Denver Employees Retirement Plan

COMPREHENSIVE ANNUAL FINANCIAL REPORT

Fiscal Year Ended December 31, 2018

A Component Unit of the City and County of Denver, Colorado

Denver Employees Retirement Plan

(A Component Unit of the City and County of Denver, Colorado)

Comprehensive Annual Financial Report

Fiscal Year Ended December 31, 2018

Eric Rothaus
Retirement Board Chair

Steven E. Hutt
Executive Director

Prepared by the Plan Staff

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Introductory Section

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Primary Plan Sponsor
City and County of Denver, Colorado

Elected Officials
Mayor
Honorable Michael B. Hancock

Auditor
Honorable Timothy M. O'Brien, CPA

City Council

District 1	Honorable Rafael Espinoza
District 2	Honorable Kevin Flynn
District 3	Honorable Paul D. López
District 4	Honorable Kendra Black
District 5	Honorable Mary Beth Susman
District 6	Honorable Paul Kashmann
District 7	Honorable Jolon Clark
District 8	Honorable Christopher Herndon
District 9	Honorable Albus Brooks
District 10	Honorable Wayne New
District 11	Honorable Stacie Gilmore
Council at-Large	Honorable Robin Kniech
Council at-Large	Honorable Deborah Ortega

Clerk and Recorder
Honorable Debra Johnson

Steven E. Hutt
Executive Director
777 Pearl Street
Denver, CO 80203
Ph. 303.839.5419
Fax 303.839.9525
www.derp.org

June 1, 2019

Dear Members of the Denver Employees Retirement Plan:

We are pleased to present the Comprehensive Annual Financial Report (CAFR) of the Denver Employees Retirement Plan (the Plan) of the City and County of Denver (the City) for the fiscal year ended December 31, 2018.

Comprehensive Annual Financial Report This report is an overview intended to give the reader reliable and useful information which describes the financial position of the Plan and provides assurance that the Plan is in compliance with applicable legal provisions. The Plan's management is responsible for the accuracy of the data contained in this report, and we believe the information included presents fairly the fiduciary net position of the Plan as of December 31, 2018, as well as the changes in fiduciary net position for the year.

Internal Control The Plan's management has designed and implemented internal and accounting controls to provide reasonable assurance of the accuracy and reliability of all the financial records and the safekeeping of the Plan assets. There are inherent limitations in the effectiveness of any system of internal controls. The cost of internal control should not exceed anticipated benefits; therefore the objective is to provide reasonable, rather than absolute, assurance that the financial statements are free of material misstatements.

Independent Audit The City's Revised Municipal Code requires an annual audit of the trust fund, with the results being furnished to the Mayor, the City Council, and the City Auditor. The Retirement Board selected the accounting firm CliftonLarsonAllen, LLP to render an opinion as to the fairness of the Plan's 2018 financial statements. The audit was performed in accordance with auditing standards generally accepted in the United States of America and the standards for financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States. The Independent Accountants' Report is included in this report's Financial Section.

Management's Discussion and Analysis Generally accepted accounting principles (GAAP) require that management provide a narrative introduction, overview, and analysis to accompany the basic financial statements in the form of Management's Discussion and Analysis (MD&A). This letter of transmittal is designed to complement MD&A and should be read in conjunction with it. The Plan's MD&A can be found immediately following the report of the independent accountants in this report's Financial Section .

Plan Profile The Plan was established on January 1, 1963, as a defined benefit plan. Most City employees, certain employees of the Denver Health and Hospital Authority (DHHA), and all of the Plan staff are covered by the Plan. Excluded from membership are the uniformed employees of the City's police and fire departments and the Denver Water Board employees. All active Plan members are required to contribute to Social Security while employed. As of December 31, 2018, there were 9,210 active and 9,945 retired Plan members.

The Plan is governed by a five member Board, the members of which are appointed for staggered six-year terms by the Mayor of the City. Additionally, three members of the Advisory Committee are elected by the Plan membership for staggered three-year terms and one member is appointed by the City's Career Service Board.

All Plan-related benefit and administrative provisions are detailed in Sections 18-401 through 18-430.7 of the City's Revised Municipal Code. Any amendments to the Plan must be enacted into ordinance by the Denver City Council and approved by the Mayor.

The Plan provides retirement benefit options based upon the member's date of hire. At the time of retirement, a member may elect to receive a reduced benefit in order to provide a lifetime benefit to a spouse or an eligible beneficiary upon the member's death. The Plan also provides disability and death benefits. With respect to other post-retirement benefits, the Plan offers retired members and their beneficiaries the option of purchasing health, dental, and vision insurance coverage. Based on a formula incorporating a member's years of service, the Plan pays a portion of the monthly insurance premium(s). A more detailed explanation of benefits is outlined in the Summary of Principal Plan Provisions in this report's Actuarial Section. The Plan's Membership Services representatives provide ongoing pre-retirement counseling to the active members and assist retired members and their beneficiaries throughout the year.

Investment Performance The Plan follows a strategic asset allocation policy so that investments are diversified. The goal of the asset allocation is to provide the highest level of return at an acceptable level of risk. During 2018, the Plan's investment portfolio returned (2.4)% net of fees. These investment results exceeded the overall strategic benchmark return for the Plan of (3.1)% and exceeded the median peer return of (4.0)%, placing the Plan in the top quartile among large public pensions. Over the last 10 years, the DERP portfolio has earned a net annual return of 8.0%, slightly behind our peers and our blended benchmark, both of which returned 8.2%.

Funded Status The Plan's pension benefit fund continues to be in a healthy financial position relative to our peer group of other public pension funds nationally. The Retirement Board, the Executive Director, and the Plan staff remain committed to managing the Plan's assets and liabilities to maintain the long-term financial soundness of the Plan and to have the funds needed to pay every dollar of benefits promised to every current and future retiree. The funded status of the pension benefit fund for the year beginning January 1, 2018 was 67.67%. The Plan continues to work successfully with the City to annually receive the full amount of the actuarially required contribution necessary to achieve the Plan's funding goals. Additional information regarding the Plan's funding is included in this report's Actuarial Section.

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 Denver Employees Retirement Plan for its CAFR for the fiscal year ended December 31, 2017. The Certificate of Achievement is a prestigious national award recognizing excellence in the preparation of state and local government financial reports. To be awarded the Certificate of Achievement for Excellence in Financial Reporting, a government unit must publish an easily readable and efficiently organized report, the contents of which meet or exceed program standards. The report must satisfy both generally accepted accounting principles and applicable legal requirements. A Certificate of Achievement is valid for one year. The Plan has received a Certificate of Achievement for 29 years in a row. We believe this current report continues to meet the Certificate of Achievement program requirements and will submit it to the GFOA for consideration again this year.

Conclusion We express our appreciation to the Plan staff who served the membership throughout 2018 and who prepared this report. We hope readers find it easy to read and understand, and will recognize the contributions that the Retirement Board, Advisory Committee, and Plan staff make toward the continued successful operation of the Plan.

Sincerely,

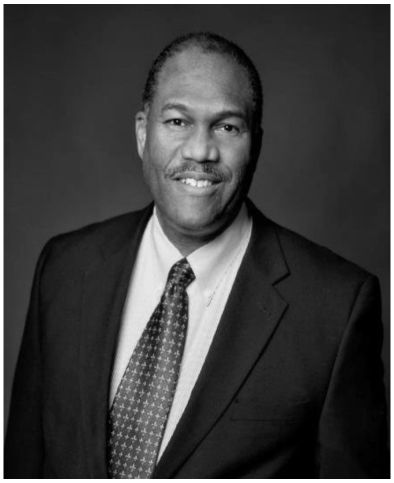
Eric Rothaus
Retirement Board Chair

Steven Hutt
Executive Director

Retirement Board

Each member is appointed by the Mayor of Denver

Jeanne Faatz
Term expires January 1, 2020



Maurice Goodgaine
Term expires January 1, 2023

Guadalupe Gutierrez-Vasquez
Term expires January 1, 2021

Bruce Hoyt
Term expires January 1, 2025

Eric S. Rothaus
Term expires January 1, 2022

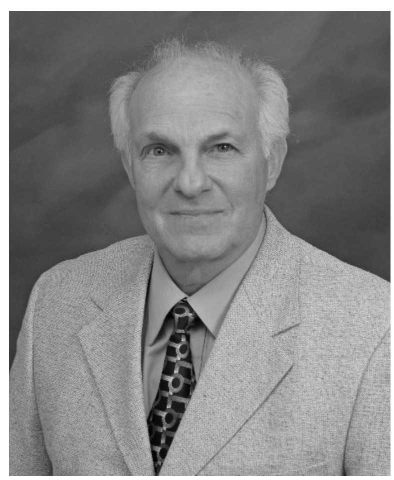
Advisory Committee

Three members are elected by the Plan membership and one member is appointed by the Denver Career Service Board

Michael F. Aleksick
Term expires June, 2021

Heather L. Britton
Term expires June, 2020

Frank T. Fresquez
Term expires June, 2019



Robert Press
Term expires June, 2020

Professional Services

Actuary
- Cheiron, Inc.

Custodian Bank
- Bank of New York Mellon Corporation

Independent Auditor
- CliftonLarsonAllen, LLP

Investment Consulting
- Meketa Investment Group

Investment Managers

Domestic Equity Managers
- Brown Advisory
- Eagle Capital Management
- Franklin Templeton
- Mellon Capital Management
- Neuberger Berman, LLC

International Equity Managers
- Dimensional Fund Advisors
- Fidelity Institutional
- Franklin Templeton
- LSV Asset Management
- Mellon Capital Management

Real Estate Managers
- Contrarian Capital Management, LLC
- JP Morgan Asset Management
- Prudential Real Estate Investors
- UBS Global Asset Management
- Walton Street Capital

Alternative Investments Managers
- Adams Street Partners, LLC
- EIG Global Energy Partners
- Hancock Timber Resource Group
- JP Morgan Private Equity Group
- Kayne Anderson Capital Advisors
- Lime Rock Resources
- Tortoise Capital Advisors

Fixed Income Managers
- Athyrium
- Bain Capital
- Colchester Global Investors Limited
- Golub Capital
- GSO Capital Partners, LP
- Mellon Capital Management

Absolute Return Funds
- PAAMCO Prisma

Investment commissions and fees can be found on pages 62-63 in the Investment Section.

Government Finance Officers Association

Certificate of Achievement for Excellence in Financial Reporting

Presented to

Denver Employees Retirement Plan

Colorado

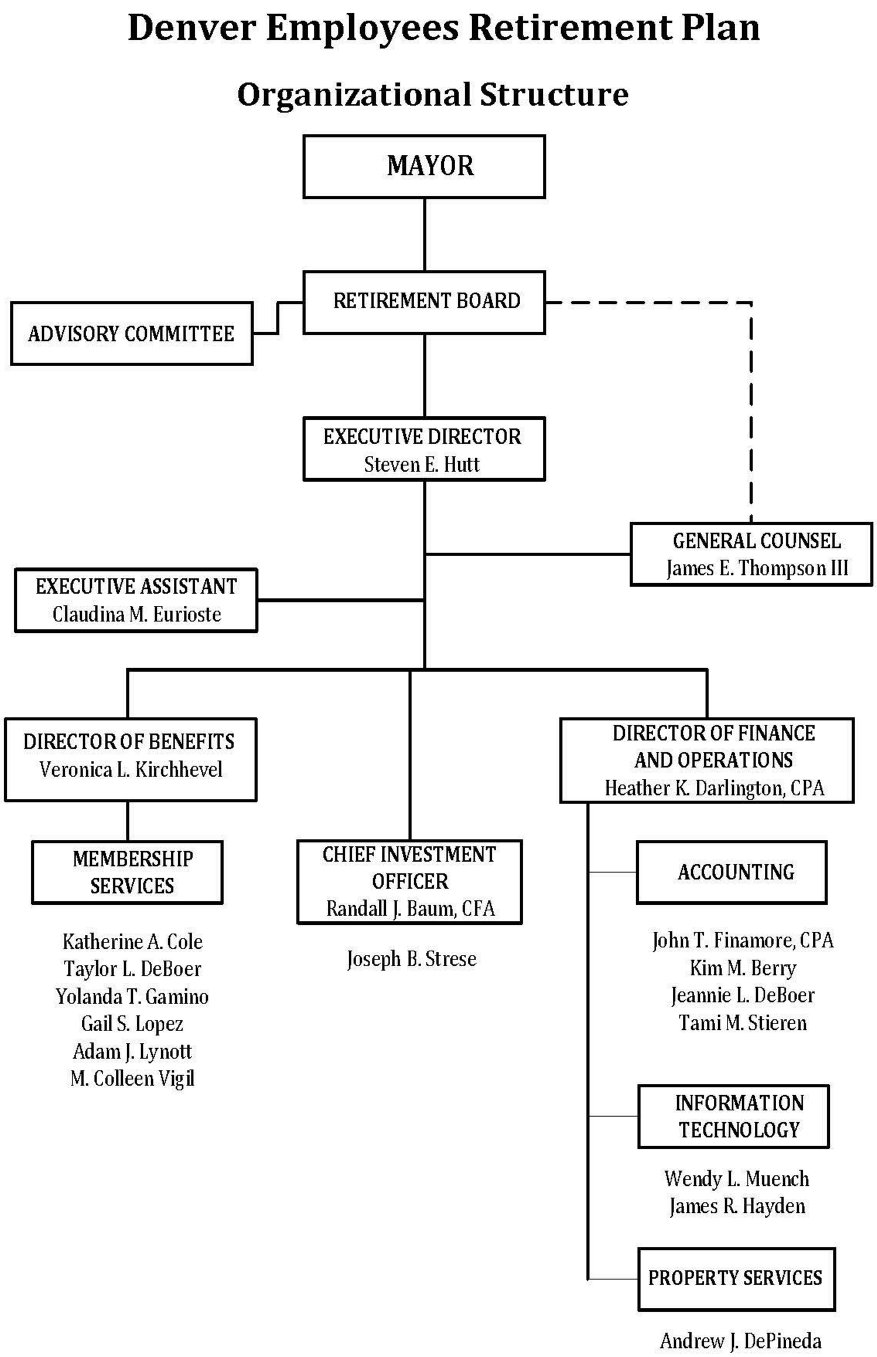
For its Comprehensive Annual
Financial Report
for the Fiscal Year Ended

December 31, 2017

Christopher P. Morrill

Executive Director/CEO

Organizational Structure



Financial Section

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CliftonLarsonAllen LLP
CLAconnect.com

INDEPENDENT AUDITORS' REPORT

Retirement Board of Directors
Denver Employees Retirement Plan
Denver, Colorado

Report on the Financial Statements

We have audited the accompanying financial statements of the Denver Employees Retirement Plan (the Plan), a component unit of the City and County of Denver, which comprise the statement of fiduciary net position and statement of changes in fiduciary net position, as of and for the year ended December 31, 2018, and the related notes to the financial statements, which collectively comprise the Plan'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 accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

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

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the Plan'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 Plan'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.

A member of Nexia International

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the fiduciary net position of the Plan as of December 31, 2018, and the changes in its fiduciary net position for the year then ended in accordance with accounting principles generally accepted in the United States of America.

Report on Summarized Comparative Information

We have previously audited the Plan's 2017 financial statements, and we expressed an unmodified audit opinion on those audited financial statements in our report dated May 7, 2018. In our opinion, the summarized comparative information presented herein as of and for the year ended December 31, 2018 is consistent, in all material respects, with the audited financial statements from which it has been derived.

Other Matters

Required Supplementary Information

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

Other Information

Our audit was conducted for the purpose of forming an opinion on the financial statements that collectively comprise the Plan's basic financial statements. The supplementary information listed in the table of contents is presented for purposes of additional analysis and is not a required part of the basic financial statements.

The supplementary information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the basic financial statements. Such information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the supplementary information is fairly stated, in all material respects, in relation to the basic financial statements as a whole.

The introductory, investment, actuarial and statistical sections listed in the table of contents have not been subjected to the auditing procedures applied in the audit of the basic financial statements and, accordingly, we express no opinion or provide any assurance on them.

Other Reporting Required by *Government Auditing Standards*

In accordance with *Government Auditing Standards*, we have also issued our report dated May 16, 2019, on our consideration of the Plan's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is solely to describe the scope of our testing of internal control over financial reporting and compliance and the result of that testing, and not to provide an opinion on internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the Plan’s internal control over financial reporting and compliance.

CliftonLarsonAllen LLP

CliftonLarsonAllen LLP

Denver, Colorado
May 16, 2019

Management's Discussion and Analysis

This is an analysis and overview of the financial activities of the Denver Employees Retirement Plan (the Plan) for the year ended December 31, 2018. For additional information, please refer to the basic financial statements, notes to the financial statements, required supplementary information, and supporting schedules.

Financial Highlights

As of December 31, 2018, $2,130,042,808 was restricted for the payment of benefits and to meet the Plan's future obligations to its members and their beneficiaries.

For 2018, the Plan's total net position restricted for benefits decreased by $170,210,755, a 7.4% decrease from the amount of net position restricted for benefits reported at the end of 2017. The net decrease for 2018 is the result of benefit payments exceeding contributions received, and a net investment loss of $75,510,404 due to unfavorable market conditions.

Additions to the Plan's net position included contributions of $80,122,159 from the City and County of Denver (the City) and $6,550,339 from the Denver Health and Hospital Authority (DHHA). In addition, active members of the Plan contributed $55,833,462.

Deductions from the Plan's net position during 2018 totaled $237,206,311. This amount is 5.5% higher than the total 2017 deductions. Increasing retired member benefits, due to a net increase in the number of retirees and higher average monthly benefit payments for new retirees, is the cause for the higher deduction amount.

The Plan's funding objective is to meet its long-term benefit obligations through employer and employee contributions and investment returns. As of January 1, 2018, the date of the last actuarial valuation, the funded ratio for the pension and health benefits funds was 67.7% and 48.0%, respectively.

Overview of the Financial Statements

The following discussion and analysis is intended to serve as an introduction to the Plan's financial statements which follow. The financial statements include:

- Statement of Fiduciary Net Position
- Statement of Changes in Fiduciary Net Position
- Notes to Financial Statements
- Required Supplementary Information
- Supplementary Information

The Statement *of Fiduciary Net Position* presents the Plan's assets, liabilities, and net position as of December 31, 2018, with summarized comparative totals for 2017. This statement reflects the Plan's net position available for benefits in each the retirement and the health benefits funds as of December 31, 2018, and in the aggregate as of December 31, 2017.

The Statement *of Changes in Fiduciary Net Position* shows the additions to and deductions from the Plan's net position during 2018, with summarized comparative totals for 2017.

The Governmental Accounting Standards Board (GASB) promulgates the requirements for financial statement presentation and certain disclosures for state and local governmental entities. The financial statements, notes to financial statements, and required supplementary information presented in this report were prepared in compliance with applicable GASB pronouncements.

Management's Discussion and Analysis

The financial statements provide a snapshot of the Plan's assets and liabilities as of December 31, 2018 and the financial activities that occurred during the year. The financial statements were prepared using the economic resources measurement focus and the accrual basis of accounting. Investment activities have been reported based on trade dates and were valued pursuant to independent outside sources. All capital assets, exclusive of land, are depreciated over their useful lives. Refer to the financial statements and notes to the financial statements for additional information.

Notes to the Financial Statements provide additional information which is essential for a full understanding of the basic financial statements.

Required Supplementary Information provides additional information and details about the Plan's progress in funding its future obligations and the history of employer and employee contributions.

Other supplementary schedules are also included. The Schedule of Administrative Expenses presents the overall cost of administrating the Plan. The schedule of Investment Expenses show the cost associated with investing the assets of the Plan.

Financial Analysis

There are several ways to measure the Plan's financial status. One means is to determine the Plan's net position available to pay benefits, which is the difference between total assets and total liabilities. Another way to measure the Plan's financial status is to refer to the funded ratio which takes into account the actuarial assets and actuarial liabilities of the Plan. As of January 1, 2018, the date of the last actuarial valuation, the pension benefits fund had a funded ratio of 67.7%, or for every dollar of pension benefits due participants, the Plan had approximately $0.68 in actuarial assets available for payment. The health benefits fund had a funded ratio of 48.0%, meaning the Plan had approximately $0.48 in actuarial assets available for payment for every dollar of health benefits due.

On December 31, 2018, the Plan's net position totaled $2,130,042,808. Of this amount, $118,078,435 represented funds reserved in the Deferred Retirement Option Plan (DROP) and the Amended Deferred Retirement Option Plan (DROP II) accounts.

The Plan's Board has an investment allocation strategy in place and, with the help of an outside consultant, continually monitors the Plan's investments. The Plan's total assets decreased in 2018 due to a negative impact from the financial markets to the Plan's investment portfolio. As of December 31, the Plan's fiduciary net position was:

	2018	2017	Amount of Change	Percentage Change
Assets				
Cash, short-term investments, and receivables	$ 37,970,774	$ 44,546,469	$ (6,575,695)	(14.8%)
Securities lending collateral	129,463,950	130,408,336	(944,386)	(0.7%)
Investments, at fair value	2,092,143,126	2,254,585,348	(162,442,222)	(7.2%)
Capital assets, net	3,518,282	3,892,515	(374,233)	(9.6%)
Total assets	2,263,096,132	2,433,432,668	(170,336,536)	(7.0%)
Liabilities				
Accounts payable and unsettled securities purchased	3,589,374	2,770,769	818,605	29.5%
Securities lending obligations	129,463,950	130,408,336	(944,386)	(0.7%)
Total liabilities	133,053,324	133,179,105	(125,781)	(0.1%)
Fiduciary net position	$ 2,130,042,808	$ 2,300,253,563	$ (170,210,755)	(7.4%)

Management's Discussion and Analysis

Reserves

The Plan has established a reserve account for accumulated DROP benefits of $118,078,435 as of December 31, 2018. These funds are restricted for individuals who elected to participate in one of the DROP programs. Upon retirement, the member could elect to receive distributions or keep the accumulated monies with the Plan. The remaining Plan net position is available to pay retirement and health benefits to all eligible members and beneficiaries.

Plan Activities

Net additions were lower than Plan deductions, resulting in an overall 7.4% decrease in Plan net position for the year. For the years ended December 31, the Plan's activities were:

	2018	2017	Amount of Change	Percentage Change
Additions				
Contributions	$ 142,505,960	$ 129,704,724	$ 12,801,236	9.9 %
Net investment earnings	(75,510,404)	313,364,200	(388,874,604)	(124.1)%
Total additions, net	66,995,556	443,068,924	(376,073,368)	(84.9)%
Deductions				
Benefits	233,056,895	220,783,412	12,273,483	5.6 %
Administrative expenses	4,149,416	4,033,860	115,556	2.9 %
Total deductions	237,206,311	224,817,272	12,389,039	5.5 %
Change in fiduciary net position	(170,210,755)	218,251,652	(388,462,407)	(178.0)%
Beginning of year fiduciary net position	2,300,253,563	2,082,001,911	218,251,652	10.5 %
End of year Fiduciary net position	$ 2,130,042,808	$ 2,300,253,563	$ (170,210,755)	(7.4)%

Additions to Fiduciary Net Position

The monies needed to pay benefits are accumulated from the contributions made from employers and employees, and income generated from the Plan's investments. Income or losses on investments are reported net of investment management expenses. Employer contributions for 2018 totaled $86,672,498, which is 13.9% higher than the amounts contributed in 2017, due primarily to an increase in in contribution rate and increase in covered payroll in 2018. During 2018, employees contributed a total of $55,833,462, which is an increase of 4.2% over the 2017 amount due to increases in covered payroll and purchase of service. The Plan's net investment return was approximately (2.40)% in 2018 compared to 15.0% in 2017. Unfavorable market conditions resulted in the loss on investments. The Plan had net securities lending transaction income of $812,066 in 2018 and $704,400 in 2017.

	2018	2017	Amount of Change	Percentage Change
Employer contributions	$ 86,672,498	$ 76,098,783	$ 10,573,715	13.9%
Employee contributions	55,833,462	53,605,941	2,227,521	4.2%
Net appreciation (depreciation) in fair value of investments	(120,309,087)	282,347,989	(402,657,076)	(142.6%)
Interest, dividends, real estate/alternative investments, and absolute return income	57,903,473	45,094,753	12,808,720	28.4%
Securities lending transactions income, net	812,066	704,400	107,666	15.3%
Investment expenses	(13,916,856)	(14,782,942)	866,086	5.9%
Total additions, net	$ 66,995,556	$ 443,068,924	$ (376,073,368)	(84.9%)

Management's Discussion and Analysis

Deductions from Fiduciary Net Position

The Plan provides a lifetime pension benefit to its retired members, as well as survivor, disability, and retiree health, dental, and vision benefits. Annual expenses of the Plan include retirement benefits, DROP distributions, refunds of employee contributions, and administrative expenses. For the year ended December 31, 2018, deductions totaled $237,206,311, an increase of 5.5% over the amount of 2017 total deductions. The increase is attributed to a 3.2 % net increase in the number of retirees, along with higher average monthly benefit payments for new retirees. Refunds of contributions to non-vested members were higher due to a 18.7% increase in the number of member refund requests, coupled with a higher average refund per member. Administrative expenses were slightly higher than those of the previous year due primarily to an increase in salary expenses.

	2018	2017	Amount of Change	Percentage Change
Benefits	$ 228,564,114	$ 217,113,664	$ 11,450,450	5.3%
Employee refunds	4,492,781	3,669,747	823,034	22.4%
Administrative expenses	4,149,416	4,033,860	115,556	2.9%
Total deductions	$ 237,206,311	$ 224,817,271	$ 12,389,040	5.5%

Capital Assets

Capital assets, net of accumulated depreciation, had a net decrease of $374,233 for the year ended December 31, 2018, which is comprised primarily of depreciation expense of $444,348. See Note 9 *Capital Assets* for additional information.

Requests for Information

This management's discussion and analysis is intended to provide the Plan's Board, participating employers, and the membership with an overview of the Plan's financial position as of December 31, 2018, and a summary of the Plan's activities for the year then ended.

Questions about any of the information presented or requests for additional information should be directed to:

Denver Employees Retirement Plan
777 Pearl Street
Denver, CO 80203
Phone: 303-839-5419
Fax: 303-839-9525
Website: www.derp.org
Email: mbrsvs@derp.org

Statement of Fiduciary Net Position

December 31, 2018

(with Summarized Comparative Totals for December 31, 2017)

			December 31,	
	Pension Benefits	Health Benefits	2018	2017
Assets				
Cash and short-term investments	$ 35,195,011	$ 1,183,557	$ 36,378,568	$ 42,654,725
Securities lending collateral	125,371,528	4,092,422	129,463,950	130,408,336
Receivables				
Unsettled securities sold	32,047	1,046	33,093	328,405
Interest and dividends	1,478,337	48,256	1,526,593	1,559,304
Total receivables	1,510,384	49,302	1,559,686	1,887,709
Investments, at fair value				
U.S. Government obligations	150,139,492	4,900,907	155,040,399	140,506,648
Domestic corporate bonds and other fixed income	297,827,972	9,721,807	307,549,779	322,406,283
Domestic stocks	407,633,082	13,306,104	420,939,186	500,018,878
International stocks	432,529,165	14,118,771	446,647,936	544,944,974
Real estate	167,569,016	5,469,847	173,038,863	174,130,666
Alternative investments	469,014,754	15,309,747	484,324,501	469,934,369
Absolute return	101,295,924	3,306,538	104,602,462	102,643,530
Total investments	2,026,009,405	66,133,721	2,092,143,126	2,254,585,348
Prepaid Items	31,492	1,028	32,520	4,035
Capital assets				
Land	416,447	13,594	430,041	430,041
Building and equipment, net of accumulated depreciation	2,990,620	97,621	3,088,241	3,462,474
Total assets	2,191,524,887	71,571,245	2,263,096,132	2,433,432,668
Liabilities				
Unsettled securities purchased	1,441,091	47,041	1,488,132	437,043
Securities lending obligations	125,371,528	4,092,422	129,463,950	130,408,336
Accounts payable	2,034,821	66,421	2,101,242	2,333,726
Total liabilities	128,847,440	4,205,884	133,053,324	133,179,105
Fiduciary net position restricted for benefits	$ 2,062,677,447	$ 67,365,361	$ 2,130,042,808	$ 2,300,253,563
Fiduciary net position restricted for pension and health benefits	$ 1,944,599,012	$ 67,365,361	$ 2,011,964,373	$ 2,174,729,320
Fiduciary net position restricted for DROP and DROP II benefits	118,078,435	—	118,078,435	125,524,243
Fiduciary net position restricted for benefits	$ 2,062,677,447	$ 67,365,361	$ 2,130,042,808	$ 2,300,253,563

See Notes to Financial Statements

Statement of Changes in Fiduciary Net Position

Year Ended December 31, 2018

(with Summarized Comparative Totals for the Year Ended December 31, 2017)

			Year ended December 31,	
	Pension Benefits	Health Benefits	2018	2017
Additions				
Contributions				
City and County of Denver, Colorado	$ 75,451,623	$ 4,670,536	$ 80,122,159	$ 69,363,888
Denver Health and Hospital Authority	6,268,121	282,218	6,550,339	6,734,895
Plan members	52,700,679	3,132,783	55,833,462	53,605,941
Total contributions	134,420,423	8,085,537	142,505,960	129,704,724
Investment earnings				
Net appreciation (depreciation) in fair value of investments	(116,509,425)	(3,799,662)	(120,309,087)	282,347,989
Dividends	17,082,480	564,491	17,646,971	14,572,911
Interest	11,244,298	373,342	11,617,640	13,591,174
Real estate, alternative investments, and absolute return income	27,721,971	916,891	28,638,862	16,930,668
	(60,460,676)	(1,944,938)	(62,405,614)	327,442,742
Investment expenses	(13,471,680)	(445,176)	(13,916,856)	(14,782,942)
	(73,932,356)	(2,390,114)	(76,322,470)	312,659,800
Securities lending transactions income	3,460,339	114,738	3,575,077	2,223,995
Securities lending transactions expenses				
Borrower rebates	(2,412,620)	(79,947)	(2,492,567)	(1,284,992)
Agent fees	(261,752)	(8,692)	(270,444)	(234,603)
	785,967	26,099	812,066	704,400
Net investment earnings	(73,146,389)	(2,364,015)	(75,510,404)	313,364,200
Total additions, net	61,274,034	5,721,522	66,995,556	443,068,924
Deductions				
Retired member benefits	207,516,054	12,905,976	220,422,030	210,302,358
DROP and DROP II benefits paid	8,142,084	—	8,142,084	6,811,306
Refunds of contributions	4,348,592	144,189	4,492,781	3,669,748
Administrative expenses	4,016,288	133,128	4,149,416	4,033,860
Total deductions	224,023,018	13,183,293	237,206,311	224,817,272
Change in fiduciary net position	(162,748,984)	(7,461,771)	(170,210,755)	218,251,652
Fiduciary net position held in trust for benefits				
Beginning of year	2,225,426,431	74,827,132	2,300,253,563	2,082,001,911
End of year	$ 2,062,677,447	$ 67,365,361	$ 2,130,042,808	$ 2,300,253,563

See Notes to Financial Statements

Notes to Financial Statements

Note 1 Plan Description

The Denver Employees Retirement Plan (the Plan) administers a cost-sharing multiple-employer defined benefit plan providing pension and post-employment health benefits to eligible members. The Plan was established in 1963 by the City and County of Denver, Colorado. During 1996, the Denver Health and Hospital Authority (DHHA) was created and joined the Plan as a contractual entity. In 2001, the Plan became closed to new entrants from DHHA. All risks and costs are shared by the City and County of Denver (the City) and DHHA. There is a single actuarial evaluation performed annually that covers both the pension and post employment health benefits. All assets of the Plan are funds held in trust by the Plan for its members for the exclusive purpose of paying pension and post-employment health benefits.

Substantially all of the general employees of the City, certain employees of DHHA, and all employees of the Plan are covered under the Plan. The classified service employees of the Denver Police and Denver Fire Departments, and the employees of the Denver Water Board, are covered by separate retirement systems. At December 31, 2018, the Plan membership consisted of the following:

	Pension Benefits	Health Benefits
Retirees and beneficiaries currently receiving benefits	9,945	6,823
Retirees and beneficiaries entitled to health benefits but not receiving any	—	3,124
Terminated employees entitled to benefits but not yet receiving them	3,378	3,378
Current employees:		
Vested	4,996	4,996
Non-vested	4,214	4,214
Total	22,533	22,535

The following brief description of the Plan is provided for general information purposes only. Sections 18-401 through 18-430.7 of the City's Revised Municipal Code should be referred to for complete details of the Plan.

The Plan provides retirement, death and disability benefits for its members and their beneficiaries. Members who were hired before September 1, 2004, and retire at or after age 65 (or at age 55 if the sum of their age and credited service is at least 75) are entitled to an annual retirement benefit, in an amount equal to 2.0% of their final average salary for each year of credited service, payable monthly for life. Effective for employees hired on or after September 1, 2004, the formula multiplier was reduced to 1.5%. Final average salary is based on the member's highest salary during a consecutive 36 month period of credited service. Members with five years of credited service may retire at or after age 55 and receive a reduced retirement benefit.

For members who were hired on or after July 1, 2011, they must be age 60 and have combined credited service of at least 85 in order to receive a normal retirement prior to age 65. Final average salary is based on the member's highest salary during a consecutive 60 month period of credited service. Five year vesting is required of all employees in order to qualify for a benefit, regardless of their age at the time of termination of employment.

Annual cost of living adjustments are granted on an ad hoc basis. The estimated cost of benefit and contribution provisions is determined annually by an independent actuary, recommended by the Plan's Board, and enacted into ordinance by the Denver City Council.

Notes to Financial Statements

The health benefits account was established by City Ordinance in 1991 to provide, beginning January 1, 1992, post-employment health care benefits in the form of a premium reduction to retired members, their spouses and dependents, spouses and dependents of deceased active and retired members, and members of the Plan awaiting approval of retirement applications. During 2018, the monthly health insurance premium reduction was $12.50 per year of service for retired participants not yet eligible for Medicare, and $6.25 per year of service for retirees eligible for Medicare. The health insurance premium reduction can be applied to the payment of medical, dental, and/or vision insurance premiums. The benefit recipient pays any remaining portion of the premiums.

Note 2 Summary of Significant Accounting Policies

Reporting Entity

The Plan has separate legal standing and is fiscally independent of the City. However, based upon the criterion of financial accountability as defined by Governmental Accounting Standards Board (GASB) Statement No. 14, *The Financial Reporting Entity,* as amended, the Plan is reported as a component unit of the City's financial reporting entity.

Basis of Accounting and Presentation

The accompanying financial statements are prepared in accordance with accounting principles generally accepted in the United States of America. The Plan is accounted for using the economic resources measurement focus and the accrual basis of accounting. Employer/employee contributions and investment earnings are recognized in the period in which they are due and earned, respectively. Expenses are recognized when incurred. Benefits and refunds are recognized when due and payable in accordance with the terms of the Plan.

Plan Expenses

The Plan's Board acts as the trustee of the Plan's assets. The operating and other administrative expenses incurred by the Board, or its employees, in the performance of its duties as the Plan's trustee are paid from the assets of the Plan accumulated from contributions and investment earnings. Such expenses totaled $4,149,416 in 2018, and are reported as administrative expenses in the accompanying statement of changes in fiduciary net position.

Investments

The Plan's investments are reported at fair value. The fair value of domestic stocks is based on prices reported by national exchanges. The fair value of international stocks and fixed income securities are based on prices obtained from an approved independent pricing service. Fair values of real estate and alternative investments are valued using the net asset value (NAV) determined by independent periodic appraisals of properties owned and valuation of assets in the various investment funds. The absolute return fund of funds' investment fair value is based upon net asset values provided by the fund's third-party administrator. Short-term investments, with the exception of international funds, are recorded at amortized cost, which approximates fair value. Investment earnings are recognized as earned. Gains and losses on sales and exchanges of securities are recognized on the trade date.

For 2018, the Plan realized net gain on the disposition of investments of $78,665,966. The calculation of realized gains and losses is independent of the calculation of the net appreciation in the fair value of the Plan's investments and is determined using the weighted average cost method. Unrealized gains and losses on investments held for more than one year and sold in the current year were included in the net appreciation in the fair value of investments reported for 2018.

Notes to Financial Statements

Investments of the Plan shall be in accordance with all applicable laws of the State of Colorado and the City, specifically:

- Investments shall be solely in the interest of the participants and their beneficiaries and for the exclusive purpose of providing benefits to the participants and their beneficiaries.
- Investments shall be made with the care, skill, prudence, and diligence under the circumstances then prevailing that a prudent investor acting in a like capacity and familiar with these matters would use in the conduct of an enterprise of a like character and with like aims.
- Investments shall be diversified so as to minimize the risk of loss and to maximize the rate of return, unless under the circumstances it is clearly prudent not to do so.

Capital Assets

Capital assets, which include land, building, furniture, and equipment, are recorded at acquisition value. The Plan's capitalization threshold for capital assets is $500 of cost and a useful life in excess of one year. The costs of routine maintenance and repairs that do not add to the value of capital assets or materially extend assets' lives are not capitalized. Depreciation on capital assets, excluding land, is calculated using the straight-line method over the following estimated useful lives:

Building	30 years
General office equipment and furniture	10 years
Internally generated computer software	15 years
Computer equipment	5 years

Income Taxes

The Plan's current determination letter issued by the Internal Revenue Service, dated February 27, 2014, qualifies the Plan as a tax-exempt entity pursuant to Section 401(a) of the Internal Revenue Code. Earnings on the trust funds are exempt from federal income tax under Section 501(a) of the Internal Revenue Code.

Estimates Made by Management

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires the Plan's management to make certain estimates and assumptions that affect the reported amounts of assets, liabilities, and changes therein and disclosure of contingent assets and liabilities at the date of the financial statements. Actual results could differ from those estimates.

Prior-Year Summarized Totals

The basic financial statements include certain prior year summarized comparative information in total, but do not present detail for the pension or health benefits accounts. Such information does not include sufficient detail to constitute a presentation in conformity with accounting principles generally accepted in the United States of America. Accordingly, such information should be read in conjunction with the Plan's audited financial statements for the year ended December 31, 2017, from which the summarized information was derived.

Current Economic Conditions

The current economic environment continues to present public employee benefit plans such as the Plan with challenges which have resulted in substantial volatility in the fair value of investments. The accompanying financial statements have been prepared using values and information available to the Plan as of the date of the financial statements. Due to the volatility of economic conditions, the values of assets recorded in the financial statements could change materially in the future.

Notes to Financial Statements

Note 3 Contributions

The Plan's funding policy provides for annual contributions at rates determined by an independent actuary recommended by the Plan's Board and enacted by City ordinance, which when expressed as a percentage of annual covered payroll, are sufficient to accumulate assets to pay benefits when due. During 2018, the actuarially determined contribution rates, expressed as a percentage of annual covered payroll, for the pension and health benefits were 20.35% and 1.26%, respectively, for a combined total of 21.61%. The City enacted Ordinance No. 1248-18 in 2018 to reset the combined total contribution rate to 21.50%, effective January 2019. In 2018, employers contributed a total of 12.50% of covered payroll and employees made a pre-tax contribution of 8.00% in accordance with Section 18-407 of the City's Revised Municipal Code. The employees' contribution was handled as a payroll deduction and was forwarded to the Plan with the employers' contribution. During 2018, the employers contributed $81,719,744 for pension benefits and $4,952,754 for health benefits while the employees contributed a total of $52,700,679 for pension benefits and $3,132,783 for health benefits.

An actuarial valuation is performed annually by an independent actuarial consultant to determine that contributions are sufficient to provide funds for future benefits and to evaluate the funded status of the Plan. For 2018, in accordance with the January 1, 2018, actuarially determined contribution requirements, the total required contribution was $139,781,688 ($61,811,816 of normal cost and $69,801,429 amortization of the unfunded actuarial accrued liability for pension benefits; $2,663,297 of normal cost and $5,505,146 amortization of the unfunded actuarial accrued liability for health benefits) based on a rate of 21.61% of projected payroll. The actual contribution was $140,414,809 using a rate of 20.50% of covered payroll, which when combined with the members' purchase of service credits of $2,091,151, discussed below, resulted in total contributions of $142,505,960. In accordance with a separate agreement between DHHA and the Plan, DHHA made a supplemental contribution in the amount of $2,812,926, which is included in the total contributions amount.

During 2018, employee contributions totaled $55,833,462 and were allocated to pension and health benefits in the same manner as the employers' contributions. Regular employee contributions were not required or allowed between January 1, 1979, and September 30, 2003. City ordinance currently allows members to repay refunded contributions plus interest to reinstate service credits for periods prior to January 1, 1979. Any employee who made contributions after September 30, 2003, and was not vested upon leaving covered service could request a refund of those contributions. Eligible active members may also purchase permissive service credits in accordance with the Internal Revenue Code, which includes a maximum of five years of nonqualified service credits. Members paid $2,091,151 under these provisions during 2018.

Note 4 Deferred Retirement Option Plan (DROP)

Between January 1, 2001, and April 30, 2003, active members of the Plan who were eligible for a normal or rule-of-75 retirement could choose to enter the Deferred Retirement Option Plan (DROP) for a maximum of four years. After April 30, 2003, no active member with an actual and effective date of retirement after May 1, 2003, could enter or participate in DROP. Under DROP, the member's monthly retirement benefit was calculated as of the date of DROP entry. While participating in DROP, the member continued to work for the employer, earning a regular salary. The monthly retirement benefits were deposited into a DROP account maintained by the Plan. The balance in each member's DROP account earns interest at a rate equal to the actuarial assumed rate of return, currently 7.50% per annum. Sections 18-422 through 18-429 of the City's Revised Municipal Code should be referred to for more complete information on DROP. Upon retirement, members have access to the funds accumulated during their participation in DROP. During 2018, a total of $8,242,838 in interest was credited to members' DROP accounts. During 2018, a total of $7,853,205 was distributed from the DROP accounts to members who had retired and exited DROP. As of December 31, 2018, the reserve for DROP payments was $113,267,011.

Notes to Financial Statements

Note 5 Amended Deferred Retirement Option Plan (DROP II)

Between May 1, 2003, and August 31, 2003, active members of the Plan who were eligible for a normal or rule-of-75 retirement could choose to enter the Amended Deferred Retirement Option Plan (DROP II) for a maximum of five years. While participating in DROP II, the member continued to work for the employer, earning a regular salary. The member's monthly retirement benefits were deposited into a DROP II account maintained by the Plan. The balance in each member's DROP II account earns interest equal to the Plan's investment earnings rate provided it is not less than 3% per annum and not more than the Plan's annual actuarial assumed rate of return, currently 7.50% per annum. Sections 18-430 through 18-430.7 of the City's Revised Municipal Code should be referred to for more complete information on DROP II. Upon exiting DROP II, members have access to the funds accumulated during their participation in DROP II. A total of $259,563 in interest was credited to members' DROP II accounts during 2018. Also during 2018, a total of $288,874 was distributed to members who had exited DROP II. As of December 31, 2018, the reserve for DROP II payments was $4,811,424.

Note 6 Deposits and Investments

It is the objective of the Plan in managing the trust as a whole to provide a net realized nominal rate of return meeting or exceeding the actuarial assumption of 7.50% annualized, over a full market/economic cycle of three to seven years. The relative investment objective of the Plan is to exceed the rate of return that would have been achieved by a statically allocated and passively managed portfolio, at the same risk, in accordance with a long-term asset allocation strategy of the following approximate percentages:

	Long-term Target	Policy Range
Public Equity	46.0%	41.0% - 56.0%
Fixed Income	20.5%	16.0% - 26.0%
Real Estate	8.0%	6.0% - 10.0%
Absolute Return	5.0%	3.5% - 6.5%
Energy MLPs	7.0%	5.0% - 9.0%
Alternatives	13.5%	6.0% - 17.0%
Total Fund	100.0%	

Investment Performance

For the year ended December 31, 2018, the money-weighted rate of return on the investment assets was (2.2)%, net of fees.

The calculation of money-weighted returns is provided as an alternative to the more traditional time-weighted calculation of return, which appears elsewhere in this document. Money-weighted rate of return expresses investment performance, net of pension/OPEB plan investment expenses, adjusted for the changing amounts actually invested. Money-weighted methodology takes into consideration the amount and timing of cash flows in determining a net amount invested in each period. Since the net amount invested in the DERP investment portfolio does not fluctuate greatly, there is little difference in the results provided by the two methodologies, particularly over longer periods.

Notes to Financial Statements

Note 6 Deposits and Investments (continued)

Fair Value Measurement

The Plan categorizes fair value measurements within the fair value hierarchy established by U.S. generally accepted accounting principles. The hierarchy is based on the valuation inputs used to measure the fair value of the asset and gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level 1 measurements) and the lowest priority to unobservable inputs (Level 3 measurements).

Level 1 Unadjusted quoted prices for identical instruments in active markets.

Level 2 Quoted prices for similar instruments in active markets; quoted prices for identical or similar instruments in markets that are not active; and model-derived valuations in which all significant inputs are observable.

Level 3 Valuations derived from valuation techniques in which significant inputs are unobservable.

Investments that are measured at fair value using the net asset value (NAV) per share (or its equivalent) as a proxy are not classified in the fair value hierarchy.

In instances where inputs used to measure fair value fall into different levels in the fair value hierarchy, fair value measurements in their entirety are categorized based on the lowest level input that is significant to the valuation.

The Plan's assessment of the significance of particular inputs to these fair value measurements requires judgment and considers factors specific to each asset or liability. The tables on the following pages show the classification by fair value level of the investments for the Plan.

Short-term securities generally include investments in money market-type securities reported at amortized cost which approximates market or fair value.

Equities and U.S. Treasuries within all asset classes that are classified in Level 1 are valued using prices quoted in active markets for those securities. Equity and equity derivative securities classified in Level 2 are securities whose values are derived daily from associated traded securities. The Plan currently does not maintain equity securities classified as Level 3.

Fixed income securities and derivatives within all asset classes that are classified in Level 2 are valued using either a bid evaluation or a matrix pricing technique. Bid evaluations may include market quotations, yields, maturities, call features, and ratings. Matrix pricing is used to value securities based on the securities' relationship to benchmark quoted prices. Such securities include U.S. Treasuries, corporate and agency bonds, bank loans, and mortgage-backed securities. Level 2 fixed income securities have non-proprietary information that was readily available to market participants, from multiple independent sources, which are known to be actively involved in the market. The Plan currently does not maintain fixed income securities classified as Level 3.

Notes to Financial Statements

Note 6 Deposits and Investments (continued)

		Fair Value Measurements Using		
Investments by fair value level	Totals at December 31, 2018	Quoted Prices in Active Markets for Identical Assets Level 1	Significant Other Observable Inputs Level 2	Significant Unobservable Inputs Level 3
U.S. Government Obligations				
Treasuries	$ 29,093,095	$ 29,093,095	$ —	$ —
Agencies	72,031,139	—	72,031,139	—
Total U.S. Government Obligations	101,124,234	29,093,095	72,031,139	—
Domestic corporate bonds and other fixed income				
Corporate Bonds	116,917	—	116,917	—
Index fund	133,986,493	—	133,986,493	—
Total Domestic corporate bonds and other fixed income	134,103,410	—	134,103,410	—
Domestic stocks				
Equities	190,568,655	190,568,655	—	—
Index fund	230,370,531	230,370,531	—	—
Total Domestic stocks	420,939,186	420,939,186	—	—
International stocks				
Equities	72,626,157	72,626,157	—	—
Equity funds	341,339,415	341,339,415	—	—
Index fund	32,682,364	32,682,364		
Total International stocks	446,647,936	446,647,936	—	—
Publicly traded partnerships				
Master limited partnerships	124,061,090	124,061,090		
Total Publicly traded partnerships	124,061,090	124,061,090		
Total Investment by fair value level	1,226,875,856	1,020,741,307	206,134,549	—
Total Investments measured at the NAV (See detailed schedule on the following page)	865,267,270			
Total Investments measured at amortized cost	15,636,916			
Total Investments measured at fair value	$ 2,107,780,042			
Total Invested securities lending collateral	$ 183,300,978	$ —	$ 183,300,978	$ —

Notes to Financial Statements

Note 6 Deposits and Investments (continued)

Investments measured at the NAV	Totals at December 31, 2018	Unfunded Commitments	Redemption Frequency	Redemption Notice Period
Fixed Income Investments				
Private Debt	$ 174,612,534	$ 26,903,736	Not Eligible	N/A
Emerging Market Debt	52,750,000	—	Monthly	3 Days
Total Fixed Income Investments	227,362,534	26,903,736		
Real Estate Investments				
Real Estate - Open end	147,106,325	—	Quarterly	20-90 Days
Real Estate - Closed end	25,932,538	10,710,552	Not Eligible	N/A
Total Real Estate Investments	173,038,863	10,710,552		
Alternative Investments				
Private Equity	222,504,652	92,998,734	Not Eligible	N/A
Energy Investments	100,546,278	58,508,177	Not Eligible	N/A
Timber	37,212,481	—	Not Eligible	N/A
Total Alternative Investments	360,263,411	151,506,911		
Absolute Return				
Hedge Fund	104,602,462	—	Quarterly	65 Days
Total Absolute Return	104,602,462	—		
Total Investments measured at the NAV	$ 865,267,270	$ 189,121,199		

Fixed Income Investments

Private debt investments are intended to generate returns by lending money to various businesses and enterprises, or by purchasing loans originated by other lenders. There are six commingled investment pools, each taking the form of a partnership or similar structure. The debt may be secured or unsecured, and various yield enhancing techniques may be used such as royalty sharing, equity options, or the application of leverage. Liquidity of these closed-end funds is determined by the monetization of underlying investments, and subject to reinvestment terms.

Investments in emerging market debt seek to purchase the publicly traded sovereign or corporate debt obligations of developing nations.

Real Estate Investments

Open end real estate investments are pooled investments that own and operate commercial property. Returns are generated from income and price appreciation. These funds have perpetual life, and periodically accept contributions or honor redemptions.

Closed end real estate investments consist of pooled funds to own and operate commercial property. These funds have a finite life, and funds are returned as investments are liquidated.

Alternative Investments

Private equity utilizes a fund of funds approach to make investments in venture capital, buyouts, and other corporate finance transactions.

Energy investments are a diversified portfolio of energy assets, including interests in oil, natural gas, power generation, and renewables.

Timber investments are made in both domestic and international timberland. Returns are generated through the acquisition, management, harvesting, and sale of timber.

Liquidity of these closed-end funds is determined by the monetization of underlying investments, and subject to reinvestment terms.

Notes to Financial Statements

Note 6 Deposits and Investments (continued)

Absolute Return Investments
A hedge fund of funds is used to generate returns that are higher than core fixed income, with significantly lower risk than public equities. A multi-strategy approach is used to improve consistency of returns while limiting downside risk.

A portion of the Plan's fixed income assets are exposed to risks, including credit risk, concentration of credit risk, interest rate risk, and foreign currency risk, that have the potential to result in losses.

Credit Risk

To mitigate the risk that issuers or other counterparties to an investment will not fulfill their obligations, the Plan manages credit risk through the constraints on investments specified in each manager's investment guidelines included in the Plan's Investment Policy. Securities implicitly guaranteed by the U.S. Government are included.

The following table provides information regarding Standard & Poor's (S&P) and Moody's credit ratings associated with the Plan's investment in debt securities as of December 31, 2018:

S&P	Moody's	Asset Backed	Corporate	Non-U.S. Government Bonds	Mortgage Backed	Implicit U.S. Agency Securities	Total
AAA	Aaa	$ 517,967	$ 23,846,059	$ —	$ 29,416,654	$ 1,889,210	$ 55,669,890
AA+ to AA-	Aa3 to A1	24,286	1,118,091	—	1,379,284	72,031,139	74,552,800
A+ to A-	A1 to Baa2	70,729	3,256,193	18,486,351	4,016,862	—	25,830,135
BBB+ to BBB-	A3 to Baa3	96,862	4,459,285	19,863,176	5,501,003	—	29,920,326
BB+ to BB-	Ba3 to B1	284	13,077	12,995,400	16,132	—	13,024,893
CC+ to CC-	Ca	62,520	—	—	—	—	62,520
NR	NR	—	174,666,930	7,742,634	—	—	182,409,564
		$ 772,648	$ 207,359,635	$ 59,087,561	$ 40,329,935	$ 73,920,349	$ 381,470,128
U.S. Treasury Securities							81,120,050
Total							$ 462,590,178

NR - no rating available.

Concentration of Credit Risk

The Plan is potentially exposed to credit risk concentrations from a single issuer. Certain fixed income managers are constrained in concentration of credit exposure. As of December 31, 2018, the Plan had no exposure to any single issuer exceeding 1% of total plan assets.

Custodial Credit Risk

In the event of a failure of a financial institution or counterparty, custodial credit risk is the risk that the Plan would not be able to recover its deposits, investments, or collateral securities in the possession of an outside party. The Plan has no formal policy for custodial credit risk for deposits and investments. At December 31, 2018, the Plan did not have any deposits, investments, or collateral securities subject to custodial credit risk.

Notes to Financial Statements

Note 6 Deposits and Investments (continued)

Interest Rate Risk

Interest rate risk is the risk that changes in financial market rates of interest will adversely affect the value of an investment. The Plan manages its exposure to changing interest rates by making allocations to variable-rate debt instruments, which have no interest rate sensitivity, and by limiting its target allocation to fixed-rate securities to 14% of the total Plan portfolio. Both allocations are set by the Investment Policy. The Investment Policy further constrains the duration (a measure of interest rate risk) of the fixed-rate allocation to prudent levels. At December 31, 2018, the Plan's fixed income investments had the following maturities by investment type:

Investment Type	Fair Value	Less than 1 Year	1-5 Years	6-10 Years	More than 10 Years
U.S. Treasury securities	$ 81,120,050	$ 78,040	$ 40,721,344	$ 28,237,689	$ 12,082,977
U.S. agency securities	73,920,349	7,351,912	27,466,388	29,042,329	10,059,720
Asset backed	772,648	1,065	289,093	308,409	174,081
Corporate	207,359,635	92,834	187,921,733	14,198,442	5,146,626
Non-U.S. Government Bonds	59,087,561	1,412,656	21,184,946	25,397,978	11,091,981
Mortgage backed	40,329,935	60,496	16,418,317	17,515,290	6,335,832
Total	$ 462,590,178	$ 8,997,003	$ 294,001,821	$ 114,700,137	$ 44,891,217

Notes to Financial Statements

Note 6 Deposits and Investments (continued)

Foreign Currency Risk

Foreign currency risk is the risk that changes in exchange rates will adversely affect the fair value of an investment or deposit. The Plan's Investment Policy allows 18.5% to 30.0% of total investments to be invested in international equities. The Plan's Investment Policy allows 1.5% to 3.5% of total investments to be invested in international fixed income. The following positions represent the Plan's total exposure to foreign currency risk (in U.S. Dollars) as of December 31, 2018:

Foreign Currency	Equities	Fixed Income	Total
Euro	$ 87,298,607	$ —	$ 87,298,607
Japanese Yen	63,214,170	—	63,214,170
British Pound Sterling	46,588,304	—	46,588,304
Chinese Yuan	34,150,251	—	34,150,251
Hong Kong Dollar	29,522,960	—	29,522,960
South Korean Won	29,413,287	—	29,413,287
Taiwan Dollar	22,355,627	—	22,355,627
Australian Dollar	15,263,932	—	15,263,932
Swiss Franc	14,792,854	—	14,792,854
Brazilian Real	9,388,090	4,025,641	13,413,731
Russian Ruble	9,058,684	3,011,928	12,070,612
Indian Rupee	11,858,640	—	11,858,640
South African Rand	7,576,354	4,008,521	11,584,875
Mexican Peso	3,129,363	7,864,758	10,994,121
Canadian Dollar	10,341,528	—	10,341,528
Malaysian Ringgit	4,117,583	5,495,794	9,613,377
Indonesian Rupiah	2,799,957	6,560,635	9,360,592
Thai Baht	7,789,103	668,865	8,457,968
Polish Zloty	1,811,737	6,373,317	8,185,054
Turkish Lira	2,635,253	4,393,860	7,029,113
Columbian Peso	1,647,033	5,001,257	6,648,290
Swedish Krona	5,014,009	—	5,014,009
Singapore Dollar	4,277,408	—	4,277,408
Danish Krone	4,208,411	—	4,208,411
Norwegian Krone	4,179,254	—	4,179,254
Romanian Leu	—	2,517,414	2,517,414
New Israeli Shekel	2,232,314	—	2,232,314
Hungarian Forint	1,482,330	478,492	1,960,822
United Arab Emirati Dirham	1,647,033	—	1,647,033
Philippine Peso	329,407	845,152	1,174,559
Argentine Peso	—	1,074,371	1,074,371
New Zealand Dollar	992,556	—	992,556
Chilean Peso	658,813	277,020	935,833
Pakistani Rupee	494,110	—	494,110
Qatari Riyal	329,407	—	329,407
Egyptian Pound	164,703	—	164,703
Peruvian Sole	—	59,499	59,499
Other	3,736,309	—	3,736,309
Total	$ 444,499,381	$ 52,656,524	$ 497,155,905

Notes to Financial Statements

Note 7 Securities Lending Transactions

The *Investment Policy* permits the Plan to participate in a securities lending program to augment income. The program is administered by the Plan's custodial agent bank, which lends certain securities for a predetermined period of time, to an independent broker/dealer (borrower) in exchange for collateral. Collateral may be cash, U.S. government securities, or other collateral approved by the Plan. Loans of domestic securities are initially collateralized at 102% of the fair value of securities lent. Loans of international securities are initially collateralized at 105% of the fair value of securities lent. The custodial agent bank determines daily that collateral margins are sufficiently maintained. The Plan continues to receive interest and dividends during the loan period. There are no restrictions on the amount of securities that can be lent at one time. At December 31, 2018, the fair value of underlying securities lent was $176,095,507. The fair value of associated collateral was $183,300,978; of this amount, $129,463,950 represents the fair value of cash collateral as reported on the financial statements and $53,837,028 is the fair value of non-cash collateral not reported on the financial statements. The Plan has no credit risk exposure at December 31, 2018, since the collateral held exceeds the value of securities lent. The custodial agent bank indemnifies the Plan in the event of a collateral shortfall.

The Plan reports securities loaned as assets on the Statement of Plan Net Position. Cash received as collateral on securities lending transactions and investments made with that cash are recorded as an asset and liability. Investments purchased with cash collateral are recorded as Securities Lending Collateral with a corresponding liability as Securities Lending Obligations.

Note 8 Capital Assets

The Plan's capital assets activity for the year ended December 31, 2018, was as follows:

	January 1	Additions	Deletions	December 31
Capital assets, not being depreciated				
Land	$ 430,041	$ —	$ —	$ 430,041
Capital assets, being depreciated				
Building	1,136,014	—	—	1,136,014
Furniture and equipment	6,022,771	70,212	(151)	6,092,832
Total capital assets, being depreciated	7,158,785	70,212	(151)	7,228,846
Accumulated depreciation				
Building	(985,927)	(37,522)	—	(1,023,449)
Furniture and equipment	(2,710,384)	(406,826)	54	(3,117,156)
Total accumulated depreciation	(3,696,311)	(444,348)	54	(4,140,605)
Total capital assets being depreciated, net	3,462,474	(374,136)	(97)	3,088,241
Capital assets, net	$ 3,892,515	$ (374,136)	$ (97)	$ 3,518,282

The 2018 depreciation expense for the pension and health benefit accounts was $418,442 and $25,906 respectively.

Note 9 Commitments and Contingencies

As of December 31, 2018, the Plan had commitments for the future purchase of investments in private debt of $26,903,736, real estate of $10,710,552, and alternative investments of $151,506,911. The purpose of such commitments is to assist the Plan in maintaining the designated level of exposure to these asset classes. The anticipated pace of funding the commitments coincides with the expected distribution rate of invested assets.

Notes to Financial Statements

Note 10 Net Pension Liability of Employers

The components of the net pension liability of the employers at December 31, 2018, were as follows:

Total pension liability	$	3,571,328,103
Plan fiduciary net position		2,062,677,447
Net pension liability	$	1,508,650,656
Plan fiduciary net position as a percentage of the total pension liability		57.76%

Actuarial Assumptions

The total pension liability was determined by an actuarial valuation as of January 1, 2018 rolled forward to a measurement date of December 31, 2018, using the following actuarial assumptions, applied to all prior periods included in the measurement:

Inflation	2.50%
Salary Increases	3.00% to 7.00%
Investment Rate of Return	7.50%

The mortality tables were based on the RP-2014 Combined Mortality Table for Males and Females projected with the Ultimate MP Scale with a multiplier of 110% male and 105% female. The Disabled mortality tables were based on the RP-2014 Disabled Life Mortality Table for Males and Females projected with the Ultimate MP Scale.

The actuarial assumptions used in the January 1, 2018 valuation were based on the results of an actuarial experience study as of January 1, 2018.

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 were adopted by the Plan's trustees after considering input from the Plan's investment consultant and actuary. For each major asset class that is included in the pension plan's target asset allocation as of December 31, 2018 these best estimates are summarized in the table on the following page.

Notes to Financial Statements

Note 10 Net Pension Liability of Employers (continued)

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
US Equities	**22.50%**	
Large Cap	12.00%	3.80%
Large Cap Value	3.50%	4.30%
Large Cap Growth	3.50%	3.80%
Small Cap Value	1.25%	4.50%
Small Cap Growth	2.25%	4.00%
International Equity	**23.50%**	
International Large Cap	2.00%	4.30%
International Large Cap Value	4.00%	5.30%
International Large Cap Growth	4.00%	4.80%
International Small Cap Value	5.50%	4.80%
Emerging Markets	8.00%	6.30%
Fixed Income	**20.50%**	
Governments	5.00%	0.50%
Core Fixed Income	6.50%	1.00%
Emerging Market Debt	2.50%	4.30%
Private Debt	4.00%	5.00%
Distress Debt	2.50%	6.50%
Real Estate	**8.00%**	
Non-Core Real Estate	3.20%	5.80%
Core Real Estate	4.80%	3.80%
Alternatives	**25.50%**	
Hedge Funds	5.00%	3.30%
MLP	7.00%	6.30%
Private Equity	7.00%	6.50%
Private Energy	5.50%	6.50%
Timber	1.00%	3.00%
Total	100.00%	

A single discount rate of 7.50% was used to measure the total pension liability. This single discount rate was based on the expected rate of return on pension plan investments of 7.50%. The projection of cash flows used to determine this single rate assumed that plan member and employer contributions will be made at the current contribution rate. Based on these assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

Regarding the sensitivity of the net pension liability to changes in the single discount rate, the following presents the Plan's net pension liability, calculated using a single discount rate of 7.50%, as well as what the Plan's net pension liability would be if it were calculated using a single discount rate that is 1-percentage point lower or 1-percentage point higher:

	1% Decrease 6.50%	Current Single Discount Rate Assumption 7.50%	1% Increase 8.50%
Net Pension Liability	$1,895,022,706	$1,508,650,656	$1,183,598,302

Notes to Financial Statements

Note 11 Net Other Post-Employment Benefits (OPEB) Liability of Employers

The components of the net OPEB liability of the employers at December 31, 2018, were as follows:

Total OPEB liability	$	171,955,902
Plan fiduciary net position		67,365,361
Net OPEB liability	$	104,590,541
Plan fiduciary net position as a percentage of the total pension liability		39.18%

Actuarial Assumptions

The total OPEB liability was determined by an actuarial valuation as of January 1, 2018 rolled forward to a measurement date of December 31, 2018, using the following actuarial assumptions, applied to all prior periods included in the measurement:

Inflation	2.50%
Salary Increases	3.00% to 7.00%
Investment Rate of Return	7.50%

The mortality tables were based on the RP-2014 Combined Mortality Table for Males and Females projected with the Ultimate MP Scale with a multiplier of 110% male and 105% female. The Disabled mortality tables were based on the RP-2014 Disabled Life Mortality Table for Males and Females projected with the Ultimate MP Scale.

The actuarial assumptions used in the January 1, 2018 valuation were based on the results of an actuarial experience study as of January 1, 2018.

The long-term expected rate of return on OPEB 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 OPEB 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 were adopted by the Plan's trustees after considering input from the Plan's investment consultant and actuary. For each major asset class that is included in the OPEB plan's target asset allocation as of December 31, 2018 these best estimates are summarized in the table on the following page.

Notes to Financial Statements

Note 11 Net Other Post-Employment Benefits (OPEB) Liability of Employers (continued)

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
US Equities	**22.50%**	
Large Cap	12.00%	3.80%
Large Cap Value	3.50%	4.30%
Large Cap Growth	3.50%	3.80%
Small Cap Value	1.25%	4.50%
Small Cap Growth	2.25%	4.00%
International Equity	**23.50%**	
International Large Cap	2.00%	4.30%
International Large Cap Value	4.00%	5.30%
International Large Cap Growth	4.00%	4.80%
International Small Cap Value	5.50%	4.80%
Emerging Markets	8.00%	6.30%
Fixed Income	**20.50%**	
Governments	5.00%	0.50%
Core Fixed Income	6.50%	1.00%
Emerging Market Debt	2.50%	4.30%
Private Debt	4.00%	5.00%
Distress Debt	2.50%	6.50%
Real Estate	**8.00%**	
Non-Core Real Estate	3.20%	5.80%
Core Real Estate	4.80%	3.80%
Alternatives	**25.50%**	
Hedge Funds	5.00%	3.30%
MLP	7.00%	6.30%
Private Equity	7.00%	6.50%
Private Energy	5.50%	6.50%
Timber	1.00%	3.00%
Total	100.00%	

A single discount rate of 7.50% was used to measure the total OPEB liability. This single discount rate was based on the expected rate of return on OPEB plan investments of 7.50%. The projection of cash flows used to determine this single rate assumed that plan member and employer contributions will be made at the current contribution rate. Based on these assumptions, the OPEB 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 OPEB plan investments was applied to all periods of projected benefit payments to determine the total OPEB liability.

The OPEB Plan is not impacted by healthcare cost trends because the benefit is a flat dollar amount, independent of healthcare costs. Regarding the sensitivity of the net OPEB liability to changes in the single discount rate, the following presents the Plan's net OPEB liability, calculated using a single discount rate of 7.50%, as well as what the Plan's net OPEB liability would be if it were calculated using a single discount rate that is 1-percentage point lower or 1-percentage point higher:

	1% Decrease 6.50%	Current Single Discount Rate Assumption 7.50%	1% Increase 8.50%
Net OPEB Liability	$121,525,492	$104,590,541	$90,183,803

Required Supplementary Information
(Unaudited)

Schedule of Changes in Net Pension Liability and Related Ratios
(Ultimately 10 Fiscal Years will be displayed)

Fiscal year ending December 31,	2018	2017
Total Pension Liability		
Service Cost (Entry-Age Normal)	$ 49,796,219	$ 49,158,616
Interest on the Total Pension Liability	248,598,306	241,977,403
Benefit Changes	—	—
Difference between Expected and Actual Experience	94,729,540	14,324,507
Transition to Entry-Age Normal[1]	—	—
Assumption/Method Changes[2][3]	—	69,289,533
Benefit Payments	(220,006,730)	(207,612,390)
Net Change in Total Pension Liability	173,117,335	167,137,669
Total Pension Liability - Beginning	3,398,210,768	3,231,073,099
Total Pension Liability - Ending (a)	$ 3,571,328,103	$ 3,398,210,768
Plan Fiduciary Net Position		
Employer Contributions	81,719,744	71,731,309
Employee Contributions	52,700,679	50,599,952
Pension Plan Net Investment Income	(73,146,389)	302,942,063
Benefit Payments	(220,006,730)	(207,612,390)
Pension Plan Administrative Expense	(4,016,288)	(3,899,901)
Other Income	—	—
Net Change in Plan Fiduciary Net Position	(162,748,984)	213,761,033
Total Fiduciary Net Position - Beginning	2,225,426,431	2,011,665,398
Total Fiduciary Net Position - Ending (b)	$ 2,062,677,447	$ 2,225,426,431
Net Pension Liability - Ending (a)-(b)	$ 1,508,650,656	$ 1,172,784,337
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	57.76%	65.49%
Covered Payroll	$ 671,120,225	$ 636,738,387
Net Pension Liability as a Percentage of Covered Payroll	224.80%	184.19%

(1) Transition liability is the additional liability due to the transition from the Projected Unit Credit to Entry-Age Normal actuarial cost method.
(2) As of October 1, 2015, the valuation interest rate was lowered from 8% to 7.75%.
(3) As of October 1, 2017, the valuation interest rate was lowered from 7.75% to 7.50%.

2016	2015	2014
$ 46,577,860	$ 46,419,739	$ 42,793,142
237,104,293	229,130,437	221,367,921
—	—	—
16,967,117	29,122,513	—
—	—	140,652,205
—	73,157,470	—
(194,541,616)	(183,992,079)	(172,686,029)
106,107,654	193,838,080	232,127,239
3,124,965,445	2,931,127,365	2,699,000,126
$ 3,231,073,099	$ 3,124,965,445	$ 2,931,127,365
$ 68,794,871	$ 67,234,597	$ 59,941,041
48,037,800	46,689,696	39,521,451
147,443,477	(35,746,029)	101,595,704
(194,541,616)	(183,992,079)	(172,686,029)
(3,742,451)	(3,785,416)	(3,638,296)
—	—	—
65,992,081	(109,599,231)	24,733,871
1,945,673,317	2,055,272,548	2,030,538,677
$ 2,011,665,398	$ 1,945,673,317	$ 2,055,272,548
$ 1,219,407,701	$ 1,179,292,128	$ 875,854,817
62.26%	62.26%	70.12%
$ 613,284,274	$ 602,454,420	$ 554,103,740
198.83%	195.75%	158.07%

Required Supplementary Information
(Unaudited)

Schedule of Changes in Net OPEB Liability and Related Ratios
(Ultimately 10 Fiscal Years will be displayed)

Fiscal year ending December 31,	2018	2,017
Total OPEB Liability		
Service Cost (Entry-Age Normal)	$ 1,932,881	$ 2,103,783
Interest on the Total OPEB Liability	11,796,771	11,700,994
Benefit Changes	—	—
Difference between Expected and Actual Experience	8,527,979	—
Transition to Entry-Age Normal	—	—
Assumption/Method Changes	—	—
Benefit Payments	(13,050,165)	(13,171,022)
Net Change in Total OPEB Liability	9,207,466	633,755
Total OPEB Liability - Beginning	162,748,436	162,114,681
Total OPEB Liability - Ending (a)	$ 171,955,902	$ 162,748,436
Plan Fiduciary Net Position		
Employer Contributions	$ 4,952,754	$ 4,367,474
Employee Contributions	3,132,783	3,005,989
OPEB Plan Net Investment Income	(2,364,015)	10,422,137
Benefit Payments, Including Refunds of Employee Contributions	(13,050,165)	(13,171,022)
OPEB Plan Administrative Expense	(133,128)	(133,959)
Other	—	—
Net Change in Plan Fiduciary Net Position	(7,461,771)	4,490,619
Total Fiduciary Net Position - Beginning	74,827,132	70,336,513
Total Fiduciary Net Position - Ending (b)	$ 67,365,361	$ 74,827,132
Net OPEB Liability - Ending (a)-(b)	$ 104,590,541	$ 87,921,304
Plan Fiduciary Net Position as a Percentage of Total OPEB Liability	39.18%	45.98%
Covered Payroll	$ 671,120,225	$ 636,738,387
Net OPEB Liability as a Percentage of Covered Payroll	15.58%	13.81%

Required Supplementary Information
(Unaudited)

Schedule of the Net Pension Liability
(Ultimately 10 Fiscal Years will be displayed)

Fiscal Year Ending December 31,	Total Pension Liability	Plan Net Position	Net Pension Liability	Plan Net Position as a % of Total Pension Liability	Covered Payroll	Net Pension Liability as a % of Covered Payroll
2014	$ 2,931,127,365	$ 2,055,272,548	$ 875,854,817	70.12%	$ 554,103,740	158.07%
2015	$ 3,124,965,445	$ 1,945,673,317	$ 1,179,292,128	62.26%	$ 602,454,420	195.75%
2016	$ 3,231,073,099	$ 2,011,665,398	$ 1,219,407,701	62.26%	$ 613,284,274	198.83%
2017	$ 3,398,210,768	$ 2,225,426,431	$ 1,172,784,337	65.49%	$ 636,738,387	184.19%
2018	$ 3,571,328,103	$ 2,062,677,477	$ 1,508,650,626	57.76%	$ 671,120,225	224.80%

Schedule of the Net OPEB Liability
(Ultimately 10 Fiscal Years will be displayed)

Fiscal Year Ending December 31,	Total Pension Liability	Plan Net Position	Net Pension Liability	Plan Net Position as a % of Total Pension Liability	Covered Payroll	Net Pension Liability as a % of Covered Payroll
2017	$ 162,748,436	$ 74,827,132	$ 87,921,304	45.98%	$ 636,738,387	13.81%
2018	$ 171,955,902	$ 67,365,361	$ 104,590,541	39.18%	$ 671,120,225	15.58%

Required Supplementary Information
(Unaudited)

Schedules of Employer Contributions

Pension Benefit

Fiscal Year Ending December 31,	Actuarially Determined Contributions (a)	Actual Contributions (b)	Contribution Deficiency (Excess) (a)-(b)	Covered Payroll (c)	Actual Contribution as a % of Covered Payroll (b)/(c)
2009	$54,392,610	$43,127,064	$ 11,265,546	$564,986,660	7.63%
2010	48,995,846	42,228,203	6,767,643	506,045,186	8.34%
2011	52,000,472	45,703,351	6,297,121	517,398,105	8.83%
2012	56,054,792	49,756,639	6,298,153	517,396,257	9.62%
2013	55,397,564	56,427,308	(1,029,744)	531,559,017	10.62%
2014	55,871,677	59,941,041	(4,069,364)	519,003,905	11.55%
2015	59,811,786	67,234,597	(7,422,811)	545,955,845	12.32%
2016	66,135,502	68,794,871	(2,659,369)	563,316,210	12.21%
2017	76,859,156	71,731,309	5,127,847	636,738,387	11.27%
2018	82,818,225	81,719,744	1,098,481	671,120,225	12.18%

OPEB Benefit

Fiscal Year Ending December 31,	Actuarially Determined Contributions (a)	Actual Contributions (b)	Contribution Deficiency (Excess) (a)-(b)	Covered Payroll (c)	Actual Contribution as a % of Covered Payroll (b)/(c)
2009	$5,156,984	$4,551,097	$605,887	$564,986,660	0.81%
2010	4,290,712	2,924,858	1,365,854	506,045,186	0.58%
2011	4,965,060	4,202,033	763,027	517,398,105	0.81%
2012	5,153,185	4,241,291	911,894	517,396,257	0.82%
2013	4,721,761	4,135,064	586,697	531,559,017	0.78%
2014	4,093,763	4,332,376	(238,613)	519,003,905	0.83%
2015	4,322,064	4,380,107	(58,043)	545,955,845	0.80%
2016	4,253,678	4,364,140	(110,462)	563,316,210	0.77%
2017	4,837,383	4,367,473	469,910	636,738,387	0.69%
2018	5,208,156	4,952,754	255,402	671,120,225	0.74%

Required Supplementary Information
(Unaudited)

Notes to Schedules of Contributions (Pension and OPEB)

Valuation Date:	**January 1, 2017**
Notes	Actuarially determined contribution rates are calculated as of December 31 of each year and are applicable for the following calendar (fiscal) year.

Methods and Assumptions Used to Determine Contribution Rates:

Actuarial Cost Method	Projected Unit Credit
Amortization Method	Level Percentage of Payroll, Annually Established 30-Year Closed Bases
Remaining Amortization Period	Approximately 27 Years
Asset Valuation Method	Smoothed market
Inflation	2.50%
Salary Increases	3.00% to 7.00%
Investment Rate of Return	7.50%
Retirement Age	Experience-based table of rates that are specific to the type of eligibility condition. Last updated for the 2013 valuation pursuant to an experience study of the period 2008-2012.
Mortality	RP-2000 Combined Mortality Table Projected Via Scale AA to 2020, with Multipliers Specific to Gender and Payment Status of Employee.

Other Information:

Notes	There were no benefit changes during the year. As of October 1, 2017, the valuation interest rate was lowered from 7.75% to 7.50%. The latest experience study was conducted in 2013 covering the 5-year period of January 1, 2008 to December 31, 2012. At the time, the recommended mortality table was expected to produce a margin of 8% on the retired male mortality experience and 7% on the retired female experience (Source: Denver Employees Retirement Plan 2013 Actuarial Experience Study for the period ending December 31, 2012, Page 24, 25).

Required Supplementary Information
(Unaudited)

Schedule of Investment Returns
(Both Pension and OPEB Plans)
Last 10 Fiscal Years

Fiscal Year Ending December 31,	Annual Return (1)
2009	13.30%
2010	14.04%
2011	(0.30)%
2012	13.09%
2013	18.18%
2014	5.41%
2015	(1.78)%
2016	7.70%
2017	15.14%
2018	(2.23)%

(1) Annual money-weighted rate of return, net of Investment expenses

Note: The calculation of money-weighted returns is provided as an alternative to the more traditional time-weighted calculation of return which appears elsewhere in this document. Money-weighted rate of return expresses investment performance, net of pension/OPEB plan investment expenses, adjusted for the changing amounts actually invested. Money-weighted methodology takes into consideration the amount and timing of cash flows in determining a net amount invested in each period. Since the net amount invested in the DERP investment portfolio does not fluctuate greatly, there is little difference in the results provided by the two methodologies, particularly over longer periods.

Supporting Schedules

Schedule of Administrative Expenses
Year ended December 31, 2018

Personnel services:	
Salaries	$ 1,738,093
Employee benefits	497,810
Total personnel services	2,235,903
Professional services:	
Actuarial	137,563
Legal	8,465
Retirement board	25,441
Audit	52,000
Consultation	5,573
Total professional services	229,042
Office operations:	
Plan insurance	89,985
Postage	43,915
Office forms and printing	18,202
Office equipment	21,688
Employee travel and conferences	15,223
Telephone	25,549
Membership education	4,401
Miscellaneous operating	8,117
Employee education	23,131
Office supplies	6,890
Publications	2,917
Automobile	1,543
Total office operations	261,561
Computer operations:	
Software licenses and hosting fees	744,604
Supplies and other expenses	31,748
Total computer operations	776,352
Miscellaneous administrative expenses:	
Building operations	202,210
Depreciation expense	444,348
Total miscellaneous administrative expenses	646,558
Total	$ 4,149,416

Supporting Schedules

Schedule of Investment Expenses
Year ended December 31, 2018

Alternative investment portfolio management	$ 4,862,011
International equity portfolio management	2,734,843
Domestic equity portfolio management	1,726,020
Fixed income portfolio management	938,939
Real estate portfolio management	1,674,914
Absolute return investment portfolio management	1,055,125
Other investment related expenses	825,235
Custody	99,769
Total	$ 13,916,856

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Investment Section

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MEMORANDUM

To: Board Members,
Denver Employees Retirement Plan

From: Leandro Festino, Mika Malone, Paola Nealon, Jonas Noack
Meketa Investment Group

Date: May 16, 2019

Re: Investment Consultant's Statement for CAFR

This letter reviews the investment performance of the Denver Employees Retirement Plan (DERP) for the year ending December 31, 2018.

DERP seeks to meet a specific investment return through the use of Modern Portfolio Theory risk/return concepts, with the intent of providing benefits to the plan participants and their beneficiaries. To this end, DERP strives to align the portfolio's asset allocation, investments, and other related decisions with this goal in mind. This alignment is a fundamental part of the Retirement Board's meetings, where performance is examined (both on an overall portfolio basis and at the manager level), asset allocation is reviewed and modified to fit changes in expected return, strategic and tactical decisions are discussed, and the Plan's liabilities are reviewed. Meketa Investment Group, DERP's investment consultant, works in concert with DERP staff, to provide guidance to the Board regarding performance evaluation, asset allocation, manager selection, and other industry best practices.

Meketa calculates performance statistics using fair values received from the custodian, BNY Mellon, and from manager statements. Rates of return are presented using a time-weighted rate of return methodology based upon estimated market values.

2018 Year in Review

Worries of rising interest rates globally, trade tensions between the U.S. and China, elevated levels of volatility in the market, and increasing concerns of a slowing U.S. economy were central themes resonating throughout calendar year 2018. During the first quarter of 2018, we saw volatility return, with markets weathering higher levels of fluctuations (though these fluctuations were still near historical averages). While volatility seemed to wane in the quarters (Q2 and Q3) that followed, fourth quarter volatility rose sharply, culminating in abysmal returns for foreign markets in particular, and domestic markets to a lesser extent. Volatility spiked in the fourth quarter with the VIX reaching $36 before re-tracing to $25 at quarter-end. For the first three quarters of the year, most markets embraced a "risk-on" appetite, though this reversed at year-end, with investors moving toward higher quality fixed income instruments. With the exception of core investment grade bonds, which delivered flat returns for the calendar year, every major asset class posted negative returns.

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May 16, 2019
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After strong returns in 2017, emerging market equities posted a -14.6% return for 2018, as a strong U.S. dollar and trade tensions weighed on results. The MSCI EAFE Index, representing foreign developed markets, followed closely with a -13.8% return. Despite a late rebound in the month of December, domestic equities ended significantly lower. U.S. equities, as represented by the Russell 3000 Index, closed out the full year with a -5.2% return. The trend of U.S. growth stocks outperforming value stocks persisted throughout the year, despite fourth quarter results favoring value (-11.7%) over growth (-15.9%). For the year, growth held a commanding lead over value of nearly 7.0%, as the Russell 100 Growth closed out the year with a -1.5% return, versus -8.3% for the Russell 1000 Value.

Within fixed income, even with a December rate hike, investment grade fixed income markets closed out the year on a strong note, relatively speaking, as the broad market was largely risk-off for the month of December. Throughout the full year of 2018, concerns over rising interest rates and inflation created headwinds. In the U.S., the Federal Reserve in December increased short-term interest rates for the ninth time since the Global Financial Crisis to a range of 2.25% to 2.50%, and continued to reduce its balance sheet. The rate increases contributed to the flattening of the U.S. yield curve during the fiscal year. Over the trailing year, TIPS (-1.3%) and high yield bonds (-2.1%) declined, while the broad U.S. bond market, represented by the Barclays Aggregate Index, was flat at 0.0%. Similar to emerging market equities, returns for emerging market bonds suffered greater losses, with local currency emerging market bonds (as represented by JPM GBI-EM Global Diversified Index) posting a -6.2% return for the year.

Within other asset classes, natural resource stocks (S&P Global Natural Resources Index) returned -16.8%, commodities (Bloomberg Commodity Index) lost -11.3%, and REITs (MSCI U.S. REIT Index) lost -4.6%. U.S. crude settled at $45/ barrel, ending the year down nearly 25% as concerns about a shortage of oil flipped to fears of oversupply. If the price of oil remains low, it could slow the pace of monetary tightening and help import-oriented economies.

2019 OUTLOOK

Looking forward, there are several issues that we will continue to monitor. First is the potential for major central banks around the globe to further tighten monetary policy at the same time. Second, in the U.S., equity markets remain extended despite the volatility spike in the fourth quarter, and the current economic cycle has been long. Also in the U.S., trade policy remains a key issue. Next is the declining growth in China and the impact of trade tensions with the U.S. Finally, political uncertainty and ongoing structural issues remain a concern in Europe.

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After a long period of accommodative monetary policy globally that supported economic and market growth, higher rates and less demand from central banks for bonds could weigh on overall economic activity and risk assets going forward. Major central banks continued to increase interest rates, not only in the U.S. but in Canada and the United Kingdom as well. The U.S. Federal Reserve has already begun to reduce its balance sheet and the European Central Bank announced the end of its quantitative easing program. If multiple central banks begin pulling back support, this could put further upward pressure on rates, weigh on economic growth, and tighten liquidity. The Federal Reserve recognized this tension, and opted not to raise rates in March 2019, while also sending dovish signals for the remainder of 2019.

The U.S. economy and equity markets have experienced a long period of growth since the Global Financial Crisis due in part to central bank support. Late cycle dynamics of low unemployment and rising inflation are in place, and valuations are stretched for equites, despite the recent pullback witnessed in the fourth quarter. With the long economic and market expansions, and the many unresolved political and trade issues, we could see heightened volatility in 2019. Other key issues in the U.S. will be policy uncertainty related to tariffs, immigration, and strategic alliances.

China has the second largest economy behind the U.S. After a long period of growth through government investment, it continues to manage a repositioning of its economy to one of consumption. This has led to a slowing of its economy and has hurt countries that depend on its trade. The recent focus on tariffs between the U.S. and China is another key issue that could have a disproportionately negative impact on China, as the U.S. is one of their largest export destinations. Another core issue in China remains its high debt levels, particularly in the corporate sector.

Europe continues to have the structural problem of maintaining a single currency and central bank, while fiscal policy rests with each individual country. Consequently, countries that are experiencing financial difficulties are unable to use the traditional tools of lowering interest rates and devaluing their currency to stimulate growth. This has caused tensions within the Eurozone, as highlighted by the recent elections in Italy and the prior elections in Germany, as well as the on-going issues in Greece. Given the size of Italy's bond market and economy within the euro area, an Italian sovereign debt crisis or its departure from the euro would have significant consequences. Further, Brexit uncertainty continues to affect the Eurozone. In March 2019, Theresa May's withdrawal proposal was rejected by Members of Parliament for a third time, increasing the likelihood of a no-deal Brexit when the current extension expires in October 2019. We will continue to monitor these issues and others.

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DERP 2018 PERFORMANCE

DERP's portfolio returned -2.4% in 2018, outperforming the Policy Index return of -3.1%. For 2018, DERP's performance ranked in the top quartile (21st percentile) of the peer universe[1] (1st percentile is best and 100th is worst). Private Equity and the Energy Composite had the strongest absolute performances during 2018, returning 21.0% and 18.8%, respectively. The International Small Cap asset class had the weakest 2018 performance at -23.3%, underperforming the MSCI World ex USA Small Cap index, which returned -18.1% over the same period.

Over the trailing three- and five-year periods, the DERP portfolio returned 6.6% and 4.6% on average annually, slightly underperforming the Policy Index returns of 6.8% and 4.7%, respectively. For the trailing three years, DERP was in the 24th percentile compared to peers, and over the trailing five years, DERP was in the 50th percentile compared to peers. However, over a longer time horizon, seven- and ten-year periods, DERP returned 7.6% and 8.0%, respectively, exceeding the current actuarial assumed rate of return of 7.5% in both periods.

Performance for DERP over the 2018 fiscal year exceeded the benchmark's return, but provided a negative return on an absolute basis. DERP was able to perform well relative to peers and minimize losses in a year where nearly all asset classes suffered declines. DERP has recently approved a new asset allocation to lower the risk profile of the portfolio but still maintain a high probability of achieving the actuarial rate of return over the long-term. We look forward to continuing to work with staff and the Board to assist the Plan in meeting its obligations to participants and their beneficiaries.

If you have any questions, please contact us at (760) 795-3450.

Leandro Festino
Managing Principal

LFestino

LAF/JEN/srt

[1] Based on InvestorForce peer rankings: Defined Benefit Public Funds over $1 billion in assets.

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Investment Policy

The Denver Employees Retirement Plan (the Plan) was established on January 1, 1963, as a defined benefit pension plan. The Plan Board assumes full and absolute responsibility for establishing, implementing, and monitoring adherence to the pension fund policy. The investment of the Trust shall be in accord with all applicable laws of the State of Colorado and the City and County of Denver. Specifically:

(a) Investments shall be solely in the interest of the participants and their beneficiaries and for the exclusive purpose of providing benefits to the participants and their beneficiaries.

(b) Investments shall be made with the care, skill, prudence, and diligence under the circumstances then prevailing that a prudent investor acting in a like capacity and familiar with these matters would use in the conduct of an enterprise of a like character with like aims.

(c) Investments shall be diversified so as to minimize the risk of loss and to maximize rate of return, unless under the circumstances it is clearly prudent not to do so.

Investment Responsibilities

The Plan Board is responsible for formulating investment strategies, asset allocation, and monitoring the performance of investment management firms and professionals. The Plan Board has formal written objectives and guidelines contained in the Plan's *Investment Policy*, in which asset allocation targets, investment objectives, and investment manager guidelines are specified. Changes to the *Investment Policy* must be approved by the Plan Board.

The investment managers are each responsible for implementing investment strategies in accordance with the stated investment policies, guidelines, and objectives of the Plan. Each manager is responsible for optimizing investment return within its guideline constraints and in the sole interest of the Plan's members and beneficiaries. The Board has directed all investment managers to vote proxies in the interest of the Plan's members and beneficiaries, and to report annually as to how proxies were voted.

Investment Objectives

As outlined in the *Investment Policy*, the investment objectives include:

(a) The investment objective for the Trust as a whole is to provide a net realized rate of return meeting or exceeding the actuarial assumption of seven point five percent (7.50%), annualized, over a full market/ economic cycle of three to seven years.

(b) Consistent with this minimum investment objective, an attempt to maintaining an efficient portfolio determined by the risk/return concepts of Modern Portfolio Theory will be made.

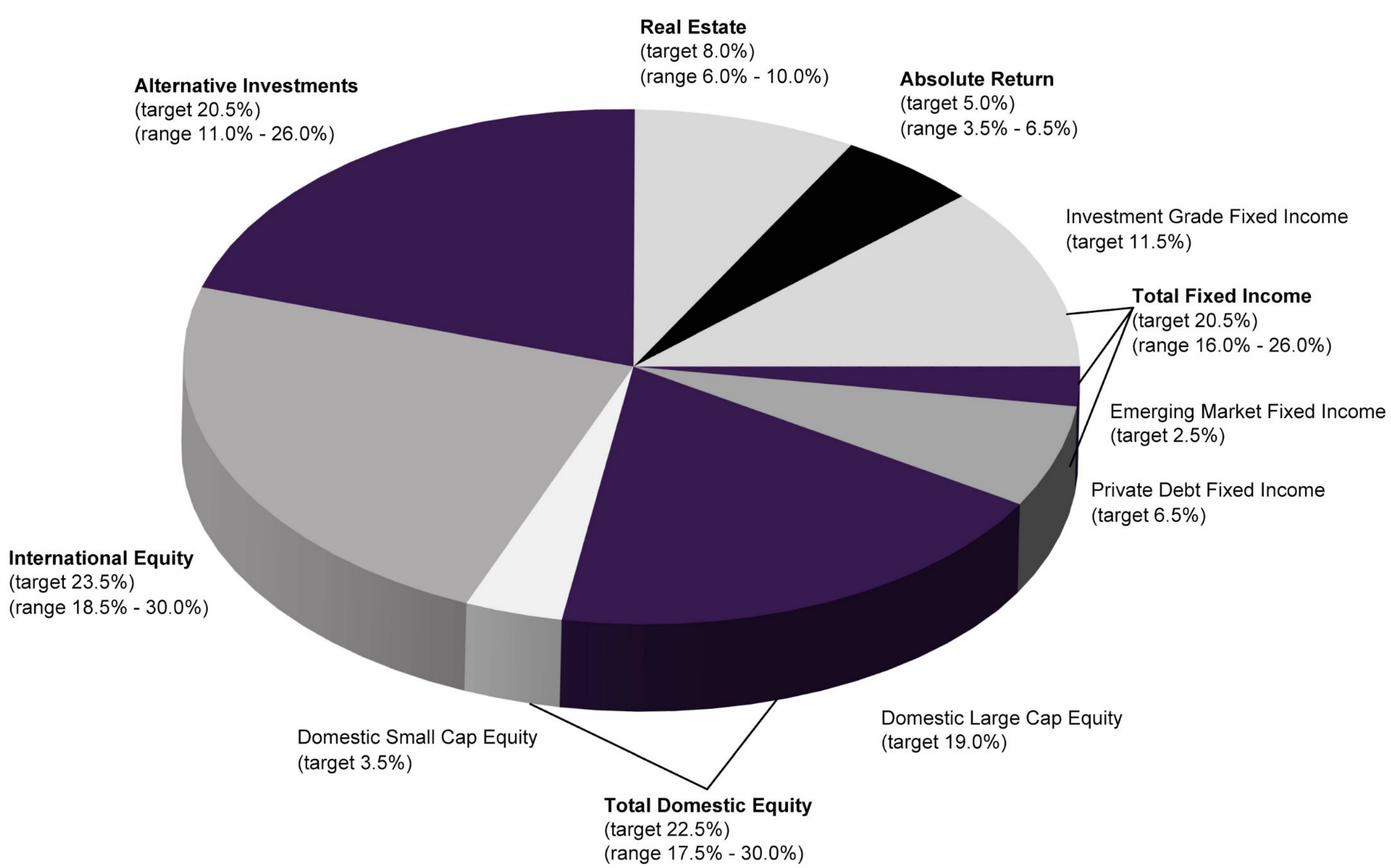
(c) The relative investment objective, over a market/ economic cycle of three to seven years, is to exceed the rate of return that would have been achieved by a statically allocated and passively managed portfolio, at the same risk, in accordance with the long term asset allocation policy set forth.

Asset Allocation Target

The Plan Board recognizes that an asset allocation plan has the greatest impact on long-term performance results and is, therefore, the most important decision in the investment process. The risk/return profile is maintained by identifying a long-term target strategic asset allocation. Temporary deviations from the targets are held within ranges.

The first formal asset allocation plan was adopted by the Plan Board in 1989. There have been subsequent asset allocation plans adopted, with the most recent being on April 20, 2018. The Plan's investment consultant assisted the Plan Board in developing the latest asset allocation.

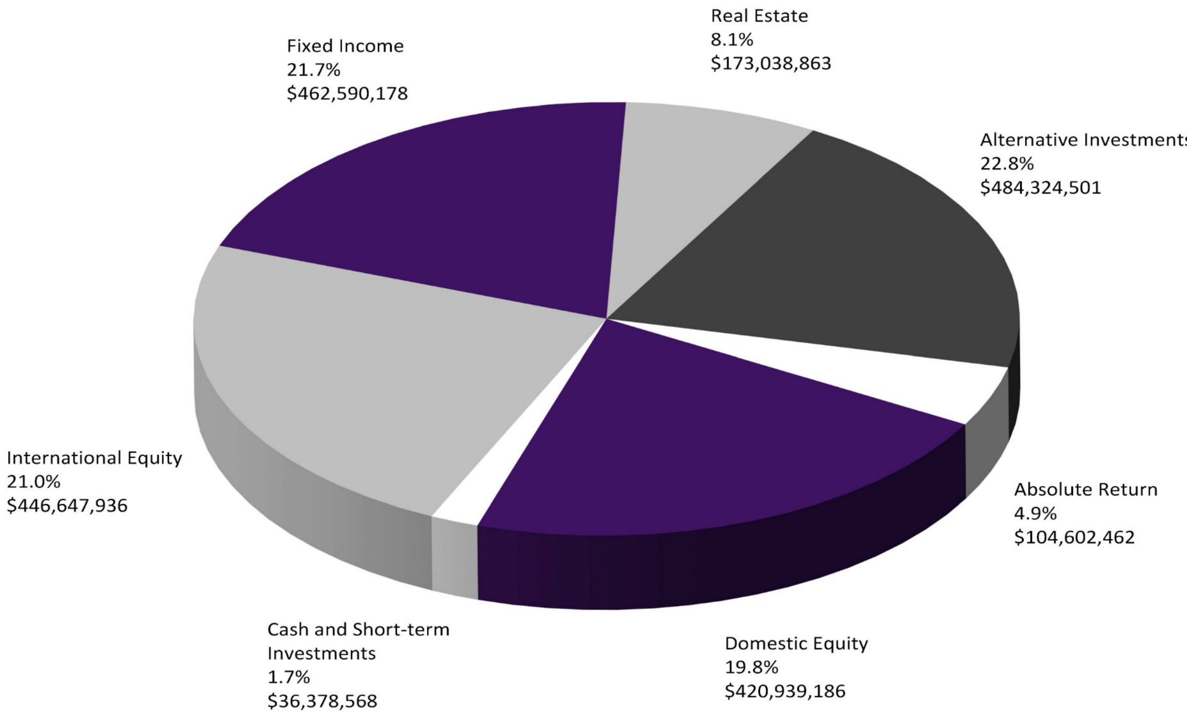
The asset allocation strategy as of December 31, 2018 is depicted in the chart below:



At target, a portfolio so allocated would be expected to achieve a 7.2% return with a standard deviation (risk) of 12.4%.

Asset Allocation by Asset Class

The total Fiduciary Net Position of the Plan on December 31, 2018, was $2,130,042,808 including cash and investments of S2,128,521,694. At December 31, 2018, the Plan's investment assets were allocated as shown in the following chart:



Asset Target Allocation by Managed Account

A list of investment managers appears in the introductory section of this report. The Plan's *Investment Policy* identifies the target allocation by managed account and asset style group as follows:

Managed Account	Target Allocation	Asset Style Group	Target Allocation Range
Mellon Capital Management	12.00%	Russell 1000 Index	9.00% to 15.00%
Brown Advisory	3.50%	Large Cap Equity (Growth)	2.00% to 5.00%
Eagle Capital Management	3.50%	Large Cap Equity (Value)	2.00% to 5.00%
Franklin Global Advisors	1.25%	Small Cap Equity (Growth)	1.00% to 2.00%
Neuberger Berman, LLC	2.25%	Small Cap Equity (Value)	1.80% to 3.50%
Mellon Capital Management	2.00%	EAFE Index	1.50% to 5.00%
Fidelity Institutional	4.00%	International Equity (Growth)	3.00% to 5.00%
Templeton Investment Counsel, LLC	4.00%	International Equity (Value)	3.00% to 5.00%
Dimensional Fund Advisors	5.50%	International Equity (Small Cap)	4.50% to 7.00%
LSV Asset Management	8.00%	International Equity (Emerging Markets)	6.00% to 10.00%
Plan Staff	5.00%	Fixed Income Government	4.50% to 7.00%
Mellon Capital Management	6.50%	Barclays Aggregate Index	4.50% to 8.00%
Golub Capital/Bain Capital	2.00%	Fixed Income-Senior Loans	1.00% to 5.00%
Athyrium	1.00%	Fixed Income-Private Debt	0.00% to 2.00%
GSO Capital	1.00%	Fixed Income-Private Debt	0.00% to 2.00%
Bain Capital	2.50%	Fixed Income-Distressed Debt	0.50% to 3.50%
Pictet Asset Management	2.50%	Fixed Income Emerging Market Debt	1.50% to 3.50%
Prisma Capital Partners	5.00%	Absolute Return	3.50% to 6.50%
Real Estate	8.00%	Real Estate	6.00% to 10.00%
Tortoise Capital Advisors	7.00%	MLP's	5.00% to 9.00%
Alternative Investments	13.50%	Energy, Timber, and Private Equity	6.00% to 17.00%

The Plan staff actively monitors each investment manager for compliance with guidelines. There is no allocation to cash. Each manager is directed to prudently remain fully invested in their asset style group. All allocated but uninvested cash is commingled and actively managed by the Plan staff. Investment manager, custodian, and consultant fees are aggressively negotiated and reviewed periodically.

The top ten stock and bond holdings as of December 31, 2018, are shown in the following tables:

Top Ten Stock Holdings
December 31, 2018

Shares	Stocks	Fair Value
7,805	ALPHABET INC	$8,082,936
70,360	MICROSOFT CORP	7,146,465
4,547	AMAZON.COM INC	6,829,458
25,300	BERKSHIRE HATHAWAY INC	5,165,754
79,227	TWENTY-FIRST CENTURY FOX INC	3,785,466
72,200	CITIGROUP INC	3,758,732
13,331	UNITEDHEALTH GROUP INC	3,321,019
35,572	ZOETIS INC	3,042,829
22,806	VISA INC	3,009,024
66,188	ORACLE CORP	2,988,388

Top Ten Bond Holdings
December 31, 2018

Par	Bonds	Coupon Rate	Maturity Date	Fair Value
9,500,000	FHLMC Bond	2.375%	1/13/2022	$9,462,190
5,000,000	FNMA Bond	6.250%	5/15/2029	6,411,850
6,500,000	FNMA Bond	2.125%	4/24/2026	6,191,250
5,800,000	U.S. Treasury Note	2.750%	4/30/2023	5,859,566
5,500,000	U.S. Treasury Note	1.375%	9/30/2023	5,221,755
4,500,000	FHLBC Bond	5.365%	9/9/2024	5,098,320
5,000,000	FHLMC Bond	2.750%	6/19/2023	5,029,200
5,000,000	FHLBC Bond	3.125%	6/11/2027	5,022,700
5,000,000	U.S. Treasury Note	2.625%	11/15/2020	5,009,200
4,950,000	FNMA Bond	2.375%	1/19/2023	4,912,974

Complete listings of stock and bond holdings are available at the Plan's office.

Investment Performance

The Plan contracts with Meketa Investment to measure investment results on a quarterly basis. Returns are calculated using a time-weighted rate of return based on the fair value of assets. Returns are reported net of fees unless otherwise stated. The estimated annualized return from January 1, 1986 to December 31, 2018 is 8.40%. Annualized investment results compared with benchmarks for the year ending December 31, 2018, are as follows:

	Last Year	Last 3 Years	Last 5 Years
Domestic Equity	(3.4)%	8.6%	7.3%
Russell 3000 Index	(5.2)%	9.0%	7.9%
International Equity	(16.7)%	4.5%	5.0%
International Equity Policy Index	(15.0)%	5.3%	1.4%
Fixed Income	2.2 %	5.0%	3.4%
Fixed Income Policy Index	0.2 %	4.4%	2.8%
Real Estate	5.8 %	6.8%	9.7%
NCREIF Index	8.3 %	8.2%	10.4%
Alternatives	5.5 %	7.1%	4.8%
Total Portfolio	(2.4)%	6.6%	4.6%
Total Fund Policy Index	(3.1)%	6.8%	4.7%
Change in Consumer Price Index (CPI-U)	1.9 %	2.0%	1.5%

Schedule of Investment Commissions

December 31, 2018

BROKER	QUANTITY (UNITS)	BROKER COMMISSION	COMMISSION PER/SHARE
MERRILL LYNCH	552,164	$8,753	$0.016
MORGAN STANLEY & CO INC	620,386	8,151	0.013
BARCLAYS CAPITAL	512,863	7,597	0.015
GOLDMAN SACHS & CO	396,375	7,095	0.018
WELLS FARGO SECURITIES, LLC	754,173	7,084	0.009
LIQUIDNET INC	363,438	6,857	0.019
BERNSTEIN SANFORD C & CO	233,241	6,438	0.028
CITIGROUP GLOBAL MARKETS LTD	576,378	5,334	0.009
J.P MORGAN SECURITIES INC	481,310	5,157	0.011
CREDIT SUISSE	360,017	4,780	0.013
RBC CAPITAL MARKETS LLC	348,275	4,669	0.013
JEFFERIES & CO INC	359,032	3,641	0.010
NATIONAL FINL SVCS CORP	156,081	3,157	0.020
ICBC FINCL SVCS	79,319	2,911	0.037
WEEDEN & CO	91,112	2,742	0.030
ISI GROUP INC	225,554	2,406	0.011
UBS WARBURG	322,866	2,143	0.007
UBS SECURITIES LLC	175,137	2,058	0.012
J.P. MORGAN CLEARING CORP	79,006	2,012	0.025
RAYMOND JAMES & ASSOC INC	53,152	1,960	0.037
STIFEL NICOLAUS	52,321	1,910	0.036
BERENBERG GOSSLER & CIE	145,322	1,799	0.012
CANTOR FITZGERALD & CO INC	47,253	1,758	0.037
CONVERGEX EXECUTION SOLUTION	103,778	1,557	0.015
INVESTMENT TECHNOLOGY GROUP LTD	205,871	1,287	0.006
RBC DOMINION SECS INC	47,400	1,119	0.024
BAIRD, ROBERT W & CO INC	28,891	1,109	0.038
ROYAL BANK OF CANADA EUROPE LTD	54,870	993	0.018
REDBURN PARTNERS LLP	105,920	953	0.009
B RILEY AND CO LLC	29,943	898	0.030
BNP PARIBAS SEC SVCS	215,676	694	0.003
PERSHING LLC	23,671	664	0.028
MIZUHO SECURITIES USA INC	17,675	646	0.037
WILLIAM BLAIR & CO	17,740	643	0.036
BMO CAPITAL MARKETS CORP	23,550	595	0.025
MACQUARIE CAPITAL (USA) INC.	27,290	583	0.021
INSTINET CORP	24,073	538	0.022
ITG INC	26,809	536	0.020
All other brokers (each at $500 or less)	429,461	5,102	0.012
TOTAL	8,367,393	$118,329	$0.014

Schedule of Investment Fees
December 31, 2018

Externally Managed Portfolios	**Assets Under Management**	**Fees**
U.S. Equities:		
Actively Managed :	$190,568,655	$1,660,873
Passively Managed	230,370,531	65,147
International Equities:		
Actively Managed	413,965,572	2,719,243
Passively Managed	32,682,364	15,600
Fixed Income:		
Actively Managed	328,603,684	915,580
Passively Managed	133,986,494	23,359
Real Estate:		
Fees netted with earnings	172,930,819	1,500,050
Fees paid separately	108,044	174,864
Absolute Return:		
Fees netted with earnings	104,602,462	1,055,125
Alternative Investments:		
Fees netted with earnings	351,548,776	3,840,798
Fees paid separately	132,775,725	1,021,213
	$2,092,143,126	$12,991,852

Other Investment Services		
Custody Fees		$99,769
Other investment related expenses		825,235

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Actuarial Section

GRS Retirement Consulting

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April 23, 2019

Board of Trustees
Denver Employees Retirement Plan
777 Pearl St
Denver, CO 80203

Re: Denver Employees Retirement Plan Actuarial Valuation as of January 1, 2018

Dear Board Members:

The results of the January 1, 2018 Annual Actuarial Valuation of the Denver Employees Retirement Plan (DERP) are presented in this report. The purpose of the valuation was to measure the Plan's funding progress and to determine the employer contribution rate, for the next fiscal year.

The valuation was based upon information, furnished by DERP, concerning Plan benefits, financial transactions, active members, terminated members, retirees and beneficiaries. We checked for internal and year-to-year consistency, but did not otherwise audit the data. These calculations may be subject to certain provisions of the agreement between Denver Health and Hospital Authority (DHHA) and DERP. This letter and these calculations are not intended as legal or accounting advice, and we would recommend review by legal counsel for the compliance of these calculations with all relevant agreements.

The actuarial methods and assumptions used are in compliance with the parameters established by GASB Statements No. 67 and No. 68. For the retiree medical benefits, the schedules illustrate the value of the explicit benefit as described in the Plan Summary, and that explicit benefit is valued in compliance with all the parameters established by GASB Statements No. 74 and 75. The value of any implicit rate subsidy in the City-sponsored health plans will be illustrated in the separate disclosures related to those plans.

The valuation results summarized in this report involve actuarial calculations that require assumptions about future events for the Pension Plan, Retiree Medical Plan, and DHHA. We believe that the assumptions and methods used in this report are reasonable and appropriate for the purpose for which they have been used. However, other assumptions and methods could also be reasonable and could result in materially different results. In addition, because it is not possible or practical to consider every possible contingency, we may use summary information, estimates or simplifications of calculations to facilitate the modeling of future events. We may also exclude factors or data that are deemed to be immaterial.

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Board of Trustees
April 23, 2019
Page 2

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

The following schedules were prepared by GRS:

1. Valuation Methods and Assumptions
2. Analysis of Financial Experience
3. Demographic History
4. Solvency Test
5. Plan Provisions
6. Schedule of Funding Progress
7. Schedule of Employer Contributions

If there is other information that you need in order to make an informed decision regarding the matters discussed in this report, please contact us.

We certify that the information contained in this report is accurate and fairly presents the actuarial position of DERP as of the valuation date. All calculations have been made in conformity with generally accepted actuarial principles and practices, and with the Actuarial Standards of Practice issued by the Actuarial Standards Board.

The actuaries submitting this statement are members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained in this report. Both are experienced in performing valuations for public retirement systems.

Respectfully submitted,

Leslie L. Thompson

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

Paul T. Wood

Paul T. Wood, ASA, FCA, MAAA
Consultant

Valuation Methods and Assumptions

Funding Valuation Methods

***Actuarial Cost Method for Determination of Actuarially Determined Contribution* - The Projected Unit Credit (PUC) Cost Method** was used in the valuation.

The Projected Unit Credit Cost Method develops a normal cost and an accrued liability based on the benefit accrued as of the valuation date.

The normal cost is the present value of the benefits that accrue during the year. The benefit accrued during the year is the retirement benefit based on pay projected to a member's retirement date, based on service accrued as of the valuation date. The actuarial accrued liability is the present value of benefits allocated to service prior to the valuation date.

Finally, for all funding methods, the present value of benefits is equal to the accrued liability plus the present value of future normal costs.

***Deferred Retirement Option Plan (DROP) and DROP II* -** The DROPs are closed and no new members are assumed to enter either of the two DROPs. For members who were in DROP and remained employed upon their exit from the DROP program, their accrued liability is calculated as the value of their deferred benefit based on compensation and service earned before their DROP participation plus the value of their additional benefit earned based on compensation and service accrued after their DROP participation ended, as well as their accrued DROP balance. Further detail describing the DROPs can be found in the Plan Provisions section of this report.

Benefits Limited to Maximums Specified in Internal Revenue Code (IRC) - Benefits in pay status are limited to the maximum specified by Section 415 of the IRC, as adjusted annually. The benefits in pay status are based on the IRC maximum compensation permitted by Section 401(a)(17).

Asset Valuation Method

***Actuarial Value of Assets* -** The Actuarial Value of Assets recognizes 20% of the difference between the projected actuarial value and the market value at the valuation date. This method has the effect of smoothing volatility in investment returns. Returns are measured net of administrative and investment expenses.

Actuarial Standards of Practice Statement #44 provides some guidance in the selection of a method for determining the actuarial value of assets. In particular, when considering utilizing an asset method other than the market value of assets, the method should be selected that is designed to produce actuarial values of assets that bear a reasonable relationship to the corresponding market values. The qualities of the DERP asset value method should include:

The actuarial value of assets should sometimes be greater than, and sometimes lesser than, the market value of assets. The method employed in the DERP valuation does produce asset values that are sometimes greater than, and sometimes less than the market value of assets.

The asset values fall within a sufficiently narrow range around the corresponding market values.

Development of Amortization Payment

Determination of UAAL Contribution Rate - The unfunded accrued liability as of January 1, 2018 is calculated as of the beginning of the fiscal year for which employer contributions are being calculated.

The unfunded accrued liability is amortized over the appropriate period to determine the amortization payment. This payment is divided by the projected fiscal year payroll to determine the amortization payment as a percentage of active member payroll.

Effective January 1, 2013, the funding policy for the development of the annual amortization payment was changed from 30-year open to a year-by-year 30-year closed. An amortization base will be established each year and each base will be paid off over 30 years, using annual payments determined as a level percentage of payroll. Each base and full payment schedule is shown in the Appendix.

GASB Statement Nos. 67 and 68 Valuation Cost Method

Actuarial Cost Method for the purposes of satisfying the requirements of GASB Statement Nos. 67 and 68 - Normal cost and the allocation of benefit values between service rendered before and after the valuation date were determined using an **Individual Entry-Age Actuarial Cost Method** having the following characteristics:

(i) the annual normal cost for each individual active member, payable from the date of employment to the date of retirement, is sufficient to accumulate the value of the member's benefit at the time of retirement;

(ii) each annual normal cost is a constant percentage of the member's year by year projected covered pay.

Actuarial gains/(losses), as they occur, reduce (increase) the Unfunded Actuarial Accrued Liability.

Valuation Assumptions

The actuarial assumptions used in the valuation were adopted by the Board effective May 18, 2018. The changes included updating the mortality, salary scale, retirement rates, disability, and withdrawal assumptions. For a detailed description of the experience related to these assumptions, as well as the rationale for any changes, please see our latest Denver Employees Retirement Plan Actuarial Experience Study Report. The experience study it covered the five-year investigation period ending December 31, 2017.

Changes to Actuarial Assumptions

The assumptions have been updated since the prior valuation based on an experience study as of January 1, 2018. This experience study was for the period from January 1, 2013 through December 31, 2017. Revised methods include changes to the salary scale, the mortality assumptions, retirement rates, termination rates, and disability rates.

GRS Retirement Consulting

Demographic Assumptions

Mortality rates were adjusted to include margin for future longevity improvement as described below.

Post-Retirement and Beneficiary Mortality Table: *This table shows the probability of dying after leaving employment either as a vested terminated member, a retiree or a beneficiary of a deceased member.*

A. Male: RP-2014 Combined Mortality Table for males projected with the Ultimate MP Scale with a multiplier of 110%

B. Female: RP-2014 Combined Mortality Table for females projected with the Ultimate MP Scale with a multiplier of 105%

	% Dying Within Next Year Non-Disabled	
Ages	**Men**	**Women**
50	0.40%	0.27%
55	0.59%	0.37%
60	0.83%	0.53%
65	1.17%	0.80%
70	1.74%	1.26%
75	2.78%	2.07%
80	4.64%	3.47%

Disabled Mortality Table: *This table shows the probability of dying at sample attained ages.*

A. Male: RP-2014 Disabled Life Mortality Table for males projected with the Ultimate MP Scale

B. Female: RP-2014 Disabled Life Mortality Table for females projected with the Ultimate MP Scale

	% Dying Within Next Year Disabled	
Ages	**Men**	**Women**
50	1.83%	1.12%
55	2.20%	1.42%
60	2.59%	1.66%
65	3.05%	1.98%
70	3.81%	2.63%
75	5.11%	3.86%
80	7.23%	5.80%

Active Mortality: *This table for active members shows the probability of dying before retirement or termination of employment. Fifteen percent of the deaths are assumed to be duty-related and 85% are assumed to be non-duty related.*

A. Male: RP-2014 Combined Mortality Table for males projected with the Ultimate MP Scale

B. Female: RP-2014 Combined Mortality Table for females projected with the Ultimate MP Scale

	% Dying Within Next Year Non-Disabled	
Ages	**Men**	**Women**
20	0.04%	0.02%
25	0.05%	0.02%
30	0.05%	0.02%
35	0.05%	0.03%
40	0.06%	0.04%
45	0.10%	0.06%
50	0.17%	0.11%

Rates of Disability: *Fifteen percent of the disabilities are assumed to be duty-related and 85% are assumed to be non-duty related.*

	% Becoming Disabled Within Next Year	
Ages	**Duty**	**Non-Duty**
20	0.00%	0.01%
25	0.00%	0.01%
30	0.00%	0.01%
35	0.00%	0.02%
40	0.01%	0.05%
45	0.01%	0.08%
50	0.03%	0.18%
55	0.04%	0.29%
60	0.07%	0.44%
65	0.10%	0.65%

Rates of Separation from Active Membership: Rates do not apply to members eligible to retire and do not include separation on account of death or disability. Inactive members are assumed to retire at the earliest eligible age. If an inactive member is not vested, the liability valued is equal to their employee contributions plus interest. Rates are not applied after the member is eligible for reduced or unreduced retirement benefits.

Non Hospital		
Years of Service	Select Period: % of Active Members Separating Within Next Year	
	Men	Women
1	18.00%	23.00%
2	15.00%	18.00%
3	14.00%	16.00%
4	11.00%	13.00%
5	10.00%	12.00%
6	9.00%	11.00%
7	8.00%	10.00%
8	8.00%	10.00%
9	7.00%	9.00%
10	6.00%	9.00%
11	5.00%	8.00%
12	5.00%	7.00%
13	5.00%	5.00%
14	5.00%	5.00%
15	4.00%	4.00%
16	4.00%	4.00%
17	3.00%	3.00%
18	3.00%	3.00%
19	3.00%	3.00%
20	3.00%	3.00%
21+	2.00%	2.00%

Hospital		
Ages	% of Active Members Separating Within Next	
	Men	Women
30	5.00%	5.00%
35	5.00%	5.00%
40	4.00%	4.00%
45	4.00%	4.00%
50	2.50%	2.50%
55	—%	—%
60	—%	—%
64	—%	—%

Rates of Retirement: *This table for active members shows the probability of eligible members retiring during the next year.*

Non Hospital			
	Percent of Eligible Active Members Retiring Within Next Year		
Ages	Early Retirement Hire Before July 1, 2011	Early Retirement Hire After July 1, 2011	Normal Retirement
55	2.50%	N/A	N/A
56	4.00%	N/A	N/A
57	4.00%	N/A	N/A
58	4.00%	N/A	N/A
59	4.00%	N/A	N/A
60	5.00%	2.50%	N/A
61	9.00%	4.50%	N/A
62	10.00%	5.00%	N/A
63	6.00%	3.00%	N/A
64	6.00%	3.00%	N/A
65	N/A	N/A	20.00%
66	N/A	N/A	18.00%
67	N/A	N/A	18.00%
68	N/A	N/A	18.00%
69	N/A	N/A	18.00%
70	N/A	N/A	25.00%
71	N/A	N/A	30.00%
72	N/A	N/A	100.00%

	Percent of Eligible Active Members Retiring Within Next Year
Ages	**Rule of 75 Retirement**
NAR*	25.00%
NAR+1	17.00%
NAR+2	17.00%
NAR+3	17.00%
NAR+4	17.00%
NAR+5	17.00%
NAR+6	27.00%
NAR+7	27.00%
NAR+8	27.00%
NAR+9	33.00%
NAR+10	33.00%

*NAR, Normal Age at Retirement, is defined as the first age at which a member is eligible to retire under the Rule of 75 with a minimum age of 55 (or Rule of 85 with a minimum age of 60 if hired after July 1, 2011) (Refer to Section G). After attainment of age 72 (age 75 for the Hospital group), or NAR +11, the retirement rate assumption is 100.00%.

Economic Assumptions

1. Investment Return Rate: 7.50% per annum, compounded annually, net of investment and administrative expenses.
2. Cost of Living Increases: 0.00% per annum
3. Inflation Rate: 2.50% per annum
4. Real Rate of Return: 5.00% per annum
5. The Rates of Salary Increase: *Assumed salary increases for active members are in accordance with the following table. This assumption is used to project a member's current salary to the salaries upon which benefits will be based.*

Non Hospital			
	% Increase in Salary for the Year		
Sample Service	Merit and Seniority	Base (Economic)*	Increase for the Year
1	7.00%	3.00%	10.00%
2	5.50%	3.00%	8.50%
3	3.50%	3.00%	6.50%
4	3.25%	3.00%	6.25%
5	3.00%	3.00%	6.00%
6	2.75%	3.00%	5.75%
7	2.50%	3.00%	5.50%
8	2.25%	3.00%	5.25%
9	2.00%	3.00%	5.00%
10	1.50%	3.00%	4.50%
11	1.50%	3.00%	4.50%
12	1.25%	3.00%	4.25%
13	1.25%	3.00%	4.25%
14	1.00%	3.00%	4.00%
15	0.75%	3.00%	3.75%
16	0.50%	3.00%	3.50%
17	0.50%	3.00%	3.50%
18	0.25%	3.00%	3.25%
19	0.25%	3.00%	3.25%
20	0.25%	3.00%	3.25%
21	0.00%	3.00%	3.00%

Hospital			
	% Increase in Salary for the Year		
Sample Ages	Merit and Seniority	Base (Economic)*	Increase for the Year
30	2.00%	3.00%	5.00%
35	0.75%	3.00%	3.75%
40	0.50%	3.00%	3.50%
45	0.00%	3.00%	3.00%
50	0.00%	3.00%	3.00%
55	0.00%	3.00%	3.00%
60	0.00%	3.00%	3.00%
65	0.00%	3.00%	3.00%

**Salary increases shown include wage inflation of 3.00% per annum.*

Miscellaneous and Technical Assumptions

Administrative & Investment Expenses	The investment return assumption is intended to be the return net of investment and administrative expenses.
Benefit Service	Exact fractional service is used to determine the amount of benefit payable.
COLA	None assumed.
Covered Payroll	Annual payroll projected forward with one year's assumed salary increase.
Death after termination but before Retirement (or Continuation)	A load of 0.7% (1.3% for members hired after July 1, 2011) is added to the vested terminated benefit to account for the benefit paid to the spouse if the participant dies before retirement.
Decrement Operation	All decrements other than withdrawal are in force during retirement eligibility.
Decrement Timing	Decrements of all types are assumed to occur mid-year.
Eligibility Testing	Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.
Incidence of Contributions	Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in this report, and the actual payroll payable at the time contributions are made.
Marriage Assumption	75% of males and 60% of females are assumed to be married for purposes of death-in-service benefits and 75% of males and 60% of females are assumed to be married for purposes of retiree medical benefits. Male spouses are assumed to be the same age as female spouses for active member valuation purposes.
Normal Form of Benefit	A straight life annuity is the normal form of benefit.
Pay Increase Timing	Beginning of year. This is equivalent to assuming that reported pays represent annualized rates of pay on the valuation date.
Service Credit Accruals	It is assumed that members accrue one year of service credit per year.
Split of Member and Employer Contributions	For the Schedule of Employer Contributions, the member and employer contributions are split between the pension and medical funds based on their respective ratios to the Total Computed Contribution Rate developed in the previous year's actuarial valuation.

Terminal Pay	For members hired prior to January 1, 2010, unused sick and vacation hours are converted into pay at retirement, death, disability or termination. That converted amount is included in the Final Average Compensation (FAC). The valuation accounts for this by assuming the FAC will be increased by 5.00% for active retirement benefits and increased by 2.25% for active ordinary death and termination benefits for members hired prior to January 1, 2010.
Retiree Medical Election Percentage	It is assumed that 85% of members who retire elect medical benefits, 30% of members who terminate elect medical benefits, 80% of beneficiaries elect medical benefits, and 80% of members who leave as disabled members elect retiree medical benefits.

Denver Employees Retirement Plan | Schedule 2

Analysis of Financial Experience

Composite Gain (Loss) for the Years Ending December 31, 2013 through 2017

Pension Benefits

Type of Activity:	2017	2016	2015	2014	2013
1. Retirement, Disability, Death, Withdrawal, Pay Increases, etc.	$ (10,454,200)	$ (8,924,900)	$ (12,616,600)	$ (27,660,900)	$ (1,477,800)
2. New Entrants	(3,711,800)	(3,714,300)	(2,768,100)	(2,376,500)	(2,101,900)
3. Investment Income	(11,792,983)	(43,288,228)	(55,770,203)	(19,188,065)	(9,038,647)
Gain (Loss)	(25,958,983)	(55,927,428)	(71,154,903)	(49,225,465)	(12,618,347)
Non-recurring Items:					
Changes in Actuarial Assumptions and Methods	(82,057,600)	(66,320,488)	—	(70,052,165)	—
Changes in Plan Provisions	—	—	—	(208,300)	(2,622,800)
Total Non-recurring Items	(82,057,600)	(66,320,488)	—	(70,260,465)	(2,622,800)
Composite Gain (Loss) During Year	$ (108,016,583)	$ (122,247,916)	$ (71,154,903)	$ (119,485,930)	$ (15,241,147)

Health Benefits

Type of Activity:	2017	2016	2015	2014	2013
1. Retirement, Disability, Death, Withdrawal, Pay Increases, etc.	$ (182,500)	$ 1,857,700	$ 905,900	$ 1,568,200	$ 781,300
2. New Entrants	(209,400)	(165,900)	(131,700)	(84,500)	(106,800)
3. Investment Income	(757,727)	(1,886,477)	(2,389,228)	(1,084,695)	(759,107)
Gain (Loss)	(1,149,627)	(194,677)	(1,615,028)	399,005	(84,607)
Non-recurring Items:					
Changes in Actuarial Assumptions and Methods	(4,937,600)	(3,449,169)	—	(3,350,257)	—
Changes in Plan Provisions	—	—	—	—	—
Total Non-recurring Items	(4,937,600)	(3,449,169)	—	(3,350,257)	—
Composite Gain (Loss) During Year	$ (6,087,227)	$ (3,643,846)	$ (1,615,028)	$ (2,951,252)	$ (84,607)

Denver Employees Retirement Plan | Schedule 3

Demographic History

Schedule of Retirees, Disableds and Beneficiaries

Valuation Date	Number Added Since Last Valuation Date	Allowances for Additional Retirees and Beneficiaries	Number Removed Since Last Valuation Date	Allowances for Retirees and Beneficiaries Removed	Number	Pension Benefit Amount	Average Annual Benefit	Percent Increase in Average Benefit
1/1/09	474	$ 9,536,489	215	$ 2,245,574	6,873	$109,243,231	$ 15,895	3.3%
1/1/10	733	17,229,892	183	1,847,244	7,423	124,695,435	16,799	5.7
1/1/11	410	7,484,590	227	2,827,899	7,606	130,319,793	17,134	2.0
1/1/12	457	9,392,512	287	2,922,903	7,776	138,317,723	17,788	3.8
1/1/13	540	11,227,434	271	2,973,325	8,045	146,837,873	18,252	2.6
1/1/14	658	15,872,322	221	3,126,984	8,482	159,503,726	18,805	3.0
1/1/15	597	13,833,209	264	4,026,993	8,815	169,735,929	19,255	2.4
1/1/16	560	12,947,276	301	3,846,224	9,074	179,304,283	19,760	2.6
1/1/17	558	13,549,263	330	4,951,335	9,302	188,483,949	20,263	2.5
1/1/18	610	15,814,329	268	3,358,163	9,644	201,456,870	20,889	3.1

Schedule of Active Members *

Valuation Date	Number	Annual Payroll	Average Annual Earnings	Percent Increase in Average Earnings
1/1/09	9,323	$ 564,986,660	$ 60,601	3.7%
1/1/10	8,604	506,045,186	58,815	(2.9)
1/1/11	8,403	517,398,105	61,573	4.7
1/1/12	8,149	517,396,257	63,492	3.1
1/1/13	8,175	531,559,017	65,023	2.4
1/1/14	8,304	540,229,189	65,057	0.1
1/1/15	8,489	568,562,500	66,976	3.0
1/1/16	8,636	586,819,180	67,950	1.5
1/1/17	8,981	623,098,077	69,380	2.1
1/1/18	9,094	646,777,231	71,121	2.5

*This schedule does not include participants in DROP and DROP II

Denver Employees Retirement Plan Schedule 4

Solvency Test
Pension Benefits

Valuation Date	Actuarial Accrued Liabilities (1) Retirees and Beneficiaries	(2) Terminated Vested Members	(3) Active Members		Valuation Assets	Portion of Accrued Liabilities Covered by Valuation Assets (1)	(2)	(3)
1/1/09	$ 1,135,549,357	$ 120,295,849	$ 840,041,890	(a)	$ 1,924,991,121	100%	100%	80%
1/1/10	1,290,661,062	123,892,229	761,689,445	(b)	1,923,560,713	100	100	67
1/1/11	1,341,928,443	129,821,083	813,006,592	(c)	1,942,871,295	100	100	58
1/1/12	1,412,766,986	154,615,776	819,147,309	(d)	1,946,844,159	100	100	46
1/1/13	1,520,343,891	156,404,385	916,442,060	(e)	1,980,204,173	100	100	33
1/1/14	1,639,107,535	154,017,183	905,875,408	(f)	2,062,322,953	100	100	30
1/1/15	1,765,776,526	173,010,460	954,881,366	(g)	2,132,024,635	100	100	20
1/1/16	1,853,396,257	185,528,934	964,664,618	(h)	2,168,754,097	100	100	13
1/1/17	1,974,521,460	202,992,252	997,126,763	(i)	2,207,267,926	100	100	3
1/1/18	2,143,380,730	211,339,032	1,003,501,920	(j)	2,272,598,617	100	61	—

(a) Includes DROP accounts of $96,801,380.
(b) Includes DROP accounts of $98,422,814.
(c) Includes DROP accounts of $98,884,382.
(d) Includes DROP accounts of $101,400,591.
(e) Includes DROP accounts of $105,677,036.
(f) Includes DROP accounts of $107,943,569.
(g) Includes DROP accounts of $110,654,947.
(h) Includes DROP accounts of $113,006,463.
(i) Includes DROP accounts of $116,492,681.
(j) Includes DROP accounts of $125,524,243.

A short-term solvency test is one means of checking a plan's progress under its funding program. In a short-term solvency test, a plan's assets are compared with the accrued liabilities of the plan. The liabilities are ranked, with (1) representing the liabilities of present retired lives, (2) terminated vested members liabilities, and (3), the liabilities for service already rendered by active members. For DERP pension benefits, the liabilities for the retired members are fully covered by the valuation assets. The liabilities for the terminated vested members is partially covered by the remainder of the valuation assets and the liabilities for service already rendered by active members are not covered by any valuation assets.

Health Benefits*

Valuation Date	Actuarial Accrued Liabilities (1) Retirees and Beneficiaries	(2) Terminated Vested Members	(3) Active Members	Valuation Assets	Portion of Accrued Liabilities Covered by Valuation Assets (1)	(2)	(3)
1/1/09	$ 87,168,030	$ 6,706,283	$ 40,126,245	$ 92,682,144	100%	82%	0%
1/1/10	98,068,689	6,768,999	36,804,834	90,414,800	92	0	0
1/1/11	94,937,728	7,310,323	40,864,423	87,609,491	92	0	0
1/1/12	94,007,699	8,530,269	40,428,959	84,679,890	90	0	0
1/1/13	95,955,842	8,393,768	44,536,708	82,992,647	86	0	0
1/1/14	98,236,724	8,277,021	43,268,329	82,736,993	84	0	0
1/1/15	100,367,730	8,614,343	43,940,208	82,194,505	82	0	0
1/1/16	101,392,643	8,845,835	43,016,068	80,383,172	79	0	0
1/1/17	103,309,786	9,289,069	43,502,852	78,722,647	76	0	0
1/1/18	108,444,284	9,245,539	44,569,780	77,858,073	72	0	0

* These liabilities represent solely the value of the explicit benefit, without regard to the implicit rate subsidy and therefore are not compliant with GASB #75.

A short-term solvency test is one means of checking a plan's progress under its funding program. In a short-term solvency test, a plan's assets are compared with the accrued liabilities of the plan. The liabilities are ranked, with (1) representing the liabilities of present retired lives, (2) terminated vested members liabilities, and (3), the liabilities for service already rendered by active members. For DERP health benefits, the liabilities for the retired members is partially covered by the valuation assets, and the liabilities for terminated vested members and for service already rendered by active members is not covered by any valuation assets.

GRS Retirement Consulting

Plan Provisions

A. Ordinances	Amended and Restated under Denver Municipal Code Section 18-391 through 18-430.7. Most recently amended under Ordinance No. 15-0591, adopted October 2017.
B. Effective Date	January 1, 1963
C. Plan Year	January 1 through December 31
D. Type of Plan	Qualified, 401(a) governmental defined benefit retirement plan; for GASB purposes it is a multi-employer cost sharing plan.
E. Eligibility Requirements	Elected Officials, Appointed Officials, and Employees as defined in Denver Municipal Code Sections 18-402 and 18-406.
F. Credited Service	Service measured in completed calendar months from date of employment to date of retirement or prior termination.
G. Compensation	*Gross pay, compensation and salary* shall mean that amount of remuneration, including wages, salaries, other amounts received for personal services actually rendered in the course of employment with the employer, and other amounts actually included or that could be included in gross income of and due to an employee, including employees on disability leave as provided for in division 4 of article V of chapter 18 of the Denver Municipal Code, or otherwise, from the employer in the full amount as calculated before any reductions or deductions are made for any purpose, including reductions or deductions by reason of sections 125, 132(f)(4) or 457 of the Internal Revenue Code, but not including distributions made from a plan of the employer designed to be eligible under section 457. Employer provided fringe benefits receiving special tax benefits, such as premiums for group term life insurance (to the extent excludible from gross income), shall be excluded from the definition of compensation. The calendar year shall be the limitation year (determination period) for purposes of section 415 of the Internal Revenue Code.
H. Final Average Compensation (FAC)	Average monthly rate of compensation during the highest 36 (60 for members hired on or after July 1, 2011) successive calendar months of covered service.
I. Normal Retirement	1. Eligibility: For employees hired prior to July 1, 2011, attainment of age 65, or attainment of age 55 with age plus credited service equal to 75. For Employees hired July 1, 2011 or after, attainment of age 65 with 5 years of service, or attainment of age 60 with age plus credited service equal to 85. 2. Benefit: 1.5% (2.0% if hired before September 1, 2004) of FAC times credited service. 3. Normal Form: straight life annuity.

J. Early Retirement

1. Eligibility: Attainment of age 55 (60 for members hired on or after July 1, 2011) and completion of 5 years.
2. Benefit: Benefit accrued to date of retirement, reduced by 3% (6% for members hired on or after July 1, 2011) per year from age 65 to reflect commencement of benefit at an earlier age.

K. Temporary Early Retirement

Pending approval of a disability application, a retirement benefit is available to an active, vested member who is at least age 55 or age 60, if hired on or after July 1, 2011. This benefit is designed to provide income to the member during the process of fulfilling the disability application requirements. There is a three year limit on this retirement benefit.

L. Deferred Retirement

1. Eligibility: Any vested employee who terminates service for any reason other than retirement, disability, or death and leaves their accumulated contributions on deposit in the trust fund.
2. Benefit: Based on the formula in effect at the time of separation from service. Payment may commence any month after the member's 55th birthday, if hired prior to July 1, 2011, or after the member's 60th birthday, if hired July 1, 2011 or later.

M. Service Connected Disability

1. Eligibility: Any employee who becomes totally and permanently disabled as defined in Denver Municipal Code Section 18-408(d) which arises out of and in the course of the member's employment with the employer.
2. Benefit: Based on the greater of 20 years of service or actual service plus 10 years. Total credited service cannot exceed the credited service the member would have earned at age 65.
3. Normal Form: straight life annuity.

N. Non-Service Connected Disability

1. Eligibility: Any vested employee who becomes totally and permanently disabled as defined in Denver Municipal Code Section 18-408(e) which does not occur as a result of a service connected disability.
2. Benefit: The higher of 75% of the amount calculated for a service-connected disability or the amount calculated for an early retirement.
3. Normal Form: straight life annuity.

O. Death in the Line of Duty

The active member's surviving spouse is awarded the retirement benefit the member would have been entitled at their normal retirement date based on the higher of 15 years of service or actual credited service plus 5 years. Total credited service cannot exceed the credited service the member would have earned at age 65. If there is no surviving spouse but the member has children under age 21, then the benefit shall be paid until the youngest child becomes age 21. If there is no surviving spouse and no children under age 21, then the benefit shall be paid to a designated beneficiary.

P. Other Pre-Retirement Death

The active member's surviving spouse is awarded 75% of the benefit that would have been entitled had the death been service connected. If an active member who has attained the age of fifty-five (55) or the age of sixty (60) if hired on or after July 1, 2011 dies prior to the actual retirement date, the member shall be deemed to have retired on the first day of the month following the month in which death occurs and the surviving spouse will receive an annuity as if the member had elected the 100% joint and survivor option if this will result in a greater benefit to the spouse than the above provision.

Q. Post-Retirement Death

1. For Normal Retirement (with at least 5 years of service), Disability Retirement (after age 65), and for Temporary Early Retirement (pending approval of disability) the lump-sum death benefit is $5,000.
2. For Disability Retirement before age 65, the death benefit is 150% of the member's annualized average monthly salary, limited to $50,000. This benefit reduces to $5,000 upon the disabled member reaching age 65.
3. If hired prior to July 1, 2011, for Early Retirement the lump-sum at age: 64 is $4,750; 63 is $4,500; 62 is $4,250; 61 is $4,000; 60 is $3,750; 59 is $3,500; 58 is $3,250; 57 is $3,000; 56 is $2,750; 55 is $2,500.
4. If hired on or after July 1, 2011, for Early Retirement the lump-sum at age: 64 is $4,500; 63 is $4,000; 62 is $3,500; 61 is $3,000; 60 is $2,500.

R. Optional Forms

Joint and Survivor Option - Any employee retiring under the normal retirement provision may elect a joint and survivor benefit. The member's benefit is actuarially reduced based on their election: 100%, 75%, or 50%. Once the benefit commences this election cannot be changed. If the spouse or designated beneficiary predeceases the member, the benefit paid to the member shall be increased to the full single straight life annuity as if no joint and survivor benefit had been selected.

S. Medical Benefits

Retiree Medical Plan Benefits – Participants and their surviving spouses or dependents receiving retirement benefits are eligible to elect to receive Plan-provided retiree medical coverage and a Plan-provided subsidy (benefit) to help provide for the payment of health insurance premiums. The Plan contributes $6.25 per month for each year of service for members who are Medicare eligible. The Plan contributes $12.50 per month for each year of service for members not eligible for Medicare. In the event of the election of a Joint and Survivor option, the benefit is calculated based on the age of the member. If the member predeceases the joint and survivor beneficiary then the full benefit is transferred to the surviving spouse or dependent regardless of the joint and survivor election percentage. The monthly benefit is limited to the monthly premium amount for the coverage elected. If a member dies and leaves a beneficiary who is not a spouse or dependent, that beneficiary can elect to participate in the group health Plan, but must pay the full cost. No Plan contribution can be made for non-spouse or non-dependent beneficiaries.

T. Refunds

1. Eligibility: All members leaving covered employment with less than 5 years of service are eligible. Vested members (those with 5 or more years of service) may not withdraw their accumulated contributions plus interest in lieu of the deferred benefits otherwise due.
2. Benefit: The member who withdraws receives a lump-sum payment of his/her employee contributions, plus the interest credited on these contributions. Interest is credited at 1.00%.

U. Member Contributions

8.00% of compensation, effective January 1, 2015.

V. Employer Contributions

12.50% of compensation, effective January 1, 2018 for each member.

W. Cost of Living Increases

Given on an ad-hoc basis. There have been no cost of living increases since 2002.

X. Changes from Previous Valuation

There have been no changes in the Plan provisions since the previous actuarial valuation, except for those specified herein.

Y. Deferred Retirement Option Plan

1. DROP – From January 1, 2001 through April 30, 2003, in lieu of immediate termination of employment and receipt of a normal retirement benefit, eligible members were permitted to continue employment for four years and have their normal retirement benefit paid into the deferred retirement option plan (DROP) account, after which time the participant either terminated employment or continued to be employed and resume regular membership with the retirement Plan.
2. DROP II – From May 1, 2003 through September 1, 2003, in lieu of immediate termination of employment and receipt of a normal retirement benefit, eligible members were permitted to continue employment for five years and have their normal retirement benefit paid into the DROP II account after which time all participants terminated employment.

Z. Other Ancillary Benefits

Social Security Make-Up Benefit – For members hired before July 1, 2011 and retiring on or after January 1, 1996, an additional retirement benefit equal to the applicable percentage (per Denver Municipal Code Section 18-409(i)) of the member's estimated primary Social Security benefit multiplied by credited service with the City/DHHA during which the contributions were made to Social Security (up to a maximum of 35 years of credited service) divided by 35. This additional benefit is payable beginning on the first day of the month after the member's 62nd birthday or the member's retirement date, whichever is later, but will not be paid before retirement benefits have begun from the Plan. Members retiring under a disability form of retirement are not eligible for this benefit.

Schedule of Funding Progress

Pension Benefits
(in millions)

Valuation Date January 1	Actuarial Value of Assets	Actuarial Accrued Liability (AAL)	Unfunded AAL (UAAL) [(3)-(2)]	Funded Ratio [(2)/(3)]	Covered Payroll	UAAL as a Percentage of Covered Payroll [(4)/(6)]
(1)	(2)	(3)	(4)	(5)	(6)	(7)
2009	$ 1,924.99	$ 2,095.89	$ 170.90	91.85%	$ 564.99	30.25%
2010	1,923.56	2,176.24	252.68	88.39%	506.05	49.93%
2011	1,942.87	2,284.76	341.89	85.04%	517.40	66.08%
2012	1,946.84	2,386.53	439.69	81.58%	517.40	84.98%
2013	1,980.20	2,593.19	612.99	76.36%	531.56	115.32%
2014	2,062.32	2,699.00	636.68	76.41%	540.23	117.85%
2015	2,132.02	2,893.67	761.65	73.68%	568.56	133.96%
2016	2,168.75	3,003.59	834.84	72.21%	586.82	142.27%
2017	2,207.27	3,174.64	967.37	69.53%	623.10	155.25%
2018	2,272.60	3,358.22	1,085.62	67.67%	646.78	167.85%

Health Benefits*
(in millions)

Valuation Date January 1	Actuarial Value of Assets	Actuarial Accrued Liability (AAL)	Unfunded AAL (UAAL) [(3)-(2)]	Funded Ratio [(2)/(3)]	Covered Payroll	UAAL as a Percentage of Covered Payroll [(4)/(6)]
(1)	(2)	(3)	(4)	(5)	(6)	(7)
2009	$ 92.68	$ 134.00	$ 41.32	69.16%	$ 564.99	7.31%
2010	90.41	141.64	51.23	63.83%	506.05	10.12%
2011	87.61	143.11	55.50	61.22%	517.40	10.73%
2012	84.68	142.97	58.29	59.23%	517.40	11.27%
2013	82.99	148.89	65.90	55.74%	531.56	12.40%
2014	82.74	149.78	67.04	55.24%	540.23	12.41%
2015	82.19	152.92	70.73	53.75%	568.56	12.44%
2016	80.38	153.25	72.87	52.45%	586.82	12.42%
2017	78.72	156.10	77.38	50.43%	623.10	12.42%
2018	77.86	162.26	84.40	47.98%	646.78	13.05%

*These liabilities represent solely the value of the explicit benefit, without regard to the implicit rate subsidy. The explicit benefit is valued in compliance with all the parameters established by GASB Statements No. 43 and No. 45. The value of any implicit rate subsidy in the city-sponsored health plans will be illustrated in the separate disclosures related to those plans.

Pension Plan
Schedule of Employer Contributions

Year Beginning January 1:	Annual Required Contribution (ARC) % of Payroll[10]	Annual Required Contribution (ARC) Amount[9]	Contribution * % of Payroll[10]	Contribution * Amount[1]	Percentage of ARC Contributed [(5)/(3)]
(1)	(2)	(3)	(4)	(5)	(6)
2009	9.63%	$ 54,392,610	7.63%	$ 43,127,064	79.29%
2010	9.68%	48,995,846	8.34%	42,228,203	86.19%
2011	10.05%	52,000,472	8.83%	45,703,351	87.89%
2012	10.83%	56,054,792	9.62%	49,756,639	88.76%
2013	10.42%	55,397,564	10.62%	56,427,308	101.86%
2014	10.34%	55,871,677	11.10%	59,941,041	107.28%
2015	10.52%	59,811,786	11.83%	67,234,597	112.41%
2016	10.83%	66,135,502	12.10%	68,794,871	104.02%
2017	11.85%	76,859,156	11.51%	71,731,309	93.33%
2018	12.80%	82,818,225	N/A	N/A	N/A

1. Employers made contributions based on the legally required rates.
2. Beginning on January 1, 2010, the employers and employees contributed 8.50% and 4.50%, respectively.
3. Beginning on January 1, 2011, the employers and employees contributed 9.50% and 5.50%, respectively.
4. Beginning on January 1, 2012, the employers and employees contributed 10.25% and 6.25%, respectively.
5. Beginning on January 1, 2013, the employers and employees contributed 11.00% and 7.00%, respectively and amortization method changed from level dollar 30-year open to level percent of pay 30-year closed bases.
6. Beginning on January 1, 2014, the employers and employees contribution are 11.20% and 7.30%, respectively.
7. Beginning on January 1, 2015, the employers and employees contributions are 11.50% and 8.00%, respectively.
8. Beginning on January 1, 2018, the employers and employees contributions are 12.50% and 8.00%, respectively.
9. Includes DHHA Supplement for 2016 and after for the Pension Plan, and for 2017 and after for the Retiree Medical Plan
10. Estimated Payroll

Retiree Medical Plan
Schedule of Employer Contributions*

Year Beginning January 1:	Annual Required Contribution (ARC) % of Payroll[10]	Annual Required Contribution (ARC) Amount[9]	Contribution * % of Payroll[10]	Contribution * Amount[1]	Percentage of ARC Contributed [(5)/(3)]
(1)	(2)	(3)	(4)	(5)	(6)
2009	0.91%	$ 5,156,984	0.81%	$ 4,551,097	88.25%
2010	0.85%	4,290,712	0.58%	2,924,858	68.17%
2011	0.96%	4,965,060	0.81%	4,202,033	84.63%
2012	1.00%	5,153,185	0.82%	4,241,292	82.30%
2013	0.89%	4,721,761	0.78%	4,135,064	87.57%
2014	0.76%	4,093,763	0.80%	4,332,376	105.83%
2015	0.76%	4,322,064	0.77%	4,380,107	101.34%
2016	0.72%	4,253,678	0.77%	4,364,140	102.60%
2017	0.77%	4,837,383	0.70%	4,367,474	90.29%
2018	0.81%	5,208,156	N/A	N/A	N/A

*These liabilities represent solely the value of the explicit benefit, without regard to the implicit rate subsidy. The value of any implicit rate subsidy in the city-sponsored health plans will be illustrated in the disclosures related to those plans.

1. Employers made contributions based on the legally required rates.
2. Beginning on January 1, 2010, the employers and employees contributed 8.50% and 4.50%, respectively.
3. Beginning on January 1, 2011, the employers and employees contributed 9.50% and 5.50%, respectively.
4. Beginning on January 1, 2012, the employers and employees contributed 10.25% and 6.25%, respectively.
5. Beginning on January 1, 2013, the employers and employees contributed 11.00% and 7.00%, respectively and amortization method changed from level dollar 30-year open to level percent of pay 30-year closed bases.
6. Beginning on January 1, 2014, the employers and employees contribution are 11.20% and 7.30%, respectively.
7. Beginning on January 1, 2015, the employers and employees contributions are 11.50% and 8.00%, respectively.
8. Beginning on January 1, 2018, the employers and employees contributions are 12.50% and 8.00%, respectively.
9. Includes DHHA Supplement for 2016 and after for the Pension Plan, and for 2017 and after for the Retiree Medical Plan
10. Estimated Payroll

Statistical Section

This section of the Plan's comprehensive annual financial report presents detailed information to assist the reader in understanding what the information in the financial statements, note disclosures, and required supplementary information indicate about the Plan's overall financial status.

Changes in Fiduciary Net Position

Last Ten Fiscal Years

	2009	2010	2011	2012
Pension Benefits				
Additions:				
Member contributions	$ 12,849,520 [2]	$ 21,139,754 [3]	$ 26,110,772 [4]	$ 30,663,247 [5]
Employer contributions	43,127,064	42,228,203	45,703,351	49,756,639
Investment earnings (net of expenses)	198,018,642	217,566,113	(2,396,020)	205,809,820
Total additions to fiduciary net position	253,995,226	280,934,070	69,418,103	286,229,706
Deductions:				
Benefit payments	121,191,856	137,392,322	142,108,250	149,470,854
Refunds	430,252	666,009	948,969	947,756
Administrative expenses	2,558,311	2,555,677	2,883,909	3,334,741
Total deductions from fiduciary net position	124,180,419	140,614,008	145,941,128	153,753,351
Change in fiduciary net position	$ 129,814,807	$ 140,320,062	$ (76,523,025)	$ 132,476,355
Health Benefits				
Additions:				
Member contributions	$ 1,291,670	$ 1,950,508	$ 2,329,357	$ 2,492,678
Employer contributions	4,551,097	2,924,858	4,202,033	4,241,292
Investment earnings (net of expenses)	9,252,242	9,714,426	(42,792)	8,635,748
Total additions to fiduciary net position	15,095,009	14,589,792	6,488,598	15,369,718
Deductions:				
Benefit payments	11,003,408	11,708,006	12,471,835	12,446,444
Refunds	20,304	30,120	41,255	39,653
Administrative expenses	120,955	115,362	125,390	139,510
Total deductions from fiduciary net position	11,144,667	11,853,488	12,638,480	12,625,607
Change in fiduciary net position	$ 3,950,342	$ 2,736,304	$ (6,149,882)	$ 2,744,111

[1] Employer and employee contributions are made in accordance with rates set by City ordinance. The contribution rate has been actuarially determined by an independent actuary to be sufficient to accumulate assets necessary to pay the actuarial liability when due.

[2] Effective January 1, 2005, the employer and employee contributions increased to 8.5% and 2.5%, respectively.

[3] Effective January 1, 2010, the employee contribution increased to 4.5%.

[4] Effective January 1, 2011, the employer and employee contributions increased to 9.5% and 5.5%, respectively.

[5] Effective January 1, 2012, the employer and employee contributions increased to 10.25% and 6.25%, respectively.

[6] Effective January 1, 2013, the employer and employee contributions increased to 11.00% and 7.00%, respectively.

[7] Effective January 1, 2014, the employer and employee contributions increased to 11.20% and 7.30%, respectively.

[8] Effective January 1, 2015, the employer and employee contributions increased to 11.50% and 8.00%, respectively.

[9] Effective January 1, 2018, the employer and employee contributions increased to 12.50% and 8.00%, respectively.

2013	2014	2015	2016	2017	2018
$ 37,138,512 (6)	$ 39,521,451 (7)	$ 46,689,696 (8)	$ 48,037,800	$ 50,599,952	$ 52,700,679 (9)
56,427,308	59,941,041	67,234,597	68,794,871	71,731,309	81,719,744
318,274,197	101,595,703	(35,746,029)	147,443,477	302,942,063	(73,146,389)
411,840,017	201,058,195	78,178,264	264,276,148	425,273,324	61,274,034
158,285,769	171,178,475	181,827,975	191,790,600	204,064,502	215,658,138
1,051,298	1,507,554	2,164,104	2,751,016	3,547,888	4,348,592
3,597,603	3,638,296	3,785,416	3,742,451	3,899,901	4,016,288
162,934,670	176,324,325	187,777,495	198,284,067	211,512,291	224,023,018
$ 248,905,347	$ 24,733,870	$ (109,599,231)	$ 65,992,081	$ 213,761,033	$ (162,748,984)
$ 2,543,374	$ 2,725,316	$ 3,026,103	$ 3,012,052	$ 3,005,989	$ 3,132,783
4,135,064	4,332,376	4,380,107	4,364,140	4,367,474	4,952,754
12,911,917	3,966,864	(1,308,528)	5,225,319	10,422,137	(2,364,015)
19,590,355	11,024,556	6,097,682	12,601,511	17,795,600	5,721,522
12,582,751	12,846,786	12,905,247	12,859,361	13,049,162	12,905,976
42,505	58,314	80,925	98,273	121,860	144,189
145,169	140,710	141,296	133,511	133,959	133,128
12,770,425	13,045,810	13,127,468	13,091,145	13,304,981	13,183,293
$ 6,819,930	$ (2,021,254)	$ (7,029,786)	$ (489,634)	$ 4,490,619	$ (7,461,771)

Schedule of Benefit Expenses by Type

Last Ten Fiscal Years

	2009	2010	2011	2012
Age and Service Benefits:				
Retirees	$100,395,696	$114,044,816	$119,878,934	$127,091,564
Survivor	$5,050,283	$5,415,206	$5,879,654	$6,126,099
Death in Service Benefits	$3,347,207	$3,636,127	$3,659,245	$3,736,130
Disability Benefits:				
Retirees:				
On-the-Job	$646,932	$769,792	$818,527	$869,781
Off-the-Job	$3,377,520	$3,712,434	$3,888,218	$3,854,524
Survivors	$1,071,358	$1,124,708	$1,122,643	$1,238,793
Lump Sum Death Benefits	$1,310,065	$1,376,342	$1,508,915	$1,315,428
Pension Benefits' Contribution Refunds				
Separation	$261,010	$591,480	$911,074	$941,408
Death	$169,242	$74,529	$37,895	$6,348
Health Benefits' Contribution Refunds				
Separation	$12,317	$26,749	$39,608	$39,387
Death	$7,987	$3,371	$1,647	$266
DROP Benefits	$5,992,795	$7,312,897	$5,352,114	$5,238,535
Pension Benefits	$115,199,061	$130,079,425	$136,756,136	$144,232,319
Health Benefits	$11,003,408	$11,708,006	$12,471,835	$12,446,444

2013	2014	2015	2016	2017	2018
$135,648,423	$146,505,901	$156,519,225	$165,246,685	$175,893,605	$185,677,299
$6,619,661	$7,274,571	$7,755,324	$8,482,372	$9,001,245	$9,413,449
$3,781,917	$3,965,980	$4,054,992	$4,135,128	$4,248,073	$4,320,956
$826,071	$844,509	$879,295	$917,075	$913,151	$1,003,139
$3,940,566	$4,018,848	$3,977,212	$4,122,190	$4,019,183	$3,936,770
$1,309,114	$1,433,661	$1,535,422	$1,569,064	$1,615,969	$1,698,309
$1,350,159	$1,415,762	$1,324,545	$1,615,976	$1,561,969	$1,466,130
$1,051,298	$1,507,554	$2,162,575	$2,671,771	$3,434,692	$4,226,993
$0	$0	$1,529	$2,616	$17,882	$3,892
$42,505	$58,314	$80,868	$174,731	$216,049	$261,655
$0	$0	$57	$171	$1,125	$241
$4,809,858	$5,719,243	$5,781,960	$5,702,111	$6,811,306	$8,142,084
$153,475,911	$165,459,232	$176,046,015	$186,088,490	$197,253,196	$207,516,054
$12,582,751	$12,846,786	$12,905,247	$12,859,360	$13,049,162	$12,905,976

Schedule of Retired Members by Type of Benefit - Pension
December 31, 2018

Amount of Monthly Benefit	Number of Retirees	Type of Retirement*							Option Selected**			
		1	2	3	4	5	6	7	1	2	3	4
$1- 50	74	70	4	—	—	—	—	—	73	—	1	—
51- 100	101	71	11	—	—	5	14	—	71	23	3	4
101- 150	224	169	23	1	—	9	22	—	123	83	6	12
151- 200	272	206	26	—	—	13	24	3	153	90	7	22
201- 250	300	222	41	—	—	15	22	—	170	98	11	21
251- 300	296	205	39	—	2	20	28	2	169	102	6	19
301- 350	288	187	38	—	3	27	27	6	167	84	13	24
351- 400	239	161	34	1	8	16	16	3	138	74	11	16
401- 450	228	153	35	—	6	16	14	4	130	63	9	26
451- 500	236	144	35	1	10	19	23	4	132	72	13	19
501- 600	448	244	93	2	21	24	48	16	241	131	26	50
601- 700	366	217	54	1	20	21	41	12	195	104	24	43
701- 800	340	195	50	2	24	15	42	12	164	111	27	38
801- 900	298	183	41	2	13	17	34	8	144	92	20	42
901- 1,000	296	203	24	3	20	11	25	10	152	84	23	37
1,001-1,100	310	201	32	2	13	12	39	11	148	92	29	41
1,101-1,200	303	207	23	1	14	11	33	14	144	96	26	37
1,201-1,300	287	200	17	3	9	13	38	7	140	75	28	44
1,301-1,400	254	194	10	3	10	4	26	7	132	65	26	31
1,401-1,500	256	191	12	1	15	12	23	2	144	58	20	34
1,501-1,600	257	209	9	3	8	9	19	—	145	61	28	23
1,601-1,700	225	182	4	2	9	10	15	3	128	46	21	30
1,701-1,800	210	166	3	—	11	11	17	2	118	43	19	30
1,801-1,900	239	216	3	1	7	4	8	—	126	48	28	37
1,901-2,000	205	181	3	—	5	5	8	3	98	51	18	38
2,001-2,500	898	793	9	4	20	20	44	8	442	246	83	127
2,501-3,000	731	680	4	5	8	6	27	1	341	185	69	136
3,001-3,500	553	519	—	5	5	7	15	2	235	152	61	105
3,501-4,000	346	330	2	—	3	3	8	—	145	103	35	63
4,001-4,500	250	239	1	—	2	4	4	—	112	60	15	63
4,501-5,000	182	176	1	—	—	1	4	—	90	49	17	26
5,001-5,500	116	114	—	1	—	1	—	—	40	37	15	24
5,501-6,000	84	79	—	—	—	2	3	—	33	32	6	13
6,001-6,500	50	50	—	—	—	—	—	—	28	13	2	7
6,501-7,000	50	47	—	—	1	1	1	—	16	22	2	10
7,001-7,500	37	37	—	—	—	—	—	—	13	9	5	10
7,501-8,000	21	18	—	—	—	—	3	—	8	7	2	4
8,001-8,500	17	17	—	—	—	—	—	—	5	6	2	4
$8,501- over	58	49	—	1	1	2	3	2	18	22	7	11
Totals	9,945	7,725	681	45	268	366	718	142	5,071	2,789	764	1,321

* Type of Retirement:
1. Normal Retirement for Age and Service
2. Early Retirement
3. Disability – On-the-Job
4. Disability – Off-the-Job
5. Survivor Payment – Death in Service
6. Survivor Payment – Normal or Early Retirement
7. Survivor Payment – Disability Retirement

**Option Selected:
1. Life
2. 100% Joint and Survivor
3. 75% Joint and Survivor
4. 50% Joint and Survivor

Schedule of Retired Members by Type of Benefit - Health Insurance Reduction
December 31, 2018

[1] Non Medicare-eligible		[2] Medicare-eligible	
Amount of Reduction Eligible to Receive	**Number of Retirees**	**Amount of Reduction Eligible to Receive**	**Number of Retirees**
$12.50 - 50.00	93	$6.25 - 50.00	568
51.00 - 100.00	284	51.00 - 100.00	1,275
101.00 - 150.00	282	101.00 - 150.00	1,265
151.00 - 200.00	209	151.00 - 200.00	1,089
201.00 - 250.00	209	201.00 - 250.00	417
251.00 - 300.00	247	251.00 - 300.00	79
301.00 - 350.00	227	301.00 - 350.00	40
351.00 - 400.00	234	351.00 - 400.00	33
401.00 - 450.00	189	401.00 - 450.00	14
451.00 - 500.00	45	451.00 - 500.00	4
501.00 - 550.00	4	501.00 - 550.00	1
551.00 - 600.00	2	551.00 - 600.00	0
601.00 - 650.00	4	601.00 - 650.00	0
651.00 - 700.00	2	651.00 - 700.00	0
701.00 - 750.00	1	701.00 - 750.00	2
751.00 - 800.00	2	751.00 - 800.00	1
$801.00 - over	1	$801.00 - over	0
Total	2,035	Total	4,788

Type of Benefit:

[1] Participants who are not Medicare-eligible are eligible for health/dental insurance premium reduction equal to $12.50 per month for each year of service.

[2] Participants who are Medicare-eligible are eligible for health/dental insurance premium reduction equal to $6.25 per month for each year of service.

Note: In some instances, the years of service of spouses may have been combined when determining the amount of benefit.

Schedule of Retired Members by Attained Age and Type of Pension Benefit
December 31, 2018

Age	Number of Retirees/ Beneficiary	Type of Retirement*						
		1	2	3	4	5	6	7
0-24	38	0	0	0	6	25	5	2
25-29	14	0	0	0	0	2	4	8
30-34	9	0	0	0	0	5	2	2
35-39	23	0	0	0	0	13	6	4
40-44	19	0	0	0	0	10	5	4
45-49	41	0	0	0	10	16	9	6
50-54	70	5	0	0	16	28	16	5
55-59	1066	910	50	5	33	36	27	5
60-64	1711	1422	88	5	63	60	58	15
65-69	2312	1949	125	19	57	60	80	22
70-74	1895	1530	147	4	45	46	103	20
75-79	1145	848	113	4	20	21	111	28
80-84	747	506	74	4	11	22	118	12
85-89	495	347	32	3	4	10	95	4
90-94	258	153	33	1	2	5	60	4
95 and up	102	55	19	0	1	7	19	1
Totals	9945	7725	681	45	268	366	718	142

*Type of Retirement:
1. Normal Retirement for Age and Service
2. Early Retirement
3. Disability – On-the-Job
4. Disability – Off-the-Job
5. Survivor Payment – Death in Service
6. Survivor Payment – Normal or Early Retirement
7. Survivor Payment – Disability Retirement

Average Monthly Benefit Payment – Pension
Last Ten Fiscal Years

Retirement Effective Date for the Years Ended December 31:	Years of Credited Service							
	0-5	6-10	11-15	16-20	21-25	26-30	31+	Total
2009								
Average Monthly Benefit	$170.48	$371.43	$861.17	$1,646.28	$2,171.89	$2,631.60	$3,380.10	$1,960.51
Mean Final Average Monthly Salary	$3,651.81	$3,179.39	$4,348.20	$5,337.72	$5,432.91	$5,123.81	$5,359.29	$4,883.90
Number of Retirees	5	93	77	114	126	73	142	630
2010								
Average Monthly Benefit	$211.53	$369.70	$979.86	$1,527.63	$2,163.74	$2,606.62	$3,138.77	$1,569.19
Mean Final Average Monthly Salary	$3,293.07	$3,738.27	$5,649.60	$5,459.85	$5,761.51	$5,114.12	$5,862.78	$5,152.88
Number of Retirees	5	72	63	74	40	33	48	335
2011								
Average Monthly Benefit	$296.19	$500.13	$1,078.70	$1,848.95	$2,506.49	$3,229.10	$3,896.81	$1,908.05
Mean Final Average Monthly Salary	$4,168.30	$4,069.33	$5,078.96	$5,671.69	$6,024.76	$5,987.34	$5,877.89	$5,268.32
Number of Retirees	40	74	66	90	44	43	55	412
2012								
Average Monthly Benefit	$547.95	$447.11	$1,083.12	$1,871.72	$2,482.05	$3,215.24	$4,364.42	$2,001.66
Mean Final Average Monthly Salary	$6,647.48	$3,884.74	$5,068.86	$5,761.95	$5,797.04	$6,102.37	$6,753.19	$5,716.52
Number of Retirees	34	101	104	78	61	37	52	467
2013								
Average Monthly Benefit	$291.11	$407.63	$1,091.12	$1,943.89	$2,882.70	$3,867.46	$4,470.81	$2,136.39
Mean Final Average Monthly Salary	$4,208.28	$3,809.74	$4,983.96	$5,834.63	$6,815.54	$7,356.09	$6,845.95	$5,693.45
Number of Retirees	29	91	87	103	85	55	63	513
2014								
Average Monthly Benefit	$236.76	$457.19	$1,130.46	$2,076.25	$3,135.95	$3,815.05	$4,512.90	$2,194.94
Mean Final Average Monthly Salary	$3,461.08	$4,024.75	$5,225.31	$6,393.35	$6,795.95	$7,206.76	$6,749.41	$5,693.80
Number of Retirees	36	126	79	92	72	54	55	514
2015								
Average Monthly Benefit	$321.79	$535.69	$1,172.21	$2,366.45	$2,919.18	$3,513.48	$4,821.40	$2,235.74
Mean Final Average Monthly Salary	$4,214.31	$4,311.94	$5,332.13	$6,817.83	$6,363.86	$6,703.53	$7,400.13	$5,877.68
Number of Retirees	24	96	100	79	80	63	57	499
2016								
Average Monthly Benefit	$266.14	$507.61	$937.86	$2,092.13	$3,076.03	$3,923.10	$4,913.50	$2,245.20
Mean Final Average Monthly Salary	$3,592.82	$4,238.98	$4,429.35	$6,410.25	$6,517.95	$7,019.04	$7,287.40	$5,642.26
Number of Retirees	33	81	66	93	87	58	41	459
2017								
Average Monthly Benefit	$307.87	$614.46	$970.75	$2,185.44	$3,034.32	$3,940.37	$5,282.81	$2,333.72
Mean Final Average Monthly Salary	$4,056.40	$4,695.63	$4,610.13	$6,591.06	$6,936.58	$7,615.46	$8,152.56	$6,093.97
Number of Retirees	29	100	71	106	81	64	80	531
2018								
Average Monthly Benefit	$303.61	$571.19	$1,171.03	$2,088.90	$2,972.35	$4,651.16	$4,937.44	$2,385.10
Mean Final Average Monthly Salary	$4,031.18	$4,366.05	$5,876.33	$6,159.74	$6,597.69	$8,893.55	$7,809.30	$6,247.69
Number of Retirees	35	101	67	82	69	66	61	481

Average Monthly Benefit Payment – Health Insurance Reduction

Last Ten Fiscal Years

As of December 31:	Years of Credited Service							
	1-5	6-10	11-15	16-20	21-25	26-30	31+	Total
2009								
Total Eligible Reduction Amount	$3,313	$35,381	$75,444	$154,194	$213,188	$256,800	$375,813	$1,114,133
Average Monthly Benefit Paid	$36.40	$72.50	$110.78	$165.44	$209.01	$260.18	$336.15	$209.54
Number of Retirees	91	488	681	932	1,020	987	1,118	5,317
2010								
Total Eligible Reduction Amount	$3,506	$34,006	$75,925	$157,556	$209,787	$252,344	$377,131	$1,110,255
Average Monthly Benefit Paid	$36.91	$69.97	$110.20	$164.12	$206.48	$255.41	$336.12	$207.29
Number of Retirees	95	486	689	960	1,016	988	1,122	5,356
2011								
Total Eligible Reduction Amount	$4,666	$31,748	$72,015	$157,243	$200,803	$262,652	$313,342	$1,042,469
Average Monthly Benefit Paid	$36.45	$62.25	$93.77	$151.05	$192.34	$246.39	$313.97	$187.66
Number of Retirees	128	510	768	1,041	1,044	1,066	998	5,555
2012								
Total Eligible Reduction Amount	$4,844	$32,767	$76,100	$161,844	$209,974	$266,394	$328,562	$1,080,485
Average Monthly Benefit Paid	$36.97	$61.36	$92.24	$147.27	$188.32	$241.08	$309.96	$184.10
Number of Retirees	131	534	825	1,099	1,115	1,105	1,060	5,869
2013								
Total Eligible Reduction Amount	$5,087	$33,201	$78,183	$165,711	$215,607	$267,749	$336,423	$1,101,961
Average Monthly Benefit Paid	$37.40	$60.70	$91.98	$144.60	$184.44	$235.90	$305.01	$181.06
Number of Retirees	136	547	850	1,146	1,169	1,135	1,103	6,086
2014								
Total Eligible Reduction Amount	$5,480	$34,538	$79,741	$166,663	$214,240	$267,382	$341,055	$1,109,099
Average Monthly Benefit Paid	$38.05	$60.17	$90.31	$139.35	$177.79	$229.12	$300.22	$175.91
Number of Retirees	144	574	883	1,196	1,205	1,167	1,136	6,305
2015								
Total Eligible Reduction Amount	$5,678	$36,043	$81,626	$168,578	$214,335	$266,580	$343,191	$1,116,031
Average Monthly Benefit Paid	$37.85	$60.37	$89.01	$134.86	$172.71	$223.27	$292.83	$171.14
Number of Retirees	150	597	917	1,250	1,241	1,194	1,172	6,521
2016								
Total Eligible Reduction Amount	$5,819	$36,470	$81,645	$169,996	$218,241	$267,517	$338,370	$1,118,058
Average Monthly Benefit Paid	$37.79	$59.11	$88.74	$132.50	$169.44	$218.38	$283.63	$167.37
Number of Retirees	154	617	920	1,283	1,288	1,225	1,193	6,680
2017								
Total Eligible Reduction Amount	$6,116	$35,569	$79,516	$164,180	$208,031	$257,991	$326,844	$1,078,246
Average Monthly Benefit Paid	$38.23	$59.18	$88.55	$130.20	$166.03	$215.53	$277.69	$164.69
Number of Retirees	160	601	898	1,261	1,253	1,197	1,177	6,547
2018								
Total Eligible Reduction Amount	$6,096	$38,087	$80,149	$173,116	$221,294	$275,969	$347,532	$1,142,244
Average Monthly Benefit Paid	$36.95	$58.15	$84.81	$126.36	$164.16	$214.10	$270.24	$161.84
Number of Retirees	165	655	945	1,370	1,348	1,289	1,286	7,058

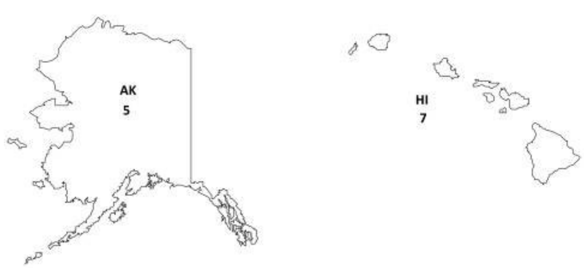
Principal Participating Employers

Current Year and Nine Years Ago

	2018			2009		
	Covered Employees	Rank	Percentage of Total System	Covered Employees	Rank	Percentage of Total System
Pension Benefits						
Participating Government:						
City and County of Denver	24,968	1	94.7%	17,669	1	91.3%
Denver Health and Hospital Authority	1,400	2	5.3%	1,687	2	8.7%
Total	26,368		100.0%	19,356		100.0%
Health Benefits						
Participating Government:						
City and County of Denver	24,968	1	94.7%	17,669	1	91.3%
Denver Health and Hospital Authority	1,400	2	5.3%	1,687	2	8.7%
Total	26,368		100.0%	19,356		100.0%

Location of Plan Retirees

Total Number of Retirees – 9,945



Other Countries and Territories

Australia	1
Canada	2
Costa Rica	3
Finland	1
Germany	1
Israel	3
Italy	1
Mexico	4
New Zealand	1
United Kingdom	2

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