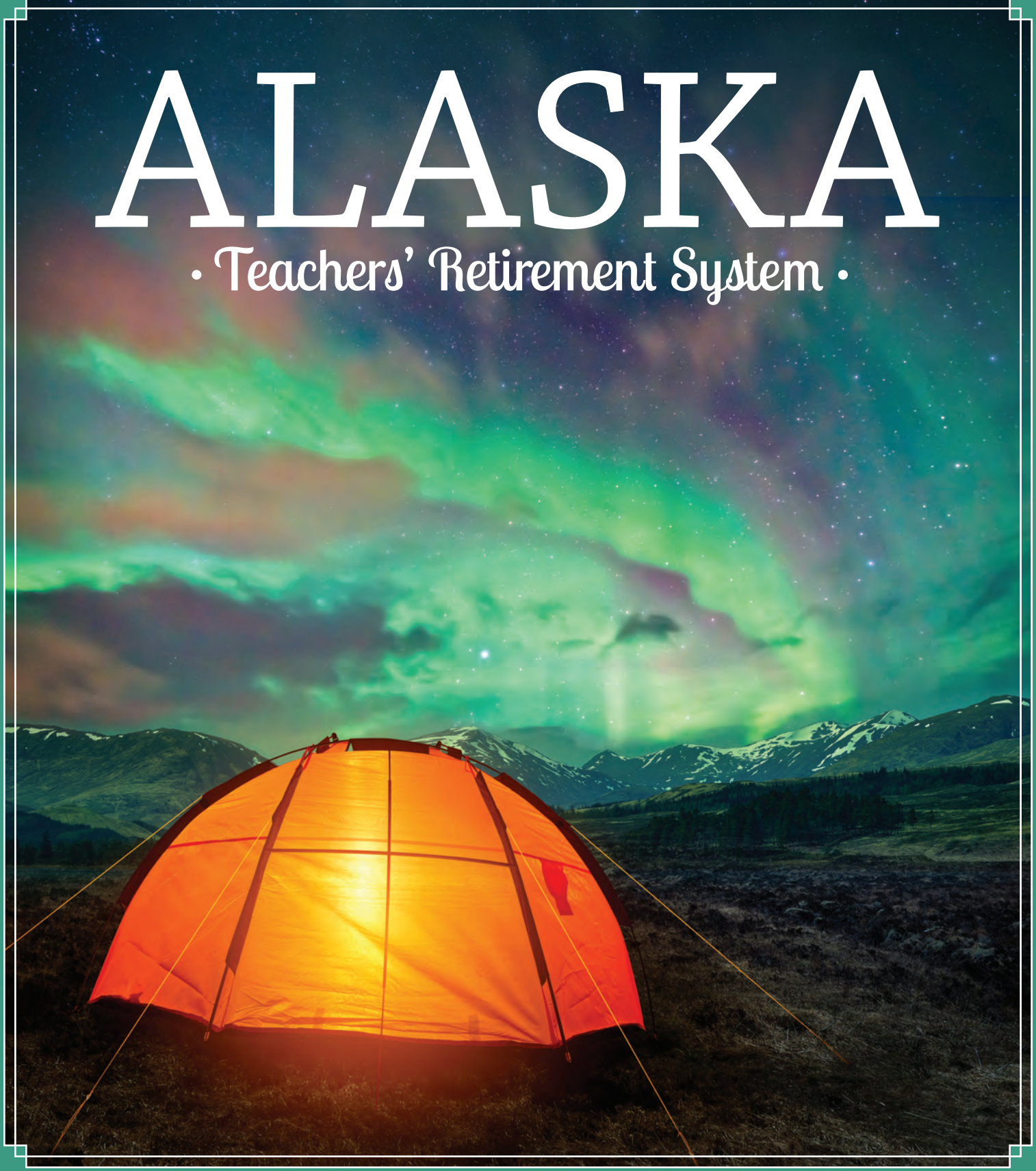
ALASKA

• Teachers' Retirement System •



A component unit of the State of Alaska

Comprehensive Annual Financial Report

Fiscal Year Ended June 30, 2017

Bill Walker, Governor

Teachers' Retirement System

COMPREHENSIVE ANNUAL FINANCIAL REPORT

A Component Unit of the State of Alaska

For the Fiscal Year Ended June 30, 2017

Bill Walker, Governor

Prepared by

Department of Administration
Division of Retirement and Benefits
P.O. Box 110203
Juneau, AK 99811-0203

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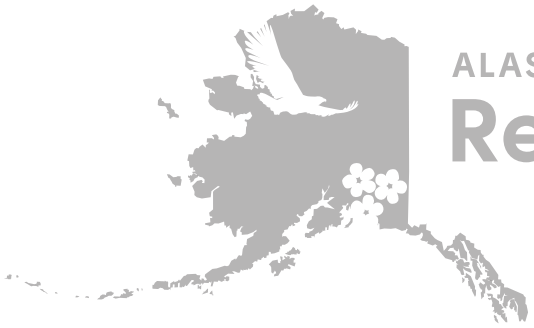

ALASKA DIVISION OF

Retirement and Benefits

The Alaska Department of Administration complies with Title II of the 1990 Americans with Disabilities Act (ADA). This publication is available in alternative communication formats upon request. To make necessary arrangements, contact the ADA Coordinator for the Division of Retirement and Benefits, at (907) 465-4460 or contact the TDD for the hearing impaired at (907) 465-2805.

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INTRODUCTORY SECTION

ALASKA DIVISION OF

Retirement and Benefits

THE STATE of ALASKA
GOVERNOR BILL WALKER

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DIVISION OF RETIREMENT AND BENEFITS
6th Floor State Office Building
333 Willoughby Avenue
P.O. Box 110203
Juneau, AK 99811-0203
FAX: (907) 465-3086
Phone: (907) 465-4460
Toll-Free: (800) 821-2251

LETTER OF TRANSMITTAL

December 15, 2017

The Honorable Bill Walker, Governor
Members of the Alaska State Legislature
Alaska Retirement Management Board
Employers and Plan Members

We are pleased to present the Comprehensive Annual Financial Report (CAFR) of the Teachers' Retirement System (TRS) (System) for the fiscal year ended June 30, 2017. The CAFR is intended to fulfill the legal requirements of Alaska Statute (AS) 14.25.004(a)(8).

The CAFR provides comprehensive information on the financial operations of the System for the fiscal year. Responsibility for the accuracy, completeness and fairness of the information presented rests with the management of the System. To the best of our knowledge and belief, the enclosed information is accurate in all material respects and is reported in a manner designed to fairly present the financial position and results of operations of the System for the year ended June 30, 2017. All disclosures necessary to enable the reader to gain an understanding of the System's activities have been included.

KPMG LLP, Certified Public Accountants, has issued an unmodified opinion on the System's basic financial statements for the year ended June 30, 2017. The independent auditor's report is located at the beginning of the Financial Section of this report.

The management's discussion and analysis (MD&A) is also located in the Financial Section of this report. The MD&A provides an analytical overview of the financial statements. This letter of transmittal is designed to complement the MD&A and should be read in conjunction with it.

Introductory Section

The CAFR is divided into five sections:

- **Introductory Section**, which contains the letter of transmittal, the organizational chart of the Division, and a list of the members serving on the Alaska Retirement Management Board (Board);
- **Financial Section**, which contains the Independent Auditor's Report, MD&A, basic financial statements, required supplementary information, and additional information;
- **Investment Section**, which contains a report prepared by the investment consultant, a report on investment activity, investment results, and various investment schedules;
- **Actuarial Section**, which contains the Actuarial Certification letter and the results of the most current annual actuarial valuation; and
- **Statistical Section**, which includes additional information related to financial trends, demographic and economic information, and operating information.

Profile of the System

The System was established in 1955 to provide pension benefits to teachers and other eligible participants. Post-employment health care benefits were added July 1, 1975. Senate Bill 141, signed into law on July 27, 2005, closed the Defined Benefit (DB) Plan effective July 1, 2006, to new members and created a Defined Contribution Retirement (DCR) Plan for members first hired on or after July 1, 2006. Beginning in fiscal year 2007, the System consists of: (1) the DB Plan and (2) the DCR Plan. This report includes both plans. The DB Plan includes the pension plan and the Alaska Retiree Health Care Trust (Tiers I and II). The DCR Plan includes the defined contribution retirement trust, occupational death and disability plan, retiree major medical plan, and the health reimbursement arrangement plan (Tier III).

Reporting Entity

The System is considered a component unit of the State of Alaska (State) for financial reporting purposes. Due to the closeness of the System's relationship to the State, it is included in the State CAFR as a fiduciary fund.

The Commissioner of the Department of Administration, appointed by the Governor, is responsible for administering the System. In order to meet the statutory requirements of administering the System, the Commissioner appoints the Plan Administrator of the Division of Retirement and Benefits (Division). The Plan Administrator is responsible for the daily operations of the System.

The Board, constituted effective October 1, 2005, replaced the Teachers' Retirement Board (effective July 1, 2005) and the Alaska State Pension Investment Board (effective October 1, 2005).

The Board is responsible for:

- adopting investment policies and developing investment objectives;
- providing a range of investment options and establishing the rules by which participants can direct their investments among those options, when applicable;
- establishing crediting rates for members' individual contribution accounts, when applicable;
- assisting in prescribing policies for the proper operation of the System;
- coordinating with the System Administrator to have actuarial valuations performed;
- reviewing actuarial assumptions and conducting experience analyses;
- contracting for an independent audit of actuarial valuations and external performance calculations; and
- reporting the financial condition of the Systems to the Governor, Legislature, and individual employers participating in the System.

Major Initiatives / Changes

The System continues to make progress on several on-going projects. Most of these efforts are focused on improving customer service, technology, methods for employers to submit information, methods for members to obtain information, and continued compliance with accounting requirements of the Governmental Accounting Standards Board (GASB) and the Financial Accounting Standards Board (FASB), as applicable.

The System continues to assess and retool its communication efforts, which include printed handbooks, newsletters, and website content. This year, the System has developed new employee videos for employers to use and make the plan information easy to access by members. The System strives to ensure that all communication material is clear, accurate, and user-friendly.

The System strives to provide the highest degree of customer service to all members. The Division continues to enhance and develop the central Member Services Section with the goals of improving phone service, provide faster processing of all customer requests, improving member education services.

The System continues to offer a broad array of fairs and seminars directed toward both active members and employers, with the goal to assist employers with successful marketing of the plans, educating members about all benefits available from early career through to retirement, encouraging healthy living, and how to best use the health plan.

Funding Requirements

The System's consulting actuary, Conduent Human Resource Services, presented the results of the June 30, 2016, actuarial valuation report to the Plan Administrator, Division, and the Board. The assumptions and benefits are explained in the Actuarial Section of this report.

Based on the most recent valuation report dated June 30, 2016, the System's DB Plan has a funding ratio (actuarial value of DB Plan assets divided by actuarial liabilities for pension and postemployment healthcare benefits) of 82.8%. The DB Plan's unfunded actuarial accrued liability (actuarial liability minus actuarial value of DB plan assets) totals approximately $1.7 billion. The unfunded liability continues to be addressed at all levels of the State. The Governor's budget proposes to provide funding to System's employers in order to maintain an appropriate level of employer contributions while also paying the actuarially determined contribution rate adopted by the Board.

Investments

On June 30, 2017, the DB Plan's investment portfolio was valued at $7.9 billion and earned a 13.36% return for the fiscal year ended June 30, 2017. The DCR Plan's investment portfolio was valued at $486.9 million for the fiscal year ended June 30, 2017. Over the past five years ending June 30, 2017, the DB Plan's investments earned a 9.27% return. The Board has statutory oversight of the System's investments and the Department of Revenue, Treasury Division, provides staff for the Board. Actual investing is performed by investment officers in the Treasury Division or by contracted external investment managers. The Board reviews and updates investment policies and strategies and is responsible for safeguarding invested assets.

Accounting System

This CAFR has been prepared to conform to the principles of accounting and reporting established by the GASB. Specific accounting treatments are detailed in the Notes to Financial Statements found in the Financial Section of this report.

Internal Controls

Division management is responsible for establishing and maintaining a system of internal controls to protect System assets from loss, theft, or misuse and to ensure adequate accounting data is compiled for the preparation of financial statements in conformity with generally accepted accounting principles. The cost of internal control should not exceed anticipated benefits; the objective is to provide reasonable, rather than absolute, assurance that the financial statements are free of any material misstatements.

Awards

The Government Finance Officers Association of the United States and Canada (GFOA) awarded a Certificate of Achievement for Excellence in Financial Reporting to the System for its CAFR for the fiscal year ended June 30, 2016. The Certificate of Achievement is a prestigious national award that recognizes conformance with the highest standards of preparation of state and local government financial reports.

In order to be awarded a Certificate of Achievement, a government entity must publish an easily readable and efficiently organized CAFR. This report must satisfy both U.S. generally accepted accounting principles and applicable legal requirements.

A Certificate of Achievement is valid for a period of one year. The Division is confident our current CAFR continues to meet the Certificate of Achievement Program's requirements and are submitting it to the GFOA for consideration.

Additionally, the Public Pension Coordinating Council (PPCC) awarded the Public Pension Standards Award for Funding and Administration certificate to the Division for the fiscal year ended June 30, 2017.

The Public Pension Standards Award for Funding and Administration certificate is valid for a period of one year. The Division is confident the System will continue to meet the standards award requirements and will apply to the PPCC for consideration in 2018.

Acknowledgements

The preparation of this report is made possible by the dedicated services of the staff of the Department of Administration, Division of Retirement and Benefits and Division of Finance; Department of Law; and the Department of Revenue, Treasury Division. This report is intended to provide complete and reliable information as a basis for making management decisions, as a means of determining compliance with legal provisions, and as a means of determining responsible stewardship of the System's financial resources.

The report is available on the web at http://doa.alaska.gov/drb/trs/employee/resources/cafr.html and mailed to those who submit a formal request. This report forms the link between the System and the membership. The cooperation of the membership contributes significantly to the success of the System. We hope the employers and plan members find this report informative.

We are grateful to the Alaska Retirement Management Board, staff, advisors, and to the many people who have diligently worked to assure the successful operation of the System.

Respectfully submitted,

Leslie Ridle
Commissioner

Ajay Desai
Division Director

Michele Michaud
Chief Health Official

Kathy Lea
Chief Pension Officer

Kevin Worley
Chief Financial Officer

Government Finance Officers Association

Certificate of Achievement for Excellence in Financial Reporting

Presented to

Alaska Teachers' Retirement System

For its Comprehensive Annual
Financial Report
for the Fiscal Year Ended

June 30, 2016

Christopher P. Morrill

Executive Director/CEO

Public Pension Coordinating Council

Public Pension Standards Award For Funding and Administration 2017

Presented to

Alaska Teachers' Retirement System

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

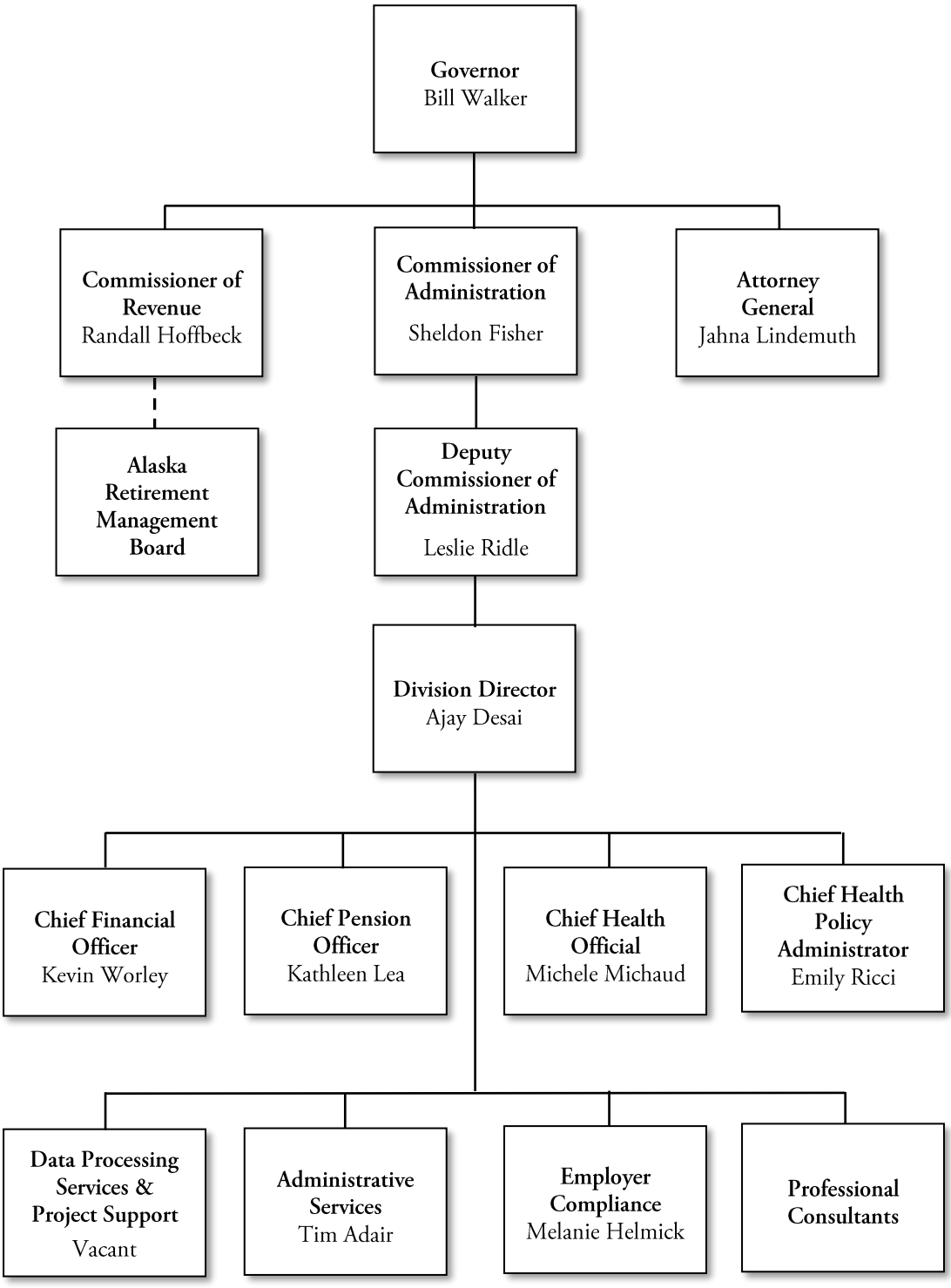
Presented by the Public Pension Coordinating Council, a confederation of

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

Alan H. Winkle
Program Administrator

ORGANIZATION CHART

As of June 30, 2017



Section Responsibilities

The **Member Services Section** is responsible for providing comprehensive retirement counseling to the participating members and employers in the plan. This section appoints members to retirement and maintains benefit payment information.

The **Health Plan Administration Section** is responsible for the administration of health, disability, and life insurance. This section provides benefits counseling and plan change information to the membership.

The **Financial Services Section** is responsible for maintaining the employee and employer records and accounts in each of the plans administered by the Division, producing financial statements and reports, and assuring compliance with Internal Revenue Service requirements.

The **Data Processing Services and Project Support Section** supports the information systems the System uses. Responsibilities include planning, development, data base design, programming, and operational support of the data processing systems, including the Local Area Network.

The **Administrative Services Section** is responsible for budget preparation, fiscal management of appropriations, procuring professional services, supplies, and equipment. The section manages the System's record center containing the member's physical records and performs other administrative functions such as legislative tracking and personnel management.

Professional Consultants

Consulting Actuary
Conduent HR Services
Denver, Colorado
Gabriel Roeder Smith
Denver, Colorado

Independent Auditors
KPMG LLP
Anchorage, Alaska

Benefits Consultants
Conduent HR Services
Denver, Colorado
The Segal Company
Greenwood Village, Colorado

IT Consultants
Computer Task Group
Applied Microsystems, Inc.
Anchorage, Alaska
Alaska IT Group
Juneau, Alaska

Third-Party Healthcare Claim Administrator
Aetna Life Insurance Company
Lexington, Kentucky
Moda Health / Delta Dental of Alaska
Portland, Oregon
PayFlex Systems USA, Inc.
Omaha, Nebraska
CHCS Services, Inc.
Pensacola, Florida

Legal Counsel
Joan Wilkerson
Siobhan McIntyre
Kevin Dilg
Assistant Attorney Generals
Juneau, Alaska
Ice Miller LLP
Indianapolis, Indiana

Consulting Physicians
Managed Medical Review Organization
Novi, Michigan

A list of investment consultants can be found on pages 77-79 and on the Schedule of Investment Management Fees on pages 87-88.

Alaska Retirement Management Board

As of June 30, 2017

Gail Anagick Schubert, Chair, serves as the President and CEO of the Bering Straits Native Corp. (BSNC), one of the twelve Alaska Native regional corporations formed under the Alaska Native Claims Settlement Act. She is Treasurer of the Alaska Federation of Natives, Vice Chair of the Akeela Treatment Services Board, Vice Chair of the Alaska Native Justice Center, and Vice Chair of the ANCSA Regional Association. Ms. Schubert is the immediate past chair of the Alaska Native Heritage Center, which she served on for nearly 15 years. She is a member of the Anchorage Chamber of Commerce ATHENA Society, a program that recognizes women's leadership. She has served on the BSNC Board of Directors since 1992. Ms. Schubert is the 2014 recipient of the Northwest Indian Bar Association's Unsung Hero Award. The annual award honors an attorney for his or her outstanding contributions toward improving the legal and political landscape of Pacific Northwest Indian Country. Prior to joining BSNC, Ms. Schubert practiced law in Anchorage after a successful career on Wall Street, where she worked at the Federal Reserve Bank of New York and two Wall Street law firms. She earned an undergraduate degree from Stanford University, a MBA from Cornell University's Johnson School of Management with an emphasis in accounting and finance, and a JD from the Cornell University School of Law. Ms. Schubert was born and raised in Unalakleet, Alaska.

Robert M. ("Rob") Johnson, Vice Chair, has been an attorney in Alaska for over 40 years. In private practice, Mr. Johnson was outside counsel for ARMB since its inception in 2005 until he recently retired from full-time practice. He also was sole outside counsel for ARMB's predecessor entities, the Alaska State Pension Investment Board and the PERS and TRS board. Mr. Johnson's law practice included many matters of state-wide importance including Exxon Valdez litigation, public sector labor disputes under the Public Employees Relations Act, and multi-year controversies involving valuation of the Trans-Alaska Pipeline System. His public employment included tenures as an assistant attorney general and director of petroleum revenue. Mr. Johnson received his law degree from Stanford and a BA in history from Claremont McKenna College.

Gayle W. Harbo, Secretary, retired after teaching mathematics in Fairbanks for 25 years. She also served as math department chair, as advanced placement coordinator, on the district curriculum, evaluation and budget committees, and twice as chair of the Lathrop Self-Evaluation for Accreditation Committee. Ms. Harbo is a member of Alpha Delta Kappa, AARP, National Retired Teachers of Alaska, Fairbanks Retired Teachers Association, National Council of Teacher Retirement Systems, NCTR Education Committee, and the Alaska Teachers' Retirement Board. She is also a co-manager of a family trust. Ms. Harbo was named Alaska Teacher of the Year in 1989. She holds a BS in Mathematics from North Carolina State University, and a Masters in Teaching from the University of Alaska, Fairbanks, and has completed an additional 40 hours in mathematics, counseling, law and finance.

Tom Brice is the Business Representative for the Alaska District Council of Laborers administering the contracts in Southeast Alaska for Laborers Local 942 and Public Employees Local 71. He was elected to the position of Vice President of Laborers Local 942 in 2011, and has sat on the negotiating team for the state contract with Public Employees Local 71 for the past three contracts. Prior to this position, Mr. Brice was the Apprenticeship Outreach Coordinator for the Alaska Works Partnership. Here he developed and managed a statewide program focused on assisting qualified rural Alaskans to gain entrance to the various registered Alaskan Building Trade apprenticeships. Mr. Brice also served in the Alaska State House of Representatives between the 18th and 21st legislatures. He has a BA from the University of Alaska Fairbanks.

Kristin Erchinger is currently finance director for the city of Seward, having worked for the city in finance positions since 1994 including a year serving simultaneously as finance director and acting city manager. She became the finance director in 2000. Ms. Erchinger is past president of the Alaska Government Finance Officer's Association and represents that

organization in the Alaska Municipal League. She also served on the Providence Alaska Region Board, the Graduate Medical Education Committee, the Alaska Municipal League Board, and the Board of the American Society for Public Administration, Alaska Chapter. Ms. Erchinger earned bachelor's degrees in international studies and Japanese language and literature, both from the University of Washington, and a master's degree in public administration from the University of Alaska Anchorage.

Sheldon Fisher, Commissioner of the Department of Administration, was appointed by Governor Walker in December 2014. Mr. Fisher was born and raised in Ashland, Oregon, and attended Brigham Young University (BYU), where he graduated with honors with a degree in economics. After BYU, Mr. Fisher went on to receive a law degree from Yale Law School and worked for a time for the law firm of Latham & Watkins. In 1994, Mr. Fisher left Latham & Watkins to pursue a career in telecommunications, working first for Hughes Electronics, and later, as the General Manager of Sprint's Broadband Wireless business. Mr. Fisher came to Alaska in 2004 taking a position as Senior Vice President of Sales and Product Marketing for Alaska Communications Systems, where he was responsible for all customer facing organizations, including all revenue generation. In 2010, Mr. Fisher resigned from ACS in order to run for Congress. In 2011, Mr. Fisher joined McKinley Capital Management, LLC, as the Chief Operating Officer, where he was responsible for the day to day administrative and general business operations of McKinley Capital. Mr. Fisher brings 20 years of management experience focusing on operations, technology infrastructure and marketing. Mr. Fisher has been married to his wife, Christine, for 26 years, and they are the parents of 7 children.

Randall Hoffbeck, Commissioner of the Department of Revenue, was appointed by Governor Walker in December 2014. Mr. Hoffbeck has 30+ years of experience in tax administration, valuation, and appraisal of real estate, as a contractor to the Tax Division from 1999-2001, and then as Petroleum Property Assessor for the State of Alaska from 2001-2006. In that capacity, he was the lead appraiser in the valuation and administration of tax assessments on all oil and gas properties in the State of Alaska. From 2006-2011 Mr. Hoffbeck served as the Director of Administration and Finance and CFO for the North Slope Borough before being appointed Chief of Staff in 2012. In late 2012 he retired from government service to focus on the completion of a Master of Divinity Degree which was completed in October 2014. Mr. Hoffbeck and his wife Cindy have just returned from serving with a short term Christian medical mission team in Kenya.

Norman West, CPA, is the Chief Financial Officer at Alaska USA Federal Credit Union with over 30 years of experience with employee benefit plans and management of large fixed income securities portfolios of $200 million to $1 billion. Mr. West is responsible for the investment of the Credit Union's fixed income portfolio as well as accounting and related activities. He served on the boards of the Credit Union subsidiaries, including Alaska USA Mortgage, Alaska USA Trust Company, Alaska USA Insurance Brokers, and served as a trustee on the Alaska USA Federal Credit Union's defined benefit plan. Prior to his Alaska USA employment, Mr. West was the Trust Controller and Chief Investment Officer for the Alaska Teamsters Employer Service Corp., the administrator for the union's benefit plans. He previously practiced as a CPA in Alaska, Arizona and Texas, and received training as an ERISA specialist in 1977. He has been active for many years in professional organizations as a member, officer and presenter, and served as a volunteer in church and Boy Scouts most of his adult life. Mr. West is a graduate of Brigham Young University with a B.S. in Accounting. He resides in Palmer and is the father of eleven children.

Bob Williams began his teaching career as a Peace Corps teacher in Gambia, Africa. He is a nationally board certified teacher, (NBCT, Math – AYA) and currently teaches Calculus and Geometry at Colony High School in Palmer. Mr. Williams is the Alaska 2009 Teacher of the Year, served as the president of the Alaska Council of Teachers of Mathematics from 2011-2013, and is the recipient of the Presidential Award for Excellence in Mathematics Teaching. He was one of five national recipients of the 2010 Horace Mann Teaching Excellence award and is a 2012 Aspen Teacher Leader Fellow. Mr. Williams has a B.S. in Petroleum Engineering from the University of Alaska, Fairbanks, an M.A. in Mathematics Education from Columbia University, and an M.Ed. in Educational Leadership from the University of Alaska, Anchorage.

FINANCIAL SECTION

ALASKA DIVISION OF

Retirement and Benefits

KPMG LLP
Suite 600
701 West Eighth Avenue
Anchorage, AK 99501

Independent Auditors' Report

The Division of Retirement and Benefits and
Members of the Alaska Retirement Management Board
State of Alaska Teachers' Retirement System:

We have audited the accompanying combining financial statements of the State of Alaska Teachers' Retirement System (the System), a component unit of the State of Alaska, 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. 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 State of Alaska Teachers' Retirement System as of June 30, 2017, and the changes in 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 (GASB) 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

Prior-Year Comparative Information

We have previously audited the System's 2016 combining financial statements, and we expressed an unmodified opinion on those financial statements in our report dated December 22, 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 the management's discussion and analysis on pages 15-24, and the schedules of changes in employer net pension and OPEB liabilities and related ratios, schedules of employer and nonemployer contributions, schedules of investment returns, on pages 45-71 be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board, who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Supplemental Schedules

Our audit was conducted for the purpose of forming an opinion on the financial statements that collectively comprise the System's basic financial statements. The supplemental schedules on pages 73 and 74 are presented for purposes of additional analysis and are not a required part of the basic financial statements. The supplemental schedules 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 supplemental schedules are fairly stated in all material respects in relation to the basic financial statements as a whole.

KPMG LLP

December 5, 2017

State of Alaska
Teachers' Retirement System
(A Component Unit of the State of Alaska)

Management's Discussion and Analysis (Unaudited)

June 30, 2017

This section presents management's discussion and analysis (MD&A) of the Teachers' Retirement System's (the System) financial position and performance for the year ended June 30, 2017. This section is presented as a narrative overview and analysis. Please read the MD&A in conjunction with the financial statements, notes to financial statements, required supplementary information, and supplemental schedules to better understand the financial condition and performance of the System during the fiscal year ended June 30, 2017.

Financial Highlights

The System's financial highlights as of June 30, 2017 were as follows:

- The System's fiduciary net position restricted for pension benefits, postemployment healthcare benefits, and individuals increased by $712.4 million during fiscal year 2017.
- The System's plan member and employer contributions decreased by $637 thousand during fiscal year 2017.
- The State of Alaska (the State) directly appropriated $116.7 million during fiscal year 2017.
- The System's net investment income increased $1,050.4 million to $1,006.8 million during fiscal year 2017.
- The System's pension benefit expenditures totaled $446.0 million during fiscal year 2017.
- The System's postemployment healthcare benefit expenditures totaled $120.2 million in fiscal year 2017.

Overview of the Financial Statements

This discussion and analysis is intended to serve as an introduction to the System's financial statements. The System's financial statements are composed of three components: (1) combining statement of fiduciary net position, (2) combining statement of changes in fiduciary net position, and (3) notes to the financial statements. This report also contains required supplementary information and other supplemental schedules.

Combining Statement of Fiduciary Net Position – This statement presents information regarding the System's assets, liabilities, and resulting net position restricted for pension benefits, postemployment healthcare benefits, and individuals. This statement reflects the System's investments at fair value, along with cash and cash equivalents, receivables, and other assets less liabilities at June 30, 2017.

Combining Statement of Changes in Fiduciary Net Position – This statement presents how the System's net position restricted for pension benefits, postemployment healthcare benefits, and individuals changed during the fiscal year ended June 30, 2017. This statement presents contributions and investment income during the period. Deductions for pension and postemployment healthcare benefits, refunds, and operating deductions are also presented.

The above statements represent resources available for investment and payment of benefits as of June 30, 2017 and the sources and uses of those funds during fiscal year 2017.

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Notes to Financial Statements – The notes to financial statements are an integral part of the financial statements and provide additional detailed information and schedules that are essential to a full understanding of the System's financial statements.

Required Supplementary Information and Related Notes – The required supplementary information consists of 12 schedules and related notes concerning the funded status of the system and actuarial assumptions and methods used in the actuarial valuation.

Supplemental Schedules – Supplemental schedules include detailed information on administrative and investment deductions incurred by the System and payments to consultants (other than investment advisors) for professional services.

Condensed Financial Information (In thousands)

System net position

Description	2017	2016	Increase (decrease) Amount	Increase (decrease) Percentage	2015
Assets:					
Cash and cash equivalents	$ 225,161	74,899	150,262	200.6%	$ 159,119
Due from State of Alaska General Fund	5,604	5,976	(372)	(6.2)	8,798
Contributions receivable	4,351	4,757	(406)	(8.5)	4,039
Other accounts receivables	1,451	87	1,364	1,567.8	87
Investments, at fair value	8,406,762	7,792,741	614,021	7.9	8,027,200
Other assets	318	711	(393)	(55.3)	711
Total assets	8,643,647	7,879,171	764,476	9.7	8,199,954
Liabilities:					
Accrued expenses	1,466	4,693	(3,227)	(68.8)	4,748
Claims payable	12,788	13,924	(1,136)	(8.2)	14,451
Forfeitures payable to employers	10,282	8,977	1,305	14.5	7,592
Securities lending collateral payable	55,150	—	55,150	—	—
Due to State of Alaska General Fund	1	—	1	—	4,425
Total liabilities	79,687	27,594	52,093	188.8	31,216
Net position	$ 8,563,960	7,851,577	712,383	9.1%	$ 8,168,738

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Condensed Financial Information Continued (In thousands)

Changes in system net position

Description	2017	2016	Increase (decrease) Amount	Increase (decrease) Percentage	2015
Net position, beginning of year	$ 7,851,577	8,168,738	(317,161)	(3.9)%	$ 6,298,726
Additions:					
Contributions – employers and plan members	163,184	163,821	(637)	(0.4)	163,251
Contributions – nonemployer State of Alaska	116,700	130,108	(13,408)	(10.3)	2,000,000
Net investment income (loss)	1,006,847	(43,534)	1,050,381	2,412.8	235,889
Other income	13,976	9,848	4,128	41.9	15,441
Total additions	1,300,707	260,243	1,040,464	399.8	2,414,581
Deductions:					
Pension and postemployment healthcare benefits	566,291	558,653	7,638	1.4	526,094
Refunds of contributions	12,296	9,560	2,736	28.6	9,232
Administrative	9,737	9,191	546	5.9	9,243
Total deductions	588,324	577,404	10,920	1.9	544,569
Increase (decrease) in net position	712,383	(317,161)	1,029,544	324.6	1,870,012
Net position, end of year	$ 8,563,960	7,851,577	712,383	9.1%	$ 8,168,738

Financial Analysis of the System

The statements of fiduciary net position as of June 30, 2017 and 2016 show net position restricted for pension benefits, postemployment healthcare benefits, and individuals of $8,563,960,000 and $7,851,577,000, respectively. The entire amount is available to cover the System's obligations to pay pension and postemployment healthcare benefits to its members and their beneficiaries, as well as administrative costs.

This represents an increase in the System's net position restricted for pension benefits, postemployment healthcare benefits, and individuals of $712,383,000 or 9.1% from fiscal year 2016 to 2017 and a decrease of $317,161,000 or 3.9% from fiscal year 2015 to 2016. Over the long term, plan member, employer, and nonemployer contributions, as well as investment income earned, are anticipated to sufficiently fund the pension benefit and postemployment healthcare costs of the System.

During the 29th Alaska State Legislature and as part of the State's Fiscal Year 2016 Operating Budget, House Bill 256 appropriated $116,700,000 from the General Fund and the Alaska Higher Education Investment Fund to the Department of Administration for deposit in the Defined Benefit Pension and the Alaska Retiree Healthcare Trust funds.

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The investment of pension funds is a long-term undertaking. On an annual basis, the Alaska Retirement Management Board (the Board) reviews and adopts an asset allocation strategy to ensure the asset mix will remain at an optimal risk/return level given the System's constraints and objectives.

System Asset Allocation

During fiscal years 2017 and 2016, the Board adopted the following asset allocation for the Defined Benefit Pension Plan (DB Plan) and Defined Contribution Retirement Pension Plan's (DCR Plan) retiree major medical insurance fund, health reimbursement arrangement fund, and occupational death and disability fund:

	2017 Pension and Healthcare Trust	
	Allocation	Range
Broad domestic equity	26.0%	± 6%
Global equity ex-U.S.	22.0	± 4
Private equity	9.0	± 5
Real assets	17.0	± 8
Absolute return	7.0	± 4
Fixed income composite	13.0	± 5
Alternative equity strategies	5.0	± 2
Cash equivalents	1.0	+ 3/- 1
Total	100.0%	
Expected return ten-year geometric mean	7.10%	
Projected standard deviation	15.00	

	2016 Pension and Healthcare Trust	
	Allocation	Range
Broad domestic equity	26.0%	± 6%
Global equity ex-U.S.	25.0	± 4
Private equity	9.0	± 5
Real assets	17.0	± 8
Absolute return	5.0	± 4
Fixed income composite	12.0	± 5
Alternative equity strategies	3.0	± 2
Cash equivalents	3.0	± 3
Total	100.0%	
Expected return five-year geometric mean	7.20%	
Projected standard deviation	15.30	

For fiscal years 2017 and 2016, the DB Plan's investments generated a 13.36% and (0.36)% rate of return, respectively.

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Contributions, Investment Income, and Other Additions

The additions required to fund retirement benefits are accumulated through a combination of employer and plan member contributions, State appropriation, investment income, and other additions as follows:

	Additions (In thousands)				
			Increase (decrease)		
	2017	2016	Amount	Percentage	2015
Contributions – plan members	$ 66,766	67,864	(1,098)	(1.6)%	$ 68,002
Contributions – employers	96,418	95,957	461	0.5	95,249
Contributions – nonemployer					
State of Alaska	116,700	130,108	(13,408)	(10.3)	2,000,000
Net investment income (loss)	1,006,847	(43,534)	1,050,381	2,412.8	235,889
Other income	13,976	9,848	4,128	41.9	15,441
Total	$ 1,300,707	260,243	1,040,464	399.8%	$ 2,414,581

The System's employer contributions increased from $95,957,000 in fiscal year 2016 to $96,418,000 in fiscal year 2017, an increase of $461,000 or 0.5%. The System's employer contributions increased from $95,249,000 in fiscal year 2015 to $95,957,000 in fiscal year 2016, an increase of $708,000 or 0.7%. The increase in employer contributions is attributable to increased contributions from the defined benefit unfunded liability portion of DCR Plan salaries.

The State provided $116,700,000 and $130,108,000 for fiscal years 2017 and 2016 in nonemployer contributions per Alaska Statute (AS) 14.25.085. The employer on-behalf amount (or additional State contribution as defined in AS 14.25.085) is calculated by the System's actuary. It is based on projected payroll and the difference between the actuarially determined contribution rate and the statutory effective rate. The employer effective contribution rate of 12.56% is established in AS 14.25.070(a). In fiscal year 2015, in an effort to bolster the funding levels of both pension and healthcare defined benefit plans, the Alaska legislature appropriated an amount in excess of the actuarially determined contribution rate, in anticipation that this additional funding would decrease future nonemployer contributions.

The System's net investment income in fiscal year 2017 increased by $1,050,381,000 or 2,412.8% from amounts recorded in fiscal year 2016. The System's net investment income in fiscal year 2016 decreased by $279,423,000 or 118.5% from amounts recorded in fiscal year 2015. Over the long term, investment earnings play a significant role in funding plan benefits. Prior to the most recent fiscal year, fiscal years 2016 and 2015 investment environment had been challenging to plans across the country. The Board continues to look at investment classes and strategies best suited to meet the expected earnings returns to meet future benefit payments.

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The System's investment rates of return at June 30, 2017, 2016, and 2015 are as follows:

	Year ended		
	2017	2016	2015
System returns	13.36%	(0.36)%	3.30%
Domestic equities	18.55	0.58	7.85
International equities	20.42	(9.15)	(3.28)
Private equity	17.04	4.71	13.77
Real assets	5.98	4.76	3.69
Absolute return	8.47	(3.09)	9.24
Fixed income	2.91	5.15	(0.73)
Alternative equity	11.38	3.41	(0.88)
Cash equivalents	0.80	0.55	0.27
Actuarially assumed rate of return	8.00	8.00	8.00

Benefits and Other Deductions

The primary deduction of the DB Plan is the payment of pension and other postemployment benefits, primarily healthcare. The primary deduction of the DCR Plan is the refund of contributions. These benefit payments, healthcare claims paid, refunds of contributions, and the cost of administering the System comprise the cost of operations as follows:

	Deductions (In thousands)				
			Increase (decrease)		
	2017	2016	Amount	Percentage	2015
Pension benefits	$ 446,044	435,699	10,345	2.4%	$ 416,354
Postemployment benefits	120,237	122,954	(2,717)	(2.2)	109,740
Refund of contributions	12,296	9,560	2,736	28.6	9,232
Administrative	9,737	9,191	546	5.9	9,243
Total	$ 588,314	577,404	10,910	1.9%	$ 544,569

The System's pension benefit payments in 2017 increased $10,345,000 or 2.4% from fiscal year 2016 and increased $19,345,000 or 4.6% from fiscal year 2015. The increase in pension benefits in fiscal year 2017 is the result of an increase in the number of retirees.

The System's postemployment healthcare benefit payments in fiscal year 2017 decreased $2,717,000 or 2.2% from fiscal year 2016 and increased $13,214,000 or 12.0% from fiscal year 2015. The System has seen an increase in plan utilization for healthcare as the number of retirees in the DB Plan continue to increase. However, the increase is offset by those members and beneficiaries who transition over to Medicare due to age, and costs shift from the System to Medicare. The System continues to look at ways for cost containment while providing benefits applicable to the plan.

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The System's refund of contributions increased $2,736,000 or 28.6% from fiscal year 2016 and increased $328,000 or 3.6% from fiscal year 2015. The increase in refunds is largely in the DCR Plan, where refunds increased $2,241,000 between fiscal year 2016 to 2017, and increased $636,000 between fiscal year 2015 to 2016. The System continues to look at ways to retain member contributions by emphasizing the low investment costs to members to maintain funds within the DCR Plan, with a number of investment options available.

The System's administrative costs in fiscal year 2017 increased $546,000 or 5.9% from fiscal year 2016 and decreased $52,000 or 0.6% from fiscal year 2015 to 2016. The increase in administrative costs in fiscal year 2017 is related to increases in management, consulting, and other professional services, offset by a decrease in Patient Protection and Affordable Care Act transitional reinsurance program fees.

Net Pension Liability

Governmental Accounting Standards Board (GASB) Statement No. 67 requires the DB Plan to report the Total Pension Liability (TPL), Fiduciary Net Position (FNP), and the Net Pension Liability (NPL). The TPL determines the total obligation for the DB Plan's pension benefits related to costs incurred as a result of years of service, changes in benefit terms, changes in actuarial assumptions, and any differences between the actuarial assumptions and actual experience. The DB Plan's FNP determines the assets available to pay the DB Plan's future payment stream. The assets are derived from contributions received from participating employers, plan members, and nonemployer contributions, as well as investment earnings, less benefit payments during the year and the related costs to administer the DB Plan. The difference between the TPL and FNP is the NPL, or the unfunded portion of the TPL.

The components of the NPL of the participating employers were as follows (in thousands):

		2017	2016
Total pension liability	$	7,338,907	7,225,545
Plan fiduciary net position		(5,312,295)	(4,942,201)
Employers' net pension liablity	$	2,026,612	2,283,344
Plan fiduciary net position as a percentage of the total pension liability		72.39%	68.40%

Net OPEB (Asset) Liability

GASB Statement No. 74, implemented in 2017, requires the Defined Benefit (DB) Other Postemployment Benefit (OPEB) Plans to report the Total OPEB Liability (TOL), FNP, and Net OPEB Liability (NOL) for each plan. The TOL determines the total obligation for the DB Plan's postemployment healthcare benefits related to costs incurred as a result of years of service, changes in benefit terms, changes in actuarial assumptions, and any differences between the actuarial assumptions and actual experience. The DB Plan's FNP determines the assets available to pay the DB OPEB Plan's future

payment stream. The assets are derived from contributions received from participating employers, plan members, and nonemployer contributions, as well as investment earnings, less benefit payments during the year and the related costs to administer the DB Plans. The difference between the TOL and FNP is the NOL, or the unfunded portion of the TOL.

The components of the net OPEB (asset) liability of the participating employers for the Plan were as follows (in thousands):

	2017		
	Alaska Retiree Healthcare Trust Plan (ARHCT)	Occupational Death and Disability (ODD)	Retiree Medical Plan (RMP)
Total OPEB liability	$ 2,941,598	263	26,108
Plan fiduciary net position	(2,757,665)	(3,531)	(30,848)
Employers' net OPEB liability (asset)	$ 183,933	(3,268)	(4,740)
Plan fidicuiary net position as a percentage of the total OPEB liability	93.75%	1,242.59%	118.16%

Funding

Retirement benefits are financed by accumulations from employers, plan members, State nonemployer contributions, and income earned on System investments.

- The employer contribution rate is adopted and set by the Board annually based on actuarial determinations made by the System's consulting actuary as reviewed by the Board's contracted actuary. AS 14.25.070(a) sets the employer effective contribution rate at 12.56%. The difference between the actuarially determined contribution rate adopted by the Board and the statutory employer effective rate is paid by the State as a direct nonemployer contribution per AS 14.25.085.
- AS 14.25.085 provides that additional State contributions are made each July 1 or as soon after July 1 for the ensuing fiscal year that when combined with the total employer contributions are sufficient to pay the System's past service liability at the contribution rate adopted by the Board for that fiscal year.
- Plan member contributions are established by AS 14.25.050 for the DB Plan and AS 14.25.340 for the DCR Plan.
- The Board works with an external consultant to determine the proper asset allocation strategy.

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Legislation

During fiscal year 2017, the 30th Alaska State Legislature enacted one law that affects the System. Conference Committee Substitute House Bill (CCS HB) 57, Section 41(b) appropriates $111.8 million from the General Fund and the Alaska Higher Education Investment Fund to the Department of Administration for deposit in the System's defined benefit pension fund and the retiree healthcare trust as partial payment of the participating employers' contribution for fiscal year ending June 30, 2018. This appropriation is to fund the difference between the statutory required contribution of 12.56% paid by participating employers for both defined benefit and defined contribution members, and the actuarially determined contribution rate adopted by the Board for that fiscal year. This additional state contribution is specified in AS 14.25.085 – Additional State Contributions.

Economic Conditions, Future Contribution Rates, and Status of Unfunded Liability

Fiscal year 2017 was a year of positive investment returns. Net investment income increased from a loss of $43,534,000 in fiscal year 2016 to income of $1,006,847,000 in fiscal year 2017, an increase of $1,050,381,000 or 2,412.8%. The return on the System's investments was above the 8.00% actuarially assumed rate of return with the System's rate of return of 13.36% at June 30, 2017. In fiscal year 2016, the System's investments returned (0.36)%, less than the actuarially assumed return of 8.00%. The Board continues to work with its investment counsel and the Alaska Department of Revenue, Treasury Division, to diversify the portfolio of the System to maintain an optimal risk/return ratio.

The consulting actuary recommended a decrease from the System's actuarially determined contribution rate of 29.27% in fiscal year 2016 to 28.02% in fiscal year 2017. The Board adopted the fiscal year 2017 actuarially determined contribution rate of 28.02%, which represented a decrease of 1.25%. The statutory employer effective contribution rate remained at 12.56% for fiscal years 2017 and 2016.

The June 30, 2016 and 2015 actuarial valuation reports for the DB Plan reported funding ratios based on valuation assets of 82.8% and 83.3%, respectively, as well as unfunded liabilities of $1.7 billion and $1.6 billion, respectively.

The System expected this slight increase in the DB Plan's recommended actuarially determined contribution rate and the corresponding decrease in the pension and healthcare funding ratios as of the June 30, 2016 actuarial valuation report with the investment earnings being less than the expected rate of return.

For fiscal years 2017 and 2016, the DCR Plan's employer contribution rate was established by AS 14.25.070(a) at 12.56%. The DCR Plan's actuarially determined occupational death and disability rate was adopted by the Board to be 0.00% in both fiscal years 2017 and 2016. The DCR Plan retiree medical plan actuarially determined contribution rate for fiscal years 2017 and 2016 was adopted by the Board to be 1.05% and 2.04%, respectively.

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Requests for Information

This financial report is designed to provide a general overview of the finances for all those with interest in the finances. Questions concerning any of the information provided in this report or requests for additional information should be addressed to:

State of Alaska Teachers' Retirement System
Division of Retirement and Benefits, Finance Section
P.O. Box 110203
Juneau, Alaska 99811-0203

Questions concerning any of the investment information provided in this report or requests for additional investment information should be addressed to:

State of Alaska
Department of Revenue, Treasury Division
P.O. Box 110405
Juneau, Alaska 99811-0405

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Combining Statement of Fiduciary Net Position

June 30, 2017
(With summarized financial information for June 30, 2016)

(In thousands)

	Defined Benefit Pension	Defined Contribution Pension	Other Postemployment Benefit Plans: Alaska Retiree Healthcare Trust	Occupational Death and Disability	Retiree Medical	Health Reimbursement Arrangement	System total June 30, 2017	System total June 30, 2016
Assets:								
Cash and cash equivalents (note 3):								
Short-term Fixed Income Pool	$ 103,659	9,118	53,156	69	612	1,760	168,374	71,744
Securities lending collateral	35,791	—	18,557	24	201	577	55,150	—
Empower money market fund – non-participant-directed	—	1,637	—	—	—	—	1,637	3,155
Total cash and cash equivalents	139,450	10,755	71,713	93	813	2,337	225,161	74,899
Receivables:								
Contributions	3,995	216	83	—	15	42	4,351	4,757
Due from State of Alaska General Fund	509	3,259	1,037	—	236	563	5,604	5,976
Other accounts receivable	87	—	1,364	—	—	—	1,451	87
Total receivables	4,591	3,475	2,484	—	251	605	11,406	10,820
Investments (note 3), at fair value:								
Fixed income securities:								
U.S. Treasury Fixed Income Pool	404,591	—	211,056	269	2,331	6,685	624,932	348,305
Taxable Municipal Bond Pool	44,317	—	23,118	29	255	732	68,451	85,645
Tactical Fixed Income Pool	47,133	—	24,587	31	272	779	72,802	53,947
High-yield Pool	135,934	—	70,910	91	783	2,246	209,964	266,254
International Fixed Income Pool	38,735	—	20,206	26	223	640	59,830	120,413
Emerging Debt Pool	35,019	—	18,268	23	202	579	54,091	51,594
Total fixed income securities	705,729	—	368,145	469	4,066	11,661	1,090,070	926,158
Broad domestic equity:								
Large Cap Pool	1,125,840	—	587,345	749	6,488	18,608	1,739,030	1,626,691
Small Cap Pool	230,717	—	120,354	154	1,329	3,812	356,366	346,033
Total broad domestic equity	1,356,557	—	707,699	903	7,817	22,420	2,095,396	1,972,724
Broad international equity:								
International Equity Pool	1,014,139	—	529,028	674	5,843	16,757	1,566,441	1,505,644
International Equity Small Cap Pool	76,038	—	39,665	51	438	1,256	117,448	102,254
Emerging Markets Equity Pool	165,246	—	86,201	110	952	2,730	255,239	216,377
Total broad international equity	1,255,423	—	654,894	835	7,233	20,743	1,939,128	1,824,275
Alternative equity:								
Alternative equity	163,374	—	85,224	109	941	2,699	252,347	257,302
Convertible Bond Pool	40,246	—	20,995	27	232	665	62,165	64,688
Total alternative equity	203,620	—	106,219	136	1,173	3,364	314,512	321,990
Private Equity Pool	447,288	—	233,329	298	2,577	7,391	690,883	603,489
Absolute Return Pool	336,373	—	175,470	224	1,938	5,558	519,563	498,015
Real assets:								
Real Estate Pool	303,377	—	158,121	202	1,746	5,008	468,454	480,701
Real Estate Investment Trust Pool	74,337	—	38,778	49	428	1,228	114,820	115,495
Infrastructure Private Pool	83,329	—	43,469	55	480	1,377	128,710	105,024
Infrastructure Public Pool	51,900	—	27,074	35	299	858	80,166	67,995
Master Limited Partnership Pool	105,784	—	55,182	70	610	1,748	163,394	159,952
Energy Pool	19,458	—	10,150	13	112	322	30,055	23,508
Farmland Pool	176,079	—	91,852	117	1,014	2,909	271,971	265,313
Timber Pool	73,908	—	38,555	49	426	1,221	114,159	123,740
Treasury Inflation Protected Securities Pool	11,681	—	6,094	8	67	193	18,043	18,250
Total real assets	899,853	—	469,275	598	5,182	14,864	1,389,772	1,359,978
Other investment funds:								
Pooled investment funds	—	212,872	—	—	—	—	212,872	159,045
Collective investment funds	—	154,566	—	—	—	—	154,566	127,067
Total other investment funds	—	367,438	—	—	—	—	367,438	286,112
Total investments	5,204,843	367,438	2,715,031	3,463	29,986	86,001	8,406,762	7,792,741
Other assets	—	—	318	—	—	—	318	711
Total assets	5,348,884	381,668	2,789,546	3,556	31,050	88,943	8,643,647	7,879,171
Liabilities:								
Accrued expenses	798	94	569	—	1	4	1,466	4,693
Claims payable (note 6)	—	—	12,788	—	—	—	12,788	13,924
Forfeitures payable	—	10,282	—	—	—	—	10,282	8,977
Securities lending collateral payable	35,791	—	18,557	24	201	577	55,150	—
Due to State of Alaska General Fund	—	—	—	1	—	—	1	—
Total liabilities	36,589	10,376	31,914	25	202	581	79,687	27,594
Net position restricted for pension benefits, postemployment healthcare benefits, and individuals	$ 5,312,295	371,292	2,757,632	3,531	30,848	88,362	8,563,960	7,851,577

See accompanying notes to financial statements.

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Combining Statement of Changes in Fiduciary Net Position

Year ended June 30, 2017
(With summarized financial information for June 30, 2016)

(In thousands)

	Defined Benefit Pension	Defined Contribution Pension	Other Postemployment Benefit Plans: Alaska Retiree Healthcare Trust	Occupational Death and Disability	Retiree Medical	Health Reimbursement Arrangement	System total June 30, 2017	System total June 30, 2016
Additions:								
Contributions:								
Employers	$ 36,634	22,165	24,069	—	3,524	10,026	96,418	95,957
Plan members	39,878	26,888	—	—	—	—	66,766	67,864
Nonemployer State of Alaska	116,700	—	—	—	—	—	116,700	130,108
Total contributions	193,212	49,053	24,069	—	3,524	10,026	279,884	293,929
Investment income (loss):								
Net appreciation (depreciation) in fair value (note 2)	542,004	43,524	277,897	350	2,805	8,057	874,637	(166,768)
Interest	18,999	16	9,727	12	98	281	29,133	29,378
Dividends	69,763	—	35,928	45	363	1,043	107,142	111,135
Total investment income (loss)	630,766	43,540	323,552	407	3,266	9,381	1,010,912	(26,255)
Less investment expense	2,808	123	1,450	1	8	23	4,413	17,279
Net investment income (loss) before securities lending activities	627,958	43,417	322,102	406	3,258	9,358	1,006,499	(43,534)
Securities lending income	282	—	146	—	2	4	434	—
Less securities lending expense	56	—	29	—	—	1	86	—
Net income from securities lending activities	226	—	117	—	2	3	348	—
Net investment income (loss)	628,184	43,417	322,219	406	3,260	9,361	1,006,847	(43,534)
Other income	10	57	13,909	—	—	—	13,976	9,848
Total additions	821,406	92,527	360,197	406	6,784	19,387	1,300,707	260,243
Deductions:								
Pension and postemployment benefits	446,044	—	120,237	—	3	7	566,291	558,653
Refunds of contributions	2,378	9,918	—	—	—	—	12,296	9,560
Administrative	2,890	915	5,908	12	12	—	9,737	9,191
Total deductions	451,312	10,833	126,145	12	15	7	588,324	577,404
Net increase (decrease)	370,094	81,694	234,052	394	6,769	19,380	712,383	(317,161)
Net position restricted for pension benefits, postemployment healthcare benefits, and individuals:								
Balance, beginning of year	4,942,201	289,598	2,523,580	3,137	24,079	68,982	7,851,577	8,168,738
Balance, end of year	$ 5,312,295	371,292	2,757,632	3,531	30,848	88,362	8,563,960	7,851,577

See accompanying notes to financial statements.

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(1) Description

The State of Alaska Teachers' Retirement System (TRS or the System) is a component unit of the State of Alaska (the State). The System is governed by the Alaska Retirement Management Board (the Board), which consists of nine trustees, as follows: two members, consisting of the commissioner of administration and the commissioner of revenue; two trustees who are members of the general public; one trustee who is employed as a finance officer for a political subdivision participating in either the Public Employees' Retirement System (PERS) or TRS; two trustees who are members of PERS; and two trustees who are members of TRS.

TRS acts as the common investment and administrative agency for the following multiple-employer plans:

Plan name	Type of plan
Defined Benefit Pension	Cost-sharing, Defined Benefit Pension
Defined Contribution Retirement Pension	Defined Contribution Pension
Defined Benefit Other Postemployment Benefits (OPEB)	
Alaska Retiree Healthcare Trust Plan	Cost-sharing, Defined Benefit OPEB
Occupational Death and Disability Plan	Cost-sharing, Defined Benefit OPEB
Retiree Medical Plan	Cost-sharing, Defined Benefit OPEB
Defined Contribution Other Postemployment Benefits	
Healthcare Reimbursement Arrangement Plan	Defined Contribution OPEB

At June 30, 2017 and 2016, the number of participating local government employers and public organizations including the State was as follows:

State of Alaska	1
School districts	53
Other	3
Total employers	57

Inclusion in the Defined Benefit Pension Plan (DB Plan) and Defined Contribution Retirement Pension Plan (DCR Plan) is a condition of employment for permanent school district, University of Alaska, and State Department of Education employees who meet the eligibility requirements for participation.

Defined Benefit Pension Plan

General

The DB Plan provides pension benefits for teachers and other eligible members. Benefit and contribution provisions are established by State law and may be amended only by the State Legislature. With the passage of Senate Bill (SB) 141, the DB Plan is closed to all new members effective July 1, 2006.

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The DB Plan's membership consisted of the following at June 30, 2017:

Inactive plan members or beneficiaries currently receiving benefits	12,701
Inactive plan members entitled to but not yet receiving benefits	2,846
Active plan members	4,937
Total DB Plan membership	20,484

Pension Benefits

Vested members hired prior to July 1, 1990, are entitled to pension benefits beginning at normal retirement age, 55, or early retirement age, 50. For members hired after June 30, 1990, the normal and early retirement ages are 60 and 55, respectively. Members may also retire at any age and receive a normal benefit when they accumulate the required credited service.

The normal annual pension benefit is based on years of service and average base salary. The average base salary is based upon the members' three highest contract years' salaries.

The benefit related to all years of credited service prior to July 1, 1990, and for years of service through a total of 20 years is equal to 2% of the employee's average base salary. The benefit for each year over 20 years of service subsequent to June 30, 1990, is equal to 2.5% of the employee's base salary.

Minimum benefits for members eligible for retirement are $25 per month for each year of credited service.

Married members must receive their benefits in the form of a joint and survivor annuity unless their spouse consents to another form of benefit or benefits are payable under the 1% supplemental contributions provision.

The DB Plan has two types of postretirement pension adjustments (PRPA). The automatic PRPA is issued annually to all eligible benefit recipients, when the cost of living increases in the previous calendar year. The automatic PRPA increase is paid beginning July 1 of each year. The discretionary PRPA may be granted to eligible recipients by the DB Plan's administrator if the funding ratio of the DB Plan meets or exceeds 105%. If both an automatic and discretionary PRPA are granted, and a retiree is eligible for both adjustments, the one that provides the retiree the greater increase will be paid.

Contributions

Contributions requirements of the active plan members and the participating employers are actuarially determined and approved by the Board as an amount that, when combined, is expected to finance the costs of benefits earned by plan members during the year, with an additional amount to finance any unfunded accrued liability. The DB Plan members contribute 8.65% of their base salary as required by statute. Employer effective contribution rates are

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12.56% of annual payroll. Alaska Statute (AS) 14.25.085 provides that additional State contributions be made each July 1, or as soon after July 1, for the ensuing fiscal year that when combined with the total employer contributions are sufficient to pay the System's past service liability at the actuarially determined contribution rate adopted by the Board for that fiscal year. Additionally, there is a Defined Benefit Unfunded Liability (DBUL) amount levied against the DCR Plan payroll. The DBUL amount is computed as the difference between:

(A) The amount calculated for the statutory employer contribution rate of 12.56% on eligible salary less

(B) The total of the employer contributions for:

(1) The defined contribution employer matching amount

(2) Major medical

(3) Occupational death and disability

(4) Health reimbursement arrangement.

The difference is deposited based on an actuarial allocation into the DB Plan's pension and healthcare funds.

Refunds

DB Plan member contributions may be voluntarily or, under certain circumstances, involuntarily refunded to the employee or a garnishing agency 60 days after termination of employment. Voluntary refund rights are forfeited on July 1 following the member's 75th birthday or within 50 years of the member's last termination date. Members who have had contributions refunded forfeit all retirement benefits, including postemployment healthcare benefits. Members are allowed to reinstate refunded service due to involuntary refunds by repaying the total involuntary refunded balance and accrued interest. Members are allowed to reinstate voluntarily refunded service by repaying the voluntarily refunded balance and accrued interest, as long as they reestablish an employee relationship with a participating DB Plan employer before July 1, 2010. Members who have not reestablished an employee relationship with a participating DB Plan employer by June 30, 2010, will not be eligible to reinstate voluntarily refunded service and will forfeit any claim to DB Plan membership rights. Balances previously refunded to members accrue interest at the rate of 7.0% per annum, compounded semiannually.

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Defined Contribution Retirement Pension Plan

General

The DCR Plan provides retirement benefits for eligible employees hired after July 1, 2006. Additionally, certain active members of the DB Plan were eligible to transfer to the DCR Plan if that member had not vested in the DB Plan. Benefit and contribution provisions are established by State law and may be amended only by the State Legislature.

At June 30, 2017, membership in the DCR Plan consisted of 4,937 members.

Retirement Benefits

A participating member is immediately and fully vested in that member's contributions and related earnings (losses). A member shall be fully vested in the employer contributions made on that member's behalf, and related earnings (losses), after five years of service. A member is partially vested in the employer contributions made on that member's behalf, and the related earnings, in the ratio of (a) 25% with two years of service; (b) 50% with three years of service; (c) 75% with four years of service; and (d) 100% with five years of service.

Contributions

State statutes require an 8.0% contribution rate for DCR Plan members. Employers are required to contribute 7.0% of the member's compensation.

Participant Distributions and Refunds of Contributions

A member is eligible to request a refund of contributions from their account 60 days after termination of employment.

Participant Accounts

Participant accounts under the DCR Plan are self-directed with respect to investment options.

Each participant designates how contributions are to be allocated among the investment options. Each participant's account is credited with the participant's contributions and the appreciation or depreciation in unit value for the investment funds.

Record-keeping/administrative fees consisting of a fixed amount, applied in a lump sum each calendar year, and a variable amount, applied monthly, are deducted from each participant's account, and applied pro rata to all the funds in which the employee participates. This fee is for all costs incurred by the record keeper and by the State. The investment management fees are netted out of the funds' performance.

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Defined Benefit Other Postemployment Benefit Plans

Alaska Retiree Healthcare Trust Plan

Beginning July 1, 2007, the Alaska Retiree Healthcare Trust Plan (ARHCT), a healthcare trust fund of the State, was established. The ARHCT is self-funded and provides major medical coverage to retirees of the DB Plan. The System retains the risk of loss of allowable claims for eligible members. The ARHCT began paying member healthcare claims on March 1, 2008. Prior to that, healthcare claims were paid for by the Retiree Health Fund (RHF).

Membership in the plan was as follows as of June 30, 2017:

Inactive plan members or beneficiaries currently receiving benefits	12,701
Inactive plan members entitled to but not yet receiving benefits	2,846
Active plan members	4,937
Total DB Plan membership	20,484

OPEB Benefits

When pension benefits begin, major medical benefits are provided without cost to (1) all members first hired before July 1, 1990; (2) members hired after July 1, 1990, with 25 years of membership service; and (3) members who are disabled or age 60 or older, regardless of their initial hire dates. Members first hired after June 30, 1990, may receive major medical benefits prior to age 60 by paying premiums.

Contributions

Employer contribution rates are actuarially determined and adopted by the Board. The 2017 employer effective contribution rate is 12.56% of member's compensation.

Occupational Death and Disability Plan

The Occupational Death and Disability Plan provides death benefits for beneficiaries of plan participants and long-term disability benefits to all active members within the System. Members in the Death and Disability Plan consisted of the following at June 30, 2017:

Active plan members	4,937
Participating employers	57
Open claims	4

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Death Benefits

If (1) the death of an employee occurs before the employee's retirement and before the employee's normal retirement date, (2) the proximate cause of death is a bodily injury sustained or a hazard undergone while in the performance and within the scope of the employee's duties, and (3) the injury or hazard is not the proximate result of willful negligence of the employee, then a monthly survivor's pension shall be paid to the surviving spouse. If there is no surviving spouse or if the spouse later dies, the monthly survivor's pension shall be paid in equal parts to the dependent children of the employee.

When benefits are payable under the 1% supplemental contribution provision, the DB Plan member's spouse is eligible for a spouse's pension if there is (are) no dependent child(ren). If there is (are) dependent child(ren), a survivor's allowance may be payable to the DB Plan member's spouse, or guardian of the dependent child(ren). The amount of the pension or allowance is determined by the DB Plan member's base salary. DB Plan members first hired after June 30, 1982 are not eligible to participate in this provision.

If an active DB Plan member dies from occupational causes, the spouse may receive a monthly pension from the DB Plan. When death is due to occupational causes and there is no surviving spouse, the DB Plan member's dependent child(ren) may receive a monthly pension until the child(ren) is(are) no longer dependents. If the member does not have a spouse or dependent children at the time of death, a lump-sum death benefit is payable to the named beneficiary(ies). The amount of the occupational death pension is 40% of the member's base salary at the time of death. The amount of the occupational death pension changes on the date the DB Plan member's normal retirement would have occurred if the DB Plan member had lived. The new benefit is based on the DB Plan member's average base salary at the time of death and the credited service that would have accrued had the DB Plan member lived and continued to work until normal retirement. If benefits are payable under the 1% supplemental contribution provision, benefits are not payable under this provision. If the death was from nonoccupational causes, and the DB Plan member was vested, the spouse may receive a monthly 50% joint and survivor option benefit based on the member's credited service and average base salary at the time of death. If the DB Plan member is not married or vested, a lump-sum death benefit is payable to the named beneficiary(ies).

The monthly survivor's pension section for survivors of DCR Plan employees is 40% of the employee's monthly compensation in the month in which the employee dies. While the monthly survivor's pension is being paid, the employer shall make contributions on behalf of the employee's beneficiaries based on the deceased employee's gross monthly compensation at the time of occupational death.

Disability Benefits

If a DB Plan member has been in membership service for five or more years for which contributions have been made, is not eligible for normal retirement benefits, and becomes permanently disabled, the DB Plan member is entitled to a monthly benefit. The annual disability benefit is equal to 50% of the base salary at the time of the disability plus an

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additional 10% of his/her base salary for each dependent child up to a maximum of four children. At normal retirement age, a disabled System member receives normal retirement benefits.

A DCR Plan member is eligible for an occupational disability benefit if employment is terminated because of a total and apparently permanent occupational disability before the employee's normal retirement date. The occupational disability benefits accrue beginning the first day of the month following termination of employment as a result of the disability and are payable the last day of the month. If a final determination granting the benefit is not made in time to pay the benefit when due, a retroactive payment shall be made to cover the period of deferment.

Contributions

An employer shall contribute to each member's account based on the member's compensation. For fiscal year 2017, the rate is 7.0%.

Retiree Medical Plan

The retiree medical plan is established under AS 14.25.480 – Medical Benefits. The Department of Administration, Division of Retirement and Benefits, which administers the System's health plans, finalized the retiree medical plan for members eligible for the DCR Plan's health benefits plan in July 2016. Members are not eligible to use this plan until they have at least 10 years of service, and are Medicare age eligible.

Membership in the plan was as follows as of June 30, 2017:

Inactive plan members or beneficiaries currently receiving benefits	4
Inactive plan members entitled to but not yet receiving benefits	443
Inactive plan members not entitled to benefits	2,011
Active plan members	4,937
Total DCR Plan membership	7,395

OPEB Benefits

The medical benefits available to eligible persons means that an eligible person may not be denied insurance coverage except for failure to pay the required premium. Major medical insurance coverage takes effect on the first day of the month following the date of the Plan administrator's approval of the election and stops when the person who elects coverage dies or fails to make the required premium payment. The coverage for persons 65 years of age or older is the same as that available for persons under 65 years of age. The benefits payable to those persons 65 years of age or older supplement any benefits provided under the federal old age, survivors and disability insurance program. The medical and optional insurance premiums owed by the person who elects coverage may be deducted from the health reimbursement arrangement becomes insufficient to pay the premiums, the person who elects coverage shall pay the premiums directly.

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The cost of premiums for retiree major medical insurance coverage for an eligible member or surviving spouse who is

(1) not eligible for Medicare is an amount equal to the full monthly group premium for retiree major medical insurance coverage,

(2) eligible for Medicare is the following percentage of the premium amounts established for retirees who are eligible for Medicare:

(a) 30 percent if the member had 10 or more, but less than 15, years of service;

(b) 25 percent if the member had 15 or more, but less than 20, years of service;

(c) 20 percent if the member had 20 or more, but less than 25, years of service;

(d) 15 percent if the member had 25 or more, but less than 30, years of service; and

(e) 10 percent if the member had 30 or more years of service.

Contributions

Employer contribution rates are actuarially determined and adopted by the Board. The 2017 employer effective contribution rate is 1.05% of member's compensation.

Defined Contribution Other Postemployment Benefit Plan

The Health Reimbursement Arrangement (HRA) Plan is established under AS 39.30.300. The Department of Administration, Division of Retirement and Benefits administers the System's health plans. The Health Reimbursement Arrangement Plan allows for medical care expenses to be reimbursed from individual savings accounts established for eligible persons. The HRA Plan became effective July 1, 2006, at which time contributions by employers began.

Membership in the plan was as follows as of June 30, 2017:

Inactive plan members or beneficiaries currently receiving benefits	3
Inactive plan members entitled to but not yet receiving benefits	444
Inactive plan members not entitled to benefits	2,011
Active plan members	4,937
Total DCR Plan membership	7,395

OPEB Benefits

Persons who meet the eligibility requirements of AS 14.25.470 are eligible for reimbursements from the individual account established for a member under the Plan, but do not have to retire directly from the System.

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The Plan Administrator may deduct the cost of monthly premiums from the HRA individual account for the Retiree Medical Plan insurance on behalf of an eligible person who elected the retiree major medical insurance under AS 14.25.480. Upon application of an eligible person, the Plan Administrator shall reimburse the costs for medical care expenses defined in 26 USC 213(d). Reimbursement is limited to the medical expenses of (1) an eligible member, the spouse of an eligible member, and the dependent children of an eligible member; or (2) a surviving spouse and the dependent children of an eligible member dependent on the surviving spouse. When the member's individual account balance is exhausted, any deductions from the HRA individual account end. If all eligible persons die before exhausting the member's individual account, the account balance reverts to the Plan.

Contributions

An employer shall contribute to the HRA Plan trust fund an amount equal to three percent of the average annual compensation of all employees of all employers in the TRS and PERS. The administrator maintains a record of each member to account for employer contributions on behalf of that member. The 2017 contribution amount was an annual contribution not to exceed $2,049.36, and required for every pay period in which the employee is enrolled in the DCR Plan, regardless of the compensation paid during the year. An amount less than $2,049.36 would be deposited to a member's account if that member worked less than a full year.

(2) Summary of Significant Accounting Policies

Basis of Accounting

The accompanying financial statements have been prepared using the economic resources measurement focus and on the accrual basis of accounting in conformity with U.S. generally accepted accounting principles (GAAP), as prescribed by the Governmental Accounting Standards Board (GASB). Contributions are due to the System when employee services have been performed and paid. Contributions are recognized as revenues when due pursuant to statutory requirements. Benefits and refunds are recognized when due and payable and expenses are recorded when the corresponding liabilities are incurred, regardless of when contributions are received or payment is made.

Use of Estimates

The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of additions and deductions during the reporting period. Actual results could differ from those estimates.

Defined Benefit Pension and OPEB Investments

The System owns shares in various investment pools that are administered by the State of Alaska, Department of Revenue, Division of Treasury (Treasury). The System's investment in the pools, except for the Short-term Fixed Income Pool, is reported at fair value based on the net asset value reported by the Treasury. The Short-term Fixed

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Income Pool maintains a share price of $1. Each participant owns shares in the pool, the number of which fluctuates daily with contributions and withdrawals.

Defined Contribution Participant-directed Investments

The Board contracts with an external investment manager who is given the authority to invest in a wholly owned pooled environment to accommodate 13 participant-directed funds. Additionally, the Board contracts with external managers who manage a mix of collective investment funds. Income for the Pooled Investment and Collective Investment Funds is credited to the fund's net asset value on a daily basis and allocated to pool participants daily on a pro rata basis.

Pooled Participant-directed Investment Funds, held in trust, are stated at fair value based on the unit value as reported by the Trustees multiplied by the number of units held by the Plan. The unit value is determined by the Trustees based on fair value of the underlying assets. Purchases and sales of securities are recorded on a trade-date basis. Underlying assets comprise domestic and international stocks, investment-grade bonds, federally guaranteed mortgages, money market instruments, and other cash equivalent instruments with maturities of less than one year, which include but are not limited to commercial paper, asset-backed securities, banker acceptances, certificates of deposit with ratings of A1/P1 or better, as well as obligations of the U.S. government and its agencies, and repurchase agreements collateralized by U.S. Treasury instruments.

Collective Investment Funds, held in trust, are stated at fair value based on the unit value as reported by the Trustees multiplied by the number of units held by the Plan. The unit value is determined by the Trustees based on fair value of the underlying assets. Purchases and sales of securities are recorded on a trade-date basis. Underlying assets are comprised of commingled investment funds, alongside other investors, through ownership of equity shares.

Contributions Receivable

Contributions from the System's members and employers for service through June 30 are accrued. These contributions are considered fully collectible, and accordingly, no allowance for uncollectible receivables is reflected in the financial statements.

Administrative Costs

Administrative costs are paid from investment earnings.

Due from (to) State of Alaska General Fund

Amounts due from (to) the State of Alaska General Fund represent the amounts paid by the System on behalf of others and amounts paid by others on behalf of the System.

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Federal Income Tax Status

The DB Plan and DCR Plan are qualified plans under Section 401(a) and 414(d) of the Internal Revenue Code and are exempt from federal income taxes under Section 501(a).

New Accounting Pronouncements

GASB Statement No. 74, Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans, during the year ended June 30, 2017. GASB 74 replaces the requirements of Statement No. 43, Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans, as amended. GASB 74 requires the disclosures of the total OPEB liability, fiduciary net position, and net OPEB liability for single-employer and cost-sharing multiple-employer defined benefit postemployment healthcare plans. GASB Statement No. 74 also requires certain additional note disclosures for defined benefit postemployment healthcare plans, including the annual money-weighted rate of return on plan investments. GASB Statement No. 74 revised the reporting requirements for required supplementary information to include schedules, which provide trend information related to (1) changes in the net OPEB liability and related ratios, (2) the actuarially and contractually determined contributions of employer contributing entities, and (3) the annual money-weighted rate of return on plan investments.

(3) Investments

The Board is the investment oversight authority of the System's investments. As the fiduciary, the Board has the statutory authority to invest the assets under the Prudent Investor Rule. Fiduciary responsibility for the Board's invested assets is pursuant to AS 37.10.210-390.

AS 37.10.071 provides that investments shall be made with the judgment and care under circumstances then prevailing that an institutional investor of ordinary professional prudence, discretion, and intelligence exercises in managing large investment portfolios.

Treasury provides staff for the Board. Treasury has created a pooled environment by which it manages investments of the Board. Additionally, Treasury manages a mix of Pooled Investment Funds and Collective Investment Funds for the DC Participant-directed Pension Plans under the Board's fiduciary responsibility.

Actual investing is performed by investment officers in Treasury or by contracted external investment managers. The Board has developed investment guidelines, policies, and procedures for Treasury staff and external investment managers to adhere to when managing investments. Treasury manages the U.S. Treasury Fixed Income Pool, Dow Jones Dividend 100 Index Fund in the Alternative Equity Strategies Pool, Real Estate Investment Trust Pool, Treasury Inflation Protected Securities Pool, and cash holdings of certain external managers in addition to acting as oversight manager for all externally managed investments. All other investments are managed by external management companies.

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The Short-term Fixed Income Pool is a State pool managed by Treasury that holds investments on behalf of the Board as well as other state funds.

Rate of Return

The money-weighted rate of return expresses investment performance, net of investment expense, adjusted for the changing amounts actually invested. The annual money-weighted rate of return, net of investment expense, for the year ended June 30, 2017 for the DB Plan is 13.04%, for the ARHCT is 12.58%, for the Occupational Death and Disability Plan is 12.03%, and for the Retiree Medical Plan is 11.80%.

For additional information on securities lending, interest rate risk, credit risk, foreign exchange, derivatives, fair value, and counterparty credit risk, see the separately issued report on the Invested Assets of the State of Alaska Retirement and Benefits Plans at http://treasury.dor.alaska.gov/armb/Reports-and-Policies/Annual-Audited-Financial-Schedules.aspx.

(4) Net Pension Liability – Defined Benefit Pension Plan

The components of the net pension liability of the participating employers at June 30, 2017 were as follows (in thousands):

Total pension liability	$	7,338,907
Plan fiduciary net position		(5,312,295)
Employers' net pension liability	$	2,026,612
Plan fiduciary net position as a percentage of the total pension liability		72.39%

Actuarial Assumptions

The total pension liability was determined by an actuarial valuation as of June 30, 2016, using the following actuarial assumptions, applied to all periods included in the measurement, and rolled forward to the measurement date of June 30, 2017:

Inflation	3.12%
Salary increases	Graded by service, from 8.11% to 3.87%
Rate of return	8.00%, net of pension plan investment expenses. This is based on an average inflation rate of 3.12% and a real rate of return of 4.88%.

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Post-termination mortality rates were based on 94% of the male rates and 97% of the female rates of the RP-2000 Mortality Table, 2000 Base Year projected to 2018 with Projection Scale BB, with a three-year setback for males and four-year setback for females. The rates for pre-termination mortality were 68% of the male rates and 60% of the female rates of the post-termination mortality rates. Deaths are assumed to result from nonoccupational causes 85% of the time.

The actuarial assumptions used in the June 30, 2016 actuarial valuation were based on the results of an actuarial experience study for the period July 1, 2009 to June 30, 2013.

The long-term expected rate of return on pension plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Best estimates of arithmetic real rates of return for each major asset class included in the pension plan's target asset allocation as of June 30, 2014 (see the discussion of the pension plan's investment policy) are summarized in the following table (note that the rates shown below exclude the inflation component):

Asset class	Long-term Expected real rate of return
Domestic equity	8.83%
Global ex-U.S. equity	7.79
Intermediate Treasuries	1.29
Opportunistic	4.76
Real assets	4.94
Absolute return	4.76
Private equity	12.02
Cash equivalents	0.63

Discount Rate

The discount rate used to measure the total OPEB liability was 8%. The projection of cash flows used to determine the discount rate assumed that employer and State contributions will continue to follow the current funding policy, which meets State statutes. Based on those assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability in accordance with the method prescribed by GASB Statement No. 67.

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

The following presents the net pension liability of the System calculated using the discount rate of 8%, as well as what the System's net pension liability would be if it were calculated using a discount rate that is one-percentage-point lower (7%) or one-percentage-point higher (9%) than the current rate (in thousands):

	1% decrease (7%)	Current discount rate (8%)	1% increase (9%)
Net pension liability	$ 2,856,759	2,026,612	1,329,198

(5) Net OPEB (Asset) Liability

The components of the net OPEB (asset) liability of the participating employers for each Plan at June 30, 2017, were as follows (in thousands):

	ARHCT	ODD	RMP
Total OPEB liability	$ 2,941,598	263	26,108
Plan fiduciary net position	(2,757,665)	(3,531)	(30,848)
Employers' net OPEB liability (asset)	$ 183,933	(3,268)	(4,740)
Plan fidicuiary net position as a percentage of the total OPEB liability	93.75%	1,342.59%	118.16%

Actuarial Assumptions

The total OPEB liability (asset) for each plan was determined by actuarial valuations as of June 30, 2016, using the following actuarial assumptions, applied to all periods in the measurement, and rolled forward to the measurement date of June 30, 2017:

Inflation	3.12%
Salary increases	Graded by service, from 8.11% to 3.87%
Investment rate of return	8.00%, net of postemployment healthcare plan investment expenses. This is based on an average inflation rate of 3.12% and a real rate of return of 4.88%.
Healthcare cost trend rates (ARHCT and RMP)	Pre-65 medical: 8.8% grading down to 4.4% Post-65 medical: 5.8% grading down to 4.0% Prescription drug: 5.4% grading down to 4.0%

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Pre-termination mortality rates for each plan were based upon the 2010–2013 actual mortality experience, 60% of male and 65% of female post-termination rates. Deaths are assumed to be occupational 70% of the time for peace officer/firefighters, 50% of the time for all others. Post-termination mortality rates for each plan were based on 96% of all rates of the RP-2000 Combined Mortality Table, 2000 Base Year projected to 2018 with Projection Scale BB.

The actuarial assumptions used in the June 30, 2016 actuarial valuations were based on the results of an actuarial experience study for the period from July 1, 2009 to June 30, 2013.

The long-term expected rate of return on plan investments for each plan was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of postretirement healthcare plan investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and adding expected inflation. Best estimates of arithmetic rates of return for each major asset class included in the plans' target asset allocation as of June 30, 2017 (see the discussion of the plans' investment policy) are summarized in the following table (note that the rates shown below exclude the inflation component):

Asset class	Long-term Expected real rate of return
Domestic equity	8.83%
Global ex-U.S. equity	7.79
Intermediate Treasuries	1.29
Opportunistic	4.76
Real assets	4.94
Absolute return	4.76
Private equity	12.02
Cash equivalents	0.63

Discount Rate

The discount rate used to measure the total OPEB liability for each plan was 8%. The projection of cash flows used to determine the discount rate assumed that employer and State contributions will continue to follow the current funding policy, which meets State statutes. Based on those assumptions, the fiduciary net position for each plan was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on plan investments was applied to all periods of projected benefit payments to determine the total OPEB liability for each plan in accordance with the method prescribed by GASB Statement No. 74.

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

The following presents the net OPEB liability (asset) for each plan as of June 30, 2017, calculated using the discount rate of 8%, as well as what the respective plan's net OPEB liability (asset) would be if it were calculated using a discount rate that is one-percentage-point lower (7%) or one-percentage-point higher (9%) than the current rate (in thousands):

		1% decrease (7%)	Current discount rate (8%)	1% increase (9%)
ARHCT	$	560,494	183,933	(128,506)
ODD		(3,284)	(3,268)	(3,260)
RMP		2,032	(4,740)	(9,885)

Sensitivity of the Net OPEB Liability to Changes in the Healthcare Cost Trend Rates

The following presents the net OPEB liability for each plan as of June 30, 2017, calculated using the healthcare cost trend rates as summarized in the 2016 actuarial valuation reports, as well as what the respective plan's net OPEB liability would be if it were calculated using trend rates that are one-percentage-point lower or one-percentage-point higher than the current healthcare cost trend rates:

		1% decrease	Current trend rate	1% increase
ARHCT	$	(171,461)	183,933	616,144
ODD		N/A	N/A	N/A
RMP		(10,911)	(4,740)	3,796

(6) Claims Payable

The liability for claims incurred but not reported represents the estimated amounts necessary to settle all outstanding claims, incurred but not reported, as of the balance sheet date. The ARHCT and Retiree Medical Plan's reserve estimates are based primarily on historical development patterns adjusted for current trends that would modify past experience. Claims are reevaluated periodically to consider the effects of inflation, claims settlement trends, and other economic factors. The process of establishing loss reserves is subject to uncertainties that are normal, recurring, and inherent in the healthcare business.

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Changes in the balances of claims liabilities are as follows (in thousands):

		2017	2016
Beginning of year:			
Due to State of Alaska General Fund	$	—	4,192
Incurred but not reported		13,924	14,451
Total, beginning of year		13,924	18,643
Benefit deductions		120,237	122,954
Benefits paid		(121,373)	(127,673)
Total, end of year	$	12,788	13,924
End of year:			
Incurred but not reported		12,788	13,924
Total, end of year	$	12,788	13,924

(7) Commitments and Contingencies

Contingencies

The Division of Retirement and Benefits is a defendant in various lawsuits. Although the outcome of these lawsuits is not presently determinable, in the opinion of the Division of Retirement and Benefits' counsel, the resolution of these matters will not have a material adverse effect on the financial condition of the Division of Retirement and Benefits.

(8) Medicare Part D Retiree Drug Subsidy

One of the provisions of Medicare Part D provides sponsors of pension healthcare plans the opportunity to receive a RDS payment if the sponsor's plan provides a prescription drug benefit that is actuarially equivalent to the Medicare Part D benefit. The RDS is equal to 28% of the amount of eligible prescription drug benefit costs of retirees who are eligible for, but not enrolled in, Medicare Part D, by virtue of continuing to be covered by the sponsor's plan. The ARHCT Plan was approved for participation in the Medicare Part D program beginning calendar year 2006.

REQUIRED SUPPLEMENTARY INFORMATION

(Unaudited)

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Required Supplementary Information (Unaudited)

Schedule of Changes in Employer Net Pension Liability and Related Ratios Defined Benefit Pension Plan

(In thousands)

	2017	2016	2015	2014	2013	2012
Total pension liability:						
Service cost	$ 68,376	61,011	63,608	64,324	69,113	69,548
Interest	559,165	550,392	540,981	515,325	517,511	501,252
Differences between expected and actual experience	(65,757)	(55,682)	(5,693)	—	1,108	10,986
Changes of assumptions	—	—	156,854	—	—	—
Benefit payments, including refunds of member contributions	(448,422)	(437,582)	(418,545)	(399,001)	(397,956)	(378,113)
Net change in total pension liability	113,362	118,139	337,205	180,648	189,776	203,673
Total pension liability – beginning	7,225,545	7,107,406	6,770,201	6,589,553	6,399,777	6,196,104
Total pension liability – ending (a)	7,338,907	7,225,545	7,107,406	6,770,201	6,589,553	6,399,777
Plan fiduciary net position:						
Contributions – employer	36,634	33,478	36,374	37,571	37,372	38,189
Contributions – member	39,878	42,654	45,506	47,724	50,201	52,020
Contributions – nonemployer entity (State)	116,700	90,589	1,662,700	208,890	196,945	157,387
Total net investment income (loss)	628,184	(31,340)	152,561	599,958	373,868	2,190
Other income	10	95	9	27	19	17
Benefit payments, including refunds of member contributions	(448,422)	(437,582)	(418,545)	(399,001)	(382,933)	(363,839)
Administrative expenses	(2,890)	(2,648)	(2,789)	(3,160)	(2,989)	(2,847)
Net change in plan fiduciary net position	370,094	(304,754)	1,475,816	492,009	272,483	(116,883)
Plan fiduciary net position – beginning	4,942,201	5,246,955	3,771,139	3,279,130	3,006,647	3,123,530
Plan fiduciary net position – ending (b)	5,312,295	4,942,201	5,246,955	3,771,139	3,279,130	3,006,647
Plan's net pension liability (a) - (b)	$ 2,026,612	2,283,344	1,860,451	2,999,062	3,310,423	3,393,130
Plan fiduciary net position as a percentage of the total pension liability	72.39%	68.40%	73.82%	55.70%	49.76%	46.98%
Covered-employee payroll	$ 449,629	473,734	490,667	514,035	550,044	561,971
Net pension liability as a percentage of covered-employee payroll	450.73%	481.99%	379.17%	583.44%	601.85%	603.79%

This schedule is intended to present information for 10 years. Additional years will be displayed as they become available.

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

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Required Supplementary Information (Unaudited)

Schedule of Employer and Nonemployer Contributions

Defined Benefit Pension Plan

Last 10 Fiscal Years

(In thousands)

		2017	2016	2015	2014	2013
Actuarially determined contribution	$	133,417	359,790	321,971	240,366	259,786
Contributions in relation to the actuarially determined contribution		153,334	124,067	1,699,074	246,461	234,317
Contribution deficiency (excess)	$	(19,917)	235,723	(1,377,103)	(6,095)	25,469
Covered-employee payroll	$	449,629	473,734	490,667	514,035	550,044
Contributions as a percentage of covered-employee payroll		34.10%	26.19%	346.28%	47.95%	42.60%

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

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Schedule of Employer and Nonemployer Contributions

Defined Benefit Pension Plan (continued)

Last 10 Fiscal Years

(In thousands)

		2012	2011	2010	2009	2008
Actuarially determined contribution	$	229,509	167,978	170,788	94,388	134,544
Contributions in relation to the actuarially determined contribution		195,576	142,147	134,275	131,533	142,550
Contribution deficiency (excess)	$	33,933	25,831	36,513	(37,145)	(8,006)
Covered-employee payroll	$	561,971	584,068	564,887	557,026	549,148
Contributions as a percentage of covered-employee payroll		34.80%	24.34%	23.77%	23.61%	25.96%

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

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Schedule of Investment Returns

Defined Benefit Pension Plan

	2017	2016	2015	2014
Annual money-weighted rate of return, net of investment expense	13.04%	(0.36)%	3.30%	18.41%

This schedule is intended to present information for 10 years. Additional years will be displayed as they become available.

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

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Schedule of Changes in Employer Net OPEB Liability and Related Ratios

Alaska Retiree Healthcare Trust Plan

(In thousands)
Year ended June 30, 2017

Total OPEB liability:		
Service cost	$	31,605
Interest		224,435
Differences between expected and actual experience		(27,011)
Benefit payments, including refunds of member contributions		(120,204)
Net change in total OPEB liability		108,825
Total OPEB liability – beginning		2,832,773
Total OPEB liability – ending (a)		2,941,598
Plan fiduciary net position:		
Contributions – employer		24,069
Total net investment income		322,219
Other income		13,909
Benefit payments, including refunds of member contributions		(120,204)
Administrative expenses		(5,908)
Net change in plan fiduciary net position		234,085
Plan fiduciary net position – beginning		2,523,580
Plan fiduciary net position – ending (b)		2,757,665
Plan's net OPEB liability (a) – (b)	$	183,933
Plan fiduciary net position as a percentage of the total OPEB liability		93.75%
Covered-employee payroll	$	449,629
Net OPEB liability as a percentage of covered-employee payroll		40.91%

This schedule is intended to present information for 10 years. Additional years will be displayed as they become available.

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

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Schedule of Employer and Nonemployer Contributions
Alaska Retiree Healthcare Trust Plan
Last 10 Fiscal Years

(In thousands)

		2017	2016	2015	2014	2013
Actuarially determined contribution	$	42,171	336,595	352,417	320,797	330,411
Contributions in relation to the actuarially determined contribution		24,069	66,099	364,222	139,936	141,125
Contribution deficiency	$	18,102	270,496	(11,805)	180,861	189,286
Covered-employee payroll	$	449,629	473,734	490,667	514,035	550,044
Contributions as a percentage of covered-employee payroll		5.35%	13.95%	74.23%	27.22%	25.66%

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

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Required Supplementary Information (Unaudited)

Schedule of Employer and Nonemployer Contributions
Alaska Retiree Healthcare Trust Plan (continued)
Last 10 Fiscal Years

(In thousands)

		2012	2011	2010	2009	2008
Actuarially determined contribution	$	192,700	167,686	312,922	164,171	185,271
Contributions in relation to the actuarially determined contribution		113,411	124,724	115,681	149,051	202,452
Contribution deficiency	$	79,289	42,962	197,241	15,120	(17,181)
Covered-employee payroll	$	561,971	584,068	564,887	557,026	549,148
Contributions as a percentage of covered-employee payroll		20.18%	21.35%	20.48%	26.76%	36.87%

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

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Schedule of Investment Returns
Alaska Retiree Healthcare Trust Plan

Year ended June 30, 2017

Annual money-weighted rate of return, net of investment expense	12.58%

This schedule is intended to present information for 10 years. Additional years will be displayed as they become available.

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

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Required Supplementary Information (Unaudited)

Schedule of Changes in Employer Net OPEB Liability and Related Ratios

Occupational Death and Disability Plan

Year ended June 30, 2017
(In thousands)

Total OPEB liability:		
Service cost	$	238
Interest		21
Changes of benefit terms		—
Differences between expected and actual experience		(15)
Net change in total OPEB liability		244
Total OPEB liability – beginning		19
Total OPEB liability – ending (a)		263
Plan fiduciary net position:		
Total net investment income		406
Administrative expenses		(12)
Net change in plan fiduciary net position		394
Plan fiduciary net position – beginning		3,137
Plan fiduciary net position – ending (b)		3,531
Plan's net OPEB asset (a) – (b)	$	(3,268)
Plan fiduciary net position as a percentage of the total OPEB asset		1,342.59%
Covered-employee payroll	$	300,750
Net OPEB liability as a percentage of covered-employee payroll		-1.09%

This schedule is intended to present information for 10 years. Additional years will be displayed as they become available.

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

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Required Supplementary Information (Unaudited)

Schedule of Employer and Nonemployer Contributions
Occupational Death and Disability Plan
Last 10 Fiscal Years

(In thousands)

		2017	2016	2015	2014	2013
Actuarially determined contribution	$	—	—	—	—	—
Contributions in relation to the actuarially determined contribution		—	1	—	—	—
Contribution deficiency	$	—	(1)	—	—	—
Covered-employee payroll	$	300,750	289,714	255,186	229,971	206,771
Contributions as a percentage of covered-employee payroll		0.00%	0.00%	0.00%	0.00%	0.00%

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

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Schedule of Employer and Nonemployer Contributions
Occupational Death and Disability Plan (continued)
Last 10 Fiscal Years

(In thousands)

		2012	2011	2010	2009	2008
Actuarially determined contribution	$	—	474	442	623	408
Contributions in relation to the actuarially determined contribution		(1)	474	442	623	408
Contribution deficiency	$	1	—	—	—	—
Covered-employee payroll	$	200,043	170,606	118,813	89,708	56,369
Contributions as a percentage of covered-employee payroll		0.00%	0.28%	0.37%	0.69%	0.72%

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

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Schedule of Investment Returns
Occupational Death and Disability Plan

Year ended June 30, 2017

Annual money-weighted rate of return, net of investment expense	12.03%

This schedule is intended to present information for 10 years. Additional years will be displayed as they become available.

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

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Schedule of Changes in Employer Net OPEB Liability and Related Ratios

Retiree Medical Plan

Year Ended June 30, 2017
(In thousands)

Total OPEB liability:		
Service cost	$	2,703
Interest		1,934
Differences between expected and actual experience		(2)
Benefit payments, including refunds of member contributions		(3)
Net change in total OPEB liability		4,632
Total OPEB liability – beginning		21,476
Total OPEB liability – ending (a)		26,108
Plan fiduciary net position:		
Contributions – employers		3,524
Total net investment income		3,260
Benefit payments, including refunds of member contributions		(3)
Administrative expenses		(12)
Net change in plan fiduciary net position		6,769
Plan fiduciary net position – beginning		24,079
Plan fiduciary net position – ending (b)		30,848
Plan's net OPEB asset (a) – (b)	$	(4,740)
Plan fiduciary net position as a percentage of the total OPEB asset		118.16%
Covered-employee payroll	$	300,750
Net OPEB asset as a percentage of covered-employee payroll		-1.58%

This schedule is intended to present information for 10 years. Additional years will be displayed as they become available.

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Schedule of Employer and Nonemployer Contributions

Retiree Medical Plan

Last 10 Fiscal Years

(In thousands)

		2017	2016	2015	2014	2013
Actuarially determined contribution	$	3,158	6,837	6,099	1,334	1,241
Contributions in relation to the actuarially determined contribution		3,524	6,317	5,670	1,181	1,101
Contribution deficiency	$	(366)	520	429	153	140
Covered-employee payroll	$	300,750	289,714	255,186	229,971	206,771
Contributions as a percentage of covered-employee payroll		1.17%	2.18%	2.22%	0.51%	0.53%

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

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Schedule of Employer and Nonemployer Contributions

Retiree Medical Plan (continued)

Last 10 Fiscal Years

(In thousands)

		2012	2011	2010	2009	2008
Actuarially determined contribution	$	1,420	1,422	1,628	1,162	763
Contributions in relation to the actuarially determined contribution		1,160	1,154	1,421	992	651
Contribution deficiency	$	260	268	207	170	112
Covered-employee payroll	$	200,043	170,606	118,813	89,708	56,369
Contributions as a percentage of covered-employee payroll		0.58%	0.68%	1.20%	1.11%	1.15%

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

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Schedule of Investment Returns

Retiree Medical Plan

Year ended June 30, 2017

Annual money-weighted rate of return, net of investment expense	11.80%

This schedule is intended to present information for 10 years. Additional years will be displayed as they become available.

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June 30, 2017

(1) Description of Schedule of Funding Progress

Each time a new benefit is added, which applies to service already rendered, an "unfunded actuarial accrued liability" is created. Laws governing the Teachers' Retirement System (the System) require that these additional liabilities be financed systematically over a period of future years. Also, if actual financial experiences are less favorable than assumed financial experiences, the difference is added to the unfunded actuarial accrued liability.

In an inflationary economy, the value of the dollar is decreasing. This environment results in employee pay increasing in dollar amounts, resulting in unfunded actuarial accrued liabilities increasing in dollar amounts, all at a time when the actual value of these items, in real terms, may be decreasing.

(2) Actuarial Assumptions and Methods

The actuarial valuation was prepared by Conduent Human Resource Services. The significant actuarial methods and assumptions used in the defined benefit pension and postemployment healthcare benefit plan valuation as of June 30, 2016 are as follows:

(a) Actuarial cost method – Entry Age Normal Actuarial Cost method of funding. Any funding surplus or unfunded accrued liability is amortized over a closed 25-year period (established June 30, 2014) as a level percentage of payroll amount. State statutes allow the contribution rate to be determined on payroll for all members, defined benefit and defined contribution member payroll combined.

(b) Valuation of assets – The actuarial asset value was reinitialized to equal fair value of assets as of June 30, 2014. Beginning in 2015, the asset value method recognizes 20% of the gain or loss each year, for a period of five years. All assets are valued at fair value. Assets are accounted for on an accrued basis and are taken directly from audited financial statements.

(c) Valuation of medical benefits – Base claims cost rates are incurred healthcare costs expressed as a rate per member per year. Ideally, claims cost rates should be derived for each significant component of cost that can be expected to require differing projection assumptions or methods, such as medical claims, prescription drug claims, administrative costs, etc. Separate analysis is limited by the availability and historic credibility of cost and enrollment data for each component of cost. This valuation reflects nonprescription claims separated by Medicare status, including eligibility for free Part A coverage. Prescription costs are analyzed separately as in prior valuations. Administrative costs are assumed in the final per capita claims cost rates used for valuation purposes. Analysis to date on Medicare Part A coverage is limited since Part A claim data is not available by individual, nor is this status incorporated into historical claim data.

(d) Investment return – 8.00% per year (geometric), compounded annually, net of expenses.

(e) Salary scale – Inflation 3.12% per year and productivity 0.50% per year.

(f) Payroll growth – 3.62% per year (inflation + productivity).

(g) Total inflation – Total inflation as measured by the Consumer Price Index for urban and clerical workers for Anchorage is assumed to increase 3.12% annually.

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Notes to Required Supplementary Information (Unaudited)

June 30, 2017

(h) Mortality (pre-termination) – Based upon the 2010–2013 actual experience, 68% of male rates and 60% of female rates of post-termination mortality. Deaths are assumed to result from nonoccupational causes 85% of the time. The mortality assumptions include an allowance for future mortality improvement. The mortality table used was set in 2014 with an Actual Deaths to Expected Deaths ratio of 110%.

(i) Mortality (post-termination) – Based upon the 2010–2013 actual experience, 94% of male and 97% of female rates of RP-2000, 2000 base year, projected to 2018 with Projection Scale BB, with a three-year setback for males and a four-year setback for females. The mortality assumptions include an allowance for future mortality improvement. The mortality table used was set in 2014 with an Actual Deaths to Expected Deaths ratio of 110%.

(j) Turnover – Select and ultimate rates based upon the 2010–2013 actual withdrawal experience.

(k) Disability – Incidence rates based upon the 2010–2013 actual experience. Post-disability mortality in accordance with the RP-2000 Disabled Retiree Mortality Table, 2000 Base Year, projected to 2018 with Projection Scale BB.

(l) Retirement – Retirement rates based on the 2010–2013 actual experience. Deferred vested members are assumed to retire at their earliest unreduced retirement date. The modified cash refund annuity is valued as a three-year certain and life annuity.

(m) Marriage and age difference – Wives are assumed to be three years younger than husbands; 85% of male members and 75% of female members are assumed to be married.

(n) Dependent children – Benefits for dependent children have been valued only for members currently covering their dependent children. These benefits are only valued through the dependent children's age 23 (unless the child is disabled).

(o) Contribution refunds – 5% of terminating members with vested benefits are assumed to have their contributions refunded; 100% of those with nonvested benefits are assumed to have their contributions refunded.

(p) Imputed data – Data changes from the prior year, which are deemed to have an immaterial impact on liabilities and contribution rates, are assumed to be correct in the current year's client data. Nonvested terminations with appropriate refund dates are assumed to have received a full refund of contributions. Active members with missing salary and service are assumed to be terminated with status based on their vesting percentage.

(q) Active rehire assumption – Starting with the June 30, 2016 valuation, the normal cost used for determining contribution rates and in the projections includes a rehire assumption to account for anticipated rehires. The normal cost shown in the report includes the following percentage loads (which were developed based on the prior five years of rehire loss experience): Pension – 18.49% and Healthcare – 10.39%.

(r) Teacher active data adjustment – To reflect participants who terminate employment before the valuation date and are subsequently rehired after the valuation date, participants who are listed as terminated in the June 30 client data but active in the October 1 client records are updated to active status as of June 30.

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Notes to Required Supplementary Information (Unaudited)

June 30, 2017

(s) Cost of living allowance (COLA) – Of those benefit recipients who are eligible for the COLA, 60% are assumed to remain in Alaska and receive the COLA.

(t) Sick leave – 4.5 days of unused sick leave for each year of service are assumed to be available to be credited once the member is retired, terminates, or dies.

(u) Postretirement pension adjustment (PRPA) – 50% and 75% of assumed inflation, or 1.56% and 2.34%, respectively, is valued for the annual automatic PRPA as specified in the statute.

(v) Expenses – The investment return assumption is net of all expenses.

(w) Part-time status – Part-time members are assumed to earn 0.75 years of credited service per year.

(x) Re-employment option – All re-employed retirees are assumed to return to work under the Standard Option.

(y) Service – Total credited service is provided by the State. The actuary assumes that this service is the only service that should be used to calculate benefits. Additionally, the State provides claimed service (including Bureau of Indian Affairs Service). Claimed service is used for vesting and eligibility purposes.

(z) Final average earnings – Final average earnings is provided on the data for active members. This amount is used as a minimum in the calculation of the average earnings in the future.

(aa) Per capita claims cost – Sample claims cost rates adjusted to age 65 for FY17 medical and prescription drug benefits are shown below:

	Medical	Prescription drugs
Pre-Medicare	$ 14,380	3,320
Medicare Parts A and B	1,707	3,320
Medicare Part B Only	8,562	3,320
Medicare Part D	N/A	614

(bb) Third-party administrator fees – $206.88 per person per year; assumed trend rate of 5% per year.

(cc) Medicare Part B Only – For active employees and retirees not yet Medicare-eligible, participation is set based on whether the member/retiree will have 40 quarters of employment covered by Social Security after March 31, 1986, depending upon date of hire and/or rehire.

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(dd) Healthcare cost trend – The table below shows the rate used to project the cost from the shown fiscal year to the next fiscal year. For example, 8.8% is applied to the FY17 pre-Medicare medical claims costs to get the FY18 medical claims costs:

Fiscal year	Medical Pre-65	Medical Post-65	Prescription drugs
2017	8.8%	5.8%	5.4%
2018	8.2	5.7	5.1
2019	7.6	5.6	4.8
2020	7.0	5.6	4.6
2021	6.5	5.6	4.4
2022	6.0	5.6	4.2
2023	5.6	5.6	4.0
2026	5.6	5.6	4.0
2051	4.4	4.0	4.0
2101	4.4	4.0	4.0

For the June 30, 2014 valuations and later, the updated Society of Actuaries' Healthcare Cost Trend Model is used to project medical and prescription drug costs. This model effectively begins estimating trend amounts beginning in 2014 and projects out to 2090. This model has been populated with assumptions that are specific to the State of Alaska.

(ee) Aging factors:

Age	Medical	Prescription drugs
0–44	2.0%	4.5%
45–54	2.5	3.5
55–64	3.5	3.0
65–74	4.0	1.5
75–84	1.5	0.5
85–95	0.5	—
96+	—	—

Note that pre-65, the factor represents the amount to increase from the ages noted to the next age. However post-65, the factor represents the adjustment to get to the ages noted up to age in the range. That is, 2.5% is used to age from 54 to 55, but 1.5% is used to age from 83 to 84.

(ff) Retired member contributions for medical benefits – Currently, contributions are required for System members who are under age 60 and have less than 25 years of service. Eligible Tier 1 members are exempt from contribution requirements. Annual FY17 contributions based on monthly rates shown below for calendar 2016 and 2017 are assumed based on the coverage category for current retirees. The composite rate shown is used for current active and inactive members in Tier 2 who are assumed to retire prior to age 60 with less than 25

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years of service and who are not disabled. For dependent children, the actuaries value one-third of the annual retiree contribution to estimate the per-child rate based upon the assumed number of children in rates where children are covered:

	Calendar 2017		Calendar 2016
Coverage category	Annual contribution	Monthly contribution	Monthly contribution
Retiree only	$ 9,324	777	777
Retiree and spouse	18,648	1,554	1,554
Retiree and child(ren)	13,164	1,097	1,097
Retiree and family	22,500	1,875	1,875
Composite	13,848	1,154	1,154

(gg) Trend rate for retired member contributions – The table below shows the rate used to project the retired member medical contributions from the shown fiscal year to the next fiscal year. For example, 6.2% is applied to the FY17 retired member medical contributions to get the FY18 retired member medical contributions.

Fiscal year	Trend Assumption
2017	6.2%
2018	5.8
2019	5.4
2020	5.0
2021	4.7
2022	4.4
2026	4.1
2051	4.0
2101	4.0

Graded trend rates for retired member medical contributions were reinitialized for the June 30, 2014 valuation. Note that actual FY17 retired member medical contributions are reflected in the valuation so trend on such contribution during FY17 is not applicable.

(hh) Healthcare participation – 100% of System-paid members and their spouses are assumed to elect healthcare benefits as soon as they are eligible; 10% of non-System-paid members and their spouses are assumed to elect healthcare benefits as soon as they are eligible.

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The significant actuarial methods and assumptions used in the defined contribution occupational death and disability and retiree medical benefits plan valuation as of June 30, 2016 are as follows:

(a) Actuarial cost method – Liabilities and contributions are computed using entry age normal actuarial cost method. Any funding surpluses or unfunded accrued liability is amortized over 25 years as a level percentage of expected payroll. However, in keeping with Governmental Accounting Standards Board (GASB) requirements, the net amortization period will not exceed 30 years. These requirements are being amended. Under the new accounting standards that will become applicable to postemployment benefit plans other than pension plans (GASB Statement Nos. 74 and 75), the GASB requirements will not directly control amortization periods used for funding of the plan.

(b) Valuation of assets – Recognizes 20% of the investment gain or loss in each of the current and preceding four years. This method was phased in over five years. Fair value of assets was $0 as of June 30, 2006. All assets are valued at fair value. Assets are accounted for on an accrued basis and are taken directly from audited financial statements. Valuation assets are constrained to a range of 80% to 120% of fair value of assets.

(c) Valuation of retiree medical and prescription drug benefits – Due to the lack of experience for the DCR retiree medical plan only, base claims costs are based on those described in the actuarial valuation as of June 30, 2016 for TRS DB retiree healthcare plan with some adjustments. The claim costs were adjusted to reflect the differences between the DCR medical plan and the DB medical plan. These differences include network steerage, different coverage levels, different Medicare coordination for medical benefits, and an indexing of the retiree out-of-pocket dollar amounts. To account for higher initial copays, deductibles, and out-of-pocket limits, upcoming FY17 claims costs were reduced 3.1% for medical and 11.2% for prescription drugs. In addition, to account for the difference in Medicare coordination, upcoming FY17 medical claims costs for Medicare eligible retirees were further reduced 33.75%. The healthcare trend rate for the DB health benefits was reduced 0.2% each year for the DCR health benefits to reflect the fact that the retiree healthcare benefits to be offered to DCR members will have an annual indexing of member cost sharing features, such as deductibles and out-of-pocket amounts.

The State intends to transition to an Employer Group Waiver Program (EGWP) for this group in 2018. That impact is reflected in the valuation, but not in the base cost rates for 2016 or 2017. Conduent estimated the impact of the EGWP plan by offsetting an amount equal to 160% of the RDS amount (a one-time adjustment, trended at regular prescription drug thereafter) based upon the actuary's review of client and industry comparisons of subsidies under RDS and EGWP. A review of the 2016 Medicare Trustees report indicates varying rates of increase for CMS subsidies under both RDS and EGWP. The projections for the next ten years indicate that EGWP reimbursements for direct and reinsurance subsidies are expected to be consistently significantly higher than projected RDS reimbursements.

The estimate of the impact of the EGWP arrangement is a somewhat conservative estimate based on the actuary's experience with other similar implementations. EGWP subsidies are provided by three mechanisms: a capitation amount, a discount on brand name drugs, and catastrophic payment.

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The greatest variation in the actuary's estimate comes from the capitation amount, which is dependent upon the risk score of the population. The risk score is a measure of how sick (or well) the population is, depending on such matters as age and diagnosis. The higher the risk score, the larger the capitation. On the other hand, the healthier the population, the lower the capitation. Relatively small variations in risk score result in large swings in the capitation. Relatively small variations in risk score result in large swings in the capitation. Employer retiree groups tend to be healthier than the Medicare population as a whole. The actuary's 60% estimate is meant to be conservative and is based on typical employer groups.

(d) Investment return/discount rate – 8.00% per year (geometric), compounded annually, net of expenses.

(e) Salary scale – Inflation 3.12% per year. Productivity 0.5% per year.

(f) Payroll growth – 3.62% per year (inflation + productivity).

(g) Total inflation – Total inflation as measured by the Consumer Price Index for urban and clerical workers for Anchorage is assumed to increase 3.12% annually.

(h) Mortality (pre-termination) – Based upon the 2010–2013 actual experience, 68% of male rates and 60% of female rates of post-termination mortality rates. Deaths are assumed to result from occupational causes 15% of the time. The mortality assumptions include an allowance for expected future mortality improvement. The mortality table used was set in 2014 with an Actual Death to Expected Deaths ratio of 110%.

(i) Mortality (post-termination) – Based upon the 2010–2013 actual experience, 94% of male and 97% of female rates of RP-2000 Mortality Table, 2000 Base Year projected to 2018 with Projection Scale BB, with a three-year setback for males and a four-year setback for females. Disability mortality in accordance with the RP-2000 Disabled Retiree Mortality Table, 2000 Base Year, projected to 2018 with projection scale BB. The mortality assumptions include an allowance for expected future mortality improvement. The mortality table used was set in 2014 with an Actual Death to Expected Deaths ratio of 110%.

(j) Turnover – Select and ultimate rates based upon the 2010–2013 actual withdrawal experience.

(k) Disability – Incidence rates based upon the 2010–2013 actual experience. Disabilities are assumed to result from occupational causes 15% of the time.

(l) Retirement – Retirement rates based upon the 2010–2013 actual experience. Deferred vested members are assumed to retire at their earliest unreduced retirement date.

(m) Marriage and age difference – Wives are assumed to be three years younger than husbands; 85% of male members and 75% of female members are assumed to be married at termination from active service.

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(n) Per capita claims cost – Sample claims cost rates (before base claims cost adjustments described below) adjusted to age 65 for FY17 medical and prescription drug benefits are shown below:

	Medical	Prescription drugs
Pre-Medicare	$ 14,380	3,320
Medicare Parts A and B	1,707	3,320
Medicare Part B Only	8,562	3,320
Medicare Part D	N/A	614

Members are assumed to attain Medicare eligibility at age 65.

(o) Third-party administrator fees – $206.88 per person per year; assumed trend rate of 5% per year.

(p) Base claims cost adjustments – Due to higher initial copays, deductibles, out-of-pocket limits, and member cost sharing compared to the DB medical plan, the following cost adjustments are applied to the per capita claims cost rates: 0.969 for the medical plan, 0.6625 for the medical Medicare coordination method, and 0.888 for the prescription drug plan.

(q) Imputed data – Data changes from the prior year, which are deemed to have an immaterial impact on liabilities and contribution rates, are assumed to be correct in the current year's client data. Nonvested terminations with appropriate refund dates are assumed to have received a full refund of contributions. Active members with missing salary and service are assumed to be terminated with status based on their vesting percentage.

(r) Active data adjustment – To reflect participants who terminate employment before the valuation date and are subsequently rehired after the valuation date, participants who are listed as terminated on the June 30 client data but active in the October 1 client records are updated to active status.

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(s) Healthcare cost trend – The table below shows the rate used to project the cost from the shown fiscal year to the next fiscal year. For example, 8.8% is applied to the FY17 pre-Medicare medical claims cost to get the FY18 medical claims cost.

Fiscal year	Medical Pre-65	Medical Post-65	Prescription drugs
2017	8.8%	5.8%	5.4%
2018	8.2	5.7	5.1
2019	7.6	5.6	4.8
2020	7.0	5.6	4.6
2021	6.5	5.6	4.4
2022	6.0	5.6	4.2
2023	5.6	5.6	4.0
2025	5.6	5.6	4.0
2050	4.4	4.0	4.0
2100	4.4	4.0	4.0

For the June 30, 2014 valuation and later, the updated Society of Actuaries' Healthcare Cost Trend Model is used to project medical and prescription drug costs. This model effectively begins estimating trend amounts beginning in 2014 and projects out to 2090. This model has been populated with assumptions that are specific to the State of Alaska.

Each of the above trend rates was reduced by 0.2% to reflect the fact that the medical benefit offered to members will have annual indexing of member cost sharing.

(t) Aging factors:

Age	Medical	Prescription drugs
0–44	2.0%	4.5%
45–54	2.5	3.5
55–64	3.5	3.0
65–74	4.0	1.5
75–84	1.5	0.5
85–94	0.5	—
95+	—	—

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June 30, 2017

(u) Retiree medical participation:

Decrement due to disability	
Age	Percent participation
<56	73.00%
56	77.50
57	79.75
58	82.00
59	84.25
60	86.50
61	88.75
62	91.00
63	93.25
64	95.50
65+	94.00

Decrement due to retirement	
Age	Percent participation
55	40.0%
56	50.0
57	55.0
58	60.0
59	65.0
60	70.0
61	75.0
62	80.0
63	85.0
64	90.0
65+	

Years of service	
<15	70.5%
15–19	75.2
20–24	79.9
25–29	89.3
30+	94.0

Participation rates reflect the expected plan election rate that varies by reason for decrement, duration that a member may pay full cost prior to Medicare eligibility, and availability of alternative and/or lower-cost options, particularly in the Medicare market. This assumption is based on observed trends in participation from a range of other plans.

Changes in Actuarial Assumptions, Methods, and Benefits Since the Prior Valuation

Defined benefit pension and postemployment healthcare benefit plan

Starting with the June 30, 2016 valuation, the normal cost used for determining contribution rates and in the projections includes a rehire assumption to account for anticipated rehires. This assumption was developed based on five years of rehire loss experience through June 30, 2015. Healthcare claim costs are updated annually.

There have been no material changes in the asset or valuation methods since the prior valuation. Enhanced health plan enrollment data resulted in some offsetting cost increases and enrollment decreases.

There have been no changes in benefit provisions since the prior valuation.

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Defined contribution occupational death and disability and retiree medical benefits plan

There have been no changes in assumptions or methods since the prior valuation. Healthcare claim costs are updated annually.

There have been no material changes in the asset or valuation methods since the prior valuation.

There have been changes in DCR medical benefit provisions since the prior valuation to reflect the adopted design as of July 2016.

SUPPLEMENTAL SCHEDULES

State of Alaska
Teachers' Retirement System
(A Component Unit of the State of Alaska)

Schedule of Administrative and Investment Deductions

Years ended June 30, 2017 and 2016
(In thousands)

	Administrative	Investment	Totals 2017	Totals 2016
Personal services:				
Wages	$ 1,807	91	1,898	1,697
Benefits	904	38	942	1,017
Total personal services	2,711	129	2,840	2,714
Travel:				
Transportation	6	35	41	47
Per diem	1	6	7	8
Moving	3	—	3	—
Total travel	10	41	51	55
Contractual services:				
Management and consulting	5,681	3,720	9,401	21,953
Accounting and auditing	103	26	129	110
Data processing	563	361	924	797
Communications	26	19	45	57
Advertising and printing	20	1	21	22
Rentals/leases	142	30	172	168
Legal	102	24	126	134
Medical specialists	25	—	25	22
Repairs and maintenance	—	—	—	—
Transportation	29	2	31	30
Securities lending	—	87	87	—
Other professional services	61	13	74	65
Total contractual services	6,752	4,283	11,035	23,358
Patient Protection and Affordable Care Act:				
Transitional Reinsurance Program	238	—	238	297
Total Patient Protection and Affordable Care Act	238	—	238	297
Other:				
Equipment	11	15	26	15
Supplies	15	31	46	31
Total other	26	46	72	46
Total administrative and investment deductions	$ 9,737	4,499	14,236	26,470

See accompanying independent auditors' report.

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Schedule of Payments to Consultants Other than Investment Advisors

Years ended June 30, 2017 and 2016
(In thousands)

Firm	Services	2017	2016
Conduent Human Resource Services	Actuarial services	$ 232	316
KPMG LLP	Auditing services	97	95
State Street Bank and Trust	Custodial banking services	461	416
Alaska IT Group	Data processing services	150	117
Applied Microsystems Incorporated	Data processing services	141	157
Computer Task Group	Data processing services	—	15
SHI International Corporation	Data processing services	169	133
Sungard Availability Services	Data processing services	10	—
State of Alaska, Department of Law	Legal services	119	104
The Segal Company Incorporated	Management consulting services	116	—
First Medical Advisory Group	Medical specialist and consulting	20	—
Health Care Cost Management	Medical specialist and consulting	20	—
State of Alaska, Department of Health and Social Services	Medical specialist and consulting	—	97
		$ 1,535	1,450

This schedule presents payments to consultants receiving greater than $10,000.

See accompanying independent auditors' report.

INVESTMENT SECTION

ALASKA DIVISION OF

Retirement and Benefits

Callan

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www.callan.com

September 17, 2017

Alaska Retirement Management Board
State of Alaska, Department of Revenue
Treasury Division
333 Willoughby Avenue, 11th Floor
Juneau, Alaska 99801

Dear Board Members:

This letter reviews the investment performance of the Alaska Retirement Management Board (ARMB) for the fiscal year ended June 30, 2017.

Callan LLC (Callan) calculates time-weighted performance statistics based on underlying custodial data provided by the Board's custodian, State Street Bank and Trust Company. The performance calculations were made using a time-weighted return methodology based upon current market values. ARMB's real estate consultant, the Townsend Group, calculates returns for the real estate segment of the portfolio and Callan incorporated Townsend data into the ARMB's Total Fund returns.

Callan serves as the ARMB Board's (Board) independent general investment consultant and evaluates ARMB's performance in relation to market benchmarks, appropriate manager peer groups and other public pension systems. The performance calculations are made using a methodology broadly similar to the Global Investment Performance Standards.

ARMB purposely seeks to invest assets prudently, expertly, and according to governing law and industry practices. The objective of this approach is that assets under supervision be sufficient to pay promised benefits to members and beneficiaries. In pursuit of these objectives, the ARMB periodically evaluates liabilities, expected contributions and potential earnings. This analysis considers a wide range of potentially viable investment strategies. With thoughtful consideration of multiple factors, the Board selects a strategic investment policy that balances long-term growth potential and acceptable risk. A policy benchmark is constructed that mirrors the Board's strategic decision regarding asset allocation policy. The custom policy benchmark comprises equity, fixed income, real estate and other market indices weighted in proportions corresponding to the ARMB's investment policy.

Market Overview

Equity markets posted strong returns across the globe in fiscal year 2017. The Russell 3000 Index, a measure of broad U.S. equity, returned 18.51% in the period. Non-U.S. stocks outperformed their U.S. counterparts, aided by a declining dollar. International stocks, as measured by the MSCI ACWI ex-U.S. Index, gained 21.00% for the fiscal year. A broad measure of the total global equity market (MSCI All Country World Index) rose 19.42%.

Rising rates weighed on fixed income performance over the last 12 months. The Bloomberg Barclays U.S. Aggregate Bond Index, a widely used gauge of the investment grade domestic bond market, fell -0.31%. Absolute return hedge fund-of-fund strategies trailed the equity markets despite notching positive returns for the fiscal year. The Callan Absolute Return Hedge Fund-of-Funds Style median return was 6.50% (net-of-fees). Private real estate investments, as measured by the NCREIF Property Index, continued an impressive run of positive returns for every fiscal year going back to 2011. In fiscal year 2017, the NCREIF Property Index returned 6.97%. Publicly traded real estate, as measured by the NAREIT All Equity Index, lagged the private markets, gaining only 0.22%.

ARMB's various asset groups performed as follows:

Domestic Stocks:	17.74%
Int'l Stocks:	20.48%
Alternative Equity:	11.27%
Fixed Income:	2.89%
Real Assets:	5.98%
Private Equity:	17.04%
Absolute Return:	8.47%

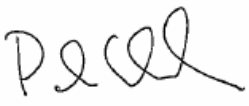
For the fiscal year ended 30 June 2017, the Public Employees Retirement System (PERS) had a time-weighted total return of 13.35%. The Teachers Retirement System (TRS) had a time-weighted total return of 13.36%. Both systems' gross return exceeded their strategic policy target return of 13.26% and the median return for Callan's Public Fund Sponsor database of 12.42%.

Over longer periods, PERS and TRS have closely tracked their target index returns. For example, PERS' 7-year annualized return was 9.55% while TRS's return was slightly higher at 9.60%. These returns were in line with but slightly above their target return of 9.44%. Over 25.75 years (the longest period for which Callan has detailed data), PERS and TRS achieved annualized total returns of 7.72% and 7.77%, respectively; the policy benchmark return for both Plans over this period was 7.69%.

Both systems are well diversified and currently have asset allocation policies that, in Callan's opinion, are consistent with achieving a long-term "real" (above inflation) return of 4.5%.

In summary, fiscal 2017 was a year in which the ARMB's asset class returns were positive across the board. The PERS and TRS portfolios are well-diversified. They produced returns well above the average public fund, ranking in the 29th percentile within the Public Fund Sponsor peer group.

Sincerely,



Paul Erlendson
Senior Vice President

Department of Revenue
Treasury Division Staff
As of June 30, 2017

Commissioner
Randall Hoffbeck

Deputy Commissioner
Jerry Burnett

Director
Pamela Leary, CPA

Chief Investment Officer
Bob G. Mitchell

Comptroller
Scott Jones, CPA

Cash Management
Michelle M. Prebula, MBA, CPA, CCM

ARMB Liaison Officer
Stephanie Alexander

Investment Officers
Zachary Hanna
Stephen R. Sikes
Victor Djajalie
Steve Verschoor
Shane Carson
Ross Alexander
Nicolas Orr
Sean Howard
Casey Colton
Emily Howard
Mackenzie Willems
Kevin Lui
Kevin Buckland
Mike Barnhill

External Money Managers and Consultants

Domestic Equity Large Capitalization
Allianz Global Investors
San Francisco, CA
Barrow, Hanley, Mewhinney & Strauss
Dallas, TX
McKinley Capital Management, Inc.
Anchorage, AK
Quantitative Management Associates
Newark, NJ
State Street Global Advisors
San Francisco, CA

Domestic Equity Small Capitalization
Barrow, Hanley, Mewhinney & Strauss
Dallas, TX
BMO Global Asset Management
Chicago, IL
Fidelity Investments
Smithfield, RI
Frontier Capital Management
Boston, MA
Jennison Associates LLC
New York, NY
Lord Abbett & Co.
Jersey City, NJ
Luther King Capital Management
Fort Worth, TX
State Street Global Advisors
San Francisco, CA
Sycamore Capital Management
Cincinnati, OH

Domestic Equity Micro Capitalization
DePrince, Race & Zollo, Inc.
Winter Park, FL
Lord Abbett & Co.
Jersey City, NJ
Zebra Capital Management
Mitford, CT

International Small Capitalization
Mondrian Investment Partners
London, England
Schroders Investment Management NA
London, England

Emerging Market Income
Lazard Asset Management
New York, NY

International Equity – EAFE, Emerging Markets Non U.S., and Global Equity
Allianz Global Investors
San Francisco, CA
Arrowstreet Capital, LP
Boston, MA
BlackRock
San Francisco, CA
Baillee Gifford Overseas Ltd.
Edinburgh, Scotland
Brandes Investment Partners, L.P.
San Diego, CA
Capital Guardian Trust Co.
Los Angeles, CA
Lazard Asset Management
New York, NY
McKinley Capital Management, Inc.
Anchorage, AK
Parametric Clifton
Seattle, WA
State Street Global Advisors
San Francisco, CA

International Fixed Income
Mondrian Investment Partners
London, England
Lazard Asset Management
New York, NY
Schroders Investment Management NA
New York, NY

High Yield/Convertible Bond/Tactical Bond
Advent Capital Management
New York, NY
Columbia Threadneedle Investment Management
Minneapolis, MN
Eaton Vance Trust Company
Boston, MA
Fidelity Investment Asset Management
Smithfield, RI
MacKay Shields LLC
New York, NY

Alternative Equity
Analytic Investors
Los Angeles, CA
State Street Global Advisors
San Francisco, CA
Quantitative Management Associates
Newark, NJ

External Money Managers and Consultants (cont.)

Taxable Municipal Bonds
Guggenheim Partners LLC
Santa Monica, CA
Western Asset Management Company
Pasadena, CA

Master Limited Partnerships
Advisory Research
St. Louis, MO
Tortoise Capital Advisors LLC
Leawood, KS

Absolute Return
Allianz Global Investors
New York, NY
Crestline Investors, Inc.
Fort Worth, TX
Global Assets Management Inc.
New York, NY
Prisma Capital
New York, NY
Zebra Capital Management
Milford, CT

Private Equity
Abbott Capital Management, L.P.
New York, NY
Angelo, Gordon & Co.
New York, NY
Advent International,
Boston, MA
Dyal Capital Partners
New York, NY
Glendon Capital
Santa Monica, CA
KKR Lending Partners
New York, NY
Lexington Partners
New York, NY
Merit Capital Partners
Chicago, IL
Neuberger Berman
New York, NY
New Mountain Partners
New York, NY
NGP
Irvine, TX
Onex
New York, NY
Pathway Capital Management, LLC
Irvine, CA
Summit Partners
Boston, MA
The Jordan Company
New York, NY
Warburg Pincus
New York, NY

Real Assets – Infrastructure
Brookfield Investment Management
New York, NY
Industry Funds Management
New York, NY
JP Morgan Asset Management
New York, NY
Lazard Asset Management
New York, NY

Real Assets – Farmland and Timber
Hancock Agricultural Investment Group
Boston, MA
UBS Farmland Investors, LLC
Hartford, CT
Hancock Timber Resource Group
Boston, MA
Timberland Investment Resources LLC
Atlanta, GA

Supplemental Benefits System, Deferred Compensation Plan and Defined Contribution Plan
Allianz Global Investors
San Francisco, CA
BlackRock
San Francisco, CA
Brandes Investment Partners
San Diego, CA
State Street Global Advisors
Boston, MA
T. Rowe Price Investment Services
Baltimore, MD

Tactical Fixed Income
Fidelity Investment Asset Management
Merrimack, NH

Global Master Custodian
State Street Bank & Trust Co.
Boston, MA

Investment Consultants
Callan Associates, Inc.
Denver, CO
The Townsend Group
San Francisco, CA

Investment Advisory Council
William Jennings
Colorado Springs, CO
Jerrold Mitchell
Wayland, MA
Robert Shaw
San Francisco, CA

Independent Auditors
KPMG, LLP
Anchorage, AK

Actuaries
Conduent HR Consulting, LLC
Denver, CO
Gabriel Roeder Smith
Denver, CO

External Money Managers and Consultants (continued)

Real Assets – Real Estate Core Separate Accounts
LaSalle Investment Management
Chicago, IL
Sentinel Real Estate Corporation
New York, NY
UBS Realty Investors, LLC
Hartford, CT

Real Assets – Commingled Real Estate Funds
Almanac Realty Investors
New York, NY
BlackRock Realty
New York, NY
Baring Real Estate Advisors
Hartford, CT
Colony NorthStar Capital
Los Angeles, CA
Coventry Real Estate Fund II, LLC
New York, NY
Clarion Partners
New York, NY
KKR & Co.
New York, NY
J.P. Morgan Investment Management Inc.
New York, NY
LaSalle Investment Management
Chicago, IL
Lowe Hospitality Investment Partners, LLC
Los Angeles, CA
Sentinel Real Estate Corporation
New York, NY
Silverpeake Real Estate Partners
New York, NY
Tishman Speyer Properties
New York NY
UBS Realty Investors, LLC
Hartford, CT

Real Assets – Energy
EIG Global Energy Partners
Washington, DC

Teachers' Retirement System
Investment Report

INVESTMENTS

The investment goals of the State of Alaska Teachers' Retirement System (TRS) are the long-term return and sustainability of the pension funds under management. Annually, the Alaska Retirement Management Board (ARMB) sets its asset allocation strategy in order to reflect changes in the marketplace while still retaining an expected optimal risk/return level within the set constraints and objectives of the ARMB.

The ARMB categorizes its investments into eight asset classes: domestic equities, global equities ex-U.S., alternative equity strategies, private equity, real assets, fixed income, absolute return, and cash equivalents. The performance of each asset class is compared with a benchmark comprised of one or more market indices. The performance for the total portfolio is compared with its policy portfolio, determined by calculating the weighted performance of the underlying asset class benchmarks at the portfolio's target asset allocation. The asset class benchmarks are illustrated below:

Asset Class	**Benchmark**
Domestic Equity	Russell 3000 Index
Global Equities Ex-U.S.	MSCI All Country World Ex-U.S. Index
Alternative Equities Strategies	50% S&P 500 Index 30% CBOE Buy Write Index 20% Bank of America Yield Alternative Index
Private Equity	1/3 S&P 500 Index 1/3 Russell 2000 Index 1/3 MSCI EAFE Index
Real Assets	50% NCREIF Property Index 15% Barclays TIPS Index 10% NCREIF Farmland Index 10% NCREIF Timberland Index 5% FTSE NAREIT All Equity REIT Index 10% S&P Global Infrastructure
Fixed Income	80% Barclays Intermediate Treasury Index 10% Bank of America Merrill Lynch US High Yield Master II Constrained Index 7% Citigroup World Gov. Bond Ex-U.S. Index 3% JP Morgan Global Bond Index - Emerging Markets Global Diversified Index
Absolute Return	91 Day Treasury Bill + 5%
Cash Equivalents	91 Day Treasury Bill

The target asset allocation is determined by the ARMB, utilizing capital market assumptions provided by its independent general investment consultant, Callan Associates. During the 2017 fiscal year, the ARMB's target asset allocation was 26% domestic equities, 22% global equities ex-U.S., 5% alternative equity strategies, 9% private equity, 17% real assets, 12% fixed income, 7% absolute return, and 1% cash equivalents. The target asset allocation is expected to generate a return of 7.1% with a standard deviation of 15.0%.

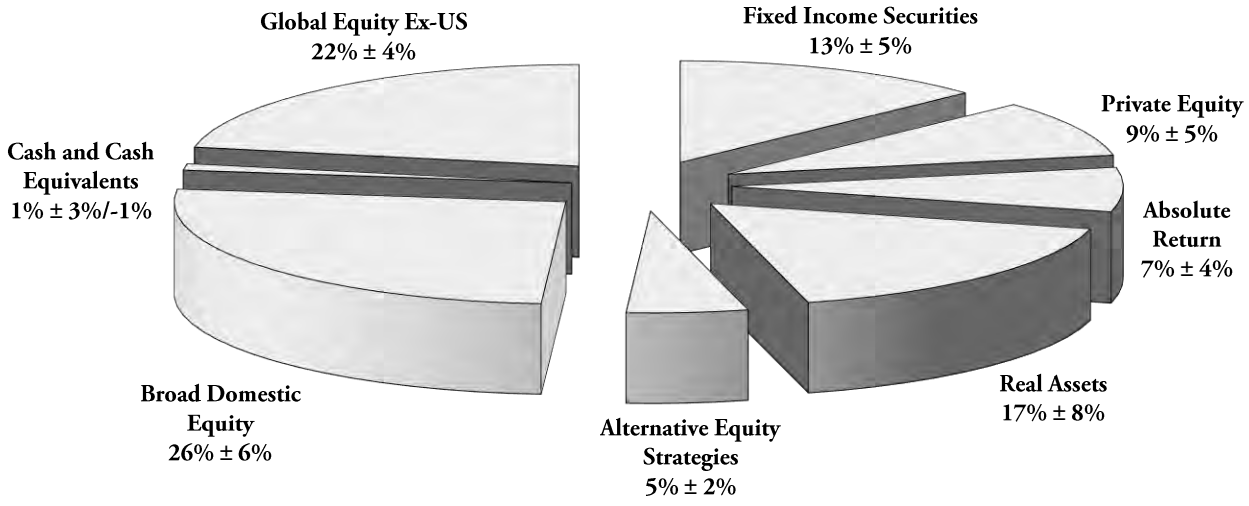
Teachers' Retirement System
Schedule of Investment Results
Fiscal Years Ended June 30

	2013	2014	2015	2016	2017	Annualized 3 Year	Annualized 5 Year
Total Fund							
TRS	12.59%	18.46%	3.30%	(0.36%)	13.36%	5.28%	9.27%
Actuarial Earnings Rate	8.00	8.00	8.00	8.00	8.00	8.00	8.00
U.S. Common Stock Returns							
TRS Domestic Equities	21.24	25.45	7.85	0.58	18.55	8.74	14.42
Custom Composite Index	21.46	25.22	7.29	2.14	18.51	9.10	14.58
Fixed Income							
TRS	0.57	5.14	(0.73)	5.15	2.91	2.41	2.58
Custom Composite Index	(0.04)	3.31	0.41	4.79	0.02	1.44	1.48
Real Assets							
TRS	10.65	12.71	3.69	4.76	5.98	4.81	7.61
Custom Composite Index	8.35	10.98	7.99	8.87	5.66	7.50	8.36
International Stock Returns							
TRS International Equities	15.03	23.41	(3.28)	(9.15)	20.42	1.90	8.47
MSCI ACWI ex-US	14.14	22.27	(4.85)	(9.80)	21.00	1.27	7.70
Private Equity							
TRS	11.68	24.19	13.77	4.71	17.04	11.72	14.10
Custom Composite Index	21.24	24.01	3.33	(4.41)	21.04	6.13	12.44
Absolute Return							
TRS	8.41	6.51	9.24	(3.09)	8.47	4.72	5.80
3-month Treasury Bill +5%	5.11	5.05	5.02	5.19	5.49	5.23	5.17
Alternative Equity							
TRS	—	24.55	(0.88)	3.41	11.38	4.51	6.92
Custom Composite Index	—	18.70	4.26	2.09	15.07	6.99	7.77
Cash Equivalents							
TRS	0.25	0.26	0.27	0.55	0.80	0.54	0.43
3-month Treasury Bill	0.11	0.05	0.02	0.19	0.49	0.23	0.17

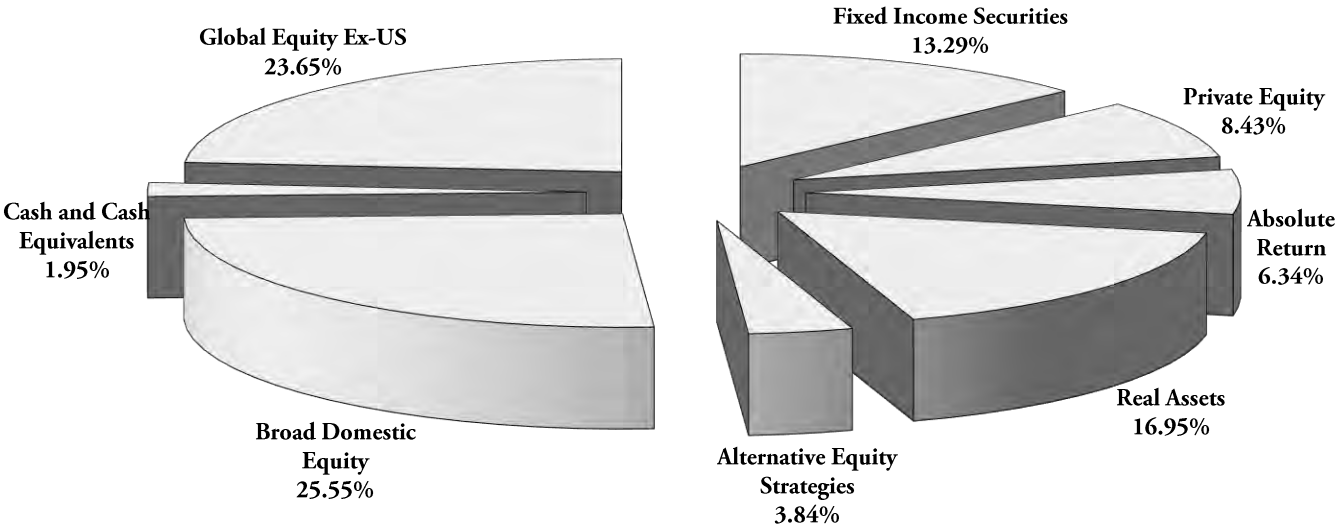
MSCI ACWI =Morgan Stanley Capital International All Country World Index
Returns for periods longer than one year are reported on an annualized basis.
Basis of calculation: Time-Weighed rate of return based on the market rate of return.

Teachers' Retirement System
Asset Allocation
June 30, 2017

Policy

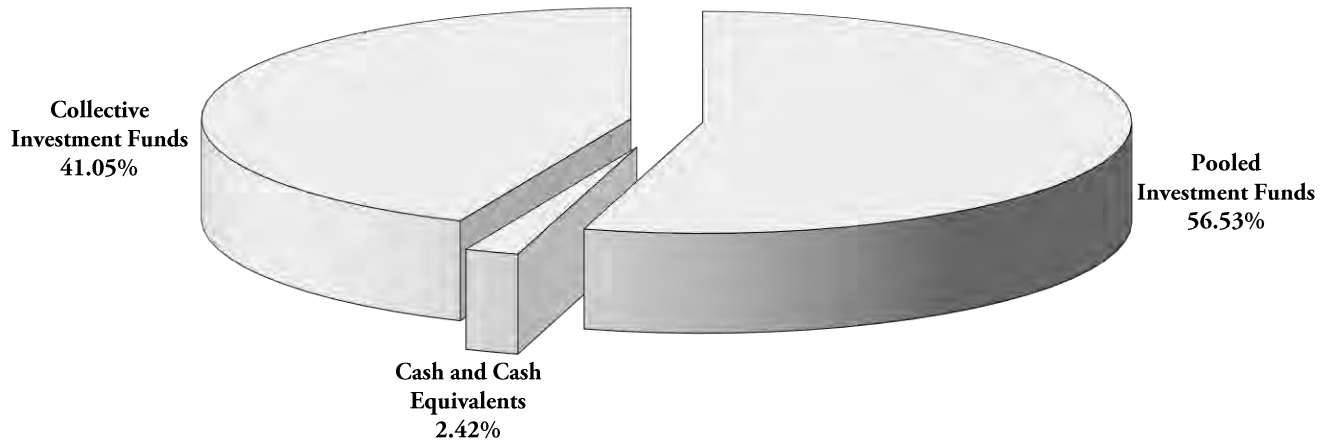


Actual — Defined Benefit Pension

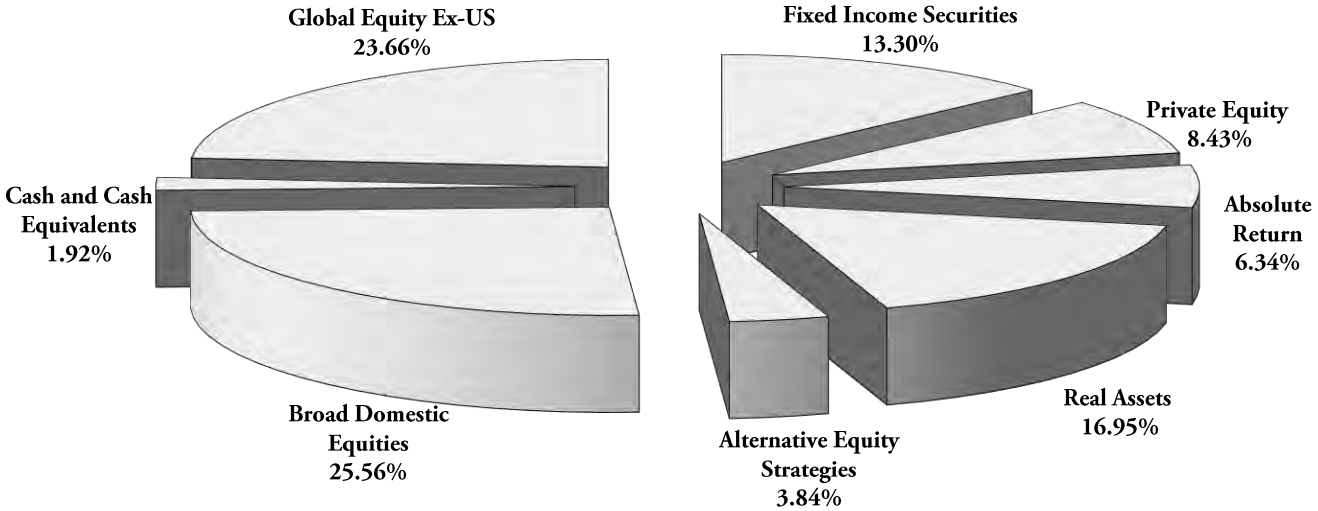


Teachers' Retirement System
Asset Allocation
June 30, 2017

Actual — Defined Contribution Participant Directed

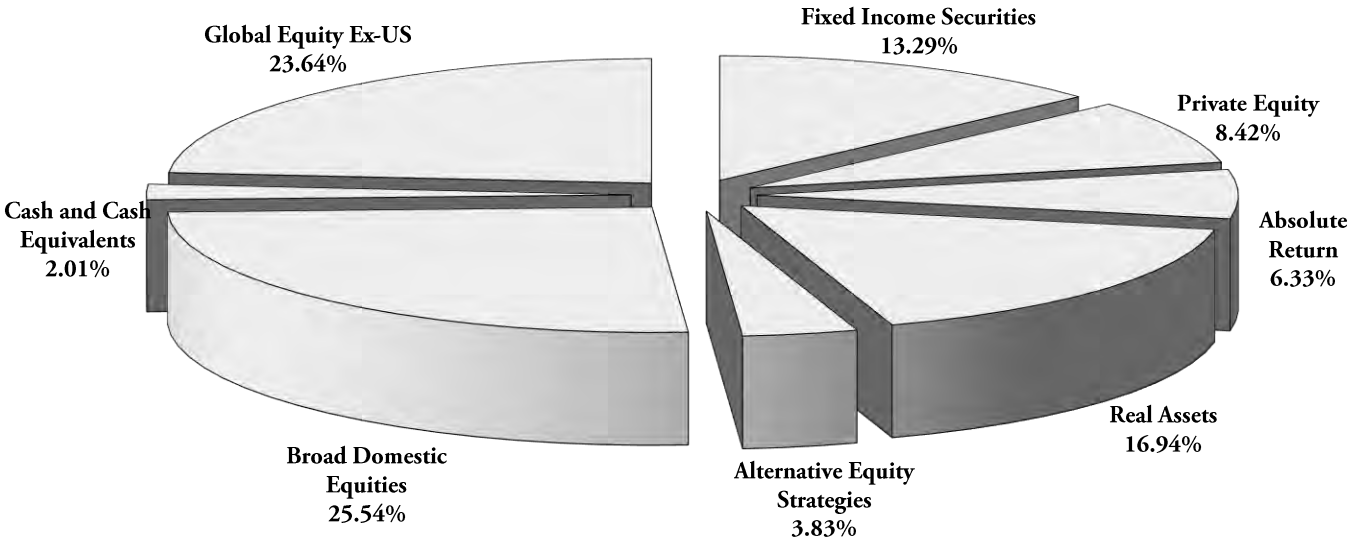


Actual — Defined Benefit Alaska Retiree Healthcare Trust

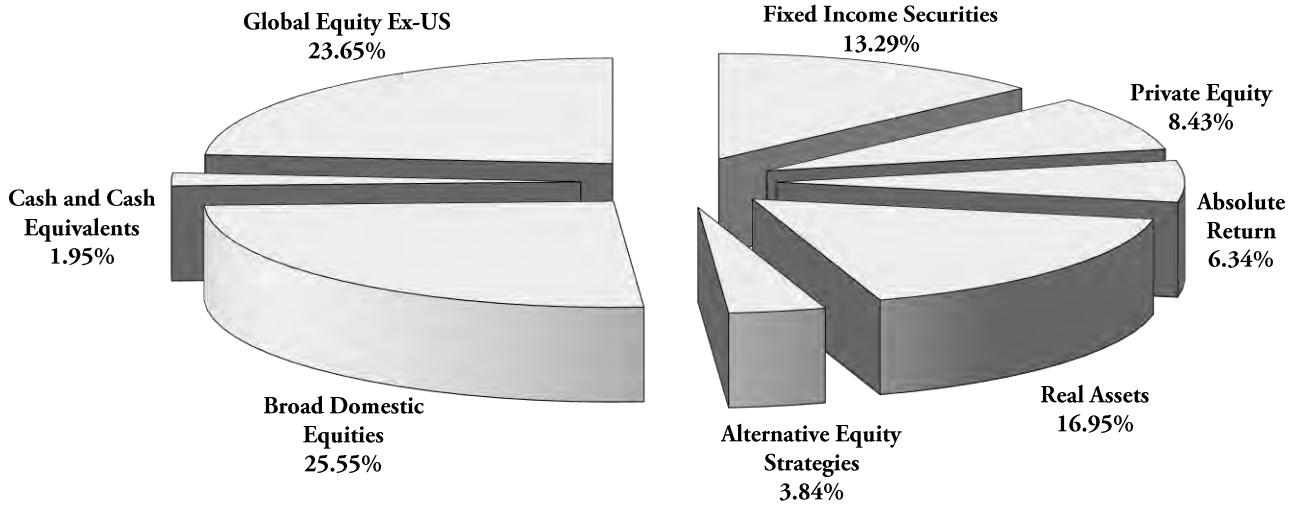


Teachers' Retirement System
Asset Allocation
June 30, 2017

Actual — Health Reimbursement Arrangement

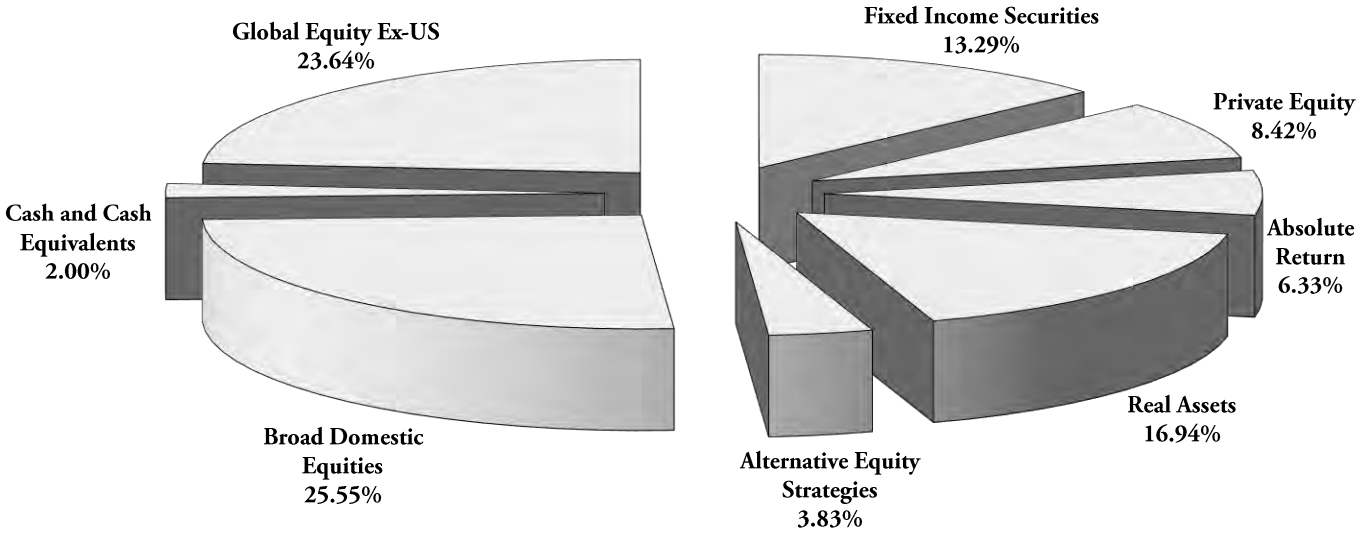


Actual — Occupational Death & Disability



Teachers' Retirement System
Asset Allocation
June 30, 2017

Actual — Retiree Medical Plan



Alaska Retirement Management Board
Top Ten Holdings by Asset Type
June 30, 2017

Invested assets under the fiduciary responsibility of the Alaska Retirement Management Board (ARMB) have been commingled in various investment pools to manage the overall cost of the program. Using investment pools increases investment efficiency in three ways. First, combining individual funds' cash inflows and outflows to offset each other reduces the amount of cash on hand needed to support daily operations. Second, pooling investments significantly reduces accounting, budgeting, and administrative costs. Finally, the ARMB can achieve economies of scale by making available investment options that could not otherwise be practically provided for smaller retirement funds. Below are the ten largest fixed income and equity holdings.

Fixed Income

Rank	Largest Fixed Income Holdings	Fair Value	Par Value
1	US Treasury 2.125% 1/31/2021	$69,020,885	$67,974,687
2	US Treasury 1.375% 8/31/2020	44,295,560	44,609,207
3	US Treasury 2.125% 5/15/2025	28,769,219	28,951,294
4	US Treasury 2.625% 11/15/2020	25,914,576	25,108,372
5	US Treasury 2.000% 8/15/2025	24,618,927	25,044,483
6	US Treasury 1.125% 6/30/2021	24,255,776	24,852,816
7	US Treasury 2.375% 8/15/2024	23,739,591	23,383,369
8	US Treasury 1.375% 7/31/2018	19,662,739	19,645,863
9	US Treasury 0.750% 7/31/2018	17,942,892	18,048,639
10	US Treasury 2.250% 11/15/2024	15,939,449	15,852,135

Equities

Rank	Largest Equity Holdings	Market Value	Par Value
1	Apple Inc.	$50723,832	$352,200
2	Microsoft Corp.	39,601,433	574,517
3	Johnson & Johnson	30,372,777	229,592
4	Exxon Mobil Corp.	25,997,306	322,028
5	Facebook Inc.	23,967,946	158,749
6	Amazon.com Inc.	23,858,475	24,647
7	Pfizer Inc.	22,807,861	679,007
8	Alphabet, Inc.	21,059,208	22,652
9	JP Morgan & Chase	20,660,618	226,046
10	Procter & Gamble Co./The	18,825,916	216,017

Additional investment information may be obtained from the Alaska Department of Revenue, Treasury Division, P.O. Box 110405, Juneau, Alaska 99811-0405.

Teachers' Retirement System
Schedule of Investment Management Fees
Year Ended June 30, 2017

		Total Fair Value	Fees
Fixed Income			
**	Columbia Threadneedle	$ 50,592,980	$ 253,052
**	Eaton Vance High Yield	41,437,404	250,635
**	Fidelity Institute Asset Management	44,196,933	151,384
**	Fidelity Institute Asset Management High Yield	68,932,706	466,907
**	Guggenheim Partners	33,383,857	82,001
**	Lazard Emerging Income	54,090,716	284,698
**	MacKay Shields	49,000,943	294,335
**	Mondrian Investment Partners	59,830,023	407,038
**	Schroders Insurance Linked Securities	28,604,355	140,680
**	Western Asset Management Company	35,068,002	89,594
	Total Fixed Income	465,137,919	2,420,324
Broad Domestic Equity			
**	Allianz Global Investors Large Cap	74,742,651	280,924
**	Barrow, Hanley, Mewhinney & Strauss Large Cap	71,522,259	364,453
**	Barrow, Hanley, Mewhinney & Strauss Small Cap	9,636,166	180,311
**	BMO DSCC Small Cap	24,671,303	76,924
**	DePrince, Race & Zollo	32,924,868	306,282
**	Fidelity Institutional Asset Management Small Cap	45,066,164	492,781
**	Frontier Capital Management Small Cap	24,771,308	394,537
**	Jennison Associates Small Cap	33,039,013	244,342
**	Lazard Freres Asset Management	136,622,797	273,680
**	Lord Abbett Large Cap	32,888,247	277,178
**	Lord Abbett Small Cap	17,652,272	190,990
**	McKinley Capital	71,721,508	332,223
**	Portable Alpha	156,714,868	116,623
**	Quantitative Management Associates	80,464,353	257,033
**	SSgA Futures Large Cap	732,545	2,586
**	SSgA Futures Small Cap	797,061	2,083
**	SSgA Managed Volatility- Russell 1000	31,216,275	23,659
**	SSgA Managed Volatility- Russell 2000	30,404,611	26,005
**	SSgA Russell 1000 Growth	381,887,610	40,332
**	SSgA Russell 1000 Value	343,280,824	37,187
**	SSgA Russell 200	206,417,487	29,025
**	SSgA Russell 2000 Growth	3,505	2,904
**	SSgA Russell 2000 Value	74,368	5,288
**	Victory Capital Management Small Cap	46,237,891	383,192
**	Zebra Capital Management	30,884,804	161,911
	Total Broad Domestic Equities	1,884,374,758	4,502,453
Global Equity Ex-U.S.			
**	Allianz Global Investors International	93,047,780	334,664
**	Arrowstreet Capital	114,370,220	489,779
**	Baillie Gifford Overseas	143,364,008	554,710
**	BlackRock ACWI Ex-US IMI	186,843,383	108,165
**	Brandes Investment Partners	222,370,582	885,484
**	Capital Guardian Trust	188,301,613	818,797
**	Eaton Vance Management Emerging Markets	89,181,866	1,017,723
	Lazard Asset Management Emerging Markets	166,057,762	1,245,433
**	Lazard Asset Management	125,776,362	125,304
**	McKinley Capital International	190,852,746	817,046
**	Mondrian Investment Partners	55,637,288	368,810
**	Schroders Investment Management	61,810,617	424,798
**	State Street Global Advisors International	301,514,155	164,506
	Total International Equities	1,939,128,382	7,355,219
Alternative Equity Strategies			
**	Advent Capital Convertible Bond	62,164,749	401,357
**	Analytic Buy Write Account	2,756,193	127,102
**	Analytic SSgA Account	91,389,842	11,309
**	Quantitative Management Associates	54,475,848	166,784
	Total Alternative Equity Strategies	210,786,632	706,552

Teachers' Retirement System
Schedule of Investment Management Fees (continued)
Year Ended June 30, 2017

		Total Fair Value	Fees
Private Equity			
	Abbott Capital Management	271,817,850	669,158
	Advent International GPE Fund VIII-B	1,877,134	109,376
	Angelo, Gordon & Co.	287,069	14,423
	Dyal Capital Partners III	6,477,158	574,221
	Glendon Opportunities	9,998,943	177,692
	Lexington Partners VII	9,551,687	175,692
	Lexington Partners VIII	3,991,265	168,630
	Merit Capital Partners	5,836,944	45,059
	Neuberger Berman Secondary Opportunities Fund III	9,514,001	204,999
	New Mountain Partners IV	6,948,413	94,921
	NGP XI	9,699,043	219,603
	Onex Partners III	4,982,629	60,291
	Pathway Capital Management	296,786,327	894,778
	Resolute Fund III	2,688,691	56,751
	Warburg Pincus X	5,051,731	28,700
	Warburg Pincus XI	10,011,832	69,656
	Warburg Pincus XII	6,496,593	299,768
	Total Private Equity	662,017,310	3,863,718
Absolute Return			
	Allianz Global Investors	118,088,107	3,380,206
	Crestline (Blue Glacier)	136,173,787	1,202,704
	Crestline Specialty Fund	10,578,806	124,739
	Global Asset Management (Glacier Bear)	30,075,333	581,964
	KKR Apex Equity Fund	30,875,371	388,527
	Prisma Capital Partners (Polar Bear)	127,368,013	915,187
	Zebra Global Equity Advantage Fund	23,193,294	185,507
	Zebra Global Equity Fund	43,209,764	347,654
	Total Absolute Return	519,562,475	7,126,488
Real Assets			
	Almanac Realty Securities V	1,354,894	32,747
	Almanac Realty Securities VII	5,761,994	199,432
**	Brookfield Infrastructure	34,043,200	221,499
	Colony Investors VIII	1,820,205	43,806
	Coventry Advisors	269,139	4,390
	EIG Energy Fund XD	73,108	3,814
	EIG Energy Fund XIV-A	4,568,401	169,390
	EIG Energy Fund XV	10,011,272	154,324
	EIG Energy Fund XVI	15,402,170	216,892
**	FAMCO MLP	74,962,584	390,292
	Hancock Agriculture	86,811,337	726,231
	Hancock Natural Resource Group	30,518,703	220,198
	IFM Global Infrastructure	95,547,206	556,037
	ING Clarion Development Ventures IV	6,000,384	20,517
	JP Morgan Strategic Property Fund	90,944,999	787,371
	JPM Infrastructure Investment	33,162,583	315,581
	KKR Real Estate Partners Americas	11,826,441	216,705
	LaSalle Separate Account	59,853,159	397,806
**	Lazard Infrastructure	46,122,212	256,100
	Lowe Hospitality Partners	55,861	49,288
	Sentinel Separate Account	60,301,606	364,595
	Silverpeak Real Estate Partners II	3,531,139	75,558
	Silverpeak Real Estate Partners III	1,785,075	59,734
	Timberland Investment Resources	83,640,395	709,106
	Tishman Speyer VI	10,689,791	73,037
	Tishman Speyer VII	1,758,929	31,274
**	Tortoise MLP	88,431,382	553,104
	UBS Agrivest	185,160,037	1,466,411
	UBS Separate Account	162,979,482	757,016
	UBS Trumbull Property Fund	47,344,871	345,075
	Total Real Assets	1,254,732,559	9,417,330
Custodian			
*	State Street Bank		419,873
Investment Advisory			
*	Callan Associates		65,798
*	Investment Advisory Council		28,682
*	Townsend Group		32,900
	Total Investment Advisory		127,380
Investment Performance			
*	Callan Associates		102,111
			$36,041,448

*These fees are paid through the Integrated Resource Information System (IRIS)

**These fees are deducted from earnings by the fund manager and are not directly recorded in IRIS

Teachers' Retirement System
Investment Summary Schedule
June 30, 2017

Investments (at Fair Value)	Defined Benefit - Pension Asset Allocation Policy	Asset Allocation Range	Fair Value	% of Total Assets
Cash and Cash Equivalents				
Short-term Fixed Income Pool			$ 103,592,085	
Securities Lending Incime			66,816	
Total Cash and Cash Equivalents	1.00%	± 3%/ - 1%	103,658,901	1.95%
Fixed Income Securities				
U.S. Treasury Fixed Income Pool			404,590,877	
Taxable Municipal Bond Pool			44,316,833	
Tactical Fixed Income			47,132,723	
High Yield Pool			135,934,088	
International Fixed Income Pool			38,734,918	
Emerging Debt Pool			35,019,199	
Total Fixed Income Securities	13.00%	± 5%	705,728,638	13.29%
Broad Domestic Equity				
Large Cap Pool			1,125,840,039	
Small Cap Pool			230,717,099	
Total Broad Domestic Equity	26.00%	± 6%	1,356,557,138	25.55%
Global Equity Ex-U.S.				
International Equity Pool			1,014,138,972	
International Equity Small Cap Pool			76,037,660	
Emerging Markets Equity Pool			165,246,236	
Total Global Equity Ex-U.S.	22.00%	± 4%	1,255,422,868	23.65%
Alternative Equity Strategies				
Alternative Equity Strategies			163,374,034	
Convertible Bond Pool			40,246,457	
Total Alternative Equities	5.00%	± 2%	203,620,491	3.84%
Private Equity				
Private Equity Pool			447,288,349	
Total Private Equity	9.00%	± 5%	447,288,349	8.43%
Absolute Return				
Absolute Return Pool			336,373,094	
Total Absolute Return	7.00%	± 4%	336,373,094	6.34%
Real Assets				
Real Estate Pool			303,376,690	
Real Estate Investment Trust Pool			74,336,541	
Infrastructure Private Pool			83,328,785	
Infrastructure Public Pool			51,900,376	
Master Limited Partnership Pool			105,783,879	
Energy Pool			19,458,058	
Farmland Pool			176,078,637	
Timber Pool			73,908,435	
Treasury Inflation Protected Securities Pool			11,681,048	
Total Real Assets	17.00%	± 8%	899,852,449	16.95%
Total Invested Assets	**100.00%**		**$ 5,308,501,928**	**100.00%**

Teachers' Retirement System
Investment Summary Schedule
June 30, 2017

Investments (at Fair Value)	Defined Contribution - Participant Directed			
	Asset Allocation Policy	Asset Allocation Range	Fair Value	% of Total Assets
Cash and Cash Equivalents				
Short-term Fixed Income Pool	100.00%	0%	$ 9,113,407	
Total Cash and Cash Equivalents			9,113,407	2.42%
Pooled Investment Funds (1)				
T. Rowe Price				
Target 2010 Trust			547,306	
Target 2015 Trust			3,105,465	
Target 2020 Trust			8,019,175	
Target 2025 Trust			13,377,971	
Target 2030 Trust			15,466,447	
Target 2035 Trust			23,053,613	
Target 2040 Trust			24,265,494	
Target 2045 Trust			38,429,091	
Target 2050 Trust			53,674,663	
Target 2055 Trust			21,105,287	
Target 2060 Trust			65,389	
Alaska Balanced Fund			6,920,793	
Long-Term Balanced Fund			4,840,809	
Total Pooled Investment Funds			212,871,503	56.53%
Collective Investment Funds (1)				
State Street Global Advisors				
Money Market Fund			485,834	
Alaska Money Market			1,994,286	
S&P Stock Index Fund			33,520,684	
Russell 3000 Index			5,300,528	
Real Estate Investment Trust Index			5,901,906	
World Equity Ex-U.S. Index			17,568,494	
Long U.S. Treasury Bond Index			259,500	
Treasury Inflation Protected Securities Index			5,131,852	
World Government Bond Ex-U.S. Index			1,535,533	
Global Balanced Fund			9,187,197	
Barclays				
Daily Government/Corporate Bond Fund			16,160,455	
Intermediate Bond Fund			9,535,608	
Brandes Institutional				
Alaska International Equity Fund			17,437,423	
RCM				
Socially Responsible Fund			1,549,945	
T. Rowe Price				
Small-Cap Fund			28,996,875	
Total Collective Investment Funds			154,566,120	41.05%
Total Invested Assets			**$ 376,551,030**	**100.00%**

(1) Pooled Investment Funds and Collective Investment Funds are participant directed and therefore are not subject to an asset allocation.

Teachers' Retirement System
Investment Summary Schedule
June 30, 2017

Investments (at Fair Value)	Defined Benefit - Alaska Retiree Health Care Trust Asset Allocation Policy	Range	Fair Value	% of Total Assets
Cash and Cash Equivalents				
Short-term Fixed Income Pool			$ 53,121,149	
Securities Lending Incime			34,644	
Total Cash and Cash Equivalents	1.00%	± 3%/ - 1%	53,155,793	1.92%
Fixed Income Securities				
U.S. Treasury Fixed Income Pool			211,055,761	
Taxable Municipal Bond Pool			23,117,978	
Tactical Fixed Income			24,586,893	
High Yield Pool			70,910,329	
International Fixed Income Pool			20,206,159	
Emerging Debt Pool			18,267,846	
Total Fixed Income Securities	13.00%	± 5%	368,144,966	13.30%
Broad Domestic Equity				
Large Cap Pool			587,345,210	
Small Cap Pool			120,354,105	
Total Broad Domestic Equity	26.00%	± 6%	707,699,315	25.56%
Global Equity Ex-U.S.				
International Equity Pool			529,027,925	
International Equity Small Cap Pool			39,665,220	
Emerging Markets Equity Pool			86,201,079	
Total Global Equity Ex-U.S.	22.00%	± 4%	654,894,224	23.66%
Alternative Equity Strategies				
Alternative Equity Strategies			85,224,440	
Convertible Bond Pool			20,994,657	
Total Alternative Equities	5.00%	± 2%	106,219,097	3.84%
Private Equity				
Private Equity Pool			233,328,995	
Total Private Equity	9.00%	± 5%	233,328,995	8.43%
Absolute Return				
Absolute Return Pool			175,469,797	
Total Absolute Return	7.00%	± 4%	175,469,797	6.34%
Real Assets				
Real Estate Pool			158,121,140	
Real Estate Investment Trust Pool			38,777,827	
Infrastructure Private Pool			43,468,652	
Infrastructure Public Pool			27,073,950	
Master Limited Partnership Pool			55,182,403	
Energy Pool			10,150,341	
Farmland Pool			91,851,826	
Timber Pool			38,554,505	
Treasury Inflation Protected Securities Pool			6,093,445	
Total Real Assets	17.00%	± 8%	469,274,089	16.95%
Total Invested Assets	**100.00%**		**$ 2,768,186,276**	**100.00%**

Teachers' Retirement System
Investment Summary Schedule
June 30, 2017

	Health Reimbursement Arrangement			
	Asset Allocation			% of Total
Investments (at Fair Value)	Policy	Range	Fair Value	Assets
Cash and Cash Equivalents				
Short-term Fixed Income Pool	1.00%	± 3%/ - 1%	$ 1,759,165	
Securities Lending Income			1,077	
Total Cash and Cash Equivalents			1,760,242	2.01%
Fixed Income Securities				
U.S. Treasury Fixed Income Pool			6,685,039	
Taxable Municipal Bond Pool			732,245	
Tactical Fixed Income			778,772	
High Yield Pool			2,246,034	
International Fixed Income Pool			640,016	
Emerging Debt Pool			578,621	
Total Fixed Income Securities	13.00%	± 5%	11,660,727	13.29%
Broad Domestic Equity				
Large Cap Pool			18,607,692	
Small Cap Pool			3,812,130	
Total Broad Domestic Equity	26.00%	± 6%	22,419,822	25.54%
Global Equity Ex-U.S.				
International Equity Pool			16,756,578	
International Equity Small Cap Pool			1,256,367	
Emerging Markets Equity Pool			2,730,357	
Total Global Equity Ex-U.S.	22.00%	± 4%	20,743,302	23.64%
Alternative Equity Strategies				
Alternative Equity Strategies			2,699,423	
Convertible Bond Pool			664,991	
Total Alternative Equities	5.00%	± 2%	3,364,414	3.83%
Private Equity				
Private Equity Pool			7,390,528	
Total Private Equity	9.00%	± 5%	7,390,528	8.42%
Absolute Return				
Absolute Return Pool			5,557,879	
Total Absolute Return	7.00%	± 4%	5,557,879	6.33%
Real Assets				
Real Estate Pool			5,008,373	
Real Estate Investment Trust Pool			1,228,260	
Infrastructure Private Pool			1,376,838	
Infrastructure Public Pool			857,548	
Master Limited Partnership Pool			1,747,863	
Energy Pool			321,505	
Farmland Pool			2,909,340	
Timber Pool			1,221,186	
Treasury Inflation Protected Securities Pool			193,006	
Total Real Assets	17.00%	± 8%	14,863,919	16.94%
Total Invested Assets	**100.00%**		**$ 87,760,833**	**100.00%**

Teachers' Retirement System
Investment Summary Schedule
June 30, 2017

Investments (at Fair Value)	Occupational Death and Disability Asset Allocation Policy	Range	Fair Value	% of Total Assets
Cash and Cash Equivalents				
Short-term Fixed Income Pool			$ 68,910	
Securities Lending Income			44	
Total Cash and Cash Equivalents	1.00%	± 3%/ - 1%	68,954	1.95%
Fixed Income Securities				
U.S. Treasury Fixed Income Pool			269,231	
Taxable Municipal Bond Pool			29,490	
Tactical Fixed Income			31,364	
High Yield Pool			90,456	
International Fixed Income Pool			25,776	
Emerging Debt Pool			23,303	
Total Fixed Income Securities	13.00%	± 5%	469,620	13.29%
Broad Domestic Equity				
Large Cap Pool			749,233	
Small Cap Pool			153,528	
Total Broad Domestic Equity	26.00%	± 6%	902,761	25.55%
Global Equity Ex-U.S.				
International Equity Pool			674,847	
International Equity Small Cap Pool			50,598	
Emerging Markets Equity Pool			109,961	
Total Global Equity Ex-U.S.	22.00%	± 4%	835,406	23.65%
Alternative Equity Strategies				
Alternative Equity Strategies			108,715	
Convertible Bond Pool			26,782	
Total Alternative Equities	5.00%	± 2%	135,497	3.84%
Private Equity				
Private Equity Pool			297,643	
Total Private Equity	9.00%	± 5%	297,643	8.43%
Absolute Return				
Absolute Return Pool			223,836	
Total Absolute Return	7.00%	± 4%	223,836	6.34%
Real Assets				
Real Estate Pool			201,705	
Real Estate Investment Trust Pool			49,466	
Infrastructure Private Pool			55,450	
Infrastructure Public Pool			34,537	
Master Limited Partnership Pool			70,393	
Energy Pool			12,948	
Farmland Pool			117,170	
Timber Pool			49,182	
Treasury Inflation Protected Securities Pool			7,773	
Total Real Assets	17.00%	± 8%	598,624	16.95%
Total Invested Assets	**100.00%**		**$ 3,532,341**	**100.00%**

Teachers' Retirement System
Investment Summary Schedule
June 30, 2017

Investments (at Fair Value)	Retiree Medical Plan Asset Allocation Policy	Range	Fair Value	% of Total Assets
Cash and Cash Equivalents				
Short-term Fixed Income Pool			$ 611,803	
Securities Lending Income			375	
Total Cash and Cash Equivalents	1.00%	± 3%/ - 1%	612,178	2.00%
Fixed Income Securities				
U.S. Treasury Fixed Income Pool			2,330,876	
Taxable Municipal Bond Pool			255,312	
Tactical Fixed Income			271,535	
High Yield Pool			783,126	
International Fixed Income Pool			223,155	
Emerging Debt Pool			201,748	
Total Fixed Income Securities	13.00%	± 5%	4,065,752	13.29%
Broad Domestic Equity				
Large Cap Pool			6,488,068	
Small Cap Pool			1,329,177	
Total Broad Domestic Equity	26.00%	± 6%	7,817,245	25.55%
Global Equity Ex-U.S.				
International Equity Pool			5,842,525	
International Equity Small Cap Pool			438,058	
Emerging Markets Equity Pool			951,995	
Total Global Equity Ex-U.S.	22.00%	± 4%	7,232,578	23.64%
Alternative Equity Strategies				
Alternative Equity Strategies			941,209	
Convertible Bond Pool			231,863	
Total Alternative Equities	5.00%	± 2%	1,173,072	3.83%
Private Equity				
Private Equity Pool			2,576,859	
Total Private Equity	9.00%	± 5%	2,576,859	8.42%
Absolute Return				
Absolute Return Pool			1,937,869	
Total Absolute Return	7.00%	± 4%	1,937,869	6.33%
Real Assets				
Real Estate Pool			1,746,272	
Real Estate Investment Trust Pool			428,258	
Infrastructure Private Pool			480,063	
Infrastructure Public Pool			299,002	
Master Limited Partnership Pool			609,428	
Energy Pool			112,099	
Farmland Pool			1,014,401	
Timber Pool			425,792	
Treasury Inflation Protected Securities Pool			67,295	
Total Real Assets	17.00%	± 8%	5,182,610	16.94%
Total Invested Assets	**100.00%**		**$ 30,598,163**	**100.00%**

Teachers' Retirement System
Recaptured Commission Fees
Year Ended June 30, 2017

Fund	Broad Domestic Equity Pool	Global Equity Ex-U.S.	Total
Defined Benefit Plan - Pension	$35,879	$34,473	$70,352
Postemployment Benefit - Alaska Retiree Healthcare Trust	18,718	17,983	36,701
Postemployment Benefit - Occupational Death & Disability	24	23	47
Postemployment Benefit - Retiree Medical Plan	207	199	406
Postemployment Benefit - Health Reimbursement Arrangement	593	570	1,163
Total Recapture Commission Fees	**$55,421**	**$53,248**	**$108,669**

The ARMB's Commission Recapture program has been in place since 1995, first working with various brokers then switching to the State Street program in 2005. Under a commission recapture program a portion of the commissions and mark-ups on trades (placed through the State Street broker network) flow directly back to the fund.

The program allows managers to place trades for commission recapture purposes. The ARMB has established direction percentages for the managers to strive for, but is only requiring best efforts to meet them given their fiduciary obligation to achieve best execution of transactions.

The current rebate arrangement with State Street Global Markets (SSGM) is: 90% of the commissions received in excess of executing the brokers' execution-only rates; 100% of commissions in excess of its execution-only rates for all trading directed through SSGM.

ALASKA DIVISION OF

Retirement and Benefits

ACTUARIAL SECTION

ALASKA DIVISION OF

Retirement and Benefits

May 23, 2017

State of Alaska
The Alaska Retirement Management Board
The Department of Revenue, Treasury Division
The Department of Administration, Division of Retirement and Benefits
P.O. Box 110203
Juneau, AK 99811-0203

Certification of Actuarial Valuation

Dear Members of The Alaska Retirement Management Board, The Department of Revenue and The Department of Administration:

This report summarizes the annual actuarial valuation results of the State of Alaska Teachers' Retirement System (TRS) as of June 30, 2016 performed by Conduent HR Services, LLC (Conduent), formerly known as Buck Consultants, LLC.

The actuarial valuation is based on financial information provided in the statements audited by KPMG LLP, member data provided by the Division of Retirement and Benefits, and medical enrollment data provided by the healthcare claims administrator (Aetna), all as summarized in this report. The benefits considered are those delineated in Alaska statutes effective June 30, 2016. The actuary did not verify the data submitted, but did perform tests for consistency and reasonableness.

All costs, liabilities and other factors under the System were determined in accordance with generally accepted actuarial principles and procedures. An actuarial cost method is used to measure the actuarial liabilities which we believe is reasonable. Conduent is solely responsible for the actuarial data and actuarial results presented in this report. This report fully and fairly discloses the actuarial position of the System as of June 30, 2016.

TRS is funded by Employer, State, and Member Contributions in accordance with the funding policy adopted by the Alaska Retirement Management Board (Board) and as required by Alaska state statutes. The funding objective for TRS is to pay required contributions that remain level as a percent of total TRS compensation. The Board has also established a funding policy objective that the required contributions be sufficient to pay the Normal Costs of active plan members, System expenses, and amortize the Unfunded Actuarial Accrued Liability as a level percentage of payroll over a closed 25-year period and as required by Alaska state statutes. The closed 25-year period was established effective June 30, 2014.

The compensation used to determine required contributions is the total compensation of all active members in TRS, including those hired after July 1, 2006 who are members of the Defined Contribution Retirement (DCR) Plan. This objective is currently being met and is projected to continue to be met.

The Board and staff of the State of Alaska may use this report for the review of the operations of TRS. Use of this report, for any other purpose or by anyone other than the Board or staff of the State of Alaska may not be appropriate and may result in mistaken conclusions because of failure to understand applicable assumptions, methods or inapplicability of the report for that purpose. Because of the risk of misinterpretation of actuarial results, you should ask Conduent to review any statement you wish to make on the results contained in this report. Conduent will not accept any liability for any such statement made without the review by Conduent.

Future actuarial measurements may differ significantly from current measurements due to plan experience differing from that anticipated by the economic and demographic assumptions, increases or decreases expected as part of the natural operation of the methodology used for these measurements, and changes in plan provisions or applicable law. In particular, retiree group benefits models necessarily rely on the use of approximations and estimates, and are sensitive to changes in these approximations and estimates. Small variations in these approximations and estimates may lead to significant changes in actuarial measurements. An analysis of the potential range of such future differences is beyond the scope of this valuation (other than the sensitivity analyses shown in Sections 3.2 and 4.7).

In our opinion, the actuarial assumptions used are reasonable, taking into account the experience of the System and reasonable long-term expectations, and represent our best estimate of the anticipated long-term experience under the System. The actuary performs an analysis of System experience periodically and recommends changes if, in the opinion of the actuary, assumption changes are needed to more accurately reflect expected future experience. The last full experience analysis was performed for the period July 1, 2009 to June 30, 2013. Based on that experience study, the Board adopted new assumptions effective for the June 30, 2014 valuation to better reflect expected future experience. Based on our annual analysis of recent claims experience, changes were made to the per capita claim cost rates effective June 30, 2016 to better reflect expected future healthcare experience. Based on recent experience, the healthcare cost trend assumptions are still reasonable and were not changed. A summary of the actuarial assumptions and methods used in this actuarial valuation are shown in Section 6.

The assumptions and methods used to determine the healthcare Actuarial Required Contributions (ARC) of the Employers to TRS as outlined in this report and all supporting schedules meet the parameters and requirements for disclosure of Governmental Accounting Standards Board (GASB) Statement No. 43, Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans. Based on member data and asset information provided by the Division of Retirement and Benefits, we have prepared the trend data schedule under GASB No. 43 that is included in the Financial Section of the CAFR. We have also prepared the member data tables shown in Section 5 of this report for the Statistical Section of the CAFR, and the summary of actuarial assumptions, solvency test, and analysis of financial experience for the Actuarial Section of the CAFR. Please see our separate GASB 67 report for pension-related information needed for the CAFR.

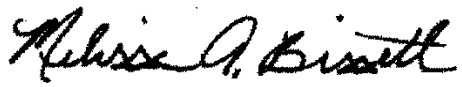
David Kershner is a Fellow of the Society of Actuaries and Larry Langer is an Associate of the Society of Actuaries. Both are Fellows of the Conference of Consulting Actuaries and Members of the American Academy of Actuaries, and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained in this report. This report has been prepared in accordance with all applicable Actuarial Standards of Practice. We are available to answer any questions on the material contained in the report, or to provide explanations or further details as may be appropriate.

Respectfully submitted,

David J. Kershner, FSA, EA, MAAA, FCA
Principal

Larry Langer, ASA, EA, MAAA, FCA
Principal

The undersigned actuary is responsible for all assumptions related to the average annual per capita health claims cost and the health care cost trend rates, and hereby affirms her qualification to render opinions in such matters, in accordance with the Qualification Standards of the American Academy of Actuaries.



Melissa A. Bissett, FSA, MAAA
Senior Consultant, Health & Productivity

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The funding method used in this valuation was adopted by the Board in October 2006. Changes in the amortization of unfunded actuarial accrued liability were made in 2014. The asset smoothing method used to determine valuation assets was changed effective June 30, 2014.

Benefits valued are those delineated in Alaska State statutes as of the valuation date. Changes in State statutes effective after the valuation date are not taken into consideration in setting the assumptions and methods.

A. Actuarial Method – Entry Age Normal Cost

Liabilities and contributions shown in the report are computed using the Entry Age Normal Actuarial Cost Method. Any funding surpluses or unfunded accrued liability are amortized over a closed 25-year period (established June 30, 2014) as a level percentage of payroll amount. State statutes allow the contribution rate to be determined on payroll for all members, defined benefit and defined contribution member payroll combined.

Projected pension and postemployment healthcare benefits were determined for all active members. Cost factors designed to produce annual costs as a constant percentage of each member's expected compensation in each year for pension benefits (constant dollar amount for healthcare benefits) from the assumed entry age to the assumed retirement age were applied to the projected benefits to determine the normal cost (the portion of the total cost of the plan allocated to the current year under the method). The normal cost is determined by summing intermediate results for active members and determining an average normal cost rate which is then related to the total payroll of active members. The actuarial accrued liability for active members (the portion of the total cost of the plan allocated to prior years under the method) was determined as the excess of the actuarial present value of projected benefits over the actuarial present value of future normal costs.

The actuarial accrued liability for retired members and their beneficiaries currently receiving benefits, terminated vested members and disabled members not yet receiving benefits was determined as the actuarial present value of the benefits expected to be paid. No future normal costs are payable for these members. The actuarial accrued liability under this method at any point in time is the theoretical amount of the fund that would have been accumulated had annual contributions equal to the normal cost been made in prior years (it does not represent the liability for benefits accrued to the valuation date). The unfunded actuarial accrued liability is the excess of the actuarial accrued liability over the actuarial value of plan assets measured on the valuation date.

Under this method, experience gains or losses, i.e., decreases or increases in accrued liabilities attributable to deviations in experience from the actuarial assumptions, adjust the unfunded actuarial accrued liability.

B. Valuation of Assets

The actuarial asset value was reinitialized to equal Fair Value of Assets as of June 30, 2014. Beginning in 2015, the asset value method recognizes 20% of the gain or loss each year, for a period of 5 years. All assets are valued at fair value. Assets are accounted for on an accrued basis and are taken directly from financial statements audited by KPMG LLP.

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C. Valuation of Medical and Prescription Drug Benefits

This section outlines the detailed methodology used to develop the initial per capita claims cost rates for PERS postemployment healthcare plan. Note that methodology reflects the results of our annual experience rate update for the period July 1, 2016 to June 30, 2017. Healthcare cost trend and retiree contribution increase assumptions for the period after June 30, 2017 remain unchanged from the June 30, 2014 valuation.

Base claims cost rates are incurred healthcare costs expressed as a rate per member per year. Ideally, claims cost rates should be derived for each significant component of cost that can be expected to require differing projection assumptions or methods, i.e., medical claims, prescription drug claims, administrative costs, etc. Separate analysis is limited by the availability and historic credibility of cost and enrollment data for each component of cost. This valuation reflects non-prescription claims separated by Medicare status, including eligibility for free Part A coverage. Prescription costs are analyzed separately as in prior valuations. Administrative costs are assumed in the final per capita claims cost rates used for valuation purposes, as described below. Analysis to date on Medicare Part A coverage is limited since Part A claim data is not available by individual, nor is this status incorporated into historical claim data.

Benefits

Medical, prescription drug, dental, vision and audio coverage is provided through the AlaskaCare Retiree Health Plan and is available to employees of the State and subdivisions who meet retirement criteria based on the retirement plan tier in effect at their date of hire. Health plan provisions do not vary by retirement tier or age, except for Medicare coordination for those Medicare-eligible. Dental, vision and audio claims (DVA) are excluded from data analyzed for this valuation as those are retiree-pay all benefits where rates are assumed to be self-supporting. Conduent relies upon rates set by a third-party for the DVA benefits. Conduent reviewed historical rate-setting information and believes that contribution rate adjustments made are not unreasonable.

Administration and Data Sources

The plan was administered by Wells Fargo Insurance Services (acquired by HealthSmart, in January 2012) from July 1, 2009 through December 31, 2013 and by Aetna effective January 1, 2014.

- Claims incurred and enrollment data for July 2012 through June 2016 (FY13 through FY16), with claims paid through July 2016 were provided by HealthSmart and Aetna and are included in our analysis.

- Aetna provided census information identifying Medicare Part B only participants. These participants are identified when hospital claims are denied by Medicare; Aetna then flags that participant as a Part B only participant. Conduent added newly identified participants to our list of Medicare Part B only participants. Conduent assumes that once identified as Part B only, that participant remains in that status until we are notified otherwise.

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For the June 30, 2016 valuation, Aetna provided a snapshot file as of July 1, 2016 of retirees and dependents that included a coverage level indicator. After analysis of this file during the valuation census data preparation, Conduent learned that dual coverage participants are reflected in eligibility files multiple times to administer coordination of benefits. This method carries over to enrollment reporting. This resulted in higher per capita costs to address the removal of the dual coverage membership and to cover the value of any additional coordinated benefits. This was offset by a reduction in the number of unique members valued.

Available historic management level reporting from HealthSmart does not show claims or enrollment separately for Medicare and non-Medicare plan participants, but does include overall statistics as to the percentage of claims and enrollment attributable to both groups. Historical claim level reporting and estimated impacts of Medicare coordination and plan design were used to augment more recent cost data by Medicare status. Aetna does provide separate experience by Medicare status and is incorporated into per capita rate development for each year of experience included in our claim base with corresponding weights applied in the final per capita cost.

Methodology

Conduent developed per capita costs and projected historic claim data to fiscal 2017 for retirees using the following summarized steps:

1. Develop historic annual incurred claim cost rates – an analysis of medical costs was completed based on claims information and enrollment data provided by Aetna and HealthSmart for each year in the experience period of fiscal 2013 through fiscal 2016.

    - Costs for medical services and prescriptions were analyzed separately, and separate trend rates were developed to project expected future medical and prescription costs for the upcoming year (e.g. from the experience period up through fiscal 2017).

    - Conduent applied an adjustment to the medical claims in fiscal year 2016 to estimate incurred but not reported claims based upon a review of claim lags through July 2016. Pharmacy claims are deemed fully incurred.

    - An offset for costs expected to be reimbursed by Medicare was incorporated beginning at age 65. Available management level reporting does indicate claims and enrollment separately for Medicare and pre-Medicare plan participants, but only since January 1, 2014. HealthSmart data does not, but we did have overall statistics as to the percentage of claims and enrollment attributable to both groups. Alaska retirees who do not have 40 quarters of Medicare-covered compensation do not qualify for Medicare Part A coverage free of charge. This is a relatively small and closed group. Medicare was applied to State employment for all employees hired after March 31, 1986. For the "no-Part A" individuals who are required to enroll in Medicare Part B, the State is the primary payer for hospital bills and other Part A services. Claim experience is not available separately for participants with both Medicare Parts A and B and those with Part B only. For Medicare Part B only participants, a lower average claims cost was applied to retirees covered by both Medicare Part A and B vs. retirees covered only by Medicare Part B based upon manual rate models that estimate the Medicare covered proportion of medical costs. To the extent that no-Part A claims can be isolated and applied strictly to the appropriate closed group, actuarial accrued liability will be more accurate.

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- Based on census data received from Aetna, 0.39% of the current retiree population was identified as having coverage only under Medicare Part B. For future retirees, we assume their Part A eligible status based on a combination of date of hire and/or re-hire, date of birth, tier, etc.

- Based upon a reconciliation of valuation census data to the Aetna July 1, 2016 snapshot eligibility file, Conduent adjusted member counts used for duplicate records where participants have dual coverage; i.e. primary coverage as a retiree and secondary coverage as the covered spouse of another retiree. This is to reflect the total cost per distinct individual/member which is then applied to distinct members in the valuation census.

- Conduent understands that pharmacy claims reported do not reflect rebates. Based upon reported rebates in proportion to incurred claims for State of Alaska retiree plans, Conduent reduced reported pharmacy incurred claims by 9% to estimate the rebates for the retiree population beginning January 1, 2014. We reduced historic pharmacy incurred claims by 5.5% to reflect rebates on experience prior to January 1, 2014. These estimates were based upon reported rebates for retirees from Aetna and Envision Rx

2. Develop estimated Retiree Drug Subsidy reimbursement - actual subsidy payments to the State were received for CY2009-CY2015, and the first six months of CY2016. Conduent obtained this information based upon recorded and available information in the RDS Subsidy website and as provided by the State. The projected subsidy for FY 2017 was determined based on the historic ratio of subsidy received to claims incurred (adjusted for rebates), and then applied to the appropriate projection period. These amounts are applicable only to Medicare eligible participants.

3. Adjust for network change – based upon additional experience and updated reporting from Aetna (through March 31, 2016), we updated the adjustment to reflect the impact of the better network discounts realized. Conduent referenced administrator reports provided by Alaska to compare the proportion of network savings to covered charges under Aetna and the prior administrator. We found the discounts to be approximately 6% higher under Aetna as a proportion of covered charges as compared to the prior administrator.

4. Adjust for claim fluctuation, anomalous experience, etc. – explicit adjustments are often made for anticipated large claims or other anomalous experience. Due to group size and demographics, we did not make any large claim adjustments. We do blend both Alaska plan-specific and national trend factors as described below. Conduent compared data utilized to lag reports and quarterly plan experience presentations provided by the State and Aetna to assess accuracy and reasonableness of data.

5. Trend all data points to the projection period – project prior years' experience forward to fiscal 2017 for retiree benefits on an incurred claim basis. Trend factors derived from historic Alaska-specific experience and national trend factors are shown in the table in item 6 below.

6. Apply credibility to prior experience – adjust prior year's data by assigning weight to recent periods, as shown at the right of the table below. Greater credibility is given to the past 24 months' experience. We have some run-out claims data, thus less estimation for complete claims in fiscal 2016 that is consistent

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with last year. We did not adjust the credibility weight further. Note also that we averaged projected plan costs using Alaska-specific trend factors and national trend factors, assigning 75% weight to Alaska-specific trends and 25% to national trends:

	Alaska-Specific and National Average Weighted Trend from Experience Period to Valuation Year		
Experience Period	Medical	Prescription	Weighting Factors
FY 2013 to FY 2014	8.9%	7.1%	10.0%
FY 2014 to FY 2015	7.7	6.5	20.0
FY 2015 to FY 2016	6.4	7.1	35.0
FY 2016 to FY 2017	5.3	8.5	35.0

Trend assumptions used for rate development are assessed annually and as additional/improved reporting becomes available, we will incorporate into rate development as appropriate. Based upon recent experience trending up (mitigating historic gains), we are not proposing an update to the valuation healthcare cost trend assumption.

7. Develop separate administration costs – no adjustments were made for internal administrative costs. Third party retiree plan administration fees for fiscal 2017 are based upon rates in effect at the midpoint of the year, January 2017, based upon negotiations with Aetna as communicated by the State. Medical fees increased 1.4% and pharmacy admin was reduced to $0. We included a small fee for estimated fees that occur on a per occurrence basis (i.e. prior authorization, retiree direct bill). We also include PCORI fees under the Affordable Care Act. We estimated the 2017 rates based upon the 2016 rate of $2.26 per member per year increased by 4%. The annual per participant per year administrative cost rate for medical and prescription benefits (including PCORI) is $206.88.

8. Healthcare Reform legislation passed on March 23, 2010 included several provisions with potential implications for the State of Alaska Retiree Health Plan liability. Conduent evaluated the impact of the following provisions; however, none of the impacts have been included in the valuation results.

   - Because the State plan is retiree-only, and was in effect at the time the legislation was enacted, not all provisions of the health reform legislation apply to the State plan. Unlimited lifetime benefits and dependent coverage to age 26 are two of these provisions. We reviewed the impact of including these provisions, but there was no decision made to adopt them, and no requirement to do so.

   - As Transitional Reinsurance fees are only in effect until 2016, we excluded these for valuation purposes.

   - The Plan will be subject to the high cost plan excise tax (Cadillac tax); however, the impact is not expected to significantly impact the OPEB liability. Based upon guidance available at the valuation date, Conduent estimated the tax based upon a blended test of pre and post Medicare projected costs and enrollment projections.

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- A blended test compares a weighted average per capita cost (based upon proportions of pre/post Medicare eligible enrollments) to the tax cost thresholds in each projection year. Projected enrollment was based upon the 2016 enrollment data provided by Aetna, and 2016 valuation headcount projections for future years.

- We included administrative fees and applied Retiree Drug Subsidy reimbursements to the Medicare rates.

- We assumed claim costs would increase according to valuation trend assumptions from the June 30, 2016 valuation, and that the tax cost thresholds would increase at 3.0%. The first year increased at 4% to reflect the additional 1% over inflation assumption.

- Conduent determined the impact to be less than $775,000 (0.01%) of the projected June 30, 2016 healthcare actuarial accrued liability for the defined benefit plans. In addition, any additional per capita costs due to the tax were not expected to significantly impact trend over the long term

The Trump administration has clearly announced its intention to repeal Healthcare Reform. As one of his first acts in office, President Trump issued an executive order that states that federal agencies can grant waivers, exemptions, and delays of "Obamacare" provisions that would impose costs on states or individuals. On February 15, 2016, CMS issued proposed rules that are intended to minimize adverse selection, but which might disrupt the fragile balance of the healthcare exchanges. We can expect more information about what is being altered.

We have not identified any other specific provisions of healthcare reform or its potential repeal that would be expected to have a significant impact on the measured obligation. As additional guidance on the legislation is issued, we will continue to monitor any potential impacts.

The following table summarizes data sources and assumptions and the relative impact changes in each have on healthcare cost projections for 2016 as compared to 2015:

Healthcare Cost Rate Data Source or Assumption Change, 2016 vs. 2015	Gain/Loss Impact on 2015 Valuation Results
Claim lag specific to medical and prescription experience	Small
Individual claims level data	- No impact on cost data used for 2016, though potentially a source of future modifications - No impact on morbidity assumptions used for 2016, though potentially a source of future modifications
Explicit TPA fees	Negligible
Actual RDS payments received	Negligible
Aggregate claims data	Loss due to adjusment for removal of dual coverage/duplicate members in reported enrollment counts, offset by gain due to experience.
Census Data	Small gain due to updated census

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In accordance with actuarial standards, we note the following specific data sources and steps taken to value retiree medical benefits:

- The Division of Retirement and Benefits provided pension valuation census data, which for people currently in receipt of healthcare benefits was supplemented by coverage data from the healthcare claims administrator (Aetna)

- Certain adjustments and assumptions were made to prepare the data for valuation:

  - Some records provided on the Aetna data were associated with a participant social security number not listed on the RIN-to-SSN translation file. We did not add these records to the retiree medical valuation data as they were unable to tie with our pension valuation data (and therefore were unable to be associated with a specific plan or participant).

  - Some in pay participants and beneficiaries on the pension valuation data who were previously assumed to be receiving medical benefits were not listed on the provided Aetna data. We have updated these records to only be valued under the pension valuation.

  - Some records in the Aetna data were duplicates due to the dual coverage (i.e. coverage as a retiree and as a spouse of another retiree) allowed under the Plan. Records were changed for these members so that each member was only valued once. Any additional value of the dual coverage (due to coordination of benefits) is small and reflected in the per capita costs.

  - Covered children included in the Aetna data were valued until age 23, unless handicapped. We assumed that those dependents over 23 were only eligible and included due to being handicapped.

  - Conduent understands that retiree medical coverage/eligibility is in place while a pension benefit is payable. If a participant dies, dependent coverage is only assumed to continue if they have ongoing pension/survivor benefits.

  - For individuals included in the pension data expecting a future pension, we valued health benefits starting at the same point that the pension benefit is assumed to start.

  - Future retirees' level of coverage is estimated according to valuation assumptions regarding spousal coverage.

- Limitations on the use of the valuation results due to uncertainty about various aspects of the data: Excluded records due to file mismatches are noted above but not are expected to have a material impact on the results.

Unresolved matters: None.

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June 30, 2016 Valuation – FY 2017 Claims Cost Rates

	Medical		
	Pre-Medicare	**Medicare A&B**	**Medicare B Only**
Fiscal 2013 Incurred Claims	**$239,986,289**	**$73,469,050**	**$1,901,151**
Membership	23,522	32,984	217
Paid Claims Cost Rate	$10,203	$2,227	$8,761
Trend to FY 2017	1.313	1.313	1.313
FY 2017 Paid Cost Rate	$13,399	$2,925	$11,506
Manual Adjustment*	0.940	0.940	0.940
FY 2017 Incurred Cost Rate	**$12,595**	**$2,750**	**$10,815**
Fiscal 2014 Incurred Claims	**$224,167,427**	**$68,834,329**	**$2,428,446**
Membership	21,322	36,843	223
Paid Claims Cost Rate	$10,514	$1,868	$10,890
Trend to FY 2017	1.205	1.205	1.205
FY 2017 Paid Cost Rate	$12,673	$2,252	$13,126
Manual Adjustment*	0.970	0.970	0.970
FY 2017 Incurred Cost Rate	**$12,293**	**$2,184**	**$12,733**
Fiscal 2015 Incurred Claims	**$222,942,485**	**$73,220,895**	**$3,066,493**
Membership	20,920	38,263	242
Paid Claims Cost Rate	$10,657	$1,914	$12,671
Trend to FY 2017	1.120	1.120	1.120
FY 2017 Paid Cost Rate	$11,940	$2,144	$14,197
Manual Adjustment*	1.000	1.000	1.000
FY 2017 Incurred Cost Rate	**$11,940**	**$2,144**	**$14,197**
Fiscal 2016 Incurred Claims	**$225,325,571**	**$83,147,336**	**$1,892,894**
Membership	20,049	40,480	275
Paid Claims Cost Rate	$11,239	$2,054	$6,883
Trend to FY 2017	1.053	1.053	1.053
FY 2017 Paid Cost Rate	$11,830	$2,162	$7,245
Manual Adjustment*	1.000	1.000	1.000
FY 2017 Incurred Cost Rate	**$11,830**	**$2,162**	**$7,245**
Weighted Average 7/1/2016-6/30/2017 Incurred Claims Cost Rates:			
At average age	$12,037	$2,219	$11,133
At age 65	$14,380	$1,707	$8,562

* "Manual Adjustment" is the estimated savings due to the change in claims administrator effective January 1, 2014.

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June 30, 2016 Valuation – FY 2017 Claims Cost Rates (cont.)

	Prescription Drugs			
	Pre-Medicare	Medicare A&B	Medicare B Only	Total
Fiscal 2013 Incurred Claims	**$49,738,435**	**$93,999,808**	**$538,020**	**$459,632,753**
Membership	23,522	32,984	217	56,723
Paid Claims Cost Rate	$2,115	$2,850	$2,479	$8,103
Trend to FY 2017	1.325	1.325	1.325	
FY 2017 Paid Cost Rate	$2,801	$3,775	$3,284	$10,670
Manual Adjustment*	0.934	0.934	0.934	
FY 2017 Incurred Cost Rate	**$2,616**	**$3,526**	**$3,067**	**$10,010**
Fiscal 2014 Incurred Claims	**$39,572,896**	**$115,011,779**	**$605,633**	**$450,620,510**
Membership	21,322	36,843	223	58,388
Paid Claims Cost Rate	$1,856	$3,122	$2,716	$7,718
Trend to FY 2017	1.237	1.237	1.237	
FY 2017 Paid Cost Rate	$2,295	$3,861	$3,359	$9,386
Manual Adjustment*	0.967	0.967	0.967	
FY 2017 Incurred Cost Rate	**$2,220**	**$3,733**	**$3,248**	**$9,095**
Fiscal 2015 Incurred Claims	**$55,314,988**	**$118,431,447**	**$651,667**	**$473,627,975**
Membership	20,920	38,263	242	59,425
Paid Claims Cost Rate	$2,644	$3,095	$2,693	$7,970
Trend to FY 2017	1.162	1.162	1.162	
FY 2017 Paid Cost Rate	$3,071	$3,595	$3,128	$9,050
Manual Adjustment*	1.000	1.000	1.000	
FY 2017 Incurred Cost Rate	**$3,071**	**$3,595**	**$3,128**	**$9,050**
Fiscal 2016 Incurred Claims	**$57,222,142**	**$135,947,721**	**$803,500**	**$504,339,164**
Membership	20,049	40,480	275	60,804
Paid Claims Cost Rate	$2,854	$3,358	$2,922	$8,295
Trend to FY 2017	1.085	1.085	1.085	
FY 2017 Paid Cost Rate	$3,096	$3,643	$3,169	$8,833
Manual Adjustment*	1.000	1.000	1.000	
FY 2017 Incurred Cost Rate	**$3,096**	**$3,643**	**$3,169**	**$8,833**
Weighted Average 7/1/2016-6/30/2017 Incurred Claims Cost Rates:				
At average age	$2,864	$3,632	$3,160	$9,079
At age 65	$3,320	$3,320	$3,320	$8,783

* "Manual Adjustment" is the estimated savings due to the change in claims administrator effective January 1, 2014.

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Following the development of total projected costs, a distribution of per capita claims cost was developed. This was accomplished by allocating total projected costs to the population census used in the valuation. The allocation was done separately for each of prescription drugs and medical costs for the Medicare eligible and pre-Medicare populations. The allocation weights were developed using participant counts by age and assumed morbidity and aging factors. Results were tested for reasonableness based on historical trend and external benchmarks for costs paid by Medicare.

Below are the results of this analysis:

Distribution of Per Capita Claims Cost by Age
for the Period July 1, 2016 through June 30, 2017

Age	Medical and Medicare Parts A & B	Medical and Medicare Part B Only	Prescription Drug	Medicare Retiree Drug Subsidy
45	$7,964	$7,964	$1,751	$ —
50	9,010	9,010	2,080	—
55	10,194	10,194	2,470	—
60	12,108	12,108	2,864	—
65	1,707	8,562	3,320	614
70	2,077	10,417	3,577	661
75	2,466	12,369	3,815	706
80	2,657	13,325	3,911	723

Changes in Methods Since the Prior Valuation

There were no changes in valuation methods except for the changes described in the healthcare sections above.

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Summary of Actuarial Assumptions and Changes in Assumptions

The demographic and economic assumptions used in the June 30, 2016 valuation are described below. Unless noted otherwise, these assumptions were adopted by the Board in December 2014. These assumptions were the result of an experience study performed as of June 30, 2013.

1.	Investment Return / Discount Rate	8.00% per year (geometric), compounded annually, net of expenses.
2.	Salary Scale	Inflation – 3.12% per year. Productivity – 0.50% per year. See Table 1 for salary scale rates.
3.	Payroll Growth	3.62% per year. (Inflation + Productivity).
4.	Total Inflation	Total inflation as measured by the Consumer Price Index for urban and clerical workers for Anchorage is assumed to increase 3.12% annually.
5.	Mortality (Pre-termination)*	Based upon the 2010-2013 actual experience. (See Table 2). 68% of male rates and 60% of female rates of post-termination mortality. Deaths are assumed to result from non-occupational causes 85% of the time.
6.	Mortality (Post-termination)*	Based upon the 2010-2013 actual experience. (See Table 3). 94% of male and 97% of female rates of RP-2000, 2000 Base Year projection to 2018 with Projection Scale BB, with a 3-year setback for males and a 4-year setback for females.
7.	Total Turnover	Select and ultimate rates based upon the 2010-2013 actual withdrawal experience. (See Table 4).
8.	Disability	Incidence rates based upon the 2010-2013 actual experience, in accordance with Table 5. Post-disability mortality in accordance with the RP-2000 Disabled Retiree Mortality Table, 2000 Base Year, projected to 2018 with Projection Scale BB. (See Table 7).
9.	Retirement	Retirement rates based upon the 2010-2013 actual experience in accordance with Table 6. Deferred vested members are assumed to retire at their earliest unreduced retirement date. The modified cash refund annuity is valued as a three-year certain and life annuity.
10.	Marriage and Age Difference	Wives are assumed to be three years younger than husbands. 85% of male members and 75% of female members are assumed to be married.

*The mortality assumptions include an allowance for future mortality improvement. The mortality table used was set in 2014 with an Actual Deaths to Expected Deaths ratio of 110%.

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11. Dependent Children	Benefits to dependent children have been valued assuming members currently covering their dependent children. These benefits are only valued through the dependent children's age 23 (unless the child is disabled).
12. Contribution Refunds	5% of terminating members with vested benefits are assumed to have their contributions refunded. 100% of those with non-vested benefits are assumed to have their contributions refunded.
13. Imputed Data	Data changes from the prior year which are deemed to have an immaterial impact on liabilities and contribution rates are assumed to be correct in the current year's client data. Nonvested terminations with appropriate refund dates are assumed to have received a full refund of contributions. Active members with missing salary and service are assumed to be terminated with status based on their vesting percentage.
14. Active Rehire Assumption	Starting with the June 30, 2016 valuation, the Normal Cost used for determining contribution rates and in the projections includes a rehire assumption to account for anticipated rehires. The Normal Cost shown in the report includes the following % loads (which were developed based on the prior 5 years of rehire loss experience): Pension 18.49% Healthcare 10.39%.
15. Active Data Assumption	To reflect participants who terminate employment before the valuation date and are subsequently rehired after the valuation date, participants who are listed as terminated in the June 30 client data but active in the October 1 client records are updated to active status as of June 30, 2016.
16. COLA	Of those benefit recipients who are eligible for the COLA, 60% are assumed to remain in Alaska and receive the COLA.
17. Sicks Leave	4.5 days of unused sick leave for each year of service are assumed to be available to be credited once the member is retired, terminates or dies.
18. Post-Retirement Pension Adjustment	50% and 75% of assumed inflation, or 1.56% and 2.34% respectively, is valued for the annual automatic Post-Retirement Pension Adjustment (PRPA) as specified in the statute.
19. Expenses	Investment return assumption is net of all expenses.
20. Part-Time Status	Part-time employees are assumed to earn 0.75 years of credited service per year.
21. Re-Employment Option	We assume all re-employed retirees return to work under the Standard Option.
22. Service	Total credited service is provided by the State. The actuary assumes that this service is the only service that should be used to calculate benefits. Additionally, the State provides claimed service (including Bureau of Indian Affairs Service). Claimed service is used for vesting and eligibility purposes.

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23. Final Average Earnings

Final Average Earnings is provided on the data for active members. This amount is used as a minimum in the calculation of the average earnings in the future.

24. Per Capita Claims Cost

Sample claims cost rates adjusted to age 65 for FY17 medical and prescription are shown below:

	Medical	Prescription drugs
Pre-Medicare	$ 14,380	$ 3,320
Medicare Parts A & B	1,707	3,320
Medicare Part B Only	8,562	3,320
Medicare Part D	N/A	614

25. Third Party Administrator Fees

$206.88 per person per year; assumed trend rate of 5% per year.

26. Medicare Part B Only

For actives and retirees not yet Medicare-eligible, participation is set based on whether the employee/retiree will have 40 quarters of employment after March 31, 1986, depending upon date of hire and/or re-hire.

27. Health Cost Trend

The table below shows the rate used to project the cost from the shown fiscal year to the next fiscal year. For example, 8.8% is applied to the FY17 pre-Medicare medical claims costs to get the FY17 medical claims costs.

Fiscal year	Medical pre-65	Medical post-65	Prescription drugs
2017	8.8%	5.8%	5.4%
2018	8.2	5.7	5.1
2019	7.6	5.6	4.8
2020	7.0	5.6	4.6
2021	6.5	5.6	4.4
2022	6.0	5.6	4.2
2023	5.6	5.6	4.0
2026	5.6	5.6	4.0
2051	4.4	4.0	4.0
2101	4.4	4.0	4.0

For the June 30, 2014 valuations and later, the updated Society of Actuaries' Healthcare Cost Trend Model is used to project medical and prescription drug costs. This model effectively begins estimating trend amounts beginning in 2014 and projects out to 2090. The model has been adopted by the Society of Actuaries, and has been populated with assumptions that are specific to the State of Alaska.

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28. Aging Factors*

Age	Medical	Prescription drugs
0–44	2.0%	4.5%
45–54	2.5	3.5
55–64	3.5	3.0
65–74	4.0	1.5
75–84	1.5	0.5
85–95	0.5	—
96 +	—	—

*Note that pre-65 the factor represents the amount to increase from the ages noted to the next age. However post-65, the factor represents the adjustment to get to the ages noted up to age in the range. That is, 2.5% is used to age from 54 to 55, but 1.5% is used to age from 83 to 84.

29. Retired Member Contributions for Medical Benefits

Currently contributions are required for TRS members who are under age 60 and have less than 25 years of service. Eligible Tier 1 members are exempt from contribution requirements. Annual FY17 contributions based on monthly rates shown below for calendar 2016 and 2017 are assumed based on the coverage category for current retirees. The composite rate shown is used for current active and inactive members in Tier 2 who are assumed to retire prior to age 60 with less than 25 years of service and who are not disabled. For dependent children, we value 1/3 of the annual retiree contribution to estimate the per child rate based upon the assumed number of children in rates where children are covered.

	Calendar 2017		Calendar 2016
Coverage category	Annual contribution	Monthly contribution	Monthly contribution
Retiree only	$ 9,324	777	777
Retiree and spouse	18,648	1,554	1,554
Retiree and child(ren)	13,164	1,097	1,097
Retiree and family	22,500	1,875	1,875
Composite	13,848	1,154	1,154

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30. Trend Rate for Retired Member Medical Contributions

The table below shows the rate used to project the retired member medical contributions from the shown fiscal year to the next fiscal year. For example, 6.2% is applied to the FY17 retired member medical contributions to get the FY18 retired member medical contributions.

Fiscal year:	
2017	6.2%
2018	5.8
2019	5.4
2020	5.0
2021	4.7
2022	4.4
2026	4.1
2051	4.0
2101	4.0

Graded trend rates for retired member medical contributions were reinitialized for the June 30, 2014 valuation. Note that actual FY17 retired member medical contributions are reflected in the valuation.

31. Healthcare Participation

100% of system paid members and their spouses are assumed to elect healthcare benefits as soon as they are eligible.

10% of non-system paid members and their spouses are assumed to elect healthcare benefits as soon as they are eligible.

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Table 1
Alaska TRS
Salary Scale

Years of Service	Percent Increase
0	8.11%
1	7.51
2	6.91
3	6.41
4	6.11
5	6.11
6	5.90
7	5.69
8	5.55
9	5.40
10	5.26
11	5.11
12	4.96
13	4.84
14	4.72
15	4.60
16	4.49
17	4.37
18	4.27
19	4.17
20	4.07
21	3.97
22+	3.87

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Table 2
Alaska TRS
Mortality Table (Pre-termination)

Age	Male	Female	Age	Male	Female
20	0.000182	0.000098	53	0.001295	0.000855
21	0.000191	0.000101	54	0.001483	0.000908
22	0.000200	0.000104	55	0.001615	0.000985
23	0.000209	0.000105	56	0.001766	0.001054
24	0.000216	0.000105	57	0.001901	0.001132
25	0.000222	0.000106	58	0.002117	0.001221
26	0.000226	0.000107	59	0.002409	0.001344
27	0.000228	0.000109	60	0.002643	0.001501
28	0.000228	0.000111	61	0.002917	0.001659
29	0.000229	0.000114	62	0.003229	0.001837
30	0.000231	0.000118	63	0.003599	0.002080
31	0.000238	0.000123	64	0.004021	0.002367
32	0.000249	0.000130	65	0.004504	0.002723
33	0.000269	0.000137	66	0.005057	0.003118
34	0.000302	0.000146	67	0.005594	0.003582
35	0.000340	0.000169	68	0.006202	0.004036
36	0.000382	0.000193	69	0.007017	0.004546
37	0.000425	0.000217	70	0.007828	0.005130
38	0.000468	0.000240	71	0.008702	0.005696
39	0.000509	0.000262	72	0.009643	0.006297
40	0.000547	0.000283	73	0.010813	0.006959
41	0.000584	0.000305	74	0.011964	0.007841
42	0.000618	0.000330	75	0.013285	0.008701
43	0.000653	0.000357	76	0.014797	0.009678
44	0.000692	0.000389	77	0.016508	0.010757
45	0.000736	0.000427	78	0.018423	0.011923
46	0.000787	0.000470	79	0.020534	0.013163
47	0.000846	0.000517	80	0.022841	0.014502
48	0.000913	0.000567	81	0.025382	0.015972
49	0.000979	0.000620	82	0.028208	0.017607
50	0.001050	0.000674	83	0.031344	0.019438
51	0.001126	0.000731	84	0.035081	0.021486
52	0.001208	0.000791	85	0.039193	0.023782

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Table 3
Alaska TRS
Mortality Table (Post-termination)

Age	Male	Female	Age	Male	Female
50	0.001544	0.001124	85	0.057637	0.039636
51	0.001656	0.001219	86	0.064248	0.043940
52	0.001777	0.001318	87	0.072770	0.048789
53	0.001904	0.001424	88	0.082264	0.054261
54	0.002181	0.001513	89	0.092884	0.060450
55	0.002375	0.001641	90	0.104794	0.068659
56	0.002597	0.001756	91	0.118129	0.077983
57	0.002795	0.001887	92	0.132941	0.088452
58	0.003113	0.002035	93	0.149196	0.100021
59	0.003543	0.002240	94	0.165479	0.112560
60	0.003887	0.002501	95	0.182705	0.125866
61	0.004289	0.002765	96	0.200693	0.139699
62	0.004749	0.003062	97	0.219249	0.153813
63	0.005293	0.003466	98	0.233940	0.164973
64	0.005913	0.003946	99	0.252821	0.178741
65	0.006624	0.004538	100	0.267022	0.188730
66	0.007436	0.005196	101	0.285888	0.201393
67	0.008227	0.005970	102	0.299408	0.209540
68	0.009121	0.006727	103	0.318102	0.220440
69	0.010318	0.007576	104	0.331094	0.226232
70	0.011511	0.008550	105	0.349384	0.237489
71	0.012798	0.009494	106	0.360058	0.246863
72	0.014180	0.010494	107	0.368483	0.258063
73	0.015902	0.011599	108	0.374013	0.270683
74	0.017595	0.013068	109	0.376000	0.284323
75	0.019536	0.014502	110	0.376000	0.298577
76	0.021760	0.016130	111	0.376000	0.313043
77	0.024276	0.017929	112	0.376000	0.327318
78	0.027093	0.019871	113	0.376000	0.340998
79	0.030198	0.021938	114	0.376000	0.353678
80	0.033590	0.024170	115	0.376000	0.364959
81	0.037326	0.026620	116	0.376000	0.374435
82	0.041482	0.029345	117	0.376000	0.381702
83	0.046095	0.032397	118	0.376000	0.386359
84	0.051589	0.035811	119	0.376000	0.388000

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Table 4
Alaska TRS
Turnover Assumptions

Select Rates of Turnover During the First 8 Year of Employment

Service	Male	Female
0	0.204	0.170
1	0.204	0.170
2	0.168	0.140
3	0.144	0.120
4	0.120	0.100
5	0.108	0.090
6	0.090	0.075
7	0.072	0.060

Ultimate Rates of Turnover
After the First 8 Years of Employment

Age	Male	Female	Age	Male	Female
15	0.031209	0.037185	40	0.030159	0.036224
16	0.031170	0.037157	41	0.030085	0.036155
17	0.031138	0.037138	42	0.030010	0.036086
18	0.031107	0.037129	43	0.029866	0.035976
19	0.031091	0.037120	44	0.029721	0.035867
20	0.030847	0.036848	45	0.029577	0.035757
21	0.030831	0.036848	46	0.029432	0.035648
22	0.030799	0.036839	47	0.029288	0.035538
23	0.030776	0.036839	48	0.029046	0.035380
24	0.030736	0.036830	49	0.028805	0.035221
25	0.030705	0.036830	50	0.028563	0.035063
26	0.030673	0.036820	51	0.028248	0.034847
27	0.030642	0.036762	52	0.027878	0.034595
28	0.030610	0.041480	53	0.027468	0.034296
29	0.030579	0.046198	54	0.046305	0.059961
30	0.030555	0.050917	55	0.045414	0.059285
31	0.030540	0.055635	56	0.044334	0.058410
32	0.030516	0.060353	57	0.043012	0.057288
33	0.030500	0.055569	58	0.041567	0.056018
34	0.030455	0.050784	59	0.039826	0.054401
35	0.030431	0.046000	60	0.037868	0.052569
36	0.030407	0.041215	61	0.035694	0.050523
37	0.030383	0.036431	62	0.033170	0.048197
38	0.030308	0.036362	63	0.030294	0.045540
39	0.030234	0.036293	64	0.027176	0.042653
			65+	0.054000	0.066000

State of Alaska
Teachers' Retirement System
Defined Benefit Retirement Plan
Summary of Actuarial Assumptions and Changes in Assumptions

Table 5
Alaska TRS Disability Table

Age	Unisex
20	0.000560
21	0.000563
22	0.000565
23	0.000574
24	0.000583
25	0.000593
26	0.000602
27	0.000611
28	0.000611
29	0.000612
30	0.000612
31	0.000613
32	0.000613
33	0.000622
34	0.000631
35	0.000641
36	0.000650
37	0.000659
38	0.000674
39	0.000689
40	0.000703
41	0.000718
42	0.000733
43	0.000770
44	0.000806
45	0.000843
46	0.000879
47	0.000916
48	0.000975
49	0.001034
50	0.001093
51	0.001152
52	0.001211
53	0.001356
54	0.001501

State of Alaska
Teachers' Retirement System
Defined Benefit Retirement Plan
Summary of Actuarial Assumptions and Changes in Assumptions

Table 6
Alaska TRS Retirement Table

	Retirement Rate		
	Reduced	Unreduced	
Age at Retirement	Unisex Rates	Male	Female
<45	N/A	0.03	0.03
46	N/A	0.05	0.05
47	N/A	0.05	0.08
48	N/A	0.05	0.08
49	N/A	0.05	0.08
50	0.08	0.05	0.13
51	0.08	0.08	0.12
52	0.08	0.15	0.12
53	0.08	0.15	0.13
54	0.16	0.15	0.14
55	0.08	0.20	0.16
56	0.08	0.17	0.16
57	0.08	0.15	0.16
58	0.08	0.20	0.16
59	0.16	0.20	0.22
60	N/A	0.25	0.22
61	N/A	0.18	0.22
62	N/A	0.18	0.20
63	N/A	0.18	0.20
64	N/A	0.18	0.25
65	N/A	0.30	0.20
66	N/A	0.25	0.20
67	N/A	0.25	0.20
68	N/A	0.25	0.25
69	N/A	0.35	0.25
70	N/A	0.30	0.25
71	N/A	0.30	0.35
72	N/A	0.30	0.35
73	N/A	0.30	0.35
74	N/A	0.30	0.35
75-84	N/A	0.50	
85+	N/A	1.00	

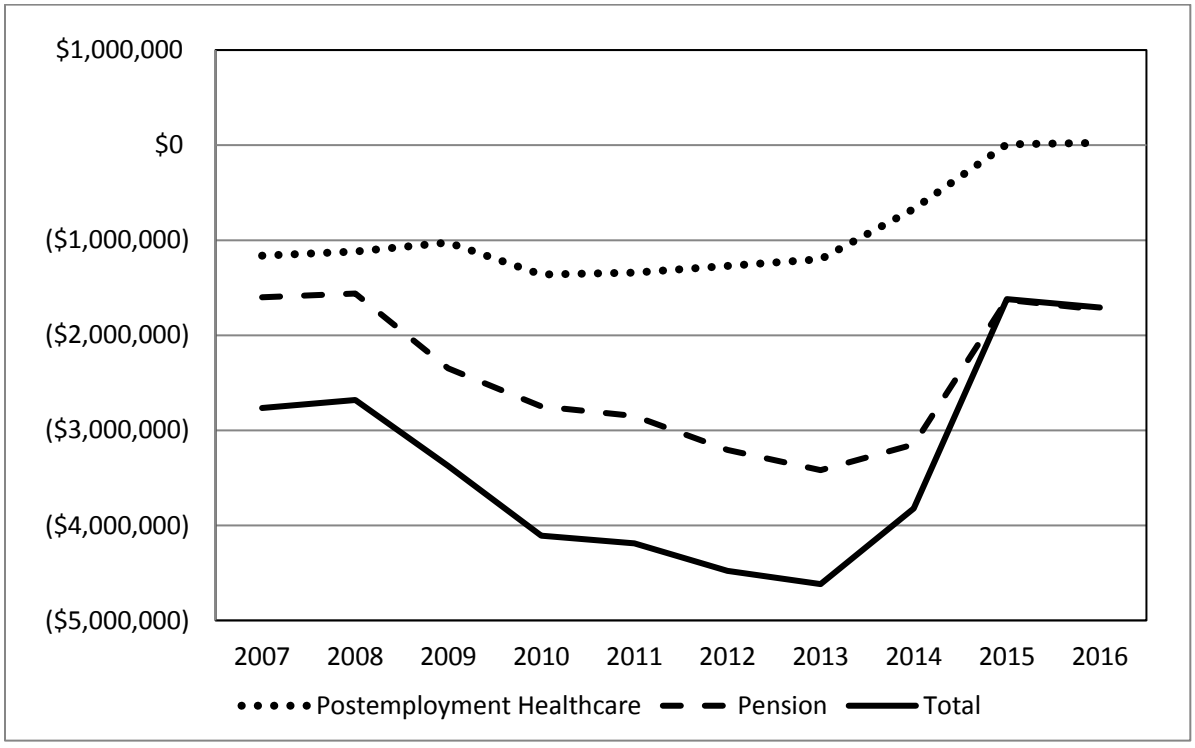
State of Alaska
Teachers' Retirement System
Defined Benefit Retirement Plan
Summary of Actuarial Assumptions and Changes in Assumptions

Table 7
Alaska TRS
Disabled Mortality Rates

Age	Male	Female	Age	Male	Female
≤45	0.0214	0.0071	80	0.0833	0.0582
46	0.0226	0.0078	81	0.0880	0.0621
47	0.0238	0.0085	82	0.0928	0.0662
48	0.0250	0.0093	83	0.0978	0.0707
49	0.0262	0.0101	84	0.1028	0.0755
50	0.0275	0.0109	85	0.1079	0.0806
51	0.0287	0.0118	86	0.1130	0.0862
52	0.0299	0.0127	87	0.1204	0.0921
53	0.0311	0.0137	88	0.1282	0.0985
54	0.0324	0.0144	89	0.1362	0.1054
55	0.0336	0.0151	90	0.1503	0.1148
56	0.0348	0.0158	91	0.1667	0.1249
57	0.0354	0.0164	92	0.1841	0.1359
58	0.0359	0.0171	93	0.2022	0.1475
59	0.0365	0.0176	94	0.2209	0.1611
60	0.0370	0.0182	95	0.2400	0.1745
61	0.0376	0.0188	96	0.2594	0.1877
62	0.0382	0.0194	97	0.2790	0.2003
63	0.0389	0.0204	98	0.2934	0.2084
64	0.0396	0.0214	99	0.3128	0.2192
65	0.0404	0.0226	100	0.3264	0.2250
66	0.0413	0.0238	101	0.3459	0.2362
67	0.0422	0.0252	102	0.3585	0.2455
68	0.0434	0.0267	103	0.3762	0.2613
69	0.0454	0.0284	104	0.3850	0.2741
70	0.0477	0.0303	105	0.3979	0.2931
71	0.0502	0.0323	106	0.4000	0.3078
72	0.0529	0.0345	107	0.4000	0.3227
73	0.0558	0.0368	108	0.4000	0.3374
74	0.0591	0.0393	109	0.4000	0.3515
75	0.0625	0.0420	110	0.4000	0.3646
76	0.0662	0.0449	111	0.4000	0.3762
77	0.0702	0.0479	112	0.4000	0.3860
78	0.0744	0.0511	113	0.4000	0.3935
79	0.0788	0.0546	114	0.4000	0.3983
			115+	0.4000	0.4000

Teachers' Retirement System Defined Benefit Retirement Plan Funding Excess/(Unfunded Liability) (In thousands)				
Actuarial Valuation Year Ended June 30	Postemployment Healthcare	Pension	Total Funding Excess/ (Unfunded Liability)	Funded Ratio
2007	$ (1,163,423)	$ (1,601,581)	$ (2,765,004)	61.5%
2008	(1,120,634)	(1,561,568)	(2,682,202)	64.8
2009	(1,026,288)	(2,348,268)	(3,374,556)	57.0
2010	(1,361,547)	(2,747,113)	(4,108,660)	53.6
2011	(1,340,703)	(2,850,155)	(4,190,858)	54.1
2012	(1,272,507)	(3,204,783)	(4,477,290)	52.1
2013	(1,198,791)	(3,419,240)	(4,618,031)	51.9
2014	(671,535)	(3,150,223)	(3,821,758)	61.2
2015	8,879	(1,629,073)	(1,620,194)	83.3
2016	23,868	(1,731,101)	(1,707,233)	82.8

10-YEAR TREND OF UNFUNDED LIABLITY
(In thousands)



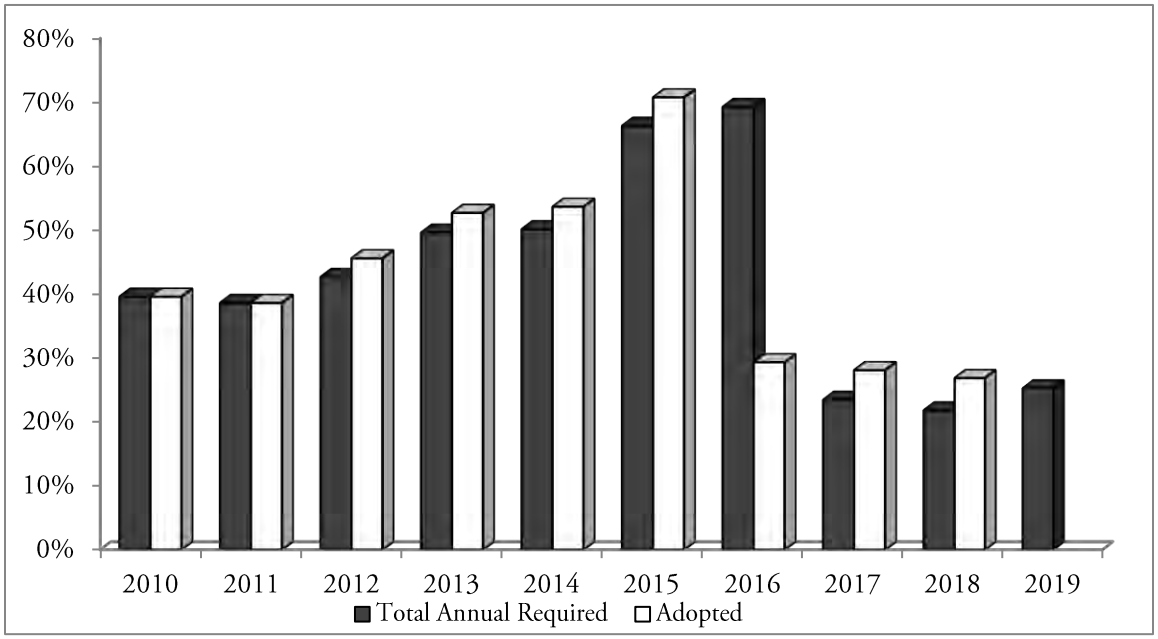
Teachers' Retirement System Defined Benefit Retirement Plan Employer Contribution Rates					
	Actuarially Determined				
Year Ended June 30	Actuarial Valuation Year Ended June 30	Normal Cost[1]	Past Service	Total Annual Required	Adopted
2010	2007	7.59%	31.94%	39.53%	39.53%
2011	2008	7.56	31.00	38.56	38.56
2012	2009	6.57	36.04	42.61	45.55
2013	2010	7.47	42.09	49.56	52.67
2014	2011	6.59	43.51	50.10	53.62
2015	2012	6.40	59.91	66.31	70.75
2016	2013	5.70	63.54	69.24	29.27
2017	2014	4.63	18.77	23.40	28.02
2018	2015	3.99	17.76	21.75	26.78
2019	2016	5.29	19.89	25.18	28.90

[1] Also referred to as the consolidated rate.

Beginning with the June 30, 2014 valuation, contribution rates for FY17 and beyond are determined using new methodology in accordance with 2014 legislation under HB 385 and SB 119, 2014 Alaska Laws, which changed the amortization methodology to a closed 25-year period as a level percentage of pay, and eliminated the time lag on the contribution rate calculation by using a 2-year year "roll-forward" approach and assuming 0% population growth. Investment gains and losses are recognized over a 5-year period beginning in FY15.

Valuations are used to set contribution rates in future years.

10-YEAR COMPARISON OF AVERAGE EMPLOYER CONTRIBUTION RATES



Teachers' Retirement System
Defined Benefit Retirement Plan
Schedule of Active Member Valuation Data

Valuation Date	Number	Annual Earnings (In thousands)	Annual Average Earnings	Percent Increase In Average Earnings	Number of Participating Employers
June 30, 2016	5,123	$ 435,222	$ 84,954	2.4%	58
June 30, 2015	5,502	456,636	82,995	2.4	58
June 30, 2014	5,861	474,873	81,023	2.1	58
June 30, 2013	6,352	504,260	79,386	2.6	58
June 30, 2012	6,845	529,468	77,351	3.6	58
June 30, 2011	7,303	545,155	74,648	3.5	58
June 30, 2010	7,832	564,887	72,125	6.5	58
June 30, 2009	8,226	557,026	67,715	5.2	58
June 30, 2008	8,531	549,148	64,371	5.8	58
June 30, 2007	9,107	554,245	60,859	2.9	58

Teachers' Retirement System
Defined Benefit Retirement Plan
Schedule of Pension Benefit Recipients Added to and Removed from Rolls

	Added to Rolls		Removed from Rolls		Rolls – End of Year			
Year Ended	No.*	Annual Pension Allowances*	No.*	Annual Pension Allowances*	No.	Annual Pension Allowances	Percent Increase/ (Decrease) In Annual Pension Allowances	Average Annual Pension Allowances
June 30, 2016	530	$ 18,364,581	222	$ 6,144,109	12,726	$ 446,083,775	2.82%	$ 35,053
June 30, 2015	888	34,120,658	220	3,531,501	12,418	433,863,303	7.59	34.938
June 30, 2014	226	5,964,256	181	(1,150,187)	11,750	403,274,146	1.80	34,321
June 30, 2013	576	19,387,542	172	1,652,575	11,705	396,159,703	4.69	33,845
June 30, 2012	473	17,104,564	188	(617,561)	11,301	378,424,736	4.91	33,486
June 30, 2011	564	19,546,369	146	1,464,766	11,016	360,702,611	5.28	32,744
June 30, 2010	533	16,980,817	190	5,495,399	10,598	342,621,008	3.47	32,329
June 30, 2009	368	9,788,639	139	(2,857,118)	10,255	331,135,590	3.97	32,290
June 30, 2008	481	14,265,236	133	806,945	10,026	318,489,833	4.41	31,766
June 30, 2007	432	12,388,703	140	(14,114,559)	9,678	305,031,542	9.52	31,518

*Numbers are estimated, and include other internal transfers.

Teachers' Retirement System Defined Benefit Retirement Plan Pension Solvency Test (In thousands)							
	Pension Actuarial Accrued Liability For:				Portion of Actuarial Accrued Liabilities Covered by Assets:		
Valuation Date	(1) Active Member Contributions	(2) Inactive Members	(3) Active Members (Employer-Financed Portion)	Pension Valuation Assets	(1)	(2)	(3)
June 30, 2016	$ 709,903	$ 5,329,673	$ 1,120,212	$ 5,428,687	100.0%	88.5%	— %
June 30, 2015	714,422	5,192,935	1,144,367	5,442,651	100.00	90.7	—
June 30, 2014[1 2]	718,694	5,042,250	1,160,418	3,771,139	100.0	60.5	—
June 30, 2013	726,139	4,726,282	1,137,132	3,170,313	100.0	51.7	—
June 30, 2012	727,435	4,532,982	1,139,360	3,194,994	100.0	54.4	—
June 30, 2011	717,819	4,352,035	1,126,250	3,345,949	100.0	60.4	—
June 30, 2010[1]	716,675	4,153,119	1,137,187	3,259,868	100.0	61.2	—
June 30, 2009	692,105	3,815,020	956,862	3,115,719	100.0	63.5	—
June 30, 2008	654,662	3,700,812	876,180	3,670,086	100.0	81.5	—
June 30, 2007	638,420	3,567,894	837,134	3,441,867	100.0	78.6	—
June 30, 2006[1 2]	615,207	3,432,703	811,426	3,296,934	100.0	78.1	—

[1] Change in Assumptions
[2] Change in Methods
[3] The pension and postemployment healthcare valuation assets were allocated using a ratio of fair value of assets as of June 30, 2005

Teachers' Retirement System
Defined Benefit Retirement Plan
Postemployment Healthcare Solvency Test
(In thousands)

Valuation Date	Postemployment Healthcare Actuarial Accrued Liability For: (1) Active Member Contributions	(2) Inactive Members	(3) Active Members (Employer-Financed Portion)	Post-Employment Healthcare Valuation Assets	Portion of Actuarial Accrued Liabilities Covered by Assets: (1)	(2)	(3)
June 30, 2016	$ —	$ 1,853,084	$ 894,752	$ 2,771,704	100.0%	100.0%	100.0%
June 30, 2015	—	1,870,987	806,406	2,686,272	100.0	100.0	100.0
June 30, 2014[1 2]	—	2,008,223	911,447	2,248,135	100.0	100.0	26.3
June 30, 2013	—	2,012,114	990,440	1,803,763	100.0	89.6	—
June 30, 2012	—	1,933,288	1,013,379	1,674,160	100.0	86.6	—
June 30, 2011	—	1,879,564	1,053,127	1,591,988	100.0	84.7	—
June 30, 2010[1]	—	1,755,961	1,084,846	1,479,260	100.0	84.2	—
June 30, 2009	—	1,477,788	905,739	1,357,239	100.0	91.8	—
June 30, 2008[1]	—	1,480,864	906,660	1,266,890	100.0	85.6	—
June 30, 2007	—	1,344,131	801,824	982,532	100.0	73.1	—
June 30, 2006[1 2]	—	1,493,219	877,296	844,766	100.0	56.6	—

Healthcare liabilities are calculated using the funding assumptions (i.e., funding investment return and net of Medicare Part D subsidy).

[1] Change in Assumptions
[2] Change in Methods
[3] The pension and postemployment healthcare valuation assets were allocated using a ratio of fair value of assets as of June 30, 2005

Teachers' Retirement System
Defined Benefit Retirement Plan
Analysis of Financial Experience

Change in Employer/State Contribution Rate Due to (Gains) and Losses in Actuarial Accrued Liabilities During the Last Five Fiscal Years Resulting From Differences Between Assumed Experience and Actual Experience

Type of (Gain) or Loss	Change in Employer/State Contribution Rate During Fiscal Year				
	2016	2015	2014	2013	2012
Health Claims and Demographic Experience	(0.43)%	(4.07)%	(8.59)%	(1.21)%	(2.02)%
Salary Experience	(0.42)	(0.34)	(0.43)	(0.30)	—
Investment Experience	2.07	0.62	(6.31)	2.44	4.18
Demographic Experience	(0.98)	(0.52)	1.75	0.38	(0.36)
Normal Cost Rehire Assumption	3.19	—	—	—	—
Contribution Shortfall	—	—	1.24	1.62	0.71
(Gain) or Loss During Year From Experience	3.43	(4.31)	(12.34)	2.93	2.51
Assumption and Method Changes	—	—	(33.50)	—	13.70
System Benefit Changes	—	—	—	—	—
Composite (Gain) or Loss During Year	3.43	(4.31)	(45.84)	2.93	16.21
Beginning Total Employer/State Contribution Rate	21.75	23.40	69.24	66.31	50.10
Ending Valuation Year Total Employer/State Contribution Rate	25.18%	19.09%	23.40%	69.24%	66.31%
Fiscal Year Employer/State Contribution Rates	25.18%*	19.09%*	23.40%	24.48%	44.25%
Fiscal Year for Which Rate Applies	FY19	FY18	FY17	FY16	FY15

* Expected. Actual Rate to be determined.

NOTE: In the second session of the 28th Alaska legislature, the legislature changed the actuarial methodology from level dollar amortization to level percent of pay. The June 30, 2013 PERS actuarial valuation report was not updated for this change, but specific revisions for the amortization change were presented to reflect the change in amortization. The change in the amortization resulted in an adjusted FY16 employer/state contribution rate of 24.48%.

Teachers' Retirement System
Defined Benefit Retirement Plan
Analysis of Financial Experience

Change in Employer/State Contribution Rate Due to (Gains) and Losses in Actuarial Accrued Liabilities During the Last Three Fiscal Years Resulting From Differences Between Assumed Experience and Actual Experience

Type of (Gain) or Loss	Change in Employer/State Contribution Rate During Fiscal Year					
	Pension			Healthcare		
	2016	2015	2014	2016	2015	2014
Health Claims and Demographic Experience	N/A	N/A	N/A	(0.43)%	(4.07)%	(8.59)%
Salary Experience	(0.42)%	(0.34)%	(0.43)%	N/A	N/A	N/A
Investment Experience	1.36	0.40	(3.97)	0.71	0.22	(2.34)
Demographic Experience	(0.98)	(0.52)	1.75	N/A	N/A	N/A
Normal Cost Rehire Assumption	2.73	—	—	0.46	—	—
Contribution Shortfall	—	—	1.10	—	—	0.14
(Gain) or Loss During Year From Experience	(2.69)	(0.46)	(1.55)	0.74	(3.85)	(10.79)
Assumption and Method Changes	—	—	(28.73)	—	—	(4.77)
System Benefit Changes	—	—	—	—	—	—
Composite (Gain) or Loss During Year	(2.69)	(0.46)	(30.28)	0.74	(3.85)	(15.56)
Beginning Total Employer/State Contribution Rate	19.16	17.78	48.06	2.59	5.62	21.18
Ending Valuation Year Total Employer/State Contribution Rate	21.85%	17.32%	17.78%	3.33%	1.77%	5.62%
Fiscal Year Employer/State Contribution Rates	21.85%*	17.32%*	17.78%	3.33%*	1.77%*	5.62%
Fiscal Year for Which Rate Applies	FY19	FY18	FY17	FY19	FY18	FY17

*Expected. Actual Rate to be determined.

State of Alaska
Teachers' Retirement System
Defined Benefit Retirement Plan
Summary of Plan Provisions and Changes in Plan Provisions

1. Effective Date

July 1, 1955, with amendments through June 30, 2016. Chapter 97, 1990 Session Laws of Alaska, created a two-tier retirement system. Members who were first hired under the TRS before July 1, 1990 (Tier 1) are eligible for different benefits than members hired after June 30, 1990 (Tier 2). Chapter 9, 2005 Session Laws of Alaska, closed the plan to new members hired after June 30, 2006.

2. Administration of Plan

The Commissioner of Administration or the Commissioner's designee is the administrator of the system. The Attorney General of the state is the legal counsel for the system and shall advise the administrator and represent the system in legal proceedings.

Prior to June 30, 2005, the Teachers' Retirement Board prescribed policies and adopted regulations and performed other activities necessary to carry out the provisions of the system. The Alaska State Pension Investment Board, Department of Revenue, Treasury Division was responsible for investing TRS funds.

On July 27, 2005, Senate Bill 141, enacted as Chapter 9, 2005 Session laws of Alaska, replaced the Teachers' Retirement Board and the Alaska State Pension Investment Board with the Alaska Retirement Management Board.

3. Employers Included

Currently, there are 57 employers participating in the TRS, including the State of Alaska, 53 school districts, and three other eligible organizations.

State of Alaska
Teachers' Retirement System
Defined Benefit Retirement Plan
Summary of Plan Provisions and Changes in Plan Provisions

4. Membership

Membership in the Alaska TRS is mandatory for the following employees hired before July 1, 2006:

- certificated full-time and part-time elementary and secondary teachers, certificated school nurses, and certificated employees in positions requiring teaching certificates;
- positions requiring a teaching certificate as a condition of employment in the Department of Education and Early Development and the Department of Labor and Workforce Development;
- University of Alaska full-time and part-time teachers, and full-time administrative employees in positions requiring academic standing if approved by the TRS administrator;
- certain full-time or part-time teachers of Alaska Native language or culture who have elected to be covered under the TRS;
- members on approved sabbatical leave under AS 14.20.310;
- certain State legislators who have elected to be covered under the TRS; and
- a teacher who has filed for worker's compensation benefits due to an on-the-job assault and who, as a result of the physical injury, is placed on leave without pay..

Employees participating in the University of Alaska's Optional Retirement Plan or other retirement plans funded by the State are not covered by the TRS.

Employees who work half-time in the TRS and Public Employees' Retirement System (PERS) simultaneously are eligible for half-time TRS and PERS credit.

Senate Bill 141, signed into law on July 27, 2005, closes the plan effective July 1, 2006 to new members first hired on or after July 1, 2006.

State of Alaska
Teachers' Retirement System
Defined Benefit Retirement Plan
Summary of Plan Provisions and Changes in Plan Provisions

5. **Credited Service**

TRS members receive a year of membership credit if they work a minimum of 172 days during the school year (July 1 through June 30 of the following year). Fractional credit is determined based on the number of days worked. Part-time members who work at least 50% of full-time receive membership credit for each day in proportion to full-time service. Credit is granted for all Alaskan public school service.

Members may claim other types of service, including:

- Outside teaching service in out-of-state schools or Alaska private schools (not more than ten years may be claimed);
- Military service (not more than five years of military service or ten years of combined outside and military service may be claimed);
- Alaska Bureau of Indian Affairs (BIA) service;
- Retroactive Alaskan service that was not creditable at the time it occurred, but later became creditable because of legislative change;
- Unused sick leave credit after members retire; and
- Leave of absence without pay.

Except for retroactive Alaska service that occurred before July 1, 1955, and unused sick leave, contributions are required for all claimed service.

Members receiving TRS disability benefits continue to earn TRS credit while disabled.

Survivors who are receiving occupational death benefits continue to earn TRS service credit while occupational survivor benefits are being paid.

6. **Employer Contributions**

TRS employers contribute the amounts required, in addition to employees' contributions, to fund the benefits of the system.

The normal cost rate is a uniform rate for all participating employers (less the value of members' contributions).

The past service rate is a uniform rate for all participating employers to amortize the unfunded past service liability with payments that are a level percentage of payroll amount over a closed 25-year period starting June 30, 2014.

Employer rates cannot be less than the normal cost rate.

State of Alaska
Teachers' Retirement System
Defined Benefit Retirement Plan
Summary of Plan Provisions and Changes in Plan Provisions

7. **Additional State Contributions**

Pursuant to AS14.25.070 effective July 1, 2008, the State shall contribute an amount (in addition to the State contribution as an employer) that when combined with the employer contribution (12.56%) will be sufficient to pay the total contribution rate adopted by The State of Alaska Retirement Management Board.

8. **Member Contributions**

Mandatory Contributions: Members are required to contribute 8.65% of their base salaries. Members' contributions are deducted from gross salaries before federal income taxes are withheld.

Contributions for Claimed Service: Member contributions are also required for most of the claimed service described in (5) above.

1% Supplemental Contributions: Members who joined the system before July 1, 1982 and elected to participate in the supplemental contributions provision are required to contribute an additional 1% of their salaries. Supplemental contributions are deducted from gross salaries after federal income taxes are withheld. Under the supplemental provision, an eligible spouse or dependent child will receive a survivor's allowance or spouse's pension if the member dies (see 13 below). Supplemental contributions are only refundable upon death (see 13 below).

Interest: Members' contributions earn 4.5% interest, compounded annually on June 30.

Refund of Contributions: Terminated members may receive refunds of their member contribution accounts which includes their mandatory contributions, indebtedness payments, and interest earned. Terminated members' accounts may be attached to satisfy claims under Alaska Statute 09.38.065, federal income tax levies, and valid Qualified Domestic Relations Orders.

Reinstatement of Contributions: Refunded accounts and the corresponding TRS service may be reinstated upon reemployment in the TRS prior to July 1, 2010. Interest accrues on refunds until paid in full or members retire.

9. **Retirement Benefits**

Eligibility:

a. Members, including deferred vested members, are eligible for normal retirement at age 55 or early retirement at age 50 if they were hired before July 1, 1990 (Tier 1) and age 60 or early retirement at age 55 if they were hired on or after July 1, 1990 (Tier 2). Additionally, they must have at least:

   i. eight years of paid-up membership service;
   ii. 15 years of paid-up creditable service, the last five years of which are membership service, and they were first hired under the TRS before July 1, 1975;

State of Alaska
Teachers' Retirement System
Defined Benefit Retirement Plan
Summary of Plan Provisions and Changes in Plan Provisions

iii. five years of paid-up membership service and three years of paid-up Alaska Bureau of Indian Affairs service;
iv. 12 years of combined part-time and full-time paid-up membership service
v. two years of paid-up membership service if they are vested in the Public Employees' Retirement System (PERS); or

vi. one year of paid-up membership service if they are retired from the PERS.

b. Members may retire at any age when they have:

i. 25 years of paid-up creditable service, the last five years of which are membership service;
ii. 20 years of paid-up membership service;
iii. 20 years of combined paid-up membership and Alaska Bureau of Indian Affairs service, the last five years of which are membership service; or
iv. 20 years of combined paid-up part-time and full-time membership service.

Benefit Type: Lifetime benefits are paid to members. Eligible members may receive normal, unreduced benefits when they (1) reach normal retirement age and complete the service required; or (2) satisfy the minimum service requirements to retire at any age under (b) above. Members may receive early, actuarially reduced benefits when they reach early retirement age and complete the service required.

Members may select joint and survivor options and a last survivor option. Under those options and early retirement, benefits are actuarially adjusted so that members receive the actuarial equivalents of their normal benefit amounts.

Benefit Calculation: Retirement benefits are calculated by multiplying the average base salary (ABS) times the total TRS service times the percentage multiplier. The ABS is determined by averaging the salaries earned during the three highest school years. Members must earn at least 115 days of credit in a school year to include it in the ABS calculation. The TRS pays a minimum benefit of $25.00 per month for each year of service when the calculated benefit is less.

The percentage multipliers are 2% for the first 20 years and 2.5% for all remaining service. Service before July 1, 1990 is calculated at 2%.

Indebtedness: Members who terminate and refund their TRS contributions are not eligible to retire unless they return to TRS employment and pay back their refunds plus interest or accrue additional service which qualifies them for retirement. TRS refunds must be paid in full if the corresponding service is to count toward the minimum service requirements for retirement. Refunded TRS service is included in total service for the purpose of calculating retirement benefits. However, when refunds are not completely paid before retirement, benefits are actuarially reduced for life. Indebtedness balances may also be created when a member purchases qualified claimed service.

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10. Reemployment of Retired Members

Retirees who return to work in a permanent full-time or part-time TRS position after a Normal Retirement are eligible to return under the Standard Option.

Under the Standard Option, retirement and retiree healthcare benefits are suspended while retired members are reemployed under the TRS. During reemployment, members earn additional TRS service and contributions are withheld from their wages.

Members retired under the RIP who return to employment under the TRS, Public Employees' Retirement System (PERS), Judicial Retirement System (JRS) or the University of Alaska's Optional Retirement Plan will:

a. forfeit the three years of incentive credits that they received;
b. owe the TRS 110% of the benefits that they received under the RIP, which may include costs for health insurance, excluding amounts that they paid to participate; and
c. be charged 7% interest from the date that they are reemployed until their indebtedness is paid in full or they retire again. If the indebtedness is not completely paid, future benefits will be actuarially reduced for life.

Employers make contributions to the unfunded liability of the plan on behalf of rehired retired members at the rate the employer is making contributions to the unfunded liability of the plan for other members.

11. Postemployment Healthcare Benefits

When pension benefits begin, major medical benefits are provided by the TRS to (1) all employees first hired before July 1, 1990 (Tier 1) and their surviving spouses and (2) members and their surviving spouses who have twenty-five years of membership service, are disabled or age sixty or older, regardless of their initial hire dates. Employees first hired after June 30, 1990 (Tier 2) and their surviving spouses may receive major medical benefits prior to age sixty by paying premiums.

Medical, prescription drug, dental, vision and audio coverage is provided through the AlaskaCare Retiree Health Plan. Health plan provisions do not vary by retirement tier or age, except for Medicare coordination. Participants in dental, vision, and audio coverage pay a full self-supporting rate and those benefits are not included in this valuation.

Surviving spouses continue coverage only if a pension payment form that provided survivor benefits was elected. Alternate payees (i.e. individuals who are the subject of a domestic relations order or DRO) are allowed to participate in the plan, but must pay the full cost. For individuals included in the pension data expecting a future pension, we valued health benefits starting at the same point that the pension benefit is assumed to start.

Where premiums are required prior to age 60 (Tier 2), the valuation bases this payment upon the age of the retiree.

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Participants in the defined benefit plan are covered under the following benefit design:

Plan Feature	Amount
Deductible (single/family)	$150/$450
Coinsurance - most services	20%
Outpatient surgery/testing	0%
Maximum Out-of-Pocket (single/family, excl. deductible)	$800/$2,400
Rx Copays (generic/brand/mail-order), does not apply to OOP max	$4/$8/$0
Lifetime Maximum	$2,000,000

The plan coordinates with Medicare on a traditional Coordination of Benefits Method.

12. Disability Benefits

Monthly disability benefits are paid to permanently disabled members until they die, recover or become eligible for normal retirement. To be eligible, members must have at least five years of paid-up membership service.

Disability benefits are equal to 50% of the member's base salary at the time of disability. The benefit is increased by 10% of the base salary for each minor child, up to a maximum of 40%. Members continue to earn TRS service until eligible for normal retirement.

Members are appointed to normal retirement on the first of the month after they become eligible.

13. Death Benefits

Monthly death benefits may be paid to a spouse or dependent children upon the death of a member. If monthly benefits are not payable under the supplemental contributions provision or occupational and nonoccupational death provisions, the designated beneficiary receives the lump sum benefit described below.

Occupational Death: When an active member dies from occupational causes, a monthly survivor's pension may be paid to the spouse, unless benefits are payable under the supplemental contributions provision (below). The pension equals 40% of the member's base salary on the date of death or disability, if earlier. If there is no spouse, the pension may be paid to the member's dependent children. On the member's normal retirement date, the benefit converts to a normal retirement benefit. The normal benefit is based on the member's average base salary on the date of death and service, including service accumulated from the date of the member's death to the normal retirement date.

Nonoccupational Death: When a vested member dies from nonoccupational causes, the surviving spouse may elect to receive a monthly 50% joint and survivor benefit or a lump sum benefit, unless benefits are payable under the supplemental contributions provision (below). The monthly benefit is calculated on the member's average base salary and TRS service accrued at the time of death.

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Lump Sum Benefit: Upon the death of an active member who has less than one year of service or an inactive member who is not vested, the designated beneficiary receives the member's contribution account, which includes mandatory contributions, indebtedness payments, and interest earned. Any supplemental contributions will also be refunded. If the member has more than one year of TRS service or is vested, the beneficiary also receives $1,000 and $100 for each year of TRS service, up to a maximum of $3,000. An additional $500 may be payable if the member is survived by dependent children.

Supplemental Contributions Provision: Members are eligible for supplemental coverage if they joined the TRS before July 1, 1982, elected to participate in the supplemental provision, and made the required contributions. A survivor's allowance or spouse's pension (below) may be payable if the member made supplemental contributions for at least one year and dies while in membership service or while disabled under the TRS. In addition, the allowance and pension may be payable if the member dies while retired or in deferred vested status if supplemental contributions were made for at least five years.

a. **Survivor's Allowance:** If the member is survived by dependent children, the surviving spouse and dependent children are entitled to a survivor's allowance. The allowance for the spouse is equal to 35% of the member's base salary at the time of death or disability, plus 10% for each dependent child up to a maximum of 40%. The allowance terminates and a spouse's pension becomes payable when there is no longer an eligible dependent child.

b. **Spouse's Pension:** The spouse's pension is equal to 50% of the retirement benefit that the deceased member was receiving or the unreduced retirement benefit that the deceased member would have received if retired at the time of death. The spouse's pension begins on the first of the month after the member's death or termination of the survivor's allowance.

c. **Death After Retirement:** If a joint and survivor option was selected at retirement, the eligible spouse receives continuing, lifetime monthly benefits after the member dies. A survivor's allowance or spouse's pension may be payable if the member participated in the supplemental contributions provision. If a joint and survivor option was not selected and benefits are not payable under the supplemental contributions provision, the designated beneficiary receives the member's contribution account, less any benefits already paid and the member's last benefit check.

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14. Postretirement Pension Adjustments

Postretirement pension adjustments (PRPAs) are granted annually to eligible benefit recipients when the consumer price index (CPI) for urban wage earners and clerical workers for Anchorage increases during the preceding calendar year. PRPAs are calculated by multiplying the recipient's base benefit, including past PRPAs, excluding the Alaska COLA, times:

a. 75% of the CPI increase in the preceding calendar year or 9%, whichever is less, if the recipient is at least age 65 or on TRS disability; or
b. 50% of the CPI increase in the preceding calendar year or 6%, whichever is less, if the recipient is at least age 60, or under age 60 if the recipient has been receiving benefits for at least eight years.

Ad hoc PRPAs, up to a maximum of 4%, may be granted to eligible recipients who were first hired before July 1, 1990 (Tier 1) if the CPI increases and the funding ratio is at least 105%.

In a year where an Ad Hoc PRPA is granted, eligible recipients will receive the higher of the two calculations.

15. Alaska Cost of Living Allowance

Eligible benefit recipients who reside in Alaska receive an Alaska cost of living allowance (COLA) equal to 10% of their base benefits. The following benefit recipients are eligible:

a. members who were first hired under the TRS before July 1, 1990 (Tier 1) and their survivors;
b. members who were first hired under the TRS after June 30, 1990 (Tier 2) and their survivors if they are at least age 65; and
c. all disabled members.

16. Changes in Benefit Provisions Since the Prior Valuation

There have been no changes in benefit provisions effective since the prior valuation.

May 23, 2017

State of Alaska
The Alaska Retirement Management Board
The Department of Revenue, Treasury Division
The Department of Administration, Division of Retirement and Benefits
P.O. Box 110203
Juneau, AK 99811-0203

Certification of Actuarial Valuation

Dear Members of The Alaska Retirement Management Board, The Department of Revenue and The Department of Administration:

This report summarizes the annual actuarial valuation results of the State of Alaska Teachers' Retirement System Defined Contribution Retirement (TRS DCR) Plan as of June 30, 2016 performed by Conduent HR Services, LLC (Conduent), formerly known as Buck Consultants, LLC.

The actuarial valuation is based on financial information provided in the financial statements audited by KPMG LLP and member data provided by the Division of Retirement and Benefits and summarized in this report. The benefits considered are those delineated in Alaska statutes effective June 30, 2016. The actuary did not verify the data submitted, but did perform tests for consistency and reasonableness.

All costs, liabilities and other factors under the Plan were determined in accordance with generally accepted actuarial principles and procedures. An actuarial cost method is used to measure the actuarial liabilities which we believe is reasonable. Conduent is solely responsible for the actuarial data and actuarial results presented in this report. This report fully and fairly discloses the actuarial position of the Plan as of June 30, 2016.

TRS DCR is funded by Employer Contributions in accordance with the funding policy adopted by the Alaska Retirement Management Board (Board). The funding objective for TRS DCR is to pay required contributions that remain level as a percent of TRS DCR compensation. The Board has also established a funding policy objective that the required contributions be sufficient to pay the Normal Costs of active plan members, Plan expenses, and amortize the Unfunded Actuarial Accrued Liability as a level percent of TRS DCR compensation over a closed layered 25-year period. This objective is currently being met and is projected to continue to be met as required by the Alaska state statutes.

The Board and staff of the State of Alaska may use this report for the review of the operations of TRS DCR. Use of this report, for any other purpose or by anyone other than the Board or staff of the State of Alaska may not be appropriate and may result in mistaken conclusions because of failure to understand applicable assumptions, methods or inapplicability of the report for that purpose. Because of the risk of misinterpretation of actuarial results, you should ask Conduent to review any statement you wish to make on the results contained in this report. Conduent will not accept any liability for any such statement made without the review by Conduent.

Future actuarial measurements may differ significantly from current measurements due to plan experience differing from that anticipated by the economic and demographic assumptions, increases or decreases expected as part of the natural operation of the methodology used for these measurements, and changes in plan provisions or applicable law. In particular, retiree group benefits models necessarily rely on the use of approximations and estimates, and are sensitive to changes in these approximations and estimates. Small variations in these approximations and estimates may lead to significant changes in actuarial measurements. An analysis of the potential range of such future differences is beyond the scope of this valuation.

In our opinion, the actuarial assumptions used are reasonable, taking into account the experience of the Plan and reasonable long-term expectations, and represent our best estimate of the anticipated long-term experience under the Plan. The actuary performs an analysis of Plan experience periodically and recommends changes if, in the opinion of the actuary, assumption changes are needed to more accurately reflect expected future experience. The last full experience analysis was performed for the period July 1, 2009 to June 30, 2013. Based on that experience study, the Board adopted new assumptions effective for the June 30, 2014 valuation to better reflect expected future experience. Based on our annual analysis of recent claims experience, changes were made to the per capita claims cost rates effective June 30, 2016 to better reflect expected future healthcare experience. The DCR medical plan design was finalized in July 2016, and we adjusted cost factors accordingly to estimate the value of the benefits. Based on recent experience, the healthcare cost trend assumptions are still reasonable and were not changed. A summary of the actuarial assumptions and methods used in this actuarial valuation are shown in Sections 5.2 and 5.3.

The assumptions and methods used to determine the healthcare Actuarial Required Contributions (ARC) of the Employers to TRS DCR as outlined in this report and all supporting schedules meet the parameters and requirements for disclosure of Governmental Accounting Standards Board (GASB) Statement No. 43, Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans. Based on member data and asset information provided by the Division of Retirement and Benefits, we have prepared the trend data schedule under GASB No. 43 that is included in the Financial Section of the CAFR. We have also prepared the member data tables shown in Section 3 of this report for the Statistical Section of the CAFR, and the summary of actuarial assumptions, solvency test, and analysis of financial experience for the Actuarial Section of the CAFR.

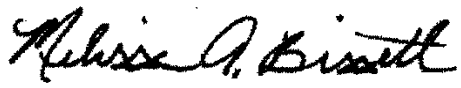
David Kershner is a Fellow of the Society of Actuaries and Larry Langer is an Associate of the Society of Actuaries. Both are Fellows of the Conference of Consulting Actuaries and Members of the American Academy of Actuaries, and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained in this report. This report has been prepared in accordance with all applicable Actuarial Standards of Practice. We are available to answer any questions on the material contained in the report, or to provide explanations or further details as may be appropriate.

Respectfully submitted,

David J. Kershner, FSA, EA, MAAA, FCA
Principal

Larry Langer, ASA, EA, MAAA, FCA
Principal

The undersigned actuary is responsible for all assumptions related to the average annual per capita health claims cost and the health care cost trend rates, and hereby affirms her qualification to render opinions in such matters in accordance with the Qualification Standards of the American Academy of Actuaries.



Melissa A. Bissett, FSA, MAAA
Senior Consultant, Health & Productivity

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The funding method used in this valuation was adopted by the Board in October 2006. The asset smoothing method used to determine valuation assets was implemented effective June 30, 2006.

Benefits valued are those delineated in Alaska State statutes as of the valuation date. Changes in State statutes effective after the valuation date are not taken into consideration in setting the assumptions and methods.

Valuation of Liabilities

A. **Actuarial Method –** Entry Age Normal Cost

Liabilities and contributions shown in the report are computed using the Entry Age Normal Actuarial Cost Method. Any funding surpluses or unfunded accrued liability is amortized over 25 years as a level percentage of expected payroll. However, in keeping with GASB requirements in effect when the plan was adopted, the net amortization period will not exceed 30 years. These requirements are being amended. Under the new accounting standards that will become applicable to Postemployment Benefit Plans Other Than Pension Plans (GASB 74 and 75), the GASB requirements will not directly control amortization periods used for funding of the plan. Per KPMG, the new accounting standards under GASB 67 (and 68) are not applicable to the Occupational Death & Disability benefits under TRS DCR.

Cost factors designed to produce annual costs as a constant percentage of each member's expected compensation in each year for death and disability benefits (constant dollar amount for retiree medical benefits), from the assumed entry age to the last age with a future benefit were applied to the projected benefits to determine the normal cost (the portion of the total cost of the Plan allocated to the current year under the method). The normal cost is determined by summing intermediate results for active members and determining an average normal cost rate which is then related to the total DCR Plan payroll of active members. The actuarial accrued liability for active members (the portion of the total cost of the Plan allocated to prior years under the method) was determined as the excess of the actuarial present value of projected benefits over the actuarial present value of future normal costs.

The actuarial accrued liability for beneficiaries and disabled members currently receiving benefits (if any) was determined as the actuarial present value of the benefits expected to be paid. No future normal costs are payable for these members.

The actuarial accrued liability under this method at any point in time is the theoretical amount of the fund that would have been accumulated had annual contributions equal to the normal cost been made in prior years (it does not represent the liability for benefits accrued to the valuation date). The unfunded actuarial accrued liability is the excess of the actuarial accrued liability over the actuarial value of plan assets measured on the valuation date.

Under this method, experience gains or losses, i.e., decreases or increases in accrued liabilities attributable to deviations in experience from the actuarial assumptions, adjust the unfunded actuarial accrued liability.

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B. Valuation of Assets

Effective June 30, 2006, the asset valuation method recognizes 20% of the investment gain or loss in each of the current and preceding four years. This method was phased in over five years. Fair Value of Assets were $0 as of June 30, 2006. All assets are valued at fair value. Assets are accounted for on an accrued basis and are taken directly from financial statements audited by KPMG LLP. Valuation assets are constrained to a range of 80% to 120% of the fair value of assets.

C. Valuation of Retiree Medical and Prescription Drug Benefits

The methodology used for the valuation of the retiree medical benefits is described in Section 6.2(d) of the State of Alaska Teachers' Retirement System Defined Benefit Plan Actuarial Valuation Report as of June 30, 2016.

Due to the lack of experience for the DCR retiree medical plan only, base claims costs are based on those described in the actuarial valuation as of June 30, 2016 for the Defined Benefit (DB) retiree healthcare plan covering TRS, PERS, and others. The DB rates were used with some adjustments. The claims costs were adjusted to reflect the differences between the DCR medical plan and the DB medical plan. These differences include network steerage, different coverage levels, different Medicare coordination for medical benefits, and an indexing of the retiree out-of-pocket dollar amounts. To account for higher initial copays, deductibles and out-of-pocket limits, upcoming FY17 claims costs were reduced 3.1% for medical and 11.2% for prescription drugs. In addition, to account for the difference in Medicare coordination, upcoming FY17 medical claims costs for Medicare eligible retirees were further reduced 33.75%. The health care trend rate used for the DB health benefits was reduced 0.2% each year for the DCR health benefits to reflect the fact that the retiree healthcare benefits to be offered to DCR members will have annual indexing of member cost sharing features such as deductibles and out-of-pocket amounts.

No implicit subsidies are assumed. Employees projected to retire with 30 years of service prior to Medicare are valued with commencement deferred to Medicare eligibility, as such members will be required to pay the full plan premium. Explicit subsidies for disabled and normal retirement are determined using the plan-defined age-related percentages of total projected plan costs, again with no implicit subsidy assumed.

The State intends to transition to an Employer Group Waiver Program (EGWP) for this group in 2018. That impact is reflected in the valuation, but not in the base cost rates for 2016 or 2017. We estimated the impact of the EGWP plan by offsetting an amount equal to 160% of the RDS amount (a one-time adjustment, trended at regular prescription drug thereafter) based upon Conduent's review of client and industry comparisons of subsidies under RDS and EGWP. We will assess the historical patterns for EGWP / RDS reimbursements as part of the experience study and cost development work for the next valuation to determine any need for further adjustment. A review of a 2016 Medicare Trustees report indicates varying rates of increase for CMS subsidies under both RDS and EGWP. The projections for the next ten years indicate that EGWP reimbursements for direct and reinsurance subsidies are expected to be consistently significantly higher than projected RDS reimbursements.

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Because EGWP subsidies are dependent upon risk scores which have not previously been measured for the State retiree population, and because EGWP subsidies are highly leveraged, there is considerable uncertainty in the estimate.

The estimate of the impact of the EGWP arrangement is a somewhat conservative estimate based on our experience with other similar implementations. EGWP subsidies are provided by three mechanisms, a capitation amount, a discount on brand name drugs (provided by pharmaceutical manufacturers rather than the federal government but still through the administration of a pharmacy benefit manager), and catastrophic payment.

The greatest variation in our estimate comes from the capitation amount, which is dependent upon the risk score of the population. The risk score is a measure of how sick (or well) the population is, depending on such matters as age and diagnosis. The higher the risk score, the larger the capitation. On the other hand, the healthier the population, the lower the capitation. Relatively small variations in risk score result in large swings in the capitation. Employer retiree groups tend to be healthier than the Medicare population as a whole. Our 60% estimate is meant to be conservative and is based on typical employer groups.

D. Healthcare Reform

Healthcare Reform legislation passed on March 23, 2010 included several provisions with potential implications for the State of Alaska Retiree Health Plan liability. Conduent evaluated the impact due to these provisions; however, only the Patient Centered Outcomes Research Institute fee impact has been included in the valuation results as part of administrative fee.

Because the State plan is retiree-only, not all provisions are required. Unlimited lifetime benefits and dependent coverage to age 26 are two of these provisions. The adopted DCR plan does not place lifetime limits on benefits, but does restrict dependent child coverage.

The Plan will be subject to the high cost plan excise tax (Cadillac tax) and the value of the Health Reimbursement Account must be included along with projected plan costs. The excise tax was originally to be effective for 2018; legislation passed in December 2015 delayed it to 2020. Based upon guidance available at the time of disclosure, Conduent determined the impact on plan liabilities to be immaterial (approximately $110,000 (0.5%)) based on a blend of projected pre-Medicare and Medicare retirees and related cost projections. Participants will be responsible for any tax to the extent they are reflected in retiree contributions.

The Trump administration has clearly announced its intention to repeal healthcare reform. As one of his first acts in office, President Trump issued an executive order that states that federal agencies can grant waivers, exemptions and delays of "Obamacare" provisions that would impose costs on states or individuals. On February 15, 2016, CMS issued proposed rules that are intended to minimize adverse selection, but which might disrupt the fragile balance of the healthcare exchanges. We can expect more information about what is being altered. As of the writing of this letter we have not identified any action that has already formally been adopted that would be expected to have a significant

impact on the measured obligation. As additional guidance on the legislation is issued, we will continue to monitor any potential impacts.

E. Changes in Methods Since the Prior Valuation

There have been no changes in methods since the prior valuation.

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Summary of Actuarial Assumptions and Changes in Assumptions

The demographic and economic assumptions used in the June 30, 2016 valuation are described below. Unless noted otherwise, these assumptions were adopted by the Board in December 2014. These assumptions were the result of an experience study performed for the PERS defined benefit plan as of June 30, 2013.

1.	Investment Return / Discount Rate	8.00% per year (geometric), compounded annually, net of expenses.
2.	Salary Scale	Inflation – 3.12% per year. Productivity – 0.50% per year. See Table 1 for salary scale rates.
3.	Payroll Growth	3.62% per year. (Inflation + Productivity).
4.	Total Inflation	Total inflation as measured by the Consumer Price Index for urban and clerical workers for Anchorage is assumed to increase 3.12% annually.
5.	Mortality (Pre-termination)*	Based upon the 2010-2013 actual mortality experience (see Table 2). 60% of male rates and 65% of female rates of the Post-Termination Mortality rates. Deaths are assumed to be occupational 70% of the time for Peace Officer/Firefighter, 50% of the time for Others.
6.	Mortality (Post-termination)*	Based upon 2010-2013 actual mortality experience (see Table 3). 96% of all rates of the RP-2000 table, 2000 Base Year projected to 2018 with Projection Scale BB.
7.	Total Turnover	Rates based upon the 2010-2013 actual experience. (See Table 4.)
8.	Disability	Incidence rates based upon the 2010-2013 actual experience, in accordance with Table 5. Post-disability mortality in accordance with the RP-2000 Disabled Retiree Mortality Table, 2000 Base Year projected to 2018 with Projection Scale BB. Disabilities are assumed to be occupational 70% of the time for Peace Officer/Firefighter, 50% of the time for Others. For Peace Officer/Firefighters, members are assumed to take the monthly annuity 100% of the time.
9.	Retirement	Retirement rates based upon the 2010-2013 actual experience in accordance with Table 6.
10.	Marriage and Age Difference	Wives are assumed to be three years younger than husbands. 85% of male members and 75% of female members are assumed to be married at termination from active service.

*The mortality assumptions include an allowance for expected future mortality improvement. The mortality table used was set in 2014 with an Actual Deaths to Expected Deaths ratio of 109%.

State of Alaska
Teachers' Retirement System
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11. Per Capita Claims Cost

Sample claims cost rates (before base claims cost adjustments described below) adjusted to age 65 for FY17 medical and prescription drug are shown below:

	Medical	Prescription drugs
Pre-Medicare	$ 14,380	$ 3,320
Medicare Parts A & B	1,707	3,320
Medicare Part B Only	8,562	3,320
Medicare Part D	N/A	614

Members are assumed to attain Medicare eligibility at age 65.

12. Third Party Administrator Fees

$206.88 per person per year; assumed trend rate of 5% per year.

13. Base Claims Cost Adjustments

Due to higher initial copays, deductibles, out-of-pocket limits and member cost sharing compared to the DB medical plan, the following cost adjustments are applied to the per capita claims cost rates above:

- 0.969 for the medical plan.
- 0.6625 for the medical Medicare coordination method.
- 0.888 for the prescription drug plan.

14. Imputed Data

Data changes from the prior year which are deemed to have an immaterial impact on liabilities and contribution rates are assumed to be correct in the current year's client data. Nonvested terminations with appropriate refund dates are assumed to have received a full refund of contributions. Active members with missing salary and service are assumed to be terminated with status based on their vesting percentage.

15. Active Data Adjustment

To reflect participants who terminate employment before the valuation date and are subsequently rehired after the valuation date, participants who are listed as terminated in the June 30 client data but active in the October 1 client records are updated to active status.

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16. Health Cost Trend

The table below shows the rate used to project the cost from the shown fiscal year to the next fiscal year. For example, 8.8% is applied to the FY17 pre-Medicare medical claims costs to get the FY18 medical claims costs.

Fiscal year	Medical pre-65	Medical post-65	Prescription drugs
2017	8.8%	5.8%	5.4%
2018	8.2	5.7	5.1
2019	7.6	5.6	4.8
2020	7.0	5.6	4.6
2021	6.5	5.6	4.4
2022	6.0	5.6	4.2
2023	5.6	5.6	4.0
2026	5.6	5.6	4.0
2051	4.4	4.0	4.0
2101	4.4	4.0	4.0

As of the June 30, 2014 valuation and later, the updated Society of Actuaries' Healthcare Cost Trend Model is used to project medical and prescription drug costs. This model effectively begins estimating trend amounts beginning in 2014 and projects out to 2090. This model has been adopted by the Society of Actuaries, and has been populated with assumptions that are specific to the State of Alaska.

Each of the above trend rates was reduced by 0.2% to reflect the fact that the medical benefit offered to members will have annual indexing of member cost sharing.

17. Aging Factors*

Age	Medical	Prescription drugs
0–44	2.0%	4.5%
45–54	2.5	3.5
55–64	3.5	3.0
65–74	4.0	1.5
75–84	1.5	0.5
85–95	0.5	—
96 +	—	—

* Note that pre-65 the factor represents the amount to increase from the ages noted to the next age. However post-65, the factor represents the adjustment to get to the ages noted up to age in the range. That is, 2.5% is used to age from 54 to 55, but 1.5% is use to age from 83 to 84.

State of Alaska
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18. Retiree Medical Participation

Decrement due to disability		Decrement due to retirement		
Age	Percent participation	Age	Percent participation	
<56	73.00%	55		40.00%
56	77.50	56		50.00
57	79.75	57		55.00
58	82.00	58		60.00
59	84.25	59		65.00
60	86.50	60		70.00
61	88.75	61		75.00
62	91.00	62		80.00
63	93.25	63		85.00
64	95.50	64		90.00
65+	94.40	65+	Years of Service	
			<15	70.50%
			15-19	75.20
			20-24	79.90
			25-29	89.30
			30+	94.00

*Participation rates reflect the expected plan election rate that varies by reason for decrement, duration that a member may pay full cost prior to Medicare eligibility, and availability of alternative and/or lower cost options, particularly in the Medicare market. This assumption is based on observed trends in participation from a range of other plans

State of Alaska
Teachers' Retirement System
Defined Contribution Retirement Plan
Summary of Actuarial Assumptions and Changes in Assumptions

Table 1
Alaska TRS DCR Plan
Salary Scale

Years of Service	Percent Increase
0	8.11%
1	7.51
2	6.91
3	6.41
4	6.11
5	6.11
6	5.90
7	5.69
8	5.55
9	5.40
10	5.26
11	5.11
12	4.96
13	4.84
14	4.72
15	4.60
16	4.49
17	4.37
18	4.27
19	4.17
20	4.07
21	3.97
22+	3.87

State of Alaska
Teachers' Retirement System
Defined Contribution Retirement Plan
Summary of Actuarial Assumptions and Changes in Assumptions

Table 2
Alaska TRS DCR Plan
Mortality Table (Pre-termination)

Age	Male	Female	Age	Male	Female
20	0.0182%	0.0098%	55	0.1615%	0.0985%
21	0.0191	0.0101	56	0.1766	0.1054
22	0.0200	0.0104	57	0.1901	0.1132
23	0.0209	0.0105	58	0.2117	0.1221
24	0.0216	0.0105	59	0.2409	0.1344
25	0.0222	0.0106	60	0.2643	0.1501
26	0.0226	0.0107	61	0.2917	0.1659
27	0.0228	0.0109	62	0.3229	0.1837
28	0.0228	0.0111	63	0.3599	0.2080
29	0.0229	0.0114	64	0.4021	0.2367
30	0.0231	0.0118	65	0.4504	0.2723
31	0.0238	0.0123	66	0.5057	0.3118
32	0.0249	0.0130	67	0.5594	0.3582
33	0.0269	0.0137	68	0.6202	0.4036
34	0.0302	0.0146	69	0.7017	0.4546
35	0.0340	0.0169	70	0.7828	0.5130
36	0.0382	0.0193	71	0.8702	0.5696
37	0.0425	0.0217	72	0.9643	0.6297
38	0.0468	0.0240	73	1.0813	0.6959
39	0.0509	0.0262	74	1.1964	0.7841
40	0.0547	0.0283	75	1.3285	0.8701
41	0.0584	0.0305	76	1.4797	0.9678
42	0.0618	0.0330	77	1.6508	1.0757
43	0.0653	0.0357	78	1.8423	1.1923
44	0.0692	0.0389	79	2.0534	1.3163
45	0.0736	0.0427	80	2.2841	1.4502
46	0.0787	0.0470	81	2.5382	1.5972
47	0.0846	0.0517	82	2.8208	1.7607
48	0.0913	0.0567	83	3.1344	1.9438
49	0.0979	0.0620	84	3.5081	2.1486
50	0.1050	0.0674	85	3.9193	2.3782
51	0.1126	0.0731			
52	0.1208	0.0791			
53	0.1295	0.0855			
54	0.1483	0.0908			

State of Alaska
Teachers' Retirement System
Defined Contribution Retirement Plan
Summary of Actuarial Assumptions and Changes in Assumptions

Table 3
Alaska TRS DCR Plan
Mortality Table (Post-termination)

Age	Male	Female	Age	Male	Female
50	0.1544%	0.1124%	85	5.7637%	3.9636%
51	0.1656	0.1219	86	6.4248	4.3940
52	0.1777	0.1318	87	7.2770	4.8789
53	0.1904	0.1424	88	8.2264	5.4261
54	0.2181	0.1513	89	9.2884	6.0450
55	0.2375	0.1641	90	10.4794	6.8659
56	0.2597	0.1756	91	11.8129	7.7983
57	0.2795	0.1887	92	13.2941	8.8452
58	0.3113	0.2035	93	14.9196	10.0021
59	0.3543	0.2240	94	16.5479	11.2560
60	0.3887	0.2501	95	18.2705	12.5866
61	0.4289	0.2765	96	20.0693	13.9699
62	0.4749	0.3062	97	21.9249	15.3813
63	0.5293	0.3466	98	23.3940	16.4973
64	0.5913	0.3946	99	25.2821	17.8741
65	0.6624	0.4538	100	26.7022	18.8730
66	0.7436	0.5196	101	28.5888	20.1393
67	0.8227	0.5970	102	29.9408	20.9540
68	0.9121	0.6727	103	31.8102	22.0440
69	1.0318	0.7576	104	33.1094	22.6232
70	1.1511	0.8550	105	34.9384	23.7489
71	1.2798	0.9494	106	36.0058	24.6863
72	1.4180	1.0494	107	36.8483	25.8063
73	1.5902	1.1599	108	37.4013	27.0683
74	1.7595	1.3068	109	37.6000	28.4323
75	1.9536	1.4502	110	37.6000	29.8577
76	2.1760	1.6130	111	37.6000	31.3043
77	2.4276	1.7929	112	37.6000	32.7318
78	2.7093	1.9871	113	37.6000	34.0998
79	3.0198	2.1938	114	37.6000	35.3678
80	3.3590	2.4170	115	37.6000	36.4959
81	3.7326	2.6620	116	37.6000	37.4435
82	4.1482	2.9345	117	37.6000	38.1702
83	4.6095	3.2397	118	37.6000	38.6359
84	5.1589	3.5811	119	100.0000	100.0000

State of Alaska
Teachers' Retirement System
Defined Contribution Retirement Plan
Summary of Actuarial Assumptions and Changes in Assumptions

Turnover Assumptions

Select Rates of Turnover During the First 5 Year of

Service	Male	Female
0	20.70%	21.80%
1	19.55	18.70
2	16.10	15.40
3	13.80	13.20
4	11.50	11.00
5	7.32	8.05

Ultimate Rates of Turnover
After the First 5 Years of Employment

Age	Male	Female	Age	Male	Female
15	6.2959%	6.6811%	40	6.1753%	6.5647%
16	6.2959	6.6811	41	6.1604	6.5516
17	6.2959	6.6811	42	6.1455	6.5386
18	6.2959	6.6811	43	6.1081	6.5175
19	6.2959	6.6811	44	6.0706	6.4965
20	6.2959	6.6811	45	6.0332	6.4754
21	6.2959	6.6811	46	5.9957	6.4544
22	6.2959	6.6811	47	5.9583	6.4333
23	6.2903	6.6773	48	5.9053	6.3975
24	6.2847	6.6735	49	5.8522	6.3617
25	6.2791	6.6697	50	5.7992	6.3259
26	6.2735	6.6659	51	5.7461	6.2901
27	6.2679	6.6621	52	5.6931	6.2543
28	6.2623	6.6583	53	5.5800	6.1818
29	6.2567	6.6544	54	5.4670	6.1093
30	6.2512	6.6506	55	5.3539	6.0367
31	6.2456	6.6467	56	5.2409	5.9642
32	6.2400	6.6429	57	5.1278	5.8917
33	6.2360	6.6351	58	5.1711	6.0021
34	6.2320	6.6273	59	5.2144	6.1125
35	6.2280	6.6194	60	5.2578	6.2230
36	6.2240	6.6116	61	5.3011	6.3334
37	6.2200	6.6038	62	5.3444	6.4438
38	6.2051	6.5908	63	5.7296	6.6292
39	6.1902	6.5777	64	6.1148	6.8146
			65+	6.5000	7.0000

State of Alaska
Teachers' Retirement System
Defined Contribution Retirement Plan
Summary of Actuarial Assumptions and Changes in Assumptions

Table 5
Alaska TRS DCR Plan
Disability Table

Age	Unisex
<19	0.0560%
20	0.0560
21	0.0563
22	0.0565
23	0.0574
24	0.0583
25	0.0593
26	0.0602
27	0.0611
28	0.0611
29	0.0612
30	0.0612
31	0.0613
32	0.0613
33	0.0622
34	0.0631
35	0.0641
36	0.0650
37	0.0659
38	0.0674
39	0.0689
40	0.0703
41	0.0718
42	0.0733
43	0.0770
44	0.0806
45	0.0843
46	0.0879
47	0.0916
48	0.0975
49	0.1034
50	0.1093
51	0.1152
52	0.1211
53	0.1356
54	0.1501

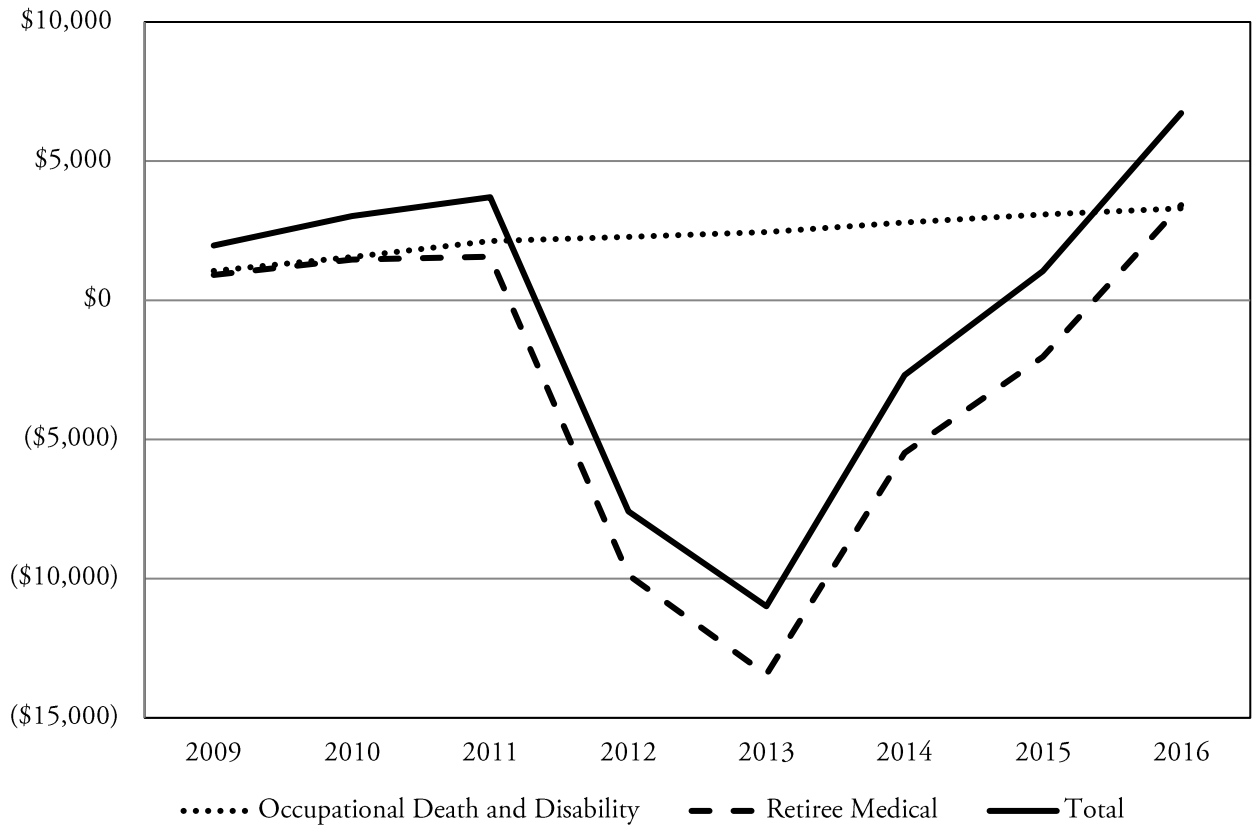
State of Alaska
Teachers' Retirement System
Defined Contribution Retirement Plan
Summary of Actuarial Assumptions and Changes in Assumptions

Table 6
Alaska TRS DCR Plan
Retirement Table

Age	Rate
<54	2.00%
55	3.00
56	3.00
57	3.00
58	3.00
59	3.00
60	5.00
61	5.00
62	10.00
63	5.00
64	5.00
65	25.00
66	25.00
67	25.00
68	20.00
69	20.00
>70	100.00

Teachers' Retirement System Defined Contribution Retirement Plan Occupational Death and Disability and Retiree Medical Benefits Funding Excess/(Unfunded Liability) (In thousands)				
Actuarial Valuation Year Ended June 30	Occupational Death and Disability	Retiree Medical	Total Funding Excess/ (Unfunded Liability)	Funded Ratio
2008	$ 376	$ 551	$ 927	215.73%
2009	1,057	907	1,964	234.5
2010	1,559	1,465	3,024	223.5
2011	2,136	1,572	3,708	196.1
2012	2,285	(9,874)	(7,589)	55.0
2013	2,452	(13,444)	(10,992)	50.3
2014	2,797	(5,482)	(2,685)	83.5
2015	3,085	(2,035)	(1,050)	105.3
2016	3,304	3,422	6,726	130.6

8-YEAR TREND OF FUNDING EXCESS/(UNFUNDED) LIABILITY
(In thousands)



Teachers' Retirement System
Defined Contribution Retirement Plan
Occupational Death and Disability and Retiree Medical Benefits
Employer Contribution Rates

		Actuarially Determined					Adopted	
		Occupational Death and Disability			Total Annual Required			
Fiscal Year	Actuarial Valuation Year Ended June 30	Peace Officer/ Firefighter	Others	Retiree Medical	Peace Officer/ Firefighter	Others	Peace Officer/ Firefighter	Others
2010	2007	1.33%	0.30%	0.83%	2.16%	1.13%	2.16%	1.13%
2011	2008	1.18	0.31	0.55	1.73	0.86	1.73	0.86
2012	2009	0.97	0.11	0.51	1.48	0.62	1.48	0.62
2013	2010	0.99	0.14	0.48	1.47	0.62	1.47	0.62
2014	2011	1.14	0.20	0.48	1.62	0.68	1.62	0.68
2015	2012	1.06	0.22	1.66	2.72	1.88	2.72	1.88
2016	2013	1.05	0.22	1.68	2.73	1.90	2.73	1.90
2017	2014	0.49	0.17	1.18	1.67	1.35	1.67	1.35
2018	2015	0.43	0.16	1.03	1.46	1.19	1.46	1.19
2019	2016	0.59	0.16	0.94	1.53	1.10	1.70	1.20

Valuations are used to set contribution rates in future years.

Teachers' Retirement System
Defined Contribution Retirement Plan
Occupational Death and Disability and Retiree Medical Benefits
Schedule of Active Member Valuation Data

Valuation Date	Number	Annual Earnings (In thousands)	Annual Average Earnings	Percent Increase/ (Decrease) in Average Earnings	Number of Participating Employers
June 30, 2016	4,383	$ 285,854	$ 65,219	2.5%	58
June 30, 2015	4,095	260,584	63,635	2.7	58
June 30, 2014	3,547	219,701	61,940	2.4	58
June 30, 2013	3,272	197,944	60,496	3.5	58
June 30, 2012	3,057	178,761	58,476	4.7	58
June 30, 2011	2,708	151,269	55,860	5.6	58
June 30, 2010	2,246	118,813	52,900	5.7	58
June 30, 2009	1,792	89,708	50,061	6.4	58
June 30, 2008	1,198	56,369	47,053	6.2	58
June 30, 2007	641	28,410	44,322	—	58

Total and average annual earnings ("valuation pay") are the annualized earnings for the fiscal year ending on the valuation date.

Teachers' Retirement System
Defined Contribution Retirement Plan
Occupational Death and Disability Solvency Test
(In thousands)

Valuation Date	Occupational Death and Disability Actuarial Accrued Liability For: (1) Active Member Contributions	(2) Inactive Members	(3) Active Members (Employer-Financed Portion)	Occupational Death and Disability Valuation Assets	Portion of Actuarial Accrued Liability Covered by Assets: (1)	(2)	(3)
June 30, 2016	$ —	$ —	$ 19	$ 3,323	100.0%	100.0%	100.0%
June 30, 2015	—	—	29	3,114	100.0	100.0	100.0
June 30, 2014[1]	—	—	23	2,820	100.0	100.0	100.0
June 30, 2013	—	—	80	2,532	100.0	100.0	100.0
June 30, 2012	—	—	63	2,348	100.0	100.0	100.0
June 30, 2011	—	—	57	2,193	100.0	100.0	100.0
June 30, 2010[1]	—	—	18	1,577	100.0	100.0	100.0
June 30, 2009[1]	—	—	14	1,071	100.0	100.0	100.0
June 30, 2008	—	—	44	420	100.0	100.0	100.0
June 30, 2007	—	—	16	—	100.0	100.0	0.0

[1] Change in Assumptions

Teachers' Retirement System
Defined Contribution Retirement Plan
Retiree Medical Solvency Test
(In thousands)

Valuation Date	Retiree Medical Actuarial Accrued Liability For: (1) Active Member Contributions	(2) Inactive Members	(3) Active Members (Employer-Financed Portion)	Retiree Medical Valuation Assets	Portion of Actuarial Accrued Liability Covered by Assets: (1)	(2)	(3)
June 30, 2016	$ —	$ —	$ 21,988	$ 25,410	100.0%	100.0%	100.0%
June 30, 2015	—	—	19,768	17,733	100.0	100.0	89.7
June 30, 2014[1]	—	—	16,273	10,791	100.0	100.0	66.3
June 30, 2013	—	—	22,058	8,614	100.0	100.0	39.1
June 30, 2012[1]	—	—	16,811	6,937	100.0	100.0	41.3
June 30, 2011	—	—	3,801	5,373	100.0	100.0	100.0
June 30, 2010[1]	—	—	2,430	3,895	100.0	100.0	100.0
June 30, 2009[1]	—	—	1,446	2,353	100.0	100.0	100.0
June 30, 2008[1]	—	—	757	1,308	100.0	100.0	100.0
June 30, 2007	—	—	358	597	100.0	100.0	100.0

Retiree medical liabilities are calculated using the funding assumptions (i.e., funding investment return and net of Medicare Part D subsidy).

[1] Change in Assumptions

State of Alaska
Teachers' Retirement System
Defined Contribution Retirement Plan
Summary of Plan Provisions and Changes in Plan Provisions

1. **Effective Date**

   July 1, 2006, with amendments through June 30, 2016.

2. **Administration of Plan**

   The Commissioner of Administration or the Commissioner's designee is the administrator of the Plan. The Attorney General of the state is the legal counsel for the Plan and shall advise the administrator and represent the Plan in legal proceedings.

   The Alaska Retirement Management Board prescribes policies, adopts regulations, invests the funds, and performs other activities necessary to carry out the provisions of the Plan.

3. **Employers Included**

   Currently there are 57 employers participating in the TRS DCR, including the State of Alaska, 53 school districts, and four other eligible organizations.

4. **Membership**

   An employee of a participating employer who first enters service on or after July 1, 2006, or a member of the defined benefit plan who works for an employer who began participation on or after July 1, 2006, and meets the following criteria is a member in the Plan:

   - Permanent full-time or part-time elementary or secondary teachers, school nurses, or a person in a position requiring a teaching certificate as a condition of hire in a public school of the State of Alaska, the Department of Education and Early Development or in the Department of Labor and Workforce Development.

   - Full-time or part-time teachers at the University of Alaska or persons occupying full-time administrative positions requiring academic standing who are not in the University's Optional Retirement Plan.

   Members can convert to the TRS DCR if they are an eligible nonvested member of the TRS defined benefit plan whose employer consents to transfers to the defined contribution plan and they elect to transfer his or her account balance to TRS DCR.

5. **Member Contributions**

   Other than the member-paid premiums shown on the next page, there are no member contributions for the occupational death & disability and retiree medical benefits.

State of Alaska
Teachers' Retirement System
Defined Contribution Retirement Plan
Summary of Plan Provisions and Changes in Plan Provisions

6. Retiree Medical Benefits

- Member must retire directly from the plan to be eligible for retiree medical coverage. Normal retirement eligibility is the earlier of a) 30 years of service or b) Medicare eligible and 10 years of service.
- No subsidized retiree medical benefits are provided until normal retirement eligibility. The member's and any covered dependent premium is 100% until the member is Medicare eligible. Upon the member's Medicare-eligibility, the required contribution will follow the service based schedule shown below.
- Coverage cannot be denied except for failure to pay premium.
- Members who are receiving disability benefits or survivors who are receiving monthly survivor benefits are not eligible until the member meets, or would have met if he/she had lived, the normal retirement eligibility requirements.
- The following is a summary of the medical benefit design adopted in July 2016. The plan description below is used for valuation purposes and indicates participant cost-sharing. Please refer to the benefit handbook for more details.

Plan Design Feature	In-Network*	Out-of-Network*[(1)]
Deductible (single/family)	$300/$600	
Medical services (participant share)	20%	40%
Emergency Room Copay (non-emergent use)	$100	$100
Medical Out-of-Pocket Maximum (single/famly, after deductible)	$1,200/$2,400	$2,400/$4.800
Medicare Coordination	Carve-out	Carve-out
Pharmacy	No Deductible	No Deductible
Retail Generic (per 30-day fill)	20% $10 min/$50 max	40%
Retail Non-Formulary Band (per 30-day fill)	25% $25 min/$75 max	
Retail Formulary Brand (per 30-day fill)	35% $80 min/$150 max	
Mail-Order Generic	$20 copay	40%
Mail-Order Non-Formulary Brand	$50 copay	
Mail-Order Formulary Brand	$100 copay	
Pharmacy Out-of-Pocket Max (single/family)	$1,000/$2,000	$1,000/$2,000
Medicare Pharmacy Arrangement	Retiree Drug Subsidy / Employer Group Waiver Plan Effective 1/1/2018	
Wellness/Preventative	100%, Not subject to deductible	

[(1)] OON applies only to non-Medicare elgibile participants.

* Assumed to increase annually to mitigate impact of healthcare cost trend

- Conduent used its manual rate models to determine relative plan values for the defined benefit (DB) retiree medical plan and the adopted DCR retiree medical plan outlined above. We applied the ratio of the DCR retiree health plan value to the DB retiree health plan value to the per capita costs determined for each of pre/post-Medicare medical and pharmacy benefits (including RDS) to estimate corresponding values for the

State of Alaska
Teachers' Retirement System
Defined Contribution Retirement Plan
Summary of Plan Provisions and Changes in Plan Provisions

adopted DCR retiree medical plan design. These factors are noted in Section 5.3. We further adjusted the Medicare medical manual rate to reflect the Medicare coordination method adopted. The RDS subsidy offset in 2018 was increased by 60% to reflect estimated Medicare reimbursements under the Employer Group Waiver Plan (EGWP) arrangement. We reflect estimated discounts and pharmacy rebates in the defined benefit medical cost assumptions so no further adjustment was needed for the DCR medical plan. The network differential is reflected in the relative plan value adjustments.

- The medical plan's coverage is supplemental to Medicare. Medicare coordination is described in the 2016 DCR Plan Handbook, referred to in the industry as carve-out coordination: Medicare payment is deducted from the Medicare allowable expense and plan parameters are applied to that amount. Starting at 2018, the prescription drug coverage is a Medicare Part D EGWP arrangement.
- The premium for Medicare-eligible retirees will be based on the member's years of service. The percentage of premium paid by the member is as follows:

Years of Service	Percent of Premium Paid by Member
Less than 15 years	30.00%
15 – 19	25.00
20 – 24	20.00
25 – 29	15.00
30 years or more	10.00

The premium for dependents who are not eligible for Medicare aligns with the member's subsidy. While a member is not Medicare-eligible, premiums are 100% of the estimated cost. As per discussion with the State, reflects updated understanding of stature regarding retiree contribution requirements and employer subsidies

Members have a separate defined contribution Health Reimbursement Arrangement account that can be used to pay for premiums or other medical expenses.

For valuation purposes this year, we set premiums equal to the age related plan costs and apply the plan subsidy percentage; thus reflecting the updated cost using enrollment information. Future premiums calculated and charged to participants will be determined to reflect any adjustment due to the updated defined benefit plan data as current premiums were determined using information based upon enrollment with dual coverage members.

- Coverage will continue for surviving spouses of covered retired members.

State of Alaska
Teachers' Retirement System
Defined Contribution Retirement Plan
Summary of Plan Provisions and Changes in Plan Provisions

7. **Occupational Disability Benefits**

- Benefit is 40% of salary at date of disability.
- Disability Benefit Adjustment: The disability benefit is increased by 75% of the cost of living increase in the preceding calendar year or 9%, whichever is less.
- Member earns service while on occupational disability.
- Benefits cease when the member becomes eligible for normal retirement at Medicare-eligible age and 10 years of service, or at any age with 30 years of service.
- No retiree medical benefits are provided until normal retirement eligibility. The member's premium is 100% until they are Medicare eligible. Medicare-eligible premiums follow the service-based schedule above.

8. **Occupational Death Benefits**

- Benefit is 40% of salary for Others members and 50% of salary for Peace Officer/Firefighter members.
- Survivor's Pension Adjustment: A survivor's pension is increased by 50% of the cost of living increase in the preceding calendar year or 6%, whichever is less, if the recipient is at least age 60 on July 1, or under age 60 if the recipient has been receiving TRS benefits for at least 5 years as of July 1.
- Benefits cease when the member would have become eligible for normal retirement.
- The period during which the survivor is receiving benefits is counted as service credit toward retiree medical benefits.
- No retiree medical benefits are provided until the member would have been eligible for normal retirement. The surviving spouse's premium is 100% until the member would have been Medicare eligible. Medicare-eligible premiums follow the service-based schedule above.

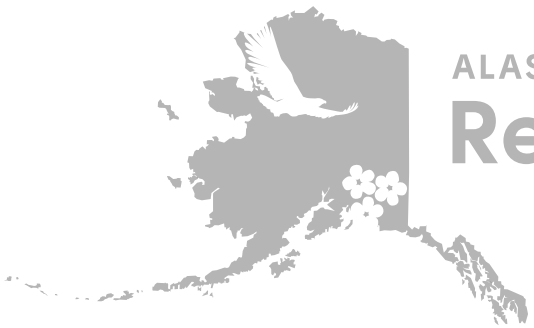
9. **Changes Since the Prior Valuation**

- Updated non-Medicare eligible dependent coverage premiums to reflect subsidy when the member is Medicare-eligible.
- Updated factors used to adjust the defined benefit plan costs to reflect adopted DCR plan design.

ALASKA DIVISION OF

Retirement and Benefits

STATISTICAL SECTION



ALASKA DIVISION OF

Retirement and Benefits

STATISTICAL SECTION OVERVIEW

The statistical section of the Teachers' Retirement System (System) comprehensive annual financial report provides additional detail in the form of financial trends, operating statistics and demographic information. This data is provided to enhance the reader's understanding of the System.

Financial Trends **166-171**

These schedules contain financial trend information utilizing a multi-year presentation so the reader can better understand how the System's financial performance has changed over time. Financial information is presented on an accrual basis.

Operating Information **172-183**

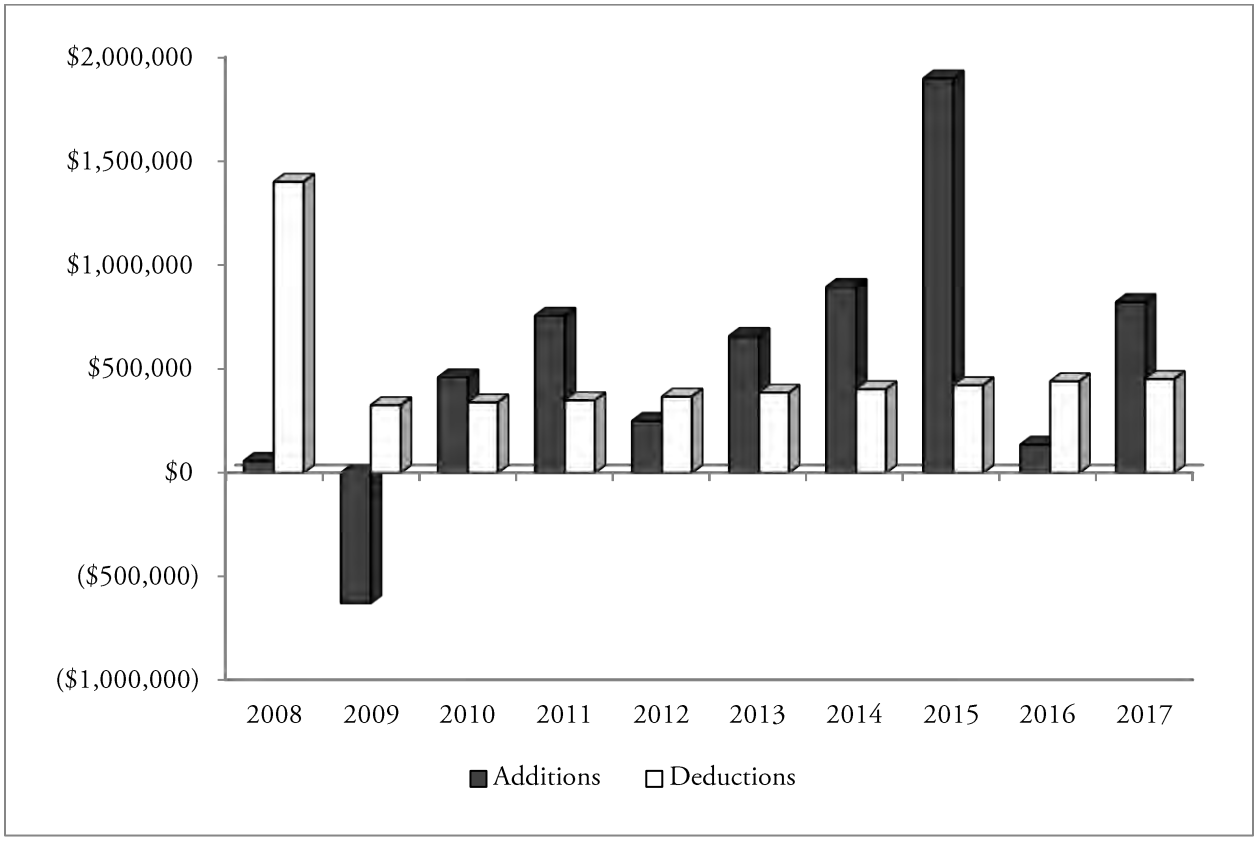
These schedules contain detailed benefit payment information to provide the reader a better understanding of the pension benefits provided by the Division.

Demographic Information **184-189**

These schedules contain detailed demographic data to provide the reader a better understanding of the membership and employer participation in the System.

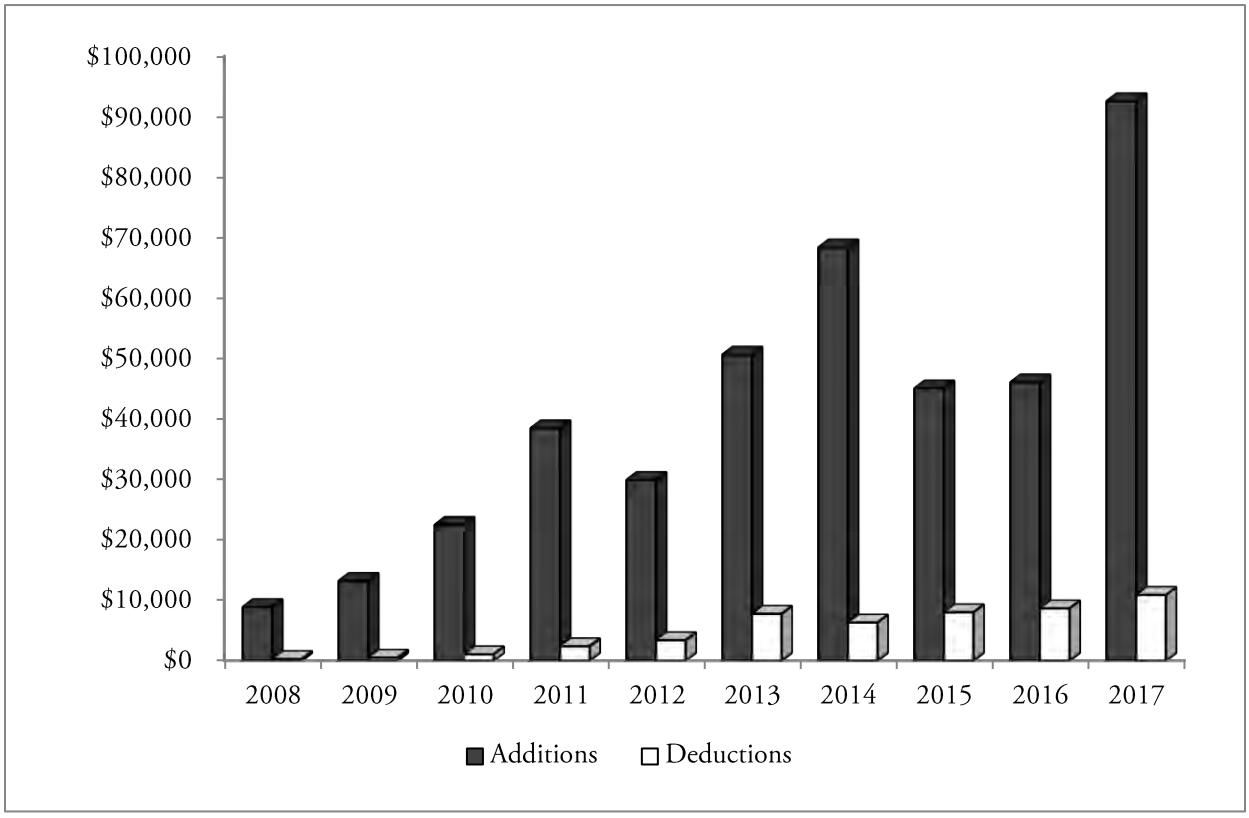
Teachers' Retirement System Defined Benefit Pension Changes in Fiduciary Net Position (In thousands)					
Year Ended June 30	Fiduciary Net Position, Beginning of Year	Additions	Deductions	Increase / (Decrease) in Fiduciary Net Position	Fiduciary Net Position, End of Year
2008	$ 4,893,114	$ 57,423	$ 1,399,739	$(1,342,316)	$ 3,550,798
2009	3,550,798	(629,058)	325,307	(954,365)	2,596,433
2010	2,596,433	458,984	338,860	120,124	2,716,557
2011	2,716,557	755,768	348,795	406,973	3,123,530
2012	3,123,530	249,803	366,686	(116,883)	3,006,647
2013	3,006,647	658,405	385,922	272,483	3,279,130
2014	3,279,130	894,170	402,161	492,009	3,771,139
2015	3,771,139	1,897,150	421,334	1,475,816	5,246,955
2016	5,246,955	135,476	440,230	(304,754)	4,942,201
2017	4,942,201	821,406	451,312	370,094	5,312,295

10-YEAR COMPARISON OF ADDITIONS AND DEDUCTIONS
(In thousands)



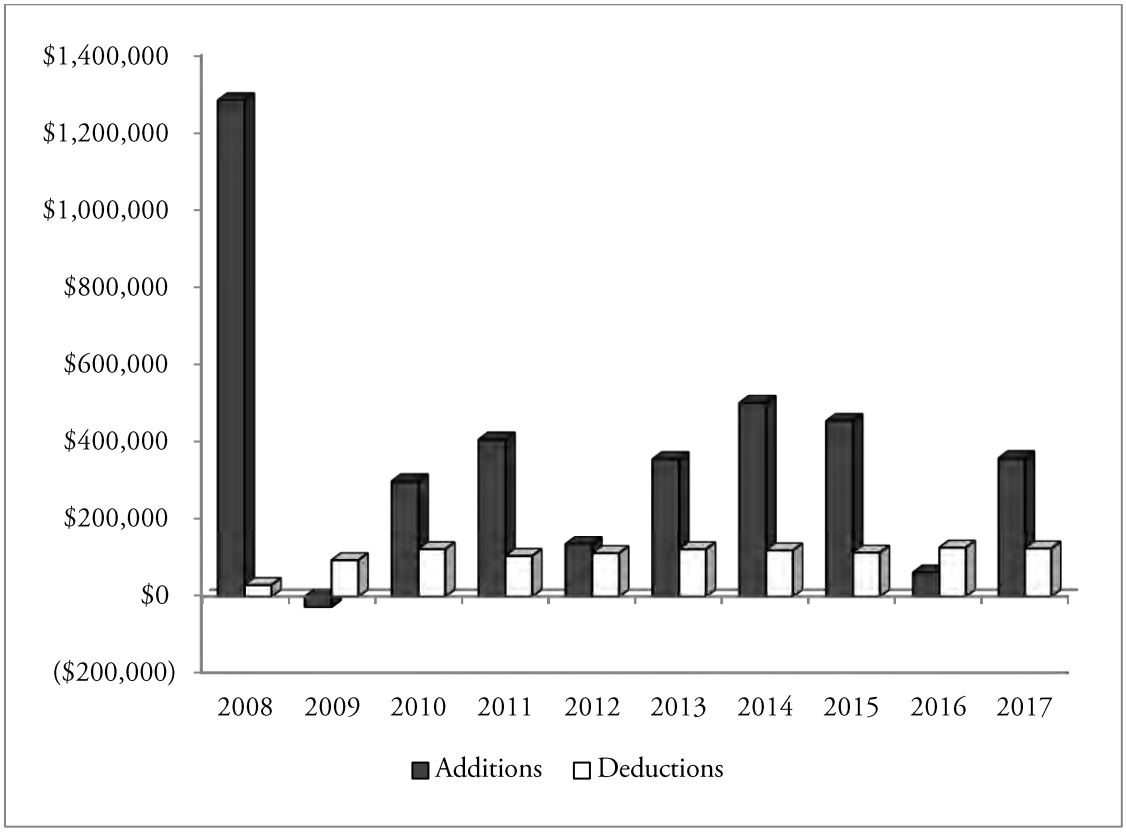
Teachers' Retirement System Defined Contribution Retirement Participant Directed Changes in Fiduciary Net Position (In thousands)					
Year Ended June 30	Fiduciary Net Position, Beginning of Year	Additions	Deductions	Increase / (Decrease) in Fiduciary Net Position	Fiduciary Net Position, End of Year
2008	$ 5,507	$ 8,825	$ 278	$ 8,547	$ 14,054
2009	14,054	13,132	498	12,634	26,688
2010	26,688	22,359	1,053	21,306	47,994
2011	47,994	38,355	2,377	35,978	83,972
2012	83,972	29,791	3,374	26,417	110,389
2013	110,389	50,560	7,715	42,845	153,234
2014	153,234	68,315	6,281	62,034	215,268
2015	215,268	44,952	7,972	36,980	252,248
2016	252,248	45,965	8,615	37,350	289,598
2017	289,598	92,527	10,833	81,694	371,292

10-YEAR COMPARISON OF ADDITIONS AND DEDUCTIONS
(In thousands)



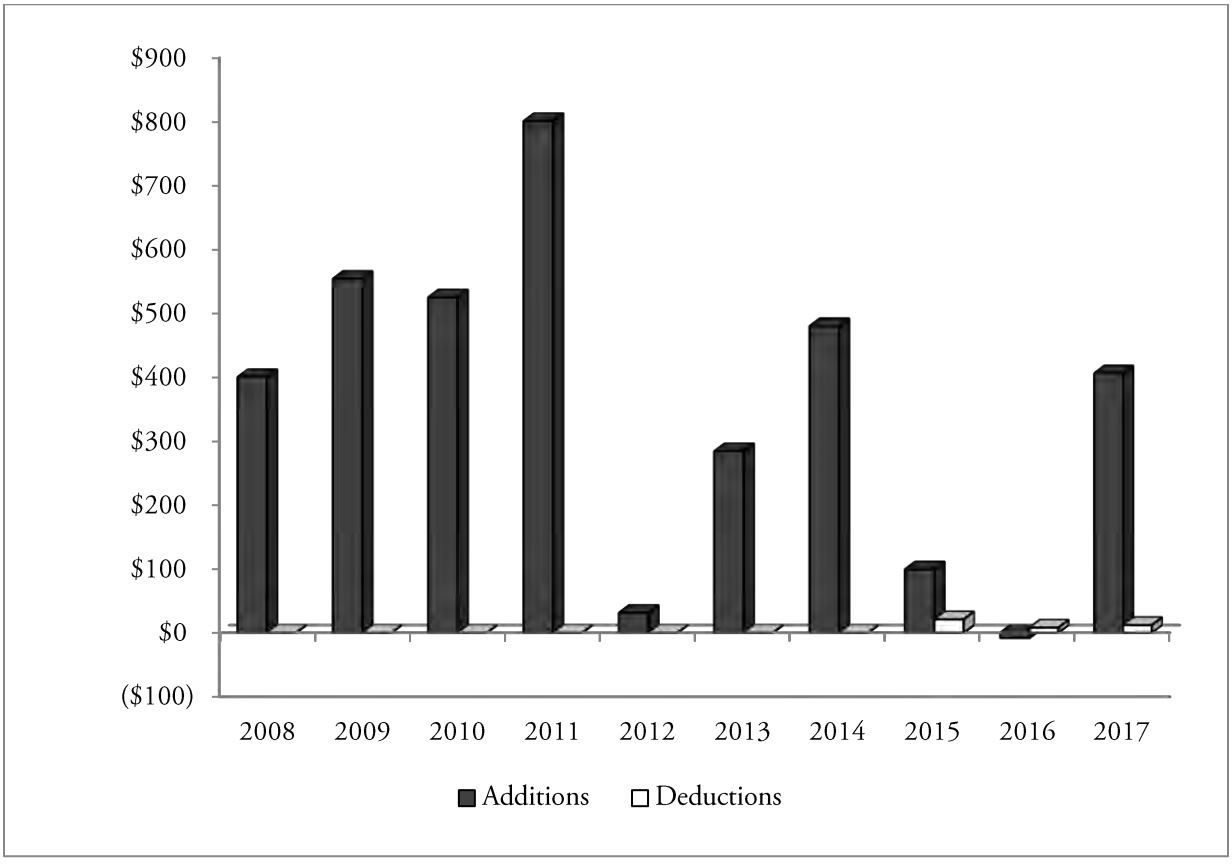
Teachers' Retirement System Defined Benefit Alaska Retiree Healthcare Trust Changes in Fiduciary Net Position (In thousands)					
Year Ended June 30	Fiduciary Net Position, Beginning of Year	Additions	Deductions	Increase / (Decrease) in Fiduciary Net Position	Fiduciary Net Position, End of Year
2008	$ —	$ 1,283,865	$ 30,292	$ 1,253,573	$ 1,253,573
2009	1,253,573	(27,157)	95,383	(122,540)	1,131,033
2010	1,131,033	300,736	124,133	176,603	1,307,636
2011	1,307,636	408,179	106,485	301,694	1,609,330
2012	1,609,330	137,594	113,883	23,711	1,633,041
2013	1,633,041	357,454	124,074	233,380	1,866,421
2014	1,866,421	502,833	121,119	381,714	2,248,135
2015	2,248,135	456,055	115,224	340,831	2,588,966
2016	2,588,966	63,079	128,465	(65,386)	2,523,580
2017	2,523,580	360,197	126,145	234,052	2,757,632

10-YEAR COMPARISON OF ADDITIONS AND DEDUCTIONS
(In thousands)



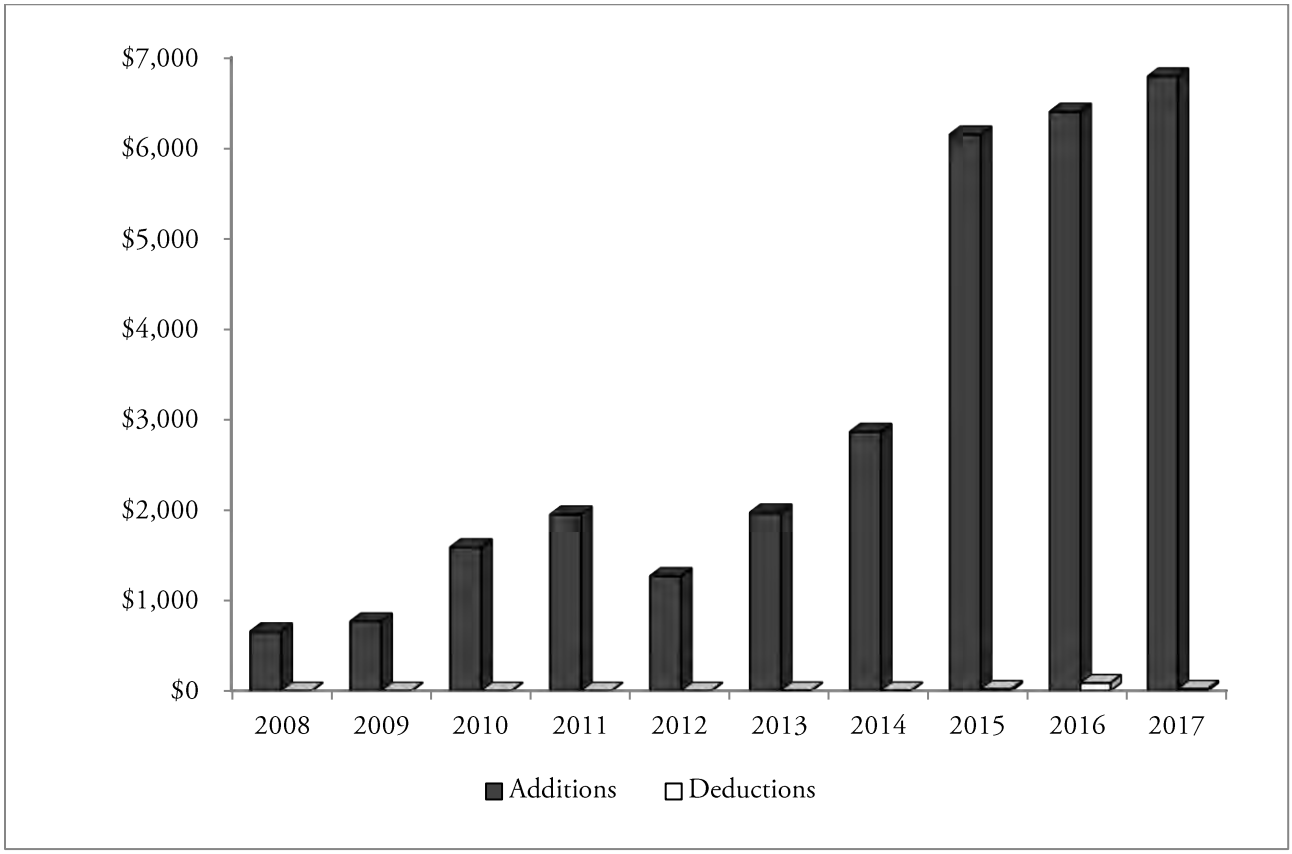
Teachers' Retirement System Defined Contribution Retirement Occupational Death & Disability Changes in Fiduciary Net Position (In thousands)					
Year Ended June 30	Fiduciary Net Position, Beginning of Year	Additions	Deductions	Increase / (Decrease) in Fiduciary Net Position	Fiduciary Net Position, End of Year
2008	$ —	$ 400	$ —	$ 400	$ 400
2009	400	554	—	554	954
2010	954	525	—	525	1,479
2011	1,479	801	—	801	2,280
2012	2,280	31	—	31	2,311
2013	2,311	284	—	284	2,595
2014	2,595	480	—	480	3,075
2015	3,075	99	21	78	3,153
2016	3,153	(8)	8	(16)	3,137
2017	3,137	406	12	394	3,531

10-YEAR COMPARISON OF ADDITIONS AND DEDUCTIONS
(In thousands)



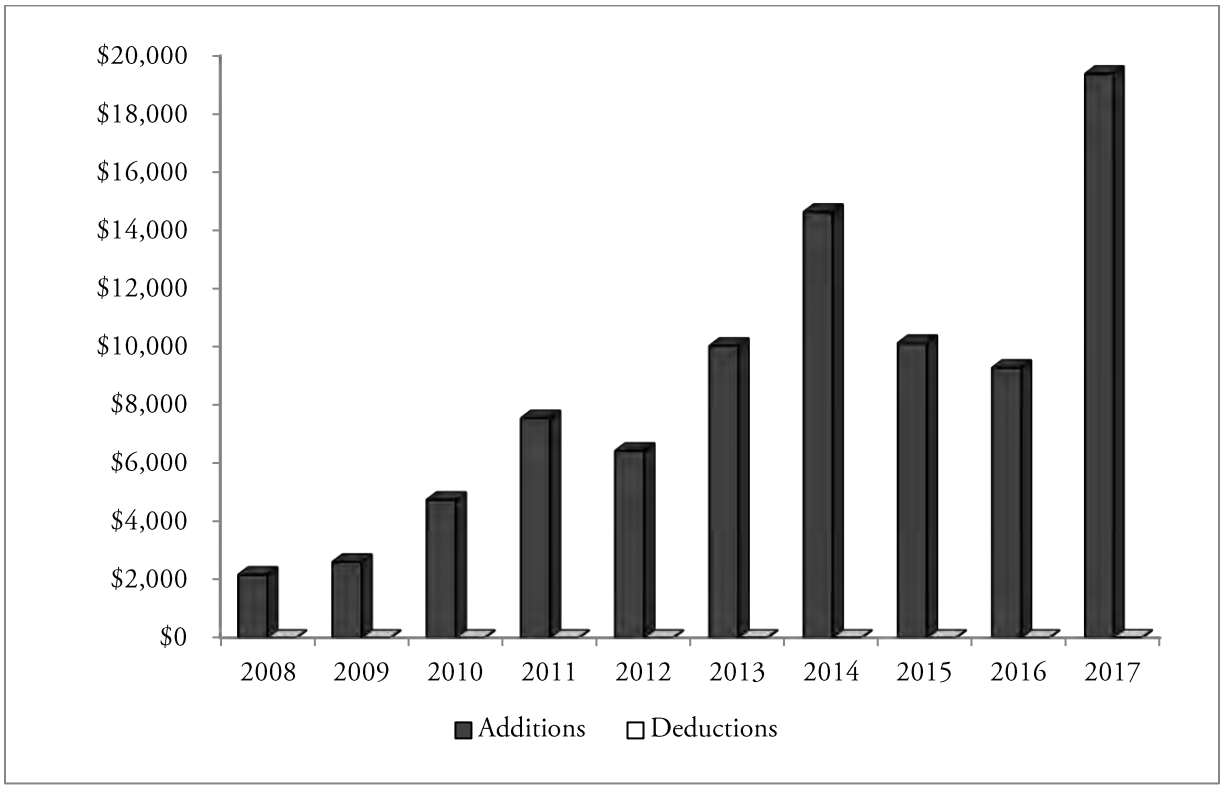
Teachers' Retirement System Defined Contribution Retirement Medical Plan Changes in Fiduciary Net Position (In thousands)					
Year Ended June 30	Fiduciary Net Position, Beginning of Year	Additions	Deductions	Increase / (Decrease) in Fiduciary Net Position	Fiduciary Net Position, End of Year
2008	$ 590	$ 656	$ —	$ 656	$ 1,246
2009	1,246	766	—	766	2,012
2010	2,012	1,586	—	1,586	3,598
2011	3,598	1,947	—	1,947	5,545
2012	5,545	1,267	—	1,267	6,812
2013	6,812	1,970	3	1,967	8,779
2014	8,779	2,861	3	2,858	11,637
2015	11,637	6,147	18	6,129	17,766
2016	17,766	6,399	86	6,313	24,079
2017	24,079	6,784	15	6,769	30,848

10-YEAR COMPARISON OF ADDITIONS AND DEDUCTIONS
(In thousands)



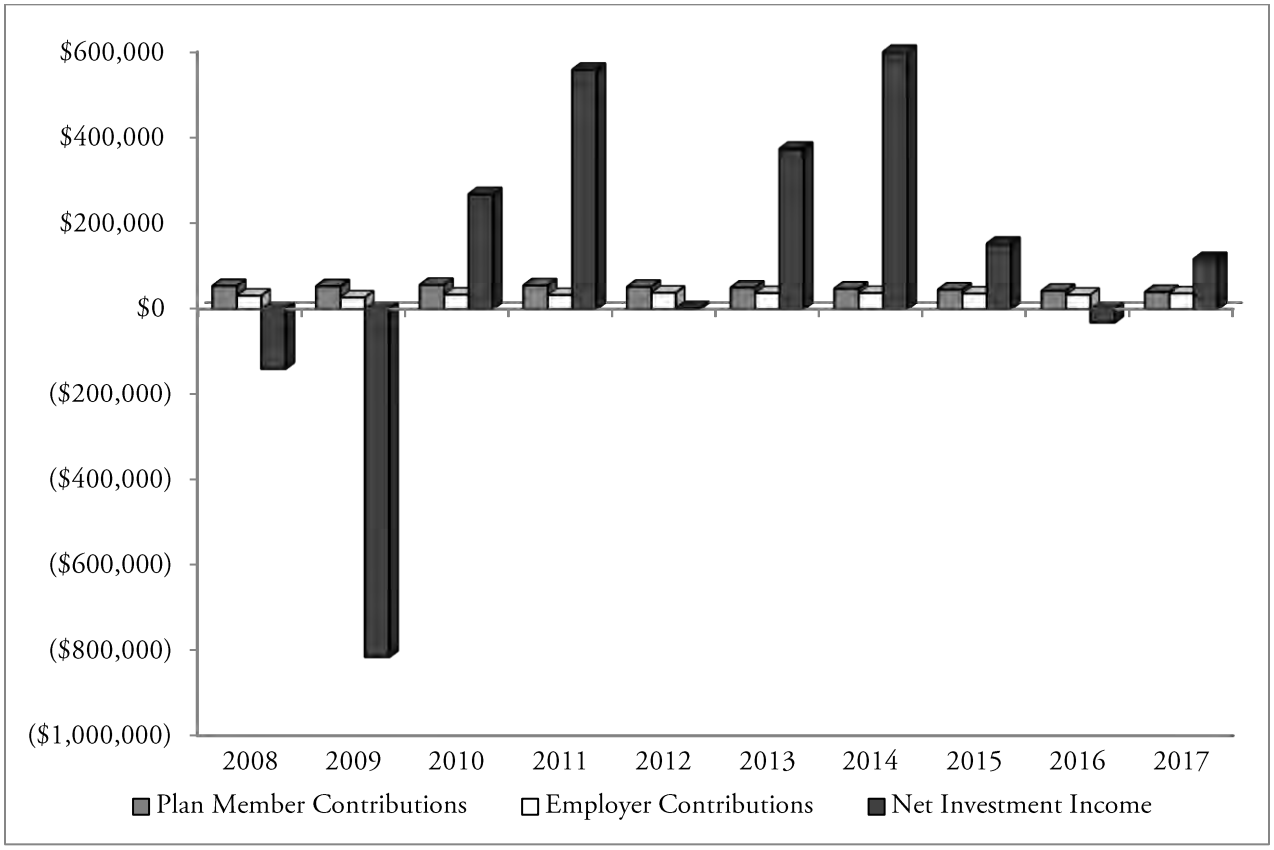
Teachers' Retirement System Defined Contribution Retirement Health Reimbursement Arrangement Changes in Fiduciary Net Position (In thousands)					
Year Ended June 30	Fiduciary Net Position, Beginning of Year	Additions	Deductions	Increase / (Decrease) in Fiduciary Net Position	Fiduciary Net Position, End of Year
2008	$ 974	$ 2,202	$ —	$ 2,202	$ 3,176
2009	3,176	2,650	—	2,650	5,826
2010	5,826	4,814	—	4,814	10,640
2011	10,640	7,606	—	7,606	18,246
2012	18,246	6,491	—	6,491	24,737
2013	24,737	10,079	3	10,076	34,813
2014	34,813	14,662	3	14,659	49,472
2015	49,472	10,178	—	10,178	59,650
2016	59,650	9,332	—	9,332	68,982
2017	68,982	19,387	7	19,380	88,362

10-YEAR COMPARISON OF ADDITIONS AND DEDUCTIONS
(In thousands)



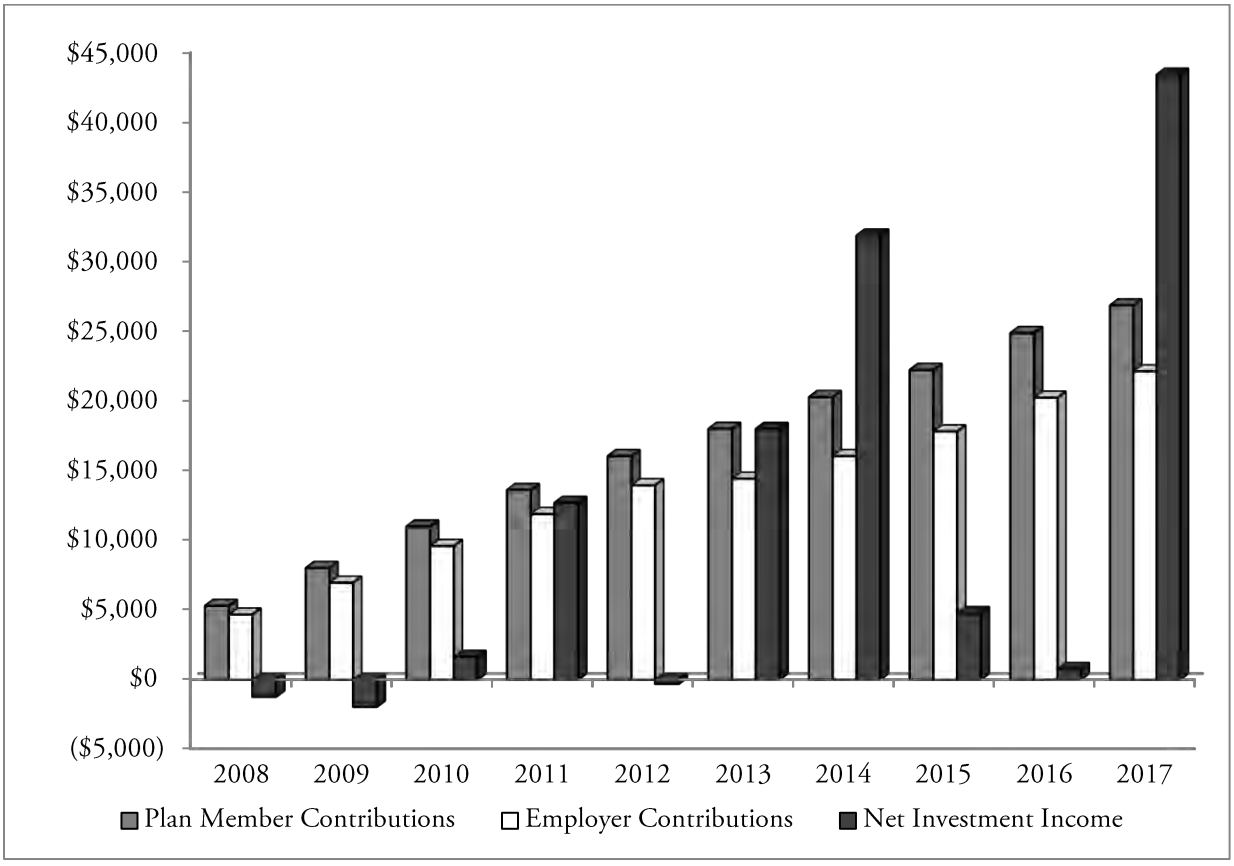
Teachers' Retirement System Defined Benefit Pension Additions by Source (In thousands)						
Year Ended June 30	Plan Member Contributions	Employer Contributions	State of Alaska	Net Investment Income (Loss)	Other	Total
2008	$ 54,121	$ 31,313	$ 111,237	$ (139,282)	$ 34	$ 57,423
2009	53,544	27,110	104,423	(814,138)	3	(629,058)
2010	56,554	33,800	100,475	268,146	9	458,984
2011	55,347	32,804	109,343	558,220	54	755,768
2012	52,020	38,189	157,387	2,190	17	249,803
2013	50,201	37,372	196,945	373,868	19	658,405
2014	47,724	37,571	208,890	599,958	27	894,170
2015	45,506	36,374	1,662,700	152,561	9	1,897,150
2016	42,654	33,478	90,589	(31,340)	95	135,476
2017	39,878	36,634	116,700	628,184	10	821,406

10-YEAR COMPARISON OF ADDITIONS BY SOURCE
(In thousands)



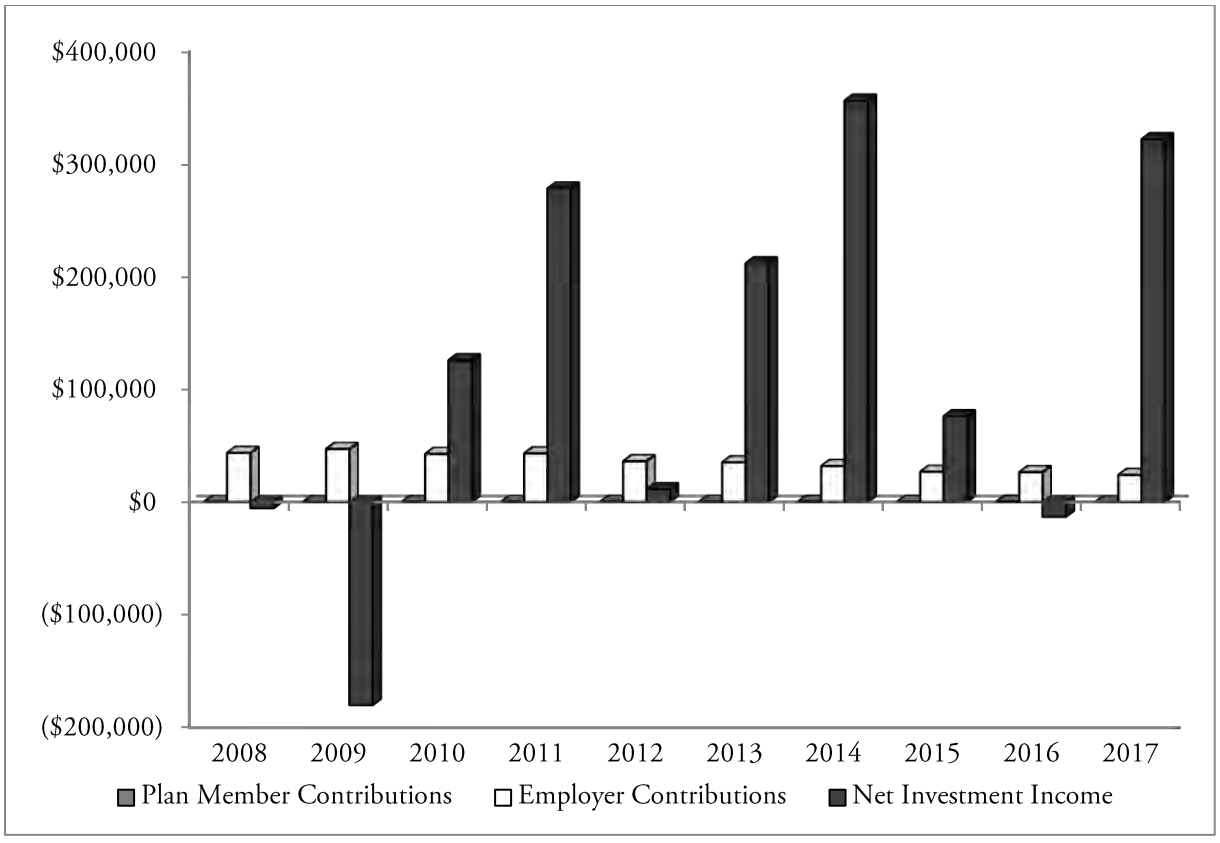
Teachers' Retirement System Defined Contribution Retirement Participant Directed Additions by Source (In thousands)					
Year Ended June 30	Plan Member Contributions	Employer Contributions	Net Investment Income (Loss)	Other	Total
2008	$ 5,347	$ 4,717	$ (1,239)	$ —	$ 8,825
2009	8,077	7,023	(1,968)	—	13,132
2010	11,051	9,658	1,650	—	22,359
2011	13,665	11,943	12,742	5	38,355
2012	16,095	14,003	(307)	—	29,791
2013	18,044	14,474	18,040	2	50,560
2014	20,326	16,098	31,887	4	68,315
2015	22,269	17,863	4,820	—	44,952
2016	24,904	20,280	773	8	45,965
2017	26,888	22,165	43,417	57	92,527

10-YEAR COMPARISON OF ADDITIONS BY SOURCE
(In thousands)



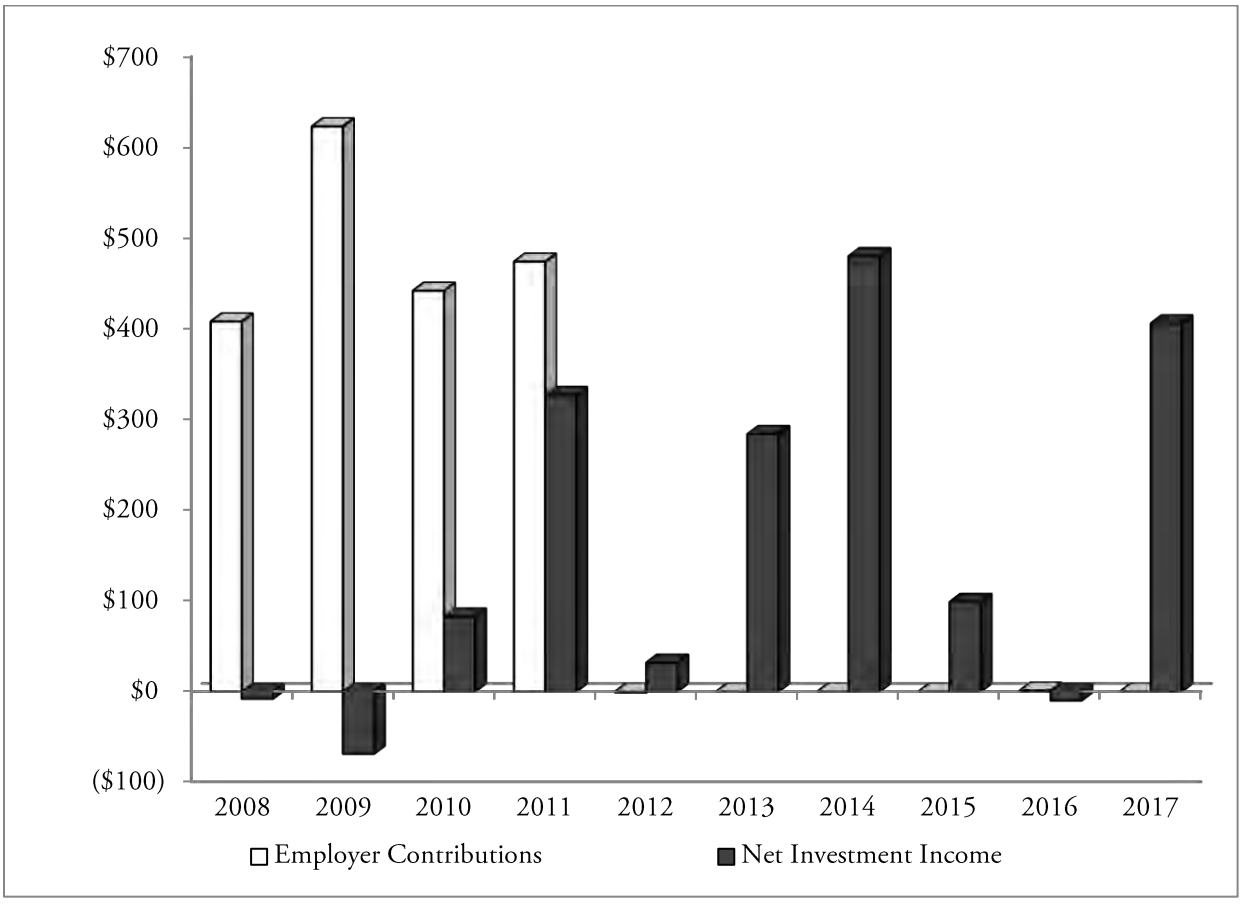
Teachers' Retirement System Defined Benefit Alaska Retiree Healthcare Trust Additions by Source (In thousands)							
Year Ended June 30	Plan Member Premiums	Employer Contributions	State of Alaska	Net Investment Income (Loss)	Transfer	Other	Total
2008	$ 111	$ 43,697	$ 158,755	$ (5,318)	$1,086,620	$ —	$ 1,283,865
2009	116	47,174	101,877	(179,919)	—	3,595	(27,157)
2010	117	42,694	72,987	125,903	—	59,035	300,736
2011	138	43,217	81,507	278,366	—	4,951	408,179
2012	183	36,281	77,130	11,465	—	12,535	137,594
2013	250	35,293	105,832	211,927	—	4,152	357,454
2014	263	31,980	107,956	356,411	—	6,223	502,833
2015	227	26,922	337,300	76,174	—	15,432	456,055
2016	306	26,580	39,519	(13,070)	—	9,744	63,079
2017	—	24,069	—	322,219	—	13,909	360,197

10-YEAR COMPARISON OF ADDITIONS BY SOURCE
(In thousands)



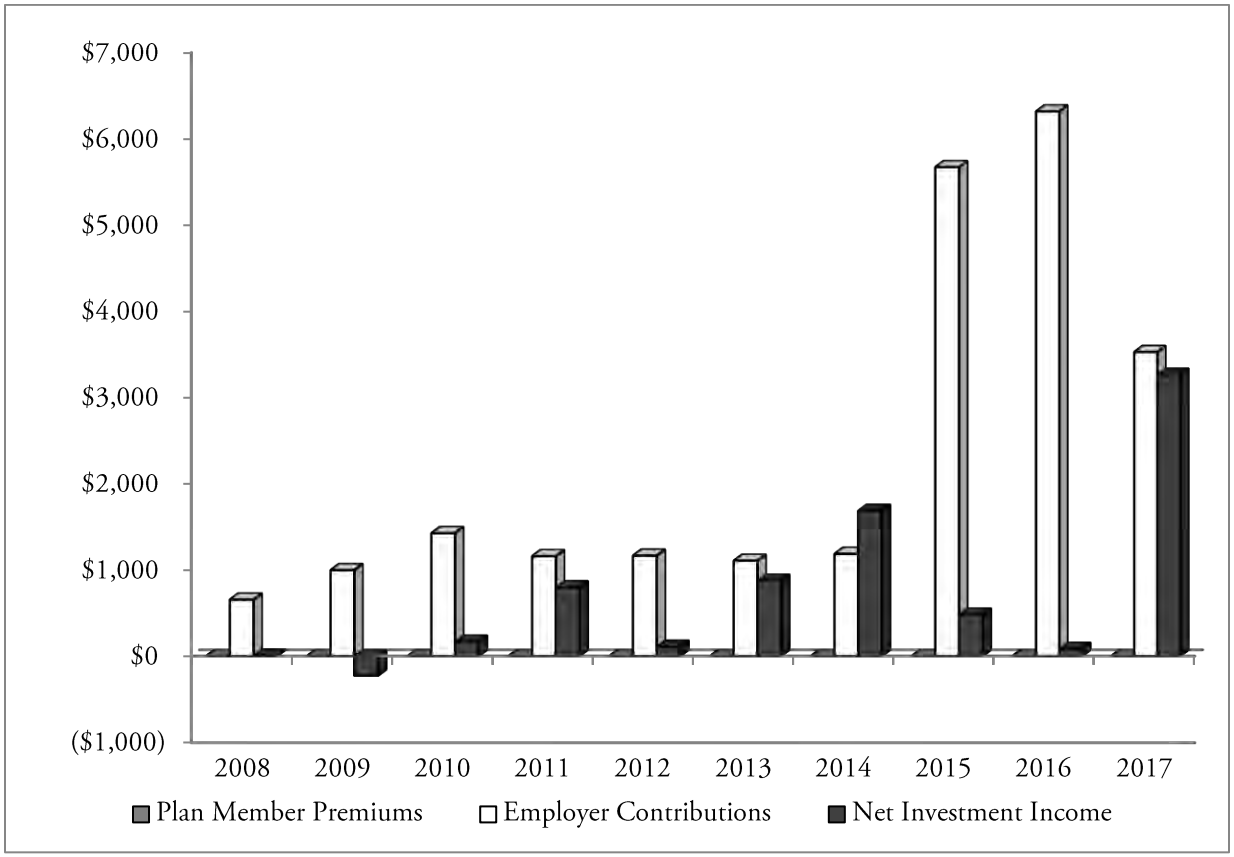
Teachers' Retirement System Defined Contribution Retirement Occupational Death & Disability Additions by Source (In thousands)				
Plan Ended June 30	Employer Contributions	Net Investment Income (Loss)	Other	Total
2008	$ 408	$ (8)	$ —	$ 400
2009	623	(69)	—	554
2010	442	83	—	525
2011	474	327	—	801
2012	(1)	32	—	31
2013	—	284	—	284
2014	—	480	—	480
2015	—	99	—	99
2016	1	(10)	1	(8)
2017	—	406	—	406

10-YEAR COMPARISON OF ADDITIONS BY SOURCE
(In thousands)



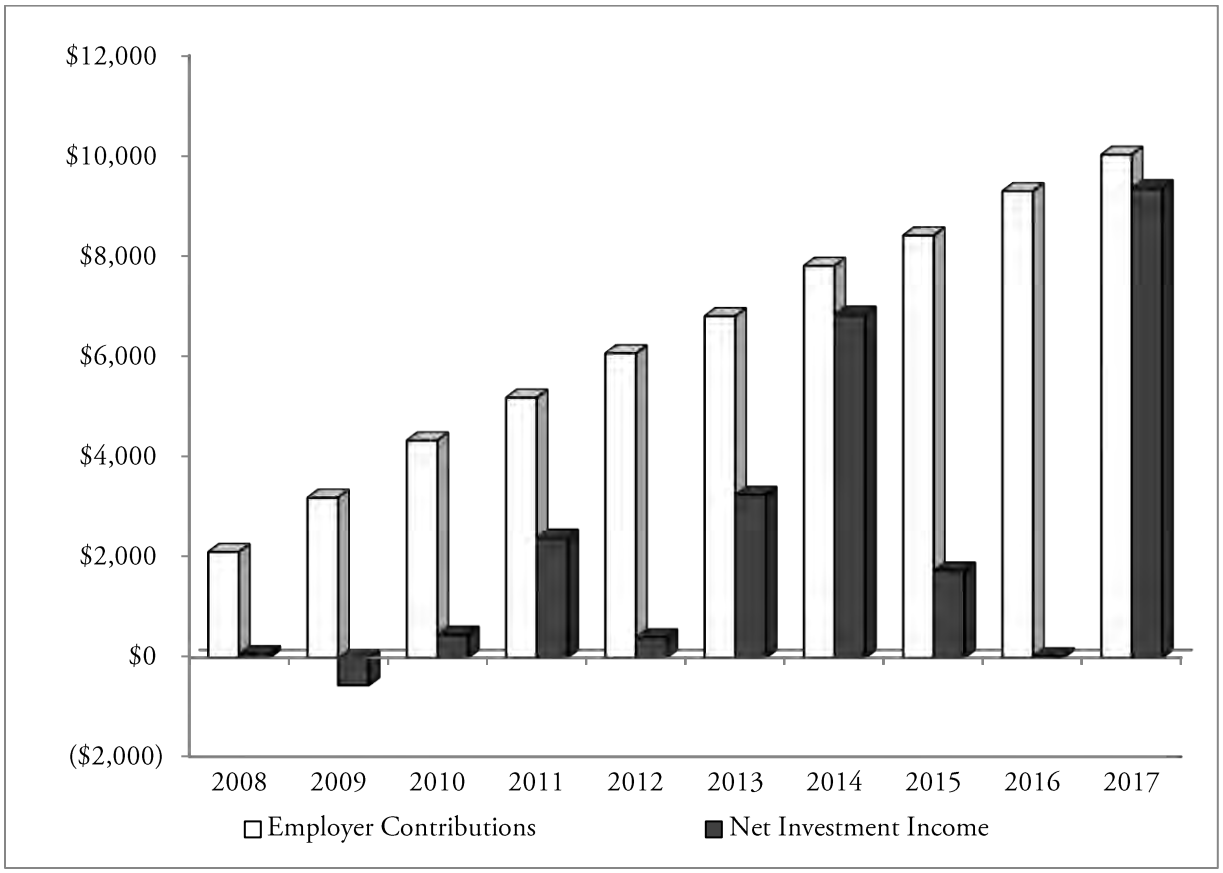
Teachers' Retirement System Defined Contribution Retirement Retiree Medical Plan Additions by Source (In thousands)				
Plan Ended June 30	Plan Member Premiums	Employer Contributions	Net Investment Income (Loss)	Total
2008	$ —	$ 651	$ 5	$ 656
2009	—	992	(226)	766
2010	—	1,421	165	1,586
2011	—	1,154	793	1,947
2012	—	1,160	107	1,267
2013	—	1,101	869	1,970
2014	—	1,181	1,680	2,861
2015	—	5,670	477	6,147
2016	—	6,317	82	6,399
2017	—	3,524	3,260	6,784

10-YEAR COMPARISON OF ADDITIONS BY SOURCE
(In thousands)



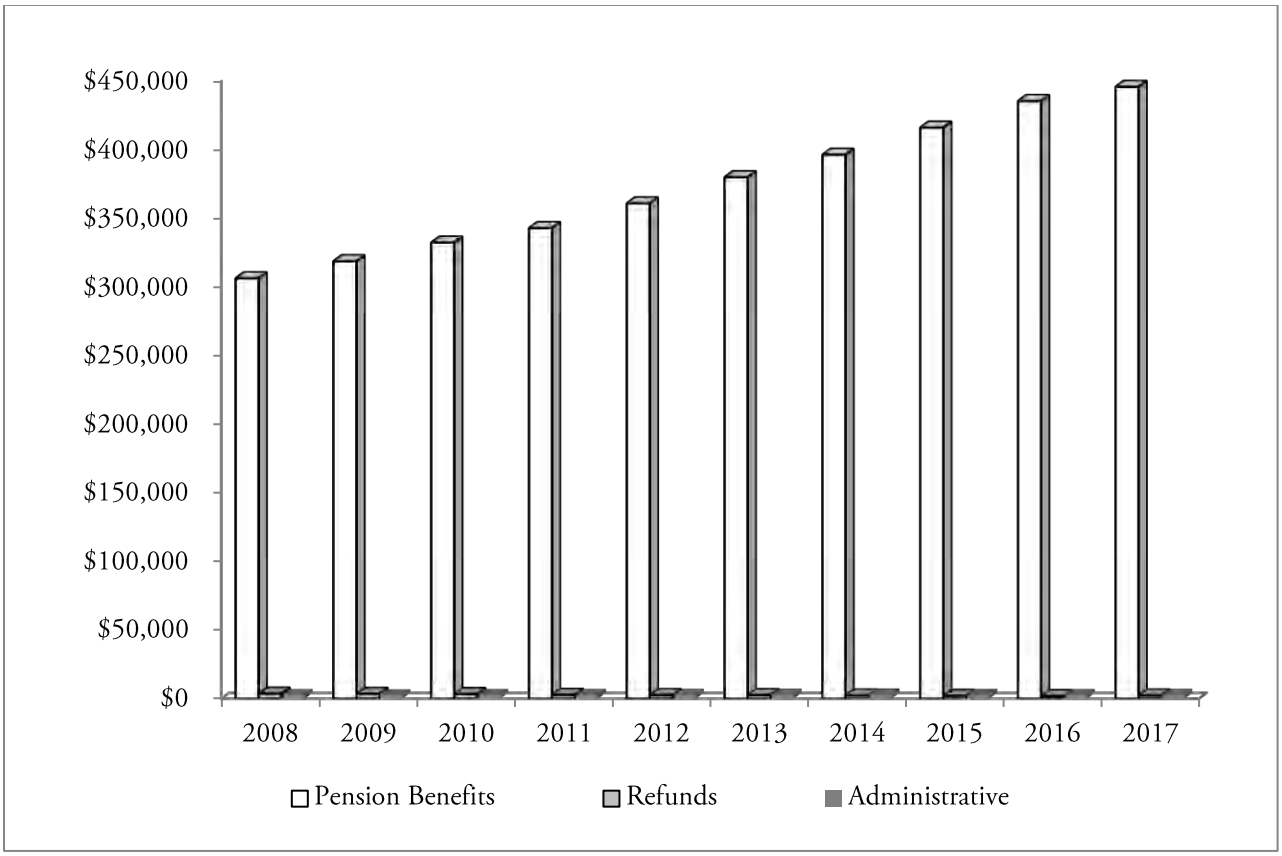
Teachers' Retirement System Defined Contribution Retirement Health Reimbursement Arrangement Additions by Source (In thousands)			
Plan Ended June 30	Employer Contributions	Net Investment Income (Loss)	Total
2008	$ 2,127	$ 75	$ 2,202
2009	3,206	(556)	2,650
2010	4,344	470	4,814
2011	5,195	2,411	7,606
2012	6,077	414	6,491
2013	6,816	3,263	10,079
2014	7,816	6,846	14,662
2015	8,420	1,758	10,178
2016	9,301	31	9,332
2017	10,026	9,361	19,387

10-YEAR COMPARISON OF ADDITIONS BY SOURCE
(In thousands)



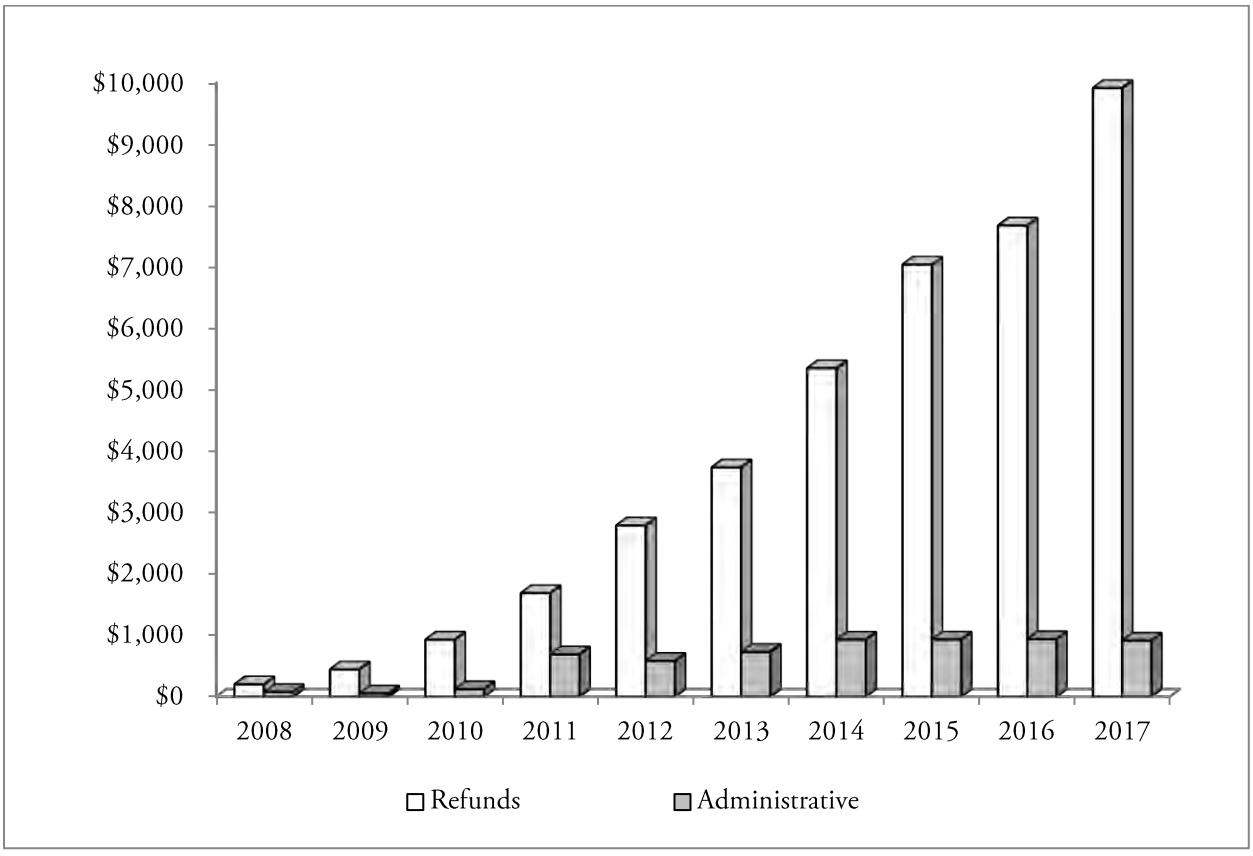
Teachers' Retirement System Defined Benefit Pension Deductions by Type (In thousands)					
Year Ended June 30	Pension Benefits	Refunds of Contributions	Administrative	Transfer	Total
2008	$ 306,689	$ 3,761	$ 2,669	$1,086,620	$ 1,399,739
2009	319,148	3,622	2,537	—	325,307
2010	332,690	3,472	2,698	—	338,860
2011	343,191	2,798	2,806	—	348,795
2012	361,202	2,637	2,847	—	366,686
2013	380,265	2,668	2,989	—	385,922
2014	396,614	2,387	3,160	—	402,161
2015	416,354	2,191	2,789	—	421,334
2016	435,699	1,883	2,648	—	440,230
2017	446,044	2,378	2,890	—	451,312

10-YEAR COMPARISON OF DEDUCTIONS BY TYPE
(In thousands)



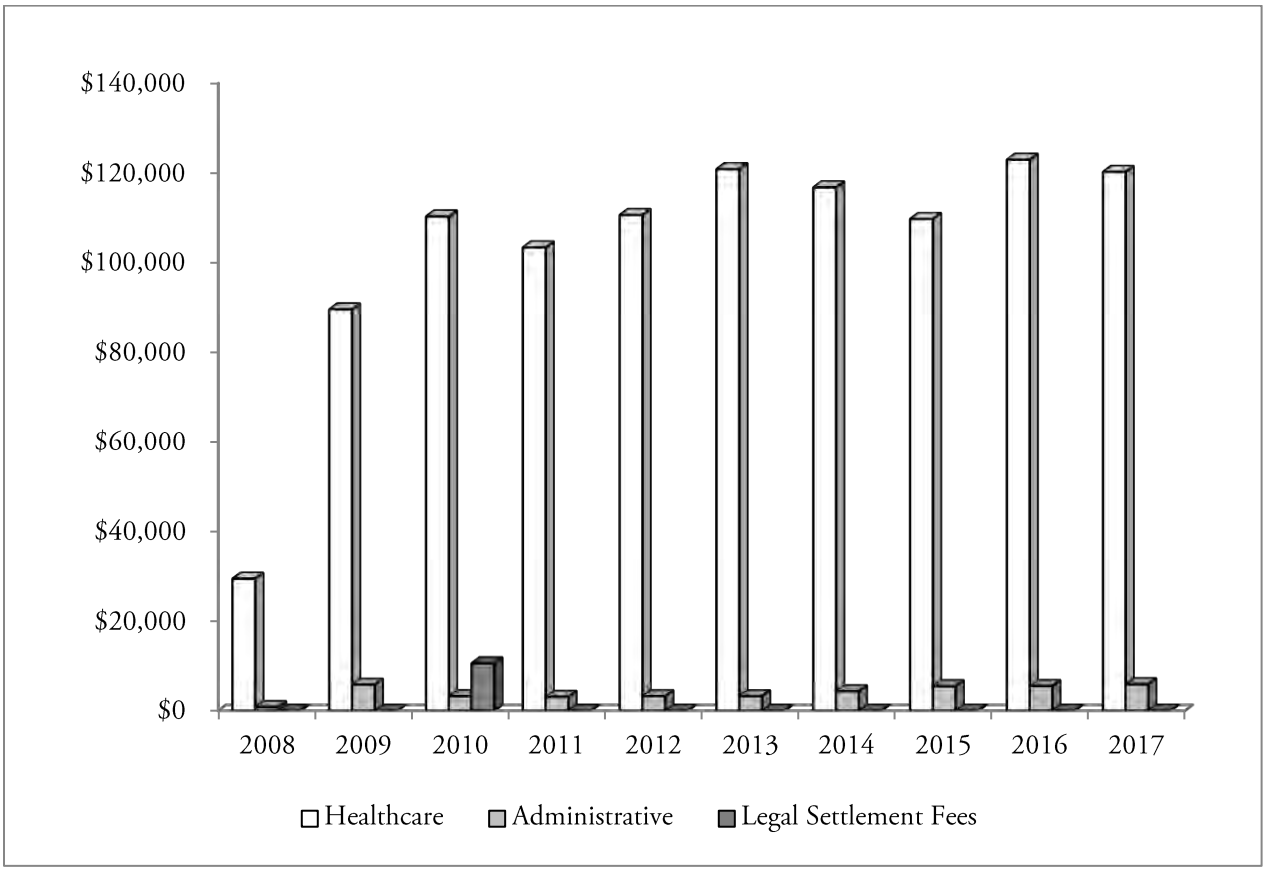
Teachers' Retirement System Defined Contribution Retirement Participant Directed Deductions by Type (In thousands)				
Plan Ended June 30	Refund of Contributions	Administrative	Prior Year Forfeiture Payable Adjustment	Total
2008	$ 202	$ 76	$ —	$ 278
2009	445	53	—	498
2010	930	123	—	1,053
2011	1,688	689	—	2,377
2012	2,791	583	—	3,374
2013	3,737	731	3,247	7,715
2014	5,352	929	—	6,281
2015	7,041	931	—	7,972
2016	7,677	938	—	8,615
2017	9,918	915	—	10,833

10-YEAR COMPARISON OF DEDUCTIONS BY TYPE
(In thousands)



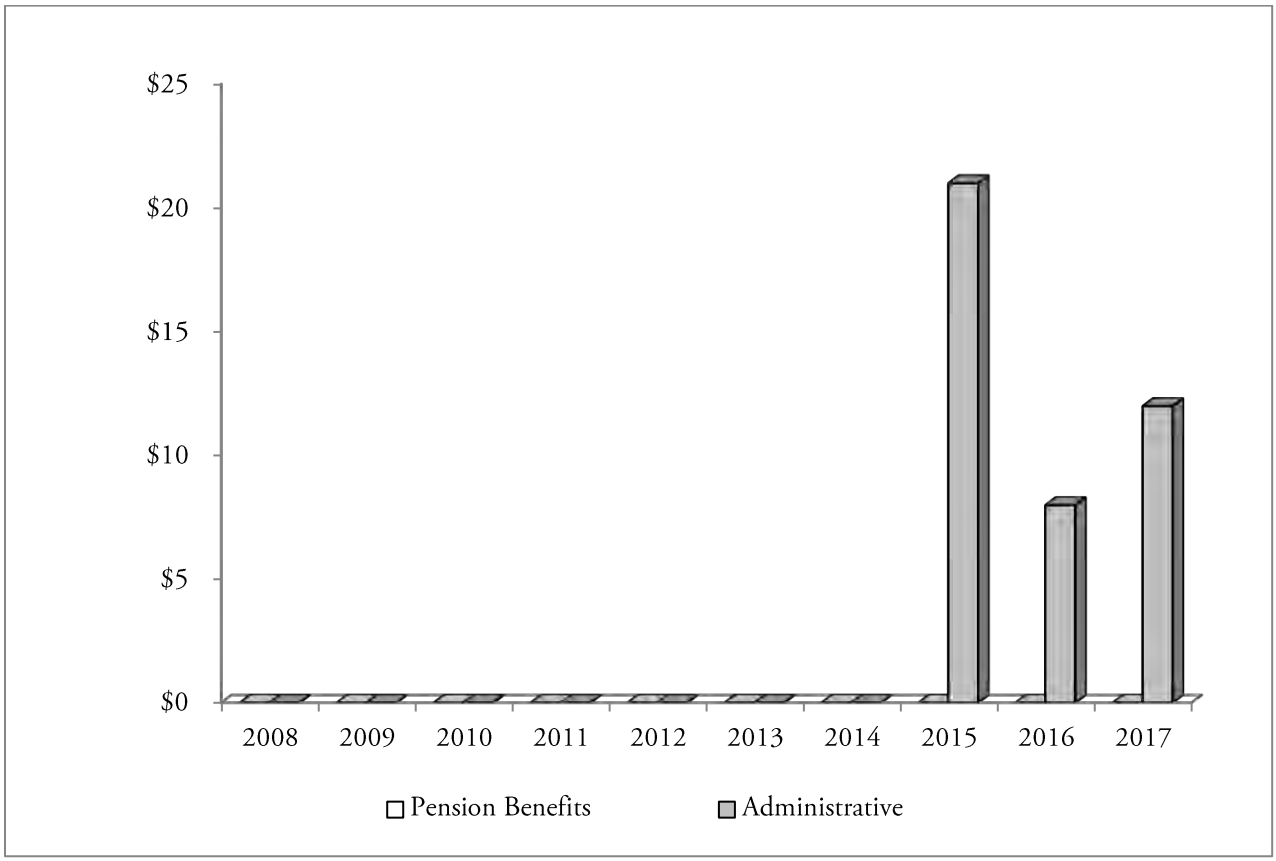
Teachers' Retirement System Defined Benefit Alaska Retiree Healthcare Trust Deductions by Type (In thousands)				
Plan Ended June 30	Healthcare	Administrative	Legal Settlement Fees	Total
2008	$ 29,494	$ 798	$ —	$ 30,292
2009	89,571	5,812	—	95,383
2010	110,313	3,228	10,592	124,133
2011	103,405	3,080	—	106,485
2012	110,632	3,251	—	113,883
2013	120,855	3,219	—	124,074
2014	116,781	4,338	—	121,119
2015	109,740	5,484	—	115,224
2016	122,954	5,511	—	128,465
2017	120,237	5,908	—	126,145

10-YEAR COMPARISON OF DEDUCTIONS BY TYPE
(In thousands)



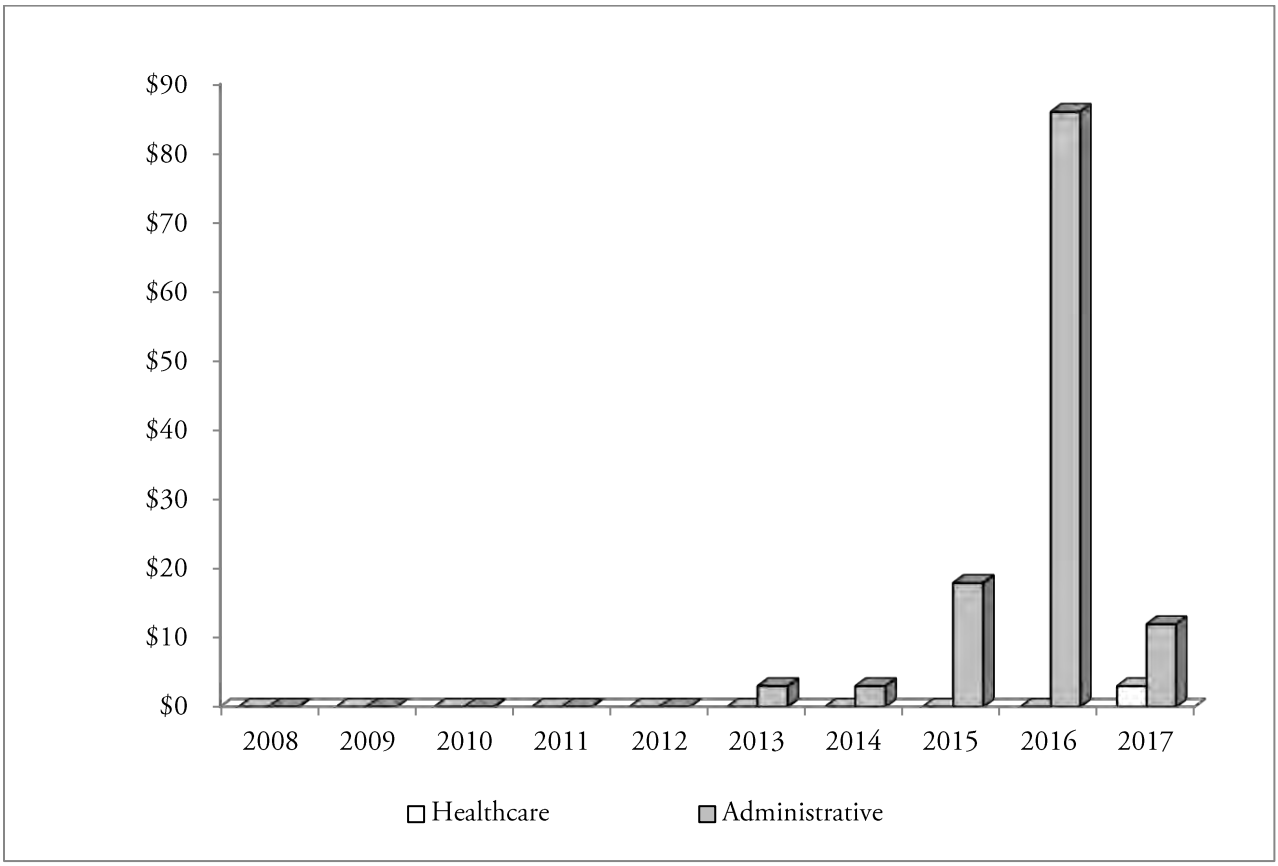
Teachers' Retirement System Defined Contribution Retirement Occupational Death & Disability Deductions by Type (In thousands)			
Plan Ended June 30	Pension Benefits	Administrative	Total
2008	$ —	$ —	$ —
2009	—	—	—
2010	—	—	—
2011	—	—	—
2012	—	—	—
2013	—	—	—
2014	—	—	—
2015	—	21	21
2016	—	8	8
2017	—	12	12

10-YEAR COMPARISON OF DEDUCTIONS BY TYPE
(In thousands)



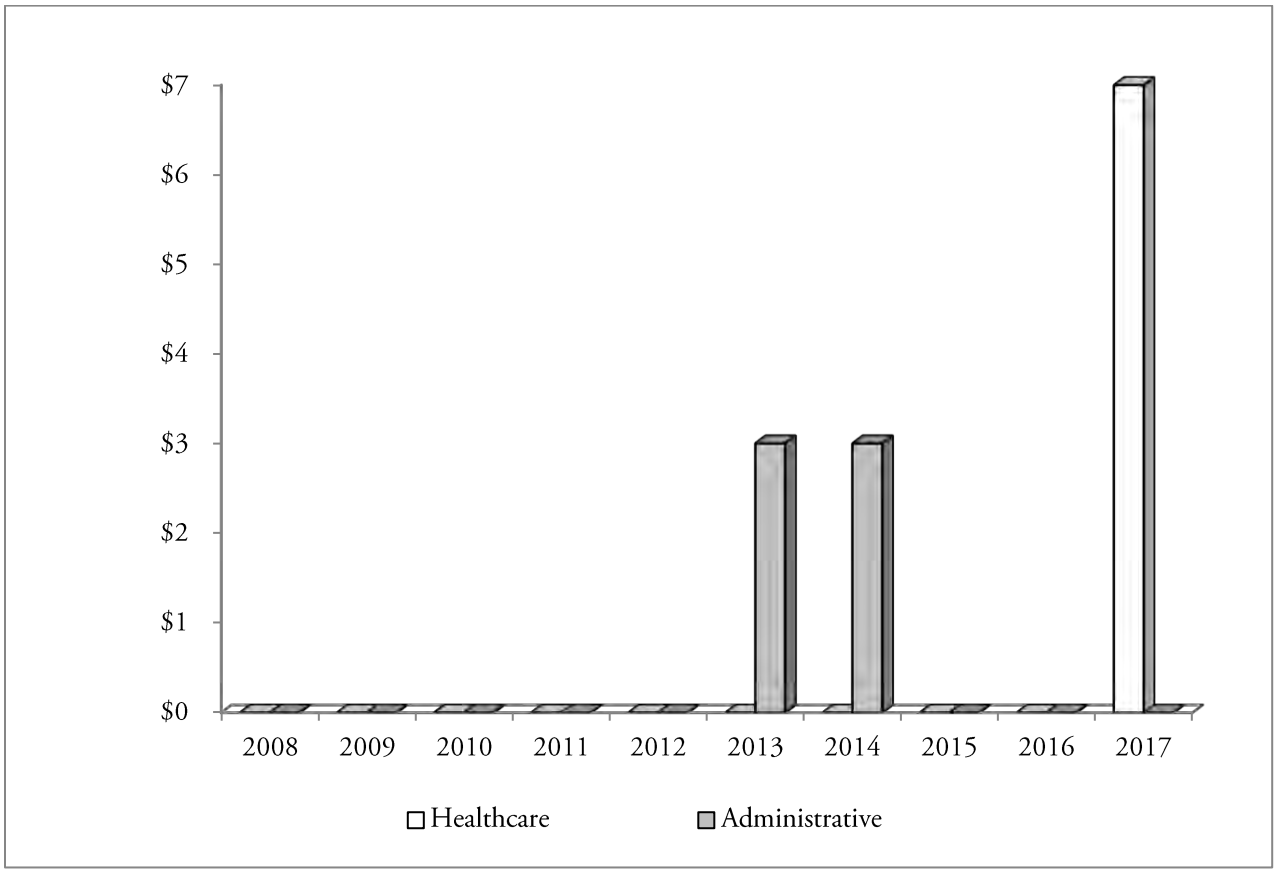
Teachers' Retirement System Defined Contribution Retirement Medical Plan Deductions by Type (In thousands)			
Plan Ended June 30	Healthcare	Administrative	Total
2008	$ —	$ —	$ —
2009	—	—	—
2010	—	—	—
2011	—	—	—
2012	—	—	—
2013	—	3	3
2014	—	3	3
2015	—	18	18
2016	—	86	86
2017	3	12	15

10-YEAR COMPARISON OF DEDUCTIONS BY TYPE
(In thousands)



Teachers' Retirement System Defined Contribution Retirement Health Reimbursement Arrangement Deductions by Type (In thousands)			
Plan Ended June 30	Healthcare	Administrative	Total
2008	$ —	$ —	$ —
2009	—	—	—
2010	—	—	—
2011	—	—	—
2012	—	—	—
2013	—	3	3
2014	—	3	3
2015	—	—	—
2016	—	—	—
2017	7	—	7

10-YEAR COMPARISON OF DEDUCTIONS BY TYPE
(In thousands)



Teachers' Retirement System
Schedule of Average Pension Benefit Payments
New Benefit Recipients

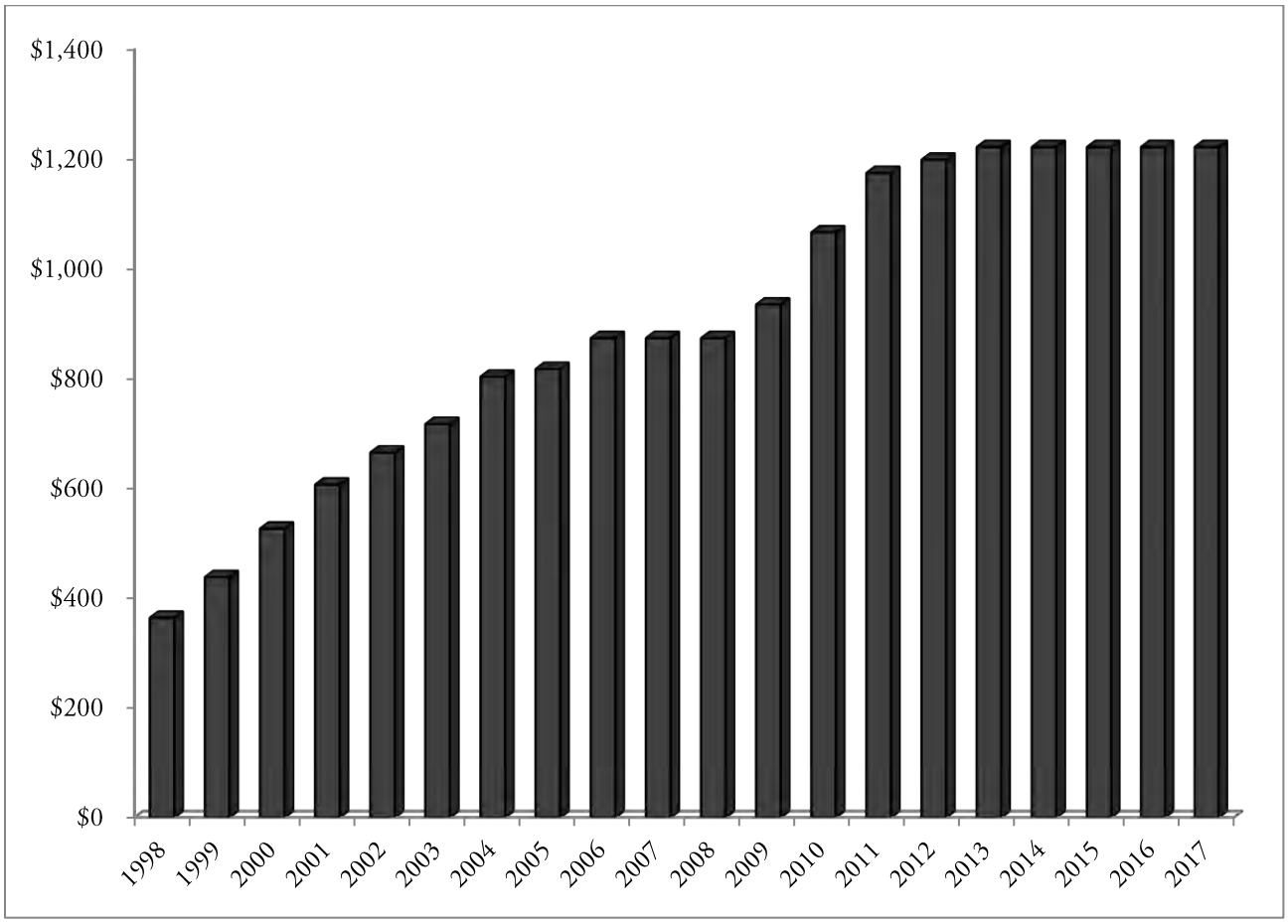
	Years of Credited Service						
	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30+
Period 7/1/10 - 6/30/11[1]:							
Average Monthly Benefit	$146	$902	$1,432	$2,328	$3,131	$4,283	$5,496
Number of Recipients	5	68	63	77	118	104	67
Period 7/1/11 - 6/30/12[1]:							
Average Monthly Benefit	$353	$1,064	$1,512	$2,241	$3,276	$4,320	$5,739
Number of Recipients	11	43	62	61	118	81	58
Period 7/1/12 - 6/30/13[1]:							
Average Monthly Benefit	$253	$1,030	$1,496	$2,450	$3,281	$4,384	$6,052
Number of Recipients	10	57	67	90	101	79	64
Period 7/1/13 - 6/30/14[1]:							
Average Monthly Benefit	$235	$904	$1,435	$2,398	$3,016	$4,073	$7,485
Number of Recipients	8	31	31	28	22	18	12
Period 7/1/14 - 6/30/15[1]:							
Average Monthly Benefit	$349	$1,041	$1,342	$2,205	$3,267	$4,220	$5,900
Number of Recipients	11	33	70	67	137	125	94
Period 7/1/15 - 6/30/16[1]:							
Average Monthly Benefit	$245	$1,002	$1,535	$2,540	$3,445	$4,472	$6,168
Number of Recipients	11	31	82	69	105	74	54

"Average Monthly Benefit" includes post-retirement pension adjustments and cost-of-living increases.

[1] Does not include beneficiaries

Teachers' Retirement System Schedule of Pension and Healthcare Benefits Deductions by Type (In thousands)						
Year Ended June 30	Service	Disability	Survivor	Dependent	Healthcare	Total
2008	$ 294,807	$ 1,889	$ 9,974	$ 18	$ 99,583	$ 406,271
2009	306,748	1,692	10,688	20	103,093	422,241
2010	319,109	1,757	11,787	37	117,556	450,246
2011	329,308	1,337	12,499	47	133,152	476,343
2012	346,538	1,222	13,398	45	146,309	507,512
2013	364,387	1,377	14,467	34	160,337	540,602
2014	379,594	1,231	15,703	86	166,631	563,245
2015	398,280	1,211	16,781	82	109,740	526,094
2016	415,963	1,279	18,360	97	122,954	558,653
2017	425,059	1,306	19,609	70	120,248	566,292

20-YEAR COMPARISON OF RETIREE MONTHLY COMPOSITE MEDICAL PREMIUMS



Teachers' Retirement System
Schedule of Pension Benefit Recipients by Type of Pension Benefit and Option Elected
Valuation as of June 30, 2016

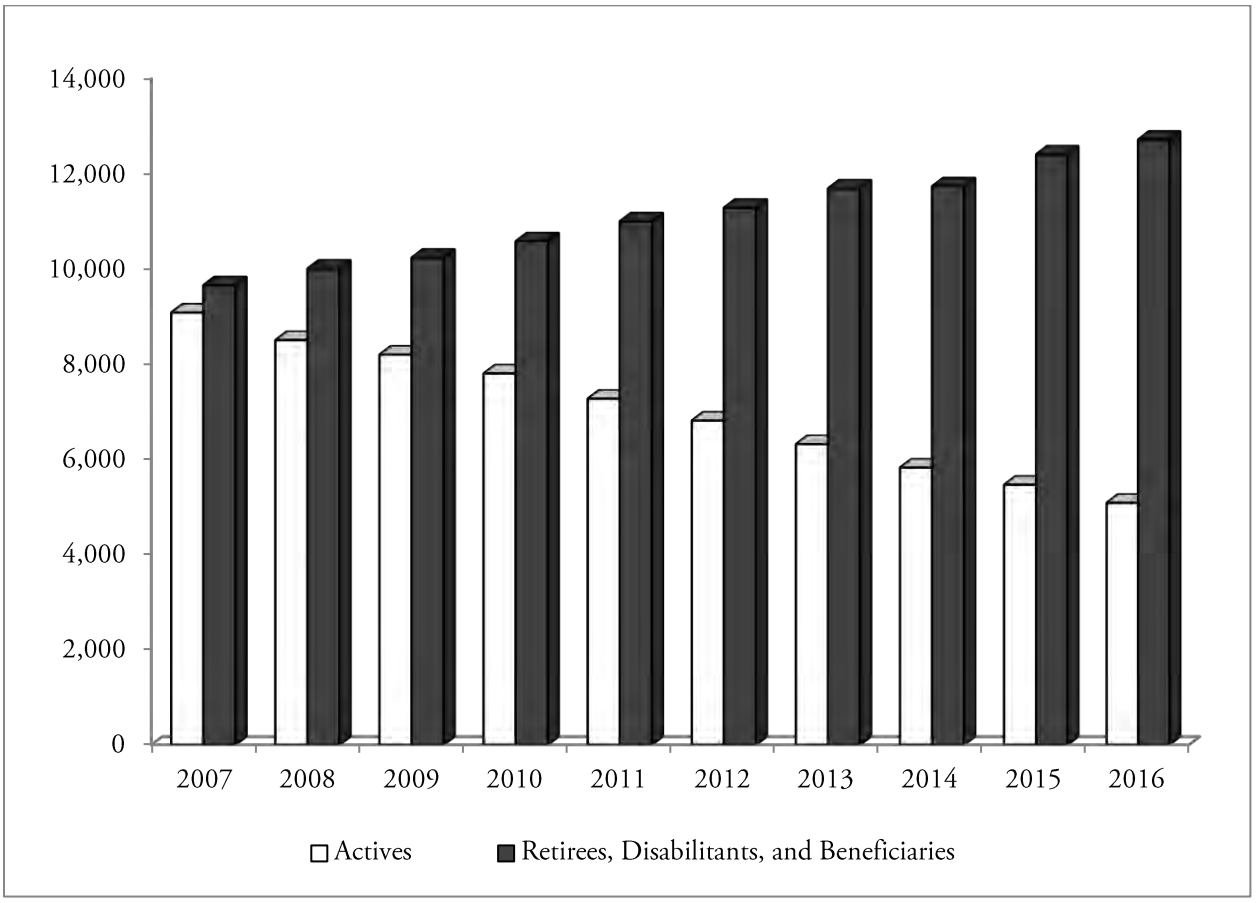
Amount of Monthly Pension Benefit	Number of Recipients	Type of Pension Benefit			Option Selected			
		1	2	3	1	2	3	4
$ 1 - 300	218	154	64	—	132	44	35	7
301 - 600	380	274	106	—	194	78	88	20
601 - 900	660	528	132	—	347	140	136	37
901 - 1,200	798	647	151	—	448	176	141	33
1,201 - 1,500	720	565	155	—	387	160	149	24
1,501 - 1,800	699	559	140	—	372	155	145	27
1,801 - 2,100	698	584	114	—	344	160	168	26
2,101 - 2,400	826	731	95	—	370	199	231	26
2,401 - 2,700	1,018	939	78	1	460	240	287	31
2,701 - 3,000	1,001	951	48	2	421	237	310	33
3,001 - 3,300	942	900	33	9	397	208	312	25
3,301 - 3,600	867	848	15	4	363	176	306	22
3,601 - 3,900	811	786	18	7	344	165	272	30
3,901 - 4,200	654	646	7	1	288	111	242	13
over $4,200	2,434	2,415	15	4	933	391	1,037	73
Totals	12,726	11,527	1,171	28	5,800	2,640	3,859	427

Type of Pension Benefit
1 - Regular retirement
2 - Survivor payment
3 - Disability

Option Selected
1 - Whole Life Annuity
2 - 75% Joint and Contingent Annuity
3 - 50% Joint and Contingent Annuity
4 - 66 2/3% Joint and Survivor Annuity

Teachers' Retirement System System Membership by Status					
Year Ended June 30	Active	Retirees Disabilitants & Beneficiaries	Vested Terminations	Nonvested Terminations w/Balance	Total
2007	9,107	9,678	846	3,044	22,675
2008	8,531	10,026	873	2,971	22,401
2009	8,226	10,255	884	2,830	22,195
2010	7,832	10,598	840	2,789	22,059
2011	7,303	11,016	852	2,675	21,846
2012	6,845	11,301	868	2,559	21,573
2013	6,352	11,705	906	2,448	21,411
2014	5,861	11,750	1,274	2,328	21,213
2015	5,502	12,418	890	2,218	21,028
2016	5,123	12,726	875	2,103	20,827

10-YEAR COMPARISON OF ACTIVE MEMBERS AND RETIREES, DISABILITANTS, AND BENEFICIARIES



Teachers' Retirement System Principal Participating Employers June 30, 2017			
Employer	**Non-retired Members**	**Rank**	**Percentage of Total Non-retired Members**
Anchorage School District	4,929	1	32.13%
Matanuska-Susitna Borough School District	1,624	2	10.58
Fairbanks North Star Borough School District	1,329	3	8.66
Total	7,882		51.37%

Teachers' Retirement System
Participating Employers
June 30, 2017

Alaska Department of Education
Alaska Gateway School District
Aleutian Region School District
Aleutians East Borough School District
Anchorage School District
Annette Island School District

Bering Strait School District
Bristol Bay Borough School District

Chatham School District
Chugach School District
Copper River School District
Cordova City School District
Craig City School District

Delta-Greely School District
Denali Borough School District
Dillingham City School District

Fairbanks North Star Borough School District

Galena City School District

Haines Borough School District
Hoonah City School District
Hydaburg City School District

Iditarod Area School District

Juneau School District, City and Borough of

Kake City School District
Kashunamiut School District
Kenai Peninsula Borough School District
Ketchikan Gateway Borough School District
Klawock City School District
Kodiak Island Borough School District
Kuspuk School District

Lake and Peninsula Borough School District
Lower Kuskokwim School District
Lower Yukon School District

Matanuska-Susitna Borough School District

Nenana City School District
Nome City School District
North Slope Borough School District
Northwest Arctic Borough School District

Pelican City School District
Petersburg City School District
Pribilof School District

Saint Mary's School District
Sitka Borough School District
Skagway City School District
Southeast Island School District
Southeast Regional Resource Center
Southwest Region School District
Special Education Service Agency

Tanana School District

Unalaska City School District
University of Alaska

Valdez City School District

Wrangell Public School District

Yakutat School District
Yukon Flats School District
Yukon-Koyukuk School District
Yupiit School District

ALASKA DIVISION OF

Retirement and Benefits

STATE OF ALASKA • DEPARTMENT OF ADMINISTRATION

• Division of Retirement and Benefits •

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