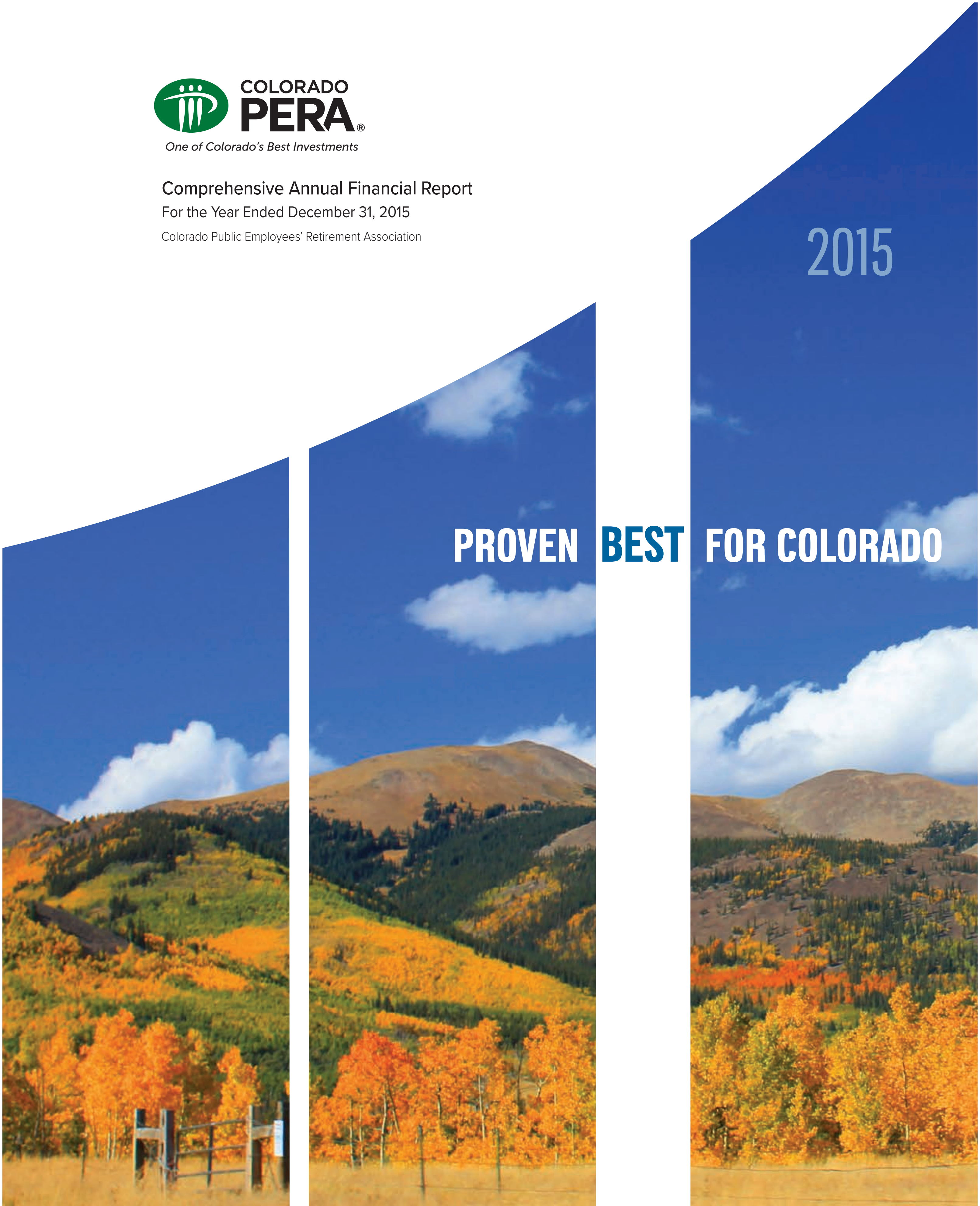
COLORADO PERA

*One of Colorado's Best Investments*

# Comprehensive Annual Financial Report

For the Year Ended December 31, 2015

Colorado Public Employees' Retirement Association



Five years after the landmark Senate Bill 10-001 legislation, Colorado PERA once again recognizes the shared sacrifices of our membership. It is with their futures in mind that PERA continues to sharpen our focus on the primary responsibility of providing secure retirements proven best for Colorado. This *Comprehensive Annual Financial Report* honors those members and retirees by featuring photos which remind us that an exceptional state merits an exceptional retirement plan.

**Cover**
Boreas Pass by Ellen Mackey, active member at Douglas County Libraries

**Introductory Section**
Byers, Colorado, by Alan Eldridge, active member at the Office of Information Technology

**Financial Section**
Pawnee Buttes by Max E. Carlson, retiree from the Judicial Department

**Investment Section**
Gateway Valley by Ron Brady, retiree from Westminster Public Schools

**Actuarial Section**
Pikes Peak by William Holm, retiree from the City of Colorado Springs

**Statistical Section**
Great Sand Dunes National Park by David Nasser, retiree from Adams 12 Five Star Schools

PERA also thanks the many other members and retirees who submitted more than 400 photographs of our great state for possible inclusion in this year's *CAFR.*

COLORADO PERA®

*One of Colorado's Best Investments*

# Comprehensive Annual Financial Report

For the Year Ended December 31, 2015

Colorado Public Employees' Retirement Association

*Prepared by Colorado PERA Staff*

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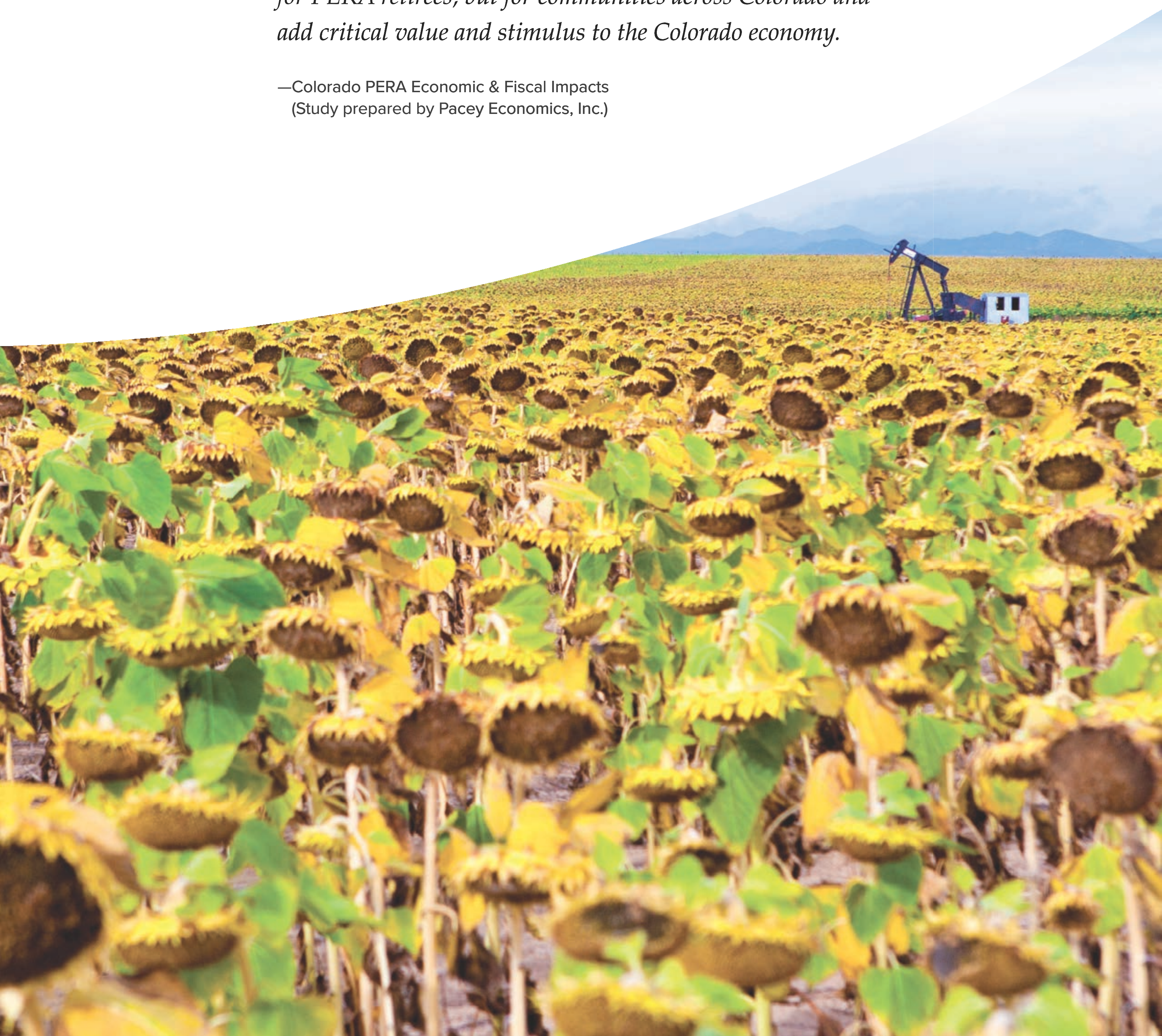
# **Proven** Valuable

*Distributions from Colorado PERA translate to $5.2 billion in economic output and help to sustain more than 29,000 Colorado jobs annually, which amounts to 1.2 percent of Colorado's gross domestic product. These distributions are a sustainable source of reliable, predictable income not just for PERA retirees, but for communities across Colorado and add critical value and stimulus to the Colorado economy.*

—Colorado PERA Economic & Fiscal Impacts
(Study prepared by Pacey Economics, Inc.)



## LETTER OF TRANSMITTAL

COLORADO PERA®

*June 21, 2016*

### Dear Colorado PERA Members, Benefit Recipients, Employers, and Members of the Board of Trustees:

**Gregory W. Smith**
*Executive Director*

I am pleased to present Colorado PERA's *Comprehensive Annual Financial Report (CAFR)* for the year ended December 31, 2015.

The extensive changes in the public pension landscape in the past few years have sharpened our focus on our primary responsibility—safeguarding the financial future for more than half a million public employees in Colorado. Five years ago, we were the first in the nation to enact changes and we have continued to navigate and be leaders in this new era of pensions. More recently, the magnitude of this responsibility precipitated the Colorado General Assembly to enact legislation in 2014, which directed the Office of the State Auditor to conduct three separate studies of PERA using neutral, outside experts to examine the benefit and funding structure for Colorado's retirement plan for public employees. In addition to these three independent studies, 2015 marked the five-year anniversary of the passage of the landmark PERA reform bill Senate Bill (SB) 10-001, which requires a report every five years to assess the impact of the reforms.

The conclusion from all of these studies proves what we have known for some time—that PERA is proven to be good for all of Colorado. PERA is the most cost effective and efficient retirement plan available, will achieve full funding, and has achieved significant savings as a result of the shared sacrifices in SB 10-001.

Together, the results of all the studies provide a wealth of information as we continue to innovate and rigorously evaluate all facets of the PERA plan. Independent, critical evaluations of PERA by objective experts familiar with the complex variables of a retirement plan give us an informed foundation for the PERA Board of Trustees (Board) and PERA members, Colorado policymakers, and taxpayers as we work together for a sustainable retirement system in the years and decades ahead. I am proud of the productive relationships PERA has forged with a range of stakeholders and how we have worked together to ensure a secure, sustainable retirement for our members.

The investment markets and returns for 2015 were disappointing with an overall total plan return of 1.5 percent net-of-fees on a market value basis, which was less than the long-term assumed rate of return of 7.5 percent. PERA's investment management did however add value by exceeding the median return of 95 other public funds of negative 0.2 percent. While the financial and economic environment in 2015 had an impact on our investment return for the year, our long-term returns remain strong with a 35-year, annualized, gross-of-fees return of 9.5 percent, which is a trademark of success for a long-term investor like PERA. We invest not for the quarter or year, but for the quarter-century and longer.

As we faced a year with economic challenges, which affected many institutional investors like PERA, we remain focused and committed to ensure PERA's sustainability for years to come. We recognize the importance of our duties and responsibilities to our membership, the economy, and the citizens of Colorado.

### Report Contents and Structure

This *CAFR* is designed to comply with the reporting requirements under Title 24, Article 51, Section 204(8) of the Colorado Revised Statutes.

The compilation of this *CAFR* reflects the combined efforts of PERA staff and is the responsibility of PERA management. It is intended to provide complete and reliable information as a basis for making management decisions, determining compliance with legal provisions, and determining responsible stewardship of assets contributed by the members and their employers.

### Overview of Colorado PERA

Established in 1931, PERA operates by authority of the Colorado General Assembly and is administered under Title 24, Article 51 of the Colorado Revised Statutes. Initially covering all State employees, PERA has expanded to include all Colorado school districts, the State's judicial system, and many municipalities and other local government entities.

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1.800.759.PERA (7372) | **www.copera.org**

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## Legislation

During the 2015 legislative session, six bills were introduced which would have impacted PERA, and of the six, two passed. The Board takes positions on legislation affecting PERA based on its fiduciary responsibility to act in the best interests of its membership.

### *Senate Bill 15-097: Supplemental Needs Trust For Certain PERA Benefits*

This bill allowed a PERA Defined Benefit Plan retiree to designate a supplemental needs trust as a cobeneficiary. The trust is eligible to receive a continuing benefit upon the PERA retiree's death. The bill also allows a supplemental needs trust to qualify as an eligible survivor and therefore able to receive applicable PERA survivor benefits.

Prior to the bill's passage, PERA retirees could name a disabled dependent as a cobeneficiary. The dependent would then receive an ongoing monthly benefit following the retiree's death. Under federal and state law, this cobeneficiary designation could result in the dependent losing his or her right to needs-based government benefits. Additionally, survivors who are entitled to PERA survivor benefits could lose the right to needs-based government benefits as a result of that entitlement.

The Board voted to support SB 15-097, and the bill passed and was signed into law by Governor Hickenlooper on April 16, 2015.

### *House Bill 15-1391: PERA & Denver Public Schools 5-Year True-up*

This bill reduced the employer contribution rate for the Denver Public Schools (DPS) Division from 13.75 percent to 10.15 percent, effective January 1, 2015. The 2009 legislation that authorized the merger of the Denver Public Schools Retirement System with PERA required that every fifth year it be determined if the DPS employer contribution rate should be adjusted. The adjustment is meant to ensure that 30 years after the merger, the funding status of the DPS Division is equal to the School Division.

The Board did not take a position on House Bill (HB) 15-1391. However, the Board voted to be neutral on HB 15-1251, a similar bill that was postponed indefinitely by the Senate State, Veterans and Military Affairs Committee. HB 15-1391 was signed into law by Governor Hickenlooper on June 3, 2015.

### *Senate Bill 15-080: Choice of PERA Members to Participate in the Defined Contribution Plan*

This bill would have allowed all new employees of all PERA employers, upon being hired after January 1, 2016, to have a choice between PERA's Defined Benefit Plan and PERA's Defined Contribution Plan, as currently structured in the State Division. In addition, the bill would have allowed all active PERA Defined Benefit Plan employees of all employers to have a one-time irrevocable option to move from the Defined Benefit Plan to the Defined Contribution Plan. If a member made the choice to move to the Defined Contribution Plan going forward, the member would have been able to freeze their current Defined Benefit account to collect a benefit later or close their Defined Benefit account and transfer the balance to the new Defined Contribution account.

The Board voted to oppose SB 15-080, and the bill was postponed indefinitely by the House State, Veterans and Military Affairs Committee.

### *Senate Bill 15-133: Compensation Report Prepared By State Personnel Director*

This bill would have required the state personnel director to make recommendations regarding retirement benefit contribution rates in the annual report for state employees. The bill would have also required that the compensation report be filed in odd-numbered years and include information for the next two fiscal years. The annual compensation report includes information on state employee salaries, merit pay, and state contributions to health, life, and dental plans.

The Board voted to oppose SB 15-133, and the bill was postponed indefinitely by the House Business Affairs and Labor Committee.

### *House Bill 15-1251: PERA & Denver Public Schools 5-Year True-up*

This bill was similar to HB 15-1391 and would have reduced the employer contribution rate for the DPS Division from 13.75 percent to 10.15 percent, effective January 1, 2015.

While the Board's position on HB 15-1251 was neutral, the Board continues to oppose the actuarial deterioration of the funded status of the DPS Division. The Board informed the General Assembly that adopting an employer contribution rate for the DPS Division of 12.6 percent was projected to bring the Division to 100 percent funding at the end of the true-up period.

The bill was postponed indefinitely by the Senate State, Veterans and Military Affairs Committee.

### *House Bill 15-1388: Securitizing Contributions for Retirement Earnings (SCORE) Act*

This bill would have authorized the Colorado Housing and Finance Authority to issue bonds and deliver the proceeds of the bonds into PERA's State and School Divisions. The bill would have required the Governor and State Treasurer to obtain an unappealable court judgment that the issuance of the bonds is constitutional. Issuing the bonds may have allowed the unfunded liability in the State and School Divisions to be paid off more quickly, resulting in potential long-term future savings for PERA employers and members.

The Board voted to support HB 15-1388, but the bill was postponed indefinitely by the Senate Finance Committee.

## Independent Studies on PERA

In the 2014 legislative session, the Joint Budget Committee sponsored SB 14-214, which created and funded three separate studies to be conducted by neutral, outside experts to examine aspects of the benefit and funding structure of PERA. The Board voted to support the bill and it was signed into law by Governor Hickenlooper on June 4, 2014. All three studies were completed in 2015.

### *Milliman Retirement Benefits Study*

The first study, released in January 2015 by the Colorado Department of Personnel and Administration, incorporated retirement benefits into the State's annual total compensation survey, which was conducted by the actuarial firm Milliman. The Colorado General

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Assembly had asked for the 2015 study to include the value of the PERA retirement and other benefits and SB 14-214 required a comparison between the retirement package provided to State employees through PERA to retirement packages offered by both private companies and other states.

The study found that when compared to 18 other states and four private sector entities, the value of the PERA benefit is 1 percent above the median plan value of 14.7 percent and the Milliman report concludes, "The State's offerings are generally consistent with market trends of survey recipients."

### *Gabriel, Roeder, Smith & Company Plan Design Study*

In July 2015, the second study was released by the Colorado Office of the State Auditor, which was an independent evaluation of PERA comparing the costs and effectiveness of PERA's DB Plan to alternative plans in the public and private sector. Nationally recognized actuarial firm Gabriel, Roeder, Smith & Company (GRS) conducted a comprehensive evaluation and came to the overall conclusion that "Colorado's largest public employee pension system is the most efficient and effective a state could have," as GRS officials told members of the Legislative Audit Committee.

Among the findings of the study is that PERA is more efficient and uses dollars more effectively than the other types of plans in use today, including 401(k) plans. In fact, at the current cost, the PERA plan provides a higher level of benefits than all the alternative plans. PERA's retirement benefits are neither too generous nor too low when compared to other similarly situated public sector employers. Furthermore, PERA provides more progress toward retirement security for every career pattern regardless of the starting age or how many years of service are worked.

### *Pension Trustee Advisors Sensitivity Analysis*

The third study was a sensitivity analysis of PERA's actuarial assumptions. The study was overseen by the Colorado Office of the State Auditor and performed by Pension Trustee Advisors (PTA) and released in October 2015. The analysis looked at the various components used in determining PERA's financial health and the findings demonstrate that all five of PERA's trust funds are projected to achieve fully funded status over time. The study also shows that the actuarial assumptions PERA uses as it makes projections and manages the plan are reasonable.

A second, critical objective of this study was to develop an understandable format for communicating PERA's progress toward becoming fully funded for a broad spectrum of stakeholders and policymakers. To fulfill this objective, PTA developed a signal light methodology for evaluating PERA. For the year ended December 31, 2014, four of PERA's five Division Trust Funds received green lights. The 694-member Judicial Division received a yellow light.

The report notes the significant impact of the shared sacrifice required of PERA retirees, members, and taxpayers as a result of SB 10-001 enacted in 2010. If the signal light reporting method had been in place in 2009 during the Great Recession, it would have shown all PERA Divisions in orange or red, meaning that PERA was projected to run out of money within 25 years. Applying the signal light methodology, the reforms implemented as a result of SB 10-001 moved the fund from red status to green.

### *Senate Bill 10-001 Report*

SB 10-001 requires PERA to report every five years to the Governor and the Colorado General Assembly on the economic impact of changes in the annual increase (AI) compared to actual inflation as well as progress made in reducing the unfunded liability in each Division of PERA. In December 2015, PERA released the inaugural *SB 1 Report.*

The overall message of the *SB 1 Report* is that the reforms returned PERA to sustainability. Since the reforms have been implemented, PERA has saved approximately $15 billion in unfunded liability. The reduction in the AI provisions accounts for 90 percent of that savings. But even recognizing the changes to the AI, benefit recipients have kept up with inflation over the last five years. Moreover, the funded ratios of the State and School Divisions are slightly ahead of the projections developed when SB 10-001 was implemented.

### *CEM Benchmarking Survey*

Beyond studies required by legislation, PERA again opened its operations to CEM Benchmarking (CEM), a global leader in evaluating customer service performance and management costs. As part of its assessment, CEM compared PERA to 13 U.S. funds that are similar in membership size as well as international pension funds. CEM found that PERA's administrative costs were well below the average. Additionally, PERA's overall service score, measuring the customer service PERA provides its members and retirees, was 87 out of 100. Only five funds out of the 73 measured globally had higher service scores than PERA.

## Economic Condition and Outlook

The U.S. economy grew 2.4 percent (year-over-year) during 2015, principally driven by consumer spending. The unemployment rate ended the year at 5.0 percent, an improvement from 5.6 percent at the end of 2014. Despite the recovery in the labor market, wage growth did not accelerate and inflation generally remained low. Manufacturing performance declined during the year, principally due to the strength of the U.S. dollar. The residential housing market slowly strengthened as housing prices rose, existing inventory fell, and housing construction increased. The Federal Reserve (Fed) raised the Fed Funds rate 25 basis points in December and indicated further increases in short-term rates will be dependent on the strength of the economy going forward.

Global growth was modest in 2015. In contrast to the U.S. where the Fed started to tighten monetary policy, other developed markets, such as Europe and Japan, continued to ease monetary policy. The U.S. dollar continued to strengthen relative to most foreign currencies during the year. Conditions in China weakened as various government reforms resulted in reduced levels of growth. Developed market and emerging market countries closely tied to commodity production continue to experience slowing growth as a result of falling commodity prices and declining investment.

Based on the most recent data, the Colorado economy continued to grow in 2015, but the pace of growth slowed relative to the prior year.

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Contributors to the growth in the state's economy were agriculture, real estate, construction, professional services, business services, health care, and manufacturing. The construction sector showed improvement during 2015 as residential housing permits increased and the number of foreclosures declined. The Colorado labor market improved with unemployment falling during the year despite having had one of the fastest population growth rates. The residential housing market showed continued improvement in 2015 as home prices increased in response to a decreasing supply of available houses; Colorado also had one of the highest housing price increases.

## Investments

The Board's Investment Committee is responsible for assisting the Board in overseeing PERA's investment program.

Investment portfolio income is a significant source of revenue to PERA. In 2015, there was net investment income of $649 million compared with total member contributions of $855 million and employer contributions of $1.4 billion.

For the year ended December 31, 2015, the total fund had a time-weighted rate of return of 1.5 percent net-of-fees on a market value basis. PERA's annualized, net-of-fees, time-weighted, rates of return over the last three and five years were 7.4 percent and 7.3 percent, respectively, and over the last 10 years it was 6.0 percent. The 35-year annualized, gross-of-fees rate of return for the pooled investment assets was 9.5 percent.

Prudent funding and healthy investment returns are important to the financial soundness of PERA. Changes in the composition of the portfolio are reflected in the Investment Summary on page 122.

An integral part of the overall investment policy is the strategic asset allocation policy. The targeted strategic asset allocation is designed to provide appropriate diversification and balance expected total rate of return with the volatility of expected returns. Specifically, the fund is to be broadly diversified across and within asset classes to limit the volatility of the total fund investment returns and to limit the impact of large losses on individual investments. Both traditional and nontraditional assets are incorporated into the asset allocation mix.

In addition to asset class targets, the Board sets ranges within which asset classes are maintained. The permissible ranges in effect at the end of 2015 were adopted by the Board on March 20, 2015. The interim and long-term targeted asset allocation mix and the specified ranges for each asset class are presented on page 119. All of the asset classes were within their specified ranges at year end.

PERA's investment policy is summarized in the Colorado PERA Report on Investment Activity on page 119.

## Corporate Governance

PERA has maintained its commitment to corporate governance reform through its participation in the Council of Institutional Investors as well as several other coalitions of long-term shareholders. PERA continues to actively advocate for comprehensive improvements to shareholder rights, rigorous federal oversight, and credit rating agency reform to a broad range of congressional and federal regulatory officials.

In addition, PERA continues to be active in the securities litigation arena, fulfilling the Board's commitment to support corporate governance reforms such as transparency, accountability, and enforcement of shareholder's rights.

## Financial Information and Management Responsibility

The financial statements of PERA have been prepared by management, which is responsible for the integrity and fairness of the data presented, including the many amounts which must, of necessity, be based on estimates and judgments. The *CAFR* was prepared to conform to the accounting principles generally accepted in the United States of America. Financial information presented through the annual report is consistent with that which is displayed in the basic financial statements.

Ultimate responsibility for the basic financial statements and annual report rests with PERA management; the Board provides an oversight role. The Board is assisted in its responsibilities by the Audit Committee, which now consists of six Board members and one outside member. The Audit Committee has the responsibility to oversee the adequacy and effectiveness of PERA's system of internal control, and the accounting and financial reporting systems. A more detailed description of the role of the Audit Committee can be found in their report on pages 14-15.

Management is responsible for establishing and maintaining adequate internal control over financial reporting. PERA's internal control over financial reporting is designed to provide reasonable assurance, but not absolute assurance, regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. The internal control over financial reporting include those policies and procedures that:

- Pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of assets;
- Provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures are being made only in accordance with authorizations of management; and
- Provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of assets that could have a material effect on the financial statements.

Management has concluded that as of December 31, 2015, internal control over financial reporting are effective.

There are inherent limitations in the effectiveness of any system of internal control, including the possibility of human error, the circumvention or overriding of controls, and that the cost of a control should not exceed the benefits to be derived. Accordingly, even an effective internal control system may not prevent or detect misstatements and can provide only reasonable assurance with respect to financial statement preparation. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions or that the degree of compliance with the policies or procedures may deteriorate.

## LETTER OF TRANSMITTAL

State law requires that the State Auditor conduct or cause to be conducted an annual audit of PERA. Pursuant to this requirement, the State Auditor selected CliftonLarsonAllen LLP to perform the independent audit of PERA. Under the direction of the State Auditor, CliftonLarsonAllen LLP audited PERA's 2015 basic financial statements in accordance with auditing standards generally accepted in the United States of America and Government Auditing Standards. This audit is described in the Report of the Independent Auditors on pages 23-25 of the Financial Section. Management has provided the auditors with full and unrestricted access to PERA's staff to discuss their audit and related findings to facilitate independent validation of the integrity of the plan's financial reporting and the adequacy of internal control.

The Financial Section of the *CAFR* also contains Management's Discussion and Analysis (MD&A) that serves as a narrative introduction, overview, and analysis of the basic financial statements (pages 26-55). This Letter of Transmittal is designed to complement the MD&A and should be read in conjunction with it.

### Funding

The Board adopted a revised pension funding policy in March 2015, with regard to the Division Trust Funds, to update and replace the funding policy dated November 2007. The purpose of the revised funding policy is three-fold: (1) to define the overall funding benchmarks of the five defined benefit pension trust funds, (2) to assess the adequacy of the contribution rates which are set by the Colorado Legislature, and (3) to define the annual actuarial metrics which will assist the Board in assessing the sustainability of the plan. The results of these three items are intended to guide the Board when considering whether to pursue or support proposed legislation pertaining to changes in contribution and/or benefit provisions. Actual contributions received over the past ten years were $3.1 billion less than the actuarially determined contributions for the Division Trust Funds. For more information on the adequacy of the contribution rates, see page 40 of the MD&A.

One of the stated goals in the Board's funding policy is the achievement of a combined division trust fund actuarial funded ratio equal to or greater than 110 percent.

On December 31, 2015, the funded ratio for PERA's five defined benefit pension trust funds was 62.1 percent with an unfunded liability of $26.8 billion based on the actuarial value of assets and an investment rate of return and discount rate assumption of 7.50 percent. (Please see pages 160-161 for additional information on PERA's funded ratio.)

Investment income is the most significant driver of the funded status in a defined benefit plan. To understand the significance of this assumption, a sensitivity analysis is included in the Actuarial Section on pages 162-163.

PERA's funded position is the top concern and priority for the Board and management. The Board worked extensively with elected officials in 2004 and 2006 to pass SB 04-257 and SB 06-235, which were designed to move PERA toward full funding over the coming decades.

Key features of these bills include increased funding through the Amortization Equalization Disbursement (AED) and the Supplemental Amortization Equalization Disbursement (SAED) as well as a new benefit structure for new hires that includes a Rule of 85 and a separate Annual Increase Reserve.

With this legislation and its phased 3 percent increases in both the AED and SAED and the projected reductions in normal cost due to benefit adjustments for new hires, PERA was expected to achieve a 30-year amortization period on unfunded liabilities in all trust funds by the end of a 30-year period (the Board has since reduced it an additional .50 percent to 7.50 percent).

However in 2008, PERA, along with investors worldwide, suffered through one of the worst financial markets in history. During 2009 and again in 2012, the Board initiated and completed an actuarial experience study and an actuarial audit and initiated an Asset Liability Study to assist in determining the best course of action for the various funds. These studies included a detailed review of all significant actuarial assumptions and methods used in preparing the annual actuarial valuation including the investment rate of return and discount rate assumptions, which as a result of these studies, were reduced 0.5 percent to 8.0 percent. Additionally in 2009, the Board requested and had completed an actuarial analysis of the impact of different possible benefit and contribution changes which would be considered during the 2010 legislative session so as to achieve long-term sustainability for the trust funds.

PERA believed it was necessary to work toward proposed legislation in the 2010 legislative session to address the dramatic decline in the financial markets and economy and the resulting decline in the PERA investment portfolio. The comprehensive proposal for legislative action came to fruition in 2010 and was based on thorough calculations and a robust analysis of how the various possible changes would impact PERA's funded status and its members. The modifications of SB 10-001 were included in the 2009 actuarial valuation results. To maintain the sustainability of PERA, it is critical that every aspect of the bill be fulfilled. A summary of SB 10-001 can be found on the PERA website.

The actuarial valuation is a valuable tool to help the Board assess the health of the system, but this is just a snapshot on one day in the past. To have a better understanding of the health of the system going forward, PERA's actuaries perform actuarial projections for each Division of the system based upon generating future valuations with the underlying actuarial assumptions. This year's projections show that each Division of the PERA Trusts is projected to obtain full funding. Based on the current market value of assets as of December 31, 2015, and the assumptions including anticipated growth in active membership, the actuaries project that the complete amortization of unfunded liabilities will occur in approximately 42 years for the State Division, 44 years in the School Division, 36 years in the DPS Division, 36 years in the Local Government Division, and 73 years in the Judicial Division.

### PERAPlus 401(k)/457 and Defined Contribution Retirement Plans

PERA offers members opportunities to save for retirement through the PERAPlus 401(k), PERAPlus 457, and Defined Contribution (DC) Retirement Plans. Nine additional employers were added to

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the 141 employers who recognized the value of offering more choices in savings by affiliating into the PERAPlus 457 Plan in 2015. In addition, 28 PERA employers adopted the Roth option in 2015, which was added in the PERAPlus 401(k) and 457 Plans at the end of 2014, for a total of 31 PERA employers who adopted the Roth option. The Roth option in these plans offers advantages over a Roth IRA, including higher contribution limits and no income-based contribution limitations.

The fiduciary net position of the PERAPlus 401(k) Plan decreased and the PERAPlus 457 and DC Plans continued to grow for the year ended December 31, 2015. The PERAPlus 401(k), PERAPlus 457, and DC Retirement Plans incurred $11.8 million, $6.4 million, and $2.5 million of investment losses with a fiduciary net position of $2.6 billion, $692 million, and $141 million, respectively.

### Colorado Mile High Fund

In October 2012, PERA introduced the Colorado Mile High Fund, a new investment vehicle that makes millions of dollars available for qualifying opportunities within Colorado's business community. The creation of the Colorado Mile High Fund earmarks capital for Colorado businesses that have a nexus to Colorado. The primary focus of this fund is private equity and venture capital opportunities structured as co-investments with financial sponsors. The fund may also consider uniquely structured capital formation opportunities to private equity and venture capital firms targeting Colorado-based opportunities. PERA uses an outside manager and adheres to the same investment and underwriting criteria for this fund as it uses in its overall private equity program.

PERA and its adviser have reviewed more than 50 investment opportunities resulting from an active deal sourcing effort that has included discussions with scores of representatives from prospective investment opportunities. As part of its community outreach, PERA has participated in events such as The Mountain Life Science Investor & Partnering Conference, Rocky Mountain Private Fund Advisers Summit, Boulder Business After Hours, Boulder Chamber's Esprit Event, the Silicon Flatirons Fall Private Equity Conference, and the Rocky Mountain Corporate Growth Conference.

At the end of 2015, the Colorado Mile High Fund had committed approximately 47 percent of the fund's total capital to five co-investments. Two co-investments have performed very well and were sold, generating gains in the portfolio. The three remaining co-investments are either based in or have significant operations in Colorado and are in the health care and industrial sectors.

### PERACare Health Benefits Program

The voluntary PERACare program has several plans providing health care, dental, and vision coverage to PERA members and retirees. PERA focuses on designing plans that are competitive, cost-effective, and valuable to members. PERA also participates in a number of value-based programs designed to support improving the patient experience of care, improving the health of populations, and reducing the per capita cost of health care (known as the "Triple Aim").

In April 2015, PERA introduced PERACare Select, a fixed-price hip and knee replacement benefit for Anthem pre-Medicare enrollees. For members who use PERACare Select providers and hospitals for their surgeries, PERACare Select waives the deductible and/or coinsurance depending on the plan. Twenty-nine members used the benefit and paid nothing for their surgery. PERA saved an average of $13 thousand per Select surgery for a total of $388 thousand in savings over the eight months the benefit was available in 2015.

### Total Compensation Philosophy

PERA recognizes that people are its primary asset, and its principal source of competitive advantage. PERA offers competitive compensation and provides comprehensive health and welfare benefits to its employees. The key elements of PERA's compensation program are: salaries, health benefits, work-life balance, performance recognition, growth, and development. This program serves to attract and retain valued employees while motivating extraordinary performance.

PERA strives to maintain its competitive compensation structure and benefit package by using external market survey data and partnering with consultants to stay abreast of current employment trends. These surveys provide solid comparable data in keeping PERA's compensation program competitive.

### Recognition of Achievements

The Government Finance Officers Association (GFOA) awarded a Certificate of Achievement for Excellence in Financial Reporting to PERA for its *CAFR* for the year ended December 31, 2014. The GFOA's Certificate of Achievement is the highest form of recognition in the area of public employee retirement system accounting and financial reporting. To receive this award, a government unit must publish an easily readable and efficiently organized CAFR that meets or exceeds program standards, and satisfies both generally accepted accounting principles and applicable legal requirements.

A Certificate of Achievement is valid for one year. PERA has been awarded this distinction for the past 30 years. We believe this *CAFR* continues to meet GFOA requirements and we are submitting it to the GFOA to determine its eligibility for another Certificate.

The GFOA also awarded PERA an Award for Outstanding Achievement in Popular Annual Financial Reporting for its *Popular Annual Financial Report* for the year ended December 31, 2014. This is the 13th year that PERA has received this prestigious national award recognizing its conformance with the highest standards for preparation of state and local government reports. In order to receive this award, a government unit must publish a Popular Financial Report whose contents conform to program standards of creativity, presentation, understandability, and reader appeal.

### PPCC Standards Award Program

The Public Pension Coordinating Council (PPCC) presented PERA with its Recognition Award for Administration for meeting professional standards in 2015 for plan administration as set forth in the Public Pension Standards. The PPCC is a coalition of three national associations that represent public retirement systems and administrators—the National Association of State Retirement Administrators, National Council on Teacher Retirement, and

LETTER OF TRANSMITTAL

National Conference on Public Employee Retirement Systems. These three associations represent more than 500 of the largest pension plans in the U.S.

## Management Changes

In December 2015, Jack Dillman joined PERA as the new Director of Facilities replacing Dennis Fischer who retired after 20 years of service. Jack previously managed facilities in the private sector for companies such as FedEx, Walgreens, and Target. He will oversee PERA facilities in Denver, Lone Tree, and Westminster.

Also in December, Jessica Linart was promoted to Director of Insurance replacing Wendy Tenzyk who retired in July 2015 after a 27-year career at PERA. Jessica was most recently the Insurance Manager for PERA and initially joined PERA in 2003 after working in the health insurance division at Great-West Life. As Director of Insurance, Jessica is responsible for the administration of the PERACare Health Benefits Program.

In January 2016, Gary Ratliff was promoted to Director of the Opportunity Fund assuming responsibilities from Amy McGarrity, Deputy Chief Investment Officer, who was also serving as the interim Director of the Opportunity Fund. Gary joined PERA in 2015 as a Senior Portfolio Manager within the Opportunity Fund. He started his career in investments in 1994, working for First Bank of Northern Colorado and has held positions at Sovereign Financial Services, Inc., Texas Tech University, and Watershed Investment Consultants, Inc. He also worked at the Denver Public Schools Retirement System from 2001 to 2008 and served as the Chief Investment Officer from 2006 to 2008. As Director of the Opportunity Fund, Gary directs the overall management of PERA's opportunity fund portfolio in accordance with established investment statutes, policies, and guidelines.

In February 2016, Tara May joined PERA as Director of Communications and External Affairs replacing Leslie Oliver who resigned in October 2015. Prior to joining PERA, Tara was the Denver Executive Vice President and General Manager of Ogilvy, an international public relations agency. Previously, she was a consultant to the U.S. Chamber of Commerce and several local United Way chapters. As Director of Communications and External Affairs, Tara is responsible for PERA's communication and stakeholder outreach efforts.

In March 2016, Martha Argo, Investment Director, retired after a 16-year career at PERA. Her responsibilities have been assumed by existing staff.

In April 2016, Kirsten Strausbaugh was promoted to Director of Field Education Services replacing Dennis Gatlin who retired in January 2016 after a 29-year career at PERA. Kirsten joined PERA in 2006 as a Field Education Representative. Before joining PERA, she was a bilingual Benefits Counselor at the University of Colorado and also served as a Communications Specialist at the Colorado Department of Labor and Employment. As Director of Field Education Services, Kirsten will oversee the outreach to members related to PERA benefits, programs, and services across the state of Colorado.

## Board Composition

PERA is governed by a 16-member Board of Trustees; 11 are elected by the membership for staggered four-year terms and serve without compensation except for necessary expenses. In addition, there are three Governor-appointed Trustees confirmed by the Senate who receive limited compensation. The State Treasurer serves as a voting ex officio Trustee, and the DPS Division seat serves as a non-voting ex officio Trustee.

In April 2015, Trustee Ben Valore-Caplan resigned from the Board. Mr. Valore-Caplan was a Governor-appointed Trustee who was named to the Board by Governor Hickenlooper in 2012. On behalf of the PERA executive team, we will miss Mr. Valore-Caplan's perspective on guiding PERA, along with his insight on investment issues.

In June 2015, the Governor appointed Roger P. Johnson to fill the vacancy created by Mr. Valore-Caplan's resignation. Mr. Johnson was confirmed by the State Senate on April 1, 2016. Mr. Johnson has served as an external member of the Audit Committee since June 2012, and is the Chief Financial Officer of the Sunshine Silver Mining & Refining Corporation. By law, governor-appointed Trustees must have experience in investment management, finance, banking, economics, accounting, pension administration, or actuarial analysis.

Also in June 2015, the Honorable James Casebolt retired from the Colorado Court of Appeals. On behalf of the PERA executive team, we will miss Judge Casebolt's valuable leadership and wisdom and his passion for doing what was ethical and in the best interests of PERA and the membership.

To fill this vacant Judicial Division seat, Judicial Division members elected the Honorable Richard Gabriel. Soon after the election, he was appointed to the Colorado Supreme Court and resigned his position on the PERA Board to fulfill his duties as Supreme Court Justice. By state law, the runner-up in the election takes over the vacated seat, in this case, the Honorable Brian T. Campbell, who is a Denver County Court Judge.

Trustee Mason Parsaye also retired in June 2015 from Colorado Springs Utilities representing the Local Government Division. We appreciate his thoughtful insight and contributions and wish him well in retirement.

In November 2015, the Board appointed Robert D. Lamb to fill the vacant Local Government Division seat. Trustee Lamb is the Finance Division Manager for Boulder County.

Both Trustees Lamb and Campbell are serving terms until the next Board Election in June 2016.

## Memoriams

In 2015, PERA lost two individuals who touched the lives of many—Joe Natale and Wendy Tenzyk.

Mr. Natale was a former Executive Secretary of PERA, who passed away on August 3, 2015, at the age of 92. He began employment at PERA in 1964 as the Assistant Executive Secretary and he became Executive Secretary in 1977. When Mr. Natale retired from PERA in 1984 after 20 years of service, the membership was nearing 100,000 active members, there were 24,000 retirees, and $4 billion in assets.

LETTER OF TRANSMITTAL

A Colorado native, Mr. Natale had exemplary academic credentials preparing him for his life-long career in public service, earning degrees in management and government from the University of Denver, and completing graduate work in business at Harvard University, the University of California, and Stanford University. In addition, Mr. Natale served with the U.S. Navy in World War II.

Under Mr. Natale's leadership, PERA began the development of a retiree health care program and sought legislation to add a 401(k) plan for the membership. His vision for both of these important voluntary programs lives on today in the PERACare and PERAPlus Plans.

Mr. Natale not only worked on behalf of Colorado's public employees, he was also President of the National Council on Teacher Retirement, Secretary of the National Conference on Public Employee Retirement Systems, and was elected to the executive board of the Government Finance Officers Association.

With profound gratitude, I recognize and memorialize Mr. Natale for his many contributions and accomplishments during his 20-year career on the PERA executive staff.

I would also like to recognize Wendy Tenzyk, former PERA Director of Insurance, who passed away on July 15, 2015, at the age of 65.

Wendy began her extensive career with PERA in 1988 serving as the Assistant Director of the Retirement Services Division and then as the Director of Retirement Services and Benefit Services until 2001, when she was named Director of the newly formed Insurance Division, a position she held until her retirement.

In addition to serving as PERA's Director of Insurance, Wendy was a Fellow of the International Society of Certified Employee Benefit Specialists and was highly respected for her expertise and contributions to retiree health care communities in Colorado and nationally.

Wendy was the consummate professional and will be remembered for her soft-spoken demeanor, her vast knowledge of the insurance industry, her unrivaled attention to detail, and her impeccable style.

It is with profound gratitude and sorrow that I recognize and memorialize Wendy for her many contributions and accomplishments during her 27 years at PERA.

## Acknowledgements

The cooperation of our affiliated employers is significant to the success of PERA—we thank the staff and management of these employers for their continuing support.

Copies of this *CAFR* are provided to all PERA-affiliated employers and other interested parties; a summary *(Popular Annual Financial Report)* will be sent to members and benefit recipients. An electronic version of both publications is available on the PERA website at www.copera.org.

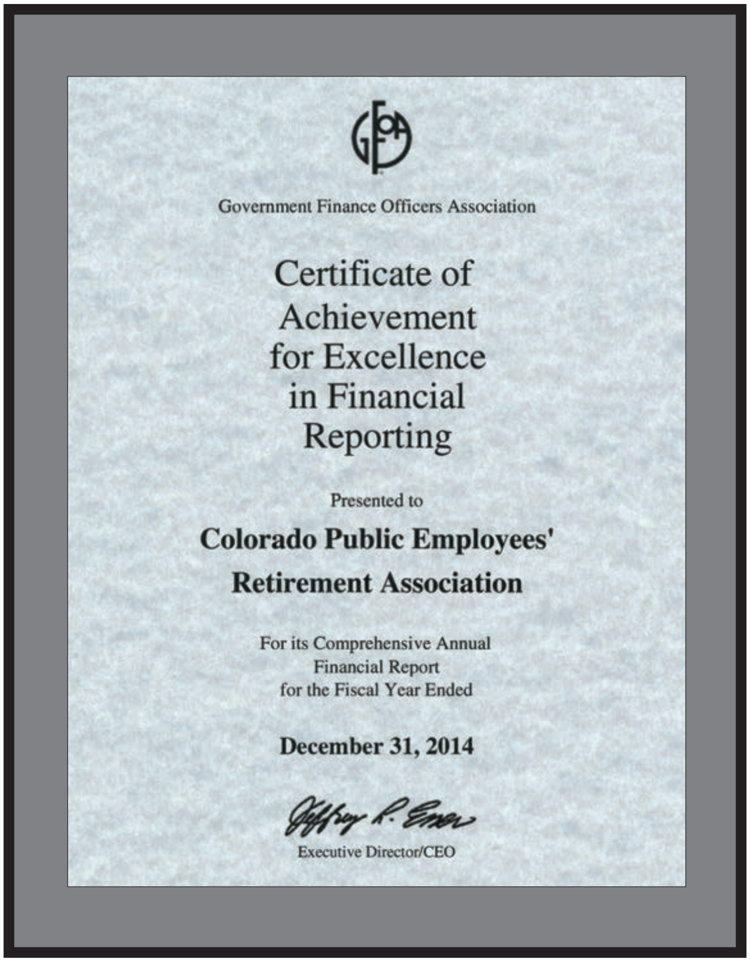
I also thank the PERA staff and Board of Trustees for their commitment and efforts to ensure that PERA meets the needs of all public servants in Colorado.

I am honored to serve our members and beneficiaries as Executive Director. I am proud to be a part of an organization with such a commitment to excellence.

Respectfully submitted,

*Gregory W. Smith*
*Colorado PERA Executive Director*
*One of Colorado's Best Investments*

## PROFESSIONAL AWARDS



Government Finance Officers Association

Certificate of Achievement for Excellence in Financial Reporting

Presented to

**Colorado Public Employees' Retirement Association**

For its Comprehensive Annual Financial Report for the Fiscal Year Ended

**December 31, 2014**

Executive Director/CEO

Public Pension Coordinating Council

***Recognition Award for Administration 2015***

Presented to

***Colorado Public Employees' Retirement Association***

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

*Presented by the Public Pension Coordinating Council, a confederation of*

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

Alan H. Winkle
Program Administrator

# BOARD CHAIR'S REPORT

COLORADO PERA®

*June 21, 2016*

**Maryann Motza**
*Board Chair*

## To All Colorado PERA Members, Benefit Recipients, and Employers:

On behalf of the Board of Trustees (Board), I am pleased to present Colorado PERA's *Comprehensive Annual Financial Report* for the year ended December 31, 2015. This report offers a detailed view of the financial and actuarial status of your retirement system in addition to highlighting other changes and accomplishments that occurred during the year.

At the end of 2015, PERA's investments generated a return of 1.5 percent, which exceeded the policy benchmark by 1.0 percent. Although this return is lower than the assumed rate of return, it reflects the volatility experienced by the financial markets throughout the year. There will be years when the PERA investment portfolio will outperform or underperform the assumed rate of return due to varying market conditions.

The Board remains vigilant in monitoring PERA's financial condition and specifically, the continued implementation of Senate Bill (SB) 10-001. One of the capstone events in 2015 was the release of PERA's *SB 1 Report* to the General Assembly. This report was a five-year update on the progress of SB 10-001 and illustrated how the changes in the annual increase provisions for retired PERA members have kept pace with inflation over the period. The main takeaway from the report is that shared sacrifice, fiscal discipline, and legislated reforms provide PERA with the resources it needs now and into the future to deliver the benefits earned by Colorado's public workforce, making Colorado stronger for everyone.

To provide a better understanding in how well PERA works for Colorado, in 2014, the General Assembly passed SB 14-214, which commissioned three independent studies of the PERA program. These studies concluded the following:

- The total compensation package for State employees aligns with peer workforces as concluded in the Milliman Retirement Benefits Study and released by the Colorado Department of Personnel and Administration.
- The current PERA Hybrid Defined Benefit Plan provides the most cost-effective retirement plan design for taxpayers and workers as compared to any other alternative retirement plan design as noted in the Gabriel, Roeder, Smith & Company Plan Design Study released by the Colorado Office of the State Auditor.
- The SB 10-001 reforms have restored sustainability for all of the PERA trust funds and confirmed the reasonableness of PERA's actuarial assumptions as reported in the Pension Trustee Advisors Sensitivity Analysis released by the Colorado Office of the State Auditor and reviewed by the General Assembly's Legislative Audit Committee.

These independent studies confirm to the General Assembly and other PERA stakeholders the value of PERA's Hybrid Defined Benefit Plan to the state of Colorado.

In 2015, the Asset Liability Study was completed by Aon Hewitt Investment Consulting, Inc. The process began in May 2014 when the Board, PERA executives, and investment team began working with the Board's consultant to craft a thoughtful allocation strategy in light of the changing dynamics of the investment landscape. In March 2015, the Board voted to approve a new long-term strategic asset allocation and adopt a phased implementation plan. More information on the interim and long-term targets can be found on page 119 of the Investment Section.

Also in 2015, the new Governmental Accounting Standards Board (GASB) Statement No. 68 pension reporting standard became effective. In July 2015, PERA provided audited schedules and notes to all PERA employers to assist them in completing their financial statements under this new reporting standard. This process went very smoothly, which can be attributed to the many months of preparations by the PERA staff GASB implementation team.

**Mail:** PO Box 5800, Denver, CO 80217-5800 | **Offices:** 1301 Pennsylvania Street, Denver | 1120 W. 122nd Avenue, Westminster
1.800.759.PERA (7372) | **www.copera.org**

## BOARD CHAIR'S REPORT

In August 2015, the Board voted to approve a three-year contract extension for Executive Director Gregory W. Smith. The Board is proud of the accomplishments of the organization under Greg's leadership and went through a long, deliberative, and transparent process to determine an appropriate contract extension allowing PERA to maintain continuity and consistency in leadership.

In addition to these events, the Board also revised and adopted its Pension Funding Policy, which provides overall funding goals and annual actuarial metrics to guide the Board when considering whether to pursue or support legislation related to contributions and benefits. Later in 2015, the Board approved to maintain the interest on member accounts at 3 percent for 2016.

I also congratulate the Honorable James Casebolt on his retirement and thank him for his distinguished 16-year tenure representing the members of the Judicial Division. Jim will be remembered for his calm approach to complex issues, his critical thinking abilities, and his passion for doing what was ethical and in the best interests of PERA and the membership. Also retiring was Mason Parsaye, who represented the members of the Local Government Division since 2014. Mason will be remembered for asking thoughtful and detailed questions earning the admiration and esteem of the Trustees. It is with the highest level of appreciation and congratulations that I thank both of these Trustees for their dedication and service.

I also recognize the resignation of Ben Valore-Caplan from the Board in April 2015. Ben was a Governor-appointed Trustee and named to the Board by Governor Hickenlooper in 2012. On behalf of the Board, we miss his eloquence and knowledgeable, insightful comments on critical issues that impact PERA.

With these departures, we also welcomed new Trustees. The Honorable Richard L. Gabriel was elected to the Judicial Division seat previously held by the Honorable James Casebolt; however, shortly after the election, he was appointed to the Colorado Supreme Court and resigned his position on the PERA Board to fulfill his duties as Supreme Court Justice. By state law, the runner-up in the election takes over the vacated seat, in this case, the Honorable Brian T. Campbell, who is a Denver County Court Judge. Filling the vacancy of Ben Valore-Caplan is Roger P. Johnson, who was appointed by Governor Hickenlooper. Roger has served as an external member of the PERA Board's Audit Committee since 2012 and is the Chief Financial Officer of the Sunshine Silver Mining & Refining Corporation. The Board also welcomed Robert D. Lamb in late 2015 to fill the Local Government vacancy left with Mason Parsaye's retirement. Bob is the Finance Division Manager for Boulder County.

On behalf of the Board, I also want to extend my gratitude and appreciation to the entire PERA membership and other constituencies for their continued support of PERA. Further, I want to express my gratitude to the Trustees for their dedication and efforts throughout 2015 as we work on behalf of all members and beneficiaries. The Board's guidance and support remain essential to the success of PERA. As Trustees, we are committed to ensuring the integrity and sustainability of the fund for all PERA members throughout our great state of Colorado.

Sincerely,

*Maryann Motza, PhD*
*Chair, Colorado PERA Board of Trustees*

## REPORT OF THE COLORADO PERA AUDIT COMMITTEE

As described more fully in its Charter, the purpose of the Colorado PERA Audit Committee (Audit Committee) is to assist the Board of Trustees (Board) in fulfilling its fiduciary responsibilities as they relate to accounting policies and financial reporting, the system of internal control, PERA's *Standards of Professional and Ethical Conduct*, the internal audit process, and the practices of the Director of Internal Audit. Management is responsible for the preparation, presentation, and integrity of PERA's financial statements; accounting and financial reporting principles; internal control; and procedures designed to reasonably ensure compliance with accounting standards, applicable laws, and regulations. PERA has a full-time Internal Audit Division that reports functionally to the Audit Committee. This Division is responsible for independently and objectively reviewing and evaluating the effectiveness and efficiency of PERA's system of internal control.

CliftonLarsonAllen LLP (CLA), PERA's independent public accounting firm (Independent Auditor), is responsible for performing an independent audit of PERA's financial statements in accordance with generally accepted auditing standards and the standards applicable to financial audits contained in Government Auditing Standards issued by the Comptroller General of the United States. In accordance with law, the Colorado Office of the State Auditor (OSA) has ultimate authority and responsibility for selecting, evaluating, and, when appropriate, replacing PERA's Independent Auditor. In 2015, the Colorado OSA selected CLA to perform the independent audit of PERA's annual financial statements for the year ended December 31, 2015.

The Audit Committee serves a Board-level oversight role in which it provides advice, counsel, and direction to management and to the Internal Audit function on the basis of the information it receives, discussions with management and Internal Audit, and the experience of the Audit Committee's members in business, financial, and accounting matters. In this role, the Audit Committee also reviews the audit plan of the Independent Auditor, the results of the audit, and the status of management's actions to implement recommendations from the audit.

The Audit Committee believes that a candid, substantive, and focused dialogue with the internal auditors and the Independent Auditor is fundamental to the Audit Committee's oversight responsibilities. To support this belief, the Audit Committee periodically meets separately with both the internal auditors and the Independent Auditor, without management present. In the course of its discussions in these meetings, the Audit Committee asked a number of questions intended to bring to light any areas of potential concern related to PERA's financial reporting and internal control. These questions include, but are not limited to:

- Are there any significant accounting judgments, estimates, or adjustments made by management in preparing the financial statements that would have been made differently had the Independent Auditor prepared and been responsible for the financial statements?
- Based on the Independent Auditors' experience, and their knowledge of PERA, do PERA's financial statements fairly present to users, with clarity and completeness, PERA's financial position and performance for the reporting period in accordance with generally accepted accounting principles?
- Based on the Independent Auditors' experience, and their knowledge of PERA, has PERA implemented internal control and internal audit procedures that are appropriate for PERA?
- Are the Independent Auditor and internal auditors getting the support they need from management to execute their duties?

Questions raised by the Audit Committee regarding these matters were answered to the Audit Committee's satisfaction.

The Audit Committee had an agenda for 2015 that included:

- Recommending the *Comprehensive Annual Financial Report* to the Board for its approval;
- Reviewing and approving the internal audit plan and budget of the Internal Audit Division;
- Reviewing the adequacy of resources made available to the Internal Audit Division;
- Reviewing the scope, objectives, and timing of the annual external audit;
- Providing input into the Executive Director's annual performance evaluation of the Director of Internal Audit;
- Reviewing PERA's compliance with its *Standards of Professional and Ethical Conduct;*

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1.800.759.PERA (7372) | **www.copera.org**

## REPORT OF THE COLORADO PERA AUDIT COMMITTEE

- Developing the process for appointing outside members of the Audit Committee;
- Meeting with the Independent Auditor separately, without management present;
- Meeting separately with the Executive Director, Director of Internal Audit, Chief Financial Officer, and General Counsel;
- Meeting with the Director of Internal Audit, or with the person acting in a similar capacity, and with management, to discuss the effectiveness of PERA's internal control; and
- Reviewing any changes in accounting practices or policies, and the financial impact thereof, any accruals, provisions, estimates, or management programs and policies that may have a significant effect on the financial statements of PERA. This included reviewing the impact of the adoption of GASB 67.

The Audit Committee has reviewed and discussed the audited financial statements for the year ended December 31, 2015, with management and CLA. Management represented to the Audit Committee that PERA's audited financial statements were prepared in accordance with U.S. generally accepted accounting principles, and CLA represented that their presentations to the Audit Committee included the matters required by auditing standards on auditor communication to be discussed with the Independent Auditor. This review included a discussion with management of the quality (not merely the acceptability) of PERA's accounting principles, the reasonableness of significant estimates and judgments, and the clarity of disclosure in PERA's financial statements, including the disclosures related to critical accounting estimates.

In reliance on these reviews and discussions, and the reports of CLA, the Audit Committee has recommended to the Board, and the Board has approved PERA's *Comprehensive Annual Financial Report* for the year ended December 31, 2015.

Audit Committee as of June 21, 2016

*Timothy M. O'Brien, Chairman*
*Roger Johnson*
*Robert Lamb*
*Warren Malmquist*
*Susan Murphy*
*Hon. Walker Stapleton*
*Lynn Turner*

# BOARD OF TRUSTEES

By State law, the management of the public employees' retirement fund is vested in the Board of Trustees (Board). The Board is composed of the following 16 Trustees:

- Nine members elected by members from their respective Divisions to serve on the Board for four–year terms; four from the School Division, three from the State Division, one from the Local Government Division, and one from the Judicial Division.
- Two retirees elected by retirees.
- Three Trustees appointed by the Governor and confirmed by the State Senate.
- The State Treasurer.
- One ex officio (non-voting) member or retiree elected by members and retirees of the Denver Public Schools (DPS) Division.

If a Board member resigns, a new Trustee is appointed from the respective Division for the remainder of the year until the next election.

### Maryann Motza
*Chair*
Elected by State Members
Social Security Administrator for the State
*Current term expires June 30, 2017*

### Carolyn Jonas-Morrison
*Vice Chair*
Elected by State Members
College Level Math Faculty
Pikes Peak Community College
*Current term expires June 30, 2018*

### Honorable Brian T. Campbell
Elected by Judicial Members
Judge
Denver County Court
*Current term expires June 30, 2016*

### Honorable James Casebolt
Elected by Judicial Members
Judge
Colorado Court of Appeals
*Term expired June 30, 2015*

### Richard Delk
Elected by State Members
Director of the Strategic Fiscal Planning
Office for the Colorado State Patrol
*Current term expires June 30, 2016*

### Karl Fisch
Elected by School Members
Director of Technology
Littleton Public Schools
*Current term expires June 30, 2018*

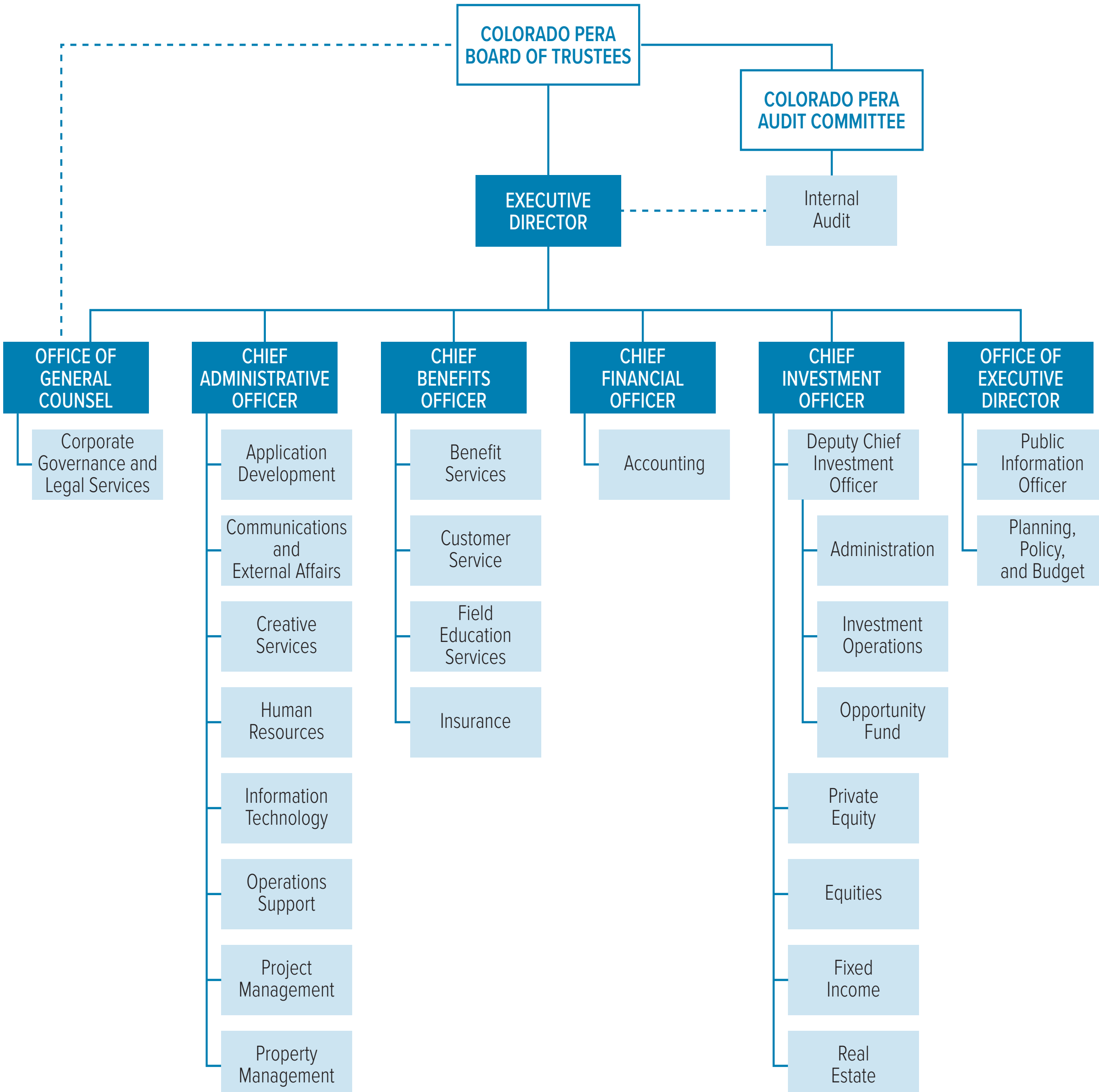
### Jon Forbes
Deputy State Treasurer
Delegated Substitute for the State Treasurer
*Continuous term effective January 2011*

### Amy Grant
Non-voting, Ex officio member
Elected by DPS Division members and retirees
Former Chair of the Denver Public Schools
Retirement System Board
Secretary
DPS JROTC Program
*Current term expires June 30, 2020*

## BOARD OF TRUSTEES

## ADMINISTRATIVE ORGANIZATIONAL CHART

*As of June 1, 2016*



## COLORADO PERA EXECUTIVE MANAGEMENT

### Gregory W. Smith—Executive Director

Jennifer Paquette—*Chief Investment Officer*
Karl Greve—*Chief Financial Officer*
Adam Franklin—*General Counsel*
Donna Baros—*Chief Benefits Officer*
Ron Baker—*Chief Administrative Officer*
Katie Kaufmanis—*Public Information Officer*
David Mather—*Director of Internal Audit*
Karl Paulson—*Director of Planning, Policy, and Budget*

### Jennifer Paquette—Chief Investment Officer

Amy McGarrity—*Deputy Chief Investment Officer*
Tom Liddy—*Director of Investment Operations*
Gary Ratliff—*Director of Opportunity Fund*

Jim Liptak—*Director of Equities*
CH Meili—*Director of Real Estate*
Tim Moore—*Director of Private Equity*
Mark Walter—*Director of Fixed Income*

### Karl Greve—Chief Financial Officer

*Accounting Division*

### Adam Franklin—General Counsel

Luz Rodriguez—*Director of Corporate Governance and Legal Services*
*Staff Attorneys*

### Donna Baros—Chief Benefits Officer

Lisa Bishop—*Director of Customer Service*
Matt Carroll—*Director of Benefit Services*
Jessica Linart—*Director of Insurance*
Kirsten Strausbaugh—*Director of Field Education Services*

### Ron Baker—Chief Administrative Officer

Kevin Carpenter—*Director of Information Technology*
Jack Dillman—*Director of Facilities*
Madalyn Knudsen—*Director of Creative Services*
Rich Krough—*Director of Application Development*
Tara May—*Director of Communications and External Affairs*

Aubre Schneider—*Director of Operations Support*
Angela Setter—*Director of Human Resources*
*Project Management Division*

## CONSULTANTS

### Health Care Program Consultant
*Denver Series of Lockton Companies, LLC*
8100 East Union Avenue
Suite 700
Denver, CO  80237

### Independent Auditors
*CliftonLarsonAllen LLP*
370 Interlocken Boulevard
Suite 500
Broomfield, CO  80021

### Investment Performance Consultants
*Aon Hewitt Investment Consulting, Inc.*
200 East Randolph Street
Suite 1500
Chicago, IL  60601

*The Northern Trust Company*
50 South LaSalle Street
Chicago, IL  60603

### Investments—Portfolio Consultant
*Aon Hewitt Investment Consulting, Inc.*
200 East Randolph Street
Suite 1500
Chicago, IL  60601

### Investments—Real Estate Performance
*Aon Hewitt Investment Consulting, Inc.*
200 East Randolph Street
Suite 1500
Chicago, IL  60601

### Master Custodian
*The Northern Trust Company*
50 South LaSalle Street
Chicago, IL  60603

### Pension and Health Care Program Actuary
*Cavanaugh Macdonald Consulting, LLC*
3550 Busbee Parkway
Suite 250
Kennesaw, GA  30144

### Risk Management
*IMA of Colorado*
1705 17th Street
Suite 100
Denver, CO  80202

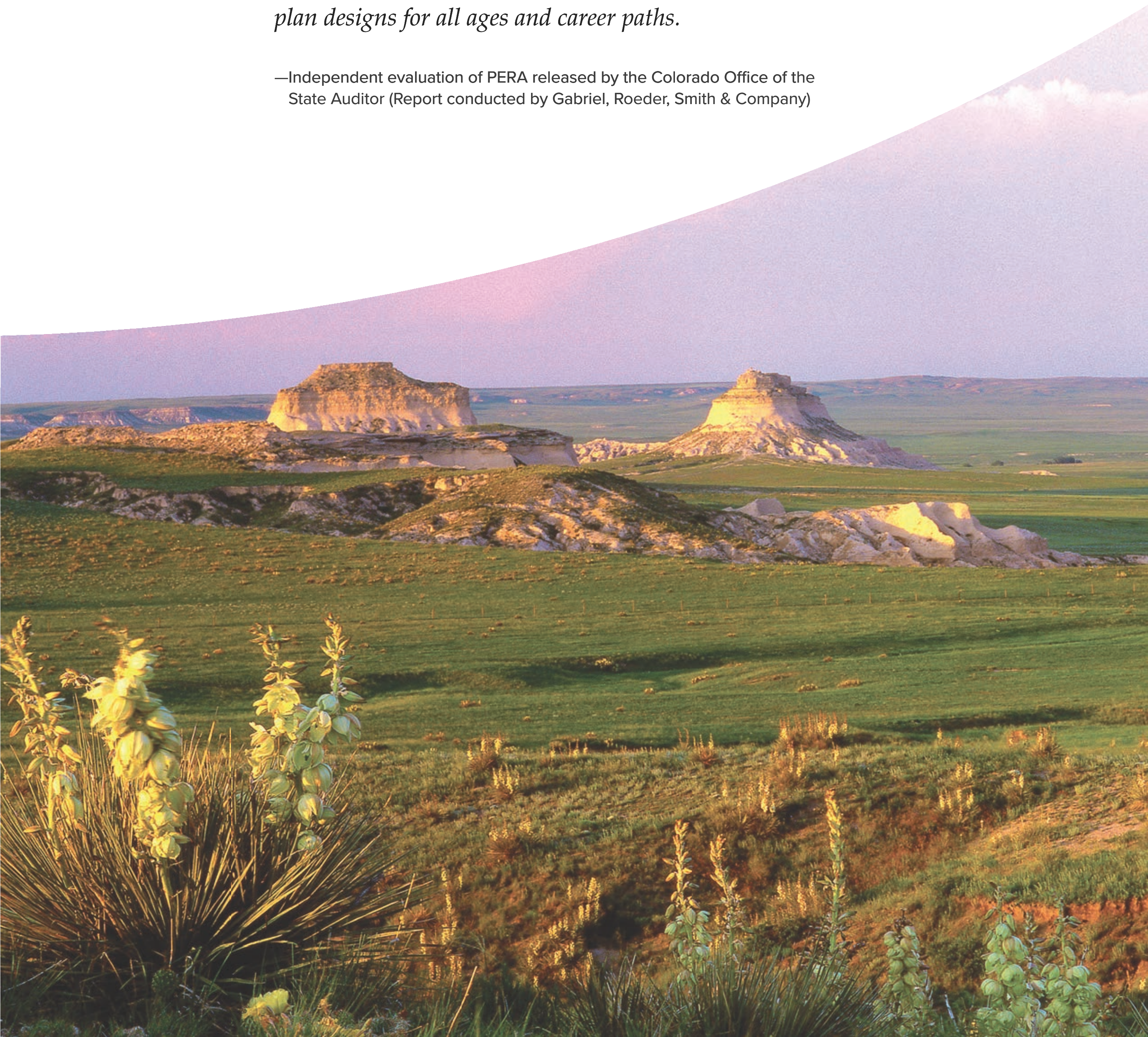
### Voluntary Investment Program, Defined Contribution Retirement, and Deferred Compensation Plan Investment and Performance Consultant
*RVK, Inc.*
1211 SW 5th Avenue
Suite 900
Portland, OR  97204

### Voluntary Investment Program, Defined Contribution Retirement, and Deferred Compensation Plan Service Provider
*Voya Institutional Plan Services, LLC*
30 Braintree Hill Office Park
Braintree, MA  02184

# Proven Effective

*Colorado PERA is more efficient and uses dollars more effectively than other types of plans in use today. The plan is the most cost effective, efficient plan available, and provides more income at retirement than the alternative plan designs for all ages and career paths.*

—Independent evaluation of PERA released by the Colorado Office of the State Auditor (Report conducted by Gabriel, Roeder, Smith & Company)



# REPORT OF THE INDEPENDENT AUDITORS

CliftonLarsonAllen LLP
www.CLAconnect.com

## INDEPENDENT AUDITORS' REPORT

The Board of Trustees
Colorado Public Employees' Retirement Association
Denver, Colorado

### Report on the Financial Statements

We have audited the accompanying financial statements of Colorado Public Employees' Retirement Association (Colorado PERA), as of and for the year ended December 31, 2015, and the related notes to the financial statements, which collectively comprise Colorado PERA's basic financial statements, as listed in the table of contents. We have also audited the financial statements of each individual fund of Colorado PERA as of and for the year ended December 31, 2015 as displayed in Colorado PERA's basic financial statements.

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

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

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

An independent member of Nexia International

REPORT OF THE INDEPENDENT AUDITORS

The Board of Trustees
Colorado Public Employees' Retirement Association

***Opinion***

In our opinion, the financial statements referred to above present fairly, in all material respects, the fiduciary net position of Colorado PERA as of December 31, 2015, and the respective changes in its fiduciary net position for the year then ended in accordance with accounting principles generally accepted in the United States of America. In addition, in our opinion, the financial statements referred to previously present fairly, in all material respects, the respective fiduciary net position of each individual fund of Colorado PERA as of December 31, 2015, and the respective changes in fiduciary net position thereof for the year then ended in conformity with accounting principles generally accepted in the United States of America

***Report on Summarized Comparative Information***

Colorado PERA's financial statements, as of and for the year ended December 31, 2014, were audited by other auditors whose opinion dated June 23, 2015, expressed an unmodified audit opinion. In our opinion, the summarized comparative information presented herein as of and for the year ended December 31, 2014 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 the schedules of changes in net pension liability, net pension liability, employer contributions, investment returns, funding progress and contributions from employers and other contributing entities and related notes, 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 considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

*Supplementary and Other Information*

Our audit was conducted for the purpose of forming an opinion on Colorado PERA's basic financial statements. The schedules of administrative expenses, other additions, other deductions, investment expenses and payments to consultants (supplementary information) and the introductory, investment, actuarial and statistical sections, as listed in the table of contents, are presented for purposes of additional analysis and are 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,

REPORT OF THE INDEPENDENT AUDITORS

The Board of Trustees
Colorado Public Employees' Retirement Association

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, as 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 do not express an opinion or provide any assurance on them.

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

In accordance with *Government Auditing Standards*, we have also issued our report dated June 21, 2016 on our consideration of Colorado PERA's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on 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 Colorado PERA's internal control over financial reporting and compliance.

CliftonLarsonAllen LLP

**CliftonLarsonAllen LLP**

Denver, Colorado
June 21, 2016

# MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)

*(Dollars in Thousands)*

This Management's Discussion and Analysis (MD&A) section provides a narrative overview and analysis of the financial activities of the Colorado Public Employees' Retirement Association (PERA) for the year ended December 31, 2015. Please consider the information presented here in conjunction with additional information in the Letter of Transmittal on page 3 of this *Comprehensive Annual Financial Report (CAFR)* and with the basic financial statements of PERA on pages 56-59.

In addition to historical information, the MD&A includes forward-looking statements, which involve certain risks and uncertainties. PERA's actual results, performance, and achievements may differ materially from the results, performance, and achievements expressed or implied in such forward-looking statements, due to a wide range of factors, including changes in interest rates, changes in the capital markets, general economic conditions, and legislative changes, as well as other factors.

PERA administers the following plans:

| Plan Name | Type of Plan |
|---|---|
| ***Defined Benefit Pension Plans (Division Trust Funds)*** | |
| State Division Trust Fund | Cost-sharing multiple-employer |
| School Division Trust Fund | Cost-sharing multiple-employer |
| Local Government Division Trust Fund | Cost-sharing multiple-employer |
| Judicial Division Trust Fund | Cost-sharing multiple-employer |
| Denver Public Schools (DPS) Division Trust Fund | Single-employer |
| ***Defined Benefit Other Postemployment Benefit Plans (Health Care Trust Funds)*** | |
| Health Care Trust Fund (HCTF) | Cost-sharing multiple-employer |
| Denver Public Schools Health Care Trust Fund (DPS HCTF) | Cost-sharing multiple-employer |
| ***Defined Contribution Plans*** | |
| Voluntary Investment Program | Multiple-employer |
| Defined Contribution Retirement Plan | Multiple-employer |
| ***Deferred Compensation Plan*** | |
| Deferred Compensation Plan | Multiple-employer |
| ***Private Purpose Trust Fund*** | |
| Life Insurance Reserve | Multiple-employer |

The MD&A is organized into the following two sections: (1) Defined Benefit Funds and (2) Defined Contribution Pension and Deferred Compensation Trust Funds. The Defined Benefit Funds section includes the discussion and analysis of the Division Trust Funds, Health Care Trust Funds, and the Life Insurance Reserve. The Defined Contribution and Deferred Compensation Funds section includes discussion and analysis of the Voluntary Investment Program, the Defined Contribution Retirement Plan, and the Deferred Compensation Plan.

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)
*(Dollars in Thousands)*

## DEFINED BENEFIT FUNDS

**Basic Retirement Equation**
Investment Income + Contributions = Benefits Paid + Expenses (I + C = B + E)

At the most basic level, in the long run, a retirement plan must balance the money coming in through investment earnings and contributions against the money going out through benefit and expense payments.

I + C = B + E

| | | |
|---|---|---|
| Where: | I | is investment income |
| | C | is contribution inflows |
| | B | is benefits paid |
| | E | is expenses |

During any year in the life of a plan, one side of the equation will be greater than the other with the goal that they will balance in the long run. The Statements of Changes in Fiduciary Net Position on pages 58–59 detail the contributions, investment income, benefit payments, and expenses for all of the fiduciary funds PERA administers.

The results for the past 35 years (January 1, 1981, to December 31, 2015) show that the funds grew by $40,823,000. The breakdown of the change in fiduciary net position (FNP) is shown below for this 35-year period. During this time, the number of members and benefit recipients grew over 360 percent from 118,118 to 547,500.

### CHANGE IN FIDUCIARY NET POSITION (35-YEAR PERIOD)

| | | |
|---|---|---|
| I | – Investment income | $56,993,000 |
| C | – Contributions | 37,414,000 |
| C | – Plan transfers | 2,764,000 |
| | Subtotal | 97,171,000 |
| B | – Benefits | 55,564,000 |
| E | – Expenses | 784,000 |
| | Subtotal | 56,348,000 |
| | **Change in fiduciary net position** | **$40,823,000** |

For the year ended December 31, 2015, the FNP of the defined benefit funds decreased by $1,604,790 or 3.6 percent. The decrease was principally due to benefits, which were greater than the contributions and lower-than-expected investment income. The total fund realized an annual return of 1.5 percent versus the total fund policy benchmark's annual return of 0.5 percent. The custom benchmark for the total fund comprises 55 percent of the Global Equity Custom Benchmark; 24 percent of the Fixed Income Custom Benchmark; 7.5 percent of the Real Estate Custom Benchmark; 7.5 percent of the Private Equity Custom Benchmark; 5 percent of the Opportunity Fund Benchmark; and 1 percent of the BofA Merrill Lynch U.S. 3-Month Treasury Bill Index. Benefits and expenses exceeded contributions by $2,274,139. The breakdown of the net change in FNP is shown below for the year ended December 31, 2015.

### 2015 CHANGE IN FIDUCIARY NET POSITION

| | | |
|---|---|---|
| I | – Investment income | $669,349 |
| C | – Contributions | 2,289,511 |
| | Subtotal | 2,958,860 |
| B | – Benefits | 4,506,189 |
| E | – Expenses | 57,461 |
| | Subtotal | 4,563,650 |
| | **Change in fiduciary net position** | **($1,604,790)** |

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)
*(Dollars in Thousands)*

## Financial Reporting Highlights

The FNP for all defined benefit funds administered by PERA decreased $1,604,790 during calendar year 2015.

### FIDUCIARY NET POSITION

| Trust Fund | 2015 Change Fiduciary Net Position | 2015 Ending Fiduciary Net Position |
|---|---|---|
| State Division | ($553,411) | $13,460,536 |
| School Division | (767,839) | 22,152,768 |
| Local Government Division | (90,959) | 3,660,509 |
| Judicial Division | (2,148) | 277,351 |
| DPS Division | (156,462) | 3,107,329 |
| HCTF | (33,133) | 276,505 |
| DPS HCTF | (85) | 16,936 |
| Life Insurance Reserve | (753) | 16,740 |
| **Total** | **($1,604,790)** | **$42,968,674** |

### CHANGE IN FIDUCIARY NET POSITION

| Trust Fund | (C) Contributions and Other Additions | + (I) Net Investment Income | – (B) – (E) Benefits, Expenses, and Other Deductions | = Change in Fiduciary Net Position |
|---|---|---|---|---|
| State Division | $733,954 | $210,337 | $1,497,702 | ($553,411) |
| School Division | 1,126,656 | 344,000 | 2,238,495 | (767,839) |
| Local Government Division | 122,416 | 56,328 | 269,703 | (90,959) |
| Judicial Division | 15,146 | 4,149 | 21,443 | (2,148) |
| DPS Division | 62,063 | 49,172 | 267,697 | (156,462) |
| HCTF | 216,329 | 4,807 | 254,269 | (33,133) |
| DPS HCTF | 12,947 | 254 | 13,286 | (85) |
| Life Insurance Reserve | — | 302 | 1,055 | (753) |
| **2015 change in fiduciary net position** | **$2,289,511** | **$669,349** | **$4,563,650** | **($1,604,790)** |
| **2014 change in fiduciary net position** | **$2,313,846** | **$2,474,349** | **$4,337,188** | **$451,007** |
| **2013 change in fiduciary net position** | **$2,022,072** | **$6,091,243** | **$4,192,436** | **$3,920,879** |
| **2012 change in fiduciary net position** | **$1,927,278** | **$4,737,372** | **$3,995,663** | **$2,668,987** |
| **2011 change in fiduciary net position** | **$1,861,792** | **$721,110** | **$3,771,506** | **($1,188,604)** |
| **2011–2015 change in fiduciary net position** | **$10,414,499** | **$14,693,423** | **$20,860,443** | **$4,247,479** |

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)
*(Dollars in Thousands)*

## Investment Highlights

**Analysis of Investment Income**
Basic Funding Equation: **I** + C = B + E

### INVESTMENT INCOME

| Trust Fund | Net Appreciation/ (Depreciation) in Fair Value | Interest and Dividends | Real Estate, Private Equity, and Oppty Fund Net Operating Inc | Investment Expenses | Net Securities Lending Income | Net Investment Income |
|---|---|---|---|---|---|---|
| State Division | ($67,392) | $252,978 | $73,179 | ($51,826) | $3,398 | $210,337 |
| School Division | (112,434) | 415,758 | 120,266 | (85,174) | 5,584 | 344,000 |
| Local Government Division | (18,817) | 68,449 | 19,800 | (14,023) | 919 | 56,328 |
| Judicial Division | (1,481) | 5,128 | 1,484 | (1,051) | 69 | 4,149 |
| DPS Division | (15,432) | 58,847 | 17,023 | (12,056) | 790 | 49,172 |
| HCTF | (1,241) | 5,510 | 1,594 | (1,129) | 73 | 4,807 |
| DPS HCTF | (86) | 309 | 89 | (63) | 5 | 254 |
| Life Insurance Reserve | (76) | 343 | 100 | (70) | 5 | 302 |
| **2015 Total** | **($216,959)** | **$807,322** | **$233,535** | **($165,392)** | **$10,843** | **$669,349** |
| **2014 Total** | **$1,563,843** | **$854,332** | **$205,078** | **($159,923)** | **$11,019** | **$2,474,349** |
| **2013 Total** | **$5,215,751** | **$806,954** | **$203,399** | **($145,422)** | **$10,561** | **$6,091,243** |
| **2012 Total** | **$3,854,770** | **$791,481** | **$225,967** | **($147,602)** | **$12,756** | **$4,737,372** |
| **2011 Total** | **($105,461)** | **$727,068** | **$227,310** | **($142,377)** | **$14,570** | **$721,110** |

The largest inflow into a retirement plan over the long term comes from investment income. Over the past 35 years, even with the large losses in 2008, investment income represents 59 percent of the inflows into PERA, and over the past 10 years it represents 52 percent of the inflows.

### Investment Performance

#### *Money-Weighted Rate of Return*

A money-weighted rate of return methodology provides information about the performance on the pooled investment assets. This methodology considers the effect of timing of transactions that increase the amount of pension plan investments (such as contributions) and those that decrease the amount of pension plan investments (such as benefit payments). Additionally, the money-weighted rate of return provides information that is comparable with the long-term assumed rate of return on the pooled investment assets.

For the year ended December 31, 2015, the net-of-fees, money-weighted, rate of return on the pooled investment assets was 1.6 percent, which was lower than the actuarial assumed rate of 7.5 percent.

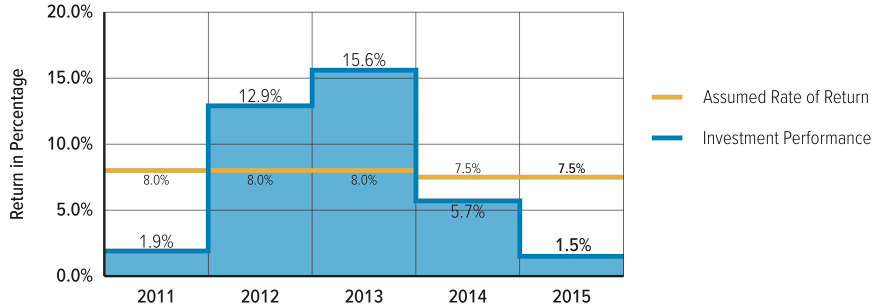
#### *Time-Weighted Rate of Returns*

The time-weighted rate of return methodology considers investment performance of a hypothetical dollar invested from the beginning of an investment period to the period's end. The effect of timing on varying amounts invested due to, for example, the receipt of contributions or the payments of benefits are not considered. This methodology allows PERA to compare its investment performance with relevant benchmark rates, as well as its performance with other pension plans, as shown on the next page.

For the year ended December 31, 2015, the net-of-fees, time-weighted, rate of return on the pooled investment assets was 1.5 percent compared to 5.7 percent for the year ended December 31, 2014. The net-of-fees, annualized rate of return for the pooled investment assets was 7.3 percent for the past five years and 6.0 percent for the past 10 years. The 35-year annualized, gross-of-fees, rate of return for the pooled investment assets was 9.5 percent. It is important to note that market returns and volatility will vary from year to year for the total fund and across various asset classes.

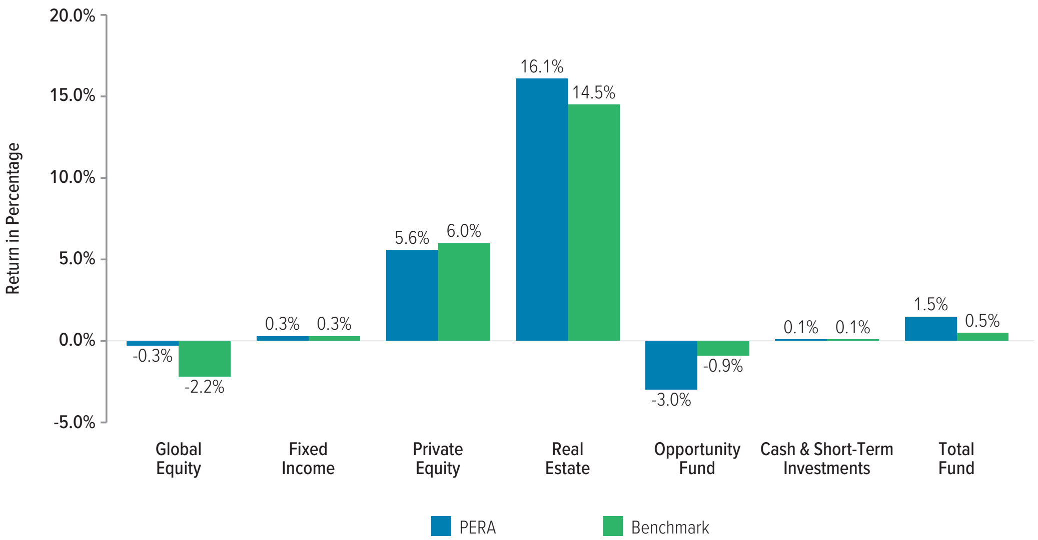
## MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)
*(Dollars in Thousands)*

Actual Time-Weighted Return vs. Assumed Rate of Return[1]




[1] In November 2013, the assumed rate of return was lowered to 7.5 percent effective January 1, 2014.

2015 Actual Time-Weighted Return vs. Benchmark




Note: Aon Hewitt Investment Consulting, Inc., the Board's investment consultant, provides the investment returns based on data made available by PERA's custodian, The Northern Trust Company. Listed above are the one-year, net-of-fees, time-weighted rates of return for each asset class and their respective benchmarks.

As of April 1, 2004, PERA adopted a policy benchmark, which is a passive representation of the asset allocation policy. As of December 31, 2015, the policy benchmark is a combination of 55 percent of the Global Equity Custom Benchmark; 24 percent of the Fixed Income Custom Benchmark; 7.5 percent of the Real Estate Custom Benchmark; 7.5 percent of the Private Equity Custom Benchmark; 5 percent of the Opportunity Fund Benchmark; and 1 percent of the BofA Merrill Lynch U.S. 3-Month Treasury Bill Index. For more information, see the Schedule of Investment Results on page 123 and the Fund Performance Evaluation on pages 125–127.

The total fund outperformed the policy benchmark return by 100 basis points for the year ended December 31, 2015. Global Equity and Real Estate were the primary contributors to the outperformance. The outperformance of the Global Equity portfolio was due to strong manager performance and superior stock selection. The Private Equity and Opportunity Fund asset classes were slight detractors to overall performance. Asset allocation, or the variance in the actual weights of the various asset classes versus the target weights, produced a slight negative impact to the total fund returns, as did cash.

For the year ended December 31, 2015, PERA's total fund returned 1.5 percent net-of-fees, compared to the BNY Mellon Performance and Risk Analytics' and Investment Metrics' Median Public Fund Universe return of negative 0.2 percent. As of December 31, 2015, the BNY Mellon Performance and Risk Analytics' and Investment Metrics' Median Public Fund Universe measure was comprised of 95 public pension funds with assets of approximately $1.4 trillion. PERA's total fund returned 7.4 percent and 7.3 percent on a three- and five-year annualized basis, respectively, compared with the BNY Mellon Performance and Risk Analytics' and Investment Metrics' Median Public Fund Universe returns of 6.7 percent and 6.6 percent, respectively.

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)
*(Dollars in Thousands)*

## Asset Allocation

The PERA Board of Trustees (Board) is responsible for the investment of PERA's funds with the following statutory limitations: the aggregate amount of moneys invested in corporate stocks and fixed income securities convertible into stock cannot exceed 65 percent of the then book value of the fund, no investment in common and/or preferred stock of any single corporation can exceed 5 percent of the then book value of the fund, and the fund cannot acquire more than 12 percent of the outstanding stock or bonds of any single corporation. As a fiduciary of the funds, the Board is responsible to carry out its investment functions solely in the interest of the PERA members and benefit recipients and for the exclusive purpose of providing benefits.

In 2014, the Board commissioned an Asset Liability Study prepared by Aon Hewitt Investment Consulting, Inc. (Aon Hewitt). The objective of the study was to determine the optimal strategic asset allocation policy that would ultimately allow PERA to meet its benefit obligations, while also ensuring that PERA incurs appropriate levels of risk. On March 20, 2015, the Board voted to change the strategic asset allocation policy of the fund effective July 1, 2015. The new strategic asset allocation contains an interim target allocation as of July 1, 2015, and a long-term target allocation and specifies ranges within which each asset class may operate. The long-term target allocation will be achieved over time. PERA staff and Aon Hewitt are responsible for annually recommending interim policy targets to the Board until the long-term target allocation is achieved.

### ASSET ALLOCATION VS. TARGETS AND RANGES

| | Actual Asset Allocation As of 12/31/2014[1] | Asset Allocation Target During 2014[2] | Target Range During 2014[2] | Actual Asset Allocation As of 12/31/2015[1] | Interim Asset Allocation Target Effective 7/1/2015 | Long-Term Asset Allocation | Target Range Effective 7/1/2015 |
|---|---|---|---|---|---|---|---|
| Global Equity | 56.5% | 56.0% | 50.0% – 62.0% | 55.5% | 55.0% | 53.0% | 47.0% – 59.0% |
| Fixed Income | 24.9% | 25.0% | 22.0% – 28.0% | 24.7% | 24.0% | 23.0% | 18.0% – 28.0% |
| Private Equity[3,4] | 7.8% | 7.0% | 4.0% – 10.0% | 8.2% | 7.5% | 8.5% | 5.0% – 12.0% |
| Real Estate | 7.4% | 7.0% | 4.0% – 10.0% | 8.6% | 7.5% | 8.5% | 5.0% – 12.0% |
| Opportunity Fund[5] | 2.5% | 5.0% | 0.0% – 8.0% | 2.2% | 5.0% | 6.0% | 0.0% – 9.0% |
| Cash & Short-Term Investments | 0.9% | 0.0% | | 0.8% | 1.0% | 1.0% | 0.0% – 3.0% |

[1] Asset allocation decisions are made based on the total holdings of the portfolios within each asset class. Therefore, the investment receivables, payables, accruals, and cash and short-term investments are allocated back to the investment portfolios that hold them for purposes of the table above and chart below.

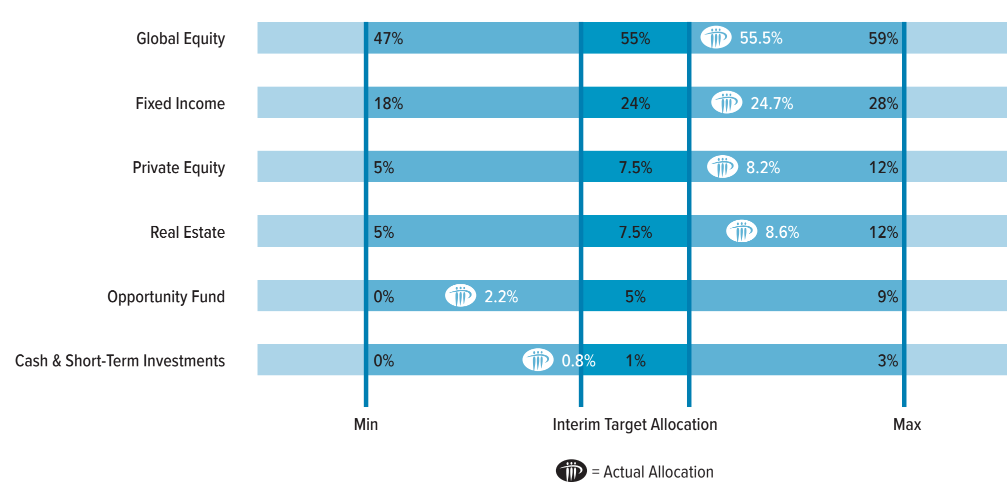
[2] The asset allocation targets and target ranges effective in 2014 were approved by the Board in September 2010. A range was not set for Cash & Short-Term Investments in the Asset Allocation Policy. The target percentage for Cash & Short-Term Investments was zero.

[3] Effective July 1, 2015, the name of the Alternative Investment asset class was changed to Private Equity.

[4] The Private Equity asset class has exposure to private equity, venture capital, secondary interests in private equity funds, and distressed debt.

[5] As of December 31, 2015, the Opportunity Fund principally consists of investments in timber, risk-parity, tactical, credit, and other opportunistic strategies.

December 31, 2015, Asset Allocation Permissible Ranges vs. Actual Allocation



MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)
*(Dollars in Thousands)*

## Sudan Divestment

Following the 2007 legislative session, former Governor Ritter signed into law House Bill (HB) 07-1184: Sudan Divestment by Public Pension Plans, which imposes targeted divestment from companies with active business operations in Sudan. As a result of this legislation, PERA is required to create a list of scrutinized companies at least every six months and to prohibit investments in these companies going forward. The establishment of the list requires PERA to engage the companies on the list to warn them of potential divestment and to encourage the companies to change their activities in Sudan. PERA must also engage the managers of actively managed indirect investments in companies on the list and request removal of scrutinized companies or ask the manager to create a similar fund that does not contain the identified companies. A similar request must be sent to the managers in PERA's defined contribution and deferred compensation trust funds. PERA also contacts its Private Equity managers to alert them of the Scrutinized Companies List. In 2015, PERA submitted its annual required report to elected officials on June 23, 2015.

More information regarding Sudan Divestment can be obtained from the PERA website at www.copera.org.

## Iran-Related Investment Policy

On January 18, 2008, the Board adopted the Iran-related investment policy. This policy outlines a phased strategy to address PERA's direct public investments in foreign companies doing business in the Islamic Republic of Iran. The strategy addresses and includes a number of actions, up to and including possible divestment. PERA recognizes the federal government has sole responsibility for the conduct of American foreign policy. PERA is acting out of a fiduciary concern for the welfare of its members' assets, which requires a broad horizon and sensitivity to the potential risks posed by investment in Iran.

More information regarding the Iran-related investment policy can be obtained from the PERA website at www.copera.org.

## Commitments

As of December 31, 2015, PERA had commitments for future investments in Private Equity of $2,354,256, in Real Estate of $798,694, and in the Opportunity Fund of $192,157.

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)
*(Dollars in Thousands)*

## Contributions

**Analysis of Contributions**
Basic Funding Equation: I + C = B + E

### Statutory Contributions

#### TOTAL CONTRIBUTIONS FOR DIVISION AND HEALTH CARE TRUST FUNDS

| Trust Fund | Employer Contributions[1] | Member Contributions | Purchased Service | Retiree Health and Life Premiums | Federal Health Care Subsidies | Employer Disaffiliation Payment | Other | Total Contributions and Other |
|---|---|---|---|---|---|---|---|---|
| State Division | $484,005 | $217,980 | $26,946 | $— | $— | $— | $5,023 | $733,954 |
| School Division | 754,182 | 348,537 | 23,841 | — | — | — | 96 | 1,126,656 |
| Local Government Division | 70,415 | 45,400 | 6,586 | — | — | — | 15 | 122,416 |
| Judicial Division | 7,702 | 3,772 | 425 | — | — | — | 3,247 | 15,146 |
| DPS Division | 8,494 | 49,973 | 3,585 | — | — | — | 11 | 62,063 |
| HCTF | 78,463 | — | — | 127,873 | — | — | 9,993 | 216,329 |
| DPS HCTF | 6,371 | — | — | 6,275 | — | — | 301 | 12,947 |
| **2015 Total** | **$1,409,632** | **$665,662** | **$61,383** | **$134,148** | **$—** | **$—** | **$18,686** | **$2,289,511** |
| **2014 Total** | **$1,306,596** | **$640,531** | **$53,040** | **$109,901** | **$—** | **$190,000** | **$13,778** | **$2,313,846** |
| **2013 Total** | **$1,203,725** | **$614,431** | **$50,963** | **$119,083** | **$16,294** | **$—** | **$17,576** | **$2,022,072** |
| **2012 Total** | **$1,093,193** | **$640,560** | **$49,795** | **$111,399** | **$14,686** | **$—** | **$17,645** | **$1,927,278** |
| **2011 Total** | **$1,013,731** | **$676,768** | **$31,441** | **$113,218** | **$14,650** | **$—** | **$11,984** | **$1,861,792** |

[1] Employer contributions include the employer statutory rate, AED, and SAED, less an offset (15.97 percent in 2015 and 16.89 percent in 2014) for the DPS Division as required by C.R.S. § 24-51-412 *et seq.*

Member and employer contribution rates are set in statute and are thus determined by the Colorado General Assembly; for the Schedule of Contribution Rate History, see pages 218-223. Member contributions for the Division Trust Funds increased from $640,531 in 2014 to $665,662 in 2015. Over the past 35 years, member contributions represent 18 percent of the inflows into the Division Trust Funds.

#### MEMBER CONTRIBUTION RATES FOR 2015

| Trust Fund | January 1–December 31 |
|---|---|
| State Division (except State Troopers) | 8.00% |
| State Division (State Troopers) | 10.00% |
| School Division | 8.00% |
| Local Government Division | 8.00% |
| Judicial Division | 8.00% |
| DPS Division | 8.00% |
| HCTF | 0.00% |
| DPS HCTF | 0.00% |

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)
*(Dollars in Thousands)*

Employer contributions for the Division Trust Funds, the HCTF, and the DPS HCTF increased from $1,306,596 in 2014 to $1,409,632 in 2015. Employer contributions increased due to increases in payroll and increases in the Amortization Equalization Disbursement (AED) and Supplemental Amortization Equalization Disbursement (SAED). Over the past 35 years, employer contributions represent 20 percent of the inflows into the Division Trust Funds, HCTF, and the DPS HCTF.

## EMPLOYER CONTRIBUTION RATES FOR 2015

| Trust Fund | Actuarially Determined Contribution[1] | Actual Employer Contribution Rate | Health Care Contribution Rate | AED | SAED | PCOP Offset | Contribution Rate Available for Funding |
|---|---|---|---|---|---|---|---|
| State Division (except State Troopers) | 22.35% | 10.15% | (1.02%) | 4.20% | 4.00% | — | 17.33% |
| State Division (State Troopers) | — | 12.85% | (1.02%) | 4.20% | 4.00% | — | 20.03% |
| School Division | 21.94% | 10.15% | (1.02%) | 4.20% | 4.00% | — | 17.33% |
| Local Government Division | 13.62% | 10.00% | (1.02%) | 2.20% | 1.50% | — | 12.68% |
| Judicial Division | 21.45% | 13.66% | (1.02%) | 2.20% | 1.50% | — | 16.34% |
| DPS Division | 11.06% | 10.15% | (1.02%) | 4.20% | 4.00% | (15.97%) | 1.36% |
| HCTF | 1.15% | — | 1.02% | — | — | — | 1.02% |
| DPS HCTF | 0.81% | — | 1.02% | — | — | — | 1.02% |

[1] Actuarially determined contribution (ADC) rates for 2015 are based on the 2013 actuarial valuation. The 2013 actuarial valuation determined the annual required contributions under the parameters promulgated by GASB 25 and GASB 43.

Colorado Revised Statutes (C.R.S.) § 24-51-412 *et seq.* provides for an offset to the DPS Division employer contribution rate. The offset, expressed as a percentage of payroll, is equal to the annual assumed payment obligations for pension certificates of participation (PCOPs) issued in 1997 and 2008, including subsequent refinancing by the Denver Public Schools at a fixed effective annual interest rate of 8.50 percent. At a minimum, the DPS Division employer contribution rate must be sufficient to fund the DPS HCTF (1.02 percent) and the Annual Increase Reserve (AIR) (1.00 percent) as the AIR applies to the DPS Division. The annual increase is a post-retirement, cost-of-living adjustment meeting certain criteria as described in Note 1 of the Notes to the Financial Statements. The staff of Denver Public Schools calculated the PCOP offset rate of 15.97 percent for 2015 and 15.54 percent for 2016.

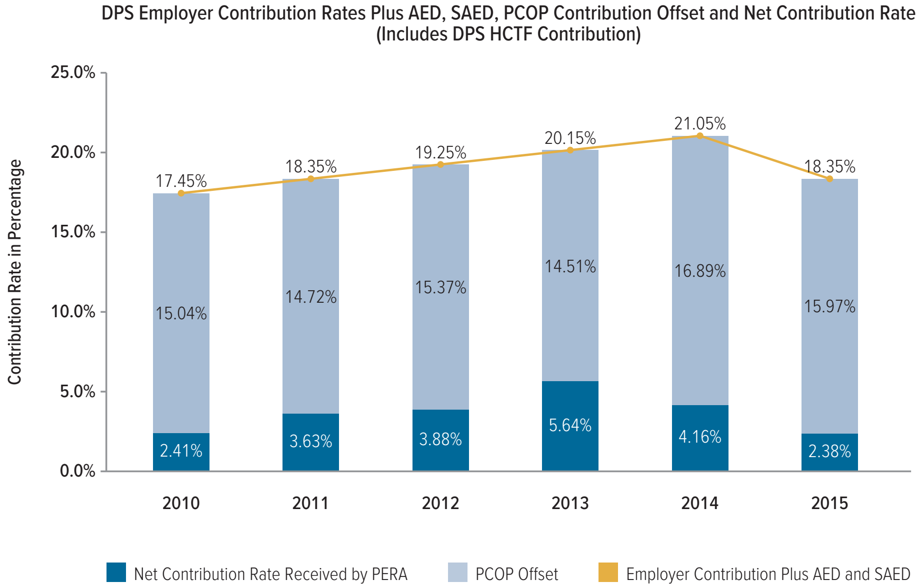
C.R.S. § 24-51-401(1.7) (e) recognizes the effort to equalize the funded status of the DPS Division and the School Division of PERA over a 30-year period beginning January 1, 2010. The basis of the funded status for this purpose is represented by the ratio of unfunded actuarial accrued liability (UAAL) to payroll for each division. Beginning January 1, 2015, and every fifth year thereafter, the bill requires a true-up calculation and actuarial projection to confirm the equalization of the funded status of these two divisions. In the event a true-up calculation does not project equalization between these divisions over the 30-year period, the Board shall recommend an adjustment of the DPS Division employer contribution rate to the Colorado General Assembly. The PCOP offset in the DPS Division will be a significant contributor to lowering the funded ratio, until such time that the employer contribution rate is adjusted. An adjustment to the DPS Division employer contribution rate may result in a significant increase or decrease in the total contributions paid by the DPS Division employers.

C.R.S. § 24-51-401(1.7) created a mechanism to reduce the funded ratio of the DPS Division at its inclusion into PERA in 2010 to the funded ratio of the School Division by 2040. The funded ratio is the actuarial value of assets divided by actuarial accrued liabilities (AALs). This mechanism involves offsetting the employer contributions into the DPS Division Trust Fund by the amount of the PCOPs payments as described above. It is expected that the equalization will occur in approximately 24 years. The DPS Division had a funded ratio of 88.3 percent at its inclusion into PERA. As of December 31, 2015, the funded ratio of the DPS Division was 82.1 percent. The funded ratio is expected to continue to decrease as a result of this equalization effort.

On June 3, 2015, HB 15-1391 was signed into law, which reduces the employer contribution rate for the DPS Division from 13.75 percent to 10.15 percent, with a retroactive effective date of January 1, 2015.

Employer contribution rates, PCOP offset rates, and net contribution rates for the DPS Division for the past five years are shown in the chart on the next page.

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)
*(Dollars in Thousands)*




## Prospective Contribution Information

The AED and the SAED are set to increase in future years, as described in the table below. With the passage of Senate Bill (SB) 10-001, the AED and the SAED can be adjusted based on the year-end funded status within a particular Division Trust Fund. If a particular Division Trust Fund reaches a funded status of 103 percent, a decrease in the AED and SAED is mandated and if it subsequently falls below a funded status of 90 percent, an increase is mandated. For the Local Government and Judicial Divisions, if the funded ratio reaches 90 percent and subsequently falls below 90 percent, an increase in the AED and SAED is mandated. Increases cannot exceed the maximum allowable limitations shown in the table below.

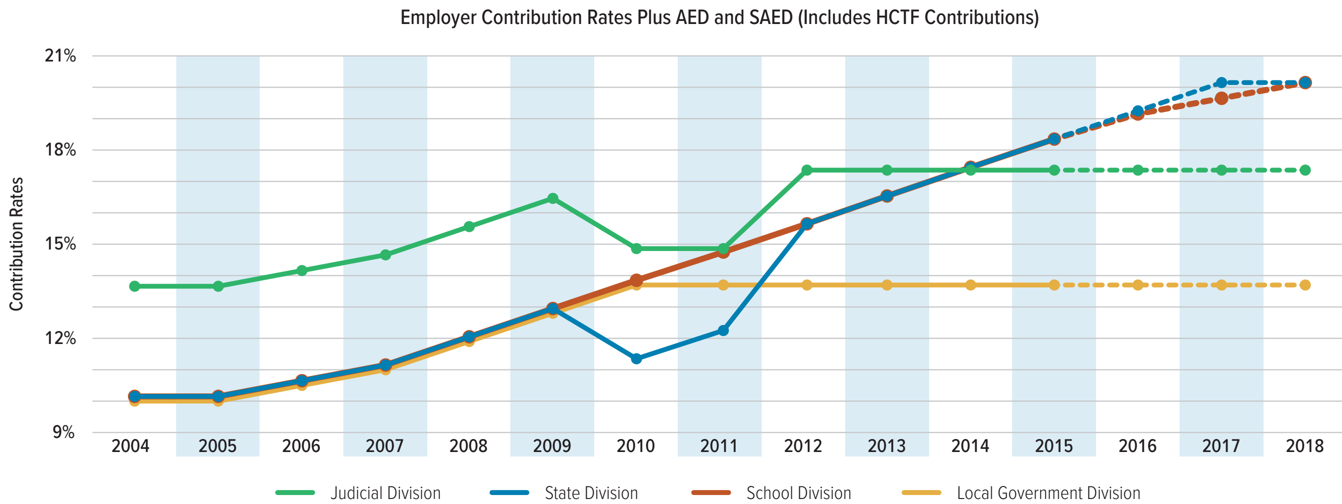
### FUTURE AED AND SAED RATES

| | State Division Trust Fund | | School Division Trust Fund | | Local Government Division Trust Fund | | Judicial Division Trust Fund | | DPS Division Trust Fund[1] | |
|---|---|---|---|---|---|---|---|---|---|---|
| Period | AED | SAED | AED | SAED | AED | SAED | AED | SAED | AED | SAED |
| 1/1/2016—12/31/2016 | 4.60% | 4.50% | 4.50% | 4.50% | 2.20% | 1.50% | 2.20% | 1.50% | 4.50% | 4.50% |
| 1/1/2017—12/31/2017 | 5.00% | 5.00% | 4.50% | 5.00% | 2.20% | 1.50% | 2.20% | 1.50% | 4.50% | 5.00% |
| 1/1/2018—12/31/2018 | 5.00% | 5.00% | 4.50% | 5.50% | 2.20% | 1.50% | 2.20% | 1.50% | 4.50% | 5.50% |
| Maximum allowable limitations | 5.00% | 5.00% | 4.50% | 5.50% | 5.00% | 5.00% | 5.00% | 5.00% | 4.50% | 5.50% |

[1] DPS Division employers are permitted to reduce the AED and SAED by the PCOP offset, as specified in C.R.S. § 24-51-412 *et seq.*

Based on the current covered payroll for the State Division, School Division, and the DPS Division, the annual AED and SAED increase would cause contributions to grow annually by $23,777, $33,882, and $4,969, respectively. If the scheduled future increases in the AED and SAED are not made, it could result in significant underfunding of the plans and impact the ability to make future benefit payments.

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)
*(Dollars in Thousands)*




Note: The 2010 and 2011 contributions for the State and Judicial Divisions include the 2.50 percent rate swap required by SB 10-146, and extended through June 30, 2012, by SB 11-076. Information on the DPS Division contribution rates can be found on page 35.

## Contribution Analysis—Division Trust Funds

### *Funding Policy*

The guidance under Governmental Accounting Standards Board (GASB) Statement No. 67 established a decided shift in financial disclosure requirements from a funding-based approach to an accounting-based approach. To accommodate the financial disclosure requirements promulgated by GASB 67, separate actuarial valuations are performed for funding and accounting purposes. The disclosure and use of the annual required contribution (ARC) as a funding benchmark is not a required reporting element. This philosophical shift necessitated the development and use of a plan-specific actuarially determined contribution (ADC) benchmark against which to gauge the adequacy of PERA's statutory contribution rates. In response to these changes, the Board adopted a revised pension funding policy in March 2015, with regard to the Division Trust Funds, to update and replace the funding policy dated November 2007. The purpose of the revised funding policy is three-fold: (1) to define the overall funding benchmarks of the five defined benefit pension trust funds, (2) to assess the adequacy of the contribution rates which are set by the Colorado Legislature by comparing these rates to an ADC rate, and (3) to define the annual actuarial metrics which will assist the Board in assessing the sustainability of the plan. The results of these three items are intended to guide the Board when considering whether to pursue or support proposed legislation pertaining to changes in contribution and/or benefit provisions. Based on this policy, which considers a layered, 30-year closed amortization period, effective December 31, 2014, the ADC calculated in the 2015 actuarial valuation for funding purposes will be the benchmark to gauge the adequacy of 2017 contributions. More information about the new funding policy can be found in the Actuarial Section on page 143.

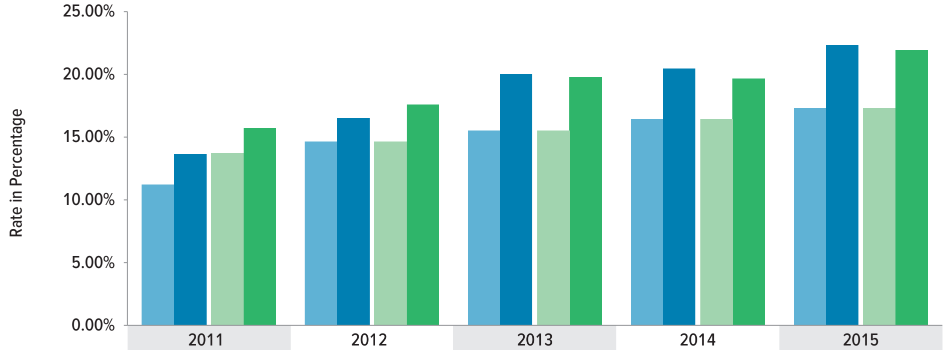
MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)
*(Dollars in Thousands)*

# Actuarially Determined Contribution (ADC)

## History

For the Schedule of Contribution Rate History, please see pages 218-223.

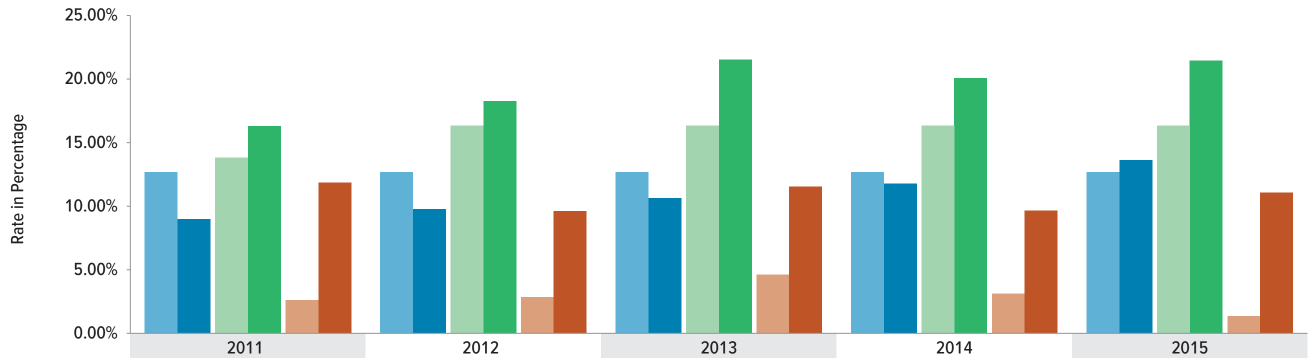
State and School Divisions; Year-End Employer Contribution/ADC Comparison
(Contribution Includes AED and SAED Less HCTF Allocation)




| | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|
| State Actual[1] | 11.23%[2] | 14.63% | 15.53% | 16.43% | **17.33%** |
| State ARC/ADC[3,4] | 13.63%[2] | 16.52%[2] | 20.01% | 20.45% | **22.35%** |
| School Actual | 13.73% | 14.63% | 15.53% | 16.43% | **17.33%** |
| School ARC/ADC[3,4] | 15.73% | 17.60% | 19.79% | 19.65% | **21.94%** |

[1] Actual rates are for non-State Troopers.
[2] The rate includes the 2.50 percent reduction required by SB 10-146 and SB 11-076.
[3] The rates shown for years 2011–2013 reflect the ARC rates under GASB 25.
[4] ADC rates for 2014 and 2015 are based on the 2012 and 2013 actuarial valuations, respectively. The 2012 and 2013 actuarial valuations determined the ARC rates under the parameters promulgated by GASB 25.

Local Government, Judicial, and DPS Divisions; Year-End Employer Contribution/ADC Comparison
(Contribution Includes AED and SAED Less HCTF Allocation)




| | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|
| Local Govt Actual[1] | 12.68% | 12.68% | 12.68% | 12.68% | **12.68%** |
| Local Govt ARC/ADC[2,3] | 8.98% | 9.79% | 10.62% | 11.78% | **13.62%** |
| Judicial Actual | 13.84%[1] | 16.34% | 16.34% | 16.34% | **16.34%** |
| Judicial ARC/ADC[2,3] | 16.30%[1] | 18.28%[1] | 21.53% | 20.07% | **21.45%** |
| DPS Actual | 2.61% | 2.86% | 4.62% | 3.14% | **1.36%** |
| DPS ARC/ADC[2,3] | 11.85% | 9.60% | 11.53% | 9.67% | **11.06%** |

[1] The rate includes the 2.50 percent reduction required by SB 10-146 and SB 11-076.
[2] The rates shown for years 2011–2013 reflect the ARC rates calculated under GASB 25.
[3] ADC rates for 2014 and 2015 are based on the 2012 and 2013 actuarial valuations, respectively. The 2012 and 2013 actuarial valuations determined the ARC rates under the parameters promulgated by GASB 25.

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)
*(Dollars in Thousands)*

## ADC Deficiency/(Excess)

GASB 67 requires the disclosure of the amount of contributions recognized by the pension plan and the ADC amount as well as the difference between these two amounts as Required Supplementary Information (RSI). An ADC deficiency arises when actual contributions are less than the ADC. The ADC is calculated using the investment rate of return and discount rate assumptions according to the Board's funding policy. The ADC for 2015 was determined based on the results of the December 31, 2013, actuarial valuation. In 2015, the actual contributions, as set in statute, were $383.1 million less than the ADC as calculated by the actuaries. During the past 10 years, this shortfall in funding without adjustment for investment earnings to the Division Trust Funds totaled $3.1 billion. Even with SB 10-001, which resulted in a lower ADC deficiency since being signed into law, the ADC deficiency is expected to continue until statutory contribution changes are fully implemented and all membership falls under the revised benefit structure. However, given the two-year delay regarding the determination of the ADC, the significant increase in the annual deficiency in 2015 is primarily due to lowering the expected investment rate of return and discount rate assumption from 8.0 percent to 7.5 percent which was effective for the December 31, 2013, actuarial valuation.

### ADC DEFICIENCY/(EXCESS)[1]
*(Dollars in Millions)*

| Trust Fund | 2011 | 2012 | 2013 | 2014 | 2015 | Cumulative Deficiency/(Excess) 2006–2015 |
|---|---|---|---|---|---|---|
| State Division | $49.2 | $65.9 | $102.0 | $90.1 | **$117.9** | $1,249.5 |
| School Division | 66.9 | 107.7 | 165.7 | 125.4 | **190.7** | 1,798.6 |
| Local Government Division | (25.0) | (32.5) | (9.1) | (188.9)[2] | **8.6** | (207.6) |
| Judicial Division | 1.0 | 1.3 | 2.1 | 1.7 | **2.5** | 13.7 |
| DPS Division | 46.5 | 35.9 | 40.0 | 40.7 | **63.4** | 289.6[3] |
| Total | $138.6 | $178.3 | $300.7 | $69.0 | $383.1 | $3,143.8 |

[1] A 10-year schedule showing the amount of contributions, the ADC amount, and the difference between these two amounts can be found in the RSI on pages 100–102.

[2] Includes the receipt of the disaffiliation payment of $186.0 for Memorial Health Systems. See Note 2, "2014 Changes in Assumptions or Other Inputs Since 2013" in the Notes to the RSI–Division Trust Funds for more information on the lawsuit resolution for Memorial Health Systems.

[3] The DPS Division was established January 1, 2010.

## Future ADC

Using the funding policy approved by the Board on March 20, 2015, and the 2014 actuarial funding valuation based on an assumed 7.5 percent investment rate of return and discount rate, the 2016 actuarially determined employer contributions needed to meet the initial, 30-year closed amortization period effective December 31, 2014, for the Division Trust Funds are as follows:

- State Division Trust Fund—22.31 percent
- School Division Trust Fund—22.36 percent
- Local Government Division Trust Fund—11.98 percent
- Judicial Division Trust Fund—22.07 percent
- DPS Division Trust Fund—10.46 percent

Additionally, using the funding policy approved by the Board on March 20, 2015, and the 2015 actuarial funding valuation based on an assumed 7.5 percent investment rate of return and discount rate, the 2017 actuarially determined employer contributions needed to meet the layered, 30-year closed amortization period for the Division Trust Funds are as follows:

- State Division Trust Fund—22.71 percent
- School Division Trust Fund—22.54 percent
- Local Government Division Trust Fund—11.92 percent
- Judicial Division Trust Fund—22.54 percent
- DPS Division Trust Fund—10.28 percent

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)
*(Dollars in Thousands)*

## Amortization of Unfunded Actuarial Accrued Liability

The table below shows the amortization periods considering the future additional contributions of the AED and the SAED. For the DPS Division, no adjustment has been made for the current PCOP offset. However, considering anticipated reductions in the future PCOP offset to DPS employer contribution requirements for the cost of certain PCOPs as currently structured, the amortization period is expected to be below 30 years if the DPS Division's statutory employer contribution amounts are maintained at their current level. Colorado statutes call for a "true-up" in 2020, and every five years following, with the express purpose of adjusting the total DPS employer contribution rate to ensure equalization of the ratio of UAAL over payroll between the DPS and School Divisions at the end of the 30-year period beginning January 1, 2010.

| Trust Fund | Amortization Period With Future AED and SAED Increases |
|---|---|
| State Division | 44 Years |
| School Division | 46 Years |
| Local Government Division | 28 Years |
| Judicial Division | Infinite |
| DPS Division | Infinite |

The amortization periods with future AED and SAED increases do not include the full effect of the 2006 and 2010 legislation. The legislation includes plan changes that will lower the normal cost for future new hires and will allow more of the employers' contribution to be used to amortize past service costs.

C.R.S. § 24-51-211 states that the amortization period of 30 years shall be deemed actuarially sound. At the end of 2015, given the current contribution rates, all the Division Trust Funds, except the Local Government Division exceeded the 30-year amortization period.

As stated by Cavanaugh Macdonald Consulting, LLC (CMC), in the Actuary's Certification Letter on pages 139–142 in the Actuarial Section of the *CAFR:*

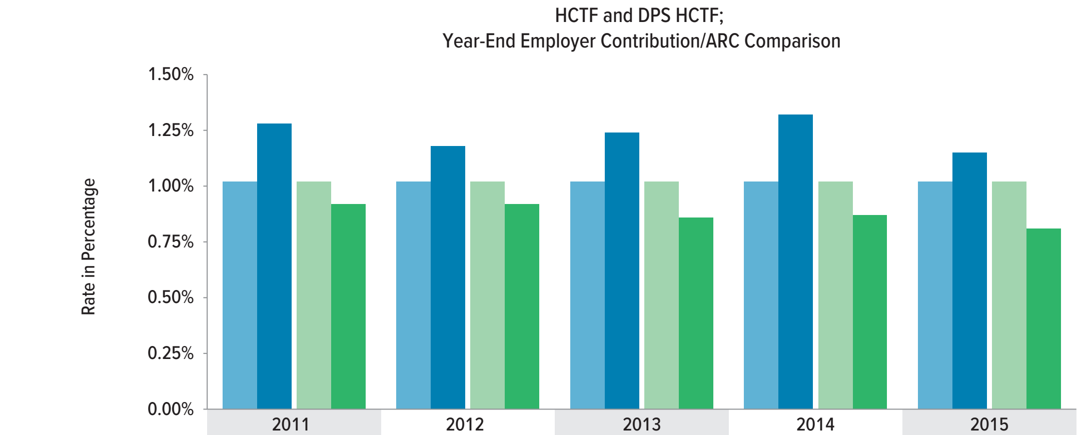
> "...The results of the December 31, 2015 funding valuation, combined with financial projections of all divisions reflecting anticipated growth in active membership, indicate that the goal of funding 100% of the actuarial accrued liability under the PERA revised benefit structure created by SB 10-001, is achievable, within a projection period of 44 years with the exception of the Judicial Division. The Judicial Division is projected to take a longer period to reach full-funding, absent favorable actuarial experience in the future."

## Contribution Analysis—Health Care Trust Funds

### *Funding Policy*

The funding policy dated November 2007 remains in force for the two pre-funded retiree Health Care Trust Funds, the HCTF and DPS HCTF. The HCTF and DPS HCTF are other postemployment benefit (OPEB) plans and financial information is reported in accordance with GASB 43. More information about the November 2007 funding policy can be found on page 171.

## MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)
*(Dollars in Thousands)*




| | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|
| HCTF Actual | 1.02% | 1.02% | 1.02% | 1.02% | **1.02%** |
| HCTF ARC | 1.28% | 1.18% | 1.24% | 1.32% | **1.15%** |
| DPS HCTF Actual | 1.02% | 1.02% | 1.02% | 1.02% | **1.02%** |
| DPS HCTF ARC | 0.92% | 0.92% | 0.86% | 0.87% | **0.81%** |

### *Contribution Deficiency/(Excess)*
The ARC is calculated and reported in the annual actuarial valuations produced for funding purposes using the investment rate of return and discount rate assumptions in that valuation. The ARC calculated provides the rate effective two years from the date of valuation. In 2015, the actual contributions, as set in statute, were $6.3 million less than the ARC as calculated by the actuaries based on parameters promulgated by GASB 43. The table below shows the yearly ARC shortfall (excess) by health care trust fund for the past five years.

**YEARLY ARC DEFICIENCY/(EXCESS)**
*(Dollars in Millions)*

| Trust Fund | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|
| HCTF | $1.6 | ($7.0) | ($10.4) | $15.6 | **$7.6** |
| DPS HCTF | (1.0) | (1.0) | (1.6) | (0.9) | **(1.3)** |
| Total | **$0.6** | **($8.0)** | **($12.0)** | **$14.7** | **$6.3** |

For more detail on the ARC, see the Actuarial Section on page 171 and the Schedule of Contributions from Employers and Other Contributing Entities for the Health Care Trust Funds on page 109.

### *Future ARC*
Using GASB 43 as a guide and the 2014 actuarial valuation based on an assumed 7.5 percent investment rate of return and discount rate, the 2016 annual required employer contributions needed to meet a 30-year amortization period are as follows:

- Health Care Trust Fund—1.09 percent
- DPS Health Care Trust Fund—0.75 percent

Additionally, using GASB 43 as a guide and the 2015 actuarial valuation based on an assumed 7.5 percent investment rate of return and discount rate, the 2017 annual required employer contributions needed to meet a 30-year amortization period are as follows:

- Health Care Trust Fund—1.08 percent
- DPS Health Care Trust Fund—0.68 percent

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)
*(Dollars in Thousands)*

### *Annual Actuarial Valuation Statistics*

As of December 31, 2015, the Funded Ratio, the UAAL, the ARC for 2017 as a percentage of covered payroll, and the amortization periods with current funding for each health care trust fund are shown in the table below. The results in this table are based on parameters set by GASB 43.

**ACTUARIAL STATISTICS**

| Trust Fund | Funded Ratio | UAAL | ARC | ARC Amortization Period | Amortization Period Current Year Funding |
|---|---|---|---|---|---|
| HCTF | 18.4% | $1,270,681 | 1.08% | 30 Years | 35 Years |
| DPS HCTF | 23.4% | 57,340 | 0.68% | 30 Years | 14 Years |
| Total Health Care Trust Funds[1] | | $1,328,021 | | | |

[1] The data in this table has been aggregated for informational purposes. The assets of each trust fund are for the sole purpose of its members and cannot be used by another fund.

For calculation of the ARC rate, the amortization period used is 30 years, which is the maximum period permitted by GASB. The amortization period is the number of years it will take to pay off the UAAL, given the current funding and benefits, based on a set of assumptions. See the RSI and the accompanying notes on pages 108–112 for additional information.

C.R.S. § 24-51-211 states that the amortization period of 30 years shall be deemed actuarially sound. At the end of 2015, given the current contribution rates, the HCTF exceeded the 30-year amortization period.

As stated by CMC in the Actuary's Certification Letter on pages 139–142 in the Actuarial Section of the *CAFR:*

> "...The results of the December 31, 2015 funding valuation, combined with financial projections reflecting anticipated growth in active membership, indicate that the goal of funding 100% of the actuarial accrued liability of the HCTFs is achievable within a projection period of 28 years."

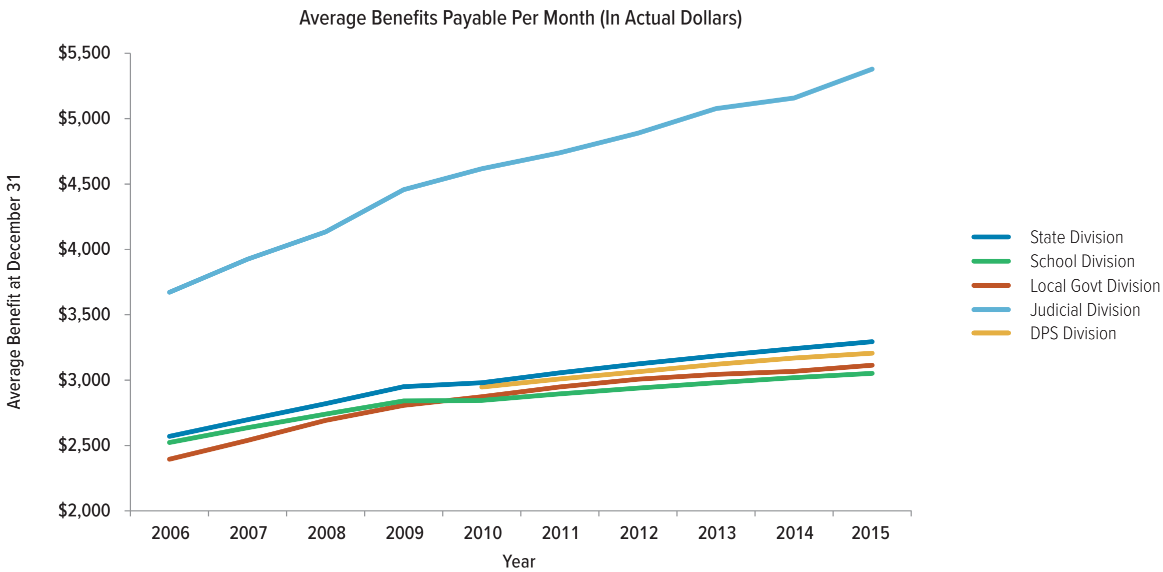
## Summary of Benefits and Expenses

Analysis of Benefits and Expenses
Basic Funding Equation: I + C = B + E

**TOTAL DEDUCTIONS BY TRUST FUND**

| Trust Fund | Benefit Payments | Refunds | Disability Premiums | Administrative Expenses | Other | Total Deductions |
|---|---|---|---|---|---|---|
| State Division | $1,417,862 | $63,567 | $2,088 | $10,779 | $3,406 | $1,497,702 |
| School Division | 2,134,754 | 70,298 | 3,400 | 20,865 | 9,178 | 2,238,495 |
| Local Government Division | 244,948 | 20,410 | 431 | 2,253 | 1,661 | 269,703 |
| Judicial Division | 21,158 | — | 42 | 77 | 166 | 21,443 |
| DPS Division | 255,068 | 7,897 | 358 | 2,599 | 1,775 | 267,697 |
| HCTF | 234,414 | — | — | 19,261 | 594 | 254,269 |
| DPS HCTF | 12,442 | — | — | 822 | 22 | 13,286 |
| **2015 Total** | **$4,320,646** | **$162,172** | **$6,319** | **$56,656** | **$16,802** | **$4,562,595** |
| **2014 Total** | **$4,094,840** | **$170,882** | **$6,947** | **$51,177** | **$12,275** | **$4,336,121** |
| **2013 Total** | **$3,937,030** | **$185,313** | **$6,741** | **$46,960** | **$15,390** | **$4,191,434** |
| **2012 Total** | **$3,736,653** | **$195,742** | **$4,749** | **$42,730** | **$15,217** | **$3,995,091** |
| **2011 Total** | **$3,537,615** | **$176,244** | **$5,010** | **$42,121** | **$9,396** | **$3,770,386** |

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)
*(Dollars in Thousands)*




Note: The DPS Division was established January 1, 2010.

## AVERAGE MONTHLY BENEFIT BY DIVISION[1, 2, 3]

*(In Actual Dollars)*

| Year Ended | State Division | School Division | Local Government Division | Judicial Division | DPS Division |
|---|---|---|---|---|---|
| 2011 | $3,056 | $2,895 | $2,948 | $4,739 | $3,009 |
| 2012 | 3,124 | 2,939 | 3,007 | 4,889 | 3,064 |
| 2013 | 3,185 | 2,980 | 3,044 | 5,077 | 3,121 |
| 2014 | 3,241 | 3,019 | 3,067 | 5,158 | 3,169 |
| **2015** | **3,294** | **3,052** | **3,114** | **5,379** | **3,206** |

1 Most employees working for a PERA-affiliated employer do not earn Social Security benefits.

2 Includes disability retirements, but not survivor benefits.

3 For more information about PERA benefit payments, please see page 205.

## RATIO OF ACTIVE MEMBERS TO RETIREES AND BENEFICIARIES

| Year Ended | State Division | School Division | Local Government Division | Judicial Division | DPS Division |
|---|---|---|---|---|---|
| 2011 | 1.65 | 2.21 | 3.02 | 1.05 | 2.15 |
| 2012 | 1.61 | 2.14 | 2.05[1] | 1.02 | 2.17 |
| 2013 | 1.58 | 2.10 | 1.94 | 1.03 | 2.26 |
| 2014 | 1.54 | 2.06 | 1.87 | 1.01 | 2.30 |
| **2015** | **1.49** | **2.00** | **1.80** | **0.97** | **2.34** |

1 The rate decreased due to the termination of affiliation with PERA by Memorial Health Systems. See Note 2, "2014 Changes in Assumptions or Other Inputs Since 2013" in the Notes to the RSI–Division Trust Funds for more information on the lawsuit resolution for Memorial Health Systems.

The decline in the ratio of active members to retirees and beneficiaries is reflective of the aging population. By itself, a declining ratio of active members to retirees and beneficiaries does not pose a problem to a Division Trust Fund's actuarial condition. However, to the extent that a plan is underfunded, a low or declining ratio of active members to retirees and beneficiaries, coupled with increasing life expectancy, can complicate the Division Trust Fund's ability to move toward full funding, as fewer active, contributing members, relatively, are available to amortize the unfunded liability.

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)
*(Dollars in Thousands)*

### RATIO OF BENEFIT PAYMENTS TO CONTRIBUTIONS

| Trust Fund | Employer Contributions | Member Contributions | Total Contributions | Benefit Payments | Ratio of Benefits/Contributions 2015 | 2014 | 2013 | 2012 | 2011 |
|---|---|---|---|---|---|---|---|---|---|
| State Division | $484,005 | $217,980 | $701,985 | $1,417,862 | **2.0** | 2.1 | 2.1 | 2.2 | 2.2 |
| School Division | 754,182 | 348,537 | 1,102,719 | 2,134,754 | **1.9** | 2.0 | 2.0 | 2.1 | 2.0 |
| Local Government Division | 70,415 | 45,400 | 115,815 | 244,948 | **2.1** | 2.1 | 2.0 | 1.4 | 1.2 |
| Judicial Division | 7,702 | 3,772 | 11,474 | 21,158 | **1.8** | 1.9 | 1.9 | 1.8 | 1.8 |
| DPS Division | 8,494 | 49,973 | 58,467 | 255,068 | **4.4** | 3.8 | 3.5 | 4.1 | 4.2 |

## Other Changes—Defined Benefit Funds

### Cash and Short-Term Investments

For the year ended December 31, 2015, PERA had cash and short-term investments of $756,550, a decrease of $431,142 from 2014. The decrease in cash and short-term investments was primarily due to two factors. At year-end there was a reduced need to have cash-on-hand due to the decrease in net pending fixed income transactions. Additionally, PERA exited from a number of derivative investments during 2015 and reduced investments in cash equivalents which were held in an amount approximate to the notional market exposure of those derivative investments. Cash equivalents were held to avoid having an inappropriately leveraged portfolio.

### Investment Settlements and Income Receivables

For the year ended December 31, 2015, PERA had receivables of $708,912, an increase of $430,233 from 2014. The increase was primarily due to higher pending settlement of fixed income investment sales at year-end.

### Investment Settlements and Other Liabilities

For the year ended December 31, 2015, PERA had investment settlements and other liabilities of $744,403, an increase of $129,932 from 2014. The increase was primarily due to higher pending settlement of fixed income investment purchases at year-end.

### Other Additions and Other Deductions—Division Trust Funds

For the year ended December 31, 2015, other additions increased by $4,708 and other deductions increased by $4,775. These changes are primarily due to recording interfund transfers at retirement as an addition for the State and Judicial Divisions and a deduction for the School, Local Government, and DPS Divisions. The amount of interfund transfers, and whether they are recorded as other additions or deductions, depends on the number of retirements where the member has earned service credit in more than one Division.

### Retiree Health Care Premiums—Health Care Trust Funds

For the year ended December 31, 2015, retiree health care premium payments received increased $24,247. The increase was primarily due to switching dental and vision health care plans from fully insured plans to self-insured plans. Premiums received for the self-insured plans are recognized as additions to the FNP.

### Benefit Payments—Health Care Trust Funds

For the year ended December 31, 2015, benefit payments for health care participants increased $35,797. The majority of the increase was due to PERA switching the dental and vision health care plans from fully insured plans to self-insured plans. Claims expenses incurred by self-insured plans are recognized as benefit payments. Additionally, the number of covered lives utilizing the other postemployment benefit trust funds and the cost of health care claims increased compared to 2014.

### Other Deductions—Health Care Trust Funds

For the year ended December 31, 2015, other deductions decreased $248. The decrease was primarily due to lower expenses for the Affordable Care Act's transitional reinsurance program in 2015 compared to 2014.

### Life Insurance Premiums—Life Insurance Reserve

Life insurance premiums increased from $196 in 2014 to $250 in 2015. The increase was due to premium expenses which are based on covered lives, age, and the amount of insurance coverage. The premium expense increases as covered-participants age.

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)
*(Dollars in Thousands)*

## Actuarial Valuations: Accounting Versus Funding

Separate actuarial valuations are prepared for accounting and funding purposes for the Division Trust Funds. The purpose of the funding valuation is to guide the Board's actions necessary to ensure the long-term sustainability of the Division Trust Funds. The funding valuation aids this action by allowing PERA to assess the sufficiency of the current statutory contribution rates and analyze the sufficiency of future contributions to meet current and future benefit obligations. One of the key measurements in the funding valuation is the difference between the actuarial value of assets and AALs, known as the UAAL. Information pertaining to the funding valuation can be found in the Actuarial Section on pages 143–170. The actuarial valuation for accounting purposes emphasizes the obligation an employer incurs to employees through the employment-exchange process. The primary purpose of the valuation for accounting purposes is to provide a consistent, standardized methodology that allows comparability of amounts and increased transparency of the pension liability across U.S. pension plans complying with GASB 67. One of the key measurements in the accounting valuation is the difference between the fair value of assets and the total pension liability (TPL), known as the net pension liability (NPL).

The objectives of each actuarial valuation require different approaches for determining the NPL and the UAAL. The NPL is determined in accordance with GASB 67 and the UAAL is determined in accordance with Actuarial Standards of Practice (ASOPs) and the Board's funding policy, dated March 2015. One of the major differences between these two approaches is the rate used to discount projected benefit payments. GASB 67 requires that the long-term expected rate of return on the investments of the pension plan should be applied only to available pension plan assets that are expected to be invested using a strategy to achieve that return. If there comes a point in the projections when plan FNP and contributions related to active and inactive employees are no longer projected to be greater than or equal to projected benefit payments related to those employees and administrative expenses (crossover point), then from that point forward the pension plan will be required to discount the projected benefit payments after the crossover point using a municipal borrowing rate—a tax-exempt, high-quality 20-year municipal general obligation bond index rate. ASOPs and the Board's funding policy require that the long-term expected rate of return is used to discount projected benefit payments. Another major difference between these two approaches is the measure of pension plan assets used to determine the NPL and UAAL. GASB 67 requires that pension plan assets are measured using the fair value of assets to determine the NPL. ASOPs permit the use of a market-related value, which smooths changes in the fair value over time to determine the UAAL. The Board's funding policy requires a four-year smoothed fair value of assets be utilized.

## Actuarial Summary—Division Trust Funds

CMC prepared the December 31, 2015, actuarial valuations for the Division Trust Funds for purposes of complying with GASB 67. These actuarial valuations, based on a set of actuarial assumptions, examine each fund's assets as compared to actuarial liabilities, compare past and future trends, and determine the collective NPL for all PERA-affiliated employers participating in each of the five Division Trust Funds.

The Board studies all economic and demographic actuarial assumptions at least every five years and approves changes to those assumptions. The Board last completed an experience study in 2012 and the next planned experience study will be in 2016. In addition, the Board reviews the economic assumptions on a more frequent basis. The Board determined that changes to the economic and demographic assumptions were not necessary for the December 31, 2015, accounting actuarial valuations. However, it should be noted that the discount rate assumption for the Judicial Division Trust Fund was lowered to 5.73 percent in accordance with GASB 67.

The actuarial valuations prepared for purposes of complying with GASB 67 were based on member data as of December 31, 2014. As permitted by GASB 67, appropriate actuarial procedures were applied to roll forward the TPL, based upon this member data, to December 31, 2015. The roll forward procedures considered service cost associated with accruing benefits for the year, interest on the TPL, and benefits and refunds paid to recipients during the year. Additionally, the impact of actuarial experiences, changes in actuarial assumptions and other inputs, as well as refinements in technical valuation parameters, were considered in the roll forward calculation.

## MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)
*(Dollars in Thousands)*

### STATUS OF COLORADO PERA DIVISION TRUST FUNDS

| | 12/31/2014 | 12/31/2015 |
|---|---|---|
| **State Division Trust Fund** | | |
| Total pension liability | $23,420,461 | **$23,991,569** |
| Fiduciary net position | 14,013,947 | **13,460,536** |
| **Net pension liability** | **$9,406,514** | **$10,531,033** |
| Fiduciary net position as a percentage of the total pension liability | 59.8% | **56.1%** |
| **School Division Trust Fund** | | |
| Total pension liability | $36,473,966 | **$37,447,062** |
| Fiduciary net position | 22,920,607 | **22,152,768** |
| **Net pension liability** | **$13,553,359** | **$15,294,294** |
| Fiduciary net position as a percentage of the total pension liability | 62.8% | **59.2%** |
| **Local Government Division Trust Fund** | | |
| Total pension liability | $4,647,777 | **$4,762,090** |
| Fiduciary net position | 3,751,468 | **3,660,509** |
| **Net pension liability** | **$896,309** | **$1,101,581** |
| Fiduciary net position as a percentage of the total pension liability | 80.7% | **76.9%** |
| **Judicial Division Trust Fund** | | |
| Total pension liability | $417,853 | **$461,245** |
| Fiduciary net position | 279,499 | **277,351** |
| **Net pension liability** | **$138,354** | **$183,894** |
| Fiduciary net position as a percentage of the total pension liability | 66.9% | **60.1%** |
| **DPS Division Trust Fund** | | |
| Total pension liability | $3,888,361 | **$3,920,864** |
| Fiduciary net position | 3,263,791 | **3,107,329** |
| **Net pension liability** | **$624,570** | **$813,535** |
| Fiduciary net position as a percentage of the total pension liability | 83.9% | **79.3%** |
| **All Division Trust Funds[1]** | | |
| Total pension liability | $68,848,418 | **$70,582,830** |
| Fiduciary net position | 44,229,312 | **42,658,493** |
| **Net pension liability** | **$24,619,106** | **$27,924,337** |
| Fiduciary net position as a percentage of the total pension liability | 64.2% | **60.4%** |

[1] The data in this table has been aggregated for informational purposes. The assets of each trust fund are for the sole purpose of its members and cannot be used by another fund.

### SCHEDULE OF CHANGES IN NET PENSION LIABILITY

| | State Division Trust Fund | School Division Trust Fund | Local Government Division Trust Fund | Judicial Division Trust Fund | DPS Division Trust Fund | All Division Trust Funds[1] |
|---|---|---|---|---|---|---|
| 2014 Net pension liability | $9,406,514 | $13,553,359 | $896,309 | $138,354 | $624,570 | $24,619,106 |
| Service cost | 309,351 | 548,358 | 63,005 | 10,813 | 82,079 | 1,013,606 |
| Interest | 1,700,903 | 2,652,731 | 338,616 | 25,005 | 281,752 | 4,999,007 |
| Changes of benefit terms | — | — | — | — | — | — |
| Differences between expected and actual experience | 237,147 | 278,464 | 14,930 | 7,289 | 45,767 | 583,597 |
| Changes of assumptions | (192,776) | (298,005) | (36,449) | 21,485 | (113,772) | (619,517) |
| Contributions—employer | (484,005) | (754,182) | (70,415) | (7,702) | (8,494) | (1,324,798) |
| Contributions—member | (244,926) | (372,378) | (51,986) | (4,197) | (53,558) | (727,045) |
| Net investment income | (210,337) | (344,000) | (56,328) | (4,149) | (49,172) | (663,986) |
| Administrative expense | 10,779 | 20,865 | 2,253 | 77 | 2,599 | 36,573 |
| Other | (1,617) | 9,082 | 1,646 | (3,081) | 1,764 | 7,794 |
| **2015 Net pension liability** | **$10,531,033** | **$15,294,294** | **$1,101,581** | **$183,894** | **$813,535** | **$27,924,337** |

[1] The data in this table has been aggregated for informational purposes. The assets of each trust fund are for the sole purpose of its members and cannot be used by another fund.

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)
*(Dollars in Thousands)*

### SUMMARY OF THE RATIOS OF FIDUCIARY NET POSITION TO TOTAL PENSION LIABILITY[1, 2]

| Trust Fund | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|
| State Division | 57.6% | 60.2% | 61.0% | 59.8% | **56.1%** |
| School Division | 60.2% | 63.3% | 64.0% | 62.8% | **59.2%** |
| Local Government Division | 69.1% | 75.9% | 77.6% | 80.7% | **76.9%** |
| Judicial Division | 69.2% | 74.3% | 77.4% | 66.9% | **60.1%** |
| DPS Division | 81.9% | 85.6% | 86.3% | 83.9% | **79.3%** |
| **Total Division Trust Funds[3]** | **61.2%** | **64.4%** | **65.2%** | **64.2%** | **60.4%** |

[1] The ratios for 2011 through 2013 are computed by dividing the total fair value of assets available to pay benefits by actuarial accrued liabilities. The ratios for 2014 and 2015 are computed by dividing the fiduciary net position by the total pension liability.

[2] The actuarial accrued liability for years 2011 through 2013 was based on actuarial valuations which used GASB 25 and the Board's funding policy dated November 2007 as guidance. The total pension liability for years 2014 and 2015 are based on the actuarial valuations prepared in accordance with GASB 67.

[3] The data in this table has been aggregated for informational purposes. The assets of each trust fund are for the sole purpose of its members and cannot be used by another fund.

The ratios listed above give an indication of a plan's ability to meet its current and future obligations in accordance with GASB 67. As an example, for every $1.00 of the TPL or earned benefits for the School Division Trust Fund as of December 31, 2015, approximately $0.59 of assets is available for payment based on the actual fair value of assets. These benefits earned will be payable over the life span of members after their retirement and therefore, it is not necessary that the TPL or earned benefits equal the fair value of assets at any given moment in time.

## Sensitivity of Actuarial Valuation to Changes in Assumed Investment Rate of Return and Discount Rate

The most important long-run driver of a pension plan is investment income. Currently, the long-term expected rate of return assumption is 7.50 percent. The investment return assumption and the discount rate for liabilities, as mandated by GASB 67, are based on an estimated long-term investment yield for the plan, with consideration given to the nature and mix of current and expected investments as long as projections of plan investments indicate that assets are available to pay benefit obligations. At the point in the projections when plan FNP and contributions related to active and inactive employees are no longer projected to be greater than or equal to projected benefit payments related to those employees and administrative expenses (crossover point), then from that point forward the pension plan is required to discount the projected benefit payments after the crossover point using a municipal borrowing rate—a tax-exempt, high-quality 20-year municipal general obligation bond index rate.

Based on the projection test required by GASB, assets are available to pay all future benefit obligations of the State, School, Local Government, and DPS Division Trust Funds. As a result, the discount rate used to determine the NPL equals the long-term expected rate of return assumption of 7.50 percent.

However, the projection test indicates assets will be insufficient to cover a portion of future benefit obligations for the Judicial Division Trust Fund, and as a result, the discount rate used to determine the NPL of this division is a blended rate of 5.73 percent. There are a number of methods to assess the sufficiency of assets available to pay future benefits and the projection test required by GASB does not necessarily reflect a plan's actual ability or inability to cover future benefit obligations.

The long-term expected return on plan assets is reviewed as part of regular experience studies prepared every four to five years for PERA. Recently, this assumption has been reviewed more frequently. The most recent analyses were outlined in presentations to the Board on November 15, 2013, January 17, 2014, and November 15, 2015. Several factors were considered in establishing the long-term rate of return assumption, including long-term historical data, estimates inherent in current market data, and a log-normal distribution analysis in which best estimate ranges of expected future real rates of return (expected return, net of investment expense and inflation) were developed for each major asset class. These ranges were 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 then adding expected inflation. The mean overall investment rate of return based on this modeling process was 8.29 percent. The one standard deviation range around the mean was 6.43 percent to 10.18 percent, which represents 68.2 percent of the possible outcomes. The two standard deviations range around the mean was 4.66 percent to 12.05 percent, which represents 95.4 percent of the possible outcomes.

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)
*(Dollars in Thousands)*

To understand the importance of the long-term assumed investment rate of return, which is used to determine the discount rate, a 1.0 percent fluctuation in the discount rate would change the ratio of FNP to TPL as shown in the tables below.

## 1.0 PERCENT DECREASE IN DISCOUNT RATE

| Trust Fund | Discount Rate | Fiduciary Net Position as a Percentage of the Total Pension Liability | Net Pension Liability |
|---|---|---|---|
| State Division | 6.50% | 50.3% | $13,304,480 |
| School Division | 6.50% | 52.8% | 19,825,875 |
| Local Government Division | 6.50% | 68.4% | 1,688,836 |
| Judicial Division[1] | 4.73% | 54.0% | 236,527 |
| DPS Division | 6.50% | 70.9% | 1,273,473 |
| **Total Division Trust Funds[2]** | | **54.0%** | **$36,329,191** |

[1] Reflects a blended discount rate as required by GASB 67.

[2] The data in this table has been aggregated for informational purposes. The assets of each trust fund are for the sole purpose of its members and cannot be used by another fund.

## CURRENT DISCOUNT RATE

| Trust Fund | Discount Rate | Fiduciary Net Position as a Percentage of the Total Pension Liability | Net Pension Liability |
|---|---|---|---|
| State Division | **7.50%** | **56.1%** | **$10,531,033** |
| School Division | **7.50%** | **59.2%** | **15,294,294** |
| Local Government Division | **7.50%** | **76.9%** | **1,101,581** |
| Judicial Division[1] | **5.73%** | **60.1%** | **183,894** |
| DPS Division | **7.50%** | **79.3%** | **813,535** |
| **Total Division Trust Funds[2]** | | **60.4%** | **$27,924,337** |

[1] Reflects a blended discount rate as required by GASB 67.

[2] The data in this table has been aggregated for informational purposes. The assets of each trust fund are for the sole purpose of its members and cannot be used by another fund.

## 1.0 PERCENT INCREASE IN DISCOUNT RATE

| Trust Fund | Discount Rate | Fiduciary Net Position as a Percentage of the Total Pension Liability | Net Pension Liability |
|---|---|---|---|
| State Division | 8.50% | 62.1% | $8,211,137 |
| School Division | 8.50% | 65.8% | 11,524,864 |
| Local Government Division | 8.50% | 85.6% | 614,511 |
| Judicial Division[1] | 6.73% | 66.6% | 138,943 |
| DPS Division | 8.50% | 87.8% | 431,943 |
| **Total Division Trust Funds[2]** | | **67.1%** | **$20,921,398** |

[1] Reflects a blended discount rate as required by GASB 67.

[2] The data in this table has been aggregated for informational purposes. The assets of each trust fund are for the sole purpose of its members and cannot be used by another fund.

Note: The time-weighted, net-of-fees, annualized rate of return for the pooled investment assets was 7.3 percent for the past five years and 6.0 percent for the past 10 years. The 35-year annualized gross-of-fees rate of return for the pooled investment assets was 9.5 percent.

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)
*(Dollars in Thousands)*

## Actuarial Summary—Health Care Trust Funds

CMC prepared the December 31, 2015, actuarial valuations for the HCTF and DPS HCTF for purposes of complying with GASB 43 and the Board's funding policy dated November 2007. These actuarial valuations, based on a set of assumptions, examine each fund's assets as compared to actuarial liabilities, compare past and future trends, and determine the ARC rates required of each employer in order to pay current and future benefits in accordance with the main provisions of the plan and compare them to the statutory contribution rate. These actuarial valuations are based on member data as of December 31, 2015.

The Board studies all economic and demographic assumptions at least every five years and approves changes to those assumptions. The last experience study was completed in 2012 and the next planned experience study will be in 2016. In addition, the Board reviews the economic assumptions on a more frequent basis. The Board determined that changes to the economic and demographic assumptions were not necessary for the December 31, 2015, valuations.

### Health Care Trust Fund Actuarial Liabilities

The HCTF and the DPS HCTF are cost-sharing multiple-employer defined benefit OPEB plans with the purpose of subsidizing PERACare, PERA's health benefits program. Participation in the HCTF and the DPS HCTF is voluntary pursuant to C.R.S. § 24-51-1201. Employer contributions and investment earnings on the assets of the plans pay for the costs. In addition, any employer, as defined by C.R.S. § 24-51-101 (20), may elect to provide health care coverage through PERACare for its employees who are members.

The HCTF and the DPS HCTF provide a health care premium subsidy based upon the benefit structure under which a member retires and the member's years of service credit. There is an allocation of the premium subsidy between the trust funds for members who retire with service credit in the DPS Division and one or more of the other divisions. The basis for the allocation of the premium subsidy is the percentage of the member contribution balance from each division as it relates to the total member contribution account balance.

In general, the AALs of the HCTF and the DPS HCTF consist of the following two types of benefits.

- A service-based monthly premium subsidy.
- A subsidy for members not eligible for premium-free Medicare Part A coverage.

C.R.S. § 24-51-1204 and § 24-51-1206 specify the eligibility for enrollment and the amount of subsidy available, respectively under the PERA benefit structure and DPS benefit structure. See Note 9 of the Notes to the Financial Statements on pages 85–88 for more detail on the benefit provisions available under the PERA benefit structure and DPS benefit structure. The plan actuary determines the costs relating to the subsidies provided by the HCTF and the DPS HCTF and the results are contained within the annual actuarial valuation report. Currently, all participating employers are statutorily required to contribute 1.02 percent of covered payroll to fund these benefits.

At December 31, 2015, and December 31, 2014, PERA had the following funded status for its Health Care Trust Funds as shown on the next page.

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)
*(Dollars in Thousands)*

### FUNDED STATUS FOR COLORADO PERA HEALTH CARE TRUST FUNDS

| | Fair Value of Assets | | Actuarial Value of Assets[1] | |
|---|---|---|---|---|
| | 12/31/2014 | 12/31/2015 | 12/31/2014 | 12/31/2015 |
| **HCTF** | | | | |
| Actuarial accrued liability[2] | $1,534,461 | **$1,556,269** | $1,534,461 | **$1,556,269** |
| Assets held to pay those liabilities | 309,638 | **276,505** | 297,377 | **285,588** |
| **Unfunded actuarial accrued liability** | **$1,224,823** | **$1,279,764** | **$1,237,084** | **$1,270,681** |
| Funded ratio | 20.2% | **17.8%** | 19.4% | **18.4%** |
| **DPS HCTF** | | | | |
| Actuarial accrued liability[2] | $76,026 | **$74,897** | $76,026 | **$74,897** |
| Assets held to pay those liabilities | 17,021 | **16,936** | 16,502 | **17,557** |
| **Unfunded actuarial accrued liability** | **$59,005** | **$57,961** | **$59,524** | **$57,340** |
| Funded ratio | 22.4% | **22.6%** | 21.7% | **23.4%** |
| **Total Health Care Trust Funds[3]** | | | | |
| Actuarial accrued liability[2] | $1,610,487 | **$1,631,166** | $1,610,487 | **$1,631,166** |
| Assets held to pay those liabilities[4] | 326,659 | **293,441** | 313,879 | **303,145** |
| **Unfunded actuarial accrued liability** | **$1,283,828** | **$1,337,725** | **$1,296,608** | **$1,328,021** |
| Funded ratio | 20.3% | **18.0%** | 19.5% | **18.6%** |

[1] The actuarial value of assets is calculated by spreading any market gains or losses above or below the assumed rate of return over four years.

[2] Based upon an assumed rate of return on investments of 7.5 percent and an assumed rate of 7.5 percent to discount the liabilities to be paid in the future to a value as of December 31, 2014, and 2015.

[3] The data in this table has been aggregated for informational purposes. The assets of each trust fund are for the sole purpose of its members and cannot be used by another fund.

[4] In aggregate, the fair value of the assets as of December 31, 2015, is $9,704 less than the value of assets calculated by the actuaries, as they are recognizing the gains and losses in value over four years, rather than in the year they occurred. The remaining gains and (losses) to be smoothed for 2013 are $6,201, for 2014 are ($2,405), and for 2015 are ($13,500).

## Actuarial Trend Information

### *Funded Ratio*

The funded ratio is determined by dividing the actuarial value of assets by the AAL. The actuarial value of assets is not the current fair value, but a market-related value, as permitted by GASB 43, which smoothes changes in the fair value over four years. The actuarial value of assets as of December 31, 2015, was $303,145 compared to a fair value of assets of $293,441 and to the AAL of $1,631,166. The funded ratio for each of the funds, based on the actuarial value of assets, at December 31 for each of the last five years is shown below.

| Trust Fund | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|
| HCTF | 16.5% | 16.5% | 18.8% | 19.4% | **18.4%** |
| DPS HCTF | 18.6% | 18.6% | 20.2% | 21.7% | **23.4%** |
| **Total Health Care Trust Funds[1]** | **16.6%** | **16.6%** | **18.9%** | **19.5%** | **18.6%** |

[1] The data in this table has been aggregated for informational purposes. The assets of each trust fund are for the sole purpose of its members and cannot be used by another fund.

The funded ratios listed above give an indication of how well the funding objective has been met to date. A larger funded ratio indicates that a plan is better funded. As an example, for every $1.00 of the actuarially determined benefits earned for the HCTF as of December 31, 2015, approximately $0.18 of assets are available for payment based on the actuarial value of assets. These benefits earned will be payable over the life span of members after their retirement and therefore, it is not necessary that the actuarially determined benefits equal the actuarial value of assets at any given moment in time.

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)
*(Dollars in Thousands)*

### Sensitivity of Actuarial Valuation to Changes in Assumed Investment Rate of Return and Discount Rate

The most important long-run driver of an OPEB plan is investment income. The investment return assumption and the discount rate for liabilities, as mandated by GASB 43, should be based on an estimated long-term investment yield for the plan, with consideration given to the nature and mix of current and expected plan investments and the basis used to determine the actuarial value of assets.

The long-term expected return on plan assets is reviewed as part of regular experience studies prepared every four to five years for PERA. Recently, this assumption has been reviewed more frequently. The most recent analyses were outlined in presentations to the Board on November 15, 2013, January 17, 2014, and November 20, 2015. Several factors were considered in establishing the long-term rate of return assumption, including long-term historical data, estimates inherent in current market data, and a log-normal distribution analysis in which best estimate ranges of expected future real rates of return (expected return, net of investment expense and inflation) were developed for each major asset class. These ranges were 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 then adding expected inflation. The mean overall investment rate of return based on this modeling process was 8.29 percent. The one standard deviation range around the mean was 6.43 percent to 10.18 percent, which represents 68.2 percent of the possible outcomes. The two standard deviations range around the mean was 4.66 percent to 12.05 percent, which represents 95.4 percent of the possible outcomes.

To understand the importance of the long-term assumed investment rate of return, which is used to discount the actuarial liabilities, a 1.0 percent fluctuation in the investment rate of return and discount rate would change the funded ratio, UAAL, and ARC (for contributions for the fiscal year December 31, 2017) as shown on the tables below and on the next page.

#### INVESTMENT RETURN ASSUMPTION (DISCOUNT RATE) EQUAL TO 6.5 PERCENT

| | Actuarial Value of Assets | | | Fair Value of Assets |
|---|---|---|---|---|
| Trust Fund | Funded Ratio | UAAL | ARC | UAAL |
| HCTF | 16.6% | $1,435,857 | 1.13% | $1,444,941 |
| DPS HCTF | 21.3% | 65,026 | 0.75% | 65,647 |
| Total Health Care Trust Funds[1] | | $1,500,883 | | $1,510,588 |

[1] The data in this table has been aggregated for informational purposes. The assets of each trust fund are for the sole purpose of its members and cannot be used by another fund.

#### CURRENT INVESTMENT RETURN ASSUMPTION (DISCOUNT RATE) EQUAL TO 7.5 PERCENT

| | Actuarial Value of Assets | | | Fair Value of Assets |
|---|---|---|---|---|
| Trust Fund | Funded Ratio | UAAL | ARC | UAAL |
| HCTF | 18.4% | $1,270,681 | 1.08% | $1,279,764 |
| DPS HCTF | 23.4% | 57,340 | 0.68% | 57,961 |
| Total Health Care Trust Funds[1] | | $1,328,021 | | $1,337,725 |

[1] The data in this table has been aggregated for informational purposes. The assets of each trust fund are for the sole purpose of its members and cannot be used by another fund.

#### INVESTMENT RETURN ASSUMPTION (DISCOUNT RATE) EQUAL TO 8.5 PERCENT

| | Actuarial Value of Assets | | | Fair Value of Assets |
|---|---|---|---|---|
| Trust Fund | Funded Ratio | UAAL | ARC | UAAL |
| HCTF | 20.2% | $1,130,875 | 1.04% | $1,139,959 |
| DPS HCTF | 25.7% | 50,850 | 0.65% | 51,471 |
| Total Health Care Trust Funds[1] | | $1,181,725 | | $1,191,430 |

[1] The data in this table has been aggregated for informational purposes. The assets of each trust fund are for the sole purpose of its members and cannot be used by another fund.

Note: The time-weighted, net-of-fees, annualized rate of return for the pooled investment assets was 7.3 percent for the past five years and 6.0 percent for the past 10 years. The time-weighted 35-year gross-of-fees annualized rate of return for the pooled investment assets was 9.5 percent.

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)
*(Dollars in Thousands)*

## GASB OPEB Project

In June 2015, GASB issued Statement No. 74, "Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans." GASB 74 addresses reporting by OPEB plans that administer benefits on behalf of governments. The new OPEB standard parallels the pension standard issued in 2012—GASB Statement No. 67, "Financial Reporting for Pension Plans." The Statement requires more extensive note disclosures and RSI related to the measurement of the OPEB liabilities for which assets have been accumulated. GASB 74 will be effective for periods beginning after June 15, 2016. PERA has chosen not to early adopt GASB 74 and has not yet determined the impact of this standard on its financial statements and disclosures.

# DEFINED CONTRIBUTION PENSION AND DEFERRED COMPENSATION TRUST FUNDS

## Financial Reporting Highlights

### FIDUCIARY NET POSITION

| | 2015 Change in Fiduciary Net Position | 2015 Ending Fiduciary Net Position |
|---|---|---|
| Voluntary Investment Program | ($37,901) | $2,644,099 |
| Defined Contribution Retirement Plan | 9,560 | 141,026 |
| Deferred Compensation Plan | 2,225 | 691,676 |
| **Total** | **($26,116)** | **$3,476,801** |

The FNP for the Voluntary Investment Program, the Defined Contribution Retirement Plan, and the Deferred Compensation Plan decreased $26,116 for the year ended December 31, 2015. The decrease in FNP of the Voluntary Investment Program was principally due to distributions and net investment losses, which were greater than contributions recognized by the Program. The increase in FNP for the Defined Contribution Retirement Plan and Deferred Compensation Plan was primarily due to contributions, which were greater than net investment losses and distributions recognized by the Plans.

### CHANGES IN FIDUCIARY NET POSITION

| | (C) Contributions and Other Additions | + (C) Plan Transfers | + (I) Net Investment Income (Loss) | – (B) – (E) Benefits, Expenses, and Other Deductions | = Change in Fiduciary Net Position |
|---|---|---|---|---|---|
| Voluntary Investment Program | $136,116 | $— | ($11,773) | $162,244 | ($37,901) |
| Defined Contribution Retirement Plan | 22,267 | — | (2,466) | 10,241 | 9,560 |
| Deferred Compensation Plan | 50,230 | — | (6,427) | 41,578 | 2,225 |
| **2015 change in fiduciary net position** | **$208,613** | **$—** | **($20,666)** | **$214,063** | **($26,116)** |
| **2014 change in fiduciary net position** | **$203,878** | **$—** | **$227,077** | **$194,890** | **$236,065** |
| **2013 change in fiduciary net position** | **$190,844** | **$—** | **$529,858** | **$187,310** | **$533,392** |
| **2012 change in fiduciary net position** | **$181,367** | **$—** | **$295,165** | **$181,981** | **$294,551** |
| **2011 change in fiduciary net position** | **$193,333** | **$4** | **$3,453** | **$172,471** | **$24,319** |
| **2011–2015 change in fiduciary net position** | **$978,035** | **$4** | **$1,034,887** | **$950,715** | **$1,062,211** |

## Investment Highlights

### *Voluntary Investment Program, the Defined Contribution Retirement Plan, and the Deferred Compensation Plan Investment Options*

The current investment funds for the three plans are the PERAdvantage Capital Preservation Fund, PERAdvantage Fixed Income Fund, PERAdvantage Real Return Fund, PERAdvantage U.S. Large Cap Stock Fund, PERAdvantage International Stock Fund, PERAdvantage U.S. Small and Mid Cap Stock Fund, PERAdvantage Socially Responsible Investment Fund, PERAdvantage Income Fund, PERAdvantage 2020 Fund, PERAdvantage 2025 Fund, PERAdvantage 2030 Fund, PERAdvantage 2035 Fund, PERAdvantage 2040 Fund, PERAdvantage 2045 Fund, PERAdvantage 2050 Fund, PERAdvantage 2055 Fund, PERAdvantage 2060 Fund, and TD Ameritrade Self-Directed Brokerage Account. Each PERAdvantage option is made up of one or more underlying portfolios.

### *Investment Income (Loss)*

For the year ended December 31, 2015, the Voluntary Investment Program, the Defined Contribution Retirement Plan, and the Deferred Compensation Plan net investment income changed from $227,077 in 2014 to a loss of ($20,666) in 2015. The change was primarily due to a decrease in global equity investment returns.

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)
*(Dollars in Thousands)*

## COMPARATIVE FINANCIAL STATEMENTS

## Defined Benefit Pension Trust Funds

The five defined benefit funds provide retirement, survivor, and disability benefits to the employees of affiliated State, School, Local Government, Judicial, and DPS employers. Benefits are funded by member and employer contributions and by earnings on investments.

### DEFINED BENEFIT PENSION TRUST FUNDS FIDUCIARY NET POSITION

| Assets | December 31, 2015 | December 31, 2014 | % Change |
|---|---|---|---|
| Cash and short-term investments | **$750,743** | $1,177,850 | (36.3%) |
| Securities lending collateral | **1,441,283** | 1,514,197 | (4.8%) |
| Receivables | **820,319** | 379,767 | 116.0% |
| Investments, at fair value | **41,761,162** | 43,220,254 | (3.4%) |
| Capital assets, net of accumulated depreciation | **16,451** | 18,009 | (8.7%) |
| Total assets | **44,789,958** | 46,310,077 | (3.3%) |
| **Liabilities** | | | |
| Investment settlements and other liabilities | **690,483** | 566,789 | 21.8% |
| Securities lending obligations | **1,440,982** | 1,513,976 | (4.8%) |
| Total liabilities | **2,131,465** | 2,080,765 | 2.4% |
| **Fiduciary net position** | **$42,658,493** | **$44,229,312** | **(3.6%)** |

### DEFINED BENEFIT PENSION TRUST FUNDS CHANGES IN FIDUCIARY NET POSITION

| Additions | For the Year Ended December 31, 2015 | For the Year Ended December 31, 2014 | % Change |
|---|---|---|---|
| Employer contributions | **$1,324,798** | $1,224,962 | 8.2% |
| Member contributions | **665,662** | 640,531 | 3.9% |
| Purchased service | **61,383** | 53,040 | 15.7% |
| Employer disaffiliation | **—** | 186,006 | (100.0%) |
| Investment income | **663,986** | 2,454,140 | (72.9%) |
| Other | **8,392** | 3,684 | 127.8% |
| Total additions | **2,724,221** | 4,562,363 | (40.3%) |
| **Deductions** | | | |
| Benefit payments | **4,073,790** | 3,883,781 | 4.9% |
| Refunds | **162,172** | 170,882 | (5.1%) |
| Disability insurance premiums | **6,319** | 6,947 | (9.0%) |
| Administrative expenses | **36,573** | 33,897 | 7.9% |
| Other | **16,186** | 11,411 | 41.8% |
| Total deductions | **4,295,040** | 4,106,918 | 4.6% |
| **Change in fiduciary net position** | **(1,570,819)** | 455,445 | (444.9%) |
| **Fiduciary net position** | | | |
| Beginning of year | **44,229,312** | 43,773,867 | 1.0% |
| End of year | **$42,658,493** | **$44,229,312** | **(3.6%)** |

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)
*(Dollars in Thousands)*

## Other Postemployment Benefit Funds

The HCTF and the DPS HCTF provide a health care premium subsidy to participating PERA benefit recipients and their eligible beneficiaries who choose to enroll in the Program. They are funded by amounts contributed by employers during an employee's working life based on a percentage of pay and by earnings on investments.

### OTHER POSTEMPLOYMENT BENEFIT FUNDS FIDUCIARY NET POSITION

| Assets | December 31, 2015 | December 31, 2014 | % Change |
|---|---|---|---|
| Cash and short-term investments | $5,481 | $9,328 | (41.2%) |
| Securities lending collateral | 10,522 | 11,991 | (12.3%) |
| Receivables | 34,976 | 20,742 | 68.6% |
| Investments, at fair value | 304,876 | 342,270 | (10.9%) |
| Total assets | 355,855 | 384,331 | (7.4%) |
| **Liabilities** | | | |
| Investment settlements and other liabilities | 51,894 | 45,682 | 13.6% |
| Securities lending obligations | 10,520 | 11,990 | (12.3%) |
| Total liabilities | 62,414 | 57,672 | 8.2% |
| Fiduciary net position | $293,441 | $326,659 | (10.2%) |

### OTHER POSTEMPLOYMENT BENEFIT FUNDS CHANGES IN FIDUCIARY NET POSITION

| Additions | For the Year Ended December 31, 2015 | For the Year Ended December 31, 2014 | % Change |
|---|---|---|---|
| Employer contributions | $84,834 | $81,634 | 3.9% |
| Retiree health care premiums | 134,148 | 109,901 | 22.1% |
| Employer disaffiliation | — | 3,994 | (100.0%) |
| Investment income | 5,061 | 19,141 | (73.6%) |
| Other | 10,294 | 10,094 | 2.0% |
| Total additions | 234,337 | 224,764 | 4.3% |
| **Deductions** | | | |
| Benefit payments | 246,856 | 211,059 | 17.0% |
| Administrative expenses | 20,083 | 17,280 | 16.2% |
| Other deductions | 616 | 864 | (28.7%) |
| Total deductions | 267,555 | 229,203 | 16.7% |
| Change in fiduciary net position | (33,218) | (4,439) | (648.3%) |
| Fiduciary net position | | | |
| Beginning of year | 326,659 | 331,098 | (1.3%) |
| End of year | $293,441 | $326,659 | (10.2%) |

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)
*(Dollars in Thousands)*

## Private Purpose Trust Fund

PERA offers an optional life insurance program where members can purchase varying amounts of coverage. The Life Insurance Reserve is an accumulation of dividends received in the past from the insurance company based upon plan experience. The proceeds and investment income from the Life Insurance Reserve are used to pay the current administrative costs of the plan.

### LIFE INSURANCE RESERVE FIDUCIARY NET POSITION

| Assets | December 31, 2015 | December 31, 2014 | % Change |
|---|---|---|---|
| Cash and short-term investments | $326 | $514 | (36.6%) |
| Securities lending collateral | 626 | 661 | (5.3%) |
| Receivables | 305 | 121 | 152.1% |
| Investments, at fair value | 18,135 | 18,858 | (3.8%) |
| Total assets | 19,392 | 20,154 | (3.8%) |
| **Liabilities** | | | |
| Investment settlements and other liabilities | 2,026 | 2,000 | 1.3% |
| Securities lending obligations | 626 | 661 | (5.3%) |
| Total liabilities | 2,652 | 2,661 | (0.3%) |
| **Fiduciary net position** | **$16,740** | **$17,493** | **(4.3%)** |

### LIFE INSURANCE RESERVE CHANGES IN FIDUCIARY NET POSITION

| Additions | For the Year Ended December 31, 2015 | For the Year Ended December 31, 2014 | % Change |
|---|---|---|---|
| Investment income | $302 | $1,068 | (71.7%) |
| Total additions | 302 | 1,068 | (71.7%) |
| **Deductions** | | | |
| Life insurance premiums | 250 | 196 | 27.6% |
| Administrative expenses | 805 | 871 | (7.6%) |
| Total deductions | 1,055 | 1,067 | (1.1%) |
| Change in fiduciary net position | (753) | 1 | (75,400.0%) |
| Fiduciary net position | | | |
| Beginning of year | 17,493 | 17,492 | 0.0% |
| End of year | **$16,740** | **$17,493** | **(4.3%)** |

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)
*(Dollars in Thousands)*

## Defined Contribution Pension and Deferred Compensation Trust Funds

PERA administers two defined contribution pension trust funds and a deferred compensation trust fund. The Voluntary Investment Program and the Deferred Compensation Plan provide retirement benefits to members of the Defined Benefit Pension Trust Funds who have voluntarily made contributions during their employment. The Defined Contribution Retirement Plan provides retirement benefits to eligible employees who selected this plan. Eligibility applies to certain new employees of State agencies and departments, most community colleges, and the District Attorney within each Judicial District, and if authorized by the county and the District Attorney, the attorneys within each Judicial District.

### DEFINED CONTRIBUTION PENSION AND DEFERRED COMPENSATION TRUST FUNDS FIDUCIARY NET POSITION

| Assets | December 31, 2015 | December 31, 2014 | % Change |
|---|---|---|---|
| Cash and short-term investments | **$92,500** | $111,127 | (16.8%) |
| Receivables | **89,418** | 89,696 | (0.3%) |
| Investments, at fair value | **3,298,529** | 3,305,577 | (0.2%) |
| **Total assets** | **3,480,447** | 3,506,400 | (0.7%) |
| **Liabilities** | | | |
| Liabilities | **3,646** | 3,483 | 4.7% |
| **Total liabilities** | **3,646** | 3,483 | 4.7% |
| **Fiduciary net position** | **$3,476,801** | **$3,502,917** | **(0.7%)** |

### DEFINED CONTRIBUTION PENSION AND DEFERRED COMPENSATION TRUST FUNDS CHANGES IN FIDUCIARY NET POSITION

| Additions | For the Year Ended December 31, 2015 | For the Year Ended December 31, 2014 | % Change |
|---|---|---|---|
| Employer contributions | **$16,344** | $15,440 | 5.9% |
| Member contributions | **189,539** | 185,661 | 2.1% |
| Investment income (loss) | **(20,666)** | 227,077 | (109.1%) |
| Other | **2,730** | 2,777 | (1.7%) |
| **Total additions** | **187,947** | 430,955 | (56.4%) |
| **Deductions** | | | |
| Refunds | **207,579** | 188,603 | 10.1% |
| Administrative expenses | **4,855** | 4,862 | (0.1%) |
| Other | **1,629** | 1,425 | 14.3% |
| **Total deductions** | **214,063** | 194,890 | 9.8% |
| **Change in fiduciary net position** | **(26,116)** | 236,065 | (111.1%) |
| **Fiduciary net position** | | | |
| **Beginning of year** | **3,502,917** | 3,266,852 | 7.2% |
| **End of year** | **$3,476,801** | **$3,502,917** | **(0.7%)** |

## STATEMENTS OF FIDUCIARY NET POSITION

As of December 31, 2015, with Comparative Combined Totals for 2014
*(Dollars in Thousands)*

| Assets | State Division Trust Fund | School Division Trust Fund | Local Government Division Trust Fund | Judicial Division Trust Fund | Denver Public Schools Division Trust Fund | Total Defined Benefit Pension Plans |
|---|---|---|---|---|---|---|
| Cash and short-term investments | | | | | | |
| Cash and short-term investments | $236,568 | $390,042 | $64,545 | $4,865 | $54,723 | $750,743 |
| Securities lending collateral | 454,164 | 748,806 | 123,915 | 9,340 | 105,058 | 1,441,283 |
| Total cash and short-term investments | 690,732 | 1,138,848 | 188,460 | 14,205 | 159,781 | 2,192,026 |
| Receivables | | | | | | |
| Benefit | 55,445 | 49,403 | 3,174 | 1,626 | 6,351 | 115,999 |
| Interfund | 267 | 441 | 73 | 5 | 62 | 848 |
| Investment settlements and income | 221,672 | 365,482 | 60,481 | 4,560 | 51,277 | 703,472 |
| Total receivables | 277,384 | 415,326 | 63,728 | 6,191 | 57,690 | 820,319 |
| Investments, at fair value | | | | | | |
| Fixed income | 3,223,940 | 5,315,483 | 879,623 | 66,303 | 745,765 | 10,231,114 |
| Global equity | 7,387,136 | 12,179,572 | 2,015,512 | 151,925 | 1,708,799 | 23,442,944 |
| Private equity | 1,093,724 | 1,803,281 | 298,413 | 22,494 | 253,001 | 3,470,913 |
| Real estate | 1,162,003 | 1,915,857 | 317,042 | 23,898 | 268,796 | 3,687,596 |
| Opportunity fund | 292,611 | 482,443 | 79,836 | 6,018 | 67,687 | 928,595 |
| Self-directed brokerage | — | — | — | — | — | — |
| Total investments, at fair value | 13,159,414 | 21,696,636 | 3,590,426 | 270,638 | 3,044,048 | 41,761,162 |
| Capital assets, at cost, net of accumulated depreciation of $24,578 and $25,302 at December 31, 2015, and 2014, respectively | 4,815 | 9,396 | 1,027 | 34 | 1,179 | 16,451 |
| Total assets | 14,132,345 | 23,260,206 | 3,843,641 | 291,068 | 3,262,698 | 44,789,958 |
| **Liabilities** | | | | | | |
| Investment settlements and other liabilities | 217,739 | 358,789 | 59,243 | 4,379 | 50,333 | 690,483 |
| Securities lending obligations | 454,070 | 748,649 | 123,889 | 9,338 | 105,036 | 1,440,982 |
| Interfund | — | — | — | — | — | — |
| Total liabilities | 671,809 | 1,107,438 | 183,132 | 13,717 | 155,369 | 2,131,465 |
| Commitments and contingencies (Note 7) | | | | | | |
| Fiduciary net position restricted for pensions, and held in trust for deferred compensation benefits, other postemployment benefits, and private purpose trust fund participants | $13,460,536 | $22,152,768 | $3,660,509 | $277,351 | $3,107,329 | $42,658,493 |
| **Fiduciary Net Position Restricted for:** | | | | | | |
| Defined benefit pension plan benefits | $13,460,536 | $22,152,768 | $3,660,509 | $277,351 | $3,107,329 | $42,658,493 |
| Defined contribution pension plan benefits | — | — | — | — | — | — |
| Deferred compensation plan benefits | — | — | — | — | — | — |
| Other postemployment benefits | — | — | — | — | — | — |
| Private purpose trust fund participants | — | — | — | — | — | — |
| Fiduciary net position restricted for pensions, and held in trust for deferred compensation benefits, other postemployment benefits, and private purpose trust fund participants | $13,460,536 | $22,152,768 | $3,660,509 | $277,351 | $3,107,329 | $42,658,493 |

*The accompanying notes are an integral part of these financial statements.*

## STATEMENTS OF FIDUCIARY NET POSITION

As of December 31, 2015, with Comparative Combined Totals for 2014

*(Dollars in Thousands)*

| Voluntary Investment Program | Defined Contribution Retirement Plan | Deferred Compensation Plan | Health Care Trust Fund | Denver Public Schools Health Care Trust Fund | Life Insurance Reserve | COMBINED TOTAL 2015 | COMBINED TOTAL 2014 |
|---|---|---|---|---|---|---|---|
| $66,472 | $7,493 | $18,535 | $5,170 | $311 | $326 | **$849,050** | $1,298,819 |
| — | — | — | 9,925 | 597 | 626 | **1,452,431** | 1,526,849 |
| 66,472 | 7,493 | 18,535 | 15,095 | 908 | 952 | **2,301,481** | 2,825,668 |
| 69,995 | 1,861 | 14,853 | 28,288 | 1,547 | — | **232,543** | 208,405 |
| — | — | — | 6 | — | — | **854** | 472 |
| 2,108 | 93 | 508 | 4,844 | 291 | 305 | **711,621** | 281,449 |
| 72,103 | 1,954 | 15,361 | 33,138 | 1,838 | 305 | **945,018** | 490,326 |
| 652,485 | 28,629 | 260,450 | 70,453 | 4,240 | 4,444 | **11,251,815** | 11,799,066 |
| 1,840,792 | 102,004 | 387,540 | 161,432 | 9,712 | 10,180 | **25,954,604** | 27,364,243 |
| — | — | — | 23,901 | 1,438 | 1,507 | **3,497,759** | 3,458,974 |
| — | — | — | 25,393 | 1,528 | 1,601 | **3,716,118** | 3,354,327 |
| — | — | — | 6,394 | 385 | 403 | **935,777** | 885,978 |
| 14,721 | 1,313 | 10,595 | — | — | — | **26,629** | 24,371 |
| 2,507,998 | 131,946 | 658,585 | 287,573 | 17,303 | 18,135 | **45,382,702** | 46,886,959 |
| — | — | — | — | — | — | **16,451** | 18,009 |
| 2,646,573 | 141,393 | 692,481 | 335,806 | 20,049 | 19,392 | **48,645,652** | 50,220,962 |
| 1,970 | 222 | 600 | 49,378 | 2,516 | 2,026 | **747,195** | 617,482 |
| — | — | — | 9,923 | 597 | 626 | **1,452,128** | 1,526,627 |
| 504 | 145 | 205 | — | — | — | **854** | 472 |
| 2,474 | 367 | 805 | 59,301 | 3,113 | 2,652 | **2,200,177** | 2,144,581 |
| **$2,644,099** | **$141,026** | **$691,676** | **$276,505** | **$16,936** | **$16,740** | **$46,445,475** | **$48,076,381** |
| $— | $— | $— | $— | $— | $— | **$42,658,493** | $44,229,312 |
| 2,644,099 | 141,026 | — | — | — | — | **2,785,125** | 2,813,466 |
| — | — | 691,676 | — | — | — | **691,676** | 689,451 |
| — | — | — | 276,505 | 16,936 | — | **293,441** | 326,659 |
| — | — | — | — | — | 16,740 | **16,740** | 17,493 |
| **$2,644,099** | **$141,026** | **$691,676** | **$276,505** | **$16,936** | **$16,740** | **$46,445,475** | **$48,076,381** |

## STATEMENTS OF CHANGES IN FIDUCIARY NET POSITION

For the Year Ended December 31, 2015, with Comparative Combined Totals for 2014
*(Dollars in Thousands)*

| Additions | State Division Trust Fund | School Division Trust Fund | Local Government Division Trust Fund | Judicial Division Trust Fund | Denver Public Schools Division Trust Fund | Total Defined Benefit Pension Plans |
|---|---|---|---|---|---|---|
| Contributions | | | | | | |
| Employers | $484,005 | $754,182 | $70,415 | $7,702 | $8,494 | $1,324,798 |
| Members | 217,980 | 348,537 | 45,400 | 3,772 | 49,973 | 665,662 |
| Purchased service | 26,946 | 23,841 | 6,586 | 425 | 3,585 | 61,383 |
| Retiree health care premiums | — | — | — | — | — | — |
| Employer disaffiliation | — | — | — | — | — | — |
| Total contributions | 728,931 | 1,126,560 | 122,401 | 11,899 | 62,052 | 2,051,843 |
| Investment income (loss) | | | | | | |
| Net appreciation (depreciation) in fair value of investments | (67,392) | (112,434) | (18,817) | (1,481) | (15,432) | (215,556) |
| Interest | 94,708 | 155,648 | 25,625 | 1,920 | 22,031 | 299,932 |
| Dividends | 158,270 | 260,110 | 42,824 | 3,208 | 36,816 | 501,228 |
| Real estate, private equity, and opportunity fund net operating income | 73,179 | 120,266 | 19,800 | 1,484 | 17,023 | 231,752 |
| Less investment expense | (51,826) | (85,174) | (14,023) | (1,051) | (12,056) | (164,130) |
| Net income (loss) from investing activities | 206,939 | 338,416 | 55,409 | 4,080 | 48,382 | 653,226 |
| Securities lending income | 3,753 | 6,168 | 1,015 | 76 | 873 | 11,885 |
| Less securities lending expense | (355) | (584) | (96) | (7) | (83) | (1,125) |
| Net income from securities lending | 3,398 | 5,584 | 919 | 69 | 790 | 10,760 |
| Net investment income (loss) | 210,337 | 344,000 | 56,328 | 4,149 | 49,172 | 663,986 |
| Other additions | 5,023 | 96 | 15 | 3,247 | 11 | 8,392 |
| Total additions | 944,291 | 1,470,656 | 178,744 | 19,295 | 111,235 | 2,724,221 |
| **Deductions** | | | | | | |
| Benefits | | | | | | |
| Benefits paid to retirees/cobeneficiaries | 1,403,902 | 2,120,311 | 242,727 | 20,839 | 253,487 | 4,041,266 |
| Benefits paid to survivors | 13,960 | 14,443 | 2,221 | 319 | 1,581 | 32,524 |
| Benefits paid to health care participants | — | — | — | — | — | — |
| Total benefits | 1,417,862 | 2,134,754 | 244,948 | 21,158 | 255,068 | 4,073,790 |
| Refunds of contribution accounts, including match and interest | 63,567 | 70,298 | 20,410 | — | 7,897 | 162,172 |
| Disability and life insurance premiums | 2,088 | 3,400 | 431 | 42 | 358 | 6,319 |
| Administrative expenses | 10,779 | 20,865 | 2,253 | 77 | 2,599 | 36,573 |
| Other deductions | 3,406 | 9,178 | 1,661 | 166 | 1,775 | 16,186 |
| Total deductions | 1,497,702 | 2,238,495 | 269,703 | 21,443 | 267,697 | 4,295,040 |
| Net increase (decrease) in fiduciary net position | (553,411) | (767,839) | (90,959) | (2,148) | (156,462) | (1,570,819) |
| Fiduciary net position restricted for pensions, and held in trust for deferred compensation benefits, other postemployment benefits, and private purpose trust fund participants | | | | | | |
| Beginning of year | 14,013,947 | 22,920,607 | 3,751,468 | 279,499 | 3,263,791 | 44,229,312 |
| End of year | $13,460,536 | $22,152,768 | $3,660,509 | $277,351 | $3,107,329 | $42,658,493 |

*The accompanying notes are an integral part of these financial statements.*

## STATEMENTS OF CHANGES IN FIDUCIARY NET POSITION

For the Year Ended December 31, 2015, with Comparative Combined Totals for 2014

*(Dollars in Thousands)*

| Voluntary Investment Program | Defined Contribution Retirement Plan | Deferred Compensation Plan | Health Care Trust Fund | Denver Public Schools Health Care Trust Fund | Life Insurance Reserve | COMBINED TOTAL 2015 | COMBINED TOTAL 2014 |
|---|---|---|---|---|---|---|---|
| $3,889 | $12,428 | $27 | $78,463 | $6,371 | $— | **$1,425,976** | $1,322,036 |
| 129,990 | 9,830 | 49,719 | — | — | — | **855,201** | 826,192 |
| — | — | — | — | — | — | **61,383** | 53,040 |
| — | — | — | 127,873 | 6,275 | — | **134,148** | 109,901 |
| — | — | — | — | — | — | — | 190,000 |
| 133,879 | 22,258 | 49,746 | 206,336 | 12,646 | — | **2,476,708** | 2,501,169 |
| (41,662) | (3,342) | (13,948) | (1,241) | (86) | (76) | **(275,911)** | 1,752,707 |
| 4,557 | 193 | 3,207 | 2,062 | 116 | 128 | **310,195** | 319,929 |
| 28,803 | 868 | 5,185 | 3,448 | 193 | 215 | **539,940** | 576,777 |
| — | — | — | 1,594 | 89 | 100 | **233,535** | 205,078 |
| (3,471) | (185) | (871) | (1,129) | (63) | (70) | **(169,919)** | (164,084) |
| (11,773) | (2,466) | (6,427) | 4,734 | 249 | 297 | **637,840** | 2,690,407 |
| — | — | — | 82 | 5 | 5 | **11,977** | 12,159 |
| — | — | — | (9) | — | — | **(1,134)** | (1,140) |
| — | — | — | 73 | 5 | 5 | **10,843** | 11,019 |
| (11,773) | (2,466) | (6,427) | 4,807 | 254 | 302 | **648,683** | 2,701,426 |
| 2,237 | 9 | 484 | 9,993 | 301 | — | **21,416** | 16,555 |
| 124,343 | 19,801 | 43,803 | 221,136 | 13,201 | 302 | **3,146,807** | 5,219,150 |
| — | — | — | — | — | — | **4,041,266** | 3,852,223 |
| — | — | — | — | — | — | **32,524** | 31,558 |
| — | — | — | 234,414 | 12,442 | — | **246,856** | 211,059 |
| — | — | — | 234,414 | 12,442 | — | **4,320,646** | 4,094,840 |
| 158,215 | 9,419 | 39,945 | — | — | — | **369,751** | 359,485 |
| — | — | — | — | — | 250 | **6,569** | 7,143 |
| 3,010 | 774 | 1,071 | 19,261 | 822 | 805 | **62,316** | 56,910 |
| 1,019 | 48 | 562 | 594 | 22 | — | **18,431** | 13,700 |
| 162,244 | 10,241 | 41,578 | 254,269 | 13,286 | 1,055 | **4,777,713** | 4,532,078 |
| **(37,901)** | **9,560** | **2,225** | **(33,133)** | **(85)** | **(753)** | **(1,630,906)** | **687,072** |
| 2,682,000 | 131,466 | 689,451 | 309,638 | 17,021 | 17,493 | **48,076,381** | 47,389,309 |
| **$2,644,099** | **$141,026** | **$691,676** | **$276,505** | **$16,936** | **$16,740** | **$46,445,475** | **$48,076,381** |

# NOTES TO THE FINANCIAL STATEMENTS

*(Dollars in Thousands)*

## Note 1—Plan Description

### Organization

Colorado PERA was established in 1931. The statute relating to PERA is Title 24, Article 51 of the Colorado Revised Statutes (C.R.S.). PERA administers the following plans:

| Plan Name | Type of Plan |
|---|---|
| ***Defined Benefit Pension Plans (Division Trust Funds)*** | |
| State Division Trust Fund | Cost-sharing multiple-employer |
| School Division Trust Fund | Cost-sharing multiple-employer |
| Local Government Division Trust Fund | Cost-sharing multiple-employer |
| Judicial Division Trust Fund | Cost-sharing multiple-employer |
| Denver Public Schools (DPS) Division Trust Fund | Single-employer |
| ***Defined Benefit Other Postemployment Benefit Plans (Health Care Trust Funds)*** | |
| Health Care Trust Fund (HCTF) | Cost-sharing multiple-employer |
| Denver Public Schools Health Care Trust Fund (DPS HCTF) | Cost-sharing multiple-employer |
| ***Defined Contribution Plans*** | |
| Voluntary Investment Program | Multiple-employer |
| Defined Contribution Retirement Plan | Multiple-employer |
| ***Deferred Compensation Plan*** | |
| Deferred Compensation Plan | Multiple-employer |
| ***Private Purpose Trust Fund*** | |
| Life Insurance Reserve | Multiple-employer |

Responsibility for the organization and administration of these plans rests with the PERA Board of Trustees (Board). The Board is composed of the following 16 Trustees:

- Nine members elected by members from their respective Divisions to serve on the Board for four–year terms; four from the School Division, three from the State Division, one from the Local Government Division, and one from the Judicial Division.
- Two retirees elected by retirees.
- Three Trustees appointed by the Governor and confirmed by the State Senate.
- The State Treasurer.
- One ex officio (non-voting) member or retiree elected by members and retirees of the DPS Division.

Listed below is the number of active participating employers for the five Division Trust Funds. Guidance under the Governmental Accounting Standards Board (GASB) Statement No. 67 classifies a primary government and its component units as one employer. In years prior to 2014, employer counts were based on separate units of government.

| Division | As of December 31, 2015[1] |
|---|---|
| State | 32 |
| School | 227 |
| Local Government | 140 |
| Judicial | 2 |
| DPS | 1 |
| **Total employers** | **402** |

[1] This employer count is presented for purposes of complying with GASB 67 only. For all other purposes, the definition of an employer is governed by Title 24, Article 51 of the C.R.S., PERA's Rules, 8 CCR 1502-1, and, if applicable, the employer's affiliation agreement with PERA.

NOTES TO THE FINANCIAL STATEMENTS
*(Dollars in Thousands)*

## Membership—Division Trust Funds-Defined Benefit Pension Plans

Benefit recipients and members of PERA consisted of the following as of December 31, 2015, with comparative combined totals for 2014:

| | State Division | School Division | Local Government Division | Judicial Division | DPS Division | 2015 | 2014 |
|---|---|---|---|---|---|---|---|
| Retirees and beneficiaries | 36,992 | 60,109 | 6,777 | 345 | 6,812 | **111,035** | 107,577 |
| Terminated employees entitled to benefits but not yet receiving benefits | 6,075 | 14,904 | 2,791 | 7 | 1,109 | **24,886** | 23,128 |
| Inactive members | 69,385 | 108,184 | 21,915 | 8 | 8,118 | **207,610** | 195,685 |
| Active members | | | | | | | |
| Vested general employees | 30,702 | 66,840 | 6,090 | 287 | 6,849 | **110,768** | 111,231 |
| Vested State Troopers | 640 | — | — | — | — | **640** | 608 |
| Non-vested general employees | 23,748 | 53,399 | 6,086 | 47 | 9,080 | **92,360** | 90,690 |
| Non-vested State Troopers | 201 | — | — | — | — | **201** | 221 |
| Total active members | 55,291 | 120,239 | 12,176 | 334 | 15,929 | **203,969** | 202,750 |
| **Total** | **167,743** | **303,436** | **43,659** | **694** | **31,968** | **547,500** | **529,140** |

## Membership—Voluntary Investment Program and Defined Contribution Retirement Plan

See Note 8.

## Membership—Deferred Compensation Plan

See Note 8.

## Membership—Health Care Trust Funds

See Note 9.

## Benefit Provisions—Division Trust Funds

Plan benefits are specified in Title 24, Article 51 of the C.R.S. and applicable provisions of the federal Internal Revenue Code (IRC). Colorado State law provisions may be amended from time to time by the Colorado General Assembly.

### *Plan Eligibility*

All employees of PERA employers who work in a position eligible for PERA membership must be covered by PERA, except for employees who are hired into a position that makes them eligible for a choice between enrolling in the PERA Defined Benefit Plan or the PERA Defined Contribution Retirement Plan (PERAChoice).

PERAChoice eligibility applies to certain new employees of State agencies and departments, most community colleges, and the District Attorney within each Judicial District. If authorized by the county and the District Attorney, the attorneys within that Judicial District may have access to PERAChoice. If an eligible employee does not make a choice of which plan he or she would like to participate in within 60 days of the starting date of employment, the employee is automatically enrolled in the PERA Defined Benefit Plan. Between month 13 and month 72 of participation in their original plan, employees may make a one-time, irrevocable election to switch to the other plan. After the 72nd month of participation, this option to switch plan participation no longer exists.

Some positions of PERA-affiliated employers are not eligible for PERA membership and may be covered by another separate retirement program.

### *Benefit Provisions*

The Division Trust Funds have various benefit provisions depending upon the member's date of hire or upon the member's date of retirement. The differences in plan benefit provisions are detailed in the following pages in Note 1. On January 1, 2010, the Denver Public Schools Retirement System (DPSRS) merged with PERA. On that date, all liabilities and assets of DPSRS transferred to and became liabilities and assets of the DPS Division of PERA. The benefit provisions of DPSRS were incorporated into PERA as the DPS benefit structure. The benefit provisions of existing members of PERA on the merger date and all new hires post-merger date are identified as the PERA benefit structure.

### *Member Accounts*

Members contribute 8 percent of their PERA-includable salary to their member accounts; State Troopers and Colorado Bureau of Investigation agents contribute 10 percent.

NOTES TO THE FINANCIAL STATEMENTS
*(Dollars in Thousands)*

State law authorizes the Board to determine annually the interest to be credited to member accounts, but in no event may the Board specify a rate that exceeds 5 percent. Effective January 1, 2009, the rate was set at 3 percent and has been reconfirmed each November since adoption.

### *Service Credit*

Members earn service credit for each month of work performed as an employee of a PERA-affiliated employer for which salary is earned for such services.

A full month of service credit is earned for each month of work where the salary earned by the employee is equal to or greater than 80 multiplied by the federal minimum hourly wage in effect for that month. Earned salary which is less than this amount results in a partial month of service credit.

Eligible members may purchase additional service credit based upon (1) other employment that is not covered by PERA or another retirement program or (2) the service credit forfeited as the result of a withdrawn PERA member account. Such service credit purchases are subject to limits in State and federal law. The amounts used to purchase service credit are credited to the member's account and may include tax-paid funds and eligible rollovers of tax-deferred funds. Such amounts are eligible for an interest accrual, but no match if the account is refunded in a lump-sum distribution.

### *Refund or Distribution Provisions*

Upon termination of employment with all PERA employers, members have the following options concerning their member account:

- Leave the account invested in the Division Trust Funds for a future distribution or retirement benefit; however, a distribution must begin by April 1 following the year in which the member reaches age 70½.
- Request a distribution of the member account plus an applicable match. Such a distribution cancels the refunding member's service credit and any benefit entitlements associated with the account. The distribution may be taken as cash with the resulting tax consequences or as a rollover to an eligible qualified plan, 403(b) plan, 457 plan, or an Individual Retirement Account.

### *Matching Amounts*

Members under the PERA benefit structure who withdraw their accounts on or after reaching retirement eligibility or age 65 receive their member account plus a 100 percent match on eligible amounts. Due to Senate Bill (SB) 10-001, as of January 1, 2011, members under the PERA benefit structure who withdraw their accounts before reaching retirement eligibility must have five years of earned service credit in order to receive a 50 percent match. All contributions received prior to January 1, 2011, are eligible for the 50 percent match regardless of how much service credit the member has earned. However, contributions received after January 1, 2011, will not be eligible for the 50 percent match until the member earns five years of service credit.

Members under the DPS benefit structure who terminated employment on or after January 1, 2001, and withdraw their accounts on or after reaching retirement eligibility receive their member account plus a 100 percent match on eligible amounts. Members under the DPS benefit structure who withdraw their accounts before reaching retirement eligibility receive a refund of their member accounts, but do not receive any match.

Members have the option of leaving their accounts until retirement eligibility age. The member's account plus a 100 percent match on eligible amounts is then annuitized into a monthly benefit using PERA's expected rate of return.

### *Highest Average Salary*

Plan benefits, described below, generally are calculated as a percentage of the member's three-year highest average salary (HAS). The following conditions apply to the HAS calculation:

- ***For all members of the PERA benefit structure, except judges, who were eligible to retire as of January 1, 2011, who were hired before January 1, 2007, and who retire on or after January 1, 2009:*** HAS is determined by the highest annual salaries associated with four periods of 12 consecutive months of service credit. The four 12-month periods selected do not have to be consecutive nor do they have to include the last four years of membership. The lowest of the four periods becomes a base year used as a starting point for a 15 percent cap on annual salary increases for the next three periods used to determine the applicable HAS. This salary cap applies regardless of when the annual salaries used in the HAS calculation occurred.

- ***For all members of the PERA benefit structure, except judges, who were not eligible to retire as of January 1, 2011, or members of the PERA benefit structure who are hired on or after January 1, 2007, regardless of the date of retirement:*** HAS is determined by the highest annual salaries associated with four periods of 12 consecutive months of service credit. The four 12-month periods selected do not have to be consecutive nor do they have to include the last four years of membership. The lowest of the four periods becomes a base year used as a starting point for an 8 percent cap on annual salary increases for the next three periods used to determine the applicable HAS. This salary cap applies regardless of when the annual salaries used in the HAS calculation occurred.

## NOTES TO THE FINANCIAL STATEMENTS

*(Dollars in Thousands)*

- *For members of the Judicial Division Trust Fund (judges) regardless of the date of hire or the date of retirement:* HAS is one-twelfth of the highest annual salary associated with one period of 12 consecutive months of service credit.
- *For members of the DPS benefit structure who are eligible to retire as of January 1, 2011:* HAS is the average monthly salary of the 36 months of earned service having the highest salaries.
- *For members of the DPS benefit structure who are not eligible to retire as of January 1, 2011:* HAS is determined by the highest annual salaries associated with four periods of 12 consecutive months of service credit. The four 12-month periods selected do not have to be consecutive nor do they have to include the last four years of membership. The lowest of the four periods becomes a base year used as a starting point for an 8 percent cap on annual salary increases for the next three periods used to determine the applicable HAS. This salary cap applies regardless of when the annual salaries used in the HAS calculation occurred.

### *Service Retirement Benefits—PERA Benefit Structure*

Upon termination of PERA-covered employment and reaching eligibility for service retirement benefits, a member may begin receipt of benefits as shown below.

**Service Retirement Eligibility for Members (Other Than State Troopers) Hired Before July 1, 2005, With Five Years of Service Credit on January 1, 2011**

| Age Requirement (in years) | Service Credit Requirement (in years) |
|---|---|
| 50 | 30 |
| 55 | Age and Service = 80 or more |
| 60 | 20 |
| 65 | 5 |
| 65 | Less than 5 but 60 payroll postings[1] |

[1] Retiring members who are age 65 and have less than five years of service credit and less than 60 payroll postings will receive a service retirement benefit under the Money Purchase Formula only.

**Service Retirement Eligibility for Members (Other Than State Troopers) Hired On or After July 1, 2005, But Before January 1, 2007, With Five Years of Service Credit on January 1, 2011**

| Age Requirement (in years) | Service Credit Requirement (in years) |
|---|---|
| Any Age | 35 |
| 55 | Age and Service = 80 or more |
| 60 | 20 |
| 65 | 5 |
| 65 | Less than 5 but 60 payroll postings[1] |

[1] Retiring members who are age 65 and have less than five years of service credit and less than 60 payroll postings will receive a service retirement benefit under the Money Purchase Formula only.

**Service Retirement Eligibility for Members (Other Than State Troopers) Hired on or After January 1, 2007, But Before January 1, 2011, With Five Years of Service Credit on January 1, 2011**

| Age Requirement (in years) | Service Credit Requirement (in years) |
|---|---|
| Any Age | 35 |
| 55 | 30 |
| 55 | Age and Service = 85 or more |
| 60 | 25 |
| 65 | 5 |
| 65 | Less than 5 but 60 payroll postings[1] |

[1] Retiring members who are age 65 and have less than five years of service credit and less than 60 payroll postings will receive a service retirement benefit under the Money Purchase Formula only.

**Service Retirement Eligibility for Members (Other Than State Troopers) Hired Before January 1, 2011, With Less Than Five Years of Service Credit on January 1, 2011**

| Age Requirement (in years) | Service Credit Requirement (in years) |
|---|---|
| Any Age | 35 |
| 55 | 30 |
| 55 | Age and Service = 85 or more |
| 60 | 25 |
| 65 | 5 |
| 65 | Less than 5 but 60 payroll postings[1] |

[1] Retiring members who are age 65 and have less than five years of service credit and less than 60 payroll postings will receive a service retirement benefit under the Money Purchase Formula only.

**Service Retirement Eligibility for Members (Other Than State Troopers) Hired on or After January 1, 2011**

| Age Requirement (in years) | Service Credit Requirement (in years) |
|---|---|
| Any Age | 35 |
| 58 | 30 |
| 58 | Age and Service = 88 or more |
| 60 | 28 |
| 65 | 5 |
| 65 | Less than 5 but 60 payroll postings[1] |

[1] Retiring members who are age 65 and have less than five years of service credit and less than 60 payroll postings will receive a service retirement benefit under the Money Purchase Formula only.

**Service Retirement Eligibility for State Troopers**

| Age Requirement (in years) | Service Credit Requirement (in years) |
|---|---|
| Any Age | 30 |
| 50 | 25 |
| 55 | 20 |
| 65 | 5 |
| 65 | Less than 5 but 60 payroll postings[1] |

[1] Retiring members who are age 65 and have less than five years of service credit and less than 60 payroll postings will receive a service retirement benefit under the Money Purchase Formula only.

## NOTES TO THE FINANCIAL STATEMENTS
*(Dollars in Thousands)*

The service retirement benefit for all retiring members is the greater of the Defined Benefit Formula or the Money Purchase Formula as explained below:

- **Defined Benefit Formula**
  HAS multiplied by 2.5 percent and then multiplied by Years of Service Credit.

- **Money Purchase Formula**
  Values the retiring member's account plus a 100 percent match on eligible amounts as of the member's retirement date. This amount is then annuitized into a monthly benefit using the retiring member's life expectancy, expected rates of return, and other actuarial factors.

In all cases, a service retirement benefit is limited to 100 percent of HAS and also cannot exceed the maximum benefit amount allowed by federal law.

In addition to the Service Retirement Eligibility Charts on page 65, SB 10-001 made the following change to the age and service credit requirements for a full service retirement:

- For all new members, other than State Troopers, first covered under the plan on or after January 1, 2017, eligibility includes a modified Rule of 90 (age and service must add to 90 with a minimum age of 60). If the most recent 10 years of service credit is earned under either the School Division Trust Fund or the DPS Division Trust Fund, eligibility will include a modified Rule of 88 (age and service must add to 88 with a minimum age of 58).

### *Reduced Service Retirement—PERA Benefit Structure*

Reduced service retirement benefits are calculated in the same manner as a service retirement benefit with a reduction for each month prior to the member's first eligible date for a service retirement. The benefit calculation reduction factors are specified in C.R.S. § 24-51-605.

Reduced Service Retirement Eligibility

| Age Requirement (in years) | | Service Credit Requirement (in years) |
|---|---|---|
| 50 | | 25 |
| 50 | —(State Troopers only)— | 20 |
| 55 | | 20 |
| 60 | | 5 |

SB 10-001 did not change the age and service requirements to be eligible for a reduced service retirement benefit nor did it change the reduced service retirement benefit for members who are eligible to retire as of January 1, 2011; for these members the current reduction factors found at C.R.S. § 24-51-605 will remain in place. The legislation did change the reduction factors used to calculate reduced benefits for those members not eligible to retire as of January 1, 2011. For these members, an actuarial equivalent reduction will be applied to the reduced service retirement benefit.

### *Service Retirement and Reduced Service Retirement Benefits—DPS Benefit Structure*

Members in the DPS benefit structure are eligible to receive a monthly retirement benefit when they meet the age and service requirements listed below. If the member has less than five years of service credit under the DPS benefit structure, the member does not have the option to apply for a benefit and the member is only eligible for a refund of his or her account.

If the member has five years of service credit as of January 1, 2011, the following age and service requirements apply:

Service Retirement Benefit

| Age Requirement (in years) | Service Credit Requirement (in years) |
|---|---|
| 50 | 30 |
| 55 | 25[1] |
| 65 | 5 |

[1] 15 years must be earned service credit

Reduced Service Retirement Benefit

| Age Requirement (in years) | Service Credit Requirement (in years) |
|---|---|
| Less than 50 | 30 |
| Less than 55 | 25 |
| 55 | 15 |

## NOTES TO THE FINANCIAL STATEMENTS

*(Dollars in Thousands)*

If the member does not have five years of service credit as of January 1, 2011, the following age and service requirements apply:

| Service Retirement Benefit | |
|---|---|
| Age Requirement (in years) | Service Credit Requirement (in years) |
| Any Age | 35 |
| 55 | 30[1] |
| 55 | Age and Service = 85 or more[1] |
| 60 | 25 |
| 65 | 5 |

[1] 20 years must be earned service credit

| Reduced Service Retirement Benefit | |
|---|---|
| Age Requirement (in years) | Service Credit Requirement (in years) |
| 50 | 25 |
| 55 | 20 |
| 60 | 5 |

The service retirement benefit for all retiring members is the greater of the two calculations as explained below:

- HAS multiplied by 2.5 percent and then multiplied by Years of Service Credit.
- $15 times the first 10 Years of Service Credit plus $20 times Service Credit over 10 years plus a monthly amount equal to the annuitized member balance (which may include matching dollars if eligible) using the retiring member's life expectancy, expected rates of return, and other actuarial factors.

In all cases, a service retirement benefit is limited to 100 percent of HAS and also cannot exceed the maximum benefit amount allowed by federal law.

### *Disability Program*

Eligible active members, other than judges, with five or more years of earned service credit are covered by the PERA Disability Program. Judges are immediately covered under the disability program. The earned service credit requirement may be waived for State Troopers who become disabled as the result of injuries in the line of duty.

Medical determinations for the disability program are outsourced to a separate disability program administrator, Unum. Applicants found to be disabled receive payments under one of two tiers:

- **Short-Term Disability:** Disability applicants are eligible for short-term disability payments if they are found to be mentally or physically incapacitated from performance of essential job duties after reasonable accommodation, and who are medically unable to earn at least 75 percent of their pre-disability earnings from any job, but who are not totally and permanently incapacitated from regular and substantial gainful employment. PERA's short-term disability program is an insurance product with PERA's disability program administrator and payments are made directly to the individual from PERA's disability program administrator. The maximum income replacement is 60 percent of the member's pre-disability PERA salary for up to 22 months.
- **Disability Retirement Benefits:** Disability applicants who are found to be totally and permanently mentally or physically incapacitated from regular and substantial gainful employment are eligible for disability retirement benefits. These benefits are paid by PERA for as long as the disability retiree remains disabled. The benefit is calculated as a percentage of the disabled member's HAS using accrued, and in some cases, projected service credit.

### *Benefit Options*

Service retirees in the PERA benefit structure and all members in either the DPS benefit structure or the PERA benefit structure who meet the requirements of a disability retirement may elect to receive their retirement or disability retirement benefits in the form of a single-life benefit payable for the retiree's lifetime only, or one of two joint-life benefits payable for the lifetime of the retiree with a continuing benefit paid upon the retiree's death to the retiree's cobeneficiary. Such option designations may only be changed under limited conditions specified in State law. The options are as follows:

NOTES TO THE FINANCIAL STATEMENTS
*(Dollars in Thousands)*

- *Option 1:* A single-life benefit payable for the life of the retiree and, upon the death of the retiree, no further monthly benefits are payable.
- *Option 2:* A joint-life benefit payable for the life of the retiree and, upon the death of the retiree, one-half of the benefit becomes payable to the cobeneficiary of the retiree for life. Upon the death of the cobeneficiary prior to the death of the retiree, an Option 1 benefit becomes payable to the retiree.
- *Option 3:* A joint-life benefit payable for the life of the retiree and, upon the death of the retiree, the same benefit becomes payable to the cobeneficiary of the retiree for life. Upon the death of the cobeneficiary prior to the death of the retiree, an Option 1 benefit becomes payable to the retiree.

Options 2 and 3 are the actuarial equivalent of Option 1.

Service retirees in the DPS benefit structure have the following options:

- *Option A:* A single-life benefit payable for the life of the retiree and, upon the death of the retiree, no further monthly benefits are payable.
- *Option B:* A single-life benefit, reduced from an Option A benefit to provide benefits to designated beneficiaries for a fixed period of time after retirement. As part of the retirement calculation, a guaranteed payment period is determined and if the retiree dies before the guaranteed period ends, the benefit will continue to the Option B beneficiary(ies) for the remainder of the guaranteed period. If the death of the retiree occurs after the guaranteed period, the benefit ends.
- *Option P2:* A joint-life benefit payable for the life of the retiree and, upon the death of the retiree, one-half of the benefit becomes payable to the cobeneficiary of the retiree for life. Upon the death of the cobeneficiary prior to the death of the retiree, an Option A benefit becomes payable to the retiree.
- *Option P3:* A joint-life benefit payable for the life of the retiree and, upon the death of the retiree, the same benefit becomes payable to the cobeneficiary of the retiree for life. Upon the death of the cobeneficiary prior to the death of the retiree, an Option A benefit becomes payable to the retiree.

Options B, P2, and P3 are the actuarial equivalent of Option A.

### *Survivor Benefits Program—PERA Benefit Structure*

Members who have at least one year of earned service credit are covered by the PERA survivor benefits program. This one-year requirement is waived if a member's death is job-incurred.

In the event of the covered member's death, monthly survivor benefits may be paid to the qualified survivors of the deceased. Qualified survivors generally include minor children, a surviving spouse, dependent parents, or a cobeneficiary (for deceased members who were eligible for retirement at the time of death).

Monthly benefits are specified in statute and vary based upon the deceased's HAS, years of service credit, the qualified survivor to whom benefits are to be paid, and the number of qualified survivors receiving benefits.

If at the time of death, a member has less than one year of earned service credit or with no qualified survivors, the deceased's named beneficiary or the estate receives a lump-sum payment of the deceased member's account plus a 100 percent match on eligible amounts.

### *Survivor Benefits Program—DPS Benefit Structure*

Active members who have at least five years of continuous service under the DPS benefit structure prior to the date of death and DPS disability retirements (prior to age 65) are covered by the Survivor Benefits Program applicable to the DPS benefit structure.

In the event of the covered member's death, the member's qualified survivors are eligible for survivor benefits as long as the named beneficiary(ies) waive their right to receive a refund of the member's contributions. Qualified survivors generally include minor children, a surviving spouse, or dependent parents.

Monthly benefits are specified in statute and vary based upon the deceased's HAS, years of service credit, the qualified survivor to whom benefits are to be paid, and the number of qualified survivors receiving benefits.

NOTES TO THE FINANCIAL STATEMENTS
*(Dollars in Thousands)*

If at the time of death, a member has not met the eligibility requirements for the DPS benefit structure survivor benefits program that are specified in statute, the member's named beneficiary(ies) will receive a lump-sum payment of the deceased member's account without a match.

### *Annual Increases*

On an annual basis, eligible benefit recipients receive post-retirement, cost-of-living adjustments called annual increases (AI). The AI payment month, eligibility, and amounts are determined by the date the retiree or deceased member began membership in PERA.

The AI provisions are explained below.

- For benefit recipients of the PERA benefit structure who began membership before January 1, 2007, and whose benefit is paid based on a retirement date prior to January 1, 2011, and benefit recipients of the DPS benefit structure whose benefit is paid based on a retirement date prior to January 1, 2011:
  - *Payment Month:* The AI is paid in July.
  - *Eligibility:* The benefit recipient has been receiving benefits for at least seven months immediately preceding the July in which the AI is to be paid.
  - *AI Amount:* The AI is 2 percent per year unless PERA has a negative investment year in which case, for the next three years, the AI becomes the lesser of 2 percent or the average of the monthly Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W) amounts for the prior calendar year. The amount of the first AI will be prorated from the month of retirement to the first AI payment date.
- For benefit recipients of the PERA benefit structure who began membership before January 1, 2007, and whose benefit is paid based on a retirement date on or after January 1, 2011, and benefit recipients of the DPS benefit structure whose benefit is paid based on a retirement date on or after January 1, 2011, the following eligibility criteria is required:
  - *Payment Month:* The AI is paid in July.
  - *Eligibility:* For full service retirees, disability retirees, and reduced service retirees who are eligible to receive a benefit on January 1, 2011, and survivor benefit recipients, the benefit recipient has received benefit payments for the 12 months prior to the July in which the AI is to be paid.

    For reduced service retirees who are not eligible to retire as of January 1, 2011: A reduced service retiree is eligible to receive the AI in July of the year in which both of the following conditions are met: (1) the retiree has received benefit payments for 12 months prior to the July in which the AI is to be paid and (2) as of January 1 of the year the AI is paid, the retiree has either reached age 60 or the age and service Rule for unreduced service retirement applicable to the retiree's Plan.
  - *AI Amount:* The AI is 2 percent per year unless PERA has a negative investment year in which case, for the next three years, the AI becomes the lesser of 2 percent or the average of the monthly CPI-W amounts for the prior calendar year.
- For benefit recipients of the PERA benefit structure who began membership on and after January 1, 2007:
  - *Payment Month:* The AI is paid in July.
  - *Eligibility:* For full service retirees, disability retirees, and survivor benefit recipients: The benefit recipient becomes eligible in July of the calendar year following the calendar year in which the benefit recipient has received 12 months of benefit payments.

    For reduced service retirees: A reduced service retiree is eligible to receive the AI in July of the year in which both of the following conditions are met: (1) as of January 1 of the year the AI is to be paid, the retiree has received 12 months of benefit payments in the prior calendar year and (2) as of January 1 of the year the AI is paid, the retiree has either reached age 60 or the age and service Rule for unreduced service retirement applicable to the retiree's Plan.
  - *AI Amount:* The AI is the lesser of 2 percent or the average of the monthly CPI-W amounts for the prior calendar year. In no case can the sum of AIs paid to a Division's benefit recipients exceed 10 percent of the divisional Annual Increase Reserve (AIR).

***Changes to the 2 Percent AI Cap:*** If PERA's overall funded status is at or above 103 percent, the AI cap of 2 percent will increase by 0.25 percent per year. If after PERA's overall funded status reaches 103 percent and it subsequently drops below 90 percent, the 2 percent AI cap will decrease by 0.25 percent per year, but will never drop below 2 percent.

NOTES TO THE FINANCIAL STATEMENTS
*(Dollars in Thousands)*

### *Indexing of Benefits*

Under previous law, inactive members who were covered by the plan as of December 31, 2006, who have 25 or more years of service credit, but do not begin receiving monthly benefits, have their benefit amount increased by the applicable AI granted by PERA from their date of termination of membership to their effective date of retirement. SB 10-001 removed this provision for all members not eligible to retire as of January 1, 2011.

### *Suspending Benefits*

If a retiree suspends retirement on or after January 1, 2011, returns to membership, and earns at least one year of service credit, a separate benefit will be earned. In this case, the retiree may opt to refund the contributions remitted with interest and an applicable match or receive a second, separate benefit. The original benefit will not be recalculated. Individuals who suspended retirement prior to January 1, 2011, are eligible to have their original benefit recalculated upon re-retirement.

If less than one year of service credit is earned during the return to membership, the retiree will be required to refund the contributions remitted with interest and an applicable match before the original benefit will resume.

### *Working After Retirement Without Suspending Benefits*

- **Retiree Contributions:** With a few statutory exceptions, employers are required to remit employer contributions, amortization equalization disbursement (AED), and supplemental amortization equalization disbursement (SAED) on salary earned by retirees who work for them, but do not suspend retirement and return to membership. Beginning January 1, 2011, working retirees are required to make contributions at a percentage equal to the member contribution rate. Under C.R.S. § 24-51-101 (53), working retiree contributions are nonrefundable and are not deposited into member accounts. PERA deposits these contributions into the employer reserve.

- **Limits on Working After Retirement:** With a few statutory exceptions, retirees may work up to 110 days/720 hours per calendar year for a PERA employer with no reduction in benefits. In addition, each employer assigned to the School Division Trust Fund, DPS Division Trust Fund, and each Higher Education Institution assigned to the State Division Trust Fund may designate on a calendar year basis, up to 10 service retirees who may work up to 30 additional days for a total of 140 days/916 hours in a calendar year. The employer contributions, AED, SAED, and working retiree contributions are due on all salary earned.

### Benefit Provisions—Voluntary Investment Program and Defined Contribution Retirement Plan

See Note 8.

### Benefit Provisions—Deferred Compensation Plan

See Note 8.

### Benefit Provisions—Health Care Trust Funds

See Note 9.

### Life Insurance Reserve

PERA offers an optional life insurance program where members can purchase varying amounts of coverage. The Life Insurance Reserve is an accumulation of dividends received in the past from the insurance company based upon plan experience. The proceeds and investment income from the Life Insurance Reserve are used to pay the current administrative costs of the plan.

### Termination of PERA

If PERA is partially or fully terminated for any reason, C.R.S. § 24-51-217 provides that the rights of all members and benefit recipients to all benefits on the date of termination, to the extent then funded, will become nonforfeitable.

## Note 2—Summary of Significant Accounting Policies

### Reporting Entity

The Board oversees all funds included in the financial statements of PERA and has the ability to influence operations. The Board's responsibilities include designation of management, membership eligibility, investment of funds, and accountability for fiscal matters.

PERA is an instrumentality of the State of Colorado (State); it is not an agency of State government. In addition, it is not subject to administrative direction by any department, commission, board, bureau, or agency of the State. Accordingly, PERA's financial statements are not included in the financial statements of any other organization.

## NOTES TO THE FINANCIAL STATEMENTS
*(Dollars in Thousands)*

### Basis of Presentation

The accompanying financial statements are prepared in accordance with accounting principles generally accepted in the United States of America that apply to governmental accounting for fiduciary funds.

PERA implemented the provisions of GASB Statement No. 82, "Pension Issues-an amendment of GASB Statements No. 67, No. 68 and No. 73" for the year ended December 31, 2015. This Statement addresses issues regarding (1) the presentation of payroll-related measures in required supplementary information (RSI), (2) the selection of assumptions and the treatment of deviations from the guidance in an Actuarial Standard of Practice for financial reporting purposes, and (3) the classification of payments made by employers to satisfy employee (plan member) contribution requirements.

In February 2015, GASB issued Statement No. 72, "Fair Value Measurement and Application." GASB 72 provides guidance for determining a fair value measurement for financial reporting purposes. GASB 72 establishes a hierarchy of inputs to valuation techniques used to measure fair value and the application to certain investments. GASB 72 also provides guidance for disclosures related to all fair value measurements. GASB 72 will be effective for periods beginning after June 15, 2015. PERA has chosen not to early adopt GASB 72 and has not yet determined the impact of the standard on its financial statements and disclosures.

In June 2015, GASB issued Statement No. 74, "Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans." GASB 74 addresses reporting by other postemployment benefit (OPEB) plans that administer benefits on behalf of governments. The new OPEB standard parallels the pension standard issued in 2012—GASB Statement No. 67, "Financial Reporting for Pension Plans." The Statement requires more extensive note disclosures and RSI related to the measurement of the OPEB liabilities for which assets have been accumulated. GASB 74 will be effective for periods beginning after June 15, 2016. PERA has chosen not to early adopt GASB 74 and has not yet determined the impact of this standard on its financial statements and disclosures.

### Basis of Accounting

The accompanying financial statements for the defined benefit and defined contribution trust funds (DB and DC trust funds), the deferred compensation trust fund, the private purpose trust fund, and the OPEB plans are prepared using the economic resources measurement focus and the accrual basis of accounting. The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires PERA to use estimates and assumptions that affect the accompanying financial statements and disclosures. Actual results could differ from those estimates. Member and employer contributions are recognized as revenues in the period in which the compensation becomes payable to the member and the employer is statutorily committed to pay these contributions to the DB and DC trust funds, the deferred compensation trust fund, the HCTF, and the DPS HCTF. Benefits and refunds are recognized when due and payable.

### Fund Accounting

The financial activities of the State Division Trust Fund, the School Division Trust Fund, the Local Government Division Trust Fund, the Judicial Division Trust Fund, the DPS Division Trust Fund, the HCTF, the DPS HCTF, the Life Insurance Reserve, the Voluntary Investment Program, the Defined Contribution Retirement Plan, and the Deferred Compensation Plan are recorded in separate funds. The State, School, Local Government, Judicial, and DPS Division Trust Funds maintain separate accounts, and all actuarial determinations are made using separate division-based information.

The Division Trust Funds, the HCTF, the DPS HCTF, and the Life Insurance Reserve pool their investments into a combined investment portfolio. Investment value and earnings of the investment pool are allocated among the funds based on each fund's percentage ownership. As of December 31, 2015, the ownership percentages of each fund are shown in the table below.

| Trust Fund | Ownership Percentages |
|---|---|
| State Division | 31.27% |
| School Division | 51.56% |
| Local Government Division | 8.53% |
| Judicial Division | 0.64% |
| DPS Division | 7.24% |
| HCTF | 0.68% |
| DPS HCTF | 0.04% |
| Life Insurance Reserve | 0.04% |
| **Total** | **100.00%** |

NOTES TO THE FINANCIAL STATEMENTS
*(Dollars in Thousands)*

The administrative activities and operating assets and liabilities are pooled and recorded in a Common Operating Fund. Expenses incurred and net operating assets are allocated from the Common Operating Fund to the Division Trust Funds based on administrative staff workload devoted to these funds and the ratio of the number of active and retired members in each division to the total for all the Division Trust Funds. Expenses are allocated to the HCTF and DPS HCTF based on administrative fees charged to participants. Expenses are allocated to the Voluntary Investment Program, the Defined Contribution Retirement Plan, and the Deferred Compensation Plan based on administrative staff workload and the ratio of Fiduciary Net Position (FNP) of each program or plan to the total for the program and plans. Expenses are allocated to the Life Insurance Reserve based on administrative staff workload.

## Fair Value of Investments

Plan investments are presented at fair value in the Statements of Fiduciary Net Position. Global equity and fixed income securities traded on a national or international exchange are valued at the last reported sales price. Fixed income securities, not traded on a national or international exchange, are based on equivalent values of comparable securities with similar yield and risk.

Private equity includes investments in corporate finance, venture capital, and other private equity partnerships. PERA invests as a limited partner in these funds which are long-term and generally illiquid. As a result, investors are subject to redemption restrictions which generally limit distributions and restrict the ability of limited partners to exit a partnership investment prior to its dissolution. Private equity investments are valued using their respective net asset values (NAV) and are generally audited annually. The most significant element of NAV is the fair value of the investment holdings. These holdings are valued by the general partners in conjunction with management, investment advisors, and valuation specialists. The valuation techniques vary based on investment type and involve a certain degree of expert judgment. The fair value for these investments could differ significantly if a ready market for these assets existed.

Real estate is held directly, as a limited partner, or in commingled funds. These investments are long-term and illiquid in nature. As a result, investors are subject to redemption restrictions which generally limit distributions and restrict the ability of limited partners to exit a partnership investment prior to its dissolution. The fair value of directly owned real estate investments and open-end commingled funds is based on periodic independent appraisals. Limited partner real estate investments and closed-end commingled real estate are valued based on their respective NAV, and are generally audited annually. The most significant element of NAV is the fair value of the investment holdings. The general partners value these holdings using valuation assumptions based on both market and property specific inputs which are not observable and involve a certain degree of expert judgment. The fair value for these investments could differ significantly if a ready market for these assets existed.

The Opportunity Fund asset class is comprised of investments in timber, risk parity, tactical, credit, and other opportunistic strategies. PERA has both direct and indirect investments in this asset class. Indirect investments include ownership of commingled fund investments, which are long-term and generally illiquid. As a result, investors are subject to redemption restrictions, which generally limit distributions and restrict the ability to exit the commingled fund investment. The fair value of directly owned timber investments is based on periodic independent appraisals. Risk parity, tactical opportunity, credit opportunity, and other opportunistic commingled funds are valued using their respective NAV and are generally audited annually. The most significant element of NAV is the fair value of the investment holdings. The general partners value these holdings in conjunction with management, investment advisers, and valuation specialists. The valuation techniques vary based on investment type and involve a certain degree of subjective judgment. The fair value for these investments could differ significantly if a ready market for these assets existed.

Interests in commingled funds are valued using the NAV per unit of each fund. The NAV reported by the fund manager is based on the fair value of the underlying investment owned by each fund, minus its liabilities, divided by the number of shares outstanding. Investments in mutual funds are valued at the NAV of shares held at year-end.

The PERAdvantage Capital Preservation Fund in the two defined contribution and the deferred compensation funds is a stable value fund and the value of the fund is based on the contract value, which approximates fair value. Contract value represents what is owed to the plan participants and what the shares of the stable value fund are being bought and sold for.

The carrying value of short-term investments is at cost, which approximates fair value.

## Health Care Trust Funds Specific Policies

See Note 9.

NOTES TO THE FINANCIAL STATEMENTS
*(Dollars in Thousands)*

## Note 3—Interfund Transfers and Balances

Interfund transfers of assets take place on a regular basis between the Division Trust Funds. The transfers occur upon the initiation of a retirement or survivor benefit where the member earned or purchased service in another Division Trust Fund in addition to the Fund that is paying the benefit. Transfers also occur from the Division Trust Funds to the Health Care Trust Funds to allocate a portion of the amount paid by members to purchase service credit. The transfers for the year ended December 31, 2015, consisted of the following amounts:

### INTERFUND TRANSFERS

| | State Division Trust Fund | School Division Trust Fund | Local Government Division Trust Fund | Judicial Division Trust Fund | DPS Division Trust Fund | HCTF | DPS HCTF |
|---|---|---|---|---|---|---|---|
| Transfers in from other Funds for retirements | $22,983 | $19,414 | $5,029 | $3,247 | $3,404 | $— | $— |
| Transfers out to other Funds for retirements | (18,123) | (24,906) | (5,870) | — | (5,178) | — | — |
| Transfers in from other Funds for survivor benefits | 91 | 17 | 405 | — | 123 | — | — |
| Transfers out to other Funds for survivor benefits | (17) | (594) | (25) | — | — | — | — |
| Transfers out to Health Care Trust Funds for purchased service credit | (3,139) | (3,062) | (1,198) | (166) | (121) | — | — |
| Transfers in to Health Care Trust Funds for purchased service credit | — | — | — | — | — | 7,565 | 121 |

As of December 31, 2015, interfund balances existed between funds due to unreimbursed internal operating expenses. The interfund balances consisted of the following amounts:

### INTERFUND BALANCES

| Trust Fund | Amount |
|---|---|
| State Division | $267 |
| School Division | 441 |
| Local Government Division | 73 |
| Judicial Division | 5 |
| DPS Division | 62 |
| Voluntary Investment Program | (504) |
| Defined Contribution Retirement Plan | (145) |
| Deferred Compensation Plan | (205) |
| HCTF | 6 |

## Note 4—Contributions

### Division Trust Funds—Defined Benefit Pension Plans

Members and employers are required to contribute to PERA at a rate set by Colorado statute. The contribution requirements of plan members and affiliated employers are established under C.R.S. § 24-51-401 *et seq*. Colorado State law provisions may be amended from time to time by the Colorado General Assembly.

Members are required to contribute 8 percent of their PERA-includable salary (State Troopers contribute 10 percent). PERA records these contributions in individual member accounts. Member contributions are tax-deferred for federal and Colorado income tax purposes, effective July 1, 1984, (January 1, 1986, for members of the DPS benefit structure) and January 1, 1987, respectively. Prior to those dates, contributions were on an after-tax basis. PERA-affiliated employers contribute a percentage of active member covered payrolls at employer rates ranging from 10.00 percent to 13.66 percent.

Employers that rehire a PERA retiree as an employee or under any other work arrangement (working retiree) are required to report and pay employer contributions on the amounts paid to the working retiree. In addition, effective January 1, 2011, working retirees are required to make contributions at a percentage of salary equal to the member contribution rate. However, under C.R.S. § 24-51-101 (53), these contributions are not member contributions, are not deposited into a member account, and therefore, are nonrefundable to the working retiree.

## NOTES TO THE FINANCIAL STATEMENTS
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For purposes of deferring federal income tax imposed on salary, member contributions and working retiree contributions shall be treated as employer contributions pursuant to the provisions of 26 U.S.C. § 414 (h)(2), as amended. For all other purposes, these contributions shall be treated as member contributions and working retiree contributions as described above.

Beginning January 1, 2006, employers are required to pay the AED, and beginning January 1, 2008, employers are required to pay the SAED. The employers pay these amounts on the PERA-includable salary for all employees working for the employer who are members of PERA, or who are eligible to elect to become members of PERA on or after January 1, 2006, including any amounts paid in connection with the employment of a retiree by an employer. PERA uses these payments to help amortize the unfunded actuarial accrued liability (UAAL). The AED and SAED are set to increase in future years, as described in the table on the next page. SB 10-001 provides for adjustment of the AED and SAED based on the year-end funded status within a particular division trust fund. If a particular division trust fund reaches a funded status of 103 percent, a decrease in the AED and SAED is mandated and if it subsequently falls below a funded status of 90 percent, an increase in the AED and SAED is mandated. For the Local Government and Judicial Divisions, if the funded ratio reaches 90 percent and subsequently falls below 90 percent, an increase in the AED and SAED is mandated. AED and SAED rates cannot exceed the maximums listed in the table on the next page.

C.R.S. § 24-51-412 permits a Pension Certificates of Participation (PCOP) offset to the DPS Division employer contribution rate. The offset, expressed as a percentage of covered payroll, is equal to the annual assumed payment obligations for PCOPs issued in 1997 and 2008, including subsequent refinancing, by the Denver Public Schools at a fixed effective annual interest rate of 8.50 percent. At a minimum, the DPS Division employer rate, after applying the PCOP offset, must be sufficient to fund the DPS HCTF and the AIR contribution rates as it applies to the DPS Division. The staff of Denver Public Schools provided the PCOP offset rate of 15.97 percent for 2015, which is reviewed and analyzed by PERA staff.

C.R.S. § 24-51-401(1.7) (e) recognizes the effort to equalize the funded status of the DPS Division and the School Division, using the actuarial valuation for funding purposes as a basis. As of December 31, 2015, the funded ratio of the DPS Division is 82.1 percent and the funded ratio of the School Division is 60.7 percent. Beginning January 1, 2015, and every fifth year thereafter, the statute requires a true-up calculation to confirm the equalization of the funded status of these two divisions, which is based on the ratio of UAAL over payroll (currently 349.6 percent for the School Division and 112.4 percent for the DPS Division). The true-up calculation is an actuarial projection to assure the funded status of these divisions will be equal in 30 years from 2010. In the event a true-up calculation does not project equalization between these divisions over the 30-year period, the Board shall recommend an adjustment of the DPS Division employer contribution rate to the Colorado General Assembly. An adjustment to the DPS Division contribution rate may result in a significant increase or decrease in the total contributions paid by the DPS Division employers. On June 3, 2015, House Bill 15-1391 was signed into law, which reduced the employer contribution rate for the DPS Division from 13.75 percent to 10.15 percent, with a retroactive effective date of January 1, 2015.

C.R.S. § 24-51-401(1.7) created a mechanism to reduce the funded ratio of the DPS Division from 88.3 percent at its inclusion into PERA in 2010 to the funded ratio of the School Division by 2040. The funded ratio is the actuarial value of assets divided by actuarial accrued liabilities (AALs). This mechanism involves offsetting the employer contributions into the DPS Division Trust Fund by the amount of the PCOPs payments as described above. It is expected that the equalization will occur in approximately 24 years.

PERA-affiliated employers forward the contributions to PERA for deposit. PERA transfers a portion of these contributions, equal to 1.02 percent of the reported salaries, into the HCTF or DPS HCTF for health care benefits. Beginning in 2007, the AIR was created within each division for the purpose of funding future benefit increases. Funding for this reserve comes from the employer contributions and is calculated at 1.0 percent of the salary reported for members in the PERA benefit structure hired on or after January 1, 2007. Post-retirement benefit increases for these members are limited to a maximum of 2.0 percent compounded annually, subject to the availability of assets in the AIR for each division. As of December 31, 2015, the value of the AIR was $69,138 in the State Division, $90,644 in the School Division, $20,595 in the Local Government Division, $787 in the Judicial Division, and $12,990 in the DPS Division. The remainder of these contributions is transferred into a trust fund established for each division for the purpose of meeting current benefit accruals and future benefit payments.

The combined employer contribution rates for retirement and health care benefits along with the member contribution rates from January 1, 2015, through December 31, 2015, are as follows on the next page.

NOTES TO THE FINANCIAL STATEMENTS
*(Dollars in Thousands)*

### CONTRIBUTION RATES

| Division Trust Fund | Membership | Employer Contribution Rate | AED | SAED | PCOP Offset | Total Contribution Rate Paid by Employer | Member Contribution Rate |
|---|---|---|---|---|---|---|---|
| State | All members (except State Troopers) | 10.15% | 4.20% | 4.00% | — | 18.35% | 8.00% |
| State | State Troopers | 12.85% | 4.20% | 4.00% | — | 21.05% | 10.00% |
| School | All members | 10.15% | 4.20% | 4.00% | — | 18.35% | 8.00% |
| Local Government | All members | 10.00% | 2.20% | 1.50% | — | 13.70% | 8.00% |
| Judicial | All members | 13.66% | 2.20% | 1.50% | — | 17.36% | 8.00% |
| DPS | All members | 10.15% | 4.20% | 4.00% | (15.97%) | 2.38% | 8.00% |

### FUTURE AED AND SAED RATES

| | State Division Trust Fund | | School Division Trust Fund | | Local Government Division Trust Fund | | Judicial Division Trust Fund | | DPS Division Trust Fund[1] | |
|---|---|---|---|---|---|---|---|---|---|---|
| Period | AED | SAED | AED | SAED | AED | SAED | AED | SAED | AED | SAED |
| 1/1/2016 — 12/31/2016 | 4.60% | 4.50% | 4.50% | 4.50% | 2.20% | 1.50% | 2.20% | 1.50% | 4.50% | 4.50% |
| 1/1/2017 — 12/31/2017 | 5.00% | 5.00% | 4.50% | 5.00% | 2.20% | 1.50% | 2.20% | 1.50% | 4.50% | 5.00% |
| 1/1/2018 — 12/31/2018 | 5.00% | 5.00% | 4.50% | 5.50% | 2.20% | 1.50% | 2.20% | 1.50% | 4.50% | 5.50% |
| Maximum allowable limitations | 5.00% | 5.00% | 4.50% | 5.50% | 5.00% | 5.00% | 5.00% | 5.00% | 4.50% | 5.50% |

[1] DPS Division employers are permitted to reduce the AED and SAED by the PCOP offset, as specified in C.R.S. § 24-51-412 *et seq.*

### Replacement Benefit Arrangements

IRC § 415 limits the amount of the benefit payable to a retiree or survivor in a defined benefit plan. In some cases, the IRC limit is lower than the benefit calculated under the plan provisions. IRC § 415(m) allows a government plan to set up a "qualified governmental excess benefit arrangement" to pay the difference to those retirees. To accomplish this, PERA has entered into agreements with the employers who last employed the affected retirees. Under the agreement, the employer pays the benefit difference to the retiree from a portion of the current employer contributions. In 2015, employers under these agreements used current employer contributions to pay retirees $2,261 in the State Division; $874 in the School Division; $1,584 in the Local Government Division; $0 in the Judicial Division, and $0 in the DPS Division.

### Contributions—Voluntary Investment Program and Defined Contribution Retirement Plan

See Note 8.

### Contributions—Deferred Compensation Plan

See Note 8.

### Contributions—Health Care Trust Funds

See Note 9.

## Note 5—Investments

### Investment Authority

Under C.R.S. § 24-51-206, the Board has complete responsibility for the investment of PERA's funds, with the following investment limitations:

- The aggregate amount of moneys invested in corporate stocks or corporate bonds, notes, or debentures that are convertible into corporate stock or in investment trust shares cannot exceed 65 percent of the then book value of the fund.
- No investment of the fund in common or preferred stock (or both) of any single corporation can exceed 5 percent of the then book value of the fund.
- The fund cannot acquire more than 12 percent of the outstanding stock or bonds of any single corporation.
- The origination of mortgages or deeds of trust on real residential property is prohibited.

Additionally, C.R.S. § 24-54.8-101 imposes targeted divestment from companies with active operations in the Sudan.

NOTES TO THE FINANCIAL STATEMENTS
*(Dollars in Thousands)*

## Colorado PERA Board's Statutory Fiduciary Responsibility

By State law, the management of PERA's retirement fund is vested in the Board who is held to the standard of conduct of fiduciaries in discharging their responsibilities. According to C.R.S. § 24-51-207(2), the Board, as fiduciaries, must carry out their functions solely in the interest of PERA members and benefit recipients and for the exclusive purpose of providing benefits.

## Investment Committee

The Investment Committee is responsible for assisting the Board in overseeing the PERA investment program. Specific responsibilities include recommending to/advising the Board of the following:

- A written statement of investment philosophy for the fund.
- A written statement of investment policy and any amendments thereto.
- Strategies to achieve the investment goals and objectives of PERA.
- New investment mandates.
- Use of internal or external management.
- On any other investment matters and make recommendations for Board action when necessary.

## Overview of Investment Policy

PERA's investment policy is established and may be amended by a majority vote of the Board. The policy outlines the investment philosophy and guidelines within which the fund's investments will be managed, and includes the following:

- Strategic asset allocation is the most significant factor influencing long-term investment performance and asset volatility.
- The fund's liabilities are long-term and the investment strategy will therefore be long-term in nature.
- The asset allocation policy will be periodically re-examined to ensure its appropriateness to the then prevailing liability considerations.
- As a long-term investor, PERA will invest across a wide spectrum of investments in a prudent manner.
- Active management may be expected to add value over passive investment alternatives under appropriate conditions.

The Board determines the strategic asset allocation policy for the fund. In 2014, the Board commissioned an Asset Liability Study prepared by Aon Hewitt Investment Consulting, Inc. (Aon Hewitt). The objective of the study was to determine the optimal strategic asset allocation policy that would ultimately allow PERA to meet its benefit obligations, while also ensuring that PERA incurs appropriate levels of risk. On March 20, 2015, the Board voted to change the strategic asset allocation policy of the fund effective July 1, 2015. The new strategic asset allocation contains an interim target allocation as of July 1, 2015, and a long-term target allocation and specifies ranges within which each asset class may operate. The long-term target allocation will be achieved over time. PERA staff and Aon Hewitt are responsible for annually recommending interim policy targets to the Board until the long-term target allocation is achieved.

### ASSET ALLOCATION TARGETS AND RANGES

| | Interim Asset Allocation Target Effective July 1, 2015 | Long-Term Asset Allocation | Target Range Effective July 1, 2015 |
|---|---|---|---|
| Global Equity | 55.0% | 53.0% | 47.0% – 59.0% |
| Fixed Income | 24.0% | 23.0% | 18.0% – 28.0% |
| Private Equity[1,2] | 7.5% | 8.5% | 5.0% – 12.0% |
| Real Estate | 7.5% | 8.5% | 5.0% – 12.0% |
| Opportunity Fund[3] | 5.0% | 6.0% | 0.0% – 9.0% |
| Cash and Short-Term Investments | 1.0% | 1.0% | 0.0% – 3.0% |

[1] Effective July 1, 2015, the name of the Alternative Investment asset class was changed to Private Equity.

[2] The Private Equity asset class has exposure to private equity, venture capital, secondary interests in private equity funds, and distressed debt.

[3] As of December 31, 2015, the Opportunity Fund principally consists of investments in timber, risk-parity, tactical, credit, and other opportunistic strategies.

The Asset Liability Study considered expected investment returns, risks, and correlations of returns. The characteristics of the fund's liabilities were analyzed in conjunction with expected investment risks and returns. The targeted strategic asset allocation is designed to provide

NOTES TO THE FINANCIAL STATEMENTS
*(Dollars in Thousands)*

appropriate diversification and to balance the expected total rate of return with the volatility of expected returns. The asset allocation targets are adhered to through the implementation of a rebalancing policy. Investments are managed and monitored in a manner which seeks to balance return and risk within the asset/liability framework. The Chief Investment Officer is authorized to execute investment transactions on behalf of the Board. Assets are managed both internally and externally. In making investment decisions, the Board and staff utilize external experts in various fields including risk and performance analysis, portfolio construction, rebalancing techniques, and other important investment functions and issues.

## Investment Performance

For the year ended December 31, 2015, the net-of-fees, money-weighted, rate of return on the pooled investment assets was 1.6 percent.

A money-weighted rate of return methodology provides information about the performance on pooled investment assets. This methodology considers the effect of timing of transactions that increase the amount of pension plan investments (such as contributions) and those that decrease the amount of pension plan investments (such as benefit payments). Additionally, the money-weighted rate of return provides information that is comparable with the long-term assumed rate of return on the pooled investment assets.

## Cash and Short-Term Investments

Cash balances represent both operating cash accounts and investment cash on deposit held by banks. To maximize investment income, the float caused by outstanding checks is invested, thus causing a possible negative book balance. Negative book balances are reflected in the liabilities section of the Statements of Fiduciary Net Position.

The carrying value of cash and short-term investments at December 31, 2015, on the Statements of Fiduciary Net Position includes short-term fixed income securities of $51,966, pending foreign exchange contracts of $2, and deposit and money market funds of $797,082 for a total of $849,050. PERA considers fixed income securities with a maturity of 12 months or less to be short-term investments.

The table below presents the PERA combined total deposits and money market funds as of December 31, 2015.

| | Carrying Value | Bank Balance |
|---|---|---|
| Deposits with banks (fully insured by federal depository insurance) | $2,001 | $1,978 |
| Deposits held at bank (uncollateralized, held by PERA’s agent in PERA’s name) | 15,184 | 15,184 |
| Short-term investment funds held at bank (shares in commingled funds, held by PERA’s agent in PERA’s name) | 779,897 | 779,897 |
| **Total deposits and money market funds** | **$797,082** | **$797,059** |

## Securities Lending Transactions

C.R.S. § 24-51-206 and Board policies permit PERA to lend its securities to broker-dealers and other entities with a simultaneous agreement to return the collateral for the same securities in the future. PERA utilized two lending agents in 2015, its custodian, The Northern Trust Company (Northern Trust) and Deutsche Bank.

Northern Trust primarily lends international stocks and fixed income securities for cash collateral. U.S. securities are loaned versus collateral valued at 102 percent of the fair value of the securities plus any accrued interest. Non-U.S. securities are loaned versus collateral valued at 105 percent of the fair value of the securities plus any accrued interest. Collateral is marked-to-market daily if price movements exceed certain minimal thresholds.

Northern Trust invests the cash collateral related to PERA’s loaned securities in a separate account, the PERA Custom Fund, according to guidelines stipulated by PERA. As of December 31, 2015, the total fair value of securities on loan with Northern Trust cannot exceed $600,000. Northern Trust’s Senior Credit Committee sets borrower credit limits.

Deutsche Bank is a third-party lending agent for PERA. Deutsche Bank lends domestic and international stocks for cash collateral. U.S. securities are loaned versus collateral valued at a minimum of 102 percent of the fair value of the securities. International securities are loaned versus collateral valued at a minimum of 105 percent of the fair value of the securities. Collateral is marked-to-market daily. As of December 31, 2015, the total market value of securities on loan with Deutsche Bank cannot exceed $1,250,000. Borrower credit limits are assigned by Deutsche Bank’s Global Credit Risk Department.

As of December 31, 2015, and December 31, 2014, the aggregate of the difference between the cash collateral investment value, including certain receivables and payables related to the securities lending program and the cash collateral received, was $303 and $222, respectively.

## NOTES TO THE FINANCIAL STATEMENTS
*(Dollars in Thousands)*

The table below details the balances relating to the securities lending transactions at December 31, 2015.

| Securities Lent for Cash Collateral | Fair Value of Underlying Securities | Cash Collateral Received | Cash Collateral Investment Value |
|---|---|---|---|
| Cash and cash equivalents | $— | $— | $1,452,431 |
| Fixed income | 256,284 | 261,541 | — |
| Global equity | 1,156,359 | 1,190,587 | — |
| **Total** | **$1,412,643** | **$1,452,128** | **$1,452,431** |

As of December 31, 2015, PERA had no credit risk exposure to borrowers because the associated value of the collateral held exceeded the value of the securities loaned. The contracts with PERA's lending agents provide that the lending agents will indemnify PERA if loaned securities are not returned and PERA suffers direct losses due to a borrower's default or the lending agent's noncompliance with the contract. PERA had no losses on securities lending transactions resulting from the default of a borrower or the lending agent for the year ended December 31, 2015. PERA has limited the total fair value of securities outstanding to one borrower to 25 percent of the total fair value of all securities outstanding in the program.

PERA or the borrower can terminate any security loan on demand. Though every loaned security can be sold and reclaimed at any time from the borrower, the weighted average loan life of overall loans at Northern Trust was approximately 55 days and at Deutsche Bank was approximately 106 days as of December 31, 2015. At Northern Trust and Deutsche Bank, all loans were done on an overnight (one day) basis as of December 31, 2015. The PERA Custom Fund had a weighted average maturity of 6 days as of December 31, 2015. Deutsche Bank invests PERA's cash collateral in a separate account. As of December 31, 2015, the weighted average maturity of the separate account was 15.25 days. The weighted average life of a security or instrument is, in the case of a fixed rate security or instrument, the date on which final payment is due or the principal amount can be recovered through demand (if applicable). In the case of a floating or variable rate security or instrument, weighted average life is the shorter of the period of time remaining until either the next readjustment of the interest rate or the principal amount can be recovered through demand (if applicable). Since the majority of securities loans are done on an overnight basis, there is usually a difference between the weighted average maturity of the investments made with the cash collateral provided by the borrower and the maturities of the securities loans.

The following table represents the balances relating to the securities lending transactions as of December 31, 2015, and December 31, 2014.

| | Fair Value of Underlying Securities December 31, 2015 | Fair Value of Underlying Securities December 31, 2014 |
|---|---|---|
| Fixed income | $256,284 | $363,989 |
| Global equity | 1,156,359 | 1,123,955 |
| **Total** | **$1,412,643** | **$1,487,944** |

As of December 31, 2015, the fair value of the securities loaned was $1,412,643, the value of associated cash collateral received was $1,452,128, and the cash collateral investment value, including certain receivables and payables related to the securities lending program was $1,452,431. PERA's income net of expenses from securities lending was $10,843 for the year ended December 31, 2015. Included in net securities lending income for the year ended December 31, 2015, is $145 from commingled funds. As of December 31, 2014, the fair value of the securities loaned was $1,487,944, the value of associated cash collateral received was $1,526,627, and the cash collateral investment value, including certain receivables and payables related to the securities lending program was $1,526,849. PERA's income net of expenses from securities lending was $11,019 for the year ended December 31, 2014. Included in net securities lending income for the year ended December 31, 2014, is $160 from commingled funds.

### Custodial Credit Risk

Custodial credit risk for investments is the risk that, in the event of the failure of the counterparty to a transaction, PERA would be unable to recover the value of investment or collateral securities that are in possession of an outside party. PERA has no formal policy for custodial credit risk for investments. Investment securities are exposed to custodial credit risk if the securities are uninsured, are not registered in PERA's name and are held by either a counterparty, or the counterparty's trust department, or agent, but not in PERA's name. Northern Trust is the master custodian for the majority of PERA's securities. At December 31, 2015, there were no investment or collateral securities subject to custodial credit risk and $15,181 in foreign currency deposits held at Northern Trust which were uninsured and uncollateralized and therefore exposed to custodial credit risk.

NOTES TO THE FINANCIAL STATEMENTS
*(Dollars in Thousands)*

### Concentration of Credit Risk

Concentration of credit risk is the risk of loss that may be attributed to the magnitude of PERA's investment in a single issuer. C.R.S. § 24-51-206 (3) requires that no investment of the fund in common or preferred stock, or both, of any single corporation shall be of an amount which exceeds 5 percent of the then book value of the fund, nor shall the fund acquire more than 12 percent of the outstanding stock or bonds of any single corporation. The 12 percent requirement does not apply to governmental securities (U.S. Treasuries, sovereigns, etc.), Government Sponsored Enterprise securities (agencies including FNMA, FHLMC, etc.), mortgage-backed securities (agency or non-agency), commercial mortgage-backed securities (CMBS), asset-backed securities, or municipal securities. There is no single issuer exposure that comprises 5 percent of the then book value of the fund and no holdings greater than 12 percent of the outstanding stock or bonds of any single corporation at December 31, 2015.

**RECONCILIATION OF CREDIT AND INTEREST RATE RISK DISCLOSURES TO FINANCIAL STATEMENTS**

| | As of December 31, 2015 |
|---|---|
| Fixed income | $11,251,815 |
| Fixed-income securities classified as short-term | 51,966 |
| **Total fixed income securities** | **$11,303,781** |

### Credit Risk

Credit risk is the risk that an issuer or other counterparty to an investment will not fulfill its obligation. As of December 31, 2015, PERA held investments across the credit ratings spectrum, with the majority invested in investment grade issuers defined as having a minimum rating of Baa3/BBB-, issued by Moody's and Standard and Poor's (S&P), respectively. PERA's credit risk policy is as follows: Fixed income portfolios generally have guidelines that establish limits on holdings within each credit rating category. Some investment grade managers are allowed to purchase below investment grade securities, but in general are limited to no more than 5 percent exposure to below investment grade securities, and are generally limited to Ba3/BB- or better. For portfolio managers that can invest in below investment grade securities, there are limits on investments in the lowest ratings categories. For some portfolios, securities rated CCC or below generally cannot exceed the portfolio's benchmark weighting of securities rated CCC or below plus 5 percent. In other portfolios, there is a floor of CCC or better. The table on the next page provides S&P credit quality ratings for PERA's fixed income holdings as of December 31, 2015.

## NOTES TO THE FINANCIAL STATEMENTS
*(Dollars in Thousands)*

### CREDIT QUALITY RATING DISPERSION SCHEDULE

| Quality Rating S & P | Total | U.S. Corporate Bonds | U.S. Govt Mortgage-Backed Securities | Fixed Income Commingled Funds | Non-U.S. Corporate Bonds | Non-U.S. Govt/Agency Bonds | Implicit U.S. Govt Agencies | Non-Agency CMBS | U.S. Municipal Bonds |
|---|---|---|---|---|---|---|---|---|---|
| AAA | $186,640 | $16,442 | $507 | $7,349 | $— | $133,756 | $— | $20,068 | $8,518 |
| AA+ | 1,232,772 | 47,820 | — | 960,194 | — | 8,166 | 200,711 | — | 15,881 |
| AA | 76,368 | 17,935 | — | 27,126 | — | — | — | 20,420 | 10,887 |
| AA- | 134,831 | 19,355 | — | — | 38,567 | 37,822 | — | 6,252 | 32,835 |
| A+ | 142,429 | 54,423 | — | — | 28,501 | 37,854 | — | 15,096 | 6,555 |
| A | 686,784 | 213,763 | — | 421,352 | 44,415 | — | — | 2,239 | 5,015 |
| A- | 372,752 | 285,218 | — | — | 80,769 | 6,765 | — | — | — |
| BBB+ | 628,138 | 457,918 | — | — | 93,062 | 77,158 | — | — | — |
| BBB | 440,027 | 306,223 | — | — | 72,174 | 55,027 | — | 6,603 | — |
| BBB- | 402,559 | 329,036 | — | — | 54,561 | 17,274 | — | 1,688 | — |
| BB+ | 152,613 | 65,792 | — | — | 25,943 | 60,878 | — | — | — |
| BB | 173,495 | 117,292 | — | — | 46,733 | 9,470 | — | — | — |
| BB- | 134,967 | 117,353 | — | — | 13,690 | 3,924 | — | — | — |
| B+ | 128,595 | 103,995 | — | — | 19,780 | 4,820 | — | — | — |
| B | 113,678 | 101,849 | — | — | 11,829 | — | — | — | — |
| B- | 65,733 | 52,566 | — | — | 13,167 | — | — | — | — |
| CCC+ | 56,679 | 51,145 | — | — | 5,534 | — | — | — | — |
| CCC | 12,094 | 3,873 | — | — | — | 8,221 | — | — | — |
| CCC- | 1,963 | 1,963 | — | — | — | — | — | — | — |
| Not rated[1] | 1,957,769 | 10,862 | 1,698,002 | — | 42,475 | 55,559 | 18,974 | 119,473 | 12,424 |
| Subtotal | $7,100,886 | $2,374,823 | $1,698,509 | $1,416,021 | $591,200 | $516,694 | $219,685 | $191,839 | $92,115 |
| U.S. Govts | 2,013,692 | | | | | | | | |
| Explicit U.S. Govt Agencies[2] | 1,247,639 | | | | | | | | |
| Defined Contribution and Deferred Compensation Fixed Income Funds[1] | 941,564 | | | | | | | | |
| **Total** | **$11,303,781** | | | | | | | | |

[1] Not rated by S&P.

[2] Bonds issued by the Government National Mortgage Association (GNMA).

NOTES TO THE FINANCIAL STATEMENTS
*(Dollars in Thousands)*

## Interest Rate Risk

Interest rate risk is the risk that changes in interest rates will adversely affect the fair value of an investment. PERA's policy is to manage its exposure to fair value losses arising from changes in interest rates by requiring that the duration of individual portfolios stays within defined bands of the duration of each portfolio's benchmark. PERA utilizes effective duration as the primary measure of interest rate risk within its fixed income investments. Duration estimates the sensitivity of a bond's price to interest rate changes. Effective duration makes assumptions regarding the most likely timing and amounts of variable cash flows arising from such investments as callable bonds, mortgage-backed securities, and variable-rate debt.

Effective duration for PERA fixed income holdings as of December 31, 2015, is shown in the table below.

### INTEREST RATE RISK—EFFECTIVE DURATION

| | Fair Value Total | Fair Value Duration Not Available | Fair Value Duration Available | Effective Weighted Duration in Years |
|---|---|---|---|---|
| U.S. government mortgage-backed securities | $2,946,148 | $— | $2,946,148 | 4.21 |
| U.S. corporate bonds | 2,374,823 | 8,005 | 2,366,818 | 6.60 |
| U.S. governments | 2,013,692 | — | 2,013,692 | 6.29 |
| Fixed income commingled funds | 1,416,021 | — | 1,416,021 | 5.31 |
| Non-U.S. corporate bonds | 591,200 | 4,278 | 586,922 | 4.72 |
| Non-U.S. government/agency bonds | 516,694 | 1,052 | 515,642 | 5.20 |
| U.S. government agencies | 219,685 | — | 219,685 | 3.86 |
| Non-agency CMBS | 191,839 | — | 191,839 | 4.75 |
| U.S. municipal bonds | 92,115 | 12,424 | 79,691 | 12.62 |
| Total non-defined contribution and non-deferred compensation investment assets | 10,362,217 | 25,759 | 10,336,458 | 5.46 |
| Defined contribution and deferred compensation plans fixed income[1] | 941,564 | — | 941,564 | 4.74 |
| **Total[2]** | **$11,303,781** | **$25,759** | **$11,278,022** | |

[1] Defined contribution and deferred compensation plans fixed income is the total of fixed income assets for the Voluntary Investment Program, the Defined Contribution Retirement Plan, and the Deferred Compensation Plan.

[2] All of the investment assets other than those held in fixed income commingled funds and defined contribution and deferred compensation plans are pooled and managed separately.

## Mortgage-Backed Securities

PERA invests in residential and commercial mortgage-backed securities which are reported at fair value in the Statements of Fiduciary Net Position under Investments at fair value, Fixed income. A residential mortgage-backed security depends on the underlying pool of single-family mortgage loans to provide the cash flow to make principal and interest payments on the security. In many cases, the payment of principal and interest is guaranteed by an agency of the U.S. Government, or a Government Sponsored Enterprise. While these guarantees reduce credit risk, the timing of principal and interest payments remains uncertain. A decline in interest rates can result in prepayments, which reduces the weighted average life of the security. Alternatively, an increase in interest rates results in decreased prepayments, which may cause the weighted average life of a mortgage investment to be longer than anticipated.

CMBS depend on underlying pools of commercial real estate loans to provide the cash flow to make principal and interest payments on the security. These loans are typically for a fixed term, cannot be repaid early by the borrower without penalty and, accordingly, have lower prepayment risk than residential mortgage-backed securities.

PERA invests in mortgage-backed securities for diversification and to enhance fixed income returns. Mortgage-backed securities are subject to credit risk, the risk that the borrower will be unable to meet its obligations. Residential mortgage-backed securities are also subject to prepayment risk, which is the risk that a payment will be made in excess of the regularly scheduled principal payment. Prepayment risk is comprised of two risks: call risk, the risk that prepayments will increase when interest rates have declined, and extension risk, the risk that prepayments will decrease when interest rates have increased.

To reduce PERA's counterparty credit risk, PERA has entered into Master Securities Forward Transaction Agreements with some counterparties which require margin collateral to be pledged or received when the change in net value of unsettled trades exceeds an agreed-upon threshold. As of December 31, 2015, the change in net value of all unsettled trades was below the agreed-upon thresholds, and as a result, no collateral was pledged or held in relation to unsettled trades of mortgage-backed securities.

## NOTES TO THE FINANCIAL STATEMENTS
*(Dollars in Thousands)*

As of December 31, 2015, the fair value of residential and commercial mortgage-backed securities was $2,827,148 and $310,838, respectively, which excludes the fair value of mortgage-backed securities held in commingled funds.

### Foreign Currency Risk

Foreign currency risk is the risk that changes in exchange rates will adversely impact the fair value of an investment or a deposit. PERA's currency risk exposure resides primarily within the Global Equity asset class. In accordance with governmental accounting standards, this disclosure is limited to investments denominated in non-U.S. dollars. There may be additional foreign currency risk in investments that contain underlying securities or business operations exposed to a foreign currency. PERA's formal policy regarding foreign currency risk is to evaluate the risk as part of the fund's periodic Asset Liability Study and to consider it in determining the total fund asset allocation. At December 31, 2015, PERA did not have a currency hedging program at the total fund level. However, at the manager level, hedging currency risk may be allowed and certain managers actively manage currency exposure. PERA monitors currency risk at the total fund, asset class, and portfolio levels.

PERA's exposure to foreign currency risk as of December 31, 2015, is shown in the following table.

#### FOREIGN CURRENCY RISK

| Currency | Total | Global Equity | Private Equity | Real Estate | Income Receivable | Cash and Short-Term Investments | Corporate Bonds | Pending Trades | Pending Foreign Exchange Trades |
|---|---|---|---|---|---|---|---|---|---|
| Euro | $2,375,763 | $2,130,242 | $231,413 | $6,290 | $7,422 | $5,809 | $— | ($110) | ($5,303) |
| Japanese yen | 1,772,912 | 1,769,322 | — | — | 3,578 | 12 | — | 1,201 | (1,201) |
| British pound sterling | 1,631,134 | 1,513,596 | 111,522 | — | 4,774 | 1,400 | — | — | (158) |
| Swiss franc | 690,893 | 680,466 | — | — | 10,427 | — | — | — | — |
| Canadian dollar | 533,343 | 531,529 | — | — | 1,176 | 909 | — | 46 | (317) |
| Hong Kong dollar | 424,645 | 424,426 | — | — | 202 | 101 | — | 78 | (162) |
| Australian dollar | 298,197 | 297,395 | — | — | 692 | 110 | — | — | — |
| Swedish krona | 224,883 | 223,983 | — | — | 836 | 67 | — | (218) | 215 |
| New Taiwan dollar | 221,953 | 218,021 | — | — | — | 3,932 | — | — | — |
| South Korean won | 221,922 | 219,393 | — | — | 2,174 | 536 | — | (257) | 76 |
| Indian rupee | 184,900 | 184,773 | — | — | — | 455 | — | (328) | — |
| Singapore dollar | 144,440 | 143,679 | — | — | 741 | 20 | — | — | — |
| Danish krone | 125,943 | 125,135 | — | — | 808 | — | — | (705) | 705 |
| South African rand | 85,082 | 84,699 | — | — | 1 | 395 | — | (168) | 155 |
| Mexican peso | 66,776 | 62,689 | — | 4,056 | — | 31 | — | — | — |
| Norwegian krone | 66,511 | 66,432 | — | — | — | 163 | — | — | (84) |
| Thai baht | 42,219 | 42,122 | — | — | — | 7 | — | 282 | (192) |
| Brazilian real | 35,039 | 34,234 | — | — | 166 | 506 | 133 | — | — |
| New Israeli shekel | 31,451 | 31,428 | — | — | 17 | 6 | — | — | — |
| Malaysian ringgit | 27,906 | 27,465 | — | — | — | 441 | — | — | — |
| Indonesian rupiah | 26,297 | 26,287 | — | — | — | 10 | — | — | — |
| Philippine peso | 18,189 | 18,183 | — | — | — | 6 | — | — | — |
| Turkish lira | 15,696 | 15,696 | — | — | — | — | — | 184 | (184) |
| Polish zloty | 14,599 | 14,593 | — | — | — | 6 | — | — | — |
| New Zealand dollar | 11,746 | 11,746 | — | — | — | — | — | — | — |
| Qatari riyal | 10,858 | 10,858 | — | — | — | — | — | — | — |
| Czech koruna | 8,987 | 8,453 | — | — | 276 | 258 | — | — | — |
| UAE dirham | 8,241 | 8,240 | — | — | — | 1 | — | — | — |
| Hungarian forint | 4,797 | 4,797 | — | — | — | — | — | — | — |
| Chilean peso | 4,669 | 4,669 | — | — | — | — | — | — | — |
| **Total** | **$9,329,991** | **$8,934,551** | **$342,935** | **$10,346** | **$33,290** | **$15,181** | **$133** | **$5** | **($6,450)** |

NOTES TO THE FINANCIAL STATEMENTS
*(Dollars in Thousands)*

## Note 6—Derivative Instruments

PERA reports derivative instruments at fair value. These derivative instruments involve, to varying degrees, elements of market risk to the extent of future market movements in excess of amounts recognized in the Statements of Fiduciary Net Position. For accounting purposes, derivative instruments are considered to be investments and not hedges.

The following table summarizes the derivative instruments outstanding as of December 31, 2015. These instruments are recorded in cash and short-term investments, investment liabilities, and investments at fair value in the Statements of Fiduciary Net Position. The changes in fair value includes all derivative instrument activity and are included in investment income in the Statements of Changes in Fiduciary Net Position. Investments in limited partnerships and commingled funds include derivative instruments that are not reported in the following disclosure.

### DERIVATIVE INSTRUMENTS—DEFINED BENEFIT PLAN

| | Changes in Fair Value | | Fair Value at December 31, 2015 | |
|---|---|---|---|---|
| Investment Derivatives | Classification | Amount | Classification | Amount |
| Foreign currency forwards | Investment income | ($1,710) | Cash and short-term investments | ($3) |
| Rights/warrants | Investment income | 2,401 | Global equity | 312 |
| Futures | Investment income | 13 | Opportunity fund | — |
| | | | Investment liabilities | — |
| Commodity index swaps | Investment income | (30,619) | Opportunity fund | — |
| Variance swaps | Investment income | (13) | Opportunity fund | — |
| Commodity forwards | Investment income | 113 | Opportunity fund | — |
| Total | | ($29,815) | Total | $309 |

### DERIVATIVE INSTRUMENTS—DEFINED CONTRIBUTION AND DEFERRED COMPENSATION PLANS (SEPARATELY MANAGED ACCOUNTS)

| | Changes in Fair Value | | Fair Value at December 31, 2015 | |
|---|---|---|---|---|
| Investment Derivatives | Classification | Amount | Classification | Amount |
| Foreign currency forwards | Investment income | ($28) | Cash and short-term investments | ($1) |
| Rights/warrants | Investment income | 37 | Global equity | — |
| Total | | $9 | Total | ($1) |

### Foreign Currency Forward Contracts

A foreign currency forward is a contractual agreement between two parties to pay or receive specific amounts of foreign currency at a future date in exchange for another currency at an agreed upon exchange rate. The settlement date for these contracts is three business days or more after the trade date. Forward commitments are not standardized and carry credit risk due to the possible nonperformance by one of the counterparties. The maximum potential loss is the aggregate face value in U.S. dollars at the time the contract was opened; however, the likelihood of such loss is remote. No losses related to counterparty default occurred in 2015. Foreign currency forward contracts are usually traded over-the-counter. These transactions are entered into in order to manage risks from exposure to foreign currency rate fluctuation and to facilitate foreign currency investment activity. Foreign currency forwards carry risk resulting from adverse fluctuations in foreign exchange rates. Recognition of realized gain or loss depends on whether the currency exchange rate has moved favorably or unfavorably to the contract holder upon termination of the contract. Prior to termination of the contract, PERA records the unrealized currency translation gain or loss based on the applicable forward currency exchange rates which are determined by an external pricing service.

At December 31, 2015, PERA's defined benefit plans had outstanding foreign currency forward contracts to purchase foreign currencies with a fair value of $1,474 and outstanding contracts to sell foreign currencies with a fair value of ($1,477). PERA's defined contribution plans and deferred compensation plan had an outstanding foreign currency forward contract to purchase a foreign currency with a fair value of $520 and an outstanding contract to sell foreign currency with a fair value of ($521).

Outstanding foreign currency forward contracts which have a fair value greater than or equal to $1 or a fair value less than or equal to ($1) are disclosed in detail on the next page.

## NOTES TO THE FINANCIAL STATEMENTS
*(Dollars in Thousands)*

### FOREIGN CURRENCY FORWARD CONTRACTS OUTSTANDING—DEFINED BENEFIT PLAN
As of December 31, 2015

| Objective[1] | Notional Amount Buy (Sell) | | Effective Date | Maturity Date | Terms | Fair Value | Index Counterparty | Counterparty Credit Rating[2] |
|---|---|---|---|---|---|---|---|---|
| Facilitate foreign currency investment activity | 788<br>(51) | ZAR<br>USD | 12/29/2015 | 1/5/2016 | Exchange U.S. dollars for South African rand | ($1) | The Northern Trust Company | AA- / Aa2 / AA |
| Facilitate foreign currency investment activity | 304<br>(36,617) | USD<br>JPY | 12/30/2015 | 1/6/2016 | Exchange Japanese yen for U.S. dollars | (1) | State Street Bank and Trust Company | AA- / A1 / AA |
| Facilitate foreign currency investment activity | 2,027<br>(132) | ZAR<br>USD | 12/30/2015 | 1/6/2016 | Exchange U.S. dollars for South African rand | (1) | The Northern Trust Company | AA- / Aa2 / AA |
| Total | | | | | | ($3) | | |

[1] Outstanding currency transactions related to foreign currency investment activity are included in this disclosure according to how Northern Trust defines currency forward and currency spot transactions.

[2] Ratings are listed in order of S&P, Moody's, and Fitch. If the counterparty legal entity does not have a public rating, the parent company rating is disclosed.

### Rights/Warrants

Rights provide the holder with the right, but not the obligation, to buy a company's common stock at a predetermined price, the subscription price. A right permits the investor to buy at a price that may be below the actual market price for that stock. A warrant is an option to buy an underlying equity security at a predetermined price for a finite period of time. For both rights and warrants, if the predetermined price is less than the actual market price for the equity security, each have intrinsic value. Both rights and warrants potentially have intrinsic value until their expiration date.

Investment in rights/warrants exposes PERA to limited market risk. In the event the market price of the company's common stock falls below the subscription or predetermined price, the amount of loss recognized is equal to the cost to acquire the investment. PERA records rights/warrants with global equity in the Statements of Fiduciary Net Position. As of December 31, 2015, PERA's defined benefit plans had outstanding rights/warrants with a total fair value of $312 and a total cost of $217.

### RIGHTS/WARRANTS OUTSTANDING—DEFINED BENEFIT PLAN
As of December 31, 2015

| Security Type | Fair Value |
|---|---|
| Warrants | $176 |
| Rights | 136 |
| Total | $312 |

### Futures

Futures represent commitments to purchase or sell securities or commodities at a future date for a specified price. Futures contracts trade on organized exchanges. Upon entering into a futures contract, PERA is required to pledge an amount of cash or securities (known as an initial margin deposit) equal to a percentage of the contract amount. Recognition of investment income, with a corresponding change to the amount of investment liabilities, occurred on a daily basis according to the fluctuation of value of the futures contract. Typically, payments were received or made to settle the fluctuation of the contract's value when it reaches a predetermined limit. There were no losses due to counterparty default during 2015. As of December 31, 2015, PERA did not own any futures contracts.

### Swaps/Commodity Forwards

Swaps represent an agreement between counterparties to exchange cash flows by reference to specified indexes on a notional principal amount for a specified period. Swaps trade in the over-the-counter market. For index or total return swaps, the total return of a given index is exchanged for the return of another index. PERA's commodity index swaps primarily included the receipt of the total return from the Bloomberg Commodity Index in exchange for the sum of the interest rate on a designated Treasury Bill plus an agreed upon number of basis points. If over a one-month period the performance of the index exceeded the return of the reference Treasury Bill rate (adjusted by the mutually agreed upon basis points), PERA received a payment for the net difference between these amounts. If the index's return was lower than the return of the reference Treasury Bill rate (adjusted by the mutually agreed upon basis points), then PERA paid the net difference between these amounts. Variance swaps are a specialized version of total return swaps. These swaps are designed to exchange cash flows based on the variance in the price movements of a reference asset or index. PERA's variance swaps paid a return when the degree of price

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fluctuations in specified commodities fluctuated less than the degree of price fluctuations implied by the option prices in these markets. Commodity forwards are designed to exchange the net difference between the fixed price and the market price of the specified commodity in the contract. PERA invested in commodity index swaps, variance swaps, and commodity forwards to gain exposure to commodities without having to purchase and hold the actual commodities. There were no losses due to counterparty default during 2015. As of December 31, 2015, PERA did not own any commodity index swaps, variance swaps, or commodity forwards.

## Note 7—Commitments and Contingencies

As of December 31, 2015, PERA had commitments for future investments in Private Equity of $2,354,256, Real Estate of $798,694, and the Opportunity Fund of $192,157.

### Pending or Threatened Litigation

PERA is involved in various lawsuits or threatened legal proceedings arising in the normal course of business. In the opinion of management, the ultimate resolution of these other matters will not have a material effect on the financial condition of PERA.

## Note 8—Voluntary Investment Program, Defined Contribution Retirement Plan, and Deferred Compensation Plan

PERA administers the Voluntary Investment Program, the Defined Contribution Retirement Plan, and the Deferred Compensation Plan (collectively, Plans). The Voluntary Investment Program (PERAPlus 401(k) Plan) and Defined Contribution Retirement Plan (DC Plan) are both defined contribution plans. The Deferred Compensation Plan (PERAPlus 457 Plan) is a deferred compensation plan. The Board has the authority to establish and amend the Plans pursuant to C.R.S. § 24-51-1401, C.R.S. § 24-51-1501, and C.R.S. § 24-51-1601, respectively. The complete provisions of the PERAPlus 401(k) Plan and the DC Plan are incorporated into *PERA's 401(k) and Defined Contribution Plan and Trust Document.* The complete provisions of the PERAPlus 457 Plan are incorporated into *The PERA Deferred Compensation Plan Document.*

### All Plans

The following investment, distribution, and fee provisions are the same under all three Plans.

- Participants have the choice of contributing to 18 different investment options. In addition, participants may also make transfers, at any time, among the following listed investment options:
  - PERAdvantage Capital Preservation Fund
  - PERAdvantage Fixed Income Fund
  - PERAdvantage Real Return Fund
  - PERAdvantage U.S. Large Cap Fund
  - PERAdvantage International Stock Fund
  - PERAdvantage U.S. Small and Mid-Cap Stock Fund
  - PERAdvantage Socially Responsible Investment (SRI) Fund
  - PERAdvantage Income Fund
  - PERAdvantage 2020 Fund
  - PERAdvantage 2025 Fund
  - PERAdvantage 2030 Fund
  - PERAdvantage 2035 Fund
  - PERAdvantage 2040 Fund
  - PERAdvantage 2045 Fund
  - PERAdvantage 2050 Fund
  - PERAdvantage 2055 Fund

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- PERAdvantage 2060 Fund
- TD Ameritrade Self-Directed Brokerage Account

- Effective February 2, 2015, the BlackRock LifePath® 2060 Index Target Retirement Date Fund was added to the PERAdvantage Target Retirement Date Funds option.
- The participant's entire account balance becomes available for distribution upon termination from all PERA-affiliated and/or PERAPlus 457-affiliated employers. All distributions are in accordance with the Plan documents and IRC requirements.
- Voya Institutional Plan Services, LLC, administers the recordkeeping for all participant transactions. The custodian is Northern Trust for all PERAdvantage investments except for the Great-West Stable Value Fund, an investment within the PERAdvantage Capital Preservation Fund, and the TD Ameritrade Self-Directed Brokerage Account.
- TD Ameritrade, Inc. provides brokerage services for the Self-Directed Brokerage Account. The TD Ameritrade Self-Directed Brokerage Account, which consists of common stock, corporate bonds, and mutual funds, is presented at fair value.
- The Great-West Stable Value Fund is offered through a group fixed and variable deferred annuity contract issued by Great-West Life & Annuity Insurance Company. As of December 31, 2015, the Stable Value Fund is reported at contract value of $406,529. Fair value as of December 31, 2015, was $404,939.
- Cash balances represent both operating cash accounts and investment cash on deposit held by the custodians.
- Plan administration expenses are paid through a monthly administrative fee charged to participant accounts and an asset-based fee paid directly from each PERAdvantage fund and/or self-directed brokerage account. In addition, the underlying investment portfolio managers within each PERAdvantage fund charge an investment management fee, which is paid directly from investment proceeds.

### PERAPlus 401(k) Plan

The PERAPlus 401(k) Plan was established January 1, 1985, and is an IRC § 401(k) plan that allows for voluntary participation to provide additional benefits at retirement for PERA members. All employees working for a PERA-affiliated employer may contribute to the PERAPlus 401(k) Plan. There were 402 employers eligible to participate in 2015 (see Note 1). The employer count is presented for purposes of complying with GASB 67 only. For all other purposes, the definition of an employer is governed by Title 24, Article 51 of the C.R.S., PERA's Rules, 8 CCR 1502-1, and, if applicable, the employer's affiliation agreement with PERA.

In 2015, participants could contribute the lesser of $18,000 (actual dollars) or 100 percent of compensation less PERA member contributions. Catch-up contributions up to $6,000 (actual dollars) in 2015 were allowed for participants who had attained age 50 before the close of the plan year, subject to the limitations of IRC § 414(v). Employer matching and discretionary contributions are allowable with total participant and employer contributions limited to $53,000 (actual dollars) per participant in 2015.

Provisions of the PERAPlus 401(k) Plan permit in-service withdrawals by participants while employed with a PERA-affiliated employer through loans, hardship withdrawals, or by a trustee-to-trustee transfer to the PERA defined benefit plan to purchase service credit. The balance of outstanding loans as of December 31, 2015, is $64,448 and is recorded as a benefit receivable on the Statements of Fiduciary Net Position. As of December 31, 2015, there were 68,791 participants with balances. Of the participants with balances, 25,726 made contributions within the last three months of the year, including 820 retirees. There were 12,425 terminated participants and 16,834 non-contributing retirees with balances. During 2015, the PERAPlus 401(k) Plan had a total of 2,381 terminated participants take full distributions of their accounts.

### DC Plan

The DC Plan was established January 1, 2006, and is an IRC § 401(a) governmental profit-sharing plan. Its purpose is to offer a defined contribution alternative to the PERA defined benefit plan. Participation is available to certain new employees of State agencies and departments, most community college employees, and the District Attorney within each Judicial District, and if authorized by the county and the District Attorney, the attorneys within that Judicial District. The eligible employees have the option to choose the PERA defined benefit plan or the DC Plan. There were 23 employers eligible to participate in 2015. The employer count is presented for purposes of complying with GASB 67 only. For all other purposes, the definition of an employer is governed by Title 24, Article 51 of the C.R.S., PERA's Rules, 8 CCR 1502-1, and, if applicable, the employer's affiliation agreement with PERA.

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Between month 13 and month 72 of participation in the DC Plan, eligible participants may elect to terminate membership in the DC Plan and become a member of the PERA defined benefit plan. Similarly, an eligible employee of the PERA defined benefit plan may elect, between month 13 and month 72 of membership, to terminate membership in the PERA defined benefit plan and become a participant of the DC Plan. Either election is irrevocable.

Participants in the DC Plan are required to contribute 8.00 percent and employers are required to contribute 10.15 percent of includable salary (for State Troopers and Colorado Bureau of Investigation agents, the participant and employer rates are 10.00 percent and 12.85 percent, respectively). In addition, employers contribute the 4.20 percent AED and 4.00 percent SAED to the State Division Trust Fund (see Note 4). DC Plan participants immediately vest in 50 percent of their employer contributions, together with accumulated investment earnings on the vested portion. For each full year of participation, vesting increases by 10 percent. Contribution requirements are established under C.R.S. § 24-51-1505.

Provisions of the DC Plan prohibit in-service withdrawals, although the election to purchase service is available to those who have made the one-time irrevocable election to transfer to the PERA defined benefit plan. As of December 31, 2015, the DC Plan had 5,403 participants with balances. Of the participants with balances, 2,357 made contributions within the last three months of the year, including nine retirees. There were 2,507 terminated participants and 20 non-contributing retirees with balances. During the year 429 participants took full distributions of their accounts.

### PERAPlus 457 Plan

On July 1, 2009, PERA assumed the administrative and fiduciary responsibilities for the State of Colorado Deferred Compensation Plan previously administered under C.R.S. Part 1 of Article 52 of Title 24, as said part existed prior to its repeal in 2009.

The PERAPlus 457 Plan is an IRC § 457 plan that allows for voluntary participation to provide additional benefits at retirement. All employees working for a PERA employer affiliated with the PERAPlus 457 Plan may contribute to the PERAPlus 457 Plan. All employers that were affiliated with the State 457 Plan prior to July 1, 2009, including those that are not PERA-affiliated employers, remained affiliated with the PERAPlus 457 Plan and their employees remained eligible to contribute. In 2015, participants could defer the lesser of $18,000 (actual dollars) or 100 percent of compensation less PERA member contributions. Catch-up deferrals, up to the greater of $6,000 (actual dollars) for participants who had attained age 50 before the close of the plan year or the limits of the special section 457 plan catch-up, were allowed in 2015, subject to the limitations of IRC § 414(v) and § 457(b).

Provisions of the PERAPlus 457 Plan permit in-service withdrawals by participants while employed with a PERAPlus 457 Plan-affiliated employer through loans, unforeseen emergency withdrawals, de minimis distributions, or by a trustee-to-trustee transfer to the PERA defined benefit plan to purchase service. The balance of outstanding loans as of December 31, 2015, is $11,995 and is recorded as a benefit receivable on the Statements of Fiduciary Net Position. As of December 31, 2015, there were 17,814 participants with balances. Of the participants with balances, 9,323 made contributions within the last three months of the year, including 215 retirees. There were 2,363 terminated participants and 3,715 non-contributing retirees with balances. During the year, the PERAPlus 457 Plan had a total of 726 terminated participants take full distributions of their accounts.

## Note 9—Health Care Trust Funds—Cost-Sharing Multiple-Employer Defined Benefit Health Care Plans

PERA offers two cost-sharing multiple-employer defined benefit OPEB health care plans to benefit recipients and retirees. The HCTF and the DPS HCTF are voluntary plans which offer benefits under C.R.S. § 24-51-1201 (1) and (2), respectively. These plans provide a health care premium subsidy to participating PERA benefit recipients and retirees who choose to enroll in one of the PERA health care plans, however, the subsidy is not available if only enrolled in the dental and/or vision plan(s). The health care premium subsidy is based upon the benefit structure under which the member retires and the member's years of service credit. For members who retire having service credit with employers in the DPS Division and one or more of the other four divisions, the premium subsidy is allocated between the two Health Care Trust Funds. The basis for the amount of the premium subsidy funded by each fund is the percentage of the member contribution account balance from each division as it relates to the total member contribution account balance from which the retirement benefit is paid.

### PERA Board Authority

Title 24, Article 51, Part 12 of the C.R.S., as amended, sets forth a framework that grants authority to the Board to contract, self-insure, and authorize disbursements necessary in order to carry out the purposes of the PERACare program, including the administration of the health care subsidies. PERA contracts with a national insurance carrier to administer claims for the self-insured plans, with a national prescription benefit manager to administer a pharmacy benefit for the self-insured plans, and with health insurance companies to provide fully insured health care plans providing services within Colorado.

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## Plan Description and Benefit Provisions

C.R.S. § 24-51-1202 *et seq.* specifies the eligibility for enrollment in the health care plans offered by PERA and the amount of the premium subsidy. The law governing a benefit recipient's eligibility for the subsidy and the amount of the subsidy differs slightly depending under which benefit structure the benefits are calculated. All benefit recipients under the PERA benefit structure and all retirees under the DPS benefit structure are eligible for a premium subsidy, if enrolled in a health care plan under PERACare. Upon the death of a DPS benefit structure retiree, no further subsidy is paid.

## Membership

Enrollment in the PERACare health care program is voluntary and available to the following eligible individuals:

- Benefit recipients and their dependents.
- Guardians of children receiving PERA survivor benefits if the children are enrolled in the health care program.
- Surviving spouses of deceased retirees who chose single-life annuity options, if the surviving spouse was enrolled in the program when the retiree's death occurred.
- Divorced spouses of retirees who are not receiving PERA benefits, but were enrolled in the program when the divorce occurred.
- Members while receiving short-term disability program payments.
- Members whose employers have elected to provide coverage through the health care program and such members' dependents.

## Available Health Care Premium Subsidy

### *PERA Benefit Structure*

The maximum service-based premium subsidy is $230 (actual dollars) per month for benefit recipients who are under 65 years of age and who are not entitled to Medicare; the maximum service-based subsidy is $115 (actual dollars) per month for benefit recipients who are 65 years of age or older or who are under 65 years of age and entitled to Medicare. The basis for the maximum service-based subsidy, in each case, is for benefit recipients with retirement benefits based on 20 or more years of service credit. There is a 5 percent reduction in the subsidy for each year less than 20. The benefit recipient pays the remaining portion of the premium to the extent the subsidy does not cover the entire amount.

For benefit recipients who have not participated in Social Security and who are not otherwise eligible for premium-free Medicare Part A for hospital-related services, C.R.S. § 24-51-1206(4) provides an additional subsidy. According to the statute, PERA cannot charge premiums to benefit recipients without Medicare Part A that are greater than premiums charged to benefit recipients with Part A for the same plan option, coverage level, and service credit. Currently, for each individual PERACare enrollee, the total premium for Medicare coverage is determined assuming plan participants have both Medicare Part A and Part B and the difference in premium cost is paid by the HCTF or the DPS HCTF on behalf of benefit recipients not covered by Medicare Part A.

### *DPS Benefit Structure*

The maximum service-based premium subsidy is $230 (actual dollars) per month for retirees who are under 65 years of age and who are not entitled to Medicare; the maximum service-based subsidy is $115 (actual dollars) per month for retirees who are 65 years of age or older or who are under 65 years of age and entitled to Medicare. The basis for the maximum subsidy, in each case, is for retirees with retirement benefits based on 20 or more years of service credit. There is a 5 percent reduction in the subsidy for each year less than 20. The retiree pays the remaining portion of the premium to the extent the subsidy does not cover the entire amount.

For retirees who have not participated in Social Security and who are not otherwise eligible for premium-free Medicare Part A for hospital-related services, the HCTF or the DPS HCTF pays an alternate service-based premium subsidy. Each individual retiree meeting these conditions receives the maximum $230 (actual dollars) per month subsidy reduced appropriately for service less than 20 years, as described above. Retirees who do not have Medicare Part A pay the difference between the total premium and the monthly subsidy.

## Medicare Prescription Drugs

The Medicare Prescription Drug, Improvement, and Modernization Act of 2003 established prescription drug coverage for Medicare beneficiaries under Medicare Part D. Beginning January 1, 2014, PERACare's prescription drug coverage for the self-insured Medicare supplement plans was moved to Employer Group Waiver Plan (EGWP) Medicare Part D prescription drug coverage, administered by Express Scripts, Inc. The EGWP provides three types of anticipated subsidies which the HCTF and DPS HCTF use to reduce the required premiums collected from the enrollees. Each fund pays for the full claims during the year and recoups the additional cost offsetting claims expense when the subsidies are received from Express Scripts, Inc.

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The subsidies provided by the EGWP include the following:

- A monthly direct subsidy based on the number of enrollees in the plan.
- A quarterly Coverage Gap Discount Program which is funded by pharmaceutical manufacturers and reimburses the funds a portion of the cost of certain drugs retirees have filled.
- An annual Catastrophic Coverage Federal Reinsurance which reimburses a portion of drug costs for retirees who reach a certain level of drug costs in a year.

The following amounts were recognized by the funds in 2015:

| Subsidy | HCTF | DPS HCTF |
|---|---|---|
| Monthly direct subsidy | $6,843 | $256 |
| Quarterly Coverage Gap Discount | 9,057 | 339 |
| Annual Federal Reinsurance | 9,559 | 357 |
| **Total** | **$25,459** | **$952** |

## Contributions

Contribution requirements are established by statute under C.R.S. § 24-51-208. Colorado State law provisions may be amended from time to time by the Colorado General Assembly. Affiliated employers, as defined by Title 24, Article 51 of the C.R.S., PERA's Rules, 8 CCR 1502-1, and, if applicable the employer's affiliation agreement with PERA, must submit contributions for all PERA members equal to 1.02 percent of covered salaries.

Affiliated employers of the State Division, School Division, Local Government Division, and Judicial Division contribute to the HCTF. Affiliated employers of the DPS Division contribute to the DPS HCTF. The number of participating employers for each division, as presented for purposes of complying with GASB 67, can be found in Note 1.

Employer contributions and investment earnings on the assets of these plans pay for the cost of the premium subsidies and the administrative costs incurred by these plans.

## Plan Data

As of December 31, 2015, there were 203,969 PERA members in active service who were earning a potential future subsidy benefit if they retire from PERA and enroll in a health care plan through PERACare. This total represents 15,929 active members in the DPS Division and 188,040 active members in the other four divisions. There were 24,886 inactive members who had accumulated a potential subsidy benefit, but were not yet receiving benefits. This total includes 1,109 in the DPS Division and 23,777 in the other four divisions.

### PARTICIPATION IN THE HEALTH CARE PLANS FOR RETIREES AND SURVIVORS CURRENTLY RECEIVING BENEFITS

| | HCTF | DPS HCTF | Total |
|---|---|---|---|
| **Enrolled in PERACare** | | | |
| Under age 65 | 13,730 | 600 | 14,330 |
| Age 65 and older | 41,362 | 3,330 | 44,692 |
| | 55,092 | 3,930 | 59,022 |
| **Not enrolled in PERACare** | | | |
| Under age 65 | 15,522 | 580 | 16,102 |
| Age 65 and older | 33,609 | 2,302 | 35,911 |
| | 49,131 | 2,882 | 52,013 |
| **Total retirees and survivors currently receiving benefits** | **104,223** | **6,812** | **111,035** |

PERA offers two general types of health plans, fully insured plans offered through a health care organization and self-insured plans administered by third-party vendors. The plan designs offered include HMO, PPO, Medicare Supplement, Medicare Advantage, and Medicare Cost plans. PERA also offers fully insured dental and self-insured dental and vision plans.

## Summary of HCTF and DPS HCTF Specific Significant Accounting Policies

The Health Care Trust Funds apply the measurement requirements of GASB 43 to determine the AALs, the annual required contribution (ARC) of the employer, and the annual OPEB cost.

Premiums collected and payments made are reported in two ways, depending on whether or not the plan bears any level of risk with regard to the health coverage. Where the plan bears risk, all premiums collected are reported as contributions and all claims paid are reported as

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benefit payments. Where there is no transfer of risk to the plan, the premiums collected are reported as a liability and the liability is relieved when the premiums are paid to the health insurance company that provides the fully insured health plan. When there is no health coverage risk, the only benefit payment reported is the subsidy benefit which is equal to the difference between the premiums collected from the enrollees and the full premium due to the health insurance company.

The health plan that involves risk to the funds is the self-insured plan administered by Anthem. PERA uses an outside consultant to determine the premiums required to cover anticipated health claims. The cost to the enrollee is reduced by the amount of the enrollee's calculated subsidy, if applicable. Implicit in this process is the risk that actual claims experience and the subsidies received from Express Scripts, Inc. could be different from the estimates resulting in either a gain or a loss to the funds.

### Dental and Vision Plans

Dental and vision plans are also available to benefit recipients. PERA offers fully insured and self-insured dental plans and self-insured vision plans. The funds provide no subsidy and the participants pay the full premiums for dental and vision coverage. For the fully insured dental plan, premiums collected are reported by the plan as a liability and the liability is relieved when the premiums are paid to the insurance company who provides the coverage. For this plan, the risk is borne by the insurance company contracted to provide the coverage. The premiums collected for the self-insured dental and vision plans are recorded as contributions and claims paid are recorded as benefit payments. PERA uses an outside consultant to determine the premiums required to cover anticipated claims. The risk to the funds by these plans is that actual claims experience could be different from the estimates resulting in either a gain or loss to the funds. As of December 31, 2015, there were 55,323 participants enrolled in the dental plans and 43,455 participants enrolled in the vision plans in both the HCTF and the DPS HCTF.

### PERA-Affiliated Employer Program Participation

In addition, fully insured pre-Medicare health plans offered through Anthem and Kaiser Permanente are available to any PERA-affiliated employer who voluntarily elects to provide health care coverage through the health care plan for its employees who are PERA members. The program acts as a purchaser of private insurance to obtain economies of scale for the employers that elect to join in the joint purchasing arrangement. As of December 31, 2015, there were 17 employers in the program with 200 active members enrolled.

Fully insured dental and vision plans are also available to eligible employees of employers who have elected to provide health care coverage through PERA. As of December 31, 2015, there were 330 participants enrolled in the dental plans and 359 participants enrolled in the vision plans.

The insurance companies, who provide coverage through the program, set the rates for each employer group. There is no transfer of risk to the funds, PERA, or between the participating employers. The funds provide no subsidy and the insurance companies providing the benefits bear the risk for the plans. The participants and/or employers pay the full premiums for the coverage. PERA collects the premiums and remits them to the insurance companies who provide the coverage.

There are no employers in the program from the DPS Division.

## Note 10—Net Pension Liability of the Division Trust Funds

The components of the net pension liability (NPL) for participating employers for each Division Trust Fund as of December 31, 2015, are as follows:

| | State Division | School Division | Local Government Division | Judicial Division | DPS Division |
|---|---|---|---|---|---|
| Total pension liability | $23,991,569 | $37,447,062 | $4,762,090 | $461,245 | $3,920,864 |
| Plan fiduciary net position | 13,460,536 | 22,152,768 | 3,660,509 | 277,351 | 3,107,329 |
| **Net pension liability** | **$10,531,033** | **$15,294,294** | **$1,101,581** | **$183,894** | **$813,535** |
| Plan fiduciary net position as a percentage of the total pension liability | 56.11% | 59.16% | 76.87% | 60.13% | 79.25% |

### Actuarial Methods and Assumptions

Actuarial valuations involve estimates of the value of reported amounts and assumptions about the probability of events far into the future. Actuarially determined amounts are subject to continual revision as actual results are compared to past expectations and new estimates are made about the future. A Schedule of Net Pension Liability is included in the RSI, which follows the Notes to the Financial Statements. It presents multi-year trend information about whether the FNP is increasing or decreasing over time relative to

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the total pension liability (TPL). Calculations are based on the benefits provided under the terms of the substantive plan in effect at the time of each pension actuarial valuation and on the pattern of sharing of costs between employers of each Division Trust Fund and/or plan members to that point. Actuarial calculations reflect a long-term perspective.

The TPL for the Division Trust Funds was determined by actuarial valuations as of December 31, 2014, and accepted actuarial procedures were applied to roll forward the TPL to December 31, 2015. The actuarial cost method and key actuarial assumptions and other inputs used to determine the TPL as of December 31, 2014, are as follows:

| | State Division | School Division | Local Government Division | Judicial Division | DPS Division |
|---|---|---|---|---|---|
| Actuarial cost method | Entry age | Entry age | Entry age | Entry age | Entry age |
| Price inflation | 2.80% | 2.80% | 2.80% | 2.80% | 2.80% |
| Real wage growth | 1.10% | 1.10% | 1.10% | 1.10% | 1.10% |
| Wage inflation | 3.90% | 3.90% | 3.90% | 3.90% | 3.90% |
| Salary increases, including wage inflation | 3.90%–9.57% | 3.90%–10.10% | 3.90%–10.85% | 4.40%–5.40% | 3.90%–10.10% |
| Long-term investment rate of return, net of pension plan investment expenses, including price inflation | 7.50% | 7.50% | 7.50% | 7.50% | 7.50% |
| Municipal bond index rate | | | | | |
| Prior measurement date | N/A | N/A | N/A | 3.70% | N/A |
| Measurement date | N/A | N/A | N/A | 3.57% | N/A |
| Beginning period of application | N/A | N/A | N/A | 2040 | N/A |
| Discount rate | | | | | |
| Prior measurement date | 7.50% | 7.50% | 7.50% | 6.14% | 7.50% |
| Measurement date | 7.50% | 7.50% | 7.50% | 5.73% | 7.50% |
| Post-retirement benefit increases: | | | | | |
| PERA benefit structure hired prior to 1/1/07 and DPS benefit structure | 2.00% compounded annually | 2.00% compounded annually | 2.00% compounded annually | 2.00% compounded annually | 2.00% compounded annually |
| PERA benefit structure hired after 12/31/06 | Financed by the AIR[1] | Financed by the AIR[1] | Financed by the AIR[1] | Financed by the AIR[1] | Financed by the AIR[1] |

[1] Post-retirement benefit increases are provided by the AIR, accounted separately within each Division Trust Fund, and subject to moneys being available; therefore, liabilities related to increases for members of these benefit tiers can never exceed available assets.

Mortality rates were based on the RP-2000 Combined Mortality Table for Males or Females, as appropriate, with adjustments for mortality improvements based on a projection of Scale AA to 2020 with males set back one year and females set back two years.

The actuarial assumptions used in the December 31, 2014, valuations were based on the results of an actuarial experience study for the period January 1, 2008 – December 31, 2011, adopted by the Board on November 13, 2012, and an economic assumptions study adopted by the Board on November 15, 2013, and January 17, 2014.

The long-term expected return on plan assets is reviewed as part of regular experience studies prepared every four or five years for PERA. Recently, this assumption has been reviewed more frequently. The most recent analyses were outlined in presentations to the Board on November 15, 2013, January 17, 2014, and November 20, 2015. Several factors were considered in evaluating the long-term rate of return assumption, including long-term historical data, estimates inherent in current market data, and a log-normal distribution analysis in which best-estimate ranges of expected future real rates of return (expected return, net of investment expense and inflation) were developed for each major asset class. These ranges were 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 then adding expected inflation. The capital market assumptions may cover a shorter investment horizon and may not be useful in setting the long-term rate of return for funding pension plans which covers a longer timeframe. The assumption is intended to be a long-term assumption and is not expected to change absent a significant change in the asset allocation, a change in the inflation assumption, or a fundamental change in the market that alters expected returns in future years.

As of the November 15, 2013, adoption of the current long-term rate of return by the Board, the target asset allocation and best estimates of geometric real rates of return for each major asset class are summarized in the table on the next page.

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| Asset Class | Target Allocation | 10-Year Expected Geometric Real Rate of Return |
|---|---|---|
| U.S. Equity – Large Cap | 26.76% | 5.00% |
| U.S. Equity – Small Cap | 4.40% | 5.19% |
| Non U.S. Equity – Developed | 22.06% | 5.29% |
| Non U.S. Equity – Emerging | 6.24% | 6.76% |
| Core Fixed Income | 24.05% | 0.98% |
| High Yield | 1.53% | 2.64% |
| Long Duration Gov't/Credit | 0.53% | 1.57% |
| Emerging Market Bonds | 0.43% | 3.04% |
| Real Estate | 7.00% | 5.09% |
| Private Equity | 7.00% | 7.15% |
| **Total** | **100.00%** | |

Note: In setting the long-term expected rate of return for the plan, projections employed to model future returns provide a range of expected long-term returns that, including expected inflation, ultimately support a long-term expected rate of return assumption of 7.50 percent.

## Discount Rate/Single Equivalent Interest Rate

The projection of cash flows used to determine the discount rate was performed in accordance with GASB 67. In addition to the actuarial cost method and assumptions of the December 31, 2014, actuarial valuation presented earlier, the projection of cash flows applied the following methods and assumptions:

- Total covered payroll for the initial projection year consists of the covered payroll of the active membership present on the valuation date and the covered payroll of future plan members assumed to be hired during the year. In subsequent projection years, total covered payroll was assumed to increase annually at a rate of 3.90 percent.
- Employee contributions were assumed to be made at the current member contribution rate. Employee contributions for future plan members were used to reduce the estimated amount of total service costs for future plan members.
- Employer contributions were assumed to be made at rates equal to the fixed statutory rates specified in law, including current and estimated future AED and SAED, until the Actuarial Value Funding Ratio reaches 103 percent, at which point, the AED and SAED will each drop 0.50 percent every year until they are zero. Additionally, estimated employer contributions included reductions for the funding of the AIR and retiree health care benefits. For future plan members, employer contributions were further reduced by the estimated amount of total service costs for future plan members not financed by their member contributions.
- Employer contributions and the amount of total service costs for future plan members were based upon a process used by the plan to estimate future actuarially determined contributions assuming an analogous future plan member growth rate.
- The AIR balance was excluded from the initial FNP, as, per statute, AIR amounts cannot be used to pay benefits until transferred to either the retirement benefits reserve or the survivor benefits reserve, as appropriate. As the ad hoc post-retirement benefit increases financed by the AIR are defined to have a present value at the long-term expected rate of return on plan investments equal to the amount transferred for their future payment, AIR transfers to the FNP and the subsequent AIR benefit payments have no impact on the Single Equivalent Interest Rate (SEIR) determination process when the timing of AIR cash flows is not a factor (i.e., the plan's FNP is not projected to be depleted). When AIR cash flow timing is a factor in the SEIR determination process (i.e., the plan's FNP is projected to be depleted), AIR transfers to the FNP and the subsequent AIR benefit payments were estimated and included in the projections.
- Benefit payments and contributions were assumed to be made at the end of the month.

Based on those methods and assumptions and the GASB 67 projection test methodology, the pension plan's FNPs for the State Division, School Division, Local Government Division, and DPS Division were projected to be available to make all projected future benefit payments of current plan members and were not projected to reach a depletion date. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the TPL. The discount rate determination does not use a municipal bond index rate. The discount rate used to measure the TPL for these divisions was 7.50 percent.

Using those same methods and assumptions and the GASB 67 projection test methodology, the pension plan's FNP for the Judicial Division was projected to be depleted in 2040. For the Judicial Division, the long-term expected rate of return of 7.50 percent on pension plan

NOTES TO THE FINANCIAL STATEMENTS
*(Dollars in Thousands)*

investments was applied to periods through 2040 and the municipal bond index rate, the Bond Buyer General Obligation 20-year Municipal Bond Index published monthly by the Board of Governors of the Federal Reserve System, was applied to periods on and after 2040 to develop a SEIR. As of the prior measurement date, the municipal bond index rate was 3.70 percent, resulting in a SEIR of 6.14 percent for the Judicial Division. For the measurement date, the municipal bond index rate was 3.57 percent, resulting in a SEIR of 5.73 percent for the Judicial Division.

The results of the GASB 67 projection test methodology and development of the SEIR do not necessarily indicate the fund's ability to make benefit payments in the future.

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

The following presents the NPL for participating employers for each plan using the current discount rate, as well as what the plan's NPL would be if it were calculated using a discount rate that is one percentage point lower or one percentage point higher than the current rate:

| Trust Fund | 1.0 Percent Decrease Discount Rate | Net Pension Liability |
|---|---|---|
| State Division | 6.50% | $13,304,480 |
| School Division | 6.50% | 19,825,875 |
| Local Government Division | 6.50% | 1,688,836 |
| Judicial Division | 4.73% | 236,527 |
| DPS Division | 6.50% | 1,273,473 |

| Trust Fund | Current Discount Rate | Net Pension Liability |
|---|---|---|
| State Division | **7.50%** | **$10,531,033** |
| School Division | **7.50%** | **15,294,294** |
| Local Government Division | **7.50%** | **1,101,581** |
| Judicial Division | **5.73%** | **183,894** |
| DPS Division | **7.50%** | **813,535** |

| Trust Fund | 1.0 Percent Increase Discount Rate | Net Pension Liability |
|---|---|---|
| State Division | 8.50% | $8,211,137 |
| School Division | 8.50% | 11,524,864 |
| Local Government Division | 8.50% | 614,511 |
| Judicial Division | 6.73% | 138,943 |
| DPS Division | 8.50% | 431,943 |

As shown, if there is a significant deviation, over a long period, in the actual rate of return from the assumed discount rate, the measurement of the NPL could be materially under- or over-reported as of December 31, 2015. Further, funding the TPL assumes the current statutory contributions by employers and members in the future will be made on a timely basis. Any significant reduction in contributions would have an impact on the ability of the plan to make benefit payments in the future.

NOTES TO THE FINANCIAL STATEMENTS
*(Dollars in Thousands)*

## Note 11—Funded Status and Funding Progress of the Health Care Trust Funds

The funded status of each plan as of December 31, 2015, the most recent actuarial valuation date, is as follows:

| | HCTF | DPS HCTF |
|---|---|---|
| Actuarial value of assets (a) | $285,588 | $17,557 |
| Actuarial accrued liability (b) | 1,556,269 | 74,897 |
| **Unfunded actuarial accrued liability (UAAL) (b-a)** | **$1,270,681** | **$57,340** |
| Funded ratio (a/b) | 18.4% | 23.4% |
| Covered payroll | $7,485,545 | $621,115 |
| UAAL as a percentage of covered payroll | 17.0% | 9.2% |

### Actuarial Methods and Assumptions

Actuarial valuations involve estimates of the value of reported amounts and assumptions about the probability of events far into the future. Actuarially determined amounts are subject to continual revision as actual results are compared to past expectations and new estimates are made about the future. A Schedule of Funding Progress is included in the RSI, which follows the Notes to the Financial Statements. It presents multi-year trend information about whether the actuarial value of plan assets is increasing or decreasing over time relative to the AAL for benefits. Calculations are based on the benefits provided under the terms of the substantive plan in effect at the time of each valuation and on the pattern of sharing of costs between employers of each fund and plan members to that point. Actuarial calculations reflect a long-term perspective. In addition, consistent with that perspective, the actuarial methods and assumptions used include techniques designed to reduce short-term volatility in AALs and the actuarial value of assets.

The AAL is based on a variety of assumptions, with the most significant assumption being the assumed rate of return on investments and related discount rate. As of December 31, 2015, PERA has estimated the rate of return on investments and discount rate will be 7.50 percent for a period equal to the remaining lives of current active members and benefit recipients.

| | HCTF | DPS HCTF |
|---|---|---|
| Valuation date | 12/31/2015 | 12/31/2015 |
| Actuarial cost method | Entry age, Level Dollar | Entry age, Level Dollar |
| Amortization method | Level percent Open | Level percent Open |
| Remaining amortization period used in ARC calculation | 30 years | 30 years |
| Remaining amortization period with current funding | 35 years | 14 years |
| Asset valuation method | 4-year smoothed market | 4-year smoothed market |
| Actuarial assumptions: | | |
| Investment rate of return and discount rate[1] | 7.50% | 7.50% |
| Projected salary increases[1] | 3.90% in aggregate | 3.90% in aggregate |
| Health care inflation factor | | |
| Service-based premium subsidy | 0.00% | 0.00% |
| Medicare Part A premiums | 2.75% Initial<br>4.25% Ultimate | N/A |
| Health care plan premiums | 5.00% | N/A |

[1] Includes inflation at 2.80 percent.

NOTES TO THE FINANCIAL STATEMENTS
*(Dollars in Thousands)*

## Sensitivity of the Unfunded Actuarial Accrued Liability to Changes in Assumed Investment Rate of Return and Discount Rate

The most important long-term driver of a postemployment benefit plan is investment income. The long-term expected rate of return on investments and discount rate assumptions, as required by GASB, should be based on an estimated long-term investment yield for the plan, with consideration given to the nature and mix of current and expected plan investments and the basis used to determine the actuarial value of assets.

Management and the Board periodically monitor the long-term expected rate of return on investments and discount rate assumptions and as a result, the Board makes changes as appropriate. A 10-year history of changes in plan provisions is included in the Notes to the RSI.

To understand the importance of the long-term assumed investment rate of return, which is used to discount the actuarial liabilities, a 1.0 percent fluctuation in the investment rate of return and discount rate would change the funded ratio, UAAL, and ARC (for contributions for the fiscal year December 31, 2017) as shown in the table below.

| | 1.0 Percent Decrease 6.50 Percent | Current Assumption 7.50 Percent | 1.0 Percent Increase 8.50 Percent |
|---|---|---|---|
| **Funded Ratio** | | | |
| HCTF | 16.6% | **18.4%** | 20.2% |
| DPS HCTF | 21.3% | **23.4%** | 25.7% |
| **Unfunded Actuarial Accrued Liability** | | | |
| HCTF | $1,435,857 | **$1,270,681** | $1,130,875 |
| DPS HCTF | 65,026 | **57,340** | 50,850 |
| **Annual Required Contribution** | | | |
| HCTF | 1.13% | **1.08%** | 1.04% |
| DPS HCTF | 0.75% | **0.68%** | 0.65% |

# REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)—DIVISION TRUST FUNDS

*(Dollars in Thousands)*

## SCHEDULE OF CHANGES IN NET PENSION LIABILITY[1]—STATE DIVISION

For the Years Ended December 31

| | 2015 | 2014 |
|---|---|---|
| **Total pension liability** | | |
| Service cost at end of year | **$309,351** | $285,311 |
| Interest | **1,700,903** | 1,663,542 |
| Changes of benefit terms | **—** | — |
| Difference between expected and actual experience | **237,147** | (1,069) |
| Changes of assumptions or other inputs | **(192,776)** | — |
| Benefit payments, refunds, and disability premiums | **(1,483,517)** | (1,415,754) |
| **Net change in total pension liability** | **571,108** | 532,030 |
| **Total pension liability – beginning** | **23,420,461** | 22,888,431 |
| **Total pension liability – ending (a)** | **$23,991,569** | **$23,420,461** |
| **Plan fiduciary net position** | | |
| Contributions – employer | **$484,005** | $444,372 |
| Contributions – active member (includes purchased service) | **244,926** | 234,056 |
| Net investment income | **210,337** | 780,762 |
| Benefit payments, refunds, and disability premiums | **(1,483,517)** | (1,415,754) |
| Administrative expense | **(10,779)** | (10,067) |
| Other additions and deductions | **1,617** | 118 |
| **Net change in plan fiduciary net position** | **(553,411)** | 33,487 |
| **Plan fiduciary net position – beginning** | **14,013,947** | 13,980,460 |
| **Plan fiduciary net position – ending (b)** | **$13,460,536** | **$14,013,947** |
| **Net pension liability – ending (a)-(b)** | **$10,531,033** | **$9,406,514** |

[1] Information is not available prior to 2014. In future reports, additional years will be added until 10 years of historical data are presented.

*The accompanying notes are an integral part of the Required Supplementary Information.*

## REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)—DIVISION TRUST FUNDS

*(Dollars in Thousands)*

### SCHEDULE OF CHANGES IN NET PENSION LIABILITY[1]—SCHOOL DIVISION

For the Years Ended December 31

| | 2015 | 2014 |
|---|---|---|
| **Total pension liability** | | |
| Service cost at end of year | **$548,358** | $511,059 |
| Interest | **2,652,731** | 2,582,865 |
| Changes of benefit terms | **—** | — |
| Difference between expected and actual experience | **278,464** | (1,387) |
| Changes of assumptions or other inputs | **(298,005)** | — |
| Benefit payments, refunds, and disability premiums | **(2,208,452)** | (2,113,547) |
| **Net change in total pension liability** | **973,096** | 978,990 |
| **Total pension liability – beginning** | **36,473,966** | 35,494,976 |
| **Total pension liability – ending (a)** | **$37,447,062** | **$36,473,966** |
| **Plan fiduciary net position** | | |
| Contributions – employer | **$754,182** | $686,323 |
| Contributions – active member (includes purchased service) | **372,378** | 356,520 |
| Net investment income | **344,000** | 1,274,862 |
| Benefit payments, refunds, and disability premiums | **(2,208,452)** | (2,113,547) |
| Administrative expense | **(20,865)** | (19,290) |
| Other additions and deductions | **(9,082)** | (4,264) |
| **Net change in plan fiduciary net position** | **(767,839)** | 180,604 |
| **Plan fiduciary net position – beginning** | **22,920,607** | 22,740,003 |
| **Plan fiduciary net position – ending (b)** | **$22,152,768** | **$22,920,607** |
| **Net pension liability – ending (a)-(b)** | **$15,294,294** | **$13,553,359** |

[1] Information is not available prior to 2014. In future reports, additional years will be added until 10 years of historical data are presented.

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## REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)—DIVISION TRUST FUNDS

*(Dollars in Thousands)*

### SCHEDULE OF CHANGES IN NET PENSION LIABILITY[1]—LOCAL GOVERNMENT DIVISION

For the Years Ended December 31

| | 2015 | 2014 |
|---|---|---|
| **Total pension liability** | | |
| Service cost at end of year | **$63,005** | $58,676 |
| Interest | **338,616** | 329,156 |
| Changes of benefit terms | **—** | — |
| Difference between expected and actual experience | **14,930** | (322) |
| Changes of assumptions or other inputs | **(36,449)** | — |
| Benefit payments, refunds, and disability premiums | **(265,789)** | (256,972) |
| **Net change in total pension liability** | **114,313** | 130,538 |
| **Total pension liability – beginning** | **4,647,777** | 4,517,239 |
| **Total pension liability – ending (a)** | **$4,762,090** | **$4,647,777** |
| **Plan fiduciary net position** | | |
| Contributions – employer | **$70,415** | $68,719 |
| Contributions – employer disaffiliation | **—** | 186,006 |
| Contributions – active member (includes purchased service) | **51,986** | 49,290 |
| Net investment income | **56,328** | 200,394 |
| Benefit payments, refunds, and disability premiums | **(265,789)** | (256,972) |
| Administrative expense | **(2,253)** | (2,091) |
| Other additions and deductions | **(1,646)** | (2,190) |
| **Net change in plan fiduciary net position** | **(90,959)** | 243,156 |
| **Plan fiduciary net position – beginning** | **3,751,468** | 3,508,312 |
| **Plan fiduciary net position – ending (b)** | **$3,660,509** | **$3,751,468** |
| **Net pension liability – ending (a)-(b)** | **$1,101,581** | **$896,309** |

[1] Information is not available prior to 2014. In future reports, additional years will be added until 10 years of historical data are presented.

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## REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)—DIVISION TRUST FUNDS

*(Dollars in Thousands)*

### SCHEDULE OF CHANGES IN NET PENSION LIABILITY[1]—JUDICIAL DIVISION

For the Years Ended December 31

| | 2015 | 2014 |
|---|---|---|
| **Total pension liability** | | |
| Service cost at end of year | **$10,813** | $9,024 |
| Interest | **25,005** | 24,820 |
| Changes of benefit terms | **—** | — |
| Difference between expected and actual experience | **7,289** | (5) |
| Changes of assumptions or other inputs | **21,485** | 21,294 |
| Benefit payments, refunds, and disability premiums | **(21,200)** | (19,903) |
| **Net change in total pension liability** | **43,392** | 35,230 |
| **Total pension liability – beginning** | **417,853** | 382,623 |
| **Total pension liability – ending (a)** | **$461,245** | **$417,853** |
| **Plan fiduciary net position** | | |
| Contributions – employer | **$7,702** | $7,070 |
| Contributions – active member (includes purchased service) | **4,197** | 4,296 |
| Net investment income | **4,149** | 15,299 |
| Benefit payments, refunds, and disability premiums | **(21,200)** | (19,903) |
| Administrative expense | **(77)** | (72) |
| Other additions and deductions | **3,081** | 156 |
| **Net change in plan fiduciary net position** | **(2,148)** | 6,846 |
| **Plan fiduciary net position – beginning** | **279,499** | 272,653 |
| **Plan fiduciary net position – ending (b)** | **$277,351** | **$279,499** |
| **Net pension liability – ending (a)-(b)** | **$183,894** | **$138,354** |

[1] Information is not available prior to 2014. In future reports, additional years will be added until 10 years of historical data are presented.

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REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)—DIVISION TRUST FUNDS

*(Dollars in Thousands)*

## SCHEDULE OF CHANGES IN NET PENSION LIABILITY[1]—DPS DIVISION

For the Years Ended December 31

| | 2015 | 2014 |
|---|---|---|
| **Total pension liability** | | |
| Service cost at end of year | **$82,079** | $76,564 |
| Interest | **281,752** | 274,862 |
| Changes of benefit terms | **—** | — |
| Difference between expected and actual experience | **45,767** | (174) |
| Changes of assumptions or other inputs | **(113,772)** | — |
| Benefit payments, refunds, and disability premiums | **(263,323)** | (255,434) |
| **Net change in total pension liability** | **32,503** | 95,818 |
| **Total pension liability – beginning** | **3,888,361** | 3,792,543 |
| **Total pension liability – ending (a)** | **$3,920,864** | **$3,888,361** |
| **Plan fiduciary net position** | | |
| Contributions – employer | **$8,494** | $18,478 |
| Contributions – active member (includes purchased service) | **53,558** | 49,409 |
| Net investment income | **49,172** | 182,823 |
| Benefit payments, refunds, and disability premiums | **(263,323)** | (255,434) |
| Administrative expense | **(2,599)** | (2,377) |
| Other additions and deductions | **(1,764)** | (1,547) |
| **Net change in plan fiduciary net position** | **(156,462)** | (8,648) |
| **Plan fiduciary net position – beginning** | **3,263,791** | 3,272,439 |
| **Plan fiduciary net position – ending (b)** | **$3,107,329** | **$3,263,791** |
| **Net pension liability – ending (a)-(b)** | **$813,535** | **$624,570** |

[1] Information is not available prior to 2014. In future reports, additional years will be added until 10 years of historical data are presented.

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## REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)—DIVISION TRUST FUNDS

*(Dollars in Thousands)*

### SCHEDULE OF NET PENSION LIABILITY[1]

For the Years Ended December 31

| State Division | 2015 | 2014 | 2013 |
|---|---|---|---|
| Total pension liability | **$23,991,569** | $23,420,461 | $22,888,431 |
| Plan fiduciary net position | **13,460,536** | 14,013,947 | 13,980,460 |
| **Net pension liability** | **$10,531,033** | **$9,406,514** | **$8,907,971** |
| Plan fiduciary net position as a percentage of the total pension liability | **56.11%** | 59.84% | 61.08% |
| Covered payroll | **$2,641,867** | $2,564,670 | $2,474,965 |
| Net pension liability as a percentage of covered payroll | **398.62%** | 366.77% | 359.92% |

| School Division | 2015 | 2014 | 2013 |
|---|---|---|---|
| Total pension liability | **$37,447,062** | $36,473,966 | $35,494,976 |
| Plan fiduciary net position | **22,152,768** | 22,920,607 | 22,740,003 |
| **Net pension liability** | **$15,294,294** | **$13,553,359** | **$12,754,973** |
| Plan fiduciary net position as a percentage of the total pension liability | **59.16%** | 62.84% | 64.07% |
| Covered payroll | **$4,235,290** | $4,063,236 | $3,938,650 |
| Net pension liability as a percentage of covered payroll | **361.12%** | 333.56% | 323.84% |

| Local Government Division | 2015 | 2014 | 2013 |
|---|---|---|---|
| Total pension liability | **$4,762,090** | $4,647,777 | $4,517,239 |
| Plan fiduciary net position | **3,660,509** | 3,751,468 | 3,508,312 |
| **Net pension liability** | **$1,101,581** | **$896,309** | **$1,008,927** |
| Plan fiduciary net position as a percentage of the total pension liability | **76.87%** | 80.72% | 77.66% |
| Covered payroll | **$561,518** | $540,468 | $529,003 |
| Net pension liability as a percentage of covered payroll | **196.18%** | 165.84% | 190.72% |

| Judicial Division | 2015 | 2014 | 2013 |
|---|---|---|---|
| Total pension liability | **$461,245** | $417,853 | $382,623 |
| Plan fiduciary net position | **277,351** | 279,499 | 272,653 |
| **Net pension liability** | **$183,894** | **$138,354** | **$109,970** |
| Plan fiduciary net position as a percentage of the total pension liability | **60.13%** | 66.89% | 71.26% |
| Covered payroll | **$46,870** | $42,977 | $39,942 |
| Net pension liability as a percentage of covered payroll | **392.35%** | 321.93% | 275.32% |

| DPS Division | 2015 | 2014 | 2013 |
|---|---|---|---|
| Total pension liability | **$3,920,864** | $3,888,361 | $3,792,543 |
| Plan fiduciary net position | **3,107,329** | 3,263,791 | 3,272,439 |
| **Net pension liability** | **$813,535** | **$624,570** | **$520,104** |
| Plan fiduciary net position as a percentage of the total pension liability | **79.25%** | 83.94% | 86.29% |
| Covered payroll | **$621,115** | $584,319 | $547,660 |
| Net pension liability as a percentage of covered payroll | **130.98%** | 106.89% | 94.97% |

[1] Information is not available prior to 2013. In future reports, additional years will be added until 10 years of historical data are presented.

*The accompanying notes are an integral part of the Required Supplementary Information.*

## REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)—DIVISION TRUST FUNDS
*(Dollars in Thousands)*

### SCHEDULE OF EMPLOYER CONTRIBUTIONS
For the Years Ended December 31

| State Division | 2015 | 2014 | 2013 | 2012 | 2011 |
|---|---|---|---|---|---|
| Actuarially determined contribution rate (a) | **22.35%** | 20.45% | 20.01% | 16.52% | 13.63% |
| Covered payroll (b) | **$2,641,867** | $2,564,670 | $2,474,965 | $2,384,934 | $2,393,791 |
| Annual Increase Reserve contribution (c) | **11,400** | 9,984 | N/A | N/A | N/A |
| Actuarially determined contribution (a) x (b) + (c) | **601,857** | 534,459 | 495,241 | 393,991 | 326,274 |
| Contributions in relation to the actuarially determined contribution | **484,005** | 444,372 | 393,218 | 328,055 | 277,122 |
| **Annual contribution deficiency** | **$117,852** | **$90,087** | **$102,023** | **$65,936** | **$49,152** |
| Actual contributions as a percentage of covered payroll | **18.32%** | 17.33% | 15.89% | 13.76% | 11.58% |

| State Division | 2010 | 2009 | 2008 | 2007 | 2006 |
|---|---|---|---|---|---|
| Actuarially determined contribution rate (a) | 18.93% | 17.91% | 18.45% | 17.23% | 19.33% |
| Covered payroll (b) | $2,392,080 | $2,384,137 | $2,371,639 | $2,236,518 | $2,099,325 |
| Annual Increase Reserve contribution (c) | N/A | N/A | N/A | N/A | N/A |
| Actuarially determined contribution (a) x (b) + (c) | 452,821 | 426,999 | 437,567 | 385,352 | 405,800 |
| Contributions in relation to the actuarially determined contribution | 282,640 | 293,234 | 267,533 | 231,909 | 208,795 |
| **Annual contribution deficiency** | **$170,181** | **$133,765** | **$170,034** | **$153,443** | **$197,005** |
| Actual contributions as a percentage of covered payroll | 11.82% | 12.30% | 11.28% | 10.37% | 9.95% |

| School Division | 2015 | 2014 | 2013 | 2012 | 2011 |
|---|---|---|---|---|---|
| Actuarially determined contribution rate (a) | **21.94%** | 19.65% | 19.79% | 17.60% | 15.73% |
| Covered payroll (b) | **$4,235,290** | $4,063,236 | $3,938,650 | $3,819,066 | $3,821,603 |
| Annual Increase Reserve contribution (c) | **15,648** | 13,280 | N/A | N/A | N/A |
| Actuarially determined contribution (a) x (b) + (c) | **944,871** | 811,706 | 779,459 | 672,156 | 601,138 |
| Contributions in relation to the actuarially determined contribution | **754,182** | 686,323 | 613,738 | 564,444 | 534,230 |
| **Annual contribution deficiency** | **$190,689** | **$125,383** | **$165,721** | **$107,712** | **$66,908** |
| Actual contributions as a percentage of covered payroll | **17.81%** | 16.89% | 15.58% | 14.78% | 13.98% |

| School Division | 2010 | 2009 | 2008 | 2007 | 2006 |
|---|---|---|---|---|---|
| Actuarially determined contribution rate (a) | 18.75% | 16.56% | 17.18% | 16.06% | 19.33% |
| Covered payroll (b) | $3,900,662 | $3,922,175 | $3,804,927 | $3,618,258 | $3,371,186 |
| Annual Increase Reserve contribution (c) | N/A | N/A | N/A | N/A | N/A |
| Actuarially determined contribution (a) x (b) + (c) | 731,374 | 649,512 | 653,686 | 581,092 | 651,650 |
| Contributions in relation to the actuarially determined contribution | 512,391 | 474,872 | 426,786 | 374,386 | 336,703 |
| **Annual contribution deficiency** | **$218,983** | **$174,640** | **$226,900** | **$206,706** | **$314,947** |
| Actual contributions as a percentage of covered payroll | 13.14% | 12.11% | 11.22% | 10.35% | 9.99% |

*The accompanying notes are an integral part of the Required Supplementary Information.*

## REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)—DIVISION TRUST FUNDS

*(Dollars in Thousands)*

### SCHEDULE OF EMPLOYER CONTRIBUTIONS

For the Years Ended December 31

| Local Government Division | 2015 | 2014 | 2013 | 2012 | 2011 |
|---|---|---|---|---|---|
| Actuarially determined contribution rate (a) | **13.62%** | 11.78% | 10.62% | 9.79% | 8.98% |
| Covered payroll (b) | **$561,518** | $540,468 | $529,003 | $523,668 | $718,169 |
| Annual Increase Reserve contribution (c) | **2,522** | 2,180 | N/A | N/A | N/A |
| Actuarially determined contribution (a) x (b) + (c) | **79,001** | 65,847 | 56,180 | 51,267 | 64,492 |
| Contributions in relation to the actuarially determined contribution | **70,415** | 254,725 | 65,329 | 83,816 | 89,536 |
| **Annual contribution deficiency (excess)** | **$8,586** | **($188,878)** | **($9,149)** | **($32,549)** | **($25,044)** |
| Actual contributions as a percentage of covered payroll | **12.54%** | 47.13% | 12.35% | 16.01% | 12.47% |

| Local Government Division | 2010 | 2009 | 2008 | 2007 | 2006 |
|---|---|---|---|---|---|
| Actuarially determined contribution rate (a) | 12.31% | 11.14% | 11.95% | 11.21% | 14.11% |
| Covered payroll (b) | $705,265 | $705,097 | $718,902 | $680,442 | $636,300 |
| Annual Increase Reserve contribution (c) | N/A | N/A | N/A | N/A | N/A |
| Actuarially determined contribution (a) x (b) + (c) | 86,818 | 78,548 | 85,909 | 76,278 | 89,782 |
| Contributions in relation to the actuarially determined contribution | 87,731 | 82,986 | 78,291 | 68,254 | 60,664 |
| **Annual contribution deficiency (excess)** | **($913)** | **($4,438)** | **$7,618** | **$8,024** | **$29,118** |
| Actual contributions as a percentage of covered payroll | 12.44% | 11.77% | 10.89% | 10.03% | 9.53% |

| Judicial Division | 2015 | 2014 | 2013 | 2012 | 2011 |
|---|---|---|---|---|---|
| Actuarially determined contribution rate (a) | **21.45%** | 20.07% | 21.53% | 18.28% | 16.30% |
| Covered payroll (b) | **$46,870** | $42,977 | $39,942 | $39,045 | $39,033 |
| Annual Increase Reserve contribution (c) | **141** | 116 | N/A | N/A | N/A |
| Actuarially determined contribution (a) x (b) + (c) | **10,195** | 8,741 | 8,599 | 7,137 | 6,362 |
| Contributions in relation to the actuarially determined contribution | **7,702** | 7,070 | 6,494 | 5,840 | 5,356 |
| **Annual contribution deficiency** | **$2,493** | **$1,671** | **$2,105** | **$1,297** | **$1,006** |
| Actual contributions as a percentage of covered payroll | **16.43%** | 16.45% | 16.26% | 14.96% | 13.72% |

| Judicial Division | 2010 | 2009 | 2008 | 2007 | 2006 |
|---|---|---|---|---|---|
| Actuarially determined contribution rate (a) | 18.63% | 17.08% | 17.66% | 15.33% | 17.21% |
| Covered payroll (b) | $37,412 | $37,583 | $35,937 | $31,150 | $29,151 |
| Annual Increase Reserve contribution (c) | N/A | N/A | N/A | N/A | N/A |
| Actuarially determined contribution (a) x (b) + (c) | 6,970 | 6,419 | 6,346 | 4,775 | 5,017 |
| Contributions in relation to the actuarially determined contribution | 5,605 | 5,749 | 5,078 | 4,211 | 3,767 |
| **Annual contribution deficiency** | **$1,365** | **$670** | **$1,268** | **$564** | **$1,250** |
| Actual contributions as a percentage of covered payroll | 14.98% | 15.30% | 14.13% | 13.52% | 12.92% |

*The accompanying notes are an integral part of the Required Supplementary Information.*

## REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)—DIVISION TRUST FUNDS

*(Dollars in Thousands)*

### SCHEDULE OF EMPLOYER CONTRIBUTIONS

For the Years Ended December 31

| DPS Division[1] | 2015 | 2014 | 2013 | 2012 | 2011 |
|---|---|---|---|---|---|
| Actuarially determined contribution rate (a) | **11.06%** | 9.67% | 11.53% | 9.60% | 11.85% |
| Covered payroll (b) | **$621,115** | $584,319 | $547,660 | $510,872 | $491,646 |
| Annual Increase Reserve contribution (c) | **3,186** | 2,633 | N/A | N/A | N/A |
| Actuarially determined contribution (a) x (b) + (c) | **71,881** | 59,137 | 63,145 | 49,044 | 58,260 |
| Contributions in relation to the actuarially determined contribution | **8,494** | 18,478 | 23,104 | 13,145 | 11,722 |
| **Annual contribution deficiency** | **$63,387** | **$40,659** | **$40,041** | **$35,899** | **$46,538** |
| Actual contributions as a percentage of covered payroll | **1.37%** | 3.16% | 4.22% | 2.57% | 2.38% |

| DPS Division[1] | 2010 |
|---|---|
| Actuarially determined contribution rate (a) | 14.61% |
| Covered payroll (b) | $470,774 |
| Annual Increase Reserve contribution (c) | N/A |
| Actuarially determined contribution (a) x (b) + (c) | 68,780 |
| Contributions in relation to the actuarially determined contribution | 5,733 |
| **Annual contribution deficiency** | **$63,047** |
| Actual contributions as a percentage of covered payroll | 1.22% |

[1] The DPS Division Trust Fund was established on January 1, 2010, and received the net assets of the Denver Public Schools Retirement System (DPSRS).

### SCHEDULE OF INVESTMENT RETURNS[1]

For the Years Ended December 31

| | 2015 | 2014 |
|---|---|---|
| Annual money-weighted rate of return, net of investment expenses | **1.6%** | 5.8% |

[1] Information is not available prior to 2014. In future reports, additional years will be added until 10 years of historical data are presented.

*The accompanying notes are an integral part of the Required Supplementary Information.*

# NOTES TO THE REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)—DIVISION TRUST FUNDS

*(Dollars in Thousands)*

## Note 1—Significant Changes in Plan Provisions Affecting Trends in Actuarial Information

### *2015 Changes in Plan Provisions Since 2014*

- Actual employer contributions to the DPS Division are reduced by an amount equal to the principal payments plus interest necessary each year to finance the pension certificates of participation (PCOPs) issued in 1997 and 2008 and refinanced thereafter.
- As required under Colorado Revised Statutes § 24-51-401(1.7)(e), PERA calculated and provided to the Colorado General Assembly an adjustment to the DPS Division's employer contribution rate to assure the equalization of the School Division's and the DPS Division's ratios of unfunded actuarial accrued liability (UAAL) to payroll as of December 31, 2039. Subsequently, the Colorado General Assembly passed House Bill 15-1391, reducing the employer contribution rate of the DPS Division from 13.75 percent to 10.15 percent, effective January 1, 2015.

### *2014 Changes in Plan Provisions Since 2013*

- Actual employer contributions to the DPS Division are reduced by an amount equal to the principal payments plus interest necessary each year to finance the PCOPs issued in 1997 and 2008 and refinanced thereafter.

### *2013 Changes in Plan Provisions Since 2012*

- Actual employer contributions to the DPS Division are reduced by an amount equal to the principal payments plus interest necessary each year to finance the PCOPs issued in 1997 and 2008 and refinanced thereafter.

### *2012 Changes in Plan Provisions Since 2011*

- The valuation reflects the disaffiliation of Memorial Health System (Memorial), formerly the largest employer of the Local Government Division, as of October 1, 2012. For the purposes of the December 31, 2012, actuarial valuation, liabilities were determined assuming no additional benefit accruals for the disaffiliated membership of Memorial that had not refunded their PERA member contribution accounts. Additionally, no additional incoming dollars were assumed added to the Local Government Division Trust Fund, as there is ongoing litigation regarding the potential dollars owed to the Local Government Division Trust Fund due to the disaffiliation.
- Pursuant to Senate Bill (SB) 11-076, there was a short term contribution "swap" between employers and active members in the State and Judicial Divisions covering the period July 1, 2011, through June 30, 2012. Active member contributions for the period were increased by 2.5 percent of pensionable payroll and employer contributions were reduced by that amount.
- Actual employer contributions to the DPS Division are reduced by an amount equal to the principal payments plus interest necessary each year to finance the PCOPs issued in 1997 and 2008 and refinanced thereafter.

### *2011 Changes in Plan Provisions Since 2010*

- Pursuant to SB 10-146, there was a short term contribution "swap" between employers and active members in the State and Judicial Divisions covering the period July 1, 2010, through June 30, 2011. The enactment of SB 11-076 extended the contribution swap an additional year, from July 1, 2011, through June 30, 2012. Active member contributions for both periods were increased by 2.5 percent of pensionable payroll and employer contributions were reduced by that amount.
- Actual employer contributions to the DPS Division are reduced by an amount equal to the principal payments plus interest necessary each year to finance the PCOPs issued in 1997 and 2008 and refinanced thereafter.

### *2010 Changes in Plan Provisions Since 2009*

- The valuation reflects the addition of the DPS benefit structure as a result of the merger of DPSRS into PERA as a separate division, effective January 1, 2010. Major plan provisions adopted as part of the merger legislation (SB 09-282) include:
  - Transfers from the DPS Division to other Divisions may build upon a DPS benefit structure benefit within those Divisions.
  - Hourly and part-time employees of Denver Public Schools become members of the DPS Division as of January 1, 2010 with no past service credit.
  - Actual employer contributions to the DPS Division are reduced by an amount equal to the principal payments plus interest necessary each year to finance the PCOPs issued in 1997 and 2008. Colorado statutes call for a "true-up" in 2015, and every five years following, with the expressed purpose of adjusting the total DPS contribution rate to ensure equalization of the ratio of UAAL over payroll between the DPS and School Divisions at the end of the 30-year period beginning January 1, 2010.

NOTES TO THE REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)—DIVISION TRUST FUNDS
*(Dollars in Thousands)*

- Pursuant to SB 10-146, there was a short term contribution "swap" between employers and active members in the State and Judicial Divisions covering the period July 1, 2010, through June 30, 2011. Active member contributions for this period were increased by 2.5 percent of pensionable payroll and employer contributions were reduced by that amount.

### *2009 Changes in Plan Provisions Since 2008*

- The following changes were made to the plan provisions as part of SB 10-001:
  - For the State Division, the amortization equalization disbursement (AED) continues to increase by 0.4 percent per year to a total rate of 5.0 percent by 2017. In addition, the supplemental amortization equalization disbursement (SAED) continues to increase by 0.5 percent per year to a total rate of 5.0 percent by 2017. However, if the funding ratio reaches 103 percent, the AED and SAED will be reduced by 0.5 percent of pay each.
  - For the School Division, the AED will continue to increase by 0.4 percent per year from 2013 through 2015 and by 0.3 percent in 2016 for a total rate of 4.5 percent. In addition, the SAED will continue to increase by 0.5 percent per year to a total rate of 5.5 percent by 2018. Also, the 0.4 percent increase in the statutory employer contribution rate in 2013 was eliminated. However, if the funding ratio reaches 103 percent, the AED and SAED will be reduced by 0.5 percent of pay each.
  - For the Local Government and Judicial Divisions, the AED is frozen at the 2010 level of 2.20 percent. In addition, the SAED is frozen at the 2010 level of 1.50 percent. However, if the funding ratio reaches 103 percent, the AED and SAED will be reduced by 0.5 percent of pay each.
  - For benefit recipients of the PERA benefit structure based upon a membership date before January 1, 2007, or for benefit recipients of the DPS benefit structure, future post-retirement benefit increases (AI) were reduced to an amount equal to 2 percent (the lesser of that or the annual Consumer Price Index for Urban Wage Earners and Clerical Workers [CPI-W] increase for 2010). However, if the investment return for the prior year is negative, then the AI is an amount equal to the annual CPI-W increase with a cap of 2 percent. The 2 percent cap may be adjusted based upon the year-end funded status, with increases mandated when the funded status reaches 103 percent and decreases mandated when the funded status subsequently falls below 90 percent. The cap will not be reduced below 2 percent. In addition, the AI is first paid on the July 1st that is at least 12 months after retirement for those members who retire on or after January 1, 2011. Members not eligible to retire as of January 1, 2011, who retire with a reduced service retirement allowance must reach age 60 or the age and service requirements for unreduced service retirement to be eligible for the AI.
  - Effective January 1, 2011, other than in the Judicial Division, for all active members who are not eligible for retirement on January 1, 2011, the annual salary increase cap in determination of highest average salary was lowered from 15 percent to 8 percent for PERA benefit structure members and for DPS benefit structure members, a change from the average of salaries of the highest 36 months of earned service to the PERA benefit structure method with an annual salary increase cap of 8 percent.
  - Effective January 1, 2011, a new requirement was added that PERA benefit structure members must have five years of earned service credit in order to receive a 50 percent match on a refund.
  - Effective January 1, 2011, the reduction factors for a reduced service retirement benefit for members not eligible to retire as of January 1, 2011, were changed to an actuarial equivalent basis.
  - Effective January 1, 2011, a modified Rule of 85 for service retirement eligibility was implemented for members with less than 5 years of service credit as of January 1, 2011 (this rule does not apply to State Troopers).
  - Effective January 1, 2011, a modified Rule of 88 with a minimum age of 58 for service retirement eligibility was implemented for members hired on or after January 1, 2011, but before January 1, 2017 (this rule does not apply to State Troopers).
  - Effective January 1, 2011, a modified Rule of 90 with a minimum age of 60 for service retirement eligibility was implemented for members hired on or after January 1, 2017 (this rule does not apply to State Troopers and to participants whose last 10 years of service were in the School or DPS Divisions).

### *2008 Changes in Plan Provisions Since 2007*

- The Board approved a reduction to the interest rate credited on member contribution accounts from 5 percent to 3 percent.

### *2007 Changes in Plan Provisions Since 2006*

- No material changes to plan provisions.

## NOTES TO THE REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)—DIVISION TRUST FUNDS

*(Dollars in Thousands)*

### *2006 Changes in Plan Provisions Since 2005*

- The following changes were made to the Plan's provisions as a result of the passage of SB 06-235:
  - The Annual Increase Reserve (AIR) was established January 1, 2007, and will be used to provide post-retirement benefit increases for members hired on or after that date. The AIR is financed by an allocation from the employer statutory contributions, made on behalf of members hired on or after January 1, 2007, equal to 1.00 percent of pensionable payroll and through an allocation of purchase of service dollars.
  - The Service Retirement Eligibility for those members, other than State Troopers, hired after January 1, 2007, was changed at age 55 by increasing the age and service requirements from 80 years to 85 years.
  - Beginning January 1, 2008, a SAED was created in addition to the AED. The SAED calls for additional employer contributions equal to a percent of pensionable payroll in accordance with the following schedule:

| Year | Percent of Pensionable Payroll |
|---|---|
| 2008 | 0.50% |
| 2009 | 1.00% |
| 2010 | 1.50% |
| 2011 | 2.00% |
| 2012 | 2.50% |
| 2013 & after | 3.00% |

The AED and SAED will continue until the funded ratio for a division exceeds 100 percent. At that point, the AED and SAED will be reduced in an amount to maintain a 100 percent funded ratio.

## Note 2—Significant Changes in Assumptions or Other Inputs Affecting Trends in Actuarial Information

### *2015 Changes in Assumptions or Other Inputs Since 2014*

- The discount rate or single equivalent interest rate (SEIR) for the Judicial Division was lowered from 6.14 percent to 5.73 percent to reflect the changes to the projection's valuation basis, the fiduciary net position's projected year of depletion, and the municipal bond index from 3.70 percent on the prior measurement date to 3.57 percent on the measurement date.
- The following programming changes were made:
  - Valuation of the full survivor benefit without any reduction for possible remarriage.
  - Reflection of the employer match on separation benefits for all eligible years.
  - Reflection of one year of service eligibility for survivor annuity benefit.
  - Refinement of the 18-month AI timing.
  - Refinements to directly value certain and life, modified cash refund and pop-up benefit forms.
- The following methodology changes were made:
  - Recognition of merit salary increases in the first projection year.
  - Elimination of the assumption that 35 percent of future disabled members elect to receive a refund.
  - Removal of the negative value adjustment for liabilities associated with refunds of future terminating members.
  - Adjustments to the timing of the normal cost and UAAL payment calculations to reflect contributions throughout the year.

### *2014 Changes in Assumptions or Other Inputs Since 2013*

- The discount rate or SEIR for the Judicial Division was lowered from 6.66 percent to 6.14 percent to reflect the change in the municipal bond index from 4.73 percent on the prior measurement date to 3.70 percent on the measurement date.
- In 2012, a lawsuit was initiated to determine the amount owed to PERA by Memorial Health System (Memorial) and the City of Colorado Springs (City) for Memorial's departure from PERA. In September 2014, PERA and the City agreed to resolve the lawsuit. The

## NOTES TO THE REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)—DIVISION TRUST FUNDS

*(Dollars in Thousands)*

agreement provided for the City to pay PERA $190,000 for the liabilities associated with the retirement and health care benefits already earned by 7,666 Memorial employees for the work that they performed before Memorial ceased to be a PERA employer. On October 3, 2014, PERA received a disaffiliation payment from the City, which was allocated to the Local Government Division Trust Fund and the Health Care Trust Fund in the amount of $186,006 and $3,994, respectively.

### *2013 Changes in Assumptions or Other Inputs Since 2012*

- The investment return assumption was lowered from 8.00 percent to 7.50 percent.
- The price inflation assumption was lowered from 3.50 percent to 2.80 percent.
- The wage inflation assumption was lowered from 4.25 percent to 3.90 percent.

### *2012 Changes in Assumptions or Other Inputs Since 2011*

- The price inflation assumption was lowered from 3.75 percent to 3.50 percent.
- The wage inflation assumption was lowered from 4.50 percent to 4.25 percent.
- The rates of retirement, withdrawal, mortality and disability were revised to more closely reflect actual experience.
- The post-retirement mortality tables used were changed to the RP-2000 Combined Mortality tables projected with Scale AA to 2020, set back one year for males and two years for females.
- The investment return assumption was changed to be only net of investment expenses to better represent the investment consultant's assumptions and predictions and also to better align with recent changes in GASB accounting and reporting requirements. An ongoing estimated administrative expense of 0.35 percent of pensionable payroll was added to the normal cost beginning with the December 31, 2012, actuarial valuation.
- To reflect the short-term contribution "swap" between employers and active members covering the period July 1, 2010, through June 30, 2012, the actuarially determined contribution (ADC) has been adjusted in the State and Judicial Divisions.

### *2011 Changes in Assumptions or Other Inputs Since 2010*

- To reflect the short-term contribution "swap" between employers and active members covering the period July 1, 2010, through June 30, 2012, the ADC has been adjusted in the State and Judicial Division.

### *2010 Changes in Assumptions or Other Inputs Since 2009*

- Assumptions were supplemented to provide for the valuation of the DPS benefit structure added as a result of the merger of DPSRS into PERA as a separate division, effective January 1, 2010.
- To reflect the short-term contribution "swap" between employers and active members covering the period July 1, 2010, through June 30, 2012, the ADC has been adjusted in the State and Judicial Division.

### *2009 Changes in Assumptions or Other Inputs Since 2008*

- The investment return assumption was lowered from 8.50 percent to 8.00 percent.
- The withdrawal rates, pre-retirement mortality rates, disability rates and retirement rates were revised to more closely reflect the actual experience of PERA.
- The post-retirement mortality tables used for service retirements and dependents of deceased pensioners were changed to the 1994 Group Annuity Mortality Table set back three years for males and set back two years for females.
- The deferral period for deferred vested members was revised to more closely reflect the actual experience of PERA.

### *2008 Changes in Assumptions or Other Inputs Since 2007*

- The assumed interest rate credited on member contribution accounts was reduced from 5 percent to 3 percent, reflecting the change to the Board approved rate.

NOTES TO THE REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)—DIVISION TRUST FUNDS
*(Dollars in Thousands)*

### *2007 Changes in Assumptions or Other Inputs Since 2006*

- For the AIR established on January 1, 2007, the AIR balance is excluded from both assets and liabilities in the determination of the ADC rate as a percentage of pensionable payroll.

### *2006 Changes in Assumptions or Other Inputs Since 2005*

- No material changes to assumptions or other inputs.

## Note 3—Methods and Assumptions Used in Calculations of ADC

The ADC rates, as a percentage of covered payroll, used to determine the ADC amounts in the Schedule of Employer Contributions are calculated as of December 31, two years prior to the end of the year in which ADC amounts are reported. The following actuarial methods and assumptions (from the December 31, 2013, actuarial valuation) were used to determine contribution rates reported in that schedule for the year ending December 31, 2015:

| | |
|---|---|
| Actuarial cost method | Entry age |
| Amortization method | Level percentage of payroll |
| Amortization period | 30 years, open |
| Asset valuation method | 4-year smoothed market |
| Price inflation | 2.80 percent |
| Real wage growth | 1.10 percent |
| Wage inflation | 3.90 percent |
| Salary increases, including wage inflation | 3.90 to 10.85 percent |
| Long-term investment rate of return, net of pension plan investment expense, including price inflation | 7.50 percent |
| Future post-retirement benefit increases | |
| PERA benefit structure hired prior to 1/1/07 and DPS benefit structure | 2.00 percent |
| PERA benefit structure hired after 12/31/06 | 0.00 percent, as financed by the AIR |

## REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)—HEALTH CARE TRUST FUNDS

*(Dollars in Thousands)*

### SCHEDULE OF FUNDING PROGRESS

For the Years Ended December 31

| Health Care Trust Fund | 2015 | 2014 | 2013 | 2012 | 2011 |
|---|---|---|---|---|---|
| Actuarial valuation date | **12/31/2015** | 12/31/2014 | 12/31/2013 | 12/31/2012 | 12/31/2011 |
| Actuarial value of assets (a) | **$285,588** | $297,377 | $293,556 | $285,097 | $282,228 |
| Actuarial accrued liability (b) | **1,556,269** | 1,534,461 | 1,557,406 | 1,723,495 | 1,710,790 |
| **Unfunded actuarial accrued liability (UAAL) (b-a)** | **$1,270,681** | **$1,237,084** | **$1,263,850** | **$1,438,398** | **$1,428,562** |
| Funded ratio (a/b) | **18.4%** | 19.4% | 18.8% | 16.5% | 16.5% |
| Covered payroll | **$7,485,545** | $7,211,351 | $6,982,560 | $6,766,713 | $6,972,596 |
| UAAL as a percentage of covered payroll | **17.0%** | 17.2% | 18.1% | 21.3% | 20.5% |

| Health Care Trust Fund | 2010 | 2009 | 2008 | 2007 | 2006 |
|---|---|---|---|---|---|
| Actuarial valuation date | 12/31/2010 | 12/31/2009 | 12/31/2008 | 12/31/2007 | 12/31/2006 |
| Actuarial value of assets (a) | $288,193 | $260,341 | $255,976 | $258,775 | $214,816 |
| Actuarial accrued liability (b) | 1,642,993 | 1,763,241 | 1,368,633 | 1,303,594 | 1,247,950 |
| **Unfunded actuarial accrued liability (UAAL) (b-a)** | **$1,354,800** | **$1,502,900** | **$1,112,657** | **$1,044,819** | **$1,033,134** |
| Funded ratio (a/b) | 17.5% | 14.8% | 18.7% | 19.9% | 17.2% |
| Covered payroll | $7,035,419 | $7,048,992 | $6,931,405 | $6,566,368 | $6,135,962 |
| UAAL as a percentage of covered payroll | 19.3% | 21.3% | 16.1% | 15.9% | 16.8% |

| DPS Health Care Trust Fund[1] | 2015 | 2014 | 2013 | 2012 | 2011 | 2010 |
|---|---|---|---|---|---|---|
| Actuarial valuation date | **12/31/2015** | 12/31/2014 | 12/31/2013 | 12/31/2012 | 12/31/2011 | 12/31/2010 |
| Actuarial value of assets (a) | **$17,557** | $16,502 | $15,482 | $14,443 | $14,448 | $14,086 |
| Actuarial accrued liability (b) | **74,897** | 76,026 | 76,636 | 77,669 | 77,475 | 78,513 |
| **Unfunded actuarial accrued liability (UAAL) (b-a)** | **$57,340** | **$59,524** | **$61,154** | **$63,226** | **$63,027** | **$64,427** |
| Funded ratio (a/b) | **23.4%** | 21.7% | 20.2% | 18.6% | 18.6% | 17.9% |
| Covered payroll | **$621,115** | $584,319 | $547,660 | $510,872 | $491,646 | $470,774 |
| UAAL as a percentage of covered payroll | **9.2%** | 10.2% | 11.2% | 12.4% | 12.8% | 13.7% |

[1] The Denver Public Schools Health Care Trust Fund (DPS HCTF) was established on January 1, 2010, and received the balance of the Denver Public Schools Retiree Health Benefit Trust.

*The accompanying notes are an integral part of the Required Supplementary Information.*

## REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)—HEALTH CARE TRUST FUNDS
*(Dollars in Thousands)*

### SCHEDULE OF CONTRIBUTIONS FROM EMPLOYERS AND OTHER CONTRIBUTING ENTITIES
For the Years Ended December 31

| Health Care Trust Fund | 2015 | 2014 | 2013 | 2012 | 2011 |
|---|---|---|---|---|---|
| Dollar amount of annual required contribution (ARC) | **$86,084** | $95,190 | $86,584 | $79,847 | $89,249 |
| ARC[1] | **1.15%** | 1.32% | 1.24% | 1.18% | 1.28% |
| % ARC contributed by Employer | **91%** | 84% | 84% | 91% | 82% |
| % ARC contributed by Medicare | **—** | — | 18% | 18% | 16% |

[1] As a percent of covered payroll. ARC based on the annual actuarial valuation two years prior to the current year.

| Health Care Trust Fund | 2010 | 2009[1] | 2008[1] | 2007[1] | 2006[1] |
|---|---|---|---|---|---|
| Dollar amount of annual required contribution (ARC) | $78,797 | $78,949 | $76,939 | $78,140 | $73,018 |
| ARC[2] | 1.12% | 1.12% | 1.11% | 1.19% | 1.19% |
| % ARC contributed by Employer | 94% | 94% | 94% | 88% | 88% |
| % ARC contributed by Medicare | 18% | 17% | 18% | 16% | 17% |

[1] Information restated in 2010 to reflect a 12-month delay from the actuarial valuation date to the beginning of the calendar year in which each annual required contribution rate became effective.

[2] As a percent of covered payroll. ARC based on the annual actuarial valuation two years prior to the current year.

| DPS Health Care Trust Fund[1] | 2015 | 2014 | 2013 | 2012 | 2011 | 2010 |
|---|---|---|---|---|---|---|
| Dollar amount of annual required contribution (ARC) | **$5,031** | $5,084 | $4,710 | $4,700 | $4,523 | $4,465 |
| ARC[2] | **0.81%** | 0.87% | 0.86% | 0.92% | 0.92% | 0.95% |
| % ARC contributed by Employer | **127%** | 118% | 118% | 112% | 111% | 107% |
| % ARC contributed by Medicare | **—** | — | 12% | 10% | 11% | 12% |

[1] The DPS HCTF was established on January 1, 2010, and received the balance of the Denver Public Schools Retiree Health Benefit Trust.

[2] As a percent of covered payroll. ARC based on the annual actuarial valuation two years prior to the current year.

*The accompanying notes are an integral part of the Required Supplementary Information.*

REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)—HEALTH CARE TRUST FUNDS
*(Dollars in Thousands)*

## Note 1—Significant Changes in Plan Provisions Affecting Trends in Actuarial Information

### *2015 Changes in Plan Provisions Since 2014*

- The following methodology change was made:
  - Rates of morbidity to model the growth in assumed claims as a PERACare enrollee ages have been added to the process used to project per capita health care costs of those PERACare enrollees under the PERA benefit structure who are age 65 and older and are not eligible for premium-free Medicare Part A benefits.
- The following changes were made to the actuarial assumptions:
  - The percentage of PERACare enrollees who will become age 65 and older and are assumed to not qualify for premium-free Medicare Part A coverage have been revised to more closely reflect actual experience.
  - Initial per capita health care costs for those PERACare enrollees under the PERA benefit structure who are age 65 and older and are not eligible for premium-free Medicare Part A benefits have been updated to reflect the change in costs for the 2016 plan year.
  - The assumed rates of inflation for health care costs for Medicare Part A premiums have been revised to reflect the current expectation of future increases.

### *2014 Changes in Plan Provisions Since 2013*

- The following changes were made to the actuarial assumptions:
  - Initial health care costs for PERACare enrollees who are age 65 and older and do not have Medicare Part A have been updated to reflect the change in costs for the 2015 plan year.

### *2013 Changes in Plan Provisions Since 2012*

- The following changes were made to the actuarial assumptions:
  - The investment rate of return assumption decreased from 8.00 percent to 7.50 percent per annum.
  - The price inflation assumption decreased from 3.50 percent to 2.80 percent per annum.
  - The wage inflation assumption decreased from 4.25 percent to 3.90 percent per annum.
  - Effective January 1, 2014, PERACare no longer participates in the Centers for Medicare & Medicaid Services' (CMS) Retiree Drug Subsidy (RDS) program. PERACare enrollees participating in the self-insured Medicare supplement plans and the Medicare HMO plan offered by Rocky Mountain Health Plans now receive their prescription drug benefits through a Medicare Prescription Drug Plan. The liability associated with the RDS has been eliminated.
  - Initial health care costs for PERACare enrollees who are age 65 and older and do not have Medicare Part A have been updated to reflect the change in costs for the 2014 plan year.
  - The assumed rates of inflation for health care costs for Medicare Part A premiums have been revised to reflect the current expectation of future increases.
  - The utilization rates for the No Part A subsidy of both retirees and their spouses have been revised.

### *2012 Changes in Plan Provisions Since 2011*

- The following changes were made to the actuarial assumptions:
  - The rates of participation in PERACare for current participants of the PERA Divisions and the DPS Division, future participants of the PERA Divisions and the DPS Division, and DPS Division deferred vested members have been revised to more closely reflect actual experience.
  - The percentage of PERACare enrollees who will become age 65 and older and are assumed to not qualify for premium-free Medicare Part A coverage have been revised to more closely reflect actual experience.
  - The average age difference between covered male and female spouses has been updated to reflect actual experience.
  - Initial per capita health care costs for PERACare enrollees under the PERA benefit structure who are age 65 and older and not eligible for premium-free Medicare Part A benefits have been updated to reflect the change in costs for the 2013 plan year.
  - The initial per capita payments estimated to be made by CMS under the RDS program have been updated based upon the most recent attestation of actuarial equivalence.
  - The assumed rates of inflation for health care costs for Medicare Part A premiums and RDS payments have been revised to reflect the current expectation of future increases.

REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)—HEALTH CARE TRUST FUNDS
*(Dollars in Thousands)*

- The last year in which the prescription drug benefit provided to those members eligible for Medicare Part D is deemed to be Actuarially Equivalent has been increased to 2023.
- The price inflation assumption decreased from 3.75 percent to 3.50 percent.
- The wage inflation assumption decreased from 4.50 percent to 4.25 percent.
- Withdrawal rates from active service for each division were revised to more closely reflect actual experience.
- The rates of post-retirement deaths for healthy lives changed to the RP-2000 Combined Mortality Table rates projected with Scale AA to 2020 (set back one year for males and two years for females).
- The rates of pre-retirement mortality (deaths in active service) were revised to match the post-retirement mortality table. However, the percentages of the post-retirement mortality tables reflected on active member lives were changed to 55 percent for males and 40 percent for females.
- The rates of disability from active service decreased slightly to more closely reflect actual experience.
- The RP-2000 Disability Mortality Table was retained. The setback applied to the male disability mortality rates remains unchanged at two years, however, the setback applied to the female mortality rates changed from five years to two years.
- The rates of early, reduced retirement for all divisions decreased and the rates for unreduced retirements increased to more closely reflect actual experience.

*2011 Changes in Plan Provisions Since 2010*

- The following changes were made to the actuarial assumptions:
  - Initial per capita health care costs for PERACare enrollees under the PERA structure who are age 65 and older and not eligible for premium-free Medicare Part A benefits have been updated to reflect the change in costs for the 2012 plan year.
  - The initial per capita payments estimated to be made by CMS under the RDS have been updated based upon the most recent attestation of actuarial equivalence.
  - The assumed rates of inflation for health care costs for Medicare Part A premiums and RDS payments have been revised to reflect the current expectation of future increases.
  - The last year in which the prescription drug benefit provided to those members eligible for Medicare Part D is deemed to be Actuarially Equivalent has been increased to 2019.

*2010 Changes in Plan Provisions Since 2009*

- The following changes were made to the actuarial assumptions:
  - DPS HCTF was created on January 1, 2010, to provide health care subsidies for DPS retirees participating in PERACare.
  - Initial health care costs for PERACare enrollees who are age 65 and older and not eligible for premium-free Medicare Part A have been updated to reflect the change in costs for the 2011 plan year.
  - PERACare funding rates are used to determine the health care costs for participants enrolled in the self-insured plans who are age 65 and older and not eligible for premium-free Medicare Part A.
  - The starting per capita payments estimated to be made by the CMS under the RDS have been updated based upon the most recent attestation of actuarial equivalence.
  - The assumed rates of inflation for health care costs for Medicare Part A premiums and RDS payments have been revised to reflect the current expectation of future increases.
  - The percentage of PERACare enrollees who are projected to be age 65 and older, and estimated to not be eligible for premium-free Medicare Part A has been revised to reflect plan experience.
  - The last year in which the prescription drug benefit provided to those members eligible for Medicare Part D is deemed to be Actuarially Equivalent has been increased to 2018.
  - Liabilities for those members represented under both the PERA benefit structure and the DPS benefit structure have been allocated based upon member contribution account balances.

*2009 Changes in Plan Provisions Since 2008*

- The following changes were made to the actuarial assumptions:
  - The investment rate of return decreased from 8.50 percent to 8.00 percent per annum.

REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)—HEALTH CARE TRUST FUNDS
*(Dollars in Thousands)*

- The withdrawal rates, pre-retirement mortality rates, disability rates, and retirement rates for all divisions have been revised to more closely reflect the actual experience of PERA.
- The post-retirement mortality tables used for service retirements and dependents of deceased pensioners have been changed to the 1994 Group Annuity Mortality Table set back three years for males and set back two years for females.
- The rates of participation in PERACare for current members, future members, deferred vested members, and spouses have been revised to more closely reflect the actual experience of PERA.
- Initial health care costs for participants who are age 65 and older and not eligible for premium-free Medicare Part A have been updated to reflect their change in costs for the 2010 plan year.
- The starting per capita payments estimated to be made by CMS under the RDS Program have been updated based upon the most recent attestation of actuarial equivalence.
- The assumed rates of inflation for health care costs have been revised to reflect the expectation of future increases.
- The last year in which the prescription drug benefit provided to those members eligible for Medicare Part D is deemed to be actuarially equivalent has been reduced to 2017.

***2008 Changes in Plan Provisions Since 2007***

- The following changes were made to the actuarial assumptions:
  - Expected costs for retirees who are age 65 and older and not eligible for premium-free Medicare Part A, and who participate in the Kaiser Permanente, Rocky Mountain Health Plans, and Secure Horizons plans, have been updated to reflect their change in costs for the 2009 plan year.
  - The starting per capita payments estimated to be made by CMS under the RDS have been updated based upon the most recent attestation of actuarial equivalence.
  - The assumed level of spousal participation was updated to better match plan experience.
  - The year in which the prescription drug benefit provided to those members eligible for Medicare Part D ceases to be actuarially equivalent, by failing the net test component of the Actuarial Equivalency Attestation, was extended to 2018 based upon the most recent attestation of actuarial equivalence.
  - The premium payable to CMS for Medicare Part A coverage was updated to reflect the change in cost for 2009.

***2007 Changes in Plan Provisions Since 2006***

- The following changes were made to the actuarial assumptions:
  - Future plan election rates for retirees age 65 and older have been adjusted to reflect recent election patterns, incorporating the addition of the Secure Horizons (HMO) option.
  - Expected inpatient hospital claims cost for retirees age 65 and older, who do not have Medicare Part A, have been updated to better reflect anticipated changes in the various coverage categories, based on the most recent "no Medicare Part A" report presented to the Board of Trustees in March 2008.

***2006 Changes in Plan Provisions Since 2005***

- The following changes were made to the actuarial assumptions:
  - Based on the results of surveys conducted by Colorado PERA staff, the percentage of actives hired before April 1, 1986, and pre-Medicare retirees assumed to not have Part A Medicare coverage was changed to 20 percent.
  - Future plan election rates for retirees age 65 and older have been adjusted to reflect recent election patterns.
  - Expected inpatient hospital claims costs for retirees age 65 and older, who do not have Medicare Part A, have been updated and associated trend assumptions for future increases in medical costs were amended to better reflect anticipated changes in the various coverage categories.
- The following methodology change was implemented:
  - Members electing coverage in a qualified plan option produce a RDS which is payable to the HCTF under Part D of the Medicare Modernization Act of 2003. The HCTF has reduced the full cost of coverage by the estimated RDS. GASB Statement 43, GASB Technical Bulletin 2006-1, and GASB Statement 45 do not allow for future assumed RDS payments to be used as a direct offset for future liabilities. Therefore, the total HCTF actuarially accrued liability has been increased for future RDS premium offsets to members.

# SUPPLEMENTARY SCHEDULES

## SCHEDULE OF ADMINISTRATIVE EXPENSES

For the Years Ended December 31

*(Dollars in Thousands)*

| | 2015 | 2014 |
|---|---|---|
| **Personnel Services** | | |
| Salaries | $28,364 | $26,551 |
| Employee benefits | 9,950 | 9,176 |
| Total personnel services | 38,314 | 35,727 |
| **Professional Services** | | |
| Actuarial contracts | 652 | 433 |
| Audits | 258 | 292 |
| Investment services | 2,472 | 2,214 |
| Legal and legislative counsel | 2,882 | 2,554 |
| Computer services and consulting | 1,272 | 1,004 |
| Management consulting | 1,137 | 1,121 |
| Health care consulting | 311 | 243 |
| Other | 713 | 1,038 |
| Total professional services | 9,697 | 8,899 |
| **Miscellaneous** | | |
| Equipment rental and services | 1,459 | 1,426 |
| Memberships | 355 | 327 |
| Publications and subscriptions | 69 | 100 |
| Travel and local expense | 749 | 686 |
| Auto expense | 18 | 25 |
| Telephone | 215 | 210 |
| Postage | 1,505 | 1,650 |
| Insurance | 529 | 342 |
| Printing | 481 | 568 |
| Office supplies | 690 | 675 |
| Building rent, supplies, and utilities | 974 | 974 |
| Total miscellaneous | 7,044 | 6,983 |
| **Direct Expense** | | |
| Life Insurance Reserve | 729 | 765 |
| Health Care Trust Fund | 16,854 | 14,247 |
| DPS Health Care Trust Fund | 660 | 504 |
| Voluntary Investment Program | 1,729 | 1,769 |
| Defined Contribution Retirement Plan | 455 | 457 |
| Deferred Compensation Plan | 734 | 743 |
| Total direct expense | 21,161 | 18,485 |
| Depreciation expense | 1,078 | 606 |
| Tenant and other expense | 1,269 | 1,093 |
| Internal investment manager expense | (16,247) | (14,883) |
| Total administrative expense | $62,316 | $56,910 |
| **Allocation of Administrative Expense** | | |
| State Division Trust Fund | $10,779 | $10,067 |
| School Division Trust Fund | 20,865 | 19,290 |
| Local Government Division Trust Fund | 2,253 | 2,091 |
| Judicial Division Trust Fund | 77 | 72 |
| DPS Division Trust Fund | 2,599 | 2,377 |
| Voluntary Investment Program | 3,010 | 3,050 |
| Defined Contribution Retirement Plan | 774 | 738 |
| Deferred Compensation Plan | 1,071 | 1,074 |
| Health Care Trust Fund | 19,261 | 16,612 |
| DPS Health Care Trust Fund | 822 | 668 |
| Life Insurance Reserve | 805 | 871 |
| Total administrative expense | $62,316 | $56,910 |

Note: The ratio of administrative expenses to fiduciary net position for the Division Trust Funds is nine basis points (0.09 percent) for 2015 and eight basis points (0.08 percent) for 2014.

*See accompanying Independent Auditors' Report.*

SUPPLEMENTARY SCHEDULES

## SCHEDULE OF OTHER ADDITIONS

For the Years Ended December 31

*(Dollars in Thousands)*

| | State Division Trust Fund | School Division Trust Fund | Local Government Trust Fund | Judicial Division Trust Fund | DPS Division Trust Fund | Voluntary Investment Program | Defined Contribution Retirement Plan | Deferred Compensation Plan | HCTF | DPS HCTF | Life Insurance Reserve | TOTAL 2015 | TOTAL 2014 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Administrative fee income | $— | $— | $— | $— | $— | $— | $— | $— | $2,407 | $162 | $— | **$2,569** | $2,528 |
| Revenue sharing | — | — | — | — | — | 106 | 6 | 41 | — | — | — | **153** | 151 |
| Participant loan interest | — | — | — | — | — | 2,122 | — | 441 | — | — | — | **2,563** | 2,552 |
| Interfund transfers at retirement | 4,934 | — | — | 3,247 | — | — | — | — | — | — | — | **8,181** | 3,498 |
| Purchase service transfer to health care | — | — | — | — | — | — | — | — | 7,565 | 121 | — | **7,686** | 7,526 |
| Settlement income | 45 | 74 | 12 | — | 11 | — | — | — | 3 | — | — | **145** | 155 |
| Miscellaneous | 44 | 22 | 3 | — | — | 9 | 3 | 2 | 18 | 18 | — | **119** | 145 |
| **Total other additions** | **$5,023** | **$96** | **$15** | **$3,247** | **$11** | **$2,237** | **$9** | **$484** | **$9,993** | **$301** | **$—** | **$21,416** | **$16,555** |

## SCHEDULE OF OTHER DEDUCTIONS

For the Years Ended December 31

*(Dollars in Thousands)*

| | State Division Trust Fund | School Division Trust Fund | Local Government Trust Fund | Judicial Division Trust Fund | DPS Division Trust Fund | Voluntary Investment Program | Defined Contribution Retirement Plan | Deferred Compensation Plan | HCTF | DPS HCTF | Life Insurance Reserve | TOTAL 2015 | TOTAL 2014 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Interfund transfers at retirement | $— | $6,069 | $461 | $— | $1,651 | $— | $— | $— | $— | $— | $— | **$8,181** | $3,498 |
| Purchase service transfer to health care | 3,139 | 3,062 | 1,198 | 166 | 121 | — | — | — | — | — | — | **7,686** | 7,526 |
| Miscellaneous | 267 | 47 | 2 | — | 3 | 1,019 | 48 | 562 | 594 | 22 | — | **2,564** | 2,676 |
| **Total other deductions** | **$3,406** | **$9,178** | **$1,661** | **$166** | **$1,775** | **$1,019** | **$48** | **$562** | **$594** | **$22** | **$—** | **$18,431** | **$13,700** |

*See accompanying Independent Auditors' Report.*

## SUPPLEMENTARY SCHEDULES

### SCHEDULE OF INVESTMENT EXPENSES

For the Years Ended December 31
*(Dollars in Thousands)*

| | 2015 | 2014 |
|---|---|---|
| External Manager Expenses | | |
| Fixed income | $5,034 | $3,790 |
| Global equity | 34,650 | 39,202 |
| Private equity | 48,304 | 50,078 |
| Real estate | 48,695 | 41,859 |
| Opportunity fund | 8,086 | 6,736 |
| Short-term investments | 461 | 410 |
| Total external manager expenses | 145,230 | 142,075 |
| Internal manager expenses | 16,247 | 14,883 |
| Other investment expenses and custody fees | 3,915 | 2,965 |
| Defined contribution and deferred compensation plan investment expenses | 4,527 | 4,161 |
| Total investment expenses | $169,919 | $164,084 |

### SCHEDULE OF PAYMENTS TO CONSULTANTS

For the Years Ended December 31
*(Dollars in Thousands)*

| | 2015 | 2014 |
|---|---|---|
| Professional Contracts | | |
| Actuarial | $652 | $433 |
| Audits | 258 | 292 |
| Legal and legislative counsel | 2,882 | 2,554 |
| Computer services and consulting | 1,272 | 1,004 |
| Management consulting | 1,137 | 1,121 |
| Health care consulting | 311 | 243 |
| Other | 713 | 1,038 |
| Total payments to consultants[1] | $7,225 | $6,685 |

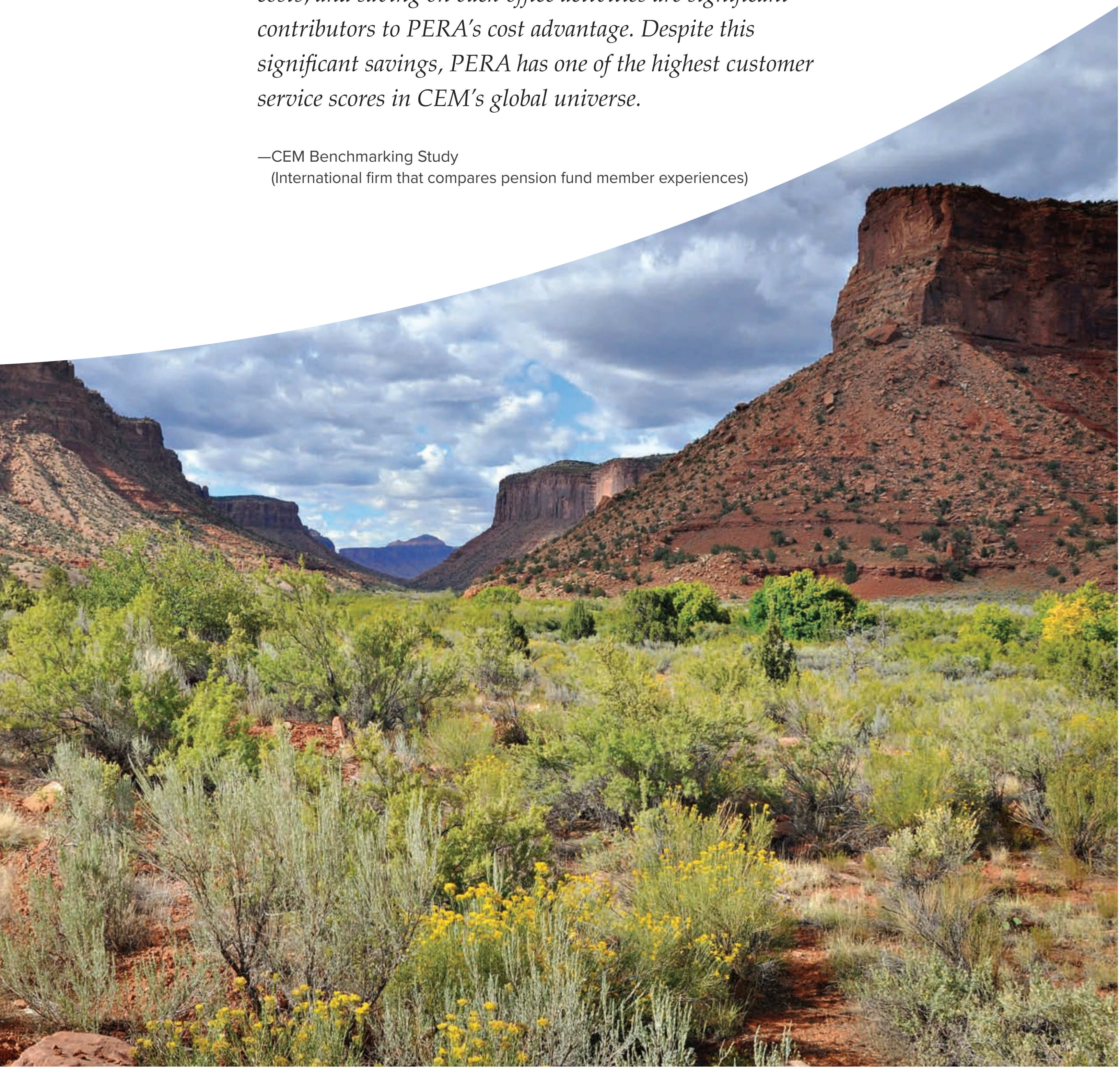
[1] Excludes investment advisers.

*See accompanying Independent Auditors' Report.*

# **Proven** Exceptional

*Colorado PERA's administrative costs are below the peer average by $9 for each of the more than 500,000 members and retirees. Higher productivity, lower third-party costs, and saving on back-office activities are significant contributors to PERA's cost advantage. Despite this significant savings, PERA has one of the highest customer service scores in CEM's global universe.*

—CEM Benchmarking Study
(International firm that compares pension fund member experiences)



# COLORADO PERA REPORT ON INVESTMENT ACTIVITY

Does Not Include the Two Defined Contribution Pension and Deferred Compensation Trust Funds

## State Law

State law gives complete responsibility for the investment of Colorado PERA's funds to the PERA Board of Trustees (Board), with some stipulations including:

- The aggregate amount of moneys invested in corporate stocks or corporate bonds, notes, or debentures, which are convertible into corporate stock or in investment trust shares cannot exceed 65 percent of the then book value of the fund.
- No investment of the fund in common or preferred stock, or both, of any single corporation can exceed 5 percent of the then book value of the fund.
- The fund cannot acquire more than 12 percent of the outstanding stock or bonds of any single corporation.
- The origination of mortgages or deeds of trust on real residential property is prohibited.

Additionally, Colorado Revised Statutes (C.R.S.) § 24-54.8-101 imposes targeted divestment from companies with active operations in the Sudan.

### Colorado PERA Board's Statutory Fiduciary Responsibility

By State law, the management of PERA's retirement fund is vested in the Board who is held to the standard of conduct of fiduciaries in discharging their responsibilities. According to C.R.S. § 24-51-207(2), the Board, as fiduciaries, must carry out their functions solely in the interest of PERA members and benefit recipients and for the exclusive purpose of providing benefits.

## Goal

The function of PERA is to provide present and future retirement or survivor benefits for its members. The investment function is managed in a manner to promote long-term financial security for our membership while maintaining the stability of the fund.

## Overview of Investment Policy

PERA's investment policy outlines the investment philosophy and guidelines within which the fund's investments will be managed, and includes the following:

- Strategic asset allocation is the most significant factor influencing long-term investment performance and asset volatility.
- The fund's liabilities are long-term and the investment strategy will therefore be long-term in nature.
- The asset allocation policy will be periodically re-examined to ensure its appropriateness to the then-prevailing liability considerations.
- As a long-term investor, PERA will invest across a wide spectrum of investments in a prudent manner.
- Active management may be expected to add value over passive investment alternatives under appropriate conditions.

The Board determines the strategic asset allocation policy for the fund. In 2014, the Board commissioned an Asset Liability Study prepared by Aon Hewitt Investment Consulting, Inc. (Aon Hewitt). The objective of the study was to determine the optimal strategic asset allocation policy that would ultimately allow PERA to meet its benefit obligations, while also ensuring that PERA incurs appropriate levels of risk. On March 20, 2015, the Board voted to change the strategic asset allocation policy of the fund effective July 1, 2015. The new strategic asset allocation contains an interim target allocation as of July 1, 2015, and a long-term target allocation and specifies ranges within which each asset class may operate. The long-term target allocation will be achieved over time. PERA staff and Aon Hewitt are responsible for annually recommending interim policy targets to the Board until the long-term target allocation is achieved.

### ASSET ALLOCATION TARGETS AND RANGES

| | Interim Asset Allocation Target Effective July 1, 2015 | Long-Term Asset Allocation | Target Range Effective July 1, 2015 |
|---|---|---|---|
| Global Equity | 55.0% | 53.0% | 47.0% – 59.0% |
| Fixed Income | 24.0% | 23.0% | 18.0% – 28.0% |
| Private Equity[1,2] | 7.5% | 8.5% | 5.0% – 12.0% |
| Real Estate | 7.5% | 8.5% | 5.0% – 12.0% |
| Opportunity Fund[3] | 5.0% | 6.0% | 0.0% – 9.0% |
| Cash and Short-Term Investments | 1.0% | 1.0% | 0.0% – 3.0% |

[1] Effective July 1, 2015, the name of the Alternative Investment asset class was changed to Private Equity.

[2] The Private Equity asset class has exposure to private equity, venture capital, secondary interests in private equity funds, and distressed debt.

[3] As of December 31, 2015, the Opportunity Fund principally consists of investments in timber, risk-parity, tactical, credit, and other opportunistic strategies.

The Asset Liability Study considered expected investment returns, risks, and correlations of returns. The characteristics of the fund's liabilities were analyzed in conjunction with expected investment risks and returns. The targeted strategic asset allocation is designed to provide appropriate diversification and to balance the expected total rate of return with the volatility of expected returns. The asset allocation targets are adhered to through the implementation of a rebalancing policy. Investments are managed and monitored in a manner which seeks to balance return and risk within the asset/liability framework. The Chief Investment Officer is authorized to execute investment transactions on behalf of the Board. Assets are

COLORADO PERA REPORT ON INVESTMENT ACTIVITY
Does Not Include the Two Defined Contribution Pension and Deferred Compensation Trust Funds

managed both internally and externally. In making investment decisions, the Board and staff utilize external experts in various fields including risk and performance analysis, portfolio construction, rebalancing techniques, and other important investment functions and issues.

## Basis of Presentation

Aon Hewitt, the Board's Investment Performance consultant, provides the investment returns for the fund based on data made available by the fund's custodian, The Northern Trust Company (Northern Trust). Performance calculations were prepared using time-weighted rates of return and are net-of-fees unless otherwise indicated. Returns for periods longer than one year are annualized.

## Corporate Governance

### General Policy

Although PERA is not subject to the Employee Retirement Income Security Act of 1974 (ERISA), the Board complies with the position taken by the U.S. Department of Labor (DOL) in February 1988. The DOL has stated that the right to vote shares of stock owned by a pension plan is, in itself, an asset of the plan, and therefore the fiduciary's responsibility to manage the assets includes proxy voting. PERA regularly works with various member organizations and federal oversight and legislative committees to promote and support national standards of corporate governance that protect long-term investor interests.

### Colorado PERA Board's Shareholder Responsibility Committee

To assist the Board in carrying out its fiduciary responsibilities in voting proxies, the Board established a Shareholder Responsibility Committee. The PERA General Counsel serves as an adviser to the Committee. The Board and the Shareholder Responsibility Committee have delegated to its staff in the Corporate Governance and Legal Services Division the authority to execute and vote all proxies according to the PERA Proxy Voting Policy. Proxy issues are reviewed by staff on a case-by-case basis and then voted according to guidelines established by the PERA Proxy Voting Policy. PERA retains proxy advisers to assist in the proxy voting process.

### Proxy Voting Policy

The PERA Proxy Voting Policy sets forth directives on a broad range of issues. The voting of proxy ballots for all domestic and non-U.S. stocks is accomplished by PERA's Corporate Governance and Legal Services Department. PERA regularly reviews and revises the Proxy Voting Policy to keep it up to date with established corporate governance standards. PERA's Proxy Voting Policy can be viewed on PERA's website at www.copera.org.

*(The Colorado PERA Report on Investment Activity was prepared by internal staff.)*

## INVESTMENT BROKERS/ADVISERS (INTERNALLY MANAGED ASSETS)

Does Not Include the Two Defined Contribution Pension and Deferred Compensation Trust Funds

Abel/Noser Corp.
Alignment Capital Group, LLC
Amherst Pierpont
Baird (Robert W.) & Co., Incorporated
Bank of America Merrill Lynch
Barclays Capital Inc.
BNP Paribas Securities Corp.
BNY Mellon
Calyon Securities (USA), Inc.
Cantor Fitzgerald & Co.
Citigroup Global Markets Inc.
Credit Suisse Securities (USA) LLC
CRT Capital Group LLC
Davidson (D.A.) & Co. Inc.
Deutsche Bank Securities Inc.
FTN Financial Services Corp.
Goldman Sachs & Co.
HSBC Securities (USA) Inc.
INVESCO Realty Advisors
J.P. Morgan Securities, Inc.
Jefferies & Co., Inc.
Keybanc Capital Markets, Inc.
L&B Realty Advisors, LLP
Liquidnet, Inc.
Loop Capital Markets LLC
MarketAxess Corp.
Merrill Lynch, Pierce, Fenner & Smith Inc.
Mizuho Securities USA, Inc.
Morgan Stanley & Co. Inc.
Nomura Securities International, Inc.
Piper Jaffray & Co.
RBC Capital Markets Corporation
RBS Securities, Inc.
RREEF Real Estate Investment Managers
Sanford C. Bernstein & Co., LLC
Sidoti & Company, LLC
Sterne Agee & Leach, Inc
Stifel, Nicolaus & Company Incorporated
Susquehanna International Group, LLC
TD Securities (USA) LLC
The Northern Trust Company
Themis Trading LLC
U.S. Bancorp
UBS Securities, LLC
Wells Fargo Securities, LLC

*Certain broker agreements include provisions for commission recapture.*

## SCHEDULE OF COMMISSIONS (INTERNALLY MANAGED ASSETS)

For the Year Ended December 31, 2015
(Dollars in Thousands)

| Asset Class | 2015 Value |
|---|---|
| Fixed Income[1] | $14,075 |
| Global Equity | 2,227 |
| Total commissions | 16,302 |
| Commission recapture income | (42) |
| **Net commissions** | **$16,260** |

[1] Fixed income commissions are estimated.

# INVESTMENT SUMMARY

Does Not Include the Two Defined Contribution Pension and Deferred Compensation Trust Funds
(Dollars in Thousands)

| | Fair Value Per Financial Statement December 31, 2015 | Reallocation[1] | Fair Value Per Investment Portfolio December 31, 2015 | Interim Asset Allocation Target[2] Eff. July 1, 2015 | Percent of Total Fair Value 2015 | 2014 | 2013 |
|---|---|---|---|---|---|---|---|
| Global Equity | $23,624,268 | $215,085 | $23,839,353 | 55.0% | **55.5%** | 56.5% | 58.4% |
| Fixed Income | 10,310,251 | 297,266 | 10,607,517 | 24.0% | **24.7%** | 24.9% | 23.4% |
| Private Equity[3] | 3,497,759 | 1,711 | 3,499,470 | 7.5% | **8.2%** | 7.8% | 7.8% |
| Real Estate | 3,716,118 | (23,030) | 3,693,088 | 7.5% | **8.6%** | 7.4% | 7.1% |
| Opportunity Fund | 935,777 | — | 935,777 | 5.0% | **2.2%** | 2.5% | 2.5% |
| Cash and Short-Term Investments | | | | | | | |
| Operating Cash | 327 | (327) | — | | | | |
| Investment Cash and Short-Term | 756,223 | (400,368) | 355,855 | 1.0% | **0.8%** | 0.9% | 0.8% |
| Net Investment Receivables and Payables | 90,664 | (90,664) | — | | | | |
| **Total Investments** | **$42,931,387** | **($327)** | **$42,931,060** | **100.0%** | **100.0%** | **100.0%** | **100.0%** |

[1] Investment receivables, payables, accruals, and cash and short-term have been reallocated back to the investment portfolios that hold them.

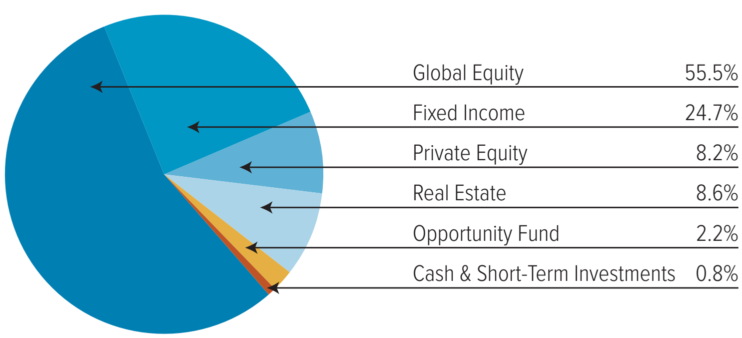
[2] On March 20, 2015, the Board voted to change the strategic asset allocation policy of the fund effective July 1, 2015. See page 119 for more details.

[3] Effective July 1, 2015, the name of the Alternative Investment asset class changed to Private Equity.

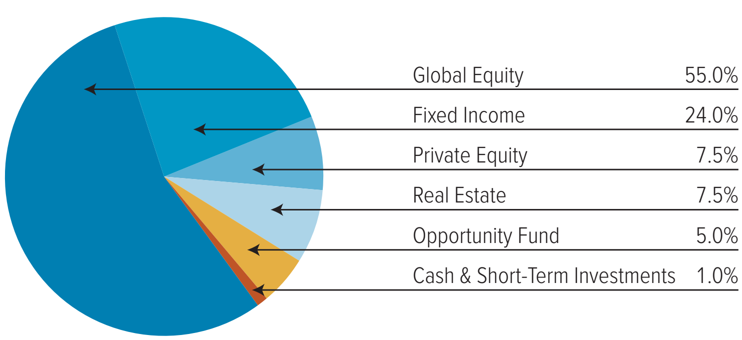
## Asset Allocation at Fair Value

Does Not Include the Two Defined Contribution Pension and Deferred Compensation Trust Funds
As of December 31, 2015

Asset Allocation at Fair Value




Interim Target Allocation



## SCHEDULE OF INVESTMENT RESULTS

Does Not Include the Two Defined Contribution Pension and Deferred Compensation Trust Funds
As of December 31, 2015

Aon Hewitt provides the investment returns for the fund based on data made available by Northern Trust. Listed below are the annualized one-, three-, five-, and ten-year net-of-fees time-weighted rates of return for each asset class and their respective benchmarks.

| | 2015 | 3–Year | 5–Year | 10–Year |
|---|---|---|---|---|
| **PERA Total Portfolio** | **1.5%** | 7.4% | 7.3% | 6.0% |
| Total Fund Policy Benchmark[1] | **0.5%** | 7.3% | 7.2% | 5.9% |
| Median Plan (BNY Mellon Performance and Risk Analytics' and Investment Metrics' Median Public Fund Universe) | **(0.2%)** | 6.7% | 6.6% | 5.5% |
| **Global Equity** | **(0.3%)** | 8.9% | 8.0% | 5.7% |
| Global Equity Custom Benchmark[1] | **(2.2%)** | 7.9% | 7.2% | 5.3% |
| **Fixed Income** | **0.3%** | 1.5% | 3.7% | 5.0% |
| Fixed Income Custom Benchmark[1] | **0.3%** | 1.5% | 3.5% | 4.7% |
| **Private Equity** | **5.6%** | 11.2% | 10.1% | 9.5% |
| Private Equity Custom Benchmark[2] | **6.0%** | 18.4% | 15.5% | 10.6% |
| **Real Estate** | **16.1%** | 14.5% | 13.9% | 6.8% |
| Real Estate Custom Benchmark[3] | **14.5%** | 13.3% | 13.2% | 6.4% |
| **Opportunity Fund** | **(3.0%)** | (0.2%) | 0.1% | — |
| Opportunity Fund Benchmark[4] | **(0.9%)** | 2.2% | 2.2% | — |
| **Cash** | **0.1%** | 0.1% | 0.1% | 1.3% |
| BofA Merrill Lynch U.S. 3-Month Treasury Bill Index | **0.1%** | 0.1% | 0.1% | 1.2% |

Note: Performance calculations were prepared using net-of-fees time-weighted rates of return.

[1] The PERA Board adopted benchmarks beginning April 1, 2004, for each of the various asset classes. The adopted benchmarks have changed over time and, accordingly, the benchmark returns presented represent a blend, as follows:

- The Total Fund Policy Benchmark—A combination of 55 percent of the Global Equity Custom Benchmark; 24 percent of the Fixed Income Custom Benchmark; 7.5 percent of the Real Estate Custom Benchmark; 7.5 percent of the Private Equity Custom Benchmark, 5 percent of the Opportunity Fund Benchmark; and 1 percent of the BofA Merrill Lynch U.S. 3-Month Treasury Bill Index. Beginning January 2012 and prior to July 2015, a combination of 56 percent of the Global Equity Custom Benchmark; 25 percent of the Fixed Income Custom Benchmark; 7 percent of the Real Estate Custom Benchmark; 7 percent of the Private Equity Custom Benchmark, and 5 percent of the Opportunity Fund Benchmark. Beginning January 2011 and prior to January 2012, a combination of 56 percent of the Global Equity Custom Benchmark; 25 percent of the Fixed Income Custom Benchmark; 7 percent of the Real Estate Custom Benchmark; 7 percent of the Private Equity Custom Benchmark, and 5 percent of the Public Markets Benchmark. Beginning January 2009 and prior to January 2011, a combination of 58 percent of the Global Equity Custom Benchmark; 25 percent of the Fixed Income Custom Benchmark; 7 percent of the Real Estate Custom Benchmark; 7 percent of the Private Equity Custom Benchmark, and 3 percent of the Public Markets Benchmark. For 2008, a combination of 43 percent of the Dow Jones Wilshire 5000 Stock Index; 15 percent of the MSCI ACWI ex-U.S. Index; 25 percent of the Barclays Capital Universal Bond Index; 7 percent of the Real Estate Custom Benchmark; 7 percent of the Private Equity Custom Benchmark, and 3 percent of the Public Markets Benchmark. Prior to January 1, 2008, the weight for the DJ Wilshire 5000 was 45 percent and the NCREIF Timber Index (which was replaced by the Public Markets Benchmark in 2008) was 1 percent. Prior to January 1, 2006, the weight for the MSCI ACWI ex-U.S. Index was 14 percent and the Private Equity Custom Benchmark was 8 percent.
- Global Equity Custom Benchmark—The MSCI ACWI IMI. Prior to February 1, 2013, 52.0 percent DJ U.S. Total Stock Market Index and 48.0 percent MSCI ACWI ex-U.S. Index. Prior to October 1, 2012, 58.0 percent DJ U.S. Total Stock Market Index and 42.0 percent MSCI ACWI ex-U.S. Index. Prior to April 2012, 64.0 percent DJ U.S. Total Stock Market Index and 36.0 percent MSCI ACWI ex-U.S. Index. Prior to October 1, 2011, 69.0 percent DJ U.S. Total Stock Market Index and 31.0 percent MSCI ACWI ex-U.S. Index. Prior to April 1, 2011, 74.1 percent DJ U.S. Total Stock Market Index (replaced the DJ Wilshire 5000 in 2009) and 25.9 percent MSCI ACWI ex-U.S. Index. Prior to January 1, 2008, 75 percent DJ Wilshire 5000 and 25 percent MSCI ACWI ex-U.S. Index. Prior to January 1, 2006, 76.3 percent DJ Wilshire 5000 and 23.7 percent MSCI ACWI ex-U.S. Index.
- Fixed Income Custom Benchmark—The Barclays Capital Universe Index. Beginning July 1, 2010 and prior to July 1, 2015, 98 percent of the Barclays Capital Universal Bond Index and 2 percent of the Barclays Capital Long Government/Credit Index. Prior to July 1, 2010, Barclays Capital Universal Bond Index. Prior to April 1, 2004, the Barclays Capital Aggregate Bond Index.

[2] The Burgiss Time Weighted Rate of Return Benchmark. Prior to January 1, 2015, the DJ U.S. Total Stock Market Index plus 250 basis points annually. Prior to January 1, 2012, DJ U.S. Total Stock Market Index (replaced the DJ Wilshire 5000 in 2009) plus 300 basis points annually.

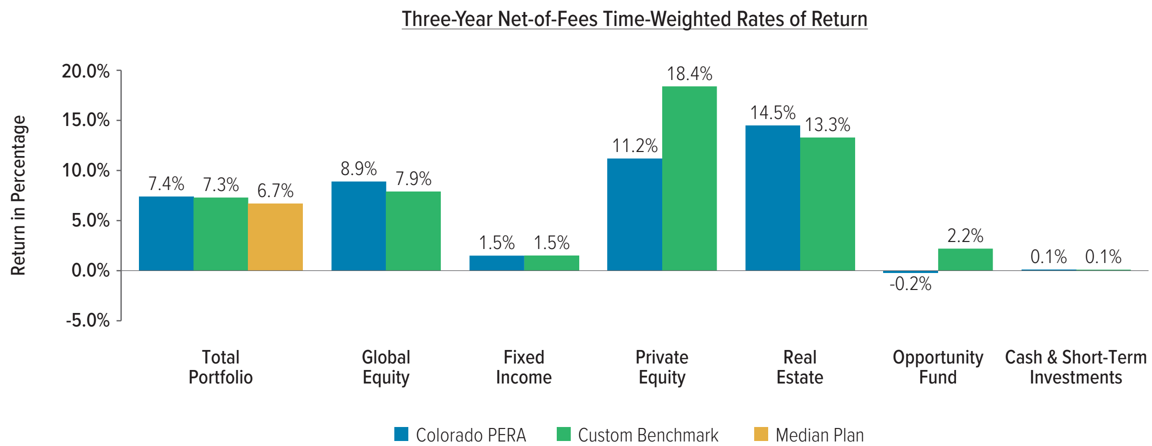
[3] NCREIF Open End Diversified Core Equity Index (NFI ODCE) plus 50 basis points annually. Prior to January 1, 2012, the NFI ODCE plus 100 basis points annually. Prior to January 1, 2006, a combination of 45 percent of the NFI ODCE Index,15 percent of the NAREIT Index, 20 percent of the Salomon Brothers Mortgage-Backed Securities Index, and 20 percent of the GPR General European Property Index.

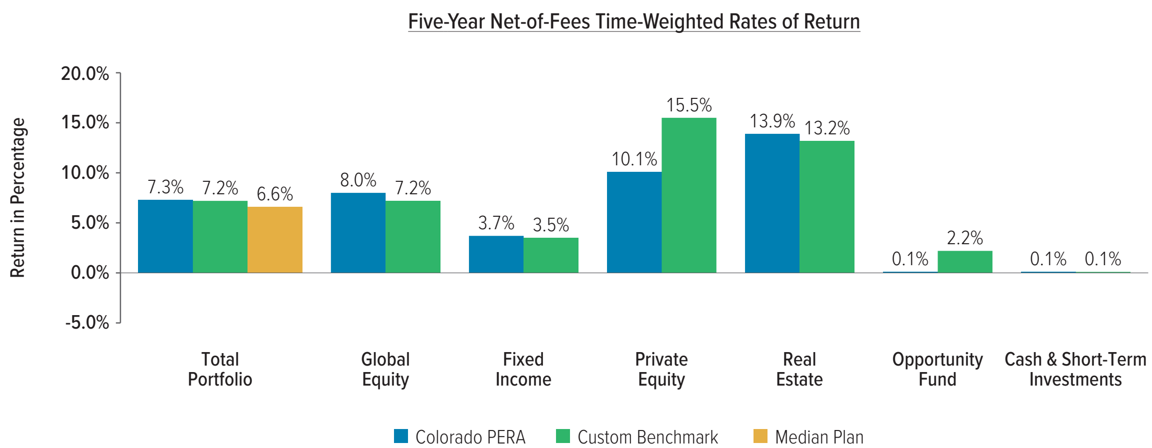
[4] A market value weighted aggregate of the benchmarks of the individual strategies included in the Opportunity Fund. Prior to January 2012, a combination of 69.1 percent of the Global Equity Custom Benchmark and 30.9 percent of the Fixed Income Custom Benchmark. Beginning January 1, 2008 and prior to January 2011, a combination of 51.8 percent DJ U.S. Total Stock Market Index (replaced the DJ Wilshire 5000 in 2009), 18.1 percent MSCI ACWI ex-U.S. Index, and 30.1 percent Fixed Income Custom Benchmark.

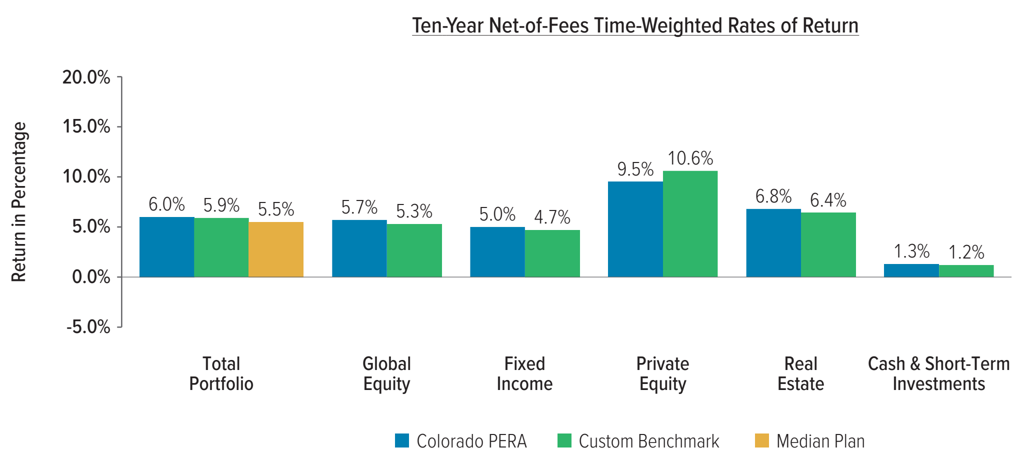
## SCHEDULE OF INVESTMENT RESULTS

Does Not Include the Two Defined Contribution Pension and Deferred Compensation Trust Funds
As of December 31, 2015

Aon Hewitt provides the investment returns based on data made available by Northern Trust. Listed below are the three-, five-, and ten-year net-of-fees time-weighted rates of return for the total fund and each asset class and their respective benchmarks.



# FUND PERFORMANCE EVALUATION

Does Not Include the Two Defined Contribution Pension and Deferred Compensation Trust Funds
(Performance returns are net-of-fees unless otherwise indicated)

## Evaluation

Aon Hewitt and Northern Trust are retained by PERA to evaluate fund performance. Aon Hewitt is also used for the Real Estate portfolio performance evaluation and industry comparisons. In their analysis, Aon Hewitt and Northern Trust include all investments within the portfolio, including cash and accrued income. They also compute the annual rates of return. In order to provide fund returns inclusive of all asset classes, performance calculations are prepared using time-weighted rates of return and are annualized for periods greater than one year.

## Asset Allocation

PERA's long-term strategic asset allocation policy sets forth specific portfolio targets. Asset allocation targets effective at the end of 2015, approved by the Board in 2015, are as follows: Global Equity 55 percent, Fixed Income 24 percent, Private Equity 7.5 percent, Real Estate 7.5 percent, Opportunity Fund 5 percent, and Cash 1 percent.

## Total Portfolio Results

PERA adopted a policy benchmark, which is a passive representation of the asset allocation policy, as of April 1, 2004. For the year ended December 31, 2015, PERA's total fund returned 1.5 percent compared to the policy benchmark return of 0.5 percent. For the three- and five-year periods ending December 31, 2015, PERA's total fund returned 7.4 percent and 7.3 percent, respectively, compared to 7.3 percent and 7.2 percent, respectively, for the policy benchmark for these periods. The total fund has outperformed the policy benchmark on the one-, three-, and five-year time periods.

For the year ended December 31, 2015, the total fund returned 1.5 percent, compared to the BNY Mellon Performance and Risk Analytics' and Investment Metrics' Median Public Fund Universe return of negative 0.2 percent. As of December 31, 2015, the BNY Mellon Performance and Risk Analytics' and Investment Metrics' Median Public Fund Universe measure was comprised of 95 public pension funds with assets of approximately $1.4 trillion. For the three- and five-year periods ending December 31, 2015, the BNY Mellon Performance and Risk Analytics' and Investment Metrics' Median Public Fund Universe returned 6.7 percent and 6.6 percent on an annualized basis, respectively. PERA's 10-year annualized rate of return was 6.0 percent compared to the BNY Mellon Performance and Risk Analytics' and Investment Metrics' Median Public Fund Universe return of 5.5 percent.

## Global Equity

Global equity markets had a disappointing 2015. Many regional markets produced negative returns, with the MSCI World (developed markets) and the MSCI Emerging Markets Indexes down by 0.9 and 14.9 percent (in U.S. dollar terms), respectively. The disappointing emerging market performance marked the third consecutive year of declines.

U.S. equity markets had their worst annual performance since 2008. This performance follows three years of double-digit gains. Domestic equity prices rose early in the year, but lost much of that momentum in August, as concerns over a slowdown in China hurt commodity prices and emerging market economic fundamentals. In addition, uncertainty around the timing of the Federal Reserve's (Fed) first interest rate increase in nearly a decade left many investors cautious throughout the year.

The biggest U.S. sector gains for 2015 were in Consumer Discretionary and Health Care. The Energy sector was the biggest decliner in the S&P 500, falling 21 percent as U.S. crude oil prices declined over 30 percent to $37 a barrel. 2015 saw a continuation of the oil price slide that began in 2014. Some hoped that OPEC would curtail production and bring back some order, but when that didn't happen, oil prices sank to multi-year lows.

European equities generally performed well in 2015 (up over 6 percent in local currency), as the European Central Bank (ECB) ramped up monetary stimulus. Asian stock markets finished mixed, while the local Chinese stock market took investors on a volatile ride in 2015, skyrocketing early in the year and then crashing during the summer months. Much of the difference between developed market and emerging market performance in 2015 can be attributed to the impact of the strong dollar and weak commodity prices.

In 2015, Colorado PERA's Global Equity portfolio returned negative 0.3 percent, outperforming its custom benchmark's return of negative 2.2 percent. The Global Equity portfolio has outperformed its custom benchmark over the one-, three-, and five-year periods.

## Fixed Income

Fixed income investors faced a challenging environment in 2015. The year initially held great promise with a strengthening U.S. domestic economy looking set to break out of seven years of slow growth. The Fed hinted that a change in monetary policy was approaching as new jobs were created and inflation was set to accelerate after a commodity induced slowdown in 2014. This outlook was ultimately challenged by further declines in energy prices, heightened geopolitical risk, and slowing growth in China and other emerging economies. Led by the ECB's commencement of a €1 trillion quantitative easing program, numerous central banks continued to reduce interest rates and inject liquidity via bond repurchase programs. While the U.S. economy improved over the summer, the international outlook deteriorated further and commodity prices declined precipitously. The Fed did not raise short term rates in September and waited until December to raise rates for the first time

FUND PERFORMANCE EVALUATION
Does Not Include the Two Defined Contribution Pension and Deferred Compensation Trust Funds
(Performance returns are net-of-fees unless otherwise indicated)

since 2006, with the caveat that further increases would proceed at a measured pace and be dependent upon incoming economic data.

Interest rates responded to the change in Fed policy with short-term rates rising by almost 40 basis points in expectation of a more restrictive monetary policy, while longer term rates moved only slightly higher showing confidence that the Fed would act to stem future inflation threats. Credit markets showed the most weakness with high yield bonds sharply underperforming. Investment grade corporations issued a record $1.3 trillion of debt, largely to fund merger and acquisition activity and shareholder remuneration, pressuring credit spreads wider.

During 2015, PERA's Fixed Income portfolio performed in-line with its custom benchmark, returning 0.3 percent versus its custom benchmark return of 0.3 percent. The portfolio has outperformed its custom benchmark over the three- and five-year time periods.

## Private Equity

2015 continued to be one of the most active private equity investment environments in recent history as many of the primary drivers carried over from 2014. Even with mid-year public equity market volatility, high-volume private equity fundraising continued. This, along with inexpensive and readily available leverage, contributed to strong investment activity. The abundance of available capital and strategic interest in mergers and acquisitions (M&A) also fueled high purchase prices across virtually all industry sectors. Mitigating the high-valuation environment, private equity sponsors continued to focus on combining platform company investments with add-on acquisitions in order to take advantage of synergistic cost savings to support increasing portfolio company values. Given the high level of activity and rich pricing environment, many private equity sponsors were persistent in generating liquidity for their more mature investments. Notwithstanding a slowdown in the initial public offering market during the latter half of 2015, record M&A activity helped keep transaction levels near all-time highs while providing liquidity to private equity sponsors.

The venture-backed market was particularly active in 2015, garnering much attention as a record number of highly-valued, high-growth companies raised capital or sought liquidity, either through additional rounds of venture capital funding or the public markets. 2015 was a banner year for "unicorn" investments, or venture-backed investments valued at greater than $1 billion. While many of these companies continue to be successful investments, several saw meaningful corrections in value as the market's optimism waned later in the year.

Cash flow for the year was positive due to significant activity throughout the year. The portfolio paid $667 million in capital calls and received $818 million in cash and stock distributions for the year.

PERA's Private Equity portfolio returned 5.6 percent in 2015 compared with its custom benchmark return of 6.0 percent. The portfolio underperformed its custom benchmark over the one-, three-, and five-year timeframes. Private equity investments tend to lag public stock market returns when the stock market has a large move. Effective in 2015, the custom benchmark was changed to a private equity benchmark rather than a public stock market benchmark on a prospective basis to better reflect private equity market performance. The portfolio's since inception net internal rate or return as of December 31, 2015, was 10.4 percent compared to its custom benchmark's since inception internal rate of return of 10.4 percent.

## Real Estate

2015 was a strong year for commercial real estate. A combination of low interest rates with significant capital flows from institutional investors, especially international, caused increased demand. Transaction activity was high as capital pursued major market, core real estate. Fundamentals remained relatively healthy in all product types as leasing velocity and job growth were positive. New construction was muted with exception in multifamily housing, which supported an increasing rental rate environment.

Industrial fundamentals continued to remain robust, driven by the strength of the warehouse segment. The rapid expansion of e-commerce supply chain logistics created strong demand in this sector. Multifamily annual effective rent growth reached the highest level since 2005. Office vacancy rates declined to the lowest level since 2008. Retail vacancy remained lowest at regional malls and lifestyle centers. E-commerce-resistant formats, mainly perishable goods, recreation, and essential services, reported the strongest leasing trends. In 2015, the U.S. hotel sector reported a record level of overall rooms sold and occupancy.

Caution signs, however, remain on the horizon. Pricing in commercial real estate approached, and in some U.S. markets exceeded, 2008 levels. Capital appears to be moving up the risk curve toward value-add, development, and non-core market opportunities.

In 2015, the Real Estate portfolio had a total return of 16.1 percent, compared to its custom benchmark of 14.5 percent. The Real Estate portfolio outperformed its custom benchmark on the one-, three-, and five-year periods.

FUND PERFORMANCE EVALUATION
Does Not Include the Two Defined Contribution Pension and Deferred Compensation Trust Funds
(Performance returns are net-of-fees unless otherwise indicated)

## Opportunity Fund

The majority of alternative markets experienced low to negative returns for the year and multi-asset class investing provided few opportunities to enhance performance. As of December 31, 2015, the Opportunity Fund was principally comprised of investments in timber, risk parity, tactical, credit, and other opportunistic strategies.

Commodities experienced the third straight year of negative returns. A confluence of bearish factors, including sluggish economic growth in China and a rising U.S. dollar, continued to depress the commodities market.

Risk parity strategies generally performed poorly in 2015 due to the component of the strategy that is inflation sensitive, such as commodities and Treasury Inflated Protected Securities (TIPS). Also, many risk parity strategies were hurt by declining emerging market equities and currencies. As a long-term strategy, risk parity seeks to diversify across a variety of asset classes in a balanced way. However, over shorter time horizons, the significant decline of a single asset class, such as commodities, can result in underperformance relative to traditional portfolios.

Timber production and prices are closely tied to housing starts, and U.S. new home construction experienced a gradual recovery from 2009 levels. Although the timber portfolio had strong absolute returns, foreign currencies' weakening relative to the U.S. dollar negatively impacted the portfolio's overall performance.

Tactical opportunities performed well during the year. Against the challenging backdrop described above, the unique risk/return profiles of the portfolio's tactical investments were able to mitigate some volatility experienced during the year, and in some cases, take advantage of it, capitalizing on long-term investment horizons.

In 2015, PERA's Opportunity Fund portfolio returned negative 3.0 percent compared to its custom benchmark return of negative 0.9 percent. The Opportunity Fund has underperformed its custom benchmark over the one-, three-, and five-year periods.

# INVESTMENT SECTION SCHEDULES

Does Not Include the Two Defined Contribution Pension and Deferred Compensation Trust Funds
*(Dollars in Thousands)*

## PROFILE OF INVESTMENTS IN COLORADO

As of December 31, 2015

| | Fair Value |
|---|---|
| Common stock of companies headquartered in Colorado | $113,089 |
| Private placements | 12,424 |
| Real estate | 54,199 |
| Portion of general partnerships investing in Colorado companies[1] | 165,892 |
| Portion of Colorado-based general partnerships or funds—committed to future funding | 47,370 |
| Bonds and notes of companies headquartered in Colorado | 54,915 |
| **Total** | **$447,889** |

[1]Private equity partnership investments domiciled in Colorado.

## LARGEST EQUITY HOLDINGS BY FAIR VALUE[1]

As of December 31, 2015

| | Shares | Fair Value |
|---|---|---|
| Apple Inc. | 3,412,368 | $359,186 |
| Alphabet Inc. | 362,420 | 281,966 |
| Microsoft Corp. | 4,582,482 | 254,236 |
| Amazon.com, Inc. | 285,018 | 192,641 |
| Wells Fargo & Co. | 3,004,668 | 163,334 |
| JP Morgan Chase & Co. | 2,321,468 | 153,287 |
| Walt Disney Co. | 1,423,312 | 149,562 |
| Nestle SA | 1,964,051 | 146,274 |
| Altria Group Inc. | 2,360,282 | 137,392 |
| Merck & Co. Inc. | 2,542,939 | 134,318 |

[1]The top ten holdings do not include commingled funds.

Note: A complete list of holdings is available upon request.

## LARGEST FIXED INCOME HOLDINGS BY FAIR VALUE[1]

As of December 31, 2015

| | Par Value | Income Rate | Maturity Date | Fair Value |
|---|---|---|---|---|
| US Treasury Notes | $168,000 | 2.750% | 2/15/24 | $174,989 |
| US Treasury Notes | 155,000 | 1.375% | 2/28/19 | 154,897 |
| US Treasury Notes | 149,000 | 1.500% | 10/31/19 | 148,534 |
| US Treasury Notes | 145,000 | 1.625% | 7/31/19 | 145,504 |
| US Treasury Notes | 140,000 | 2.625% | 8/15/20 | 145,430 |
| GNMAII POOL #MA3175 | 132,951 | 4.500% | 10/20/45 | 143,082 |
| US Treasury Notes | 115,000 | 1.375% | 2/29/20 | 113,679 |
| US Treasury Notes | 105,000 | 0.625% | 4/30/18 | 103,651 |
| US Treasury Notes | 105,000 | 2.000% | 2/15/25 | 102,642 |
| GNMA POOL #MA3309 | 99,756 | 3.000% | 12/20/45 | 101,245 |

[1]The top ten holdings do not include commingled funds.

Note: A complete list of holdings is available upon request.

# VOLUNTARY INVESTMENT PROGRAM, DEFINED CONTRIBUTION RETIREMENT PLAN, AND DEFERRED COMPENSATION PLAN (PLANS) REPORT ON INVESTMENT ACTIVITY

*(Dollars in Thousands)*

## Overview

PERA established the Voluntary Investment Program (PERAPlus 401(k) Plan) on January 1, 1985, under Section 401(k) of the Internal Revenue Code (IRC). The Defined Contribution Retirement Plan (DC Plan) was established January 1, 2006, as an IRC § 401(a) governmental profit-sharing plan. On July 1, 2009, PERA assumed the administrative and fiduciary responsibility for the State of Colorado Deferred Compensation Plan, now known as the PERAPlus 457 Plan. PERA publishes an Annual Report for the PERAPlus 401(k), the DC Plan, and the PERAPlus 457 Plan and distributes it to all plan participants.

The PERAPlus 401(k) Plan includes voluntary contributions made by employees of PERA-affiliated employers in the State, School, Local Government, Judicial, and Denver Public Schools Division Trust Funds. These contributions are entirely separate from those that members make to the defined benefit plan each month. On December 31, 2015, the PERAPlus 401(k) Plan had a fiduciary net position (FNP) of $2,644,099 and 68,791 accounts, representing a decrease of 1.4 percent in the FNP and an increase of 0.8 percent increase in the number of accounts from December 31, 2014.

The DC Plan offers a defined contribution alternative to the PERA defined benefit plan for certain new employees of State agencies and departments, most community colleges, and the District Attorney within each Judicial District, and if authorized by the county and the District Attorney, the attorneys within each Judicial District. On December 31, 2015, the DC Plan had a FNP of $141,026 and 5,403 accounts, representing increases of 7.3 percent in the FNP and 7.1 percent in the number of accounts from December 31, 2014.

The PERAPlus 457 Plan includes voluntary contributions made by employees working for a PERA-affiliated employer that have also affiliated with the PERAPlus 457 Plan. The employees of some employers that had affiliated with the State of Colorado Deferred Compensation Plan prior to July 1, 2009, and were not affiliated with PERA, remain eligible to contribute. On December 31, 2015, the PERAPlus 457 Plan had a FNP of $691,676 and 17,814 accounts, representing increases of 0.3 percent in the FNP and 0.4 percent in the number of accounts from December 31, 2014.

### PERAPLUS 401(K) PLAN YEAR-END STATISTICS

| Year | Fiduciary Net Position | Number of Accounts |
|---|---|---|
| 2006 | $1,522,244 | 72,707 |
| 2007 | 1,730,930 | 72,832 |
| 2008 | 1,303,807 | 72,353 |
| 2009 | 1,674,861 | 75,819 |
| 2010 | 1,902,325 | 73,860 |
| 2011 | 1,891,347 | 71,620 |
| 2012 | 2,105,675 | 69,559 |
| 2013 | 2,509,750 | 68,691 |
| 2014 | 2,682,000 | 68,270 |
| **2015** | **2,644,099** | **68,791** |

### DC PLAN YEAR-END STATISTICS

| Year | Fiduciary Net Position | Number of Accounts |
|---|---|---|
| 2006 | $595 | 225 |
| 2007 | 2,547 | 489 |
| 2008 | 4,996 | 864 |
| 2009 | 37,475 | 3,039 |
| 2010 | 53,384 | 3,479 |
| 2011 | 63,597 | 4,029 |
| 2012 | 83,267 | 4,362 |
| 2013 | 113,500 | 4,719 |
| 2014 | 131,466 | 5,046 |
| **2015** | **141,026** | **5,403** |

### PERAPLUS 457 PLAN YEAR-END STATISTICS

| Year | Fiduciary Net Position | Number of Accounts |
|---|---|---|
| 2009 | $393,352 | 18,007 |
| 2010 | 458,881 | 18,215 |
| 2011 | 483,965 | 17,821 |
| 2012 | 544,518 | 17,469 |
| 2013 | 643,602 | 17,462 |
| 2014 | 689,451 | 17,738 |
| **2015** | **691,676** | **17,814** |

## Outline of Investment Policies

### Objectives

The Board is responsible for approving an appropriate range of investments that addresses the needs of the participants in the Plans. The objectives of selecting the investment options under each Plan are to:

- Provide a wide range of investment opportunities in various asset classes so as to allow for diversification and to cover a wide risk/return spectrum.
- Maximize returns within reasonable and prudent levels of risk.
- Provide returns comparable to returns for similar investment options.
- Control administrative and management costs to the plan and participants.

### Responsibilities

The Investment Advisory Committee (IAC), a committee of internal management staff, monitors and evaluates the investment asset classes and the underlying portfolio asset mix and allocation range for each investment option. The IAC also monitors and evaluates the portfolio managers and other service providers. RVK, Inc. serves as consultant to the IAC and the Board.

Recommendations of the IAC are presented to PERA's Executive Director and Chief Investment Officer. Upon their concurrence, the recommendations are presented to the Board for consideration if required by the investment policy.

## VOLUNTARY INVESTMENT PROGRAM, DEFINED CONTRIBUTION RETIREMENT PLAN, AND DEFERRED COMPENSATION PLAN (PLANS) REPORT ON INVESTMENT ACTIVITY

*(Dollars in Thousands)*

The Board is responsible for:

- The oversight of the Plans and portfolio composition.
- Approving changes to the plan documents.
- Approving the investment policies and amendments thereto.
- Accepting or rejecting the IAC's recommendations with regard to policies, objectives, specific investment options, and service providers.

## PERAdvantage Investment Options

The PERAdvantage investments provide diversification within each of the six primary funds, one additional specialized fund, and ten target retirement date funds. The PERAdvantage investments simplify choices, increase diversification, and help participants identify investments based on how the fund invests the money rather than name familiarity. In addition, the Plans also provide a self-directed brokerage account for participants to select their own investments.

Participants invest assets in one or more of the following investments:

### Primary Investment Options

- ***PERAdvantage Capital Preservation Fund***
  The fund seeks to provide consistent investment income with a stable net asset value primarily by investing in a portfolio of high quality, medium-term fixed income securities. This fund invests in securities issued by the U.S. Government or one of its agencies, including agency mortgage bonds as well as high-grade corporate bonds. The fund is managed by Great-West Capital Management, LLC, a federally registered investment advisor and a wholly-owned subsidiary of Great-West Life & Annuity Insurance Company.

- ***PERAdvantage Fixed Income Fund***
  The fund seeks to generate income, preserve capital, and provide long-term capital appreciation by investing in a diversified portfolio of fixed-income instruments of varying maturities. The fund objective is to combine actively managed core plus and passive core styles. As of January 14, 2015, the fund is managed by BlackRock (targeted at 50 percent of the portfolio) and Wells Capital Management (targeted at 50 percent of the portfolio). See 2015 changes on the next page.

- ***PERAdvantage Real Return Fund***
  The fund seeks to provide broad exposure to real assets and TIPS and to produce a return over a full market cycle that exceeds the rate of inflation. The fund invests in U.S. TIPS, Real Estate Investment Trusts (REITs), global commodity and natural resource stocks, and commodities. State Street Global Advisors manages the fund.

- ***PERAdvantage U.S. Large Cap Stock Fund***
  The fund seeks to provide long-term capital appreciation and dividend income primarily by investing in the common stock of companies located in the United States with large market capitalizations similar to those found in the Russell 1000™ Index. The fund combines core, growth, and value investment styles, and active and passive management styles. The fund is managed by PERA (targeted at 70 percent of the portfolio), LSV Asset Management (targeted at 15 percent of the portfolio), and Winslow Capital Management (targeted at 15 percent of the portfolio).

- ***PERAdvantage International Stock Fund***
  The fund seeks to provide long-term capital appreciation and dividend income primarily by investing in the common stock of companies located outside the United States. The fund invests in a wide array of international stocks similar to those found in the MSCI All Country World (ACWI) ex-U.S. Index. The fund combines growth and value investment styles, and active and passive management styles. The fund is managed by Harding Loevner (targeted at 35 percent of the portfolio), Dodge & Cox (targeted at 35 percent of the portfolio), and BlackRock (targeted at 30 percent of the portfolio).

- ***PERAdvantage U.S. Small and Mid Cap Stock Fund***
  The fund seeks to provide long-term capital appreciation and dividend income primarily by investing in the common stock of companies located in the United States with small and mid-market capitalizations similar to the securities included in the Russell 2500™ Index. The fund combines growth and value investment styles and active and passive management styles. The fund is managed by TimesSquare Capital Management (targeted at 35 percent of the portfolio), Dimensional Fund Advisors (targeted at 35 percent of the portfolio), and BlackRock (targeted at 30 percent of the portfolio).

### Additional Investment Options

- ***PERAdvantage Target Retirement Date Funds***
  There are ten funds with varying asset mixes and risk levels based on expected retirement date. Each of the funds is invested in the corresponding BlackRock LifePath® Index Target Retirement Date Fund. These funds use passive management strategies and become more conservative as the retirement date approaches. BlackRock manages the funds.

- ***PERAdvantage Socially Responsible Investment Fund***
  The fund seeks to invest in a portfolio of developed market stocks screened on environmental, social, and governance (ESG) factors, and U.S. government fixed income securities. The equity portion seeks to replicate the return of the MSCI World ESG Index. The fixed income portion invests in U.S. Government securities, and may invest a significant portion or all of its assets in mortgage-backed securities. The fund is managed by Northern Trust Investments (targeted at 60 percent of the portfolio), and J.P. Morgan (targeted at 40 percent of the portfolio).

VOLUNTARY INVESTMENT PROGRAM, DEFINED CONTRIBUTION RETIREMENT PLAN, AND DEFERRED COMPENSATION PLAN (PLANS) REPORT ON INVESTMENT ACTIVITY
*(Dollars in Thousands)*

- *TD Ameritrade Self-Directed Brokerage Account*
  This account allows selection from numerous mutual funds and other types of securities, such as stocks and bonds, for an additional fee. Investment in the self-directed brokerage account is offered through TD Ameritrade, a Division of TD Ameritrade, Inc.

## 2015 Changes

Effective January 14, 2015, a new underlying portfolio manager, Wells Capital Management, was added to the PERAdvantage Fixed Income Fund. At that time, the Fixed Income Fund was rebalanced to an equal division of assets between the funds of the underlying portfolio managers, BlackRock (previously targeted at 100 percent) and Wells Capital Management. All PERAdvantage Fixed Income Fund changes were at the recommendation of the IAC and approved by the Executive Director and Chief Investment Officer.

Effective February 2, 2015, the BlackRock LifePath® 2060 Index Target Retirement Date Fund was added to the PERAdvantage Target Retirement Date Funds option.

## Loans

Participants in the PERAPlus 401(k) and PERAPlus 457 Plans may access their funds through loans as allowed under plan policy and the Internal Revenue Service. The DC Plan prohibits participant loans.

## Administrative Fees

Plan administrative fees pay for recordkeeping, custodial services, consulting, and internal PERA administrative expenses.

The administrative fee consists of a flat $1.00 per month per participant per plan and an asset-based fee of up to 0.14 percent on each underlying PERAdvantage portfolio. There is a 0.06 percent plan administrative fee on the self-directed brokerage account. Investments with revenue sharing reduce the asset-based administrative fee by the amount of such revenue sharing.

*(The Colorado PERA Report on Investment Activity was prepared by internal staff.)*

# VOLUNTARY INVESTMENT PROGRAM, DEFINED CONTRIBUTION RETIREMENT PLAN, AND DEFERRED COMPENSATION PLAN (PLANS) SCHEDULE OF INVESTMENT RESULTS

| Fund/Benchmark | 2015 | 3-Year |
|---|---|---|
| PERAdvantage Capital Preservation Fund | 1.9% | 1.9% |
| Hueler Stable Value Index (Equal Wtd Avg) | 1.8% | 1.8% |
| PERAdvantage Fixed Income Fund | 0.3% | 1.2% |
| Barclays US Agg Bond Index | 0.6% | 1.4% |
| PERAdvantage Real Return Fund | (10.4%) | (5.5%) |
| 70% SSgA Real Asset Strategy[1]/30% Barclays US TIPS Index | (10.4%) | (5.3%) |
| PERAdvantage U.S. Large Cap Stock Fund | 0.9% | 15.1% |
| Russell 1000™ Index | 0.9% | 15.0% |
| PERAdvantage International Stock Fund | (5.8%) | 3.1% |
| MSCI ACWI Ex-US | (5.7%) | 1.5% |
| PERAdvantage U.S. Small and Mid Cap Stock Fund | (4.4%) | 11.8% |
| Russell 2500™ Index | (2.9%) | 12.5% |
| PERAdvantage SRI Fund | 0.1% | 6.3% |
| SRI Fund Custom Index[2] | (0.1%) | 6.4% |
| PERAdvantage Income Fund | (1.4%) | 3.3% |
| BlackRock LifePath® Retirement Index | (1.1%) | 3.5% |
| PERAdvantage 2020 Fund | (1.5%) | 4.5% |
| BlackRock LifePath® 2020 Index | (1.3%) | 4.7% |
| PERAdvantage 2025 Fund | (1.6%) | 5.2% |
| BlackRock LifePath® 2025 Index | (1.5%) | 5.4% |
| PERAdvantage 2030 Fund | (1.8%) | 5.8% |
| BlackRock LifePath® 2030 Index | (1.6%) | 6.0% |
| PERAdvantage 2035 Fund | (1.9%) | 6.3% |
| BlackRock LifePath® 2035 Index | (1.8%) | 6.6% |
| PERAdvantage 2040 Fund | (2.1%) | 6.8% |
| BlackRock LifePath® 2040 Fund | (2.0%) | 7.0% |
| PERAdvantage 2045 Fund | (2.2%) | 7.2% |
| BlackRock LifePath® 2045 Fund | (2.1%) | 7.5% |
| PERAdvantage 2050 Fund | (2.2%) | 7.6% |
| BlackRock LifePath® 2050 Fund | (2.1%) | 7.9% |
| PERAdvantage 2055 Fund | (2.2%) | 8.0% |
| BlackRock LifePath® 2055 Fund | (2.1%) | 8.3% |
| PERAdvantage 2060 Fund[3] | (2.2%) | N/A |
| BlackRock LifePath® 2060 Fund[3] | (2.1%) | N/A |

Note: Performance is net of management and administrative fees. Performance is calculated using time-weighted Net Asset Values (NAV). All performance is calculated by RVK, Inc. The PERAdvantage Funds commenced on October 1, 2011, therefore actual annual historic performance for the funds does not exist prior to 2012.

[1] The SSgA Real Asset Strategy Index consists of 30 percent Barclays Capital U.S. Treasury Inflation Protected Securities Index, 15 percent Dow Jones U.S. Select REIT Index, 25 percent Bloomberg Commodity Total Return Index, and 30 percent S&P Global LargeMidCap Commodity and Resources Index. Prior to July 1, 2014, the Index consisted of 25 percent Barclays Capital U.S. Treasury Inflation Protected Securities Index, 20 percent Dow Jones U.S. Select REIT Index, 20 percent DJ-UBS Roll Select Commodity Total Return Index, 35 percent S&P Global LargeMidCap Commodity and Resources Index.

[2] The SRI Fund Custom Index consists of 60 percent MSCI World ESG Index (Net) and 40 percent Barclays U.S. Government Index.

[3] Effective February 2, 2015, the PERAdvantage 2060 Fund was added to the PERAdvantage Target Retirement Date Funds option. The BlackRock LifePath® 2060 Fund product inception was December 31, 2014.

# VOLUNTARY INVESTMENT PROGRAM INVESTMENT SUMMARY

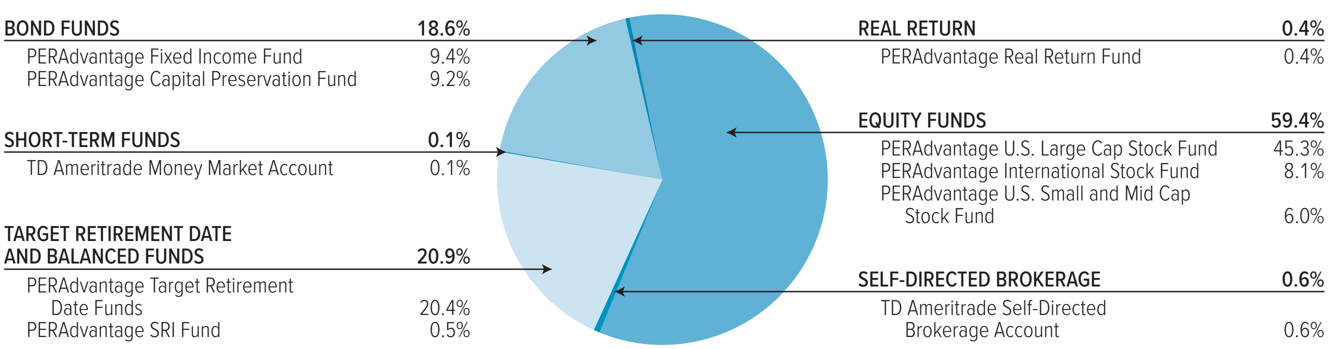
*(Dollars in Thousands)*

| | Fair Value December 31, 2015 | Percent of Total Fair Value 2015 |
|---|---|---|
| PERAdvantage Capital Preservation Fund[1] | $235,511 | 9.2% |
| PERAdvantage Fixed Income Fund | 240,171 | 9.4% |
| PERAdvantage Real Return Fund | 9,993 | 0.4% |
| PERAdvantage U.S. Large Cap Stock Fund | 1,164,083 | 45.3% |
| PERAdvantage International Stock Fund | 208,208 | 8.1% |
| PERAdvantage U.S. Small and Mid Cap Stock Fund | 155,087 | 6.0% |
| PERAdvantage SRI Fund | 12,448 | 0.5% |
| PERAdvantage Income Fund | 117,133 | 4.6% |
| PERAdvantage 2020 Fund | 98,702 | 3.8% |
| PERAdvantage 2025 Fund | 91,984 | 3.6% |
| PERAdvantage 2030 Fund | 69,803 | 2.7% |
| PERAdvantage 2035 Fund | 61,370 | 2.4% |
| PERAdvantage 2040 Fund | 37,842 | 1.5% |
| PERAdvantage 2045 Fund | 22,820 | 0.9% |
| PERAdvantage 2050 Fund | 13,624 | 0.5% |
| PERAdvantage 2055 Fund | 9,786 | 0.4% |
| PERAdvantage 2060 Fund | 900 | 0.0% |
| TD Ameritrade Money Market Account | 3,145 | 0.1% |
| TD Ameritrade Self-Directed Brokerage Account | 14,721 | 0.6% |

[1] The Stable Value Fund in the PERAdvantage Capital Preservation Fund is reported at contract value.

## Asset Allocation for Voluntary Investment Program (PERAPlus 401 (k) Plan)

As of December 31, 2015



# DEFINED CONTRIBUTION RETIREMENT PLAN INVESTMENT SUMMARY

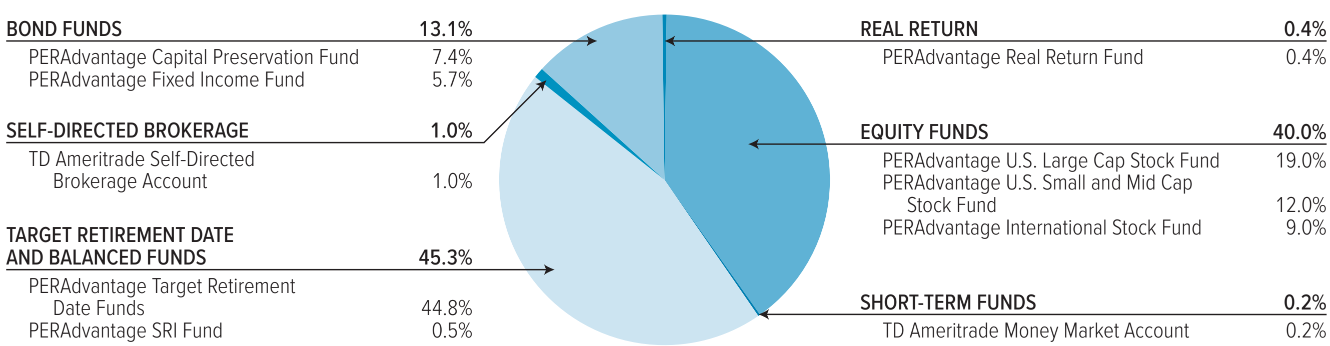
*(Dollars in Thousands)*

| | Fair Value December 31, 2015 | Percent of Total Fair Value 2015 |
|---|---|---|
| PERAdvantage Capital Preservation Fund[1] | $10,120 | 7.4% |
| PERAdvantage Fixed Income Fund | 7,820 | 5.7% |
| PERAdvantage Real Return Fund | 509 | 0.4% |
| PERAdvantage U.S. Large Cap Stock Fund | 26,147 | 19.0% |
| PERAdvantage International Stock Fund | 12,422 | 9.0% |
| PERAdvantage U.S. Small and Mid Cap Stock Fund | 16,440 | 12.0% |
| PERAdvantage SRI Fund | 673 | 0.5% |
| PERAdvantage Income Fund | 5,352 | 3.9% |
| PERAdvantage 2020 Fund | 4,726 | 3.4% |
| PERAdvantage 2025 Fund | 4,820 | 3.5% |
| PERAdvantage 2030 Fund | 6,493 | 4.7% |
| PERAdvantage 2035 Fund | 6,978 | 5.1% |
| PERAdvantage 2040 Fund | 8,504 | 6.2% |
| PERAdvantage 2045 Fund | 12,000 | 8.7% |
| PERAdvantage 2050 Fund | 9,487 | 6.9% |
| PERAdvantage 2055 Fund | 3,116 | 2.3% |
| PERAdvantage 2060 Fund | 161 | 0.1% |
| TD Ameritrade Money Market Account | 320 | 0.2% |
| TD Ameritrade Self-Directed Brokerage Account | 1,313 | 1.0% |

[1] The Stable Value Fund in the PERAdvantage Capital Preservation Fund is reported at contract value.

## Asset Allocation for Defined Contribution Retirement Plan (DC Plan)

As of December 31, 2015



# DEFERRED COMPENSATION PLAN INVESTMENT SUMMARY

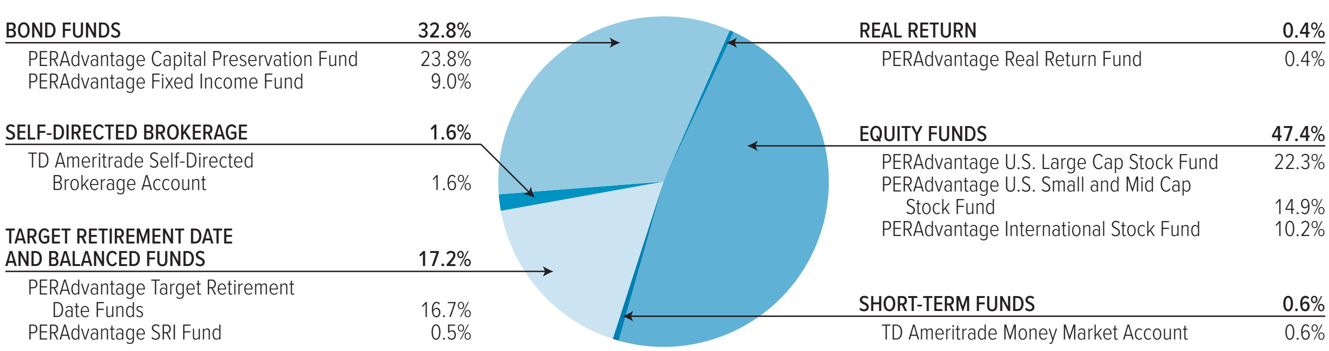
*(Dollars in Thousands)*

| | Fair Value December 31, 2015 | Percent of Total Fair Value 2015 |
|---|---|---|
| PERAdvantage Capital Preservation Fund[1] | $160,898 | 23.8% |
| PERAdvantage Fixed Income Fund | 60,884 | 9.0% |
| PERAdvantage Real Return Fund | 3,118 | 0.4% |
| PERAdvantage U.S. Large Cap Stock Fund | 150,531 | 22.3% |
| PERAdvantage International Stock Fund | 68,587 | 10.2% |
| PERAdvantage U.S. Small and Mid Cap Stock Fund | 100,747 | 14.9% |
| PERAdvantage SRI Fund | 3,411 | 0.5% |
| PERAdvantage Income Fund | 23,668 | 3.5% |
| PERAdvantage 2020 Fund | 19,958 | 3.0% |
| PERAdvantage 2025 Fund | 22,006 | 3.3% |
| PERAdvantage 2030 Fund | 15,125 | 2.2% |
| PERAdvantage 2035 Fund | 13,410 | 2.0% |
| PERAdvantage 2040 Fund | 8,361 | 1.2% |
| PERAdvantage 2045 Fund | 4,197 | 0.6% |
| PERAdvantage 2050 Fund | 2,372 | 0.4% |
| PERAdvantage 2055 Fund | 2,725 | 0.4% |
| PERAdvantage 2060 Fund | 365 | 0.1% |
| TD Ameritrade Money Market Account | 3,932 | 0.6% |
| TD Ameritrade Self-Directed Brokerage Account | 10,594 | 1.6% |

[1] The Stable Value Fund in the PERAdvantage Capital Preservation Fund is reported at contract value.

## Asset Allocation for Deferred Compensation Plan (PERAPlus 457 Plan)

As of December 31, 2015



# **Proven** Discipline

*Colorado PERA has remained dedicated to implementing the reforms developed five years ago in Senate Bill 10-001. We are committed to a long-term and sustainable solution, and our continued dedication to fiscal discipline and rigor confirms PERA is on track for the future.*

—Senate Bill 10-001 Report
(Prepared by Colorado PERA as required by the Colorado Legislature)

## ACTUARY'S CERTIFICATION LETTER

Cavanaugh Macdonald
CONSULTING, LLC
*The experience and dedication you deserve*

June 14, 2016

Board of Trustees
Public Employees' Retirement Association of Colorado
1301 Pennsylvania Street
Denver, CO 80203-2386

**RE: ACTUARIAL CERTIFICATION OF PERA DIVISION AND HEALTH CARE TRUST FUNDS**

Dear Members of the Board:

Per the "Colorado PERA Defined Benefit Pension Plan Funding Policy", adopted by the Board on March 20, 2015, the main funding objectives of the Public Employees' Retirement Association of Colorado (PERA) are:

- Preservation of the defined benefit plan structure,
- Demonstration of transparency and accountability,
- Achievement of a funded ratio greater than or equal to 110%,
- Balance of contribution rate stability and intergenerational equity,
- Reduction of Unfunded Actuarial Accrued Liabilities, and
- Recognition of beneficial elements of pooled risk.

With these goals in mind, an annual actuarial valuation is as performed as a measure of the progress towards these goals. The most recent valuations are based on the plan provisions and assumptions in effect on December 31, 2015. In completing the valuation of these pension divisions and Health Care Trust Funds (HCTFs), Cavanaugh Macdonald Consulting, LLC (CMC) relied on membership and financial data provided by PERA. We have reviewed this data for reasonableness, and made some general edit checks to impute certain information that may not have been provided with the original employee data. We have not audited this data, but we have reconciled the data used in the prior year's valuation with this current valuation data.

This valuation reflects some changes from the prior valuation including:

- ➢ Method Change
    - ▪ Rates of morbidity to model the growth in assumed claims as a PERACare enrollee ages have been added to the process used to project per capita health care costs of those PERACare enrollees under the PERA Benefit Structure who are age 65 and older and are not eligible for premium-free Medicare Part A benefits.

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## ACTUARY'S CERTIFICATION LETTER

Board of Trustees
Public Employees' Retirement Association of Colorado
June 14, 2016
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- Assumption Changes

  - The percentage of PERACare enrollees who will become age 65 and older and are assumed to not qualify for premium-free Medicare Part A coverage have been revised to more closely reflect actual experience.
  - Initial per capita health care costs for those PERACare enrollees under the PERA Benefit Structure who are age 65 and older and are not eligible for premium-free Medicare Part A benefits have been updated to reflect the change in costs for the 2016 plan year.
  - The assumed rates of inflation for health care costs for Medicare Part A premiums have been revised to reflect the current expectation of future increases.

In our opinion, the assumptions are individually reasonable, taking into account the experience of the System and reasonable expectations, internally consistent, and, in combination, offer our best estimate of anticipated experience affecting the System. We also believe the assumptions and actuarial methods meet the requirements of Governmental Accounting Standards Board (GASB) Statements No. 43.

Future actuarial results may differ significantly from the current results presented herein due to factors such as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in actuarial 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 of contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Since the potential impact of such factors is outside the scope of a normal actuarial valuation, an analysis of the range of potential results is not presented herein.

CMC provided the following schedules for the December 31, 2015, CAFR:

**FINANCIAL SECTION**
- Yearly ARC Deficiency – Health Care Trust Funds Only
- Yearly ADC and 10-Year Cumulative Deficiency – Division Trust Fund Only
- Average Monthly Benefit – Division Trust Funds Only
- Actuarial Statistics – Health Care Trust Funds Only
- Required Discount Rate Sensitivity Information for the **Division Trust Funds** providing the ratio of the Fiduciary Net Position to Total Pension Liability and the Net Pension Liability at a discount rate that is one percentage point lower and one percentage point higher than the discount rate at Measurement Date.
- Discount Rate Sensitivity Information for the **Health Care Trust Funds** providing the Funded Ratio, Unfunded Actuarial Accrued Liability and Annual Required Contributions using 6.5%, 7.5%, and 8.5% investment assumptions
- Summary of the Ratios FNP to TPL – Division Trust Funds Only
- Funded Ratios – Health Care Trust Fund Only
- Required Supplementary Information – Schedule of Changes in Net Pension Liability – Division Trust Funds
- Required Supplementary Information – Schedule of the Net Pension Liability – Division Trust Funds
- Required Supplementary Information – Schedule of Employer Contributions – Division Trust Funds
- Notes to Required Supplementary Information – For All Trust Funds
- Required Supplementary Information – Schedule of Funding Progress – Health Care Trust Funds
- Required Supplementary Information – Schedule of Employer Contributions and Other Contributing Entities – Health Care Trust Funds

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Board of Trustees
Public Employees' Retirement Association of Colorado
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**ACTUARIAL SECTION**

- Schedule of Retirees and Beneficiaries Added to and Removed from the Benefit Payroll
- Member – Retiree Comparison – All Division Trust Funds
- Schedule of Members in Valuation
- Solvency Test
- Schedule of Funding Progress
- Schedule of Gains and Losses in Accrued Liabilities
- Defined Benefit Pension Trust Funds Changes in Unfunded Actuarial Accrued Liabilities – Division Trust Funds Only
- Schedule of Computed Employer Contribution Rates for the 2017 Fiscal Year
- Actuarial Statistics – Division Trust Funds Only
- Funded Ratios – Division Trust Funds Only
- Funded Ratio, Unfunded Actuarial Accrued Liability and Actuarially Determined Contributions for all Division Trust Funds and Health Care Trust Funds using 6.0%, 7.0%, 7.5%, 8.0% and 9.0% investment return assumptions
- Actuarially Determined Contributions for all Division Trust Funds using 25-year, 20-year and 15-year amortization periods.
- Schedule of Active Member Actuarial Valuation Data

**STATISTICAL SECTION**

- Member and Benefit Recipient Statistics
- Schedule of Average Retirement Benefits Payable
- PERA Benefit Payments - All Division Trust Funds
    - Benefit Payments by Benefit Range
- Benefit Payments by Decile
- Current Average Monthly Benefit by Year of Retirement
- Schedule of Retirees and Survivors by Types of Benefits
- Schedule of Average Benefit Payments

In aggregate, the PERA division trust funds have a funded ratio of 62% based on the Actuarial Value of Assets and 60% based on the Market Value of Assets. For the health care trust funds combined, the funded ratios are 19% on an actuarial value basis and 18% on a market value of assets basis.

The employer contribution rate, combined with anticipated future employee growth and service purchase transfers, is sufficient to eventually finance the PERA Health Care Trust Fund's (PERA HCTF) and the DPS Health Care Trust Fund's (DPS HCTF) benefits in accordance with GASB 43 and 45.

The results of the valuation indicate that the combined employer and member contribution rates are sufficient to fund the normal cost for all members and provide additional contributions to help finance both the PERA HCTF and the DPS HCTF, each division's unfunded actuarial accrued liability and the Annual Increase Reserve (AIR) Fund.

It should be noted that the results of the December 31, 2015 funding valuation, combined with financial projections of all divisions reflecting anticipated growth in active membership, indicate that the goal of funding 100% of the actuarial accrued liability under the PERA revised benefit structure created by SB 10-001, is achievable, within a projection period of 44 years with the exception of the Judicial Division. The

## ACTUARY'S CERTIFICATION LETTER

Board of Trustees
Public Employees' Retirement Association of Colorado
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Judicial Division is projected to take a longer period to reach full-funding, absent favorable actuarial experience in the future. Similarly, the results of the December 31, 2015 funding valuation, combined with financial projections reflecting anticipated growth in active membership, indicate that the goal of funding 100% of the actuarial accrued liability of the HCTFs is achievable within a projection period of 28 years. It must be noted that projections provide general trends in financial measurements, not absolute results. Based on the expected actuarial experience, the long term funding trends for all divisions and HCTFs are positive.

Actuarial computations presented in the December 31, 2015 actuarial valuation report are for purposes of determining the actuarially determined contribution rates and evaluating the funding of the plans. Determinations for purposes other than meeting these requirements may be significantly different from the results shown in the December 31, 2015 actuarial valuation.

We also prepared actuarial computations as of December 31, 2015 for purposes of fulfilling financial accounting requirements for PERA under Governmental Accounting Standards Board (GASB) Statement No. 67. The actuarial assumptions used in the funding report were also used for GASB 67 reporting, with the exception of the discount rate used to determine the Total Pension Liability for the Judicial Division. In addition, the entry age normal actuarial cost method, which is required to be used under GASB 67, is also used in the funding valuation report. The actuarial assumptions used in both the funding and the GASB 67 accounting reports meet the parameters set by Actuarial Standards of Practice (ASOPs), as issued by the Actuarial Standards Board, and generally accepted accounting principles (GAAP) applicable in the United States of America as promulgated by the Governmental Accounting Standards Board.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this information is complete and accurate and that the valuation was performed in accordance with standards of practice and by qualified actuaries as prescribed by the American Academy of Actuaries and the Actuarial Standards Board. The undersigned 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 herein. All of the consultants listed below have experience in performing valuations for large statewide public retirement systems.

Sincerely,

Patrice Beckham

Patrice A. Beckham, FSA, FCA, EA, MAAA
Principal and Consulting Actuary

Eric H. Gary, FSA, FCA, MAAA
Principal and Chief Health Actuary

Edward J. Koebel

Edward J. Koebel, FCA, EA, MAAA
Principal and Consulting Actuary

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# DIVISION TRUST FUNDS—PENSION

## Introduction

The standards promulgated by the Governmental Accounting Standards Board (GASB) Statement No. 67, require the need to prepare two actuarial valuations—one for funding purposes and one for accounting and financial reporting purposes. Unless otherwise noted, this Division Trust Funds subsection reports the results of the actuarial valuation performed for funding purposes, but also includes information on specific differences between the two actuarial valuations.

The PERA Board of Trustees (Board) is responsible for maintaining a pension funding policy applicable to PERA's five Division Trust Funds. The pension funding policy was last revised and adopted by the Board on March 20, 2015, effective for the December 31, 2014, funding actuarial valuation. The revised funding policy adopts an actuarially determined contribution (ADC) for each of the five Division Trust Funds. The ADC assesses the adequacy of the statutory contribution rate of each Division Trust Fund. The ADC will be determined in accordance with pension plan provisions, as described in Note 1 of the Notes to the Financial Statements found in the Financial Section.

## Actuarial Methods and Assumptions

### Actuarial Methods

The Board is responsible for the actuarial methods and assumptions used in the actuarial valuations in accordance with Colorado Revised Statutes (C.R.S.) § 24-51-204(5). The Board retains an external actuary, currently Cavanaugh Macdonald Consulting, LLC (CMC), to perform annual actuarial valuations and sustainability projections as well as periodic experience studies to review the actuarial assumptions and actual experience of the plan. Through formal action, the Board updates, replaces, or adopts new methods and assumptions as is deemed necessary. In addition to annual actuarial valuations and periodic assumption reviews, the Board established the practice of conducting actuarial audits every three to five years; the last one was performed by Milliman during 2014.

The ultimate cost that a defined benefit retirement plan, such as PERA, incurs is equal to the benefits paid plus expenses. Contributions to the plan and investment earnings on the assets of the plan pay for the ultimate cost.

Using the plan's schedule of benefits, the member data, and the carefully selected actuarial assumptions, the plan's actuary annually estimates the cost of the benefits to be paid. Using a particular actuarial funding method, the actuary allocates these costs and determines a systematic manner to fund future plan benefits.

#### *Entry Age Normal Cost Method*

For PERA (as well as most public sector plans), one important funding policy objective is to fund the plan in a manner that keeps contribution rates approximately level from generation to generation. The funding method best designed to keep annual costs level as a percent of covered payroll is the Entry Age Normal (EAN) cost method. It is for this reason that the EAN cost method was selected by the Board to be used in the actuarial valuation. Under the EAN cost method, early and service retirement, termination (including the possibility of refunds), disability, and death benefits are projected for all active members. Cost factors, which are developed to produce level annual costs in each year from the age at hire (entry age) to the assumed retirement age, are applied to the projected benefits to determine the normal cost. The normal cost is the portion of the total cost of the plan allocated to the current year. Normal cost is determined only for active members currently accruing benefits. Those in receipt of benefits, terminated or beyond assumed retirement age have no allocated normal cost. The actuarial accrued liability (AAL) for active members is the portion of the total cost of the plan allocated to prior years. The total AAL for the plan includes the AAL for active members and the present value of the expected benefit payments to members currently receiving benefits and inactive members entitled to future benefits. The excess of the total AAL over the actuarial value of plan assets is the unfunded actuarial accrued liability (UAAL).

The effect of differences between the actuarial assumptions and the actual experience of the plan is calculated each year when the annual actuarial valuation is performed. These differences produce actuarial gains or losses that result in an adjustment of the UAAL.

#### *Amortization Method*

Under the funding policy, an ADC is determined by adding the normal cost and the cost to amortize, over defined, closed periods, any existing UAAL or new UAAL, including the impact of any experience actuarial gains and losses, actuarial assumption changes, and changes in plan provisions. Implementing a layered amortization approach requires each amortized item to be tracked over the closed period defined for that category.

The legacy UAAL as of December 31, 2014, will be recognized over a closed 30-year period from that date. All gains, losses, and changes in actuarial methods and assumptions on and after January 1, 2015, will be recognized over a closed 30-year period as of each occurrence. The impact of any changes in plan provisions will be recognized over a closed period relating to the demographics of the group affected and/or the duration of the enhancement provided, not to exceed 25 years. If any future actuarial valuation indicates a division has a negative UAAL, the ADC shall be set equal to the normal cost until such time as the funded ratio equals or exceeds 120 percent. At that time, the ADC shall be equal to the normal cost less an amount equal to 15 year amortization of the portion of the negative UAAL above the 120 percent funded ratio.

DIVISION TRUST FUNDS—PENSION

Once determined, the ADC is then expressed as a level percentage of assumed future covered payroll and compared, as a benchmark, against the current statutory employer contribution rate under each division.

### *Asset Valuation Method*

In 1992, the Board adopted a method for valuing assets that recognizes a smoothed market value of assets. The smoothed market value of assets recognizes the differences between actual and expected investment experience for each year in equal amounts over a four–year period. The smoothed market value of assets excludes the Annual Increase Reserve (AIR). Note the term "market value" is used in the Board's pension funding policy regarding the description of the determination of the asset valuation method used for funding purposes and is used consistently throughout the Actuarial Section, which has the identical meaning of the term "fair value" as is used in other sections of this *CAFR*.

## Actuarial Assumptions

The determination of the AAL includes recognition of a number of economic and non-economic assumptions in addition to the applied actuarial methods described above. Unless otherwise noted, it can be assumed that the economic and demographic actuarial assumptions applied to the actuarial valuation for funding purposes also were applied to the actuarial valuation for accounting and financial reporting purposes.

### *Economic Assumptions*

In November 2013, the Board voted to lower the investment rate of return assumption from 8.00 percent per year, compounded annually, net of investment expenses, to 7.50 percent, compounded annually, net of investment expenses, effective December 31, 2013. This rate also is used to discount the AALs associated with each of the five Division Trust Funds.

In November 2013, the Board participated in an actuarial assumption workshop to ensure understanding and to provide for the adoption of all economic assumptions under the guidance provided by Actuarial Standard of Practice (ASOP) No. 27, *Selection of Economic Assumptions for Measuring Pension Obligations*, as prescribed by the Actuarial Standards Board. The Board received presentations given by the retained actuary, CMC, and the investment consultant, Aon Hewitt Investment Consulting, Inc. (Aon Hewitt). In addition, the Board reviewed a variety of current and projected economic and financial information prior to the meeting.

As a result of discussions regarding economic assumptions at both the November 15, 2013, and the January 17, 2014, Board meetings, the underlying economic assumptions changed effective for the December 31, 2013, actuarial valuation, as follows:

- The inflation assumption was reduced from 3.50 percent per year to 2.80 percent per year, resulting in an increase of the real rate of return assumption from 4.50 percent per year to 4.70 percent per year.
- The overall annual member payroll increase was changed from 4.25 percent to 3.90 percent per year.

In November 2015, the Board participated in an informational actuarial assumption workshop to ensure understanding of PERA's economic assumptions and to gauge the current economic environment and factors.

Exhibits A, B, C, and E show sample pay increase assumptions for individual members in 2015. The State Legislature determines pay increases for the Judicial Division, listed in Exhibit D.

Annually, the Board reviews the rate at which interest is credited to member accounts. The Board originally adopted the general policy regarding the annual review during 2006, with slight revisions to the policy details since adoption. In November 2015, the Board voted to continue the annual interest rate at 3.00 percent for interest earned during 2016.

### *Non-Economic Assumptions*

ASOP No. 35, *Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations*, is followed for the selection and adoption of appropriate demographic assumptions. As a result of the most recent experience analysis, the withdrawal rates, pre- and post-retirement mortality rates, disability rates, and retirement rates for all divisions, were revised in 2012 to more closely reflect PERA's actual experience.

The probabilities of withdrawal from service (rates for the ultimate period), death-in-service, and disability are shown for sample ages in Exhibits A, B, C, D, and E. Exhibit F shows the select rates of withdrawal applicable to certain members in the first four years of employment (rates for the select period). The probabilities of age and service retirements for all divisions are shown in Exhibits G and H.

The results of the 2012 experience analysis supported the current withdrawal assumption, last revised in 2009, for all non-Judicial Division members in the PERA benefit structure, that 35 percent of the vested members who terminate will elect to withdraw their accounts while the remaining 65 percent will elect to leave their accounts in the plan to be eligible for a benefit at their retirement date. As a result, the actuary did not recommend adjustments to this assumption for these members. In addition, based on findings of the experience analysis, the actuary recommended adoption of the same assumption for members in the DPS benefit structure. The assumption for members of the Judicial Division also was retained, which assumes that 100 percent of vested members who terminate elect to leave their contributions in the plan in order to be eligible for a benefit at their retirement date.

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As a result of the 2012 experience analysis, CMC recommended a change to a more recently published mortality table to provide PERA with a reasonable margin for improved mortality in the future. Therefore, healthy mortality assumptions for both pre- and post-retirement reflect the RP-2000 Combined Mortality Table projected with Scale AA to 2020, set back one year for males and set back two years for females, and the pre-retirement healthy mortality rates incorporate a 55 percent factor applied to male rates and a 40 percent factor applied to female rates. Regarding mortality after disability retirement, the current table, RP-2000 Disability Mortality Table proved sufficient, but the adjustments were changed to a set-back of two years for both males and females as a result of the 2012 experience analysis.

The recently revised mortality assumptions appropriately reflect PERA's recent and anticipated plan experience and are used to estimate the value of expected future benefit payments. Exhibits A, B, C, D, and E list the healthy pre-retirement mortality rates at sample ages and Exhibit I lists all the healthy post-retirement mortality rates and values at sample ages.

### *Annual Increase Assumptions*

For PERA benefit structure members with a membership date prior to January 1, 2007, and DPS benefit structure members, it is assumed that retirement, disability, and survivor benefits increase at a rate of 2.0 percent per year after payments begin and eligibility requirements for payment of the annual increase (AI) have been met. This assumption was adopted as of the December 31, 2009, actuarial valuation in recognition of changes made to the AI by Senate Bill (SB) 10-001.

For members in the PERA benefit structure hired on or after January 1, 2007, an AIR was established for each Division Trust Fund to provide AIs, to the extent affordable, once benefits become payable for these members. From the employer statutory contributions submitted for these members, an amount equal to one percent of covered payroll and a certain percentage of reinstatement of service purchase dollars are transferred into the AIR to fund the current and future increases related to the AIR provisions. Pursuant to C.R.S. § 24-51-1009(4), the maximum AI that may be awarded by the Board equals the lesser of 2.0 percent or the average of the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W) for each of the months during the prior calendar year. The total amount of increases paid in any year cannot exceed 10.0 percent of the total funds available in the AIR in the division from which they retire or decease. Therefore, the actuarial assumption applied to these members assumes that benefits do not increase with respect to the annual assessment of actuarial liability associated with the Division Trust Funds, since they receive AIs only to the extent affordable in accordance with C.R.S. § 24-51-1009. This assumption was adopted as of the December 31, 2007, actuarial valuation in recognition of AI provisions enacted in 2006.

Held within the trust and accounted for separately, the dollars within each AIR are excluded from the division trust fund assets for purposes of the annual funding actuarial valuation. The AIR is subject to a separate annual actuarial calculation to determine the extent of the payment, if any, of AIs each year to eligible individuals.

### *Actuarial Studies*

Accumulated investment income is a significant contributor to the success of a defined benefit plan, often providing between 50 to 80 percent of the total inflows over the life of a plan. The financial market's major decline in 2008 prompted the Board to pursue additional actuarial studies over the last few years to evaluate the appropriateness of PERA's investment return assumption in concert with other pertinent economic assumptions.

In 2012, the Board requested an experience analysis covering plan experience for the four-year period from 2008 through 2011, to provide an updated view of all economic and demographic assumptions. CMC completed the experience analysis in October 2012, for purposes of discussion at the November actuarial assumption workshop, and the Board adopted certain demographic assumptions at the November 2012 Board meeting. In the following year, as a result of the November 2013 actuarial assumption workshop, effective December 31, 2013, the Board adjusted the economic assumptions as previously described.

At the March 21, 2014, Board meeting, the Board approved an asset/liability modeling study to be conducted by Aon Hewitt. Based on the study, the Board adopted a new Asset Allocation policy on March 20, 2015, as described in Note 5 in the Financial Section.

The Board periodically contracts an actuarial firm, independent of the retained actuary, to conduct an actuarial audit; the most recent performed by Milliman during 2014. The primary focus of the audit is to ensure independence, accuracy, and conformity with the accepted ASOPs with regard to results of the annual actuarial valuation and the appropriateness of the actuarial assumptions used to calculate those results. Milliman findings were favorable toward CMC's work product concluding, overall, the calculations were reasonable. During the replication of the December 31, 2013, actuarial valuation, Milliman was able to come within a 1 percent margin of CMC's calculated AALs and closely matched each division's normal cost rates applying the same methods as used by CMC. Milliman determined that the data used by CMC were reasonable, were able to closely match benefit and valuation asset amounts, and determined that the actuarial methods and assumptions applied were in conformity with the ASOPs. Milliman found no grounds on which to suggest a revision of the previous year's actuarial valuation, but recommended a few changes in methodologies to be considered for future actuarial valuations as listed below and on the next page.

- Apply mid-year timing of contributions used in normal cost rate calculation.

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- Make a technical change in the amortization calculation.
- Make slight adjustments to certain liability calculations.
- Include merit increases in first year compensation amounts.
- Add further disclosure of assumptions and methods in the actuarial valuation report.

CMC evaluated each of Milliman's recommendations as well as internally reviewed all programming and actuarial procedures. The assessment resulted in the adoption of revised procedures reflecting Milliman's suggestions as well as some additional procedural and/or programming refinements. All of the changes were first incorporated into the December 31, 2014, valuation results and have continued to be applied in subsequent valuations.

Milliman found no grounds on which to suggest a revision of the most recent experience study, but recommended a few changes in methodologies to be considered for future experience studies.

- Increase margin for mortality assumption.
- Modify assumed timing of AI for active members.

Pursuant to C.R.S. § 24-51-1010, passed into law in 2006, prior to any increase in benefits, the Legislature is responsible for contracting an actuary or actuarial firm to conduct an actuarial assessment of the impact of such increase. Since there has not been a proposed increase in benefits since the passage of this legislation, the Legislature has not been required to contract for such a study.

## Changes Since Last Actuarial Valuation

### *Changes in Actuarial Methods*

There are no actuarial method changes reflected in the December 31, 2015, actuarial valuation since the last actuarial valuation as of December 31, 2014.

### *Changes in Actuarial Assumptions*

There are no actuarial assumption changes reflected in the December 31, 2015, actuarial valuation since the last actuarial valuation as of December 31, 2014.

### *Changes in Plan Provisions*

There are no changes in plan provisions reflected in the December 31, 2015, actuarial valuation since the last actuarial valuation as of December 31, 2014.

### *Significant Events*

- There were no significant events during 2015.

## Differences in Actuarial Valuation Methods and Assumptions

- The actuarial valuation for funding purposes was performed as of December 31, 2015. The actuarial valuation for accounting and financial reporting purposes was performed as of December 31, 2014, and the total pension liability (TPL) was rolled forward to the measurement date as of December 31, 2015.
- Census data used for the actuarial valuation for funding purposes reflects membership data as of December 31, 2015, and the census data used for the actuarial valuation for accounting and financial reporting purposes reflects membership data as of December 31, 2014. Therefore, all summaries and schedules, regarding actuarial valuation results for funding purposes, shown in the Actuarial Section, reflect census data as of December 31, 2015.
- The actuarial valuation for funding purposes for the Judicial Division used a discount rate of 7.50 percent as of December 31, 2014, and December 31, 2015. The actuarial valuation for accounting and financial reporting purposes for the Judicial Division used a discount rate of 6.14 percent and 5.73 percent as of December 31, 2014, and December 31, 2015, respectively.
- The actuarial valuation for funding purposes applies an asset valuation method that recognizes a four-year smoothed market value of assets for purposes of determining the UAAL. The actuarial valuation for accounting and financial reporting purposes applies the fair value of assets to determine the net pension liability.
- The actuarial valuation for funding purposes does not apply an AI assumption for members of the PERA benefit structure hired on or after January 1, 2007, in the determination of the AAL. Therefore, the ADC established by the funding valuation does not consider future increases for this member group and the assets attributable to the AIR are not included in the actuarial value of assets. A separate annual actuarial valuation is performed on the AIR to determine the applicable AI payable to eligible members after benefit commencement. AIR plan provisions are deemed substantively automatic, ad hoc cost-of-living adjustments. Liabilities associated with the AIR statutorily can never exceed available assets. As a result, the actuarial valuation for accounting and financial reporting purposes includes the balance of the AIR both in the plan assets, at fair value, and in the TPL of the applicable division.

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## Actuarial Assumptions: Exhibits A–I

### Exhibit A: Separations from Employment Before Retirement and Individual Pay Increase Assumptions—State Division

| | Percent of Members Separating Within the Next Year | | | | | | Pay Increase Assumptions for an Individual Member | | |
|---|---|---|---|---|---|---|---|---|---|
| | Ultimate Withdrawal[1] | | Death[2] | | Disability | | Merit and | Inflation and | Total Increase |
| Sample Ages | Male | Female | Male | Female | Male | Female | Seniority | Productivity | (Next Year) |
| State Members *(Other Than State Troopers)* | | | | | | | | | |
| 20 | 21.00% | 18.00% | 0.012% | 0.005% | 0.01% | 0.01% | 5.67% | 3.90% | 9.57% |
| 25 | 9.00% | 14.00% | 0.017% | 0.006% | 0.01% | 0.01% | 3.75% | 3.90% | 7.65% |
| 30 | 6.00% | 9.00% | 0.021% | 0.008% | 0.02% | 0.02% | 2.80% | 3.90% | 6.70% |
| 35 | 5.50% | 7.00% | 0.035% | 0.013% | 0.03% | 0.03% | 2.05% | 3.90% | 5.95% |
| 40 | 4.50% | 5.75% | 0.048% | 0.018% | 0.06% | 0.06% | 1.50% | 3.90% | 5.40% |
| 45 | 4.00% | 5.00% | 0.059% | 0.027% | 0.10% | 0.10% | 0.85% | 3.90% | 4.75% |
| 50 | 4.00% | 5.00% | 0.076% | 0.041% | 0.17% | 0.17% | 0.50% | 3.90% | 4.40% |
| 55 | 4.00% | 5.00% | 0.120% | 0.075% | 0.25% | 0.25% | 0.10% | 3.90% | 4.00% |
| 60 | 4.00% | 5.00% | 0.237% | 0.142% | 0.35% | 0.35% | 0.00% | 3.90% | 3.90% |
| 65 | 4.00% | 5.00% | 0.468% | 0.277% | 0.45% | 0.45% | 0.00% | 3.90% | 3.90% |
| State Troopers | | | | | | | | | |
| 20 | 10.00% | 10.00% | 0.012% | 0.005% | 0.02% | 0.02% | 5.50% | 3.90% | 9.40% |
| 25 | 8.00% | 8.00% | 0.017% | 0.006% | 0.04% | 0.04% | 3.75% | 3.90% | 7.65% |
| 30 | 4.25% | 4.25% | 0.021% | 0.008% | 0.06% | 0.06% | 2.80% | 3.90% | 6.70% |
| 35 | 3.75% | 3.75% | 0.035% | 0.013% | 0.10% | 0.10% | 2.05% | 3.90% | 5.95% |
| 40 | 3.50% | 3.50% | 0.048% | 0.018% | 0.18% | 0.18% | 1.50% | 3.90% | 5.40% |
| 45 | 3.50% | 3.50% | 0.059% | 0.027% | 0.28% | 0.28% | 1.20% | 3.90% | 5.10% |
| 50 | 3.50% | 3.50% | 0.076% | 0.041% | 0.40% | 0.40% | 0.80% | 3.90% | 4.70% |
| 55 | 3.50% | 3.50% | 0.120% | 0.075% | 0.56% | 0.56% | 0.40% | 3.90% | 4.30% |
| 60 | 3.50% | 3.50% | 0.237% | 0.142% | 0.80% | 0.80% | 0.00% | 3.90% | 3.90% |
| 65 | 3.50% | 3.50% | 0.468% | 0.277% | 1.20% | 1.20% | 0.00% | 3.90% | 3.90% |

[1] There are no select withdrawal assumptions for State Troopers.

[2] Rates are shown for healthy members. Separate disability mortality tables are used for disabled retirees.

### Exhibit B: Separations from Employment Before Retirement and Individual Pay Increase Assumptions—School Division and Denver Public Schools (DPS) Division—PERA Benefit Structure

| | Percent of Members Separating Within the Next Year | | | | | | Pay Increase Assumptions for an Individual Member | | |
|---|---|---|---|---|---|---|---|---|---|
| | Ultimate Withdrawal | | Death[1] | | Disability | | Merit and | Inflation and | Total Increase |
| Sample Ages | Male | Female | Male | Female | Male | Female | Seniority | Productivity | (Next Year) |
| 20 | 12.00% | 14.50% | 0.012% | 0.005% | 0.01% | 0.01% | 6.20% | 3.90% | 10.10% |
| 25 | 9.00% | 11.00% | 0.017% | 0.006% | 0.01% | 0.01% | 4.10% | 3.90% | 8.00% |
| 30 | 5.50% | 7.50% | 0.021% | 0.008% | 0.01% | 0.01% | 2.95% | 3.90% | 6.85% |
| 35 | 4.25% | 6.25% | 0.035% | 0.013% | 0.02% | 0.02% | 2.50% | 3.90% | 6.40% |
| 40 | 4.00% | 4.50% | 0.048% | 0.018% | 0.04% | 0.04% | 1.95% | 3.90% | 5.85% |
| 45 | 4.00% | 4.50% | 0.059% | 0.027% | 0.06% | 0.06% | 1.35% | 3.90% | 5.25% |
| 50 | 4.00% | 4.50% | 0.076% | 0.041% | 0.09% | 0.09% | 0.80% | 3.90% | 4.70% |
| 55 | 4.00% | 4.50% | 0.120% | 0.075% | 0.15% | 0.15% | 0.35% | 3.90% | 4.25% |
| 60 | 4.00% | 4.50% | 0.237% | 0.142% | 0.22% | 0.22% | 0.00% | 3.90% | 3.90% |
| 65 | 4.00% | 4.50% | 0.468% | 0.277% | 0.32% | 0.32% | 0.00% | 3.90% | 3.90% |

[1] Rates are shown for healthy members. Separate disability mortality tables are used for disabled retirees.

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## Exhibit C: Separations from Employment Before Retirement and Individual Pay Increase Assumptions—Local Government Division

| | Percent of Members Separating Within the Next Year | | | | | | Pay Increase Assumptions for an Individual Member | | |
|---|---|---|---|---|---|---|---|---|---|
| | Ultimate Withdrawal | | Death[1] | | Disability | | Merit and | Inflation and | Total Increase |
| Sample Ages | Male | Female | Male | Female | Male | Female | Seniority | Productivity | (Next Year) |
| 20 | 12.00% | 20.00% | 0.012% | 0.005% | 0.01% | 0.01% | 6.95% | 3.90% | 10.85% |
| 25 | 10.00% | 15.00% | 0.017% | 0.006% | 0.01% | 0.01% | 4.30% | 3.90% | 8.20% |
| 30 | 7.25% | 11.00% | 0.021% | 0.008% | 0.01% | 0.01% | 2.64% | 3.90% | 6.54% |
| 35 | 5.50% | 8.75% | 0.035% | 0.013% | 0.02% | 0.02% | 1.72% | 3.90% | 5.62% |
| 40 | 5.00% | 6.25% | 0.048% | 0.018% | 0.04% | 0.04% | 1.23% | 3.90% | 5.13% |
| 45 | 4.50% | 6.00% | 0.059% | 0.027% | 0.08% | 0.08% | 0.99% | 3.90% | 4.89% |
| 50 | 4.50% | 6.00% | 0.076% | 0.041% | 0.14% | 0.14% | 0.79% | 3.90% | 4.69% |
| 55 | 4.50% | 6.00% | 0.120% | 0.075% | 0.18% | 0.18% | 0.60% | 3.90% | 4.50% |
| 60 | 4.50% | 6.00% | 0.237% | 0.142% | 0.24% | 0.24% | 0.25% | 3.90% | 4.15% |
| 65 | 4.50% | 6.00% | 0.468% | 0.277% | 0.30% | 0.30% | 0.00% | 3.90% | 3.90% |

[1] Rates are shown for healthy members. Separate disability mortality tables are used for disabled retirees.

## Exhibit D: Separations from Employment Before Retirement and Individual Pay Increase Assumptions—Judicial Division

| | Percent of Members Separating Within the Next Year | | | | | | Pay Increase Assumptions for an Individual Member | | |
|---|---|---|---|---|---|---|---|---|---|
| | Ultimate Withdrawal[1] | | Death[2] | | Disability | | Merit and | Inflation and | Total Increase |
| Sample Ages | Male | Female | Male | Female | Male | Female | Seniority[3] | Productivity | (Next Year) |
| 30 | 1.80% | 1.80% | 0.021% | 0.008% | 0.02% | 0.02% | 1.50% | 3.90% | 5.40% |
| 35 | 1.80% | 1.80% | 0.035% | 0.013% | 0.03% | 0.03% | 1.50% | 3.90% | 5.40% |
| 40 | 1.80% | 1.80% | 0.048% | 0.018% | 0.06% | 0.06% | 0.67% | 3.90% | 4.57% |
| 45 | 1.80% | 1.80% | 0.059% | 0.027% | 0.10% | 0.10% | 0.50% | 3.90% | 4.40% |
| 50 | 1.80% | 1.80% | 0.076% | 0.041% | 0.17% | 0.17% | 0.50% | 3.90% | 4.40% |
| 55 | 1.80% | 1.80% | 0.120% | 0.075% | 0.25% | 0.25% | 0.50% | 3.90% | 4.40% |
| 60 | 1.80% | 1.80% | 0.237% | 0.142% | 0.35% | 0.35% | 0.50% | 3.90% | 4.40% |
| 65 | 1.80% | 1.80% | 0.468% | 0.277% | 0.45% | 0.45% | 0.50% | 3.90% | 4.40% |

[1] There are no select withdrawal assumptions for the Judicial Division.

[2] Rates are shown for healthy members. Separate disability mortality tables are used for disabled retirees.

[3] Pay raises are subject to legislative approval. Percentages shown are based on prior experience.

## Exhibit E: Separations from Employment Before Retirement and Individual Pay Increase Assumptions—All Division Trust Funds (DPS Benefit Structure)

| | Percent of Members Separating Within the Next Year | | | | | | Pay Increase Assumptions for an Individual Member | | |
|---|---|---|---|---|---|---|---|---|---|
| | Ultimate Withdrawal | | Death[1] | | Disability | | Merit and | Inflation and | Total Increase |
| Sample Ages | Male | Female | Male | Female | Male | Female | Seniority | Productivity | (Next Year) |
| 20 | 7.00% | 10.00% | 0.012% | 0.005% | 0.01% | 0.01% | 3.50% | 3.90% | 7.40% |
| 25 | 7.00% | 10.00% | 0.017% | 0.006% | 0.01% | 0.01% | 3.50% | 3.90% | 7.40% |
| 30 | 6.00% | 8.00% | 0.021% | 0.008% | 0.01% | 0.01% | 3.20% | 3.90% | 7.10% |
| 35 | 6.00% | 7.00% | 0.035% | 0.013% | 0.02% | 0.02% | 2.76% | 3.90% | 6.66% |
| 40 | 4.50% | 5.75% | 0.048% | 0.018% | 0.05% | 0.05% | 2.12% | 3.90% | 6.02% |
| 45 | 3.50% | 4.25% | 0.059% | 0.027% | 0.08% | 0.08% | 1.34% | 3.90% | 5.24% |
| 50 | 3.50% | 3.50% | 0.076% | 0.041% | 0.12% | 0.12% | 0.80% | 3.90% | 4.70% |
| 55 | 3.50% | 3.50% | 0.120% | 0.075% | 0.25% | 0.25% | 0.42% | 3.90% | 4.32% |
| 60 | 3.50% | 3.50% | 0.237% | 0.142% | 0.40% | 0.40% | 0.20% | 3.90% | 4.10% |
| 65 | 3.50% | 3.50% | 0.468% | 0.277% | 0.60% | 0.60% | 0.00% | 3.90% | 3.90% |

[1] Rates are shown for healthy members. Separate disability mortality tables are used for disabled retirees.

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## Exhibit F: Select Rates of Separation Assumptions—State, School and DPS Divisions, Local Government Division and DPS Benefit Structure

**Percent of Members With Less Than Five Years of Service Withdrawing from Employment Next Year[1]**

| Completed | State Division | | School & DPS Divisions[2] | | Local Government Division | | DPS Benefit Structure[3] | |
|---|---|---|---|---|---|---|---|---|
| Years of Service | Male | Female | Male | Female | Male | Female | Male | Female |
| 0 | 43.0% | 43.0% | 38.0% | 35.0% | 40.0% | 38.0% | 22.0% | 23.0% |
| 1 | 20.0% | 21.0% | 20.0% | 19.0% | 22.0% | 22.0% | 20.0% | 20.0% |
| 2 | 14.0% | 15.0% | 15.0% | 14.5% | 15.0% | 17.0% | 17.0% | 16.0% |
| 3 | 11.0% | 12.0% | 11.0% | 11.5% | 11.5% | 13.0% | 13.0% | 12.0% |
| 4 | 9.0% | 11.0% | 10.0% | 10.0% | 9.0% | 11.0% | 10.0% | 9.0% |

[1] There are no select withdrawal assumptions for State Troopers or Judicial Division members.

[2] Rates shown are for PERA benefit structure members in the School or DPS Divisions.

[3] Rates shown are for DPS benefit structure members in any division.

## Exhibit G: Percent of Members Eligible for Reduced Retirement Benefits Retiring Next Year

| Retirement | State Division | | State | School & DPS Divisions[1] | | Local Government Division | | Judicial | DPS Benefit Structure[2] | |
|---|---|---|---|---|---|---|---|---|---|---|
| Ages | Male | Female | Troopers | Male | Female | Male | Female | Division | Male | Female |
| 50 | 10% | 10% | 14% | 10% | 10% | 10% | 12% | 5% | 10% | 5% |
| 51 | 10% | 10% | 14% | 10% | 10% | 10% | 12% | 5% | 10% | 5% |
| 52 | 10% | 10% | 14% | 10% | 10% | 10% | 12% | 5% | 10% | 5% |
| 53 | 10% | 10% | 14% | 10% | 10% | 10% | 12% | 5% | 10% | 5% |
| 54 | 10% | 10% | 14% | 10% | 10% | 10% | 12% | 5% | 10% | 5% |
| 55 | 10% | 10% | 10% | 10% | 10% | 10% | 12% | 5% | 10% | 5% |
| 56 | 10% | 10% | 10% | 10% | 10% | 10% | 12% | 5% | 10% | 5% |
| 57 | 10% | 10% | 10% | 10% | 10% | 10% | 12% | 5% | 10% | 5% |
| 58 | 10% | 10% | 10% | 10% | 10% | 10% | 12% | 5% | 11% | 9% |
| 59 | 10% | 10% | 10% | 10% | 10% | 10% | 12% | 5% | 12% | 9% |
| 60 | 10% | 10% | 10% | 10% | 10% | 10% | 12% | 12% | 13% | 9% |
| 61 | 10% | 10% | 10% | 10% | 10% | 10% | 12% | 12% | 14% | 9% |
| 62 | 10% | 10% | 10% | 10% | 10% | 10% | 12% | 12% | 15% | 9% |
| 63 | 10% | 10% | 10% | 10% | 10% | 10% | 12% | 12% | 15% | 9% |
| 64 | 10% | 10% | 10% | 10% | 10% | 10% | 12% | 12% | 15% | 15% |
| 65 and Over | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |

[1] Rates shown are for PERA benefit structure members in the School or DPS Divisions.

[2] Rates shown are for DPS benefit structure members in any division.

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## Exhibit H: Percent of Members Eligible for Unreduced Retirement Benefits Retiring Next Year

| Retirement | State Division | | State | School & DPS Divisions[1] | | Local Government Division | | Judicial | DPS Benefit Structure[2] | |
|---|---|---|---|---|---|---|---|---|---|---|
| Ages | Male | Female | Troopers | Male | Female | Male | Female | Division | Male | Female |
| 50 | 55% | 50% | 45% | 55% | 55% | 60% | 60% | 5% | 30% | 30% |
| 51 | 48% | 40% | 32% | 46% | 50% | 45% | 50% | 5% | 30% | 30% |
| 52 | 42% | 38% | 32% | 44% | 42% | 35% | 45% | 5% | 30% | 30% |
| 53 | 38% | 30% | 32% | 42% | 40% | 32% | 42% | 5% | 30% | 30% |
| 54 | 32% | 30% | 32% | 40% | 38% | 30% | 35% | 5% | 30% | 30% |
| 55 | 27% | 30% | 32% | 28% | 30% | 30% | 33% | 5% | 30% | 25% |
| 56 | 25% | 24% | 32% | 26% | 27% | 25% | 25% | 5% | 20% | 25% |
| 57 | 22% | 22% | 32% | 25% | 25% | 25% | 22% | 5% | 20% | 20% |
| 58 | 21% | 22% | 32% | 26% | 24% | 20% | 22% | 5% | 20% | 20% |
| 59 | 20% | 22% | 32% | 26% | 24% | 20% | 25% | 5% | 20% | 20% |
| 60 | 21% | 22% | 32% | 26% | 25% | 25% | 22% | 12% | 20% | 22% |
| 61 | 18% | 18% | 32% | 28% | 26% | 25% | 20% | 12% | 20% | 30% |
| 62 | 25% | 25% | 32% | 25% | 28% | 22% | 24% | 12% | 30% | 25% |
| 63 | 21% | 22% | 32% | 25% | 28% | 22% | 24% | 12% | 35% | 25% |
| 64 | 21% | 22% | 32% | 27% | 30% | 28% | 25% | 12% | 25% | 25% |
| 65 | 24% | 22% | 100% | 27% | 27% | 28% | 25% | 12% | 25% | 30% |
| 66 | 26% | 28% | 100% | 28% | 28% | 28% | 25% | 12% | 30% | 25% |
| 67 | 24% | 24% | 100% | 23% | 23% | 18% | 25% | 12% | 25% | 30% |
| 68 | 19% | 20% | 100% | 19% | 19% | 25% | 12% | 12% | 30% | 30% |
| 69 | 22% | 22% | 100% | 20% | 20% | 27% | 20% | 12% | 30% | 20% |
| 70 and Over | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% |

[1] Rates shown are for PERA benefit structure members in the School or DPS Divisions.

[2] Rates shown are for DPS benefit structure members in any division.

## Exhibit I: Rates of Post-Retirement Mortality and Single Life Retirement Values

*(In Actual Dollars)*

| Sample | Percent of Retirees Deceasing Within the Next Year | | Present Value of $1 Monthly for Life | | Present Value of $1 Monthly Increasing 2.0% Annually | | Future Life Expectancy in Years | |
|---|---|---|---|---|---|---|---|---|
| Attained Ages | Male | Female | Male | Female | Male | Female | Male | Female |
| 40 | 0.087% | 0.044% | $155.90 | $157.66 | $200.67 | $204.32 | 43.24 | 46.22 |
| 45 | 0.108% | 0.068% | 152.14 | 154.30 | 193.19 | 197.49 | 38.43 | 41.34 |
| 50 | 0.139% | 0.102% | 146.95 | 149.70 | 183.71 | 188.89 | 33.65 | 36.49 |
| 55 | 0.218% | 0.188% | 139.83 | 143.51 | 171.74 | 178.17 | 28.91 | 31.71 |
| 60 | 0.431% | 0.355% | 130.59 | 135.53 | 157.29 | 165.29 | 24.30 | 27.07 |
| 65 | 0.851% | 0.692% | 119.22 | 125.64 | 140.61 | 150.30 | 19.94 | 22.65 |
| 70 | 1.464% | 1.216% | 105.96 | 114.14 | 122.21 | 133.77 | 15.92 | 18.56 |
| 75 | 2.557% | 1.956% | 90.31 | 100.84 | 101.78 | 115.65 | 12.20 | 14.80 |
| 80 | 4.738% | 3.267% | 73.19 | 85.83 | 80.63 | 96.30 | 8.95 | 11.39 |
| 85 | 8.670% | 5.542% | 56.61 | 69.49 | 61.07 | 76.32 | 6.32 | 8.40 |

DIVISION TRUST FUNDS—PENSION

## Summary of Funding Progress

The PERA funding objective is to be able to pay long-term benefit promises through contributions that remain approximately level from year to year as a percent of covered payroll earned by PERA members. The information in this section provides an overview of funding progress:

- The solvency test shows (by Division Trust Fund and in total) the degree to which existing liabilities are funded, including prior history.
- A schedule of funding progress shows the UAAL (by Division Trust Fund and in total) as a percentage of annual covered payroll, including prior history.
- Schedules detailing actuarial gains and losses, by source, (by Division Trust Fund) including prior history and a reconciliation of UAAL considering the total of all five Division Trust Funds, over the past five years.
- The scheduled contribution requirements for the year immediately following the reporting period, including any legislatively scheduled employer contribution increments, Amortization Equalization Disbursement (AED) and Supplemental Amortization Equalization Disbursement (SAED) in future years.

Consideration of the plans' current funded ratio, the unfunded liabilities in relation to annual covered payroll, historic trends, including significant gains and losses, and the schedule of future contributions should provide sufficient information to appropriately measure funding progress.

### Solvency Test

The solvency test is one means of checking PERA's funding progress. In this test, the retirement plan's valuation assets are compared with: (A) member contributions (with interest) on deposit, (B) the liabilities for future benefits to persons who have retired, died or become disabled, and to those who have terminated service with the right to a future benefit, and (C) the liabilities for service already rendered by active members. In a system that has been following the discipline of level contribution rate financing, the liabilities for member contributions on deposit (liability A) and the liabilities for future benefits to present retirees (liability B) are fully covered by present valuation assets, except in certain circumstances.

The actuarial valuation of December 31, 2015, shows that liability A is fully covered by PERA assets. In addition, the remainder of present valuation assets covers a large portion of the liabilities for future benefits to persons who have retired or terminated service with the right to a future benefit (liability B). Generally, if the system continues to use level contribution rate financing, the funded portion of liability B and C will increase over time.

## DIVISION TRUST FUNDS—PENSION

### SOLVENCY TEST

*(Dollars in Thousands)*

| Valuation Date | Aggregate Accrued Liabilities: Active Member Contributions (A)[1] | Aggregate Accrued Liabilities: Retirees, Beneficiaries, and Inactive Members (B) | Aggregate Accrued Liabilities: Employer-Financed Portion of Active Members (C) | Valuation Assets | Portion of Actuarial Accrued Liabilities Covered by Valuation Assets: Liability (A) | Liability (B) | Liability (C) |
|---|---|---|---|---|---|---|---|
| **State Division** | | | | | | | |
| 12/31/2006 | $2,509,680 | $11,230,860 | $4,505,470 | $13,327,290 | 100.0% | 96.3% | 0.0% |
| 12/31/2007 | 2,527,091 | 12,118,948 | 4,744,257 | 14,220,681 | 100.0% | 96.5% | 0.0% |
| 12/31/2008 | 2,566,620 | 12,999,235 | 4,932,813 | 13,914,371 | 100.0% | 87.3% | 0.0% |
| 12/31/2009 | 2,568,287 | 12,660,958 | 4,747,972 | 13,382,736 | 100.0% | 85.4% | 0.0% |
| 12/31/2010 | 2,569,046 | 13,149,658 | 4,637,472 | 12,791,946 | 100.0% | 77.7% | 0.0% |
| 12/31/2011 | 2,629,640 | 13,710,393 | 4,486,510 | 12,010,045 | 100.0% | 68.4% | 0.0% |
| 12/31/2012 | 2,668,942 | 14,191,469 | 4,331,084 | 12,538,675 | 100.0% | 69.5% | 0.0% |
| 12/31/2013 | 2,675,469 | 15,296,368 | 4,871,888 | 13,129,460 | 100.0% | 68.3% | 0.0% |
| 12/31/2014 | 2,688,514 | 15,846,200 | 4,873,607 | 13,523,488 | 100.0% | 68.4% | 0.0% |
| **12/31/2015** | **2,685,014** | **16,470,370** | **4,930,287** | **13,882,820** | **100.0%** | **68.0%** | **0.0%** |
| **School Division** | | | | | | | |
| 12/31/2006 | $3,536,251 | $16,803,609 | $7,368,822 | $20,535,733 | 100.0% | 100.0% | 2.7% |
| 12/31/2007 | 3,596,453 | 18,039,390 | 7,605,585 | 22,070,769 | 100.0% | 100.0% | 5.7% |
| 12/31/2008 | 3,695,995 | 19,416,006 | 7,888,201 | 21,733,329 | 100.0% | 92.9% | 0.0% |
| 12/31/2009 | 3,769,100 | 18,830,712 | 7,813,003 | 21,054,910 | 100.0% | 91.8% | 0.0% |
| 12/31/2010 | 3,779,760 | 19,658,749 | 7,901,245 | 20,321,736 | 100.0% | 84.1% | 0.0% |
| 12/31/2011 | 3,783,336 | 20,666,021 | 7,536,842 | 19,266,110 | 100.0% | 74.9% | 0.0% |
| 12/31/2012 | 3,823,348 | 21,466,078 | 7,329,607 | 20,266,574 | 100.0% | 76.6% | 0.0% |
| 12/31/2013 | 3,881,145 | 23,301,641 | 8,254,526 | 21,369,380 | 100.0% | 75.1% | 0.0% |
| 12/31/2014 | 3,915,705 | 24,247,868 | 8,222,959 | 22,143,356 | 100.0% | 75.2% | 0.0% |
| **12/31/2015** | **4,003,251** | **25,133,168** | **8,540,734** | **22,871,661** | **100.0%** | **75.1%** | **0.0%** |
| **Local Government Division** | | | | | | | |
| 12/31/2006 | $645,209 | $1,509,232 | $1,133,980 | $2,613,386 | 100.0% | 100.0% | 40.5% |
| 12/31/2007 | 661,272 | 1,707,349 | 1,194,578 | 2,892,847 | 100.0% | 100.0% | 43.9% |
| 12/31/2008 | 675,174 | 1,949,108 | 1,213,801 | 2,933,296 | 100.0% | 100.0% | 25.5% |
| 12/31/2009 | 678,519 | 1,963,925 | 1,208,377 | 2,932,628 | 100.0% | 100.0% | 24.0% |
| 12/31/2010 | 657,847 | 2,180,451 | 1,167,268 | 2,926,045 | 100.0% | 100.0% | 7.5% |
| 12/31/2011 | 666,794 | 2,330,543 | 1,162,678 | 2,882,691 | 100.0% | 95.1% | 0.0% |
| 12/31/2012 | 528,029 | 2,750,956 | 878,636 | 3,098,721 | 100.0% | 93.4% | 0.0% |
| 12/31/2013 | 533,003 | 2,991,177 | 978,102 | 3,291,298 | 100.0% | 92.2% | 0.0% |
| 12/31/2014 | 534,695 | 3,114,436 | 961,836 | 3,629,400 | 100.0% | 99.4% | 0.0% |
| **12/31/2015** | **533,262** | **3,275,093** | **972,343** | **3,777,161** | **100.0%** | **99.0%** | **0.0%** |
| **Judicial Division** | | | | | | | |
| 12/31/2006 | $51,297 | $130,981 | $65,213 | $210,633 | 100.0% | 100.0% | 43.5% |
| 12/31/2007 | 49,445 | 152,073 | 62,692 | 231,228 | 100.0% | 100.0% | 47.4% |
| 12/31/2008 | 54,593 | 160,475 | 72,990 | 230,967 | 100.0% | 100.0% | 21.8% |
| 12/31/2009 | 52,754 | 165,904 | 77,038 | 228,714 | 100.0% | 100.0% | 13.1% |
| 12/31/2010 | 53,742 | 171,904 | 78,193 | 227,814 | 100.0% | 100.0% | 2.8% |
| 12/31/2011 | 54,688 | 186,420 | 78,329 | 221,515 | 100.0% | 89.5% | 0.0% |
| 12/31/2012 | 57,762 | 193,774 | 75,361 | 238,807 | 100.0% | 93.4% | 0.0% |
| 12/31/2013 | 59,348 | 208,236 | 84,014 | 256,800 | 100.0% | 94.8% | 0.0% |
| 12/31/2014 | 60,973 | 214,541 | 95,739 | 270,866 | 100.0% | 97.8% | 0.0% |
| **12/31/2015** | **60,118** | **232,303** | **109,545** | **286,891** | **100.0%** | **97.6%** | **0.0%** |
| **DPS Division[2]** | | | | | | | |
| 12/31/2010 | $317,442 | $2,370,217 | $645,155 | $2,961,720 | 100.0% | 100.0% | 42.5% |
| 12/31/2011 | 333,550 | 2,435,504 | 673,473 | 2,804,706 | 100.0% | 100.0% | 5.3% |
| 12/31/2012 | 348,739 | 2,479,706 | 667,104 | 2,936,695 | 100.0% | 100.0% | 16.2% |
| 12/31/2013 | 364,126 | 2,672,260 | 749,486 | 3,075,895 | 100.0% | 100.0% | 5.3% |
| 12/31/2014 | 379,240 | 2,665,352 | 771,501 | 3,151,456 | 100.0% | 100.0% | 13.9% |
| **12/31/2015** | **394,306** | **2,732,879** | **778,055** | **3,207,327** | **100.0%** | **100.0%** | **10.3%** |

*Please see page 153 for footnote references.*

## DIVISION TRUST FUNDS—PENSION

### SOLVENCY TEST (CONTINUED)

*(Dollars in Thousands)*

| | Aggregate Accrued Liabilities | | | | Portion of Actuarial Accrued Liabilities Covered by Valuation Assets | | |
|---|---|---|---|---|---|---|---|
| Valuation Date | Active Member Contributions (A)[1] | Retirees, Beneficiaries, and Inactive Members (B) | Employer-Financed Portion of Active Members (C) | Valuation Assets | Liability (A) | Liability (B) | Liability (C) |
| All Division Trust Funds[3, 4] | | | | | | | |
| 12/31/2006 | $6,742,437 | $29,674,682 | $13,073,485 | $36,687,042 | 100.0% | 100.0% | 2.1% |
| 12/31/2007 | 6,834,261 | 32,017,760 | 13,607,112 | 39,415,525 | 100.0% | 100.0% | 4.1% |
| 12/31/2008 | 6,992,382 | 34,524,824 | 14,107,805 | 38,811,963 | 100.0% | 92.2% | 0.0% |
| 12/31/2009 | 7,068,660 | 33,621,499 | 13,846,390 | 37,598,988 | 100.0% | 90.8% | 0.0% |
| 12/31/2010 | 7,377,837 | 37,530,979 | 14,429,333 | 39,229,261 | 100.0% | 84.9% | 0.0% |
| 12/31/2011 | 7,468,008 | 39,328,881 | 13,937,832 | 37,185,067 | 100.0% | 75.6% | 0.0% |
| 12/31/2012 | 7,426,820 | 41,081,983 | 13,281,792 | 39,079,472 | 100.0% | 77.0% | 0.0% |
| 12/31/2013 | 7,513,091 | 44,469,682 | 14,938,016 | 41,122,833 | 100.0% | 75.6% | 0.0% |
| 12/31/2014 | 7,579,127 | 46,088,397 | 14,925,642 | 42,718,566 | 100.0% | 76.2% | 0.0% |
| **12/31/2015** | **7,675,951** | **47,843,813** | **15,330,964** | **44,025,860** | **100.0%** | **76.0%** | **0.0%** |

[1] Includes accrued interest on member contributions.

[2] The DPS Division Trust Fund was established on January 1, 2010, and received the net assets of the Denver Public Schools Retirement System (DPSRS).

[3] Results prior to December 31, 2010, do not include the DPS Division.

[4] The data in this table is aggregated for informational purposes. The assets of each trust fund are for the sole purpose of its members and cannot be used by another fund.

DIVISION TRUST FUNDS—PENSION

## Unfunded Actuarial Accrued Liability

UAALs are the difference between actuarially calculated liabilities for service already rendered and the valuation assets of the retirement fund. It is natural for unfunded liabilities to exist in a defined benefit retirement plan.

In 2014, the ratio of PERA's valuation assets to accrued liabilities was 62.3 percent and decreased to 62.1 percent by the end of 2015.

The following factors resulted in higher liabilities (or losses) to PERA during 2015:

- Lower investment returns than assumed in 2014 and 2015.
- Fewer members terminated PERA-covered employment and withdrew their accounts than expected.
- More service and disability retirements were experienced than expected.
- Current retirees are living longer than expected.
- Higher number of survivor benefits were granted than anticipated.
- New PERA members had some service resulting in accrued liabilities.
- Actual contributions were less than the determined ADC.

The following factors resulted in lower liabilities (or gains) during 2015:

- Higher investment returns than assumed in 2012 and 2013.
- Member pay increases were lower than expected.

Since 2000, PERA's funded ratio has declined from a high of 105.2 percent to the current funded status of 62.1 percent at the end of 2015. In response to the declining funded ratio, legislation was enacted in 2004 and 2006, with the specific purpose of strengthening PERA's future funded status. Among other cost-saving measures, the AED and the SAED were created and implemented. The 2008 global financial crisis further necessitated major pension reform. The enactment of SB 10-001 significantly affected benefit and eligibility provisions, the payment structure of AIs, and employer funding mechanisms with the intent to return PERA to a 100 percent funded ratio within the next 30 years.

Liabilities for members are based on service rendered toward their retirement benefits payable in the future. UAALs exist because liabilities for such service by members exceed assets currently on hand for such future benefits. The Solvency Test shows that benefits to all PERA retirees are funded at 76.0 percent.

Since inflation decreases the dollar's value, it is important to examine more than basic actuarial metrics and data when assessing the plan's financial status. The ratio of UAAL dollars divided by member salary dollars can provide a meaningful index. The lower the ratio, the greater is the strength of the system. Observation of this relative index over a period of years will give an indication of the financial strength of the system. This ratio has decreased at times over the last decade, but the decline from 2006 through 2007 was in recognition of investment gains and additional funding measures implemented during this period. The significant increase in this ratio for the periods 2008 through 2011 was primarily a result of the four-year smoothing of the large investment loss from 2008. The increase in this ratio for 2013 was predominantly attributable to the increase in liability due to the reduction in the investment rate of return assumption as well as the changes in the underlying economic assumptions effective for the December 31, 2013, actuarial valuation. The decrease in this ratio for 2014 and 2015 mainly is attributable to investment gains on the actuarial value of assets, reflecting the strong investment performance in 2012 and 2013, and changes to certain actuarial methods incorporated into the 2014 actuarial valuation as a result of the 2014 actuarial audit.

DIVISION TRUST FUNDS—PENSION

## SCHEDULE OF FUNDING PROGRESS

*(Dollars in Thousands)*

| (A) Valuation Date | (B) Actuarial Value of Plan Assets | (C) Actuarial Accrued Liabilities | (D) Unfunded Actuarial Accrued Liabilities (UAALs) (C) – (B) | (E) Funded Ratio (B)/(C) | (F) Annual Covered Payroll | (G) UAALs As a % of Covered Payroll (D)/(F) |
|---|---|---|---|---|---|---|
| **State Division** | | | | | | |
| 12/31/2006 | $13,327,290 | $18,246,010 | $4,918,720 | 73.0% | $2,099,325 | 234.3% |
| 12/31/2007 | 14,220,681 | 19,390,296 | 5,169,615 | 73.3% | 2,236,518 | 231.1% |
| 12/31/2008 | 13,914,371 | 20,498,668 | 6,584,297 | 67.9% | 2,371,639 | 277.6% |
| 12/31/2009 | 13,382,736 | 19,977,217 | 6,594,481 | 67.0% | 2,384,137 | 276.6% |
| 12/31/2010 | 12,791,946 | 20,356,176 | 7,564,230 | 62.8% | 2,392,080 | 316.2% |
| 12/31/2011 | 12,010,045 | 20,826,543 | 8,816,498 | 57.7% | 2,393,791 | 368.3% |
| 12/31/2012 | 12,538,675 | 21,191,495 | 8,652,820 | 59.2% | 2,384,934 | 362.8% |
| 12/31/2013 | 13,129,460 | 22,843,725 | 9,714,265 | 57.5% | 2,474,965 | 392.5% |
| 12/31/2014 | 13,523,488 | 23,408,321 | 9,884,833 | 57.8% | 2,564,670 | 385.4% |
| **12/31/2015** | **13,882,820** | **24,085,671** | **10,202,851** | **57.6%** | **2,641,867** | **386.2%** |
| **School Division** | | | | | | |
| 12/31/2006 | $20,535,733 | $27,708,682 | $7,172,949 | 74.1% | $3,371,186 | 212.8% |
| 12/31/2007 | 22,070,769 | 29,241,428 | 7,170,659 | 75.5% | 3,618,258 | 198.2% |
| 12/31/2008 | 21,733,329 | 31,000,202 | 9,266,873 | 70.1% | 3,804,927 | 243.5% |
| 12/31/2009 | 21,054,910 | 30,412,815 | 9,357,905 | 69.2% | 3,922,175 | 238.6% |
| 12/31/2010 | 20,321,736 | 31,339,754 | 11,018,018 | 64.8% | 3,900,662 | 282.5% |
| 12/31/2011 | 19,266,110 | 31,986,199 | 12,720,089 | 60.2% | 3,821,603 | 332.8% |
| 12/31/2012 | 20,266,574 | 32,619,033 | 12,352,459 | 62.1% | 3,819,066 | 323.4% |
| 12/31/2013 | 21,369,380 | 35,437,312 | 14,067,932 | 60.3% | 3,938,650 | 357.2% |
| 12/31/2014 | 22,143,356 | 36,386,532 | 14,243,176 | 60.9% | 4,063,236 | 350.5% |
| **12/31/2015** | **22,871,661** | **37,677,153** | **14,805,492** | **60.7%** | **4,235,290** | **349.6%** |
| **Local Government Division** | | | | | | |
| 12/31/2006 | $2,613,386 | $3,288,421 | $675,035 | 79.5% | $636,300 | 106.1% |
| 12/31/2007 | 2,892,847 | 3,563,199 | 670,352 | 81.2% | 680,442 | 98.5% |
| 12/31/2008 | 2,933,296 | 3,838,083 | 904,787 | 76.4% | 718,902 | 125.9% |
| 12/31/2009 | 2,932,628 | 3,850,821 | 918,193 | 76.2% | 705,097 | 130.2% |
| 12/31/2010 | 2,926,045 | 4,005,566 | 1,079,521 | 73.0% | 705,265 | 153.1% |
| 12/31/2011 | 2,882,691 | 4,160,015 | 1,277,324 | 69.3% | 718,169 | 177.9% |
| 12/31/2012 | 3,098,721 | 4,157,621 | 1,058,900 | 74.5% | 523,668 | 202.2% |
| 12/31/2013 | 3,291,298 | 4,502,282 | 1,210,984 | 73.1% | 529,003 | 228.9% |
| 12/31/2014 | 3,629,400 | 4,610,967 | 981,567 | 78.7% | 540,468 | 181.6% |
| **12/31/2015** | **3,777,161** | **4,780,698** | **1,003,537** | **79.0%** | **561,518** | **178.7%** |
| **Judicial Division** | | | | | | |
| 12/31/2006 | $210,633 | $247,491 | $36,858 | 85.1% | $29,151 | 126.4% |
| 12/31/2007 | 231,228 | 264,210 | 32,982 | 87.5% | 31,150 | 105.9% |
| 12/31/2008 | 230,967 | 288,058 | 57,091 | 80.2% | 35,937 | 158.9% |
| 12/31/2009 | 228,714 | 295,696 | 66,982 | 77.3% | 37,583 | 178.2% |
| 12/31/2010 | 227,814 | 303,839 | 76,025 | 75.0% | 37,412 | 203.2% |
| 12/31/2011 | 221,515 | 319,437 | 97,922 | 69.3% | 39,033 | 250.9% |
| 12/31/2012 | 238,807 | 326,897 | 88,090 | 73.1% | 39,045 | 225.6% |
| 12/31/2013 | 256,800 | 351,598 | 94,798 | 73.0% | 39,942 | 237.3% |
| 12/31/2014 | 270,866 | 371,253 | 100,387 | 73.0% | 42,977 | 233.6% |
| **12/31/2015** | **286,891** | **401,966** | **115,075** | **71.4%** | **46,870** | **245.5%** |

*Please see page 156 for footnote references.*

DIVISION TRUST FUNDS—PENSION

## SCHEDULE OF FUNDING PROGRESS (CONTINUED)

*(Dollars in Thousands)*

| (A) Valuation Date | (B) Actuarial Value of Plan Assets | (C) Actuarial Accrued Liabilities | (D) Unfunded Actuarial Accrued Liabilities (UAALs) (C) – (B) | (E) Funded Ratio (B)/(C) | (F) Annual Covered Payroll | (G) UAALs As a % of Covered Payroll (D)/(F) |
|---|---|---|---|---|---|---|
| DPS Division[1] | | | | | | |
| 12/31/2010 | $2,961,720 | $3,332,814 | $371,094 | 88.9% | $470,774 | 78.8% |
| 12/31/2011 | 2,804,706 | 3,442,527 | 637,821 | 81.5% | 491,646 | 129.7% |
| 12/31/2012 | 2,936,695 | 3,495,549 | 558,854 | 84.0% | 510,872 | 109.4% |
| 12/31/2013 | 3,075,895 | 3,785,872 | 709,977 | 81.2% | 547,660 | 129.6% |
| 12/31/2014 | 3,151,456 | 3,816,093 | 664,637 | 82.6% | 584,319 | 113.7% |
| **12/31/2015** | **3,207,327** | **3,905,240** | **697,913** | **82.1%** | **621,115** | **112.4%** |
| All Division Trust Funds[2, 3] | | | | | | |
| 12/31/2006 | $36,687,042 | $49,490,604 | $12,803,562 | 74.1% | $6,135,962 | 208.7% |
| 12/31/2007 | 39,415,525 | 52,459,133 | 13,043,608 | 75.1% | 6,566,368 | 198.6% |
| 12/31/2008 | 38,811,963 | 55,625,011 | 16,813,048 | 69.8% | 6,931,405 | 242.6% |
| 12/31/2009 | 37,598,988 | 54,536,549 | 16,937,561 | 68.9% | 7,048,992 | 240.3% |
| 12/31/2010 | 39,229,261 | 59,338,149 | 20,108,888 | 66.1% | 7,506,193 | 267.9% |
| 12/31/2011 | 37,185,067 | 60,734,721 | 23,549,654 | 61.2% | 7,464,242 | 315.5% |
| 12/31/2012 | 39,079,472 | 61,790,595 | 22,711,123 | 63.2% | 7,277,585 | 312.1% |
| 12/31/2013 | 41,122,833 | 66,920,789 | 25,797,956 | 61.5% | 7,530,220 | 342.6% |
| 12/31/2014 | 42,718,566 | 68,593,166 | 25,874,600 | 62.3% | 7,795,670 | 331.9% |
| **12/31/2015** | **44,025,860** | **70,850,728** | **26,824,868** | **62.1%** | **8,106,660** | **330.9%** |

[1] The DPS Division Trust Fund was established on January 1, 2010, and received the net assets of DPSRS.

[2] Results prior to December 31, 2010, do not include the DPS Division.

[3] The data in this table is aggregated for informational purposes. The assets of each trust fund are for the sole purpose of its members and cannot be used by another fund.

Note: For a history of contributions by Division Trust Fund, the actuarially determined contribution compared to the actual employer contributions paid, including the deficiency (or excess), for each of the last ten years, is shown in the Schedule of Employer Contributions, found on pages 100–102, in the Required Supplementary Information (RSI) in the Financial Section.

DIVISION TRUST FUNDS—PENSION

## Actuarial Gains and Losses

### ANALYSIS OF FINANCIAL EXPERIENCE

*(Dollars in Millions)*

| | State Division | School Division | Local Government Division | Judicial Division | DPS Division |
|---|---|---|---|---|---|
| **Amounts** | | | | | |
| From differences between assumed and actual experience on liabilities | | | | | |
| Age and service retirements[1] | $36.5 | $74.9 | $13.5 | ($0.8) | $8.0 |
| Disability retirements[2] | 9.8 | 9.2 | 2.1 | (0.1) | 1.7 |
| Deaths[3] | 3.8 | 62.7 | 4.3 | 0.2 | (2.5) |
| Withdrawals[4] | 57.7 | 113.5 | 13.0 | 0.8 | (12.3) |
| New members[5] | 48.4 | 63.7 | 10.2 | 5.1 | 22.5 |
| Pay increases[6] | (26.5) | (22.7) | (8.3) | 8.5 | (15.4) |
| Other[7] | (6.9) | (15.5) | (2.9) | (1.0) | (9.4) |
| Subtotal | 122.8 | 285.8 | 31.9 | 12.7 | (7.4) |
| From differences between assumed and actual experience on assets | (138.0) | (215.6) | (28.6) | (2.3) | (33.5) |
| From changes in plan assumptions and methods | — | — | — | — | — |
| From changes in plan provisions | — | — | — | — | — |
| **Total actuarial (gains)/losses on 2015 activities** | **($15.2)** | **$70.2** | **$3.3** | **$10.4** | **($40.9)** |
| **Total actuarial (gains)/losses on 2014 activities** | **($162.7)** | **($331.7)** | **($69.3)** | **$1.8** | **($107.2)** |

[1] *Age and service retirements:* If members retire at older ages than assumed, there is a gain. If members retire at younger ages than assumed, there is a loss.

[2] *Disability retirements:* If disability claims are lower than assumed, there is a gain. If disability claims are higher than assumed, there is a loss.

[3] *Deaths:* If survivor claims are lower than assumed, there is a gain. If survivor claims are higher than assumed, there is a loss. If retirees die sooner than assumed, there is a gain. If retirees live longer than assumed, there is a loss.

[4] *Withdrawal from employment:* If more members terminate and more liabilities are released by withdrawals than assumed, there is a gain. If fewer liabilities are released by terminations than assumed, there is a loss.

[5] *New members:* If new members entering the plan have prior service, there is a loss.

[6] *Pay increases:* If there are smaller salary increases than assumed, there is a gain. If greater salary increases occur than assumed, there is a loss.

[7] *Other:* Miscellaneous gains and losses result from changes in actuary's valuation software, data adjustments, timing of financial transactions, etc.

## DIVISION TRUST FUNDS—PENSION

The table below identifies the components that contributed to the growth in the underfunded status of the Division Trust Funds for the period 2011 to 2015.

### SCHEDULE OF GAINS AND LOSSES IN ACCRUED LIABILITIES AND RECONCILIATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITIES

*(Dollars in Millions)*

| | $ (Gain) or Loss for Years Ended December 31 | | | | | |
|---|---|---|---|---|---|---|
| Type of Activity | 2011 | 2012 | 2013 | 2014 | 2015 | 2011–2015 |
| **UAAL beginning of year** | $20,108.8 | $23,549.6 | $22,711.2 | $25,798.0 | **$25,874.6** | $20,108.8 |
| Experience (gains) and losses | | | | | | |
| Age and service retirements | (1.7) | 49.0 | 32.7 | 180.4 | **132.1** | 392.5 |
| Disability retirements | (9.2) | (9.9) | 24.2 | 23.9 | **22.7** | 51.7 |
| Deaths | 33.8 | 5.2 | 70.4 | 67.1 | **68.5** | 245.0 |
| Withdrawal from employment | 154.1 | (44.1) | 122.4 | 204.1 | **172.7** | 609.2 |
| New members | 147.1 | 160.0 | 215.3 | 176.0 | **149.9** | 848.3 |
| Pay increases | (901.0) | (385.3) | (230.2) | (52.6) | **(64.4)** | (1,633.5) |
| Investment income | 3,188.9 | (1,062.4) | (1,139.1) | (579.1) | **(418.0)** | (9.7) |
| Other | (18.3) | 68.6 | (11.4) | (52.0) | **(35.7)** | (48.8) |
| Experience (gain)/loss during year | 2,593.7 | (1,218.9) | (915.7) | (32.2) | **27.8** | 454.7 |
| Non-recurring items | | | | | | |
| Change in plan assumptions and methods | — | (663.7) | 3,140.3 | (636.9) | **—** | 1,839.7 |
| Change in plan provisions | — | — | — | — | **—** | — |
| Non-recurring items | — | (663.7) | 3,140.3 | (636.9) | **—** | 1,839.7 |
| Contribution deficiency | 125.8 | 157.3 | 301.7 | 55.3 | **380.9** | 1,021.0 |
| Expected change in UAAL | 721.3 | 886.9 | 560.5 | 690.4 | **541.6** | 3,400.7 |
| **Total (gain)/loss for year** | **3,440.8** | **(838.4)** | **3,086.8** | **76.6** | **950.3** | **6,716.1** |
| **UAAL end of year** | **$23,549.6** | **$22,711.2** | **$25,798.0** | **$25,874.6** | **$26,824.9** | **$26,824.9** |

The previous schedule shows where gains and losses occurred over the five-year period compared to what was expected or assumed. These include the following significant gains and losses:

- $3.1 billion loss, in 2013, primarily due to the reduction of the long-term expected investment rate of return assumption from 8.0 percent to 7.5 percent.
- $3.4 billion cumulative loss indicating the five-year difference between each prior year's UAAL and the expected current year UAAL considering the normal cost earned, less the required employer contributions all of which is adjusted for interest.
- $1.6 billion cumulative gain due to lower pay increases than expected.
- $1.0 billion cumulative loss resulting from contribution deficiencies; occurring when actual contributions flowing into the plans are less than the determined ADC (previous to 2014, GASB's annual required contribution).

DIVISION TRUST FUNDS—PENSION

## Actuarial Valuation Results

Contribution rates for the year ending December 31, 2017, are derived from the results of the December 31, 2015, annual actuarial valuation and are determined in advance for purposes of budgeting and consideration of any necessary legislative action.

### SCHEDULE OF COMPUTED EMPLOYER CONTRIBUTION RATES FOR THE 2017 FISCAL YEAR

| | Expressed as a Percentage of Covered Payroll | | | | |
|---|---|---|---|---|---|
| | State Division | School Division | Local Government Division | Judicial Division | DPS Division |
| **Contributions** | | | | | |
| Service retirement benefits | 7.72% | 9.06% | 7.29% | 14.71% | 8.73% |
| Disability retirement benefits | 0.38% | 0.24% | 0.25% | 0.89% | 0.31% |
| Survivor benefits | 0.16% | 0.13% | 0.16% | 0.45% | 0.13% |
| Termination withdrawals | 1.53% | 1.67% | 1.63% | 1.05% | 1.50% |
| Refunds | 0.79% | 0.75% | 0.83% | 0.10%[1] | 1.38% |
| Administrative expense load | 0.35% | 0.35% | 0.35% | 0.35% | 0.35% |
| Total normal cost | 10.93% | 12.20% | 10.51% | 17.55% | 12.40% |
| Less member contributions | (8.05%)[2] | (8.00%) | (8.00%) | (8.00%) | (8.00%) |
| **Employer normal cost** | **2.88%** | **4.20%** | **2.51%** | **9.55%** | **4.40%** |
| Percentage available to amortize unfunded actuarial accrued liabilities | 15.87% | 14.04% | 9.70% | 6.48% | 0.00% |
| Amortization period | 44 years | 50 years | 28 years | Infinite | Infinite |
| Total employer contribution rate for actuarially funded benefits | 10.22%[2] | 10.15% | 10.00% | 13.66% | 10.15% |
| Amortization Equalization Disbursement | 5.00% | 4.50% | 2.20% | 2.20% | 4.50% |
| Supplemental Amortization Equalization Disbursement | 5.00% | 5.00% | 1.50% | 1.50% | 5.00% |
| Less Health Care Trust Fund | (1.02%) | (1.02%) | (1.02%) | (1.02%) | (1.02%) |
| Less Annual Increase Reserve | (0.45%) | (0.39%) | (0.47%) | (0.31%) | (0.54%) |
| Less PCOP Credit | — | — | — | — | (15.32%)[3] |
| **Employer contribution rate for defined benefit plan** | **18.75%** | **18.24%** | **12.21%** | **16.03%** | **2.77%** |

[1] Assumes no judge will elect a refund of contributions made for the 17th through the 20th year of service.

[2] Weighted average of more than one statutory rate.

[3] An offset to the DPS Division rate is provided for under C.R.S. § 24-51-412. See Note 4—Contributions, in the Financial Section.

The AED and SAED are set to increase in future years as shown below. With the passage of SB 10-001, the AED and the SAED can be adjusted based on the year-end funded status within a particular Division Trust Fund. If a particular Division Trust Fund reaches a funded status of 103 percent, a decrease in the AED and SAED is mandated and if it subsequently falls below a funded status of 90 percent, an increase is mandated. For the Local Government and Judicial Divisions, if the funded ratio reaches 90 percent and subsequently falls below 90 percent, an increase in the AED and SAED is mandated. Increases cannot exceed the maximum allowable limitations shown below.

### FUTURE AED AND SAED RATES

| | State Division Trust Fund | | School Division Trust Fund | | Local Government Division Trust Fund | | Judicial Division Trust Fund | | DPS Division Trust Fund[1] | |
|---|---|---|---|---|---|---|---|---|---|---|
| Period | AED | SAED | AED | SAED | AED | SAED | AED | SAED | AED | SAED |
| 1/1/2017 — 12/31/2017 | 5.00% | 5.00% | 4.50% | 5.00% | 2.20% | 1.50% | 2.20% | 1.50% | 4.50% | 5.00% |
| 1/1/2018 — 12/31/2018 | 5.00% | 5.00% | 4.50% | 5.50% | 2.20% | 1.50% | 2.20% | 1.50% | 4.50% | 5.50% |
| Maximum allowable limitations | 5.00% | 5.00% | 4.50% | 5.50% | 5.00% | 5.00% | 5.00% | 5.00% | 4.50% | 5.50% |

[1] DPS Division employers are permitted to reduce the AED and SAED by the PCOP offset, as specified in C.R.S. § 24-51-412 *et seq.*

Note: For a history of contributions by Division Trust Fund, the actuarially determined contribution compared to the actual employer contributions paid, including the deficiency (or excess), for each of the last ten years, is shown in the Schedule of Employer Contributions, found on pages 100–102, in the RSI in the Financial Section.

## DIVISION TRUST FUNDS—PENSION

### *Annual Actuarial Valuation Statistics*

As of December 31, 2015, the Funded Ratio, the UAAL, the ADC for 2017 as a percentage of covered payroll, and the amortization period considering current funding and future increases of the AED and the SAED, for each Division Trust Fund, are shown in the following table. The results in this table are based on the actuarial valuation for funding purposes, which does not consider the impact of reduced benefits for those hired in the future as provided for in Colorado law.

**ACTUARIAL STATISTICS**
*(Dollars in Thousands)*

| Trust Fund | Funded Ratio | UAAL | ADC[1] | Amortization Period Considering Future AED and SAED Increases |
|---|---|---|---|---|
| State Division | 57.6% | $10,202,851 | 22.71% | 44 Years |
| School Division | 60.7% | 14,805,492 | 22.54% | 46 Years |
| Local Government Division | 79.0% | 1,003,537 | 11.92% | 28 Years |
| Judicial Division | 71.4% | 115,075 | 22.54% | Infinite |
| DPS Division | 82.1% | 697,913 | 10.28% | Infinite |
| All Division Trust Funds[2] | | $26,824,868 | | |

[1] Determined considering the 30-year target amortization period defined in the revised pension funding policy, adopted March 20, 2015, for purposes of funding benchmarks and RSI reporting as shown in the Financial Section.

[2] The data in this table has been aggregated for informational purposes. The assets of each trust fund are for the sole purpose of its members and cannot be used by another fund.

Pursuant to the pension funding policy revised March 20, 2015, for reporting purposes, alternative ADCs also are determined by applying the layered amortization methodology as previously described. Under the target and alternative calculations, the legacy UAAL as of December 31, 2014, was amortized using a 30-year period, but the alternative ADCs use a 25-year closed period, a 20-year closed period, and a 15-year closed period, in lieu of the 30-year period, for amortization of any "new" UAAL recognized on and after January 1, 2015. The 2017 target and alternative ADCs, by Division, are displayed below:

| Trust Fund | Target ADC 30-Year[1] | Alternative ADCs 25-Year[2] | 20-Year[2] | 15-Year[2] |
|---|---|---|---|---|
| State Division | 22.71% | 22.71% | 22.71% | 22.71% |
| School Division | 22.54% | 22.55% | 22.58% | 22.61% |
| Local Government Division | 11.92% | 11.91% | 11.91% | 11.89% |
| Judicial Division | 22.54% | 22.67% | 22.87% | 23.22% |
| DPS Division | 10.28% | 10.23% | 10.17% | 10.06% |

[1] Refers to the amortization period used to amortize the legacy UAAL as of December 31, 2014, and any "new" UAAL recognized on and after January 1, 2015.

[2] Refers to the amortization period used to amortize any "new" UAAL recognized on and after January 1, 2015.

### *Funded Ratio*
*(Dollars in Thousands)*

The funded ratio for the plan is determined by dividing the actuarial value of assets by the AAL. The actuarial value of assets is not the current market value but a market-related value, which recognizes the differences between actual and expected investment experience for each year in equal amounts over a four-year period. The actuarial value of the assets as of December 31, 2015, was $44,025,860 compared to a market value of assets of $42,464,338, and to the AAL of $70,850,728. The funded ratio for each of the funds, based on the actuarial value of assets, at December 31 for each of the last five years is shown below.

| Trust Fund | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|
| State Division | 57.7% | 59.2% | 57.5% | 57.8% | **57.6%** |
| School Division | 60.2% | 62.1% | 60.3% | 60.9% | **60.7%** |
| Local Government Division | 69.3% | 74.5% | 73.1% | 78.7% | **79.0%** |
| Judicial Division | 69.3% | 73.1% | 73.0% | 73.0% | **71.4%** |
| DPS Division | 81.5% | 84.0% | 81.2% | 82.6% | **82.1%** |
| All Division Trust Funds[1] | **61.2%** | **63.2%** | **61.5%** | **62.3%** | **62.1%** |

[1] The data in this table has been aggregated for informational purposes. The assets of each trust fund are for the sole purpose of its members and cannot be used by another fund.

## DIVISION TRUST FUNDS—PENSION

The Board's pension funding policy, revised as of March 20, 2015, states that the targeted actuarial funded ratio is greater than or equal to 110 percent on a combined division trust fund basis. The funded ratios listed above give an indication of progress made toward achieving the stated objective. A larger funded ratio indicates that a plan is better funded. As an example, for every $1.00 of the actuarially determined benefits earned for the School Division Trust Fund as of December 31, 2015, approximately $0.61 of assets are available for payment based on the actuarial value of assets. These benefits earned will be payable over the life span of members after their retirement and therefore, it is not imperative that the AAL equal the actuarial value of assets at any given moment in time.

At December 31, 2015, and December 31, 2014, PERA had the following funded status for all of its Division Trust Funds.

### FUNDED STATUS FOR THE DIVISION TRUST FUNDS

*(Dollars in Thousands)*

| | Market Value of Assets[1] | | Actuarial Value of Assets[2] | |
|---|---|---|---|---|
| | 12/31/2014 | 12/31/2015 | 12/31/2014 | 12/31/2015 |
| **State Division Trust Fund** | | | | |
| Actuarial accrued liability[3] | $23,408,321 | **$24,085,671** | $23,408,321 | **$24,085,671** |
| Assets held to pay those liabilities | 13,956,630 | **13,391,398** | 13,523,488 | **13,882,820** |
| **Unfunded actuarial accrued liability** | **$9,451,691** | **$10,694,273** | **$9,884,833** | **$10,202,851** |
| Funded ratio | 59.6% | **55.6%** | 57.8% | **57.6%** |
| **School Division Trust Fund** | | | | |
| Actuarial accrued liability[3] | $36,386,532 | **$37,677,153** | $36,386,532 | **$37,677,153** |
| Assets held to pay those liabilities | 22,846,249 | **22,062,124** | 22,143,356 | **22,871,661** |
| **Unfunded actuarial accrued liability** | **$13,540,283** | **$15,615,029** | **$14,243,176** | **$14,805,492** |
| Funded ratio | 62.8% | **58.6%** | 60.9% | **60.7%** |
| **Local Government Division Trust Fund** | | | | |
| Actuarial accrued liability[3] | $4,610,967 | **$4,780,698** | $4,610,967 | **$4,780,698** |
| Assets held to pay those liabilities | 3,733,496 | **3,639,914** | 3,629,400 | **3,777,161** |
| **Unfunded actuarial accrued liability** | **$877,471** | **$1,140,784** | **$981,567** | **$1,003,537** |
| Funded ratio | 81.0% | **76.1%** | 78.7% | **79.0%** |
| **Judicial Division Trust Fund** | | | | |
| Actuarial accrued liability[3] | $371,253 | **$401,966** | $371,253 | **$401,966** |
| Assets held to pay those liabilities | 278,860 | **276,563** | 270,866 | **286,891** |
| **Unfunded actuarial accrued liability** | **$92,393** | **$125,403** | **$100,387** | **$115,075** |
| Funded ratio | 75.1% | **68.8%** | 73.0% | **71.4%** |
| **Denver Public Schools Division Trust Fund** | | | | |
| Actuarial accrued liability[3] | $3,816,093 | **$3,905,240** | $3,816,093 | **$3,905,240** |
| Assets held to pay those liabilities | 3,254,064 | **3,094,339** | 3,151,456 | **3,207,327** |
| **Unfunded actuarial accrued liability** | **$562,029** | **$810,901** | **$664,637** | **$697,913** |
| Funded ratio | 85.3% | **79.2%** | 82.6% | **82.1%** |
| **All Division Trust Funds[4]** | | | | |
| Actuarial accrued liability[3] | $68,593,166 | **$70,850,728** | $68,593,166 | **$70,850,728** |
| Assets held to pay those liabilities[5] | 44,069,299 | **42,464,338** | 42,718,566 | **44,025,860** |
| **Unfunded actuarial accrued liability** | **$24,523,867** | **$28,386,390** | **$25,874,600** | **$26,824,868** |
| Funded ratio | 64.2% | **59.9%** | 62.3% | **62.1%** |

[1] The market value of assets is the fair value of the investments.

[2] The actuarial value of assets is calculated by spreading any market gains or losses above or below the assumed rate of return over four years.

[3] Based upon an assumed rate of return on investments of 7.5 percent and an assumed rate of 7.5 percent to discount the liabilities to be paid in the future to a value as of December 31, 2014, and 2015.

[4] The data in the table has been aggregated for information purposes. The assets of each trust fund are for the sole purpose of its members and cannot be used by another fund.

[5] In aggregate, the market value of the assets as of December 31, 2015, is $1,561,522 less than the actuarial value of assets calculated by the actuaries, as they are recognizing the gains and losses in value over four years, rather than only in the year they occurred. The remaining gains and (losses) to be smoothed for 2013 are $732,197, for 2014 are ($375,489), and for 2015 are ($1,918,230).

DIVISION TRUST FUNDS—PENSION

### *Sensitivity of Actuarial Valuation to Changes in Assumed Investment Rate of Return and Discount Rate*

The most important long-term driver of a pension plan is investment income. The investment return assumption and the discount rate for liabilities should be based on an estimated long-term investment yield for the plan, considering the nature and mix of current and expected plan investments and the basis used to determine the actuarial value of assets.

To understand the importance of the investment rate of return, which is used to discount the actuarial liabilities of PERA, a one and one-half, and one-half percent fluctuation in the investment rate of return and discount rate would change the funded ratio, UAAL, and ADC (for contributions for the fiscal year ended December 31, 2017) as shown on the tables below and on the next page.

#### INVESTMENT RETURN ASSUMPTION (DISCOUNT RATE) EQUAL TO 6.0 PERCENT

*(Dollars in Thousands)*

| | Actuarial Value of Assets | | | Market Value of Assets |
|---|---|---|---|---|
| Trust Fund | Funded Ratio | UAAL | ADC | UAAL |
| State Division | 48.8% | $14,585,958 | 30.87% | $15,077,379 |
| School Division | 51.0% | 21,992,326 | 32.01% | 22,801,864 |
| Local Government Division | 66.1% | 1,933,548 | 21.58% | 2,070,795 |
| Judicial Division | 61.3% | 181,129 | 32.72% | 191,457 |
| DPS Division | 69.3% | 1,419,483 | 19.19% | 1,532,471 |
| All Division Trust Funds[1] | | $40,112,444 | | $41,673,966 |

[1] The data in this table has been aggregated for informational purposes. The assets of each trust fund are for the sole purpose of its members and cannot be used by another fund.

#### INVESTMENT RETURN ASSUMPTION (DISCOUNT RATE) EQUAL TO 7.0 PERCENT

*(Dollars in Thousands)*

| | Actuarial Value of Assets | | | Market Value of Assets |
|---|---|---|---|---|
| Trust Fund | Funded Ratio | UAAL | ADC | UAAL |
| State Division | 54.6% | $11,531,664 | 25.25% | $12,023,086 |
| School Division | 57.4% | 16,977,818 | 25.47% | 17,787,356 |
| Local Government Division | 74.6% | 1,284,235 | 14.99% | 1,421,482 |
| Judicial Division | 67.9% | 135,426 | 25.77% | 145,753 |
| DPS Division | 77.8% | 915,806 | 13.03% | 1,028,794 |
| All Division Trust Funds[1] | | $30,844,949 | | $32,406,471 |

[1] The data in this table has been aggregated for informational purposes. The assets of each trust fund are for the sole purpose of its members and cannot be used by another fund.

#### CURRENT INVESTMENT RETURN ASSUMPTION (DISCOUNT RATE) EQUAL TO 7.5 PERCENT

*(Dollars in Thousands)*

| | Actuarial Value of Assets | | | Market Value of Assets |
|---|---|---|---|---|
| Trust Fund | Funded Ratio | UAAL | ADC | UAAL |
| State Division | **57.6%** | **$10,202,851** | **22.71%** | **$10,694,273** |
| School Division | **60.7%** | **14,805,492** | **22.54%** | **15,615,029** |
| Local Government Division | **79.0%** | **1,003,537** | **11.92%** | **1,140,784** |
| Judicial Division | **71.4%** | **115,075** | **22.54%** | **125,403** |
| DPS Division | **82.1%** | **697,913** | **10.28%** | **810,901** |
| All Division Trust Funds[1] | | $26,824,868 | | $28,386,390 |

[1] The data in this table has been aggregated for informational purposes. The assets of each trust fund are for the sole purpose of its members and cannot be used by another fund.

DIVISION TRUST FUNDS—PENSION

### INVESTMENT RETURN ASSUMPTION (DISCOUNT RATE) EQUAL TO 8.0 PERCENT

*(Dollars in Thousands)*

| | Actuarial Value of Assets | | | Market Value of Assets |
|---|---|---|---|---|
| Trust Fund | Funded Ratio | UAAL | ADC | UAAL |
| State Division | 60.7% | $8,987,416 | 20.29% | $9,478,838 |
| School Division | 64.1% | 12,823,753 | 19.77% | 13,633,291 |
| Local Government Division | 83.5% | 747,835 | 8.97% | 885,082 |
| Judicial Division | 74.9% | 96,200 | 19.46% | 106,527 |
| DPS Division | 86.5% | 499,340 | 7.68% | 612,328 |
| All Division Trust Funds[1] | | $23,154,544 | | $24,716,066 |

[1] The data in this table has been aggregated for informational purposes. The assets of each trust fund are for the sole purpose of its members and cannot be used by another fund.

### INVESTMENT RETURN ASSUMPTION (DISCOUNT RATE) EQUAL TO 9.0 PERCENT

*(Dollars in Thousands)*

| | Actuarial Value of Assets | | | Market Value of Assets |
|---|---|---|---|---|
| Trust Fund | Funded Ratio | UAAL | ADC | UAAL |
| State Division | 67.0% | $6,850,228 | 15.76% | $7,341,649 |
| School Division | 71.0% | 9,352,987 | 14.64% | 10,162,524 |
| Local Government Division | 92.6% | 300,780 | 3.33% | 438,027 |
| Judicial Division | 82.1% | 62,398 | 13.60% | 72,726 |
| DPS Division | 95.5% | 151,949 | 2.87% | 264,938 |
| All Division Trust Funds[1] | | $16,718,342 | | $18,279,864 |

[1] The data in this table has been aggregated for informational purposes. The assets of each trust fund are for the sole purpose of its members and cannot be used by another fund.

Note: The time-weighted, net-of-fees annualized rate of return for the pooled investment assets was 7.3 percent for the past five years and 6.0 percent for the past 10 years. The 35-year annualized gross-of-fees rate of return for the pooled investment assets was 9.5 percent.

DIVISION TRUST FUNDS—PENSION

## Plan Data

### SCHEDULE OF RETIREES, BENEFICIARIES, AND SURVIVORS ADDED TO AND REMOVED FROM THE BENEFIT PAYROLL

*(In Actual Dollars)*

| Year Ended | Added to Payroll No.[1] | Added to Payroll Annual Benefits | Removed from Payroll No.[1] | Removed from Payroll Annual Benefits | Payroll—End of Year No.[1] | Payroll—End of Year Annual Benefits | Average Annual Benefits | Increase in Average Benefits |
|---|---|---|---|---|---|---|---|---|
| **State Division[2]** | | | | | | | | |
| 12/31/2006 | | | | | 28,672 | $872,636,112 | $30,435 | — |
| 12/31/2007 | 1,632 | $57,669,468 | 656 | $12,017,172 | 29,648 | 947,151,132 | 31,947 | 5.0% |
| 12/31/2008 | 1,579 | 56,570,160 | 713 | 13,388,088 | 30,514 | 1,020,023,424 | 33,428 | 4.6% |
| 12/31/2009 | 1,550 | 58,001,148 | 734 | 16,212,468 | 31,330 | 1,095,394,056 | 34,963 | 4.6% |
| 12/31/2010 | 1,705 | 63,012,492 | 668 | 15,870,416 | 32,367 | 1,142,735,232 | 35,306 | 1.0% |
| 12/31/2011 | 1,477 | 52,575,840 | 767 | 18,206,208 | 33,077 | 1,198,047,252 | 36,220 | 2.6% |
| 12/31/2012 | 1,753 | 60,313,800 | 835 | 17,053,956 | 33,995 | 1,259,715,132 | 37,056 | 2.3% |
| 12/31/2013 | 1,472 | 49,314,648 | 621 | 15,343,872 | 34,846 | 1,316,530,332 | 37,781 | 2.0% |
| 12/31/2014 | 1,688 | 70,625,718 | 728 | 17,912,280 | 35,806 | 1,369,243,770 | 38,241 | 1.2% |
| **12/31/2015** | **1,862** | **92,808,306** | **803** | **20,891,508** | **36,865** | **1,441,160,568** | **39,093** | **2.2%** |
| **School Division[2]** | | | | | | | | |
| 12/31/2006 | | | | | 41,948 | $1,255,020,564 | $29,918 | — |
| 12/31/2007 | 2,713 | $87,156,144 | 775 | $13,230,432 | 43,886 | 1,371,661,740 | 31,255 | 4.5% |
| 12/31/2008 | 2,663 | 84,572,232 | 795 | 14,103,468 | 45,754 | 1,487,330,100 | 32,507 | 4.0% |
| 12/31/2009 | 2,432 | 75,857,232 | 727 | 14,333,928 | 47,459 | 1,599,048,372 | 33,693 | 3.6% |
| 12/31/2010 | 3,002 | 94,587,504 | 717 | 15,977,299 | 49,744 | 1,677,950,928 | 33,732 | 0.1% |
| 12/31/2011 | 2,783 | 83,582,412 | 809 | 17,059,212 | 51,718 | 1,776,539,052 | 34,350 | 1.8% |
| 12/31/2012 | 3,044 | 87,700,656 | 985 | 18,719,640 | 53,777 | 1,876,340,508 | 34,891 | 1.6% |
| 12/31/2013 | 2,744 | 79,704,816 | 713 | 17,081,472 | 55,808 | 1,974,615,348 | 35,382 | 1.4% |
| 12/31/2014 | 3,016 | 111,392,724 | 843 | 19,419,540 | 57,981 | 2,066,588,532 | 35,643 | 0.7% |
| **12/31/2015** | **2,990** | **130,162,524** | **1,027** | **23,409,984** | **59,944** | **2,173,341,072** | **36,256** | **1.7%** |
| **Local Government Division[2]** | | | | | | | | |
| 12/31/2006 | | | | | 3,821 | $107,505,516 | $28,135 | — |
| 12/31/2007 | 345 | $12,147,432 | 78 | $892,944 | 4,088 | 122,322,048 | 29,922 | 6.4% |
| 12/31/2008 | 367 | 14,246,328 | 82 | 1,380,000 | 4,373 | 139,012,452 | 31,789 | 6.2% |
| 12/31/2009 | 373 | 12,911,052 | 75 | 1,444,056 | 4,671 | 154,915,224 | 33,165 | 4.3% |
| 12/31/2010 | 463 | 18,211,380 | 82 | 1,560,317 | 5,052 | 171,596,184 | 33,966 | 2.4% |
| 12/31/2011 | 332 | 11,254,980 | 88 | 1,645,992 | 5,296 | 184,500,768 | 34,838 | 2.6% |
| 12/31/2012 | 687 | 23,576,376 | 105 | 1,892,688 | 5,878 | 209,260,764 | 35,601 | 2.2% |
| 12/31/2013 | 345 | 10,330,380 | 76 | 1,456,248 | 6,147 | 221,838,300 | 36,089 | 1.4% |
| 12/31/2014 | 392 | 13,412,585 | 93 | 2,018,928 | 6,446 | 233,231,957 | 36,182 | 0.3% |
| **12/31/2015** | **408** | **18,760,927** | **97** | **2,215,488** | **6,757** | **249,777,396** | **36,966** | **2.2%** |
| **Judicial Division[2]** | | | | | | | | |
| 12/31/2006 | | | | | 257 | $11,072,184 | $43,082 | — |
| 12/31/2007 | 25 | $1,438,848 | 5 | $99,228 | 277 | 12,786,492 | 46,161 | 7.1% |
| 12/31/2008 | 7 | 543,828 | 3 | 105,720 | 281 | 13,659,096 | 48,609 | 5.3% |
| 12/31/2009 | 19 | 1,376,436 | 9 | 189,624 | 291 | 15,290,100 | 52,543 | 8.1% |
| 12/31/2010 | 10 | 876,804 | 8 | 234,040 | 293 | 15,935,640 | 54,388 | 3.5% |
| 12/31/2011 | 21 | 1,224,480 | 3 | 103,752 | 311 | 17,320,980 | 55,694 | 2.4% |
| 12/31/2012 | 19 | 1,089,288 | 11 | 337,308 | 319 | 18,331,992 | 57,467 | 3.2% |
| 12/31/2013 | 9 | 740,508 | 6 | 156,468 | 322 | 19,219,128 | 59,687 | 3.9% |
| 12/31/2014 | 16 | 1,068,823 | 8 | 368,520 | 330 | 19,919,431 | 60,362 | 1.1% |
| **12/31/2015** | **20** | **2,111,405** | **6** | **323,940** | **344** | **21,706,896** | **63,101** | **4.5%** |
| **DPS Division[2, 3]** | | | | | | | | |
| 12/31/2010 | 6,199 | $216,886,500 | — | $— | 6,199 | $216,886,500 | $34,987 | — |
| 12/31/2011 | 252 | 7,977,360 | 155 | 4,143,396 | 6,296 | 224,954,832 | 35,730 | 2.1% |
| 12/31/2012 | 274 | 8,333,292 | 168 | 3,949,860 | 6,402 | 232,858,044 | 36,373 | 1.8% |
| 12/31/2013 | 284 | 9,255,936 | 135 | 3,704,628 | 6,551 | 242,733,072 | 37,053 | 1.9% |
| 12/31/2014 | 306 | 12,537,532 | 171 | 5,065,860 | 6,686 | 250,204,744 | 37,422 | 1.0% |
| **12/31/2015** | **295** | **14,799,992** | **178** | **5,884,980** | **6,803** | **259,119,756** | **38,089** | **1.8%** |

*Please see page 165 for footnote references.*

## DIVISION TRUST FUNDS—PENSION

### SCHEDULE OF RETIREES, BENEFICIARIES, AND SURVIVORS ADDED TO AND REMOVED FROM THE BENEFIT PAYROLL (CONTINUED)

*(In Actual Dollars)*

| | Added to Payroll | | Removed from Payroll | | Payroll—End of Year | | Average | Increase in |
|---|---|---|---|---|---|---|---|---|
| Year Ended | No.[1] | Annual Benefits | No.[1] | Annual Benefits | No.[1] | Annual Benefits | Annual Benefits | Average Benefits |
| All Division Trust Funds[2, 4] | | | | | | | | |
| 12/31/2006 | | | | | 74,698 | $2,246,234,376 | $30,071 | 5.0% |
| 12/31/2007 | 4,715 | $158,411,892 | 1,514 | $26,239,776 | 77,899 | 2,453,921,412 | 31,501 | 4.8% |
| 12/31/2008 | 4,616 | 155,932,548 | 1,593 | 28,977,276 | 80,922 | 2,660,025,072 | 32,871 | 4.3% |
| 12/31/2009 | 4,374 | 148,145,868 | 1,545 | 32,180,076 | 83,751 | 2,864,647,752 | 34,204 | 4.1% |
| 12/31/2010 | 11,379[5] | 393,574,680 | 1,475 | 33,642,072 | 93,655[5] | 3,225,104,484 | 34,436 | 0.7% |
| 12/31/2011 | 4,865 | 156,615,072 | 1,822 | 41,158,560 | 96,698 | 3,401,362,884 | 35,175 | 2.1% |
| 12/31/2012 | 5,777 | 181,013,412 | 2,104 | 41,953,452 | 100,371 | 3,596,506,440 | 35,832 | 1.9% |
| 12/31/2013 | 4,854 | 149,346,288 | 1,551 | 37,742,688 | 103,674 | 3,774,936,180 | 36,412 | 1.6% |
| 12/31/2014 | 5,418 | 209,037,382 | 1,843 | 44,785,128 | 107,249 | 3,939,188,434 | 36,729 | 0.9% |
| **12/31/2015** | **5,575** | **258,643,154** | **2,111** | **52,725,900** | **110,713** | **4,145,105,688** | **37,440** | **1.9%** |

[1] The number does not include deferred survivors.

[2] Amounts derived on an accrual basis.

[3] The DPS Division Trust Fund was established on January 1, 2010, and received the net assets of DPSRS.

[4] Data prior to December 31, 2010, does not include the DPS Division.

[5] Includes the addition of 6,199 beneficiaries due to the DPSRS merger.

The number of persons receiving monthly retirement benefits has grown steadily in relation to membership. This trend will likely continue for many years into the future. The retirement benefit disbursements shown in the right-hand column include cost-of-living increases paid in years since 1970. Prior to 1981, figures are for years ended June 30.

### MEMBER-RETIREE COMPARISON—ALL DIVISION TRUST FUNDS[1]

*(In Actual Dollars)*

| Year | Number of Retiree Accounts on 12/31 | Number of Member Accounts on 12/31[2] | Retiree Accounts as % of Members on 12/31 | Total Benefits Paid–Year Ended 12/31 |
|---|---|---|---|---|
| 1940 | 93 | 3,715 | 2.5% | $72,588 |
| 1945 | 171 | 5,585 | 3.1% | 137,442 |
| 1950 | 280 | 11,853 | 2.4% | 237,866 |
| 1955 | 747 | 21,185 | 3.5% | 745,679 |
| 1960 | 1,775 | 33,068 | 5.4% | 2,055,139 |
| 1965 | 3,631 | 49,701 | 7.3% | 5,486,225 |
| 1970 | 6,308 | 65,586 | 9.6% | 13,115,234 |
| 1975 | 11,650 | 84,781 | 13.7% | 32,820,433 |
| 1980 | 17,301 | 96,473 | 17.9% | 71,289,456 |
| 1985 | 24,842 | 101,409 | 24.5% | 192,456,029 |
| 1990 | 32,955 | 115,350 | 28.6% | 350,398,094 |
| 1995 | 41,909 | 203,102 | 20.6% | 639,501,796 |
| 2000 | 53,015 | 248,104 | 21.4% | 1,093,779,068 |
| 2005 | 69,416 | 306,139 | 22.7% | 1,973,240,491 |
| 2010 | 91,412 | 378,264 | 24.2% | 3,161,773,781 |
| **2015** | **108,426** | **436,465** | **24.8%** | **4,073,789,897** |

[1] Amounts derived on a cash basis. Data prior to 2010 does not include the DPS Division.

[2] Includes inactive member accounts.

## DIVISION TRUST FUNDS—PENSION

### SCHEDULE OF MEMBERS IN ACTUARIAL VALUATION

By Attained Age and Years of Service as of December 31, 2015

*(In Actual Dollars)*

#### State Division

For State Division members (excluding State Troopers) the average age was 45.9 years, the average service was 8.9 years, and the average expected remaining service life was 8.4 years. For State Troopers the average age was 41.5 years, the average service was 12.1 years, and the average expected remaining service life was 10.3 years.

| | Years of Service to Valuation Date | | | | | | | Total | |
|---|---|---|---|---|---|---|---|---|---|
| Attained Age | 0–4 | 5–9 | 10–14 | 15–19 | 20–24 | 25–29 | 30+ | No. | Annual Valuation Payroll |
| Up to 20 | 134 | — | — | — | — | — | — | 134 | $727,818 |
| 20 – 24 | 1,535 | 4 | — | — | — | — | — | 1,539 | 31,310,120 |
| 25 – 29 | 3,760 | 395 | 5 | — | — | — | — | 4,160 | 138,165,205 |
| 30 – 34 | 3,987 | 1,578 | 257 | 12 | — | — | — | 5,834 | 238,989,197 |
| 35 – 39 | 2,954 | 1,753 | 1,122 | 265 | 6 | — | — | 6,100 | 282,900,079 |
| 40 – 44 | 2,376 | 1,515 | 1,233 | 962 | 199 | 8 | — | 6,293 | 323,312,861 |
| 45 – 49 | 4,060 | 1,674 | 1,210 | 1,148 | 813 | 300 | 31 | 9,236 | 464,958,582 |
| 50 – 54 | 1,790 | 1,345 | 1,188 | 1,056 | 831 | 671 | 218 | 7,099 | 389,854,892 |
| 55 – 59 | 1,496 | 1,351 | 1,157 | 1,012 | 769 | 582 | 386 | 6,753 | 363,276,973 |
| 60 | 291 | 246 | 234 | 161 | 160 | 107 | 68 | 1,267 | 66,709,941 |
| 61 | 253 | 236 | 178 | 179 | 123 | 85 | 67 | 1,121 | 59,843,007 |
| 62 | 203 | 199 | 203 | 170 | 99 | 85 | 72 | 1,031 | 54,249,988 |
| 63 | 212 | 192 | 183 | 148 | 109 | 67 | 56 | 967 | 49,176,091 |
| 64 | 161 | 149 | 157 | 109 | 99 | 71 | 60 | 806 | 43,026,055 |
| 65 | 139 | 147 | 134 | 116 | 79 | 63 | 49 | 727 | 37,065,234 |
| 66 | 120 | 124 | 97 | 67 | 57 | 38 | 27 | 530 | 26,151,521 |
| 67 | 106 | 86 | 72 | 54 | 30 | 25 | 32 | 405 | 19,584,907 |
| 68 | 73 | 62 | 51 | 44 | 33 | 19 | 27 | 309 | 14,328,363 |
| 69 | 72 | 51 | 46 | 40 | 13 | 24 | 33 | 279 | 12,530,719 |
| 70+ | 227 | 128 | 103 | 75 | 55 | 49 | 64 | 701 | 25,705,097 |
| **Total** | **23,949** | **11,235** | **7,630** | **5,618** | **3,475** | **2,194** | **1,190** | **55,291** | **$2,641,866,650** |

#### School Division

For School Division members the average age was 44.6 years, the average service was 8.4 years, and the average expected remaining service life was 8.9 years.

| | Years of Service to Valuation Date | | | | | | | Total | |
|---|---|---|---|---|---|---|---|---|---|
| Attained Age | 0–4 | 5–9 | 10–14 | 15–19 | 20–24 | 25–29 | 30+ | No. | Annual Valuation Payroll |
| Up to 20 | 761 | — | — | — | — | — | — | 761 | $4,032,133 |
| 20 – 24 | 4,302 | 37 | — | — | — | — | — | 4,339 | 72,165,923 |
| 25 – 29 | 9,531 | 1,141 | 45 | — | — | — | — | 10,717 | 302,570,372 |
| 30 – 34 | 7,001 | 4,336 | 902 | 20 | — | — | — | 12,259 | 414,776,790 |
| 35 – 39 | 6,285 | 3,604 | 3,755 | 630 | 16 | — | — | 14,290 | 532,776,080 |
| 40 – 44 | 6,027 | 3,173 | 3,040 | 2,600 | 378 | 9 | — | 15,227 | 597,232,796 |
| 45 – 49 | 7,966 | 3,573 | 3,037 | 2,462 | 1,928 | 359 | 11 | 19,336 | 722,255,079 |
| 50 – 54 | 4,132 | 2,895 | 3,098 | 2,251 | 1,676 | 1,421 | 247 | 15,720 | 633,126,590 |
| 55 – 59 | 3,300 | 2,326 | 2,808 | 2,408 | 1,650 | 958 | 562 | 14,012 | 529,441,804 |
| 60 | 519 | 383 | 403 | 383 | 245 | 132 | 101 | 2,166 | 77,699,082 |
| 61 | 456 | 277 | 362 | 336 | 219 | 127 | 99 | 1,876 | 69,187,819 |
| 62 | 426 | 266 | 334 | 291 | 214 | 113 | 67 | 1,711 | 60,544,076 |
| 63 | 373 | 257 | 272 | 212 | 190 | 100 | 65 | 1,469 | 50,471,678 |
| 64 | 336 | 244 | 234 | 165 | 143 | 98 | 58 | 1,278 | 43,967,454 |
| 65 | 312 | 192 | 174 | 142 | 101 | 74 | 36 | 1,031 | 33,009,111 |
| 66 | 299 | 133 | 134 | 95 | 61 | 44 | 33 | 799 | 23,649,416 |
| 67 | 242 | 123 | 105 | 72 | 61 | 31 | 23 | 657 | 17,875,452 |
| 68 | 201 | 113 | 90 | 56 | 31 | 25 | 23 | 539 | 13,174,834 |
| 69 | 197 | 114 | 68 | 51 | 29 | 25 | 18 | 502 | 11,614,981 |
| 70 + | 733 | 369 | 206 | 98 | 59 | 38 | 47 | 1,550 | 25,718,812 |
| **Total** | **53,399** | **23,556** | **19,067** | **12,272** | **7,001** | **3,554** | **1,390** | **120,239** | **$4,235,290,282** |

DIVISION TRUST FUNDS—PENSION

## SCHEDULE OF MEMBERS IN ACTUARIAL VALUATION (CONTINUED)

By Attained Age and Years of Service as of December 31, 2015

*(In Actual Dollars)*

### Local Government Division

For Local Government Division members the average age was 44.5 years, the average service was 7.8 years, and the average expected remaining service life was 7.9 years.

| | Years of Service to Valuation Date | | | | | | | Total | |
|---|---|---|---|---|---|---|---|---|---|
| Attained Age | 0–4 | 5–9 | 10–14 | 15–19 | 20–24 | 25–29 | 30+ | No. | Annual Valuation Payroll |
| Up to 20 | 454 | — | — | — | — | — | — | 454 | $1,898,447 |
| 20 – 24 | 628 | 6 | — | — | — | — | — | 634 | 9,328,093 |
| 25 – 29 | 846 | 93 | 6 | — | — | — | — | 945 | 30,070,127 |
| 30 – 34 | 772 | 231 | 91 | 10 | — | — | — | 1,104 | 46,239,048 |
| 35 – 39 | 699 | 319 | 203 | 66 | 8 | — | — | 1,295 | 64,136,025 |
| 40 – 44 | 749 | 299 | 292 | 139 | 43 | 1 | — | 1,523 | 74,311,599 |
| 45 – 49 | 502 | 280 | 344 | 173 | 112 | 45 | 6 | 1,462 | 84,488,026 |
| 50 – 54 | 438 | 265 | 340 | 190 | 156 | 114 | 52 | 1,555 | 91,001,124 |
| 55 – 59 | 388 | 269 | 279 | 200 | 159 | 103 | 70 | 1,468 | 82,731,554 |
| 60 | 76 | 45 | 46 | 31 | 28 | 20 | 15 | 261 | 13,624,300 |
| 61 | 59 | 33 | 41 | 38 | 20 | 11 | 10 | 212 | 11,741,299 |
| 62 | 60 | 40 | 38 | 25 | 20 | 7 | 6 | 196 | 9,946,140 |
| 63 | 65 | 39 | 38 | 25 | 15 | 17 | 6 | 205 | 10,162,578 |
| 64 | 52 | 35 | 32 | 20 | 17 | 5 | 11 | 172 | 8,894,525 |
| 65 | 38 | 18 | 32 | 6 | 14 | 5 | 4 | 117 | 5,237,666 |
| 66 | 38 | 30 | 30 | 11 | 5 | 6 | 3 | 123 | 5,527,956 |
| 67 | 29 | 15 | 21 | 4 | 4 | 4 | 1 | 78 | 3,208,654 |
| 68 | 37 | 11 | 11 | 8 | 3 | 1 | 3 | 74 | 2,560,628 |
| 69 | 28 | 7 | 13 | 3 | 6 | 1 | 2 | 60 | 1,967,673 |
| 70 + | 128 | 53 | 33 | 12 | 9 | 2 | 1 | 238 | 4,442,743 |
| **Total** | **6,086** | **2,088** | **1,890** | **961** | **619** | **342** | **190** | **12,176** | **$561,518,205** |

### Judicial Division

For Judicial Division members the average age was 56.7 years, the average service was 14.3 years, and the average expected remaining service life was 8.6 years.

| | Years of Service to Valuation Date | | | | | | | Total | |
|---|---|---|---|---|---|---|---|---|---|
| Attained Age | 0–4 | 5–9 | 10–14 | 15–19 | 20–24 | 25–29 | 30+ | No. | Annual Valuation Payroll |
| Up to 20 | — | — | — | — | — | — | — | — | $— |
| 20 – 24 | — | — | — | — | — | — | — | — | — |
| 25 – 29 | — | — | — | — | — | — | — | — | — |
| 30 – 34 | 2 | — | — | — | — | — | — | 2 | 68,146 |
| 35 – 39 | 5 | 1 | — | — | — | — | — | 6 | 581,614 |
| 40 – 44 | 4 | 6 | 1 | 2 | — | — | — | 13 | 1,742,031 |
| 45 – 49 | 10 | 13 | 12 | 3 | 4 | 1 | — | 43 | 5,908,208 |
| 50 – 54 | 8 | 27 | 11 | 10 | 6 | 5 | 1 | 68 | 9,742,599 |
| 55 – 59 | 8 | 21 | 11 | 11 | 10 | 11 | 3 | 75 | 10,774,870 |
| 60 | 4 | 3 | — | 3 | — | 2 | — | 12 | 1,719,737 |
| 61 | 1 | — | 4 | 2 | 1 | 1 | — | 9 | 1,207,142 |
| 62 | 2 | 5 | 2 | 1 | 1 | 2 | 1 | 14 | 2,034,715 |
| 63 | — | 5 | 5 | 4 | 3 | 1 | 1 | 19 | 2,638,852 |
| 64 | — | 1 | 2 | — | 2 | — | 2 | 7 | 1,007,017 |
| 65 | 1 | 3 | 2 | 3 | 1 | 4 | 2 | 16 | 2,352,574 |
| 66 | — | 4 | 2 | 1 | 1 | 3 | 1 | 12 | 1,742,955 |
| 67 | — | 1 | 4 | 2 | 1 | 1 | 2 | 11 | 1,309,581 |
| 68 | 1 | — | 1 | 3 | 2 | 1 | 2 | 10 | 1,404,905 |
| 69 | — | — | 2 | 1 | — | — | 1 | 4 | 608,082 |
| 70 + | 1 | — | — | 3 | 1 | 4 | 4 | 13 | 2,026,702 |
| **Total** | **47** | **90** | **59** | **49** | **33** | **36** | **20** | **334** | **$46,869,730** |

DIVISION TRUST FUNDS—PENSION

## SCHEDULE OF MEMBERS IN ACTUARIAL VALUATION (CONTINUED)

By Attained Age and Years of Service as of December 31, 2015

*(In Actual Dollars)*

### DPS Division

For DPS Division members the average age was 40.6 years, the average service was 5.8 years, and the average expected remaining service life was 9.8 years.

| | Years of Service to Valuation Date | | | | | | | Total | |
|---|---|---|---|---|---|---|---|---|---|
| Attained Age | 0–4 | 5–9 | 10–14 | 15–19 | 20–24 | 25–29 | 30+ | No. | Annual Valuation Payroll |
| Up to 20 | 51 | — | — | — | — | — | — | 51 | $493,977 |
| 20 – 24 | 893 | 4 | — | — | — | — | — | 897 | 17,871,740 |
| 25 – 29 | 2,334 | 233 | 2 | — | — | — | — | 2,569 | 81,821,578 |
| 30 – 34 | 1,691 | 767 | 44 | — | — | — | — | 2,502 | 99,498,368 |
| 35 – 39 | 1,638 | 714 | 250 | 23 | 1 | — | — | 2,626 | 102,946,199 |
| 40 – 44 | 716 | 542 | 273 | 175 | 15 | 1 | — | 1,722 | 76,938,864 |
| 45 – 49 | 573 | 449 | 235 | 191 | 74 | 13 | 2 | 1,537 | 69,215,365 |
| 50 – 54 | 416 | 394 | 167 | 175 | 120 | 84 | 11 | 1,367 | 63,749,004 |
| 55 – 59 | 341 | 344 | 155 | 167 | 106 | 81 | 39 | 1,233 | 52,114,696 |
| 60 | 53 | 61 | 26 | 27 | 20 | 13 | 4 | 204 | 9,033,200 |
| 61 | 53 | 57 | 26 | 27 | 17 | 5 | 8 | 193 | 8,201,351 |
| 62 | 61 | 46 | 27 | 23 | 16 | 13 | 8 | 194 | 7,872,269 |
| 63 | 30 | 43 | 26 | 22 | 13 | 10 | 3 | 147 | 6,735,114 |
| 64 | 37 | 34 | 17 | 16 | 6 | 11 | 6 | 127 | 5,209,831 |
| 65 | 38 | 35 | 13 | 24 | 12 | 6 | 1 | 129 | 5,530,747 |
| 66 | 19 | 32 | 6 | 10 | 9 | 1 | 2 | 79 | 3,050,775 |
| 67 | 25 | 27 | 6 | 4 | 4 | 8 | 4 | 78 | 3,137,914 |
| 68 | 20 | 21 | 1 | 2 | — | 1 | 1 | 46 | 1,155,024 |
| 69 | 17 | 14 | 1 | 5 | 2 | 5 | 3 | 47 | 1,776,560 |
| 70 + | 75 | 67 | 13 | 9 | 9 | 1 | 7 | 181 | 4,761,997 |
| **Total** | **9,081** | **3,884** | **1,288** | **900** | **424** | **253** | **99** | **15,929** | **$621,114,573** |

DIVISION TRUST FUNDS—PENSION

## SCHEDULE OF ACTIVE MEMBER ACTUARIAL VALUATION DATA

As of December 31, 2015

*(In Actual Dollars)*

| Year | Number of Participating Employers[1] | Number of Active Members | Annual Payroll for Active Members | Average Annual Pay for Active Members | % Increase (Decrease) in Average Annual Pay |
|---|---|---|---|---|---|
| State Division | | | | | |
| 2006 | 69 | 52,866 | $2,099,325,147 | $39,710 | — |
| 2007 | 69 | 53,324 | 2,236,517,828 | 41,942 | 5.62% |
| 2008 | 69 | 54,441 | 2,371,638,806 | 43,563 | 3.86% |
| 2009 | 70 | 54,333 | 2,384,136,844 | 43,880 | 0.73% |
| 2010 | 70 | 54,977 | 2,392,080,128 | 43,511 | (0.84%) |
| 2011 | 70 | 54,956 | 2,393,791,402 | 43,558 | 0.11% |
| 2012 | 70 | 54,804 | 2,384,933,961 | 43,518 | (0.09%) |
| 2013 | 70 | 55,354 | 2,474,965,482 | 44,712 | 2.74% |
| 2014 | 32 | 55,300 | 2,564,669,718 | 46,377 | 3.72% |
| **2015** | **32** | **55,291** | **2,641,866,650** | **47,781** | **3.03%** |
| School Division | | | | | |
| 2006 | 196 | 113,288 | $3,371,185,745 | $29,758 | — |
| 2007 | 197 | 116,245 | 3,618,258,368 | 31,126 | 4.60% |
| 2008 | 197 | 118,547 | 3,804,926,777 | 32,096 | 3.12% |
| 2009 | 196 | 119,390 | 3,922,175,230 | 32,852 | 2.36% |
| 2010 | 271[2] | 116,486 | 3,900,661,576 | 33,486 | 1.93% |
| 2011 | 275[2] | 114,820 | 3,821,603,410 | 33,283 | (0.61%) |
| 2012 | 281[2] | 115,294 | 3,819,065,598 | 33,125 | (0.47%) |
| 2013 | 294[2] | 117,727 | 3,938,649,818 | 33,456 | 1.00% |
| 2014 | 224 | 119,618 | 4,063,235,757 | 33,968 | 1.53% |
| **2015** | **227** | **120,239** | **4,235,290,282** | **35,224** | **3.70%** |
| Local Government Division | | | | | |
| 2006 | 134 | 15,959 | $636,299,525 | $39,871 | — |
| 2007 | 137 | 16,977 | 680,442,121 | 40,080 | 0.52% |
| 2008 | 141 | 17,379 | 718,901,763 | 41,366 | 3.21% |
| 2009 | 139 | 16,166 | 705,097,035 | 43,616 | 5.44% |
| 2010 | 142 | 16,144 | 705,265,331 | 43,686 | 0.16% |
| 2011 | 145 | 16,065 | 718,169,015 | 44,704 | 2.33% |
| 2012 | 143 | 12,097 | 523,668,446 | 43,289 | (3.17%) |
| 2013 | 146 | 11,954 | 529,003,436 | 44,253 | 2.23% |
| 2014 | 141 | 12,084 | 540,468,037 | 44,726 | 1.07% |
| **2015** | **140** | **12,176** | **561,518,205** | **46,117** | **3.11%** |
| Judicial Division | | | | | |
| 2006 | 6 | 291 | $29,150,633 | $100,174 | — |
| 2007 | 6 | 296 | 31,150,228 | 105,237 | 5.05% |
| 2008 | 6 | 317 | 35,937,094 | 113,366 | 7.72% |
| 2009 | 6 | 317 | 37,582,661 | 118,557 | 4.58% |
| 2010 | 6 | 317 | 37,412,139 | 118,019 | (0.45%) |
| 2011 | 6 | 329 | 39,033,369 | 118,642 | 0.53% |
| 2012 | 6 | 329 | 39,045,008 | 118,678 | 0.03% |
| 2013 | 6 | 332 | 39,941,730 | 120,306 | 1.37% |
| 2014 | 2 | 334 | 42,976,979 | 128,674 | 6.96% |
| **2015** | **2** | **334** | **46,869,730** | **140,329** | **9.06%** |

*Please see page 170 for footnote references.*

DIVISION TRUST FUNDS—PENSION

## SCHEDULE OF ACTIVE MEMBER ACTUARIAL VALUATION DATA (CONTINUED)

As of December 31, 2015
*(In Actual Dollars)*

| Year | Number of Participating Employers[1] | Number of Active Members | Annual Payroll for Active Members | Average Annual Pay for Active Members | % Increase (Decrease) in Average Annual Pay |
|---|---|---|---|---|---|
| DPS Division[3] | | | | | |
| 2010 | 28[2] | 13,171 | $470,773,746 | $35,743 | — |
| 2011 | 27[2] | 13,571 | 491,646,251 | 36,228 | 1.36% |
| 2012 | 29[2] | 13,911 | 510,872,366 | 36,724 | 1.37% |
| 2013 | 31[2] | 14,816 | 547,659,912 | 36,964 | 0.65% |
| 2014 | 1 | 15,414 | 584,319,269 | 37,908 | 2.55% |
| **2015** | **1** | **15,929** | **621,114,573** | **38,993** | **2.86%** |
| All Division Trust Funds[4] | | | | | |
| 2006 | 405 | 182,404 | $6,135,961,050 | $33,639 | 2.29% |
| 2007 | 409 | 186,842 | 6,566,368,545 | 35,144 | 4.47% |
| 2008 | 413 | 190,684 | 6,931,404,440 | 36,350 | 3.43% |
| 2009 | 411 | 190,206 | 7,048,991,770 | 37,060 | 1.95% |
| 2010 | 517[2] | 201,095 | 7,506,192,920 | 37,327 | 0.72% |
| 2011 | 523[2] | 199,741 | 7,464,243,447 | 37,370 | 0.12% |
| 2012 | 529[2] | 196,435 | 7,277,585,379 | 37,048 | (0.86%) |
| 2013 | 547[2] | 200,183 | 7,530,220,378 | 37,617 | 1.54% |
| 2014 | 400 | 202,750 | 7,795,669,760 | 38,450 | 2.21% |
| **2015** | **402** | **203,969** | **8,106,659,440** | **39,745** | **3.37%** |

[1] Prior to 2014, employer counts were based on separate units of government. Beginning in 2014, new guidance under GASB 67 classifies a primary government and its component units as one employer. Employer counts for the years 2014 and beyond are presented for purposes of complying with GASB 67 only. For all other purposes, the definition of an employer is governed by Title 24, Article 51 of the C.R.S., PERA's Rules, 8 CCR 1502-1, and, if applicable, the employer's affiliation agreement with PERA.

[2] Includes charter schools operating within the School and DPS Divisions and under the Colorado Charter School Institute.

[3] The DPS Division Trust Fund was established on January 1, 2010, and received the net assets of DPSRS.

[4] Data prior to 2010 does not include the DPS Division.

# HEALTH CARE TRUST FUNDS—OPEB

## Introduction

This Health Care Trust Funds subsection reports the results of PERA's other postemployment benefit (OPEB) actuarial valuation, which was performed for both funding and accounting and financial reporting purposes. The actuarial valuation complies with the accounting requirements required by GASB Statement 43. PERA has chosen not to early adopt the requirements of GASB Statement 74, and has not yet determined the impact of that standard on its actuarial valuation, or financial reporting.

The Health Care Trust Fund (HCTF) and the DPS Health Care Trust Fund (DPS HCTF) are defined benefit OPEB plans, with the purpose of subsidizing PERACare, PERA's health benefits program. Participation in the HCTF and the DPS HCTF is voluntary pursuant to C.R.S. § 24-51-1201. Employer contributions and investment earnings on the assets of the plans pay for the costs. In addition, any employer, as defined by C.R.S. § 24-51-101 (20), may elect to provide health care coverage through PERACare for its employees who are members.

The HCTF and the DPS HCTF provide a health care premium subsidy based upon the benefit structure under which a member retires and the member's years of service credit. There is an allocation of the premium subsidy between the trust funds for members who retire with service credit in the DPS Division and one or more of the other divisions. The basis for the allocation of the premium subsidy is the percentage of the member contribution balance from each division as it relates to the total member contribution account balance.

The Board is responsible for maintaining a funding policy applicable to PERA's OPEB funds. The OPEB funding policy was last revised and adopted by the Board on November 16, 2007. The OPEB funds are subject to GASB 43 accounting standards, including the determination of an ARC. The ARC is determined in accordance with the OPEB plan provisions, as described in detail in Note 9 of the Notes to the Financial Statements found in the Financial Section. The ARC rate for each of the funds will be compared to the associated statutory contribution rate.

The authority to contract, self-insure, authorize disbursements necessary in order to carry out the purposes of the PERACare program including the administration of the health care subsidies, rests with the Board.

## Actuarial Methods and Assumptions

### Actuarial Methods

The Board also is responsible for the actuarial methods and assumptions used in the OPEB actuarial valuations in accordance with C.R.S. § 24-51-204(5). The Board retains an external actuary, currently CMC, to perform annual actuarial valuations and projections as well as periodic experience studies to review the actuarial assumptions and actual experience.

In general, the AALs of the HCTF and the DPS HCTF consists of the following two types of benefits:

- A service-based monthly premium subsidy.
- A subsidy for members not eligible for premium-free Medicare Part A coverage.

The plan's actuary determines the costs relating to the subsidies provided by the HCTF and the DPS HCTF. Currently, all participating employers are statutorily required to contribute 1.02 percent of covered compensation to fund these benefits.

The actuary followed ASOP No. 6, *Measuring Retiree Group Benefit Obligation*, for purposes of recommending appropriate OPEB assumptions. Although many of the economic and demographic assumptions used to determine pension liabilities apply in the determination of OPEB liabilities, additional assumptions typically are required. All actuarial methods and assumptions necessary to assess OPEB liabilities, in addition to those already provided on previous pages, are described and/or listed below.

#### *Entry Age Normal Cost Method*

The EAN cost method used for the determination of the pension liabilities applies in a similar manner in the calculation of the OPEB liabilities with a few notable exceptions. For the health care benefits, the calculation of the normal cost is based upon total expected career service and is independent of compensation.

#### *Amortization Method*

As provided under GASB 43 reporting standards, the ARC for each health care plan is determined by adding the normal cost and the cost to amortize the UAAL over a 30-year period. The ARC is then expressed as a level percentage of assumed future covered payroll and compared, as a benchmark, against the current statutory employer contribution rate.

#### *Asset Valuation Method*

The method for valuing assets is a smoothed market value of assets. The smoothed value of assets recognizes the differences between actual and expected investment experience for each year in equal amounts over a four–year period. Note the term "market value" is used in the Board's health care funding policy regarding the description of the determination of the asset valuation method used for funding purposes and is used consistently throughout the Actuarial Section, but has the identical meaning of the term "fair value" as is used in the other sections of this *CAFR.*

### Actuarial Assumptions

The determination of the AAL includes recognition of a number of economic and non-economic assumptions in addition to the applied actuarial methods described above.

HEALTH CARE TRUST FUNDS—OPEB

### *Economic Assumptions*

The economic assumptions for price inflation, investment rate of return, and wage inflation, used in the determination of the pension liabilities also apply to the OPEB plans. In addition to these economic assumptions, health care cost trend rates are needed to project the future costs associated with providing benefits to those PERACare enrollees under the PERA benefit structure who are not eligible for premium-free Medicare Part A.

Exhibit J contains the assumptions used in determining the additional liability for PERACare enrollees under the PERA benefit structure who are age 65 or older and who are not eligible for premium-free Medicare Part A. Shown are the monthly costs/premiums assumed for 2016 which are subject to the morbidity rates and health care cost trend rates displayed in the adjacent tables.

Exhibit K contains the dollar subsidy amounts used in determining the additional liability for PERACare enrollees under the DPS benefit structure who are age 65 or older and who are not eligible for premium-free Medicare Part A.

Effective January 1, 2014, PERACare enrollees participating in the self-insured Medicare supplement plans and the Medicare HMO plan offered by Rocky Mountain Health Plans receive their prescription drug benefits through a Medicare Prescription Drug Plan (PDP).

As the service-based premium subsidy does not increase over time, PERACare enrollees are required to pay the entire increase in annual health care costs each year, resulting in monthly contributions that increase more rapidly over time than the total cost of coverage.

### *Non-Economic Assumptions*

Current PERACare participants are assumed to maintain their current health care benefit elections in perpetuity. For active members retiring directly from covered employment, Exhibit L provides the assumed participation rates. The participation of current PERACare enrollees and members retiring directly from active service is adjusted to reflect the increasing rate of participation with age, as described in Exhibit L. For eligible inactive members, 25 percent are assumed to elect health care coverage upon commencement of their monthly benefit. For spousal participation, actual census data and current plan elections of current benefit recipients are used. For spouses of eligible inactive members and future retirees, 25 percent (15 percent for DPS Division) are assumed to elect coverage for their spouse.

Exhibit M shows the assumed plan elections for current and future Medicare-eligible retirees.

For those current PERACare enrollees who are age 65 and older, the premium-free Medicare Part A eligibility status is provided by PERA and is assumed to be maintained in perpetuity. For current PERACare enrollees not yet age 65, estimated to have been hired prior to April 1, 1986, and not assumed eligible for premium-free Medicare Part A coverage through their spouse, and for those active employees hired prior to April 1, 1986, Exhibit N lists the percentage, by estimated age at hire, of PERACare enrollees assumed to not qualify for premium-free Medicare Part A benefits, thus qualifying for the applicable "No Part A" subsidy.

Healthy mortality assumptions for both pre- and post-retirement reflect the RP-2000 Combined Mortality Table projected with Scale AA to 2020, set back one year for males and set back two years for females, and the pre-retirement healthy mortality rates incorporate a 55 percent factor applied to male rates and 40 percent to female rates. Regarding mortality after disability retirement, the current table, RP-2000 Disability Mortality Table proved sufficient, but the adjustments were changed to a set-back of two years for both males and females.

The mortality assumptions appropriately reflect PERA's recent and anticipated plan experience and are used to estimate the value of expected future subsidy payments. Referencing information found in the Division Trust Funds subsection of this actuarial section, Exhibits A, B, C, D, and E list the healthy pre-retirement mortality rates at sample ages and Exhibit I lists all the healthy post-retirement mortality rates and values at sample ages.

### *Annual Increase Assumptions*

As the service-based premium subsidy does not increase over time, there is no need for an assumption regarding increasing benefit amounts.

### *Actuarial Studies*

All actuarial studies described in the Division Trust Funds subsection of this Actuarial Section titled, Actuarial Methods and Assumptions, Actuarial Studies, incorporated a review and analysis of actuarial methods and assumptions pertaining to the HCTF and the DPS HCTF.

## Changes Since Last Actuarial Valuation

### *Changes in Actuarial Methods*

Listed below is the actuarial method change incorporated into the December 31, 2015, actuarial valuation:

- Rates of morbidity to model the growth in assumed claims as a PERACare enrollee ages have been added to the process used to project per capita health care costs of those PERACare enrollees under the PERA benefit structure who are age 65 and older and are not eligible for premium-free Medicare Part A benefits.

### *Changes in Actuarial Assumptions*

Listed below are the actuarial assumption changes incorporated into the December 31, 2015, actuarial valuation:

- The percentage of PERACare enrollees who will become age 65 and older and are assumed to not qualify for premium-free Medicare Part A coverage have been revised to more closely reflect actual experience.

HEALTH CARE TRUST FUNDS—OPEB

- Initial per capita health care costs for those PERACare enrollees under the PERA benefit structure who are age 65 and older and are not eligible for premium-free Medicare Part A benefits have been updated to reflect the change in costs for the 2016 plan year.
- The assumed rates of inflation for health care costs for Medicare Part A premiums have been revised to reflect the current expectation of future increases.

### *Changes in Plan Provisions*

There are no changes in plan provisions reflected in the December 31, 2015, actuarial valuation since the last actuarial valuation as of December 31, 2014.

### *Significant Events*

- There were no significant events during 2015.

HEALTH CARE TRUST FUNDS—OPEB

## Actuarial Assumptions: Exhibits J–N

The following exhibits (Exhibits J through N) show the actuarial assumptions employed to determine the actuarial valuation results. The basic economic and demographic actuarial assumptions as detailed in Exhibits A through I, in the Division Trust Funds subsection of the Actuarial Section, also were applied, as applicable, for purposes of determining OPEB liabilities.

### Exhibit J: Initial Health Care Costs, Age-Related Morbidity, and Trend Rate Assumptions—PERA Benefit Structure

#### INITIAL HEALTH CARE COSTS

*(In Actual Dollars)*

| | For Members Without Medicare Part A | | |
|---|---|---|---|
| Plan | Monthly Cost | Monthly Premium | Monthly Cost Adjusted to Age 65 |
| Self-Funded Medicare Supplement Plans | $708 | $309 | $314 |
| Kaiser Permanente Medicare Advantage HMO | 593 | 223 | 333 |
| Rocky Mountain Health Plans Medicare HMO | 608 | 243 | 279 |
| UnitedHealthcare Medicare HMO | 690 | 181 | 433 |

2016 Monthly Medicare Part A Premium — $411

#### AGE-RELATED MORBIDITY ASSUMPTIONS

| Participant Age | Annual Increase |
|---|---|
| 65–69 | 3.0% |
| 70–74 | 2.5% |
| 75–79 | 2.0% |
| 80–84 | 1.0% |
| 85–89 | 0.5% |
| 90 and older | 0.0% |

#### HEALTH CARE COST TREND RATE ASSUMPTIONS[1]

| Year | PERACare Medicare Plans | Medicare Part A Premiums |
|---|---|---|
| 2016 | 5.00% | 2.75% |
| 2017 | 5.00% | 2.75% |
| 2018 | 5.00% | 3.00% |
| 2019 | 5.00% | 3.50% |
| 2020+ | 5.00% | 4.25% |

[1] Applies only to PERACare enrollees who are age 65 or older and who are not eligible for premium-free Medicare Part A.

### Exhibit K: Additional Premium Subsidy Assumptions—DPS Benefit Structure[1]

| Years of Service | Monthly Subsidy for Members Without Medicare Part A | Years of Service | Monthly Subsidy for Members Without Medicare Part A |
|---|---|---|---|
| 20+ | $115.00 | 10 | 57.50 |
| 19 | 109.25 | 9 | 51.75 |
| 18 | 103.50 | 8 | 46.00 |
| 17 | 97.75 | 7 | 40.25 |
| 16 | 92.00 | 6 | 34.50 |
| 15 | 86.25 | 5 | 28.75 |
| 14 | 80.50 | 4 | 23.00 |
| 13 | 74.75 | 3 | 17.25 |
| 12 | 69.00 | 2 | 11.50 |
| 11 | 63.25 | 1 | 5.75 |

[1] Health care assumptions for future PERACare enrollees who are age 65 or older and who are assumed to not be eligible for premium-free Medicare Part A.

HEALTH CARE TRUST FUNDS—OPEB

## Exhibit L: Health Care Participation Rate Assumptions

| | Percent Electing Health Care Coverage | | | Percent Electing Health Care Coverage | |
|---|---|---|---|---|---|
| Attained Age(s) | HCTF | DPS HCTF | Attained Age(s) | HCTF | DPS HCTF |
| 15-48 | 25% | 50% | 62 | 55% | 65% |
| 49 | 30% | 50% | 63 | 55% | 65% |
| 50 | 35% | 50% | 64 | 55% | 65% |
| 51 | 35% | 60% | 65 | 60% | 65% |
| 52 | 40% | 60% | 66 | 60% | 65% |
| 53 | 40% | 60% | 67 | 60% | 65% |
| 54 | 45% | 60% | 68 | 60% | 65% |
| 55 | 45% | 60% | 69 | 60% | 65% |
| 56 | 45% | 60% | 70 | 60% | 70% |
| 57 | 50% | 60% | 71 | 60% | 70% |
| 58 | 50% | 60% | 72 | 60% | 75% |
| 59 | 55% | 60% | 73 | 60% | 75% |
| 60 | 55% | 65% | 74+ | 65% | 75% |
| 61 | 55% | 65% | | | |

## Exhibit M: Medicare Health Care Plan Election Rate Assumptions

Medicare plan elections for future retirees who are not eligible for premium-free Medicare Part A are assumed as follows:

| | Percent Electing Medicare Plan | |
|---|---|---|
| Medicare Plan | Other Divisions | DPS Division |
| Self-Funded Medicare Supplement Plans[1] | 60% | 40% |
| Kaiser Permanente Medicare Advantage HMO | 25% | 35% |
| Rocky Mountain Health Plans Medicare HMO | 10% | 5% |
| UnitedHealthcare Medicare HMO | 5% | 20% |

[1] Eighty-one (81) percent of those PERACare enrollees participating in the self-funded plans are assumed to elect MS #1, 17 percent MS #2, and 2 percent MS #3.

Medicare plan elections for current, pre-Medicare retirees who are not eligible for premium-free Medicare Part A are assumed as follows:

| | Percent Electing Medicare Plan | |
|---|---|---|
| Medicare Plan | Pre-Medicare Anthem Plans | Pre-Medicare Kaiser Plans |
| Self-Funded Medicare Supplement Plans[1] | 88% | 5% |
| Kaiser Permanente Medicare Advantage HMO | 2% | 94% |
| Rocky Mountain Health Plans Medicare HMO | 6% | 1% |
| UnitedHealthcare Medicare HMO | 4% | 0% |

[1] Eighty-one (81) percent of those PERACare enrollees participating in the self-funded plans are assumed to elect MS #1, 17 percent MS #2, and 2 percent MS #3.

## Exhibit N: Percent Qualifying for “No Part A” Subsidy Assumptions

| | Percent Qualifying for “No Part A” Subsidy | |
|---|---|---|
| Hire Age | HCTF | DPS HCTF |
| 0 – 24 | 17% | 17% |
| 25 – 29 | 11% | 11% |
| 30+ | 4% | 4% |

Note: Ninety-five (95) percent of PERACare enrollees receiving health care benefits as a result of disability retirement are assumed to qualify for premium-free Medicare Part A. One-hundred (100) percent of eligible inactive (or deferred vested) members enrolled in PERACare are assumed to obtain the 40 or more quarters of Medicare-covered employment required for premium-free Medicare Part A coverage as a result of their subsequent employment.

HEALTH CARE TRUST FUNDS—OPEB

## Summary of Funding Progress

The PERA funding objective is to be able to pay long-term benefit promises through contributions that remain approximately level from year to year as a percent of salaries earned by PERA members. The following information in this section provides an overview of funding progress:

- The solvency test shows (by individual health care trust fund and in total) the degree to which existing liabilities are funded, including prior history.
- A schedule of funding progress shows (by individual health care trust fund and in total) the UAAL as a percentage of annual valuation payroll, including prior history.
- A schedule detailing actuarial gains and losses, by source, (by individual health care trust fund) for the current year.
- The scheduled contribution requirements (by individual health care trust fund) for the year immediately following the reporting period.

Consideration of the plans' current funded ratio, the unfunded liabilities in relation to annual payroll, historic trends, including significant gains and losses, and the schedule of future contributions should provide sufficient information to appropriately measure funding progress.

### Solvency Test

The solvency test is one means of checking funding progress of defined benefit plans. In this test, the plan's valuation assets typically are compared with: (A) member contributions (with interest) on deposit, (B) the liabilities for future benefits to persons who have retired, died or become disabled, and to those who have terminated service with the right to a future benefit, and (C) the liabilities for service already rendered by active members. Since the HCTF and the DPS HCTF are only funded through employer contributions, there are no member contribution accounts (liability A). Each table below shows the funded level of the liabilities for future benefits to current retirees (liability B) and the unfunded liabilities associated with service already rendered by active members (liability C).

**SOLVENCY TEST**
*(Dollars in Thousands)*

| | Aggregate Accrued Liabilities | | | | Portion of Actuarial Accrued Liabilities Covered by Valuation Assets | | |
|---|---|---|---|---|---|---|---|
| Valuation Date | Active Member Contributions (A) | Retirees, Beneficiaries, and Inactive Members (B) | Employer-Financed Portion of Active Members (C) | Valuation Assets | Liability (A) | Liability (B) | Liability (C) |
| HCTF | | | | | | | |
| 12/31/2006 | N/A | $878,997 | $368,953 | $214,816 | N/A | 24.4% | 0.0% |
| 12/31/2007 | N/A | 926,180 | 377,414 | 258,775 | N/A | 27.9% | 0.0% |
| 12/31/2008 | N/A | 969,288 | 399,345 | 255,976 | N/A | 26.4% | 0.0% |
| 12/31/2009 | N/A | 1,241,349 | 521,892 | 260,341 | N/A | 21.0% | 0.0% |
| 12/31/2010 | N/A | 1,179,809 | 463,184 | 288,193 | N/A | 24.4% | 0.0% |
| 12/31/2011 | N/A | 1,251,579 | 459,211 | 282,228 | N/A | 22.5% | 0.0% |
| 12/31/2012 | N/A | 1,259,557 | 463,938 | 285,097 | N/A | 22.6% | 0.0% |
| 12/31/2013 | N/A | 1,092,438 | 464,968 | 293,556 | N/A | 26.9% | 0.0% |
| 12/31/2014 | N/A | 1,085,995 | 448,466 | 297,377 | N/A | 27.4% | 0.0% |
| **12/31/2015** | **N/A** | **1,099,045** | **457,224** | **285,588** | **N/A** | **26.0%** | **0.0%** |
| DPS HCTF[1] | | | | | | | |
| 12/31/2010 | N/A | $58,432 | $20,081 | $14,086 | N/A | 24.1% | 0.0% |
| 12/31/2011 | N/A | 57,093 | 20,382 | 14,448 | N/A | 25.3% | 0.0% |
| 12/31/2012 | N/A | 54,727 | 22,942 | 14,443 | N/A | 26.4% | 0.0% |
| 12/31/2013 | N/A | 52,106 | 24,530 | 15,482 | N/A | 29.7% | 0.0% |
| 12/31/2014 | N/A | 50,998 | 25,028 | 16,502 | N/A | 32.4% | 0.0% |
| **12/31/2015** | **N/A** | **49,891** | **25,006** | **17,557** | **N/A** | **35.2%** | **0.0%** |

*Please see page 177 for footnote references.*

HEALTH CARE TRUST FUNDS—OPEB

## SOLVENCY TEST (CONTINUED)

*(Dollars in Thousands)*

| | Aggregate Accrued Liabilities | | | | Portion of Actuarial Accrued Liabilities Covered by Valuation Assets | | |
|---|---|---|---|---|---|---|---|
| Valuation Date | Active Member Contributions (A) | Retirees, Beneficiaries, and Inactive Members (B) | Employer-Financed Portion of Active Members (C) | Valuation Assets | Liability (A) | Liability (B) | Liability (C) |
| Total of Health Care Trust Funds[2, 3] | | | | | | | |
| 12/31/2006 | N/A | $878,997 | $368,953 | $214,816 | N/A | 24.4% | 0.0% |
| 12/31/2007 | N/A | 926,180 | 377,414 | 258,775 | N/A | 27.9% | 0.0% |
| 12/31/2008 | N/A | 969,288 | 399,345 | 255,976 | N/A | 26.4% | 0.0% |
| 12/31/2009 | N/A | 1,241,349 | 521,892 | 260,341 | N/A | 21.0% | 0.0% |
| 12/31/2010 | N/A | 1,238,241 | 483,265 | 302,279 | N/A | 24.4% | 0.0% |
| 12/31/2011 | N/A | 1,308,672 | 479,593 | 296,676 | N/A | 22.7% | 0.0% |
| 12/31/2012 | N/A | 1,314,284 | 486,880 | 299,540 | N/A | 22.8% | 0.0% |
| 12/31/2013 | N/A | 1,144,544 | 489,498 | 309,038 | N/A | 27.0% | 0.0% |
| 12/31/2014 | N/A | 1,136,993 | 473,494 | 313,879 | N/A | 27.6% | 0.0% |
| **12/31/2015** | **N/A** | **1,148,936** | **482,230** | **303,145** | **N/A** | **26.4%** | **0.0%** |

[1] The DPS HCTF was established on January 1, 2010, and received the balance of the Denver Public Schools Retiree Health Benefit Trust.

[2] Results prior to December 31, 2010, do not include the DPS HCTF.

[3] The data in this table is aggregated for informational purposes. The assets of each trust fund are for the sole purpose of its members and cannot be used by another fund.

HEALTH CARE TRUST FUNDS—OPEB

## Unfunded Actuarial Accrued Liability

UAALs are the difference between actuarially calculated liabilities for service already rendered and the valuation assets of the retirement fund. It is natural for unfunded liabilities to exist in a defined benefit OPEB plan.

The following factors resulted in higher liabilities (or losses) during 2015:

- Lower investment returns than assumed in 2014 and 2015.
- Fewer members terminated PERA-covered employment than expected.
- More service and disability retirements were experienced than expected.
- Retirees lived longer than expected.
- New members had some service resulting in accrued liabilities.

The following factor resulted in lower liabilities (or gains) during 2015:

- Higher investment returns than assumed in 2012 and 2013.

### SCHEDULE OF FUNDING PROGRESS

*(Dollars in Thousands)*

| (A) Valuation Date | (B) Actuarial Value of Plan Assets | (C) Actuarial Accrued Liabilities | (D) Unfunded Actuarial Accrued Liabilities (UAALs) (C)–(B) | (E) Funded Ratio (B)/(C) | (F) Annual Covered Payroll | (G) UAALs As a % of Covered Payroll (D)/(F) |
|---|---|---|---|---|---|---|
| HCTF | | | | | | |
| 12/31/2006 | $214,816 | $1,247,950 | $1,033,134 | 17.2% | $6,135,962 | 16.8% |
| 12/31/2007 | 258,775 | 1,303,594 | 1,044,819 | 19.9% | 6,566,368 | 15.9% |
| 12/31/2008 | 255,976 | 1,368,633 | 1,112,657 | 18.7% | 6,931,405 | 16.1% |
| 12/31/2009 | 260,341 | 1,763,241 | 1,502,900 | 14.8% | 7,048,992 | 21.3% |
| 12/31/2010 | 288,193 | 1,642,993 | 1,354,800 | 17.5% | 7,035,419 | 19.3% |
| 12/31/2011 | 282,228 | 1,710,790 | 1,428,562 | 16.5% | 6,972,596 | 20.5% |
| 12/31/2012 | 285,097 | 1,723,495 | 1,438,398 | 16.5% | 6,766,713 | 21.3% |
| 12/31/2013 | 293,556 | 1,557,406 | 1,263,850 | 18.8% | 6,982,560 | 18.1% |
| 12/31/2014 | 297,377 | 1,534,461 | 1,237,084 | 19.4% | 7,211,351 | 17.2% |
| **12/31/2015** | **285,588** | **1,556,269** | **1,270,681** | **18.4%** | **7,485,545** | **17.0%** |
| DPS HCTF[1] | | | | | | |
| 12/31/2010 | $14,086 | $78,513 | $64,427 | 17.9% | $470,774 | 13.7% |
| 12/31/2011 | 14,448 | 77,475 | 63,027 | 18.6% | 491,646 | 12.8% |
| 12/31/2012 | 14,443 | 77,669 | 63,226 | 18.6% | 510,872 | 12.4% |
| 12/31/2013 | 15,482 | 76,636 | 61,154 | 20.2% | 547,660 | 11.2% |
| 12/31/2014 | 16,502 | 76,026 | 59,524 | 21.7% | 584,319 | 10.2% |
| **12/31/2015** | **17,557** | **74,897** | **57,340** | **23.4%** | **621,115** | **9.2%** |
| Total of Health Care Trust Funds[2, 3] | | | | | | |
| 12/31/2006 | $214,816 | $1,247,950 | $1,033,134 | 17.2% | $6,135,962 | 16.8% |
| 12/31/2007 | 258,775 | 1,303,594 | 1,044,819 | 19.9% | 6,566,368 | 15.9% |
| 12/31/2008 | 255,976 | 1,368,633 | 1,112,657 | 18.7% | 6,931,405 | 16.1% |
| 12/31/2009 | 260,341 | 1,763,241 | 1,502,900 | 14.8% | 7,048,992 | 21.3% |
| 12/31/2010 | 302,279 | 1,721,506 | 1,419,227 | 17.6% | 7,506,193 | 18.9% |
| 12/31/2011 | 296,676 | 1,788,265 | 1,491,589 | 16.6% | 7,464,242 | 20.0% |
| 12/31/2012 | 299,540 | 1,801,164 | 1,501,624 | 16.6% | 7,277,585 | 20.6% |
| 12/31/2013 | 309,038 | 1,634,042 | 1,325,004 | 18.9% | 7,530,220 | 17.6% |
| 12/31/2014 | 313,879 | 1,610,487 | 1,296,608 | 19.5% | 7,795,670 | 16.6% |
| **12/31/2015** | **303,145** | **1,631,166** | **1,328,021** | **18.6%** | **8,106,660** | **16.4%** |

[1] The DPS HCTF was established on January 1, 2010, and received the balance of the Denver Public Schools Retiree Health Benefit Trust.

[2] Results prior to December 31, 2010, do not include the DPS HCTF.

[3] The data in this table is aggregated for informational purposes. The assets of each trust fund are for the sole purpose of its members and cannot be used by another fund.

HEALTH CARE TRUST FUNDS—OPEB

## Actuarial Gains and Losses

### ANALYSIS OF FINANCIAL EXPERIENCE

*(Dollars in Millions)*

| | HCTF | DPS HCTF |
|---|---|---|
| Amounts | | |
| From differences between assumed and actual experience on liabilities | | |
| Age and service retirements[1] | $2.9 | $0.2 |
| Disability retirements[2] | 0.5 | 0.0 |
| Deaths[3] | 1.7 | (0.1) |
| Withdrawals[4] | 4.4 | (0.2) |
| New members[5] | 3.0 | 0.4 |
| Other[6] | 4.3 | (1.5) |
| Subtotal | 16.8 | (1.2) |
| From differences between assumed and actual experience on assets | (5.3) | (0.2) |
| From change in plan assumptions | 0.5 | (0.1) |
| From change in actuarial methods | 0.4 | 0.0 |
| **Total actuarial (gains)/losses on 2015 activities** | **$12.4** | **($1.5)** |
| **Total actuarial (gains)/losses on 2014 activities** | **($47.3)** | **($1.4)** |

[1] *Age and service retirements:* If members retire at older ages than assumed, there is a gain. If members retire at younger ages than assumed, there is a loss.

[2] *Disability retirements:* If disability claims are lower than assumed, there is a gain. If disability claims are higher than assumed, there is a loss.

[3] *Deaths:* If survivor claims are lower than assumed, there is a gain. If survivor claims are higher than assumed, there is a loss. If retirees die sooner than assumed, there is a gain. If retirees live longer than assumed, there is a loss.

[4] *Withdrawal from employment:* If more members terminate and more liabilities are released by withdrawals than assumed, there is a gain. If fewer liabilities are released by terminations than assumed, there is a loss.

[5] *New members:* If new members entering the plan have prior service, there is a loss.

[6] *Other:* Miscellaneous gains and losses result from purchased service transfers, claims experience, changes in actuary's valuation software, data adjustments, timing of financial transactions, etc.

## Actuarial Valuation Results

Contribution rates for the year ending December 31, 2017, are derived from the results of the December 31, 2015, annual actuarial valuation and are determined in advance for purposes of budgeting and consideration of any necessary legislative action.

### SCHEDULE OF COMPUTED EMPLOYER CONTRIBUTION RATES FOR THE 2017 FISCAL YEAR

| | Expressed as a Percentage of Member Payroll | |
|---|---|---|
| | HCTF | DPS HCTF |
| Contributions | | |
| Service retirement benefits | 0.17% | 0.18% |
| Disability retirement benefits | 0.01% | 0.01% |
| Survivor benefits | 0.00% | 0.00% |
| Separation benefits | 0.03% | 0.02% |
| Total normal cost | 0.21% | 0.21% |
| Less member contributions | (0.00%) | (0.00%) |
| **Employer normal cost** | **0.21%** | **0.21%** |
| Percentage available to amortize unfunded actuarial accrued liabilities | 0.81% | 0.81% |
| Amortization period | 35 years | 14 years |
| **Total employer contribution rate for actuarially funded benefits** | **1.08%** | **0.68%** |

## HEALTH CARE TRUST FUNDS—OPEB

### *Sensitivity of Actuarial Valuation to Changes in Assumed Investment Rate of Return and Discount Rate*

The most important long-term driver of an OPEB plan is investment income. The investment return assumption and the discount rate for liabilities, as mandated by GASB, should be based on an estimated long-term investment yield for the plan, considering the nature and mix of current and expected plan investments and the basis used to determine the actuarial value of assets.

To understand the importance of the investment rate of return, which is used to discount the actuarial liabilities, a one and one-half, and one-half percent fluctuation in the investment rate of return and discount rate would change the funded ratio, UAAL, and ARC (for contributions for the fiscal year ended December 31, 2017) as shown on the tables below and on the next page.

#### INVESTMENT RETURN ASSUMPTION (DISCOUNT RATE) EQUAL TO 6.0 PERCENT

*(Dollars in Thousands)*

| | Actuarial Value of Assets | | | Market Value of Assets |
|---|---|---|---|---|
| Trust Fund | Funded Ratio | UAAL | ARC | UAAL |
| HCTF | 15.7% | $1,529,864 | 1.17% | $1,538,947 |
| DPS HCTF | 20.2% | 69,409 | 0.80% | 70,031 |
| Total Health Care Trust Funds[1] | | $1,599,273 | | $1,608,978 |

[1] The data in this table has been aggregated for informational purposes. The assets of each trust fund are for the sole purpose of its members and cannot be used by another fund.

#### INVESTMENT RETURN ASSUMPTION (DISCOUNT RATE) EQUAL TO 7.0 PERCENT

*(Dollars in Thousands)*

| | Actuarial Value of Assets | | | Market Value of Assets |
|---|---|---|---|---|
| Trust Fund | Funded Ratio | UAAL | ARC | UAAL |
| HCTF | 17.5% | $1,349,742 | 1.11% | $1,358,825 |
| DPS HCTF | 22.3% | 61,016 | 0.72% | 61,638 |
| Total Health Care Trust Funds[1] | | $1,410,758 | | $1,420,463 |

[1] The data in this table has been aggregated for informational purposes. The assets of each trust fund are for the sole purpose of its members and cannot be used by another fund.

#### CURRENT INVESTMENT RETURN ASSUMPTION (DISCOUNT RATE) EQUAL TO 7.5 PERCENT

*(Dollars in Thousands)*

| | Actuarial Value of Assets | | | Market Value of Assets |
|---|---|---|---|---|
| Trust Fund | Funded Ratio | UAAL | ARC | UAAL |
| HCTF | **18.4%** | **$1,270,681** | **1.08%** | **$1,279,764** |
| DPS HCTF | **23.4%** | **57,340** | **0.68%** | **57,961** |
| Total Health Care Trust Funds[1] | | **$1,328,021** | | **$1,337,725** |

[1] The data in this table has been aggregated for informational purposes. The assets of each trust fund are for the sole purpose of its members and cannot be used by another fund.

## HEALTH CARE TRUST FUNDS—OPEB

### INVESTMENT RETURN ASSUMPTION (DISCOUNT RATE) EQUAL TO 8.0 PERCENT

*(Dollars in Thousands)*

| | Actuarial Value of Assets | | | Market Value of Assets |
|---|---|---|---|---|
| Trust Fund | Funded Ratio | UAAL | ARC | UAAL |
| HCTF | 19.3% | $1,197,940 | 1.05% | $1,207,023 |
| DPS HCTF | 24.5% | 53,961 | 0.66% | 54,583 |
| Total Health Care Trust Funds[1] | | $1,251,901 | | $1,261,606 |

[1] The data in this table has been aggregated for informational purposes. The assets of each trust fund are for the sole purpose of its members and cannot be used by another fund.

### INVESTMENT RETURN ASSUMPTION (DISCOUNT RATE) EQUAL TO 9.0 PERCENT

*(Dollars in Thousands)*

| | Actuarial Value of Assets | | | Market Value of Assets |
|---|---|---|---|---|
| Trust Fund | Funded Ratio | UAAL | ARC | UAAL |
| HCTF | 21.1% | $1,068,920 | 1.02% | $1,078,003 |
| DPS HCTF | 26.8% | 47,977 | 0.63% | 48,599 |
| Total Health Care Trust Funds[1] | | $1,116,897 | | $1,126,602 |

[1] The data in this table has been aggregated for informational purposes. The assets of each trust fund are for the sole purpose of its members and cannot be used by another fund.

Note: The time-weighted, net-of-fees annualized rate of return for the pooled investment assets was 7.3 percent for the past five years and 6.0 percent for the past 10 years. The 35-year annualized gross-of-fees rate of return for the pooled investment assets was 9.5 percent.

HEALTH CARE TRUST FUNDS—OPEB

## Plan Data

### SCHEDULE OF RETIREES, BENEFICIARIES, AND SURVIVORS ADDED TO AND REMOVED FROM THE BENEFIT PAYROLL

*(In Actual Dollars)*

| | Added to Payroll | | Removed from Payroll | | Payroll—End of Year | | Average | Increase in |
|---|---|---|---|---|---|---|---|---|
| Year Ended | No. | Annual Benefits | No. | Annual Benefits | No. | Annual Benefits | Annual Benefits | Average Benefits |
| HCTF[1] | | | | | | | | |
| 12/31/2006 | | | | | 41,421 | $72,539,493 | $1,751 | — |
| 12/31/2007 | 3,408 | $7,714,959 | 1,710 | $2,841,489 | 43,119 | 75,263,268 | 1,745 | (0.3%) |
| 12/31/2008 | 3,479 | 7,960,047 | 1,713 | 2,767,245 | 44,885 | 78,323,211 | 1,745 | 0.0% |
| 12/31/2009 | 3,435 | 7,886,217 | 1,582 | 2,442,462 | 46,738 | 81,765,552 | 1,749 | 0.2% |
| 12/31/2010 | 3,633 | 8,290,281 | 1,653 | 2,623,104 | 48,718 | 85,247,016 | 1,750 | 0.1% |
| 12/31/2011 | 3,399 | 7,638,162 | 1,900 | 2,999,430 | 50,217 | 86,755,011 | 1,728 | (1.3%) |
| 12/31/2012 | 3,489 | 7,844,610 | 2,040 | 3,548,532 | 51,666 | 90,123,660 | 1,744 | 0.9% |
| 12/31/2013 | 3,256 | 7,098,720 | 1,881 | 3,383,139 | 53,041 | 91,009,965 | 1,716 | (1.6%) |
| 12/31/2014 | 3,231 | 6,954,234 | 2,196 | 3,945,282 | 54,076 | 91,222,002 | 1,687 | (1.7%) |
| **12/31/2015** | **3,271** | **6,998,325** | **2,255** | **3,920,028** | **55,092** | **91,545,543** | **1,662** | **(1.5%)** |
| DPS HCTF[1, 2] | | | | | | | | |
| 12/31/2010 | 3,944 | $6,446,394 | — | $— | 3,944 | $6,446,394 | $1,634 | — |
| 12/31/2011 | 203 | 411,792 | 189 | 292,905 | 3,958 | 6,296,871 | 1,591 | (2.6%) |
| 12/31/2012 | 168 | 340,929 | 165 | 258,957 | 3,961 | 6,086,352 | 1,537 | (3.4%) |
| 12/31/2013 | 198 | 428,532 | 164 | 241,845 | 3,995 | 6,098,082 | 1,526 | (0.7%) |
| 12/31/2014 | 184 | 368,943 | 217 | 346,587 | 3,962 | 5,961,324 | 1,505 | (1.4%) |
| **12/31/2015** | **174** | **360,111** | **206** | **330,648** | **3,930** | **5,829,741** | **1,483** | **(1.5%)** |
| Total of Health Care Trust Funds[1, 3] | | | | | | | | |
| 12/31/2006 | | | | | 41,421 | $72,539,493 | $1,751 | — |
| 12/31/2007 | 3,408 | $7,714,959 | 1,710 | $2,841,489 | 43,119 | 75,263,268 | 1,745 | (0.3%) |
| 12/31/2008 | 3,479 | 7,960,047 | 1,713 | 2,767,245 | 44,885 | 78,323,211 | 1,745 | 0.0% |
| 12/31/2009 | 3,435 | 7,886,217 | 1,582 | 2,442,462 | 46,738 | 81,765,552 | 1,749 | 0.2% |
| 12/31/2010 | 7,577[4] | 14,736,675 | 1,653 | 2,623,104 | 52,662[4] | 91,693,410 | 1,741 | (0.5%) |
| 12/31/2011 | 3,602 | 8,049,954 | 2,089 | 3,292,335 | 54,175 | 93,051,882 | 1,718 | (1.3%) |
| 12/31/2012 | 3,657 | 8,185,539 | 2,205 | 3,807,489 | 55,627 | 96,210,012 | 1,730 | 0.7% |
| 12/31/2013 | 3,454 | 7,527,252 | 2,045 | 3,624,984 | 57,036 | 97,108,047 | 1,703 | (1.6%) |
| 12/31/2014 | 3,415 | 7,323,177 | 2,413 | 4,291,869 | 58,038 | 97,183,326 | 1,674 | (1.7%) |
| **12/31/2015** | **3,445** | **7,358,436** | **2,461** | **4,250,676** | **59,022** | **97,375,284** | **1,650** | **(1.4%)** |

[1] The annual benefit is based upon creditable service and varies by attained age. Results do not include benefits valued for "No Part A" benefits or RDS subsidies prior to December 31, 2013.

[2] The DPS HCTF was established on January 1, 2010, and received the balance of the Denver Public Schools Retiree Health Benefit Trust.

[3] Data prior to 2010 does not include the DPS HCTF.

[4] Includes the addition of 3,944 beneficiaries due to the DPSRS merger.

HEALTH CARE TRUST FUNDS—OPEB

## SCHEDULE OF ACTIVE MEMBER ACTUARIAL VALUATION DATA

As of December 31, 2015
*(In Actual Dollars)*

| Year | Number of Participating Employers[1] | Number of Active Members | Annual Payroll for Active Members | Average Annual Pay for Active Members | % Increase (Decrease) in Average Annual Pay |
|---|---|---|---|---|---|
| HCTF | | | | | |
| 2006 | 405 | 182,404 | $6,135,961,050 | $33,639 | 2.29% |
| 2007 | 409 | 186,842 | 6,566,368,545 | 35,144 | 4.47% |
| 2008 | 413 | 190,684 | 6,931,404,440 | 36,350 | 3.43% |
| 2009 | 411 | 190,206 | 7,048,991,770 | 37,060 | 1.95% |
| 2010 | 489[2] | 187,924 | 7,035,419,174 | 37,438 | 1.02% |
| 2011 | 496[2] | 186,170 | 6,972,597,196 | 37,453 | 0.04% |
| 2012 | 500[2] | 182,524 | 6,766,713,013 | 37,073 | (1.01%) |
| 2013 | 516[2] | 185,367 | 6,982,560,466 | 37,669 | 1.61% |
| 2014 | 531 | 187,336 | 7,211,350,491 | 38,494 | 2.19% |
| **2015** | **534** | **188,040** | **7,485,544,867** | **39,808** | **3.41%** |
| DPS HCTF[3] | | | | | |
| 2010 | 28[2] | 13,171 | $470,773,746 | $35,743 | — |
| 2011 | 27[2] | 13,571 | 491,646,251 | 36,228 | 1.36% |
| 2012 | 29[2] | 13,911 | 510,872,366 | 36,724 | 1.37% |
| 2013 | 31[2] | 14,816 | 547,659,912 | 36,964 | 0.65% |
| 2014 | 34 | 15,414 | 584,319,269 | 37,908 | 2.55% |
| **2015** | **38** | **15,929** | **621,114,573** | **38,993** | **2.86%** |
| Total of Health Care Trust Funds[4] | | | | | |
| 2006 | 405 | 182,404 | $6,135,961,050 | $33,639 | 2.29% |
| 2007 | 409 | 186,842 | 6,566,368,545 | 35,144 | 4.47% |
| 2008 | 413 | 190,684 | 6,931,404,440 | 36,350 | 3.43% |
| 2009 | 411 | 190,206 | 7,048,991,770 | 37,060 | 1.95% |
| 2010 | 517[2] | 201,095 | 7,506,192,920 | 37,327 | 0.72% |
| 2011 | 523[2] | 199,741 | 7,464,243,447 | 37,370 | 0.12% |
| 2012 | 529[2] | 196,435 | 7,277,585,379 | 37,048 | (0.86%) |
| 2013 | 547[2] | 200,183 | 7,530,220,378 | 37,617 | 1.54% |
| 2014 | 565 | 202,750 | 7,795,669,760 | 38,450 | 2.21% |
| **2015** | **572** | **203,969** | **8,106,659,440** | **39,745** | **3.37%** |

[1] Any differences in the number of participating employers in this schedule compared to the same schedule for the Division Trust Funds are due to the definition of employer as promulgated by GASB 67.

[2] Includes charter schools operating within the School and DPS Divisions and under the Colorado Charter School Institute.

[3] The DPS HCTF was established on January 1, 2010, and received the balance of the Denver Public Schools Retiree Health Benefit Trust.

[4] Data prior to 2010 does not include the DPS HCTF.

# **Proven** Sustainable

*The reforms enacted in 2010 with Senate Bill 10-001 make Colorado PERA sustainable into the future and the actuarial assumptions PERA uses to make projections and manage the plan are reasonable.*

—Independent actuarial study of PERA released by the Colorado Office of the State Auditor (Report conducted by Pension Trustee Advisors)

The Statistical Section presents detailed information that assists users in utilizing the basic financial statements, notes to basic financial statements, and required supplementary information to assess the economic condition of PERA.

## Overview

### Financial Trends

The following schedules show trend information about the changes and growth in PERA's fiduciary net position over the past 10 years:

- *Changes in Fiduciary Net Position*
- *Benefits and Refund Deductions from Fiduciary Net Position by Type*

### Operating Information

The following schedules contain information related to the services that PERA provides and the activities it performs:

- *Member and Benefit Recipient Statistics*[1]
- *Schedule of Average Retirement Benefits Payable—All Division Trust Funds*[1]
- *Schedule of Average Retirement Benefits Payable*[1]
- *Colorado PERA Benefit Payments—All Division Trust Funds*[1]
- *Schedule of Retirees and Survivors by Types of Benefits*[1]
- *Schedule of Average Benefit Payments*[1]
- *Schedule of Average Benefit Payments—All Division Trust Funds*[1]
- *Schedule of Contribution Rate History*
- *Principal Participating Employers*
- *Schedule of Affiliated Employers*

Note: Schedules and information are derived from PERA internal sources unless otherwise noted.

[1] Schedules and data are provided by the consulting actuary, Cavanaugh Macdonald Consulting, LLC.

# CHANGES IN FIDUCIARY NET POSITION

For the Years Ended December 31

*(Dollars in Thousands)*

## State Division Trust Fund

| Additions | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|
| Employer contributions[1] | $208,795 | $232,997 | $270,353 | $297,240 | $287,624 |
| Member contributions[1] | 169,965 | 179,971 | 191,481 | 194,168 | 223,240 |
| Purchased service | 39,480 | 8,259 | 13,315 | 8,830 | 12,496 |
| Investment income (loss) | 1,921,863 | 1,388,265 | (3,745,843) | 1,742,571 | 1,553,142 |
| Other | 1 | 4 | 7 | 3 | 1 |
| **Total additions** | 2,340,104 | 1,809,496 | (3,270,687) | 2,242,812 | 2,076,503 |
| **Deductions** | | | | | |
| Benefit payments | 849,229 | 925,761 | 999,279 | 1,071,725 | 1,122,435 |
| Refunds | 65,911 | 56,578 | 56,716 | 58,416 | 68,844 |
| Disability insurance premiums | 1,772 | 1,833 | 1,794 | 2,004 | 1,661 |
| Administrative expenses | 7,889 | 6,963 | 8,639 | 8,729 | 8,942 |
| Other | 3,103 | 7,592 | 6,613 | (1,519) | (726) |
| **Total deductions** | 927,904 | 998,727 | 1,073,041 | 1,139,355 | 1,201,156 |
| **Change in fiduciary net position** | 1,412,200 | 810,769 | (4,343,728) | 1,103,457 | 875,347 |
| **Fiduciary net position held at beginning of year** | 12,629,060 | 14,041,260 | 14,852,029 | 10,508,301 | 11,611,758 |
| **Fiduciary net position held at end of year** | **$14,041,260** | **$14,852,029** | **$10,508,301** | **$11,611,758** | **$12,487,105** |

| Additions | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|
| Employer contributions[1] | $283,222 | $335,073 | $401,658 | $444,372 | **$484,005** |
| Member contributions[1] | 258,678 | 227,058 | 202,799 | 211,610 | **217,980** |
| Purchased service | 11,277 | 16,358 | 22,241 | 22,446 | **26,946** |
| Investment income | 232,669 | 1,511,244 | 1,931,658 | 780,762 | **210,337** |
| Other | 331 | 150 | 4,869 | 3,289 | **5,023** |
| **Total additions** | 786,177 | 2,089,883 | 2,563,225 | 1,462,479 | **944,291** |
| **Deductions** | | | | | |
| Benefit payments | 1,174,707 | 1,231,922 | 1,295,780 | 1,352,293 | **1,417,862** |
| Refunds | 70,090 | 69,221 | 68,735 | 61,152 | **63,567** |
| Disability insurance premiums | 1,685 | 1,570 | 2,229 | 2,309 | **2,088** |
| Administrative expenses | 8,685 | 8,568 | 9,780 | 10,067 | **10,779** |
| Other | (4,546) | 3,911 | 3,593 | 3,171 | **3,406** |
| **Total deductions** | 1,250,621 | 1,315,192 | 1,380,117 | 1,428,992 | **1,497,702** |
| **Change in fiduciary net position** | (464,444) | 774,691 | 1,183,108 | 33,487 | **(553,411)** |
| **Fiduciary net position held at beginning of year** | 12,487,105 | 12,022,661 | 12,797,352 | 13,980,460 | **14,013,947** |
| **Fiduciary net position held at end of year** | **$12,022,661** | **$12,797,352** | **$13,980,460** | **$14,013,947** | **$13,460,536** |

[1] Employer and member contribution rate history is shown on pages 218–223.

## CHANGES IN FIDUCIARY NET POSITION
For the Years Ended December 31
*(Dollars in Thousands)*

### School Division Trust Fund

| Additions | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|
| Employer contributions[1] | $336,703 | $375,480 | $430,215 | $480,239 | $519,044 |
| Member contributions[1] | 272,589 | 289,231 | 304,686 | 314,571 | 316,446 |
| Purchased service | 50,806 | 14,331 | 15,020 | 10,152 | 13,096 |
| Investment income (loss) | 2,954,863 | 2,145,958 | (5,842,787) | 2,741,797 | 2,469,517 |
| Other | 23 | 15 | 19 | 12 | 25 |
| Total additions | 3,614,984 | 2,825,015 | (5,092,847) | 3,546,771 | 3,318,128 |
| **Deductions** | | | | | |
| Benefit payments | 1,213,875 | 1,329,803 | 1,449,907 | 1,563,315 | 1,642,350 |
| Refunds | 68,493 | 67,710 | 65,659 | 70,910 | 79,012 |
| Disability insurance premiums | 2,829 | 2,983 | 2,886 | 3,186 | 2,802 |
| Administrative expenses | 11,523 | 11,942 | 12,815 | 13,226 | 17,104 |
| Other | 9,909 | 5,348 | 3,272 | 9,121 | 9,396 |
| Total deductions | 1,306,629 | 1,417,786 | 1,534,539 | 1,659,758 | 1,750,664 |
| Change in fiduciary net position | 2,308,355 | 1,407,229 | (6,627,386) | 1,887,013 | 1,567,464 |
| Fiduciary net position held at beginning of year | 19,327,602 | 21,635,957 | 23,043,186 | 16,415,800 | 18,302,813 |
| Fiduciary net position held at end of year | **$21,635,957** | **$23,043,186** | **$16,415,800** | **$18,302,813** | **$19,870,277** |

| Additions | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|
| Employer contributions[1] | $541,962 | $573,586 | $624,784 | $686,323 | **$754,182** |
| Member contributions[1] | 315,958 | 313,923 | 322,217 | 334,585 | **348,537** |
| Purchased service | 14,465 | 17,406 | 19,285 | 21,935 | **23,841** |
| Investment income | 370,045 | 2,434,176 | 3,136,269 | 1,274,862 | **344,000** |
| Other | 544 | 246 | 139 | 112 | **96** |
| Total additions | 1,242,974 | 3,339,337 | 4,102,694 | 2,317,817 | **1,470,656** |
| **Deductions** | | | | | |
| Benefit payments | 1,731,348 | 1,832,643 | 1,932,756 | 2,032,628 | **2,134,754** |
| Refunds | 78,543 | 77,154 | 76,980 | 77,171 | **70,298** |
| Disability insurance premiums | 2,619 | 2,522 | 3,655 | 3,748 | **3,400** |
| Administrative expenses | 16,322 | 16,086 | 18,523 | 19,290 | **20,865** |
| Other | 9,839 | 9,157 | 7,132 | 4,376 | **9,178** |
| Total deductions | 1,838,671 | 1,937,562 | 2,039,046 | 2,137,213 | **2,238,495** |
| Change in fiduciary net position | (595,697) | 1,401,775 | 2,063,648 | 180,604 | **(767,839)** |
| Fiduciary net position held at beginning of year | 19,870,277 | 19,274,580 | 20,676,355 | 22,740,003 | **22,920,607** |
| Fiduciary net position held at end of year | **$19,274,580** | **$20,676,355** | **$22,740,003** | **$22,920,607** | **$22,152,768** |

[1] Employer and member contribution rate history is shown on pages 218–223.

## CHANGES IN FIDUCIARY NET POSITION

For the Years Ended December 31
*(Dollars in Thousands)*

### Local Government Division Trust Fund

| Additions | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|
| Employer contributions[1] | $60,664 | $68,711 | $79,457 | $84,456 | $89,515 |
| Member contributions[1] | 51,047 | 54,880 | 58,508 | 57,598 | 56,728 |
| Purchased service | 14,461 | 2,447 | 3,820 | 4,460 | 3,671 |
| Investment income (loss) | 369,181 | 274,991 | (778,885) | 381,350 | 355,964 |
| Other | 4 | 12 | (2) | 2 | 9 |
| **Total additions** | 495,357 | 401,041 | (637,102) | 527,866 | 505,887 |
| **Deductions** | | | | | |
| Benefit payments | 104,156 | 117,350 | 132,696 | 150,036 | 165,770 |
| Refunds | 16,328 | 16,683 | 18,219 | 19,648 | 22,942 |
| Disability insurance premiums | 529 | 561 | 560 | 591 | 496 |
| Administrative expenses | 1,800 | 1,918 | 2,102 | 2,160 | 2,215 |
| Other | (1,056) | 1,326 | 2,014 | 2,737 | 5,235 |
| **Total deductions** | 121,757 | 137,838 | 155,591 | 175,172 | 196,658 |
| **Change in fiduciary net position** | 373,600 | 263,203 | (792,693) | 352,694 | 309,229 |
| **Fiduciary net position held at beginning of year** | 2,377,471 | 2,751,071 | 3,014,274 | 2,221,581 | 2,574,275 |
| **Fiduciary net position held at end of year** | **$2,751,071** | **$3,014,274** | **$2,221,581** | **$2,574,275** | **$2,883,504** |

| Additions | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|
| Employer contributions[1] | $91,780 | $86,113 | $67,197 | $68,719 | **$70,415** |
| Member contributions[1] | 58,590 | 54,827 | 42,627 | 43,792 | **45,400** |
| Purchased service | 3,902 | 13,927 | 7,363 | 5,498 | **6,586** |
| Employer disaffiliation | — | — | — | 186,006 | — |
| Investment income | 53,130 | 368,492 | 482,297 | 200,394 | **56,328** |
| Other | 78 | 2,663 | 14 | 14 | **15** |
| **Total additions** | 207,480 | 526,022 | 599,498 | 504,423 | **178,744** |
| **Deductions** | | | | | |
| Benefit payments | 179,449 | 195,945 | 217,875 | 232,055 | **244,948** |
| Refunds | 22,686 | 42,941 | 32,480 | 24,436 | **20,410** |
| Disability insurance premiums | 442 | 410 | 479 | 481 | **431** |
| Administrative expenses | 2,157 | 2,035 | 2,021 | 2,091 | **2,253** |
| Other | 2,737 | 2,072 | 4,463 | 2,204 | **1,661** |
| **Total deductions** | 207,471 | 243,403 | 257,318 | 261,267 | **269,703** |
| **Change in fiduciary net position** | 9 | 282,619 | 342,180 | 243,156 | **(90,959)** |
| **Fiduciary net position held at beginning of year** | 2,883,504 | 2,883,513 | 3,166,132 | 3,508,312 | **3,751,468** |
| **Fiduciary net position held at end of year** | **$2,883,513** | **$3,166,132** | **$3,508,312** | **$3,751,468** | **$3,660,509** |

[1] Employer and member contribution rate history is shown on pages 218–223.

## CHANGES IN FIDUCIARY NET POSITION
For the Years Ended December 31
*(Dollars in Thousands)*

### Judicial Division Trust Fund

| Additions | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|
| Employer contributions[1] | $3,767 | $4,222 | $5,105 | $5,793 | $5,654 |
| Member contributions[1] | 2,292 | 2,479 | 2,806 | 3,001 | 3,465 |
| Purchased service | 1,814 | 80 | 392 | (3) | 109 |
| Investment income (loss) | 29,920 | 21,965 | (61,192) | 29,977 | 27,400 |
| **Total additions** | 37,793 | 28,746 | (52,889) | 38,768 | 36,628 |
| **Deductions** | | | | | |
| Benefit payments | 10,755 | 12,396 | 13,356 | 15,011 | 15,394 |
| Refunds | — | 4 | — | 30 | 104 |
| Disability insurance premiums | 24 | 25 | 26 | 31 | 26 |
| Administrative expenses | 19 | 19 | 21 | 22 | 61 |
| Other | (3) | (2,908) | (322) | (1,778) | (2,491) |
| **Total deductions** | 10,795 | 9,536 | 13,081 | 13,316 | 13,094 |
| **Change in fiduciary net position** | 26,998 | 19,210 | (65,970) | 25,452 | 23,534 |
| **Fiduciary net position held at beginning of year** | 194,665 | 221,663 | 240,873 | 174,903 | 200,355 |
| **Fiduciary net position held at end of year** | **$221,663** | **$240,873** | **$174,903** | **$200,355** | **$223,889** |

| Additions | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|
| Employer contributions[1] | $5,430 | $5,922 | $6,587 | $7,070 | **$7,702** |
| Member contributions[1] | 4,120 | 3,628 | 3,224 | 3,461 | **3,772** |
| Purchased service | 5 | 180 | 240 | 835 | **425** |
| Investment income | 4,105 | 28,063 | 37,096 | 15,299 | **4,149** |
| Other | 6 | 2,556 | 1,451 | 256 | **3,247** |
| **Total additions** | 13,666 | 40,349 | 48,598 | 26,921 | **19,295** |
| **Deductions** | | | | | |
| Benefit payments | 16,809 | 17,606 | 18,616 | 19,800 | **21,158** |
| Refunds | 513 | 605 | 385 | 60 | — |
| Disability insurance premiums | 26 | 27 | 40 | 43 | **42** |
| Administrative expenses | 61 | 61 | 69 | 72 | **77** |
| Other | (1,043) | 22 | 52 | 100 | **166** |
| **Total deductions** | 16,366 | 18,321 | 19,162 | 20,075 | **21,443** |
| **Change in fiduciary net position** | (2,700) | 22,028 | 29,436 | 6,846 | **(2,148)** |
| **Fiduciary net position held at beginning of year** | 223,889 | 221,189 | 243,217 | 272,653 | **279,499** |
| **Fiduciary net position held at end of year** | **$221,189** | **$243,217** | **$272,653** | **$279,499** | **$277,351** |

[1] Employer and member contribution rate history is shown on pages 218–223.

## CHANGES IN FIDUCIARY NET POSITION

For the Years Ended December 31
*(Dollars in Thousands)*

### DPS Division Trust Fund[1]

| Additions | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|
| Employer contributions[2] | $6,493 | $12,859 | $14,703 | $25,157 | $18,478 | **$8,494** |
| Member contributions[2] | 36,824 | 39,422 | 41,124 | 43,564 | 47,083 | **49,973** |
| Plan transfer | 2,750,566 | — | — | — | — | **—** |
| Purchased service | 2,056 | 1,792 | 1,924 | 1,834 | 2,326 | **3,585** |
| Investment income | 367,145 | 55,081 | 354,867 | 452,919 | 182,823 | **49,172** |
| Other | 5 | 77 | 146 | 269 | 13 | **11** |
| **Total additions** | 3,163,089 | 109,231 | 412,764 | 523,743 | 250,723 | **111,235** |
| **Deductions** | | | | | | |
| Benefit payments | 215,825 | 221,113 | 228,742 | 237,921 | 247,005 | **255,068** |
| Refunds | 3,029 | 4,412 | 5,821 | 6,733 | 8,063 | **7,897** |
| Disability insurance premiums | 311 | 238 | 220 | 338 | 366 | **358** |
| Administrative expenses | 2,944 | 1,914 | 1,919 | 2,240 | 2,377 | **2,599** |
| Other | 54 | 2,409 | 55 | 150 | 1,560 | **1,775** |
| **Total deductions** | 222,163 | 230,086 | 236,757 | 247,382 | 259,371 | **267,697** |
| **Change in fiduciary net position** | 2,940,926 | (120,855) | 176,007 | 276,361 | (8,648) | **(156,462)** |
| **Fiduciary net position held at beginning of year** | — | 2,940,926 | 2,820,071 | 2,996,078 | 3,272,439 | **3,263,791** |
| **Fiduciary net position held at end of year** | **$2,940,926** | **$2,820,071** | **$2,996,078** | **$3,272,439** | **$3,263,791** | **$3,107,329** |

[1] The Denver Public Schools (DPS) Division Trust Fund was established on January 1, 2010, and received the net assets of the Denver Public Schools Retirement System (DPSRS).

[2] Employer and member contribution rate history is shown on pages 218–223.

## CHANGES IN FIDUCIARY NET POSITION
For the Years Ended December 31
*(Dollars in Thousands)*

### Voluntary Investment Program

| Additions | 2006[1] | 2007[1] | 2008[1] | 2009 | 2010 |
|---|---|---|---|---|---|
| Employer contributions | $2,724 | $3,252 | $3,866 | $3,383 | $3,827 |
| Member contributions | 165,641 | 171,630 | 157,937 | 134,645 | 132,674 |
| Plan transfer | — | — | — | 18,358 | — |
| Investment income (loss) | 166,668 | 125,576 | (500,862) | 291,029 | 194,500 |
| Other | 3,396 | 6,317 | 4,472 | 3,654 | 3,697 |
| **Total additions** | 338,429 | 306,775 | (334,587) | 451,069 | 334,698 |
| **Deductions** | | | | | |
| Refunds | 108,477 | 92,607 | 87,571 | 75,351 | 102,056 |
| Administrative expenses | 4,706 | 5,482 | 4,965 | 4,664 | 5,178 |
| **Total deductions** | 113,183 | 98,089 | 92,536 | 80,015 | 107,234 |
| **Change in fiduciary net position** | 225,246 | 208,686 | (427,123) | 371,054 | 227,464 |
| **Fiduciary net position held at beginning of year** | 1,296,998 | 1,522,244 | 1,730,930 | 1,303,807 | 1,674,861 |
| **Fiduciary net position held at end of year** | **$1,522,244** | **$1,730,930** | **$1,303,807** | **$1,674,861** | **$1,902,325** |

| Additions | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|
| Employer contributions | $3,610 | $3,697 | $3,679 | $3,866 | **$3,889** |
| Member contributions | 126,331 | 119,013 | 120,203 | 126,112 | **129,990** |
| Investment income (loss) | (5,752) | 236,775 | 423,877 | 188,199 | **(11,773)** |
| Other | 3,298 | 2,075 | 2,141 | 2,291 | **2,237** |
| **Total additions** | 127,487 | 361,560 | 549,900 | 320,468 | **124,343** |
| **Deductions** | | | | | |
| Refunds | 133,719 | 144,171 | 142,064 | 144,329 | **158,215** |
| Administrative expenses | 4,717 | 2,827 | 3,137 | 3,050 | **3,010** |
| Other | 29 | 234 | 624 | 839 | **1,019** |
| **Total deductions** | 138,465 | 147,232 | 145,825 | 148,218 | **162,244** |
| **Change in fiduciary net position** | (10,978) | 214,328 | 404,075 | 172,250 | **(37,901)** |
| **Fiduciary net position held at beginning of year** | 1,902,325 | 1,891,347 | 2,105,675 | 2,509,750 | **2,682,000** |
| **Fiduciary net position held at end of year** | **$1,891,347** | **$2,105,675** | **$2,509,750** | **$2,682,000** | **$2,644,099** |

[1] To improve trend analysis, the year has been restated to remove the Defined Contribution Retirement Plan which was reported as a component of the Voluntary Investment Program. For the years 2006–2008, the Defined Contribution Plan was a component plan in the Voluntary Investment Program Trust. In 2009, the Defined Contribution Retirement Plan became a separate trust.

## CHANGES IN FIDUCIARY NET POSITION
For the Years Ended December 31
*(Dollars in Thousands)*

### Defined Contribution Retirement Plan

| Additions | 2006[1] | 2007[1] | 2008[1] | 2009 | 2010 |
|---|---|---|---|---|---|
| Employer contributions | $329 | $1,104 | $1,946 | $5,899 | $6,428 |
| Member contributions | 260 | 880 | 1,564 | 4,652 | 6,896 |
| Plan transfer | — | — | — | 18,374 | 11 |
| Investment income (loss) | 14 | 69 | (841) | 5,060 | 5,519 |
| Other | — | 49 | 3 | 14 | 35 |
| Total additions | 603 | 2,102 | 2,672 | 33,999 | 18,889 |
| **Deductions** | | | | | |
| Refunds | 8 | 148 | 215 | 1,377 | 2,886 |
| Administrative expenses | — | 2 | 8 | 143 | 94 |
| Total deductions | 8 | 150 | 223 | 1,520 | 2,980 |
| Change in fiduciary net position | 595 | 1,952 | 2,449 | 32,479 | 15,909 |
| Fiduciary net position held at beginning of year | — | 595 | 2,547 | 4,996 | 37,475 |
| Fiduciary net position held at end of year | **$595** | **$2,547** | **$4,996** | **$37,475** | **$53,384** |

| Additions | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|
| Employer contributions | $7,034 | $7,997 | $11,090 | $11,531 | **$12,428** |
| Member contributions | 9,732 | 8,364 | 8,828 | 9,179 | **9,830** |
| Investment income (loss) | (1,130) | 9,046 | 17,416 | 6,745 | **(2,466)** |
| Other | 40 | 2 | 6 | 8 | **9** |
| Total additions | 15,676 | 25,409 | 37,340 | 27,463 | **19,801** |
| **Deductions** | | | | | |
| Refunds | 5,176 | 4,869 | 6,314 | 8,690 | **9,419** |
| Administrative expenses | 282 | 848 | 744 | 738 | **774** |
| Other | 5 | 22 | 49 | 69 | **48** |
| Total deductions | 5,463 | 5,739 | 7,107 | 9,497 | **10,241** |
| Change in fiduciary net position | 10,213 | 19,670 | 30,233 | 17,966 | **9,560** |
| Fiduciary net position held at beginning of year | 53,384 | 63,597 | 83,267 | 113,500 | **131,466** |
| Fiduciary net position held at end of year | **$63,597** | **$83,267** | **$113,500** | **$131,466** | **$141,026** |

[1] To improve trend analysis, the year has been restated to report changes in fiduciary net position which were included in the Voluntary Investment Program. For the years 2006–2008, the Defined Contribution Plan was a component plan in the Voluntary Investment Program Trust. In 2009, the Defined Contribution Retirement Plan became a separate trust.

## CHANGES IN FIDUCIARY NET POSITION

For the Years Ended December 31

*(Dollars in Thousands)*

### Deferred Compensation Plan[1]

| Additions | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|
| Employer contributions | $12 | $12 | $51 | $14 |
| Member contributions | 23,875 | 44,203 | 42,253 | 39,851 |
| Plan transfer | 336,504 | 24 | 4 | — |
| Investment income | 40,443 | 42,232 | 10,335 | 49,344 |
| Other | 1,820 | 917 | 984 | 354 |
| Total additions | 402,654 | 87,388 | 53,627 | 89,563 |
| **Deductions** | | | | |
| Refunds | 8,745 | 20,869 | 27,524 | 27,627 |
| Administrative expenses | 507 | 822 | 834 | 1,105 |
| Other | 50 | 168 | 185 | 278 |
| Total deductions | 9,302 | 21,859 | 28,543 | 29,010 |
| Change in fiduciary net position | 393,352 | 65,529 | 25,084 | 60,553 |
| Fiduciary net position held at beginning of year | — | 393,352 | 458,881 | 483,965 |
| Fiduciary net position held at end of year | **$393,352** | **$458,881** | **$483,965** | **$544,518** |

| Additions | 2013 | 2014 | 2015 |
|---|---|---|---|
| Employer contributions | $20 | $43 | **$27** |
| Member contributions | 44,449 | 50,370 | **49,719** |
| Investment income (loss) | 88,565 | 32,133 | **(6,427)** |
| Other | 428 | 478 | **484** |
| Total additions | 133,462 | 83,024 | **43,803** |
| **Deductions** | | | |
| Refunds | 32,854 | 35,584 | **39,945** |
| Administrative expenses | 1,094 | 1,074 | **1,071** |
| Other | 430 | 517 | **562** |
| Total deductions | 34,378 | 37,175 | **41,578** |
| Change in fiduciary net position | 99,084 | 45,849 | **2,225** |
| Fiduciary net position held at beginning of year | 544,518 | 643,602 | **689,451** |
| Fiduciary net position held at end of year | **$643,602** | **$689,451** | **$691,676** |

[1] On July 1, 2009, the State of Colorado's Deferred Compensation Plan assets transferred to PERA, which became the administrator of that plan under the provisions of SB 09-66.

## CHANGES IN FIDUCIARY NET POSITION

For the Years Ended December 31
*(Dollars in Thousands)*

### Health Care Trust Fund

| Additions | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|
| Employer contributions[1] | $64,547 | $68,508 | $72,599 | $74,073 | $74,047 |
| Retiree health care premiums | 85,673 | 96,345 | 102,644 | 106,903 | 110,158 |
| Federal health care subsidies | 12,481 | 12,397 | 13,743 | 13,633 | 25,751 |
| Investment income (loss) | 30,920 | 23,868 | (72,423) | 35,483 | 34,676 |
| Other | 12,997 | 12,454 | 12,803 | 12,721 | 16,035 |
| **Total additions** | 206,618 | 213,572 | 129,366 | 242,813 | 260,667 |
| Deductions | | | | | |
| Benefit payments | 164,755 | 159,939 | 196,769 | 192,656 | 192,044 |
| Administrative expenses | 8,145 | 11,051 | 11,838 | 12,170 | 11,131 |
| **Total deductions** | 172,900 | 170,990 | 208,607 | 204,826 | 203,175 |
| **Change in fiduciary net position** | 33,718 | 42,582 | (79,241) | 37,987 | 57,492 |
| **Fiduciary net position held at beginning of year** | 193,132 | 226,850 | 269,432 | 190,191 | 228,178 |
| **Fiduciary net position held at end of year** | **$226,850** | **$269,432** | **$190,191** | **$228,178** | **$285,670** |

| Additions | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|
| Employer contributions[1] | $73,449 | $72,553 | $72,784 | $75,631 | **$78,463** |
| Retiree health care premiums | 108,689 | 107,104 | 114,364 | 105,459 | **127,873** |
| Federal health care subsidies | 14,151 | 14,198 | 15,731 | — | **—** |
| Employer disaffiliation | — | — | — | 3,994 | **—** |
| Investment income | 5,153 | 36,710 | 46,097 | 18,203 | **4,807** |
| Other | 10,574 | 11,668 | 10,522 | 9,813 | **9,993** |
| **Total additions** | 212,016 | 242,233 | 259,498 | 213,100 | **221,136** |
| Deductions | | | | | |
| Benefit payments | 203,419 | 218,768 | 222,860 | 200,627 | **234,414** |
| Administrative expenses | 12,481 | 13,514 | 13,766 | 16,612 | **19,261** |
| Other | — | — | — | 832 | **594** |
| **Total deductions** | 215,900 | 232,282 | 236,626 | 218,071 | **254,269** |
| **Change in fiduciary net position** | (3,884) | 9,951 | 22,872 | (4,971) | **(33,133)** |
| **Fiduciary net position held at beginning of year** | 285,670 | 281,786 | 291,737 | 314,609 | **309,638** |
| **Fiduciary net position held at end of year** | **$281,786** | **$291,737** | **$314,609** | **$309,638** | **$276,505** |

[1] Employer contribution rate history is shown on page 223.

## CHANGES IN FIDUCIARY NET POSITION
For the Years Ended December 31
*(Dollars in Thousands)*

### DPS Health Care Trust Fund[1]

| Additions | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|
| Employer contributions[2] | $4,762 | $5,029 | $5,243 | $5,558 | $6,003 | **$6,371** |
| Plan transfer | 13,510 | — | — | — | — | **—** |
| Retiree health care premium | 4,747 | 4,529 | 4,295 | 4,719 | 4,442 | **6,275** |
| Federal health care subsidies | 1,252 | 499 | 488 | 563 | — | **—** |
| Investment income | 1,992 | 424 | 1,800 | 2,277 | 938 | **254** |
| Other | 109 | 374 | 216 | 312 | 281 | **301** |
| **Total additions** | 26,372 | 10,855 | 12,042 | 13,429 | 11,664 | **13,201** |
| **Deductions** | | | | | | |
| Benefit payments | 11,012 | 10,770 | 11,027 | 11,222 | 10,432 | **12,442** |
| Administrative expenses | 569 | 501 | 547 | 561 | 668 | **822** |
| Other | — | — | — | — | 32 | **22** |
| **Total deductions** | 11,581 | 11,271 | 11,574 | 11,783 | 11,132 | **13,286** |
| **Change in fiduciary net position** | 14,791 | (416) | 468 | 1,646 | 532 | **(85)** |
| **Fiduciary net position held at beginning of year** | — | 14,791 | 14,375 | 14,843 | 16,489 | **17,021** |
| **Fiduciary net position held at end of year** | **$14,791** | **$14,375** | **$14,843** | **$16,489** | **$17,021** | **$16,936** |

[1] The Denver Public Schools Health Care Trust Fund (DPS HCTF) was established on January 1, 2010, and received the balance of the Denver Public Schools Retiree Health Benefit Trust.

[2] Employer contribution rate history is shown on page 223.

## CHANGES IN FIDUCIARY NET POSITION
For the Years Ended December 31
*(Dollars in Thousands)*

### Life Insurance Reserve

| Additions | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|
| Life insurance premiums | $8,950 | $9,075 | $1,772 | $— | $— |
| Investment income (loss) | 2,625 | 2,851 | (4,693) | 2,496 | 2,280 |
| **Total additions** | 11,575 | 11,926 | (2,921) | 2,496 | 2,280 |
| **Deductions** | | | | | |
| Life insurance premiums and claims | 8,653 | 7,961 | 2,820 | 575 | 545 |
| Administrative expenses | 1,100 | 1,732 | 486 | 576 | 575 |
| **Total deductions** | 9,753 | 9,693 | 3,306 | 1,151 | 1,120 |
| **Change in fiduciary net position** | 1,822 | 2,233 | (6,227) | 1,345 | 1,160 |
| **Fiduciary net position held at beginning of year** | 14,700 | 16,522 | 18,755 | 12,528 | 13,873 |
| **Fiduciary net position held at end of year** | **$16,522** | **$18,755** | **$12,528** | **$13,873** | **$15,033** |

| Additions | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|
| Investment income | $503 | $2,020 | $2,630 | $1,068 | **$302** |
| **Total additions** | 503 | 2,020 | 2,630 | 1,068 | **302** |
| **Deductions** | | | | | |
| Life insurance premiums | 547 | 62 | 131 | 196 | **250** |
| Administrative expenses | 573 | 510 | 871 | 871 | **805** |
| **Total deductions** | 1,120 | 572 | 1,002 | 1,067 | **1,055** |
| **Change in fiduciary net position** | (617) | 1,448 | 1,628 | 1 | **(753)** |
| **Fiduciary net position held at beginning of year** | 15,033 | 14,416 | 15,864 | 17,492 | **17,493** |
| **Fiduciary net position held at end of year** | **$14,416** | **$15,864** | **$17,492** | **$17,493** | **$16,740** |

# BENEFITS AND REFUND DEDUCTIONS FROM FIDUCIARY NET POSITION BY TYPE

For the Years Ended December 31

*(Dollars in Thousands)*

## State Division Trust Fund

| Type of Benefit | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|
| Age and service benefits: | | | | | |
| Retirees | $764,672 | $838,033 | $910,475 | $979,419 | $1,031,628 |
| Disability | 72,548 | 75,212 | 76,056 | 78,799 | 77,830 |
| Survivors | 12,009 | 12,516 | 12,748 | 13,507 | 12,977 |
| **Total benefits** | **$849,229** | **$925,761** | **$999,279** | **$1,071,725** | **$1,122,435** |
| **Type of Refund** | | | | | |
| Separation | $61,073 | $53,220 | $51,047 | $53,668 | $59,330 |
| Death | 3,966 | 2,825 | 5,014 | 3,760 | 9,047 |
| Purchased service | 872 | 533 | 655 | 988 | 467 |
| **Total refunds** | **$65,911** | **$56,578** | **$56,716** | **$58,416** | **$68,844** |

## State Division Trust Fund

| Type of Benefit | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|
| Age and service benefits: | | | | | |
| Retirees | $1,083,722 | $1,140,055 | $1,202,238 | $1,257,767 | **$1,322,592** |
| Disability | 77,715 | 78,689 | 79,854 | 80,753 | **81,310** |
| Survivors | 13,270 | 13,178 | 13,688 | 13,773 | **13,960** |
| **Total benefits** | **$1,174,707** | **$1,231,922** | **$1,295,780** | **$1,352,293** | **$1,417,862** |
| **Type of Refund** | | | | | |
| Separation | $65,525 | $65,627 | $64,072 | $57,895 | **$58,274** |
| Death | 3,986 | 3,503 | 4,411 | 3,058 | **5,213** |
| Purchased service | 579 | 91 | 252 | 199 | **80** |
| **Total refunds** | **$70,090** | **$69,221** | **$68,735** | **$61,152** | **$63,567** |

## BENEFITS AND REFUND DEDUCTIONS FROM FIDUCIARY NET POSITION BY TYPE

For the Years Ended December 31

*(Dollars in Thousands)*

### School Division Trust Fund

| Type of Benefit | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|
| Age and service benefits: | | | | | |
| Retirees | $1,147,787 | $1,261,407 | $1,378,531 | $1,490,293 | $1,568,637 |
| Disability | 54,971 | 57,054 | 59,019 | 60,532 | 60,920 |
| Survivors | 11,117 | 11,342 | 12,357 | 12,490 | 12,793 |
| **Total benefits** | **$1,213,875** | **$1,329,803** | **$1,449,907** | **$1,563,315** | **$1,642,350** |
| Type of Refund | | | | | |
| Separation | $64,239 | $62,784 | $61,259 | $67,330 | $74,423 |
| Death | 3,198 | 4,455 | 3,530 | 2,725 | 4,206 |
| Purchased service | 1,056 | 471 | 870 | 855 | 383 |
| **Total refunds** | **$68,493** | **$67,710** | **$65,659** | **$70,910** | **$79,012** |

### School Division Trust Fund

| Type of Benefit | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|
| Age and service benefits: | | | | | |
| Retirees | $1,657,071 | $1,757,279 | $1,855,195 | $1,952,989 | **$2,053,108** |
| Disability | 61,150 | 62,140 | 63,741 | 65,780 | **67,203** |
| Survivors | 13,127 | 13,224 | 13,820 | 13,859 | **14,443** |
| **Total benefits** | **$1,731,348** | **$1,832,643** | **$1,932,756** | **$2,032,628** | **$2,134,754** |
| Type of Refund | | | | | |
| Separation | $74,446 | $73,075 | $73,215 | $73,522 | **$66,494** |
| Death | 3,676 | 3,815 | 3,282 | 3,521 | **3,621** |
| Purchased service | 421 | 264 | 483 | 128 | **183** |
| **Total refunds** | **$78,543** | **$77,154** | **$76,980** | **$77,171** | **$70,298** |

## BENEFITS AND REFUND DEDUCTIONS FROM FIDUCIARY NET POSITION BY TYPE

For the Years Ended December 31

*(Dollars in Thousands)*

### Local Government Division Trust Fund

| Type of Benefit | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|
| Age and service benefits: | | | | | |
| Retirees | $89,226 | $102,239 | $116,951 | $133,732 | $149,260 |
| Disability | 13,107 | 13,376 | 13,900 | 14,407 | 14,572 |
| Survivors | 1,823 | 1,735 | 1,845 | 1,897 | 1,938 |
| **Total benefits** | **$104,156** | **$117,350** | **$132,696** | **$150,036** | **$165,770** |
| Type of Refund | | | | | |
| Separation | $15,405 | $15,835 | $16,742 | $18,703 | $21,999 |
| Death | 677 | 647 | 1,399 | 574 | 750 |
| Purchased service | 246 | 201 | 78 | 371 | 193 |
| **Total refunds** | **$16,328** | **$16,683** | **$18,219** | **$19,648** | **$22,942** |

### Local Government Division Trust Fund

| Type of Benefit | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|
| Age and service benefits: | | | | | |
| Retirees | $162,681 | $178,845 | $199,821 | $213,962 | **$226,400** |
| Disability | 14,727 | 15,096 | 16,022 | 16,045 | **16,327** |
| Survivors | 2,041 | 2,004 | 2,032 | 2,048 | **2,221** |
| **Total benefits** | **$179,449** | **$195,945** | **$217,875** | **$232,055** | **$244,948** |
| Type of Refund | | | | | |
| Separation | $21,316 | $41,696 | $31,268 | $23,034 | **$18,062** |
| Death | 1,283 | 1,154 | 1,201 | 1,401 | **2,317** |
| Purchased service | 87 | 91 | 11 | 1 | **31** |
| **Total refunds** | **$22,686** | **$42,941** | **$32,480** | **$24,436** | **$20,410** |

## BENEFITS AND REFUND DEDUCTIONS FROM FIDUCIARY NET POSITION BY TYPE

For the Years Ended December 31

*(Dollars in Thousands)*

### Judicial Division Trust Fund

| Type of Benefit | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|
| Age and service benefits: | | | | | |
| Retirees | $9,708 | $11,292 | $12,113 | $13,734 | $14,126 |
| Disability | 696 | 746 | 850 | 913 | 917 |
| Survivors | 351 | 358 | 393 | 364 | 351 |
| **Total benefits** | **$10,755** | **$12,396** | **$13,356** | **$15,011** | **$15,394** |
| Type of Refund | | | | | |
| Separation | $— | $— | $— | $30 | $104 |
| Purchased service | — | 4 | — | — | — |
| **Total refunds** | **$—** | **$4** | **$—** | **$30** | **$104** |

### Judicial Division Trust Fund

| Type of Benefit | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|
| Age and service benefits: | | | | | |
| Retirees | $15,563 | $16,333 | $17,362 | $18,573 | **$19,901** |
| Disability | 889 | 897 | 908 | 917 | **938** |
| Survivors | 357 | 376 | 346 | 310 | **319** |
| **Total benefits** | **$16,809** | **$17,606** | **$18,616** | **$19,800** | **$21,158** |
| Type of Refund | | | | | |
| Separation | $513 | $250 | $385 | $60 | **$—** |
| Death | — | 355 | — | — | **—** |
| **Total refunds** | **$513** | **$605** | **$385** | **$60** | **$—** |

### DPS Division Trust Fund[1]

| Type of Benefit | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|
| Age and service benefits: | | | | | | |
| Retirees | $207,398 | $212,524 | $220,106 | $228,692 | $237,955 | **$245,683** |
| Disability | 6,886 | 7,078 | 7,070 | 7,592 | 7,482 | **7,804** |
| Survivors | 1,541 | 1,511 | 1,566 | 1,637 | 1,568 | **1,581** |
| **Total benefits** | **$215,825** | **$221,113** | **$228,742** | **$237,921** | **$247,005** | **$255,068** |
| Type of Refund | | | | | | |
| Separation | $2,947 | $4,322 | $5,602 | $6,558 | $7,424 | **$7,685** |
| Death | 82 | 82 | 217 | 160 | 631 | **207** |
| Purchased service | — | 8 | 2 | 15 | 8 | **5** |
| **Total refunds** | **$3,029** | **$4,412** | **$5,821** | **$6,733** | **$8,063** | **$7,897** |

[1] The DPS Division Trust Fund was established on January 1, 2010, and received the net assets of DPSRS.

## MEMBER AND BENEFIT RECIPIENT STATISTICS[1]

*(In Actual Dollars)*

| Active Members | State Division | School Division | Local Government Division | Judicial Division | DPS Division | Total |
|---|---|---|---|---|---|---|
| **Active members as of December 31, 2015** | **55,291** | **120,239** | **12,176** | **334** | **15,929** | **203,969** |
| **Retirements during 2015** | | | | | | |
| Disability retirements | 71 | 93 | 15 | — | 13 | **192** |
| Service retirements | 1,729 | 2,834 | 384 | 19 | 275 | **5,241** |
| **Total** | **1,800** | **2,927** | **399** | **19** | **288** | 5,433 |
| **Retirement benefits** | | | | | | |
| Total receiving disability and service retirement benefits on December 31, 2014 | 34,944 | 56,891 | 6,291 | 318 | 6,549 | **104,993** |
| Total retiring during 2015 | 1,800 | 2,927 | 399 | 19 | 288 | **5,433** |
| Cobeneficiaries continuing after retiree's death | 286 | 249 | 42 | 6 | 49 | **632** |
| Returning to retirement rolls from suspension | 6 | 14 | 2 | — | — | **22** |
| Total | 37,036 | 60,081 | 6,734 | 343 | 6,886 | **111,080** |
| Retirees and cobeneficiaries deceased during year | 1,048 | 1,205 | 137 | 13 | 217 | **2,620** |
| Retirees suspending benefits to return to work | 11 | 21 | — | — | 2 | **34** |
| **Total receiving retirement benefits** | **35,977** | **58,855** | **6,597** | **330** | **6,667** | **108,426** |
| Annual retirement benefits for retirees as of December 31, 2015 | $1,422,039,312 | $2,155,628,520 | $246,511,704 | $21,298,920 | $256,497,228 | $4,101,975,684 |
| Average monthly benefit on December 31, 2015 | $3,294 | $3,052 | $3,114 | $5,379 | $3,206 | $3,153 |
| Average monthly benefit for all members who retired during 2015 | $2,828 | $2,293 | $2,750 | $7,030 | $2,493 | $2,531 |
| **Survivor benefits** | | | | | | |
| Survivor benefit accounts | | | | | | |
| Total survivors being paid on December 31, 2015 | 888 | 1,089 | 160 | 14 | 136 | 2,287 |
| Annual benefits payable to survivors as of December 31, 2015 | $19,121,256 | $17,712,552 | $3,265,692 | $407,976 | $2,622,528 | $43,130,004 |
| **Future benefits** | | | | | | |
| Future retirements to age 62 or 65 | 6,075 | 14,904 | 2,791 | 7 | 1,109 | 24,886 |
| Total annual future benefits | $61,487,939 | $109,652,276 | $36,908,303 | $206,940 | $11,445,227 | $219,700,685 |
| Future survivor beneficiaries of inactive members | 127 | 165 | 20 | 1 | 9 | 322 |
| Total annual future benefits | $1,713,228 | $1,842,732 | $256,644 | $9,120 | $118,512 | $3,940,236 |

[1] In addition, as of December 31, 2015, there was a total of 207,610 non-vested terminated members due a refund of their contributions as follows: State Division—69,385; School Division—108,184; Local Government Division—21,915; Judicial Division—8; DPS Division—8,118.

## SCHEDULE OF AVERAGE RETIREMENT BENEFITS PAYABLE—ALL DIVISION TRUST FUNDS[1, 2]

*(In Actual Dollars)*

| Year Ended | Average Monthly Benefit | Average Age at Retirement | Average Current Age of Retirees | Average Years of Service at Retirement | Average Age at Death |
|---|---|---|---|---|---|
| 12/31/2006 | $2,538 | 58.1 | 68.8 | 22.9 | N/A |
| 12/31/2007 | 2,658 | 58.0 | 68.9 | 23.1 | N/A |
| 12/31/2008 | 2,772 | 58.0 | 69.0 | 23.2 | N/A |
| 12/31/2009 | 2,885 | 58.0 | 69.3 | 23.3 | N/A |
| 12/31/2010 | 2,905 | 58.1 | 69.7 | 23.6 | N/A |
| 12/31/2011 | 2,966 | 58.1 | 69.9 | 23.6 | N/A |
| 12/31/2012 | 3,020 | 58.2 | 70.0 | 23.5 | N/A |
| 12/31/2013 | 3,068 | 58.2 | 70.4 | 23.5 | 82.0[3] |
| 12/31/2014 | 3,112 | 58.3 | 70.7 | 23.4 | 82.8 |
| **12/31/2015** | **3,153** | **58.4** | **70.9** | **23.3** | **82.2** |

[1] Includes disability retirements, but not survivor benefits.

[2] Data prior to December 31, 2010, does not include the DPS Division.

[3] Information not available prior to December 31, 2013.

## SCHEDULE OF AVERAGE RETIREMENT BENEFITS PAYABLE[1]

*(In Actual Dollars)*

| | State Division | School Division | Local Government Division | Judicial Division | DPS Division |
|---|---|---|---|---|---|
| **Year Ended 12/31/2015** | | | | | |
| Average monthly benefit | **$3,294** | **$3,052** | **$3,114** | **$5,379** | **$3,206** |
| Average age at retirement | **58.2** | **58.5** | **58.1** | **61.4** | **59.1** |
| Average age of current retiree | **71.2** | **70.7** | **68.6** | **74.5** | **73.9** |
| Average years of service at retirement | **23.0** | **23.5** | **21.8** | **22.9** | **25.0** |
| Average age at death | **81.7** | **82.2** | **79.6** | **78.9** | **85.3** |
| **Year Ended 12/31/2014** | | | | | |
| Average monthly benefit | $3,241 | $3,019 | $3,067 | $5,158 | $3,169 |
| Average age at retirement | 58.1 | 58.4 | 58.0 | 61.4 | 59.0 |
| Average age of current retiree | 71.0 | 70.4 | 68.3 | 74.5 | 73.7 |
| Average years of service at retirement | 23.0 | 23.6 | 21.9 | 22.7 | 25.3 |
| Average age at death | 82.2 | 83.1 | 78.8 | 81.1 | 85.2 |
| **Year Ended 12/31/2013** | | | | | |
| Average monthly benefit | $3,185 | $2,980 | $3,044 | $5,077 | $3,121 |
| Average age at retirement | 58.0 | 58.3 | 57.8 | 61.3 | 58.8 |
| Average age of current retiree | 70.8 | 70.0 | 67.9 | 74.2 | 73.5 |
| Average years of service at retirement | 23.0 | 23.6 | 22.1 | 22.8 | 25.5 |
| Average age at death[2] | 82.5 | 81.4 | 78.6 | 88.2 | 84.8 |
| **Year Ended 12/31/2012** | | | | | |
| Average monthly benefit | $3,124 | $2,939 | $3,007 | $4,889 | $3,064 |
| Average age at retirement | 58.0 | 58.2 | 57.7 | 61.2 | 58.8 |
| Average age of current retiree | 70.4 | 69.7 | 67.5 | 73.7 | 73.3 |
| Average years of service at retirement | 23.0 | 23.7 | 22.2 | 22.6 | 25.8 |
| **Year Ended 12/31/2011** | | | | | |
| Average monthly benefit | $3,056 | $2,895 | $2,948 | $4,739 | $3,009 |
| Average age at retirement | 58.0 | 58.2 | 57.5 | 61.0 | 58.7 |
| Average age of current retiree | 70.3 | 69.5 | 67.8 | 73.7 | 73.2 |
| Average years of service at retirement | 23.0 | 23.8 | 22.3 | 22.4 | 26.0 |

[1] Includes disability retirements, but not survivor benefits.

[2] Information not available prior to December 31, 2013.

# COLORADO PERA BENEFIT PAYMENTS—ALL DIVISION TRUST FUNDS

As of December 31, 2015
*(In Actual Dollars)*

At of the end of 2015, PERA was paying benefits to more than 110,000 retired public employees and their beneficiaries who received an average benefit of $3,120[1] per month. For most benefit recipients, this is the only source of income in retirement as most PERA benefit recipients and their beneficiaries do not qualify for Social Security payments. The median monthly PERA benefit is $2,893 ($34,716 a year), which means that half of all monthly benefits paid are lower than $2,893 and half are higher than that amount.

The PERA service retirement formula for calculating benefits, specified in State law, is 2.5 percent multiplied by years of service multiplied by highest average salary (HAS). HAS[2] is also defined in State law as one-twelfth of the average of the highest annual salaries on which contributions were paid that are associated with three periods of 12 consecutive months of service credit. The three 12-month periods do not have to be consecutive, nor do they have to be the last three years of employment.

These three periods are tied to a fourth 12-month period which becomes the base year for the year-to-year salary increase limitation for HAS calculation purposes. The year-to-year limit for members who were eligible to retire on January 1, 2011, and hired before January 1, 2007, is 15 percent. All other members are subject to an 8 percent year-to-year limit in their HAS calculation. This annual limit applied to salaries in the HAS years is designed to moderate salary "spiking."

Approximately 70 percent of PERA benefit recipients receive less than $50,000 a year in retirement, as the graph below demonstrates. Slightly more than 1 percent (1,368) of PERA benefit recipients receive an annual benefit payment of $100,000 or more. Generally, these benefit recipients had high salaries and a significant number of years of service credit.

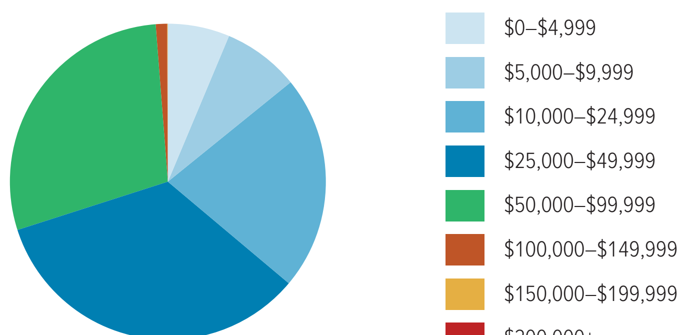
[1] Does not include benefits that ended in 2015 or retirements suspended in 2015. Includes only continuing benefits at the end of 2015, excluding amounts paid under the Replacement Benefit Arrangements.

[2] Some members of the DPS benefit structure and members in the Judicial Division have different HAS calculations.

## PERA Benefit Payments by Dollar Amount of Annual Benefit/Number of Benefit Recipients

| Benefit Range | Number of Benefit Recipients[1] |
|---|---|
| $0–$4,999 | 7,002 |
| $5,000–$9,999 | 8,684 |
| $10,000–$24,999 | 24,307 |
| $25,000–$49,999 | 37,567 |
| $50,000–$99,999 | 31,785 |
| $100,000–$149,999 | 1,276 |
| $150,000–$199,999 | 74 |
| $200,000+ | 18 |
| **Total Benefit Recipients** | **110,713** |

[1] Does not include 322 deferred survivors.



## COLORADO PERA BENEFIT PAYMENTS—ALL DIVISION TRUST FUNDS

As of December 31, 2015
*(In Actual Dollars)*

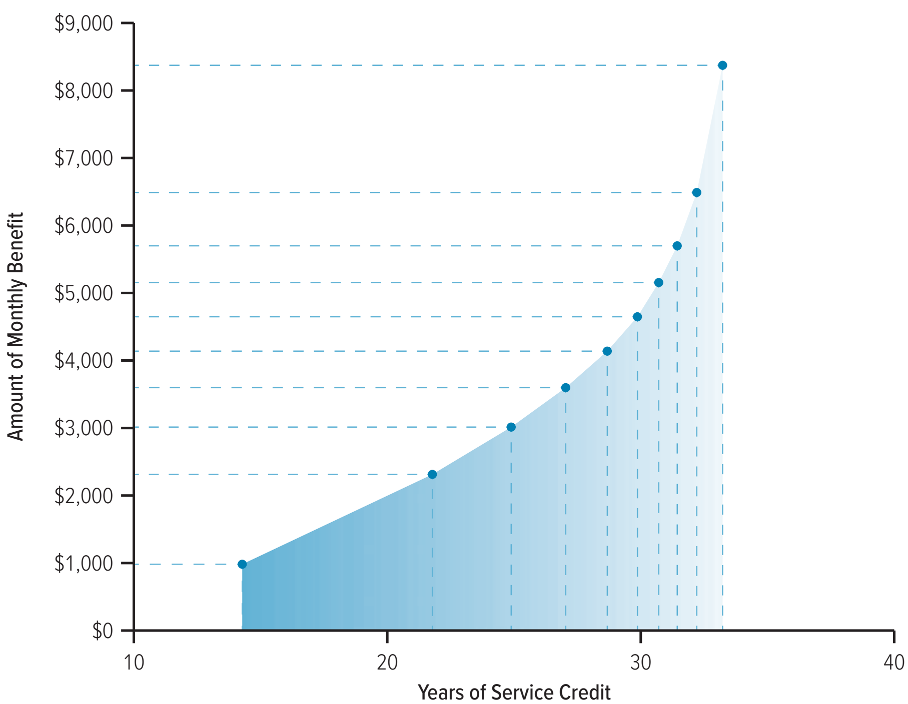
### Benefit Payments by Decile

Another way to examine the data is to group benefit recipients and the benefits they receive into benefit payment ranges as a percentage of the total. The table below shows that, for the one-third of PERA benefit recipients (36,938) in the lowest decile, the average benefit is $11,784 a year. This group retired at an average age of 60 with just over 14¼ years of service credit. For the top decile, on the other end of the scale, the average benefit is $100,476 a year. However, this group, on average, had over 33 years of service credit, which is more than twice the length of the average service credit of those in the lowest decile. For the 5,433 new retirees in 2015, the average monthly benefit is $2,531. These members retired at an average age of 61 with 20.67 years of service credit.

| Decile | Number of Benefit Recipients[1] | Percent of Benefit Recipients | Average Monthly Benefit | Average Age at Retirement | Average Service Credit |
|---|---|---|---|---|---|
| 1%–10% | 36,938 | 33.36% | $982 | 60 | 14.28 |
| 11%–20% | 14,931 | 13.50% | 2,313 | 58 | 21.78 |
| 21%–30% | 11,460 | 10.35% | 3,014 | 58 | 24.89 |
| 31%–40% | 9,601 | 8.67% | 3,598 | 58 | 27.04 |
| 41%–50% | 8,346 | 7.54% | 4,139 | 57 | 28.68 |
| 51%–60% | 7,431 | 6.71% | 4,648 | 57 | 29.87 |
| 61%–70% | 6,702 | 6.05% | 5,155 | 57 | 30.71 |
| 71%–80% | 6,061 | 5.47% | 5,699 | 57 | 31.44 |
| 81%–90% | 5,323 | 4.81% | 6,489 | 57 | 32.21 |
| 91%–100% | 3,920 | 3.54% | 8,373 | 57 | 33.23 |
| **Total** | **110,713** | **100.00%** | **3,120** | **58** | **23.10** |

[1] Does not include 322 deferred survivors.

### Average Monthly Benefit Payment by Years of Service Credit



# SCHEDULE OF RETIREES AND SURVIVORS BY TYPES OF BENEFITS

As of December 31, 2015

### *Types of Benefits*

1—Age and service retirement.
2—Disability retirement.
3—Survivor payment—Option 3.
4—Survivor payment—children, spouse, or dependent parent.
5—Surviving spouse with future benefit.
6—Former member with future benefit.

### *Option Selected*

Retirees select one of the following options at retirement:
1—Single-life benefit.
2—Joint benefit with 1/2 to surviving cobeneficiary.
3—Joint and survivor benefit.
4—Joint benefit with 1/2 to either survivor. (No longer offered to members retiring.)

### *Surviving Cobeneficiary*

Retiree has predeceased the cobeneficiary.

### *Surviving Retiree*

Cobeneficiary has predeceased the retiree.

## State Division

Types of Benefits

| Amount of Monthly Benefit *(In Actual Dollars)* | Total (Columns 1–5) | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| $1–$1,000 | 4,953 | 4,289 | 306 | 19 | 271 | 68 | 4,418 |
| $1,001–$2,000 | 6,822 | 4,950 | 1,504 | 41 | 278 | 49 | 1,235 |
| $2,001–$3,000 | 7,325 | 5,982 | 1,198 | 22 | 117 | 6 | 286 |
| $3,001–$4,000 | 6,237 | 5,890 | 266 | 25 | 53 | 3 | 93 |
| $4,001–$5,000 | 4,490 | 4,371 | 88 | 14 | 16 | 1 | 24 |
| $5,001+ | 7,165 | 7,112 | 21 | 24 | 8 | — | 19 |
| **Total** | **36,992** | **32,594** | **3,383** | **145** | **743** | **127** | **6,075** |

Option Selected

| Amount of Monthly Benefit[1] *(In Actual Dollars)* | 1 | 2 | 3 | 4 | Surviving Cobeneficiary | Surviving Retiree |
|---|---|---|---|---|---|---|
| $1–$1,000 | 2,946 | 298 | 687 | 4 | 620 | 40 |
| $1,001–$2,000 | 3,644 | 685 | 1,075 | 5 | 948 | 97 |
| $2,001–$3,000 | 3,886 | 1,015 | 1,406 | 9 | 775 | 89 |
| $3,001–$4,000 | 3,243 | 1,092 | 1,330 | 5 | 442 | 44 |
| $4,001–$5,000 | 2,203 | 899 | 1,081 | 4 | 243 | 29 |
| $5,001+ | 3,331 | 1,605 | 1,881 | 6 | 275 | 35 |
| **Total** | **19,253** | **5,594** | **7,460** | **33** | **3,303** | **334** |

[1] For Types of Benefits 1 and 2 above.

## SCHEDULE OF RETIREES AND SURVIVORS BY TYPES OF BENEFITS

As of December 31, 2015

### *Types of Benefits*

1—Age and service retirement.
2—Disability retirement.
3—Survivor payment—Option 3.
4—Survivor payment—children, spouse, or dependent parent.
5—Surviving spouse with future benefit.
6—Former member with future benefit.

### *Option Selected*

Retirees select one of the following options at retirement:
1—Single-life benefit.
2—Joint benefit with 1/2 to surviving cobeneficiary.
3—Joint and survivor benefit.
4—Joint benefit with 1/2 to either survivor. (No longer offered to members retiring.)

### *Surviving Cobeneficiary*

Retiree has predeceased the cobeneficiary.

### *Surviving Retiree*

Cobeneficiary has predeceased the retiree.

### School Division

| | Types of Benefits | | | | | | |
|---|---|---|---|---|---|---|---|
| Amount of Monthly Benefit *(In Actual Dollars)* | Total (Columns 1–5) | 1 | 2 | 3 | 4 | 5 | 6 |
| $1–$1,000 | 12,404 | 10,939 | 811 | 39 | 505 | 110 | 12,502 |
| $1,001–$2,000 | 9,853 | 8,349 | 1,164 | 30 | 272 | 38 | 1,984 |
| $2,001–$3,000 | 9,190 | 8,358 | 685 | 17 | 118 | 12 | 310 |
| $3,001–$4,000 | 8,942 | 8,567 | 306 | 18 | 46 | 5 | 73 |
| $4,001–$5,000 | 8,494 | 8,361 | 108 | 11 | 14 | — | 23 |
| $5,001+ | 11,226 | 11,173 | 34 | 12 | 7 | — | 12 |
| **Total** | **60,109** | **55,747** | **3,108** | **127** | **962** | **165** | **14,904** |

| | Option Selected | | | | | |
|---|---|---|---|---|---|---|
| Amount of Monthly Benefit[1] *(In Actual Dollars)* | 1 | 2 | 3 | 4 | Surviving Cobeneficiary | Surviving Retiree |
| $1–$1,000 | 8,242 | 839 | 1,677 | 4 | 898 | 90 |
| $1,001–$2,000 | 5,945 | 1,176 | 1,420 | 9 | 863 | 100 |
| $2,001–$3,000 | 5,401 | 1,467 | 1,454 | 9 | 612 | 100 |
| $3,001–$4,000 | 5,370 | 1,791 | 1,345 | 8 | 316 | 43 |
| $4,001–$5,000 | 4,812 | 1,897 | 1,500 | 5 | 225 | 30 |
| $5,001+ | 7,059 | 2,412 | 1,557 | 9 | 152 | 18 |
| **Total** | **36,829** | **9,582** | **8,953** | **44** | **3,066** | **381** |

[1] For Types of Benefits 1 and 2 above.

## SCHEDULE OF RETIREES AND SURVIVORS BY TYPES OF BENEFITS
As of December 31, 2015

### *Types of Benefits*
1—Age and service retirement.
2—Disability retirement.
3—Survivor payment—Option 3.
4—Survivor payment—children, spouse, or dependent parent.
5—Surviving spouse with future benefit.
6—Former member with future benefit.

### *Option Selected*
Retirees select one of the following options at retirement:
1—Single-life benefit.
2—Joint benefit with 1/2 to surviving cobeneficiary.
3—Joint and survivor benefit.
4—Joint benefit with 1/2 to either survivor. (No longer offered to members retiring.)

### *Surviving Cobeneficiary*
Retiree has predeceased the cobeneficiary.

### *Surviving Retiree*
Cobeneficiary has predeceased the retiree.

## Local Government Division

| | | Types of Benefits | | | | | |
|---|---|---|---|---|---|---|---|
| Amount of Monthly Benefit *(In Actual Dollars)* | Total (Columns 1–5) | 1 | 2 | 3 | 4 | 5 | 6 |
| $1–$1,000 | 1,165 | 1,040 | 63 | 4 | 47 | 11 | 1,706 |
| $1,001–$2,000 | 1,410 | 1,014 | 330 | 7 | 52 | 7 | 693 |
| $2,001–$3,000 | 1,221 | 965 | 226 | 11 | 18 | 1 | 265 |
| $3,001–$4,000 | 1,027 | 961 | 51 | 6 | 8 | 1 | 81 |
| $4,001–$5,000 | 750 | 732 | 14 | 3 | 1 | — | 35 |
| $5,001+ | 1,204 | 1,196 | 5 | 2 | 1 | — | 11 |
| **Total** | **6,777** | **5,908** | **689** | **33** | **127** | **20** | **2,791** |

| | | | Option Selected | | | |
|---|---|---|---|---|---|---|
| Amount of Monthly Benefit[1] *(In Actual Dollars)* | 1 | 2 | 3 | 4 | Surviving Cobeneficiary | Surviving Retiree |
| $1–$1,000 | 713 | 86 | 171 | — | 127 | 6 |
| $1,001–$2,000 | 736 | 161 | 268 | 3 | 164 | 12 |
| $2,001–$3,000 | 611 | 197 | 280 | — | 88 | 15 |
| $3,001–$4,000 | 526 | 208 | 236 | — | 38 | 4 |
| $4,001–$5,000 | 364 | 161 | 192 | — | 29 | — |
| $5,001+ | 508 | 303 | 354 | — | 34 | 2 |
| **Total** | **3,458** | **1,116** | **1,501** | **3** | **480** | **39** |

[1] For Types of Benefits 1 and 2 above.

## SCHEDULE OF RETIREES AND SURVIVORS BY TYPES OF BENEFITS
As of December 31, 2015

*Types of Benefits*

1—Age and service retirement.
2—Disability retirement.
3—Survivor payment—Option 3.
4—Survivor payment—children, spouse, or dependent parent.
5—Surviving spouse with future benefit.
6—Former member with future benefit.

*Option Selected*

Retirees select one of the following options at retirement:
1—Single-life benefit.
2—Joint benefit with 1/2 to surviving cobeneficiary.
3—Joint and survivor benefit.
4—Joint benefit with 1/2 to either survivor. (No longer offered to members retiring.)

*Surviving Cobeneficiary*

Retiree has predeceased the cobeneficiary.

*Surviving Retiree*

Cobeneficiary has predeceased the retiree.

### Judicial Division

Types of Benefits

| Amount of Monthly Benefit *(In Actual Dollars)* | Total (Columns 1–5) | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| $1–$1,000 | 16 | 14 | 1 | — | — | 1 | 1 |
| $1,001–$2,000 | 35 | 27 | 2 | — | 6 | — | 2 |
| $2,001–$3,000 | 31 | 25 | 2 | — | 4 | — | 1 |
| $3,001–$4,000 | 34 | 28 | 3 | — | 3 | — | 2 |
| $4,001–$5,000 | 41 | 35 | 6 | — | — | — | 1 |
| $5,001+ | 188 | 182 | 5 | 1 | — | — | — |
| Total | 345 | 311 | 19 | 1 | 13 | 1 | 7 |

Option Selected

| Amount of Monthly Benefit[1] *(In Actual Dollars)* | 1 | 2 | 3 | 4 | Surviving Cobeneficiary | Surviving Retiree |
|---|---|---|---|---|---|---|
| $1–$1,000 | 4 | 1 | 3 | — | 7 | — |
| $1,001–$2,000 | 11 | — | 4 | — | 13 | 1 |
| $2,001–$3,000 | 2 | 7 | 10 | — | 8 | — |
| $3,001–$4,000 | 10 | 4 | 12 | — | 5 | — |
| $4,001–$5,000 | 11 | 5 | 12 | 1 | 12 | — |
| $5,001+ | 58 | 47 | 70 | — | 12 | — |
| Total | 96 | 64 | 111 | 1 | 57 | 1 |

[1] For Types of Benefits 1 and 2 above.

## SCHEDULE OF RETIREES AND SURVIVORS BY TYPES OF BENEFITS

As of December 31, 2015

### *Types of Benefits*

1—Age and service retirement.
2—Disability retirement.
3—Survivor payment—Option 3.
4—Survivor payment—children, spouse, or dependent parent.
5—Surviving spouse with future benefit.
6—Former member with future benefit.

### *Option Selected*

Retirees select one of the following options at retirement:
1—Single-life benefit.
2—Joint benefit with 1/2 to surviving cobeneficiary.
3—Joint and survivor benefit.
4—Joint benefit with 1/2 to either survivor. (No longer offered to members retiring.)

### *Surviving Cobeneficiary*

Retiree has predeceased the cobeneficiary.

### *Surviving Retiree*

Cobeneficiary has predeceased the retiree.

## DPS Division

Types of Benefits

| Amount of Monthly Benefit *(In Actual Dollars)* | Total (Columns 1–5) | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| $1–$1,000 | 757 | 615 | 81 | — | 56 | 5 | 794 |
| $1,001–$2,000 | 1,222 | 1,065 | 126 | 4 | 24 | 3 | 255 |
| $2,001–$3,000 | 1,182 | 1,055 | 87 | 14 | 25 | 1 | 49 |
| $3,001–$4,000 | 1,426 | 1,377 | 40 | 7 | 2 | — | 11 |
| $4,001–$5,000 | 1,295 | 1,280 | 12 | 2 | 1 | — | — |
| $5,001+ | 930 | 925 | 4 | 1 | — | — | — |
| **Total** | **6,812** | **6,317** | **350** | **28** | **108** | **9** | **1,109** |

Option Selected[1]

| Amount of Monthly Benefit[2] *(In Actual Dollars)* | 1 | 2 | 3 | 4 | Surviving Cobeneficiary | Surviving Retiree | Cobeneficiaries Both Deceased |
|---|---|---|---|---|---|---|---|
| $1–$1,000 | 442 | 22 | 129 | — | 74 | 28 | 1 |
| $1,001–$2,000 | 714 | 85 | 218 | — | 122 | 48 | 4 |
| $2,001–$3,000 | 591 | 95 | 274 | — | 115 | 67 | — |
| $3,001–$4,000 | 671 | 113 | 411 | — | 143 | 78 | 1 |
| $4,001–$5,000 | 601 | 110 | 405 | — | 93 | 83 | — |
| $5,001+ | 446 | 88 | 290 | — | 72 | 33 | — |
| **Total** | **3,465** | **513** | **1,727** | **—** | **619** | **337** | **6** |

[1] Below are the equivalent DPS benefit structure options:
PERA Option 1 = Options A, B, and D (D is discontinued)
PERA Option 2 = Options P2 and E (E is discontinued)
PERA Option 3 = Options P3 and C (C is discontinued)

[2] For Types of Benefits 1 and 2 above.

# SCHEDULE OF AVERAGE BENEFIT PAYMENTS

*(In Actual Dollars)*

## State Division

| | Years of Service Credit | | | | | | |
|---|---|---|---|---|---|---|---|
| Year Retired | 0–5 | 6–10 | 10–15 | 15–20 | 20–25 | 25–30 | 30+ |
| **Period 1/1/2015 to 12/31/2015** | | | | | | | |
| Average monthly benefit | **$241** | **$770** | **$1,339** | **$2,111** | **$2,934** | **$4,121** | **$5,232** |
| Average highest average salary | **$2,851** | **$4,043** | **$4,506** | **$4,766** | **$5,260** | **$6,074** | **$6,490** |
| Number of service retirees | **82** | **246** | **214** | **222** | **293** | **348** | **324** |
| **Period 1/1/2014 to 12/31/2014** | | | | | | | |
| Average monthly benefit | $228 | $626 | $1,239 | $1,996 | $2,930 | $4,002 | $5,438 |
| Average highest average salary | $2,960 | $3,421 | $4,046 | $4,609 | $5,351 | $5,904 | $6,642 |
| Number of service retirees | 64 | 204 | 218 | 212 | 278 | 327 | 261 |
| **Period 1/1/2013 to 12/31/2013** | | | | | | | |
| Average monthly benefit | $269 | $628 | $1,288 | $1,997 | $2,853 | $4,165 | $5,285 |
| Average highest average salary | $2,836 | $3,508 | $4,030 | $4,527 | $5,150 | $6,196 | $6,617 |
| Number of service retirees | 64 | 173 | 151 | 167 | 236 | 296 | 252 |
| **Period 1/1/2012 to 12/31/2012** | | | | | | | |
| Average monthly benefit | $236 | $634 | $1,259 | $2,121 | $2,855 | $4,126 | $5,035 |
| Average highest average salary | $2,487 | $3,355 | $4,141 | $4,661 | $5,248 | $5,969 | $6,268 |
| Number of service retirees | 60 | 182 | 196 | 206 | 284 | 351 | 343 |
| **Period 1/1/2011 to 12/31/2011** | | | | | | | |
| Average monthly benefit | $160 | $690 | $1,214 | $1,956 | $2,863 | $4,096 | $5,307 |
| Average highest average salary | $2,254 | $3,425 | $4,027 | $4,413 | $5,181 | $6,002 | $6,661 |
| Number of service retirees | 53 | 184 | 130 | 143 | 237 | 331 | 305 |
| **Period 1/1/2010 to 12/31/2010** | | | | | | | |
| Average monthly benefit | $266 | $617 | $1,089 | $2,200 | $2,816 | $4,011 | $5,156 |
| Average highest average salary | $2,569 | $3,212 | $3,504 | $4,923 | $5,102 | $5,983 | $6,394 |
| Number of service retirees | 34 | 171 | 127 | 164 | 305 | 430 | 362 |
| **Period 1/1/2009 to 12/31/2009** | | | | | | | |
| Average monthly benefit | $181 | $530 | $1,160 | $1,952 | $2,848 | $3,974 | $5,087 |
| Average highest average salary | $2,223 | $2,903 | $3,750 | $4,397 | $5,159 | $5,790 | $6,426 |
| Number of service retirees | 25 | 131 | 129 | 143 | 241 | 406 | 361 |
| **Period 1/1/2008 to 12/31/2008** | | | | | | | |
| Average monthly benefit | $271 | $482 | $1,049 | $1,774 | $2,437 | $3,499 | $4,672 |
| Average highest average salary | $2,730 | $2,686 | $3,608 | $4,319 | $4,716 | $5,428 | $6,031 |
| Number of service retirees | 14 | 123 | 122 | 106 | 276 | 294 | 530 |
| **Period 1/1/2007 to 12/31/2007** | | | | | | | |
| Average monthly benefit | $109 | $518 | $978 | $1,576 | $2,415 | $3,267 | $4,469 |
| Average highest average salary | $2,192 | $2,995 | $3,477 | $3,848 | $4,631 | $5,088 | $5,748 |
| Number of service retirees | 13 | 134 | 105 | 100 | 272 | 321 | 583 |
| **Period 1/1/2006 to 12/31/2006** | | | | | | | |
| Average monthly benefit | $68 | $482 | $889 | $1,568 | $2,235 | $3,224 | $4,391 |
| Average highest average salary | $1,368 | $2,893 | $3,097 | $3,927 | $4,319 | $5,150 | $5,694 |
| Number of service retirees | 14 | 133 | 82 | 86 | 266 | 327 | 658 |

Note: Highest average salary is defined as one-twelfth of the average of the highest annual salaries associated with three periods of 12 consecutive months of service credit. These three periods are tied to a fourth 12-month period which becomes the base year for the year-to-year increase limitation, which is designed to moderate “spiking.” Some members of the DPS benefit structure and members in the Judicial Division have different HAS calculations.

## SCHEDULE OF AVERAGE BENEFIT PAYMENTS
*(In Actual Dollars)*

### School Division

| Year Retired | 0–5 | 6–10 | 10–15 | 15–20 | 20–25 | 25–30 | 30+ |
|---|---|---|---|---|---|---|---|
| | | | | Years of Service Credit | | | |
| **Period 1/1/2015 to 12/31/2015** | | | | | | | |
| Average monthly benefit | **$221** | **$436** | **$899** | **$1,565** | **$2,400** | **$3,682** | **$4,621** |
| Average highest average salary | **$2,015** | **$2,317** | **$3,058** | **$3,538** | **$4,322** | **$5,347** | **$5,741** |
| Number of service retirees | **110** | **372** | **398** | **397** | **544** | **618** | **395** |
| **Period 1/1/2014 to 12/31/2014** | | | | | | | |
| Average monthly benefit | $194 | $467 | $939 | $1,661 | $2,407 | $3,726 | $4,778 |
| Average highest average salary | $2,108 | $2,580 | $3,189 | $3,706 | $4,372 | $5,422 | $5,908 |
| Number of service retirees | 106 | 362 | 401 | 392 | 531 | 597 | 465 |
| **Period 1/1/2013 to 12/31/2013** | | | | | | | |
| Average monthly benefit | $201 | $474 | $976 | $1,687 | $2,448 | $3,685 | $4,739 |
| Average highest average salary | $1,791 | $2,726 | $3,197 | $3,721 | $4,357 | $5,318 | $5,886 |
| Number of service retirees | 79 | 350 | 339 | 311 | 492 | 571 | 441 |
| **Period 1/1/2012 to 12/31/2012** | | | | | | | |
| Average monthly benefit | $216 | $473 | $815 | $1,632 | $2,411 | $3,682 | $4,592 |
| Average highest average salary | $1,696 | $2,575 | $2,800 | $3,546 | $4,368 | $5,370 | $5,791 |
| Number of service retirees | 96 | 365 | 349 | 380 | 534 | 634 | 509 |
| **Period 1/1/2011 to 12/31/2011** | | | | | | | |
| Average monthly benefit | $214 | $462 | $806 | $1,625 | $2,430 | $3,617 | $4,632 |
| Average highest average salary | $1,980 | $2,563 | $2,683 | $3,526 | $4,344 | $5,235 | $5,804 |
| Number of service retirees | 71 | 336 | 273 | 334 | 506 | 651 | 497 |
| **Period 1/1/2010 to 12/31/2010** | | | | | | | |
| Average monthly benefit | $212 | $464 | $780 | $1,543 | $2,393 | $3,603 | $4,602 |
| Average highest average salary | $2,193 | $2,572 | $2,500 | $3,336 | $4,243 | $5,207 | $5,722 |
| Number of service retirees | 56 | 297 | 252 | 305 | 585 | 755 | 601 |
| **Period 1/1/2009 to 12/31/2009** | | | | | | | |
| Average monthly benefit | $165 | $440 | $825 | $1,671 | $2,384 | $3,508 | $4,515 |
| Average highest average salary | $1,928 | $2,311 | $2,663 | $3,512 | $4,246 | $5,047 | $5,632 |
| Number of service retirees | 33 | 268 | 191 | 232 | 459 | 618 | 495 |
| **Period 1/1/2008 to 12/31/2008** | | | | | | | |
| Average monthly benefit | $369 | $383 | $706 | $1,238 | $2,183 | $2,994 | $4,313 |
| Average highest average salary | $2,965 | $2,373 | $2,534 | $2,948 | $4,125 | $4,567 | $5,554 |
| Number of service retirees | 22 | 218 | 197 | 156 | 523 | 553 | 847 |
| **Period 1/1/2007 to 12/31/2007** | | | | | | | |
| Average monthly benefit | $90 | $352 | $729 | $1,143 | $2,046 | $2,980 | $4,198 |
| Average highest average salary | $1,465 | $2,228 | $2,593 | $2,789 | $3,871 | $4,553 | $5,409 |
| Number of service retirees | 12 | 228 | 170 | 156 | 499 | 567 | 961 |
| **Period 1/1/2006 to 12/31/2006** | | | | | | | |
| Average monthly benefit | $49 | $377 | $561 | $1,131 | $1,892 | $2,924 | $4,120 |
| Average highest average salary | $1,043 | $2,257 | $1,948 | $2,765 | $2,561 | $4,488 | $5,382 |
| Number of service retirees | 15 | 192 | 167 | 151 | 510 | 531 | 1,024 |

Note: Highest average salary is defined as one-twelfth of the average of the highest annual salaries associated with three periods of 12 consecutive months of service credit. These three periods are tied to a fourth 12-month period which becomes the base year for the year-to-year increase limitation, which is designed to moderate “spiking.” Some members of the DPS benefit structure and members in the Judicial Division have different HAS calculations.

## SCHEDULE OF AVERAGE BENEFIT PAYMENTS
*(In Actual Dollars)*

### Local Government Division

| | Years of Service Credit | | | | | | |
|---|---|---|---|---|---|---|---|
| Year Retired | 0–5 | 6–10 | 10–15 | 15–20 | 20–25 | 25–30 | 30+ |
| **Period 1/1/2015 to 12/31/2015** | | | | | | | |
| Average monthly benefit | **$252** | **$663** | **$1,202** | **$2,255** | **$3,152** | **$3,970** | **$5,814** |
| Average highest average salary | **$3,727** | **$4,141** | **$4,581** | **$5,481** | **$5,960** | **$5,896** | **$7,317** |
| Number of service retirees | **16** | **64** | **62** | **36** | **76** | **70** | **60** |
| **Period 1/1/2014 to 12/31/2014** | | | | | | | |
| Average monthly benefit | $241 | $680 | $1,185 | $2,190 | $3,110 | $4,068 | $4,796 |
| Average highest average salary | $4,005 | $3,912 | $4,206 | $5,106 | $5,805 | $6,299 | $6,037 |
| Number of service retirees | 15 | 87 | 63 | 42 | 61 | 59 | 48 |
| **Period 1/1/2013 to 12/31/2013** | | | | | | | |
| Average monthly benefit | $211 | $650 | $1,259 | $2,156 | $2,733 | $4,020 | $5,692 |
| Average highest average salary | $3,013 | $3,743 | $4,467 | $5,107 | $5,311 | $6,024 | $7,353 |
| Number of service retirees | 16 | 58 | 47 | 36 | 49 | 73 | 34 |
| **Period 1/1/2012 to 12/31/2012** | | | | | | | |
| Average monthly benefit | $536 | $839 | $1,264 | $2,524 | $3,095 | $4,323 | $4,943 |
| Average highest average salary | $4,726 | $4,538 | $4,213 | $5,649 | $5,626 | $6,465 | $6,275 |
| Number of service retirees | 27 | 96 | 77 | 83 | 138 | 138 | 99 |
| **Period 1/1/2011 to 12/31/2011** | | | | | | | |
| Average monthly benefit | $338 | $665 | $1,011 | $1,985 | $2,908 | $4,093 | $5,337 |
| Average highest average salary | $5,959 | $3,988 | $3,469 | $4,616 | $5,333 | $6,070 | $6,712 |
| Number of service retirees | 13 | 48 | 33 | 32 | 42 | 78 | 60 |
| **Period 1/1/2010 to 12/31/2010** | | | | | | | |
| Average monthly benefit | $401 | $725 | $1,053 | $1,955 | $2,776 | $4,540 | $5,024 |
| Average highest average salary | $3,879 | $4,141 | $3,516 | $4,482 | $5,184 | $6,476 | $6,414 |
| Number of service retirees | 8 | 46 | 32 | 41 | 73 | 116 | 124 |
| **Period 1/1/2009 to 12/31/2009** | | | | | | | |
| Average monthly benefit | $327 | $579 | $1,496 | $1,991 | $2,869 | $3,712 | $4,755 |
| Average highest average salary | $2,981 | $3,088 | $4,420 | $4,380 | $5,249 | $5,634 | $5,970 |
| Number of service retirees | 9 | 43 | 37 | 35 | 49 | 83 | 90 |
| **Period 1/1/2008 to 12/31/2008** | | | | | | | |
| Average monthly benefit | $485 | $605 | $1,072 | $1,625 | $2,867 | $3,453 | $5,245 |
| Average highest average salary | $5,531 | $3,547 | $3,832 | $4,043 | $5,522 | $5,503 | $7,011 |
| Number of service retirees | 9 | 42 | 25 | 27 | 45 | 59 | 135 |
| **Period 1/1/2007 to 12/31/2007** | | | | | | | |
| Average monthly benefit | $92 | $592 | $1,205 | $2,061 | $2,388 | $3,437 | $4,627 |
| Average highest average salary | $1,847 | $3,446 | $4,358 | $5,220 | $4,593 | $5,463 | $6,010 |
| Number of service retirees | 9 | 33 | 26 | 21 | 58 | 55 | 118 |
| **Period 1/1/2006 to 12/31/2006** | | | | | | | |
| Average monthly benefit | $69 | $364 | $1,135 | $1,451 | $2,042 | $3,053 | $4,470 |
| Average highest average salary | $2,098 | $2,226 | $3,913 | $3,505 | $3,930 | $4,708 | $5,727 |
| Number of service retirees | 3 | 14 | 16 | 14 | 41 | 61 | 118 |

Note: Highest average salary is defined as one-twelfth of the average of the highest annual salaries associated with three periods of 12 consecutive months of service credit. These three periods are tied to a fourth 12-month period which becomes the base year for the year-to-year increase limitation, which is designed to moderate “spiking.” Some members of the DPS benefit structure and members in the Judicial Division have different HAS calculations.

## SCHEDULE OF AVERAGE BENEFIT PAYMENTS

*(In Actual Dollars)*

### Judicial Division

| | Years of Service Credit | | | | | | |
|---|---|---|---|---|---|---|---|
| Year Retired | 0–5 | 6–10 | 10–15 | 15–20 | 20–25 | 25–30 | 30+ |
| **Period 1/1/2015 to 12/31/2015** | | | | | | | |
| Average monthly benefit | **$—** | **$—** | **$4,012** | **$4,158** | **$5,913** | **$7,635** | **$9,227** |
| Average highest average salary | **$—** | **$—** | **$13,045** | **$11,602** | **$11,664** | **$12,097** | **$12,331** |
| Number of service retirees | **—** | **—** | **2** | **1** | **6** | **4** | **6** |
| **Period 1/1/2014 to 12/31/2014** | | | | | | | |
| Average monthly benefit | $— | $1,505 | $2,767 | $4,432 | $6,197 | $7,806 | $7,287 |
| Average highest average salary | $— | $9,209 | $10,444 | $10,910 | $11,182 | $12,370 | $9,350 |
| Number of service retirees | — | 3 | 3 | 1 | 4 | 2 | 3 |
| **Period 1/1/2013 to 12/31/2013** | | | | | | | |
| Average monthly benefit | $— | $— | $3,596 | $— | $— | $9,561 | $9,427 |
| Average highest average salary | $— | $— | $9,119 | $— | $— | $11,271 | $10,871 |
| Number of service retirees | — | — | 3 | — | — | 1 | 4 |
| **Period 1/1/2012 to 12/31/2012** | | | | | | | |
| Average monthly benefit | $— | $713 | $3,376 | $4,438 | $7,013 | $6,927 | $2,582 |
| Average highest average salary | $— | $4,363 | $10,256 | $8,787 | $12,913 | $10,988 | $3,077 |
| Number of service retirees | — | 4 | 1 | 2 | 2 | 8 | 1 |
| **Period 1/1/2011 to 12/31/2011** | | | | | | | |
| Average monthly benefit | $— | $962 | $2,332 | $3,156 | $5,642 | $4,768 | $7,974 |
| Average highest average salary | $— | $8,192 | $10,487 | $8,704 | $10,430 | $7,818 | $9,925 |
| Number of service retirees | — | 1 | 2 | 3 | 5 | 3 | 5 |
| **Period 1/1/2010 to 12/31/2010** | | | | | | | |
| Average monthly benefit | $— | $— | $2,246 | $— | $5,734 | $7,313 | $8,959 |
| Average highest average salary | $— | $— | $7,685 | $— | $10,717 | $10,602 | $10,999 |
| Number of service retirees | — | — | 1 | — | 1 | 4 | 4 |
| **Period 1/1/2009 to 12/31/2009** | | | | | | | |
| Average monthly benefit | $— | $1,006 | $2,549 | $4,238 | $5,555 | $7,012 | $8,330 |
| Average highest average salary | $— | $3,171 | $7,858 | $10,304 | $10,302 | $10,449 | $10,297 |
| Number of service retirees | — | 1 | 2 | 1 | 5 | 3 | 6 |
| **Period 1/1/2008 to 12/31/2008** | | | | | | | |
| Average monthly benefit | $— | $— | $— | $— | $5,148 | $8,780 | $7,031 |
| Average highest average salary | $— | $— | $— | $— | $9,636 | $11,871 | $9,982 |
| Number of service retirees | — | — | — | — | 3 | 1 | 3 |
| **Period 1/1/2007 to 12/31/2007** | | | | | | | |
| Average monthly benefit | $— | $714 | $1,853 | $— | $3,764 | $6,020 | $6,631 |
| Average highest average salary | $— | $3,898 | $9,312 | $— | $7,676 | $9,227 | $8,678 |
| Number of service retirees | — | 3 | 1 | — | 4 | 6 | 8 |
| **Period 1/1/2006 to 12/31/2006** | | | | | | | |
| Average monthly benefit | $— | $— | $— | $— | $4,648 | $5,977 | $5,679 |
| Average highest average salary | $— | $— | $— | $— | $9,104 | $9,667 | $7,425 |
| Number of service retirees | — | — | — | — | 5 | 3 | 4 |

Note: Highest average salary is defined as one-twelfth of the average of the highest annual salaries associated with three periods of 12 consecutive months of service credit. These three periods are tied to a fourth 12-month period which becomes the base year for the year-to-year increase limitation, which is designed to moderate "spiking." Some members of the DPS benefit structure and members in the Judicial Division have different HAS calculations.

## SCHEDULE OF AVERAGE BENEFIT PAYMENTS

*(In Actual Dollars)*

### DPS Division[1]

| | Years of Service Credit | | | | | | |
|---|---|---|---|---|---|---|---|
| Year Retired | 0–5 | 6–10 | 10–15 | 15–20 | 20–25 | 25–30 | 30+ |
| **Period 1/1/2015 to 12/31/2015** | | | | | | | |
| Average monthly benefit | **$230** | **$702** | **$1,588** | **$1,994** | **$3,147** | **$4,159** | **$5,254** |
| Average highest average salary | **$1,908** | **$4,275** | **$5,022** | **$4,808** | **$5,523** | **$7,318** | **$6,391** |
| Number of service retirees | **12** | **55** | **36** | **37** | **60** | **56** | **19** |
| **Period 1/1/2014 to 12/31/2014** | | | | | | | |
| Average monthly benefit | $472 | $810 | $1,379 | $2,233 | $3,091 | $4,243 | $4,862 |
| Average highest average salary | $3,399 | $4,593 | $4,489 | $5,569 | $5,607 | $6,250 | $5,891 |
| Number of service retirees | 15 | 39 | 44 | 49 | 72 | 44 | 32 |
| **Period 1/1/2013 to 12/31/2013** | | | | | | | |
| Average monthly benefit | $276 | $890 | $1,365 | $1,847 | $3,214 | $4,350 | $5,049 |
| Average highest average salary | $2,532 | $5,835 | $4,861 | $4,618 | $5,754 | $6,611 | $6,097 |
| Number of service retirees | 15 | 30 | 31 | 32 | 69 | 57 | 27 |
| **Period 1/1/2012 to 12/31/2012** | | | | | | | |
| Average monthly benefit | $274 | $840 | $1,507 | $2,099 | $3,032 | $3,589 | $4,568 |
| Average highest average salary | $2,645 | $4,483 | $4,919 | $5,238 | $5,454 | $5,478 | $5,682 |
| Number of service retirees | 8 | 38 | 31 | 42 | 70 | 38 | 33 |
| **Period 1/1/2011 to 12/31/2011** | | | | | | | |
| Average monthly benefit | $1,297 | $996 | $1,479 | $2,060 | $3,373 | $4,188 | $4,290 |
| Average highest average salary | $2,751 | $4,789 | $4,956 | $4,948 | $5,910 | $6,046 | $5,198 |
| Number of service retirees | 8 | 30 | 35 | 38 | 57 | 38 | 26 |
| **Period 1/1/2010 to 12/31/2010** | | | | | | | |
| Average monthly benefit | $1,203 | $867 | $1,386 | $1,943 | $2,870 | $3,971 | $4,710 |
| Average highest average salary | $3,568 | $4,608 | $4,335 | $5,151 | $5,312 | $5,893 | $5,944 |
| Number of service retirees | 5 | 17 | 20 | 25 | 42 | 33 | 30 |

[1] The DPS Division Trust Fund was established on January 1, 2010, and received the net assets of DPSRS.

Note: Highest average salary is defined as one-twelfth of the average of the highest annual salaries associated with three periods of 12 consecutive months of service credit. These three periods are tied to a fourth 12-month period which becomes the base year for the year-to-year increase limitation, which is designed to moderate “spiking.” Some members of the DPS benefit structure and members in the Judicial Division have different HAS calculations.

## SCHEDULE OF AVERAGE BENEFIT PAYMENTS
*(In Actual Dollars)*

### All Division Trust Funds[1]

| | Years of Service Credit | | | | | | |
|---|---|---|---|---|---|---|---|
| Year Retired | 0–5 | 6–10 | 10–15 | 15–20 | 20–25 | 25–30 | 30+ |
| **Period 1/1/2015 to 12/31/2015** | | | | | | | |
| Average monthly benefit | **$231** | **$587** | **$1,101** | **$1,802** | **$2,686** | **$3,879** | **$5,006** |
| Average highest average salary | **$2,445** | **$3,198** | **$3,753** | **$4,112** | **$4,848** | **$5,738** | **$6,225** |
| Number of service retirees | **220** | **737** | **712** | **693** | **979** | **1,096** | **804** |
| **Period 1/1/2014 to 12/31/2014** | | | | | | | |
| Average monthly benefit | $229 | $564 | $1,084 | $1,839 | $2,674 | $3,863 | $5,005 |
| Average highest average salary | $2,620 | $3,135 | $3,641 | $4,207 | $4,875 | $5,674 | $6,165 |
| Number of service retirees | 200 | 695 | 729 | 696 | 946 | 1,029 | 809 |
| **Period 1/1/2013 to 12/31/2013** | | | | | | | |
| Average monthly benefit | $233 | $555 | $1,117 | $1,822 | $2,640 | $3,896 | $4,999 |
| Average highest average salary | $2,352 | $3,196 | $3,644 | $4,111 | $4,747 | $5,710 | $6,229 |
| Number of service retirees | 174 | 611 | 571 | 546 | 846 | 998 | 758 |
| **Period 1/1/2012 to 12/31/2012** | | | | | | | |
| Average monthly benefit | $270 | $589 | $1,038 | $1,913 | $2,677 | $3,910 | $4,779 |
| Average highest average salary | $2,413 | $3,174 | $3,480 | $4,227 | $4,870 | $5,721 | $5,999 |
| Number of service retirees | 191 | 685 | 654 | 713 | 1,028 | 1,169 | 985 |
| **Period 1/1/2011 to 12/31/2011** | | | | | | | |
| Average monthly benefit | $265 | $576 | $989 | $1,770 | $2,657 | $3,817 | $4,919 |
| Average highest average salary | $2,480 | $3,063 | $2,941 | $3,605 | $4,371 | $5,351 | $6,012 |
| Number of service retirees | 145 | 599 | 473 | 550 | 847 | 1,101 | 893 |
| **Period 1/1/2010 to 12/31/2010[2]** | | | | | | | |
| Average monthly benefit | $292 | $549 | $922 | $1,795 | $2,572 | $3,836 | $4,846 |
| Average highest average salary | $2,515 | $2,979 | $2,767 | $3,754 | $4,401 | $5,454 | $5,881 |
| Number of service retirees | 103 | 531 | 432 | 535 | 1,006 | 1,338 | 1,121 |
| **Period 1/1/2009 to 12/31/2009** | | | | | | | |
| Average monthly benefit | $193 | $482 | $1,024 | $1,802 | $2,585 | $3,703 | $4,779 |
| Average highest average salary | $2,180 | $2,564 | $3,263 | $3,911 | $4,643 | $5,377 | $5,995 |
| Number of service retirees | 67 | 443 | 359 | 411 | 754 | 1,110 | 952 |
| **Period 1/1/2008 to 12/31/2008** | | | | | | | |
| Average monthly benefit | $362 | $439 | $854 | $1,471 | $2,313 | $3,194 | $4,527 |
| Average highest average salary | $3,405 | $2,602 | $3,009 | $3,553 | $4,411 | $4,915 | $5,859 |
| Number of service retirees | 45 | 383 | 344 | 289 | 847 | 907 | 1,515 |
| **Period 1/1/2007 to 12/31/2007** | | | | | | | |
| Average monthly benefit | $98 | $430 | $860 | $1,369 | $2,199 | $3,123 | $4,335 |
| Average highest average salary | $1,844 | $2,600 | $3,075 | $3,356 | $4,188 | $4,816 | $5,585 |
| Number of service retirees | 34 | 398 | 302 | 277 | 833 | 949 | 1,670 |
| **Period 1/1/2006 to 12/31/2006** | | | | | | | |
| Average monthly benefit | $59 | $417 | $697 | $1,299 | $2,027 | $3,049 | $4,245 |
| Average highest average salary | $1,284 | $2,505 | $2,422 | $3,204 | $3,238 | $4,754 | $5,523 |
| Number of service retirees | 32 | 339 | 265 | 251 | 822 | 922 | 1,804 |

[1] Data prior to December 31, 2010, does not include the DPS Division.

[2] The DPS Division Trust Fund was established on January 1, 2010, and received the net assets of DPSRS.

Note: Highest average salary is defined as one-twelfth of the average of the highest annual salaries associated with three periods of 12 consecutive months of service credit. These three periods are tied to a fourth 12-month period which becomes the base year for the year-to-year increase limitation, which is designed to moderate “spiking.” Some members of the DPS benefit structure and members in the Judicial Division have different HAS calculations.

# SCHEDULE OF CONTRIBUTION RATE HISTORY

## State Division (Members Other Than State Troopers)[1]

| Years | | | Percent of Covered Payroll | | | | |
|---|---|---|---|---|---|---|---|
| | | | Member Contribution Rate | Employer Contribution Rate[2] | Amortization Equalization Disbursement | Supplemental Amortization Equalization Disbursement | Total Contribution Rate |
| 8/1/1931 | to | 6/30/1938 | 3.50% | — | — | — | 3.50% |
| 7/1/1938 | to | 6/30/1949 | 3.50% | 3.50% | — | — | 7.00% |
| 7/1/1949 | to | 6/30/1958 | 5.00% | 5.00% | — | — | 10.00% |
| 7/1/1958 | to | 6/30/1969 | 6.00% | 6.00% | — | — | 12.00% |
| 7/1/1969 | to | 6/30/1970 | 7.00% | 7.00% | — | — | 14.00% |
| 7/1/1970 | to | 6/30/1971 | 7.00% | 8.00% | — | — | 15.00% |
| 7/1/1971 | to | 6/30/1973 | 7.00% | 8.50% | — | — | 15.50% |
| 7/1/1973 | to | 6/30/1974 | 7.75% | 9.50% | — | — | 17.25% |
| 7/1/1974 | to | 6/30/1975 | 7.75% | 10.50% | — | — | 18.25% |
| 7/1/1975 | to | 8/31/1980 | 7.75% | 10.64% | — | — | 18.39% |
| 9/1/1980 | to | 12/31/1981 | 7.75% | 12.20% | — | — | 19.95% |
| 1/1/1982 | to | 6/30/1987 | 8.00% | 12.20% | — | — | 20.20% |
| 7/1/1987 | to | 6/30/1988 | 8.00% | 10.20% | — | — | 18.20% |
| 7/1/1988 | to | 6/30/1991 | 8.00% | 12.20% | — | — | 20.20% |
| 7/1/1991 | to | 4/30/1992 | 8.00% | 11.60% | — | — | 19.60% |
| 5/1/1992 | to | 6/30/1992 | 8.00% | 5.60%[3] | — | — | 13.60% |
| 7/1/1992 | to | 6/30/1993 | 8.00% | 10.60% | — | — | 18.60% |
| 7/1/1993 | to | 6/30/1997 | 8.00% | 11.60% | — | — | 19.60% |
| 1/1/2006 | to | 12/31/2006 | 8.00% | 10.15% | 0.50% | — | 18.65% |
| 1/1/2007 | to | 12/31/2007 | 8.00% | 10.15% | 1.00% | — | 19.15% |
| 1/1/2008 | to | 12/31/2008 | 8.00% | 10.15% | 1.40% | 0.50% | 20.05% |
| 1/1/2009 | to | 12/31/2009 | 8.00% | 10.15% | 1.80% | 1.00% | 20.95% |
| 1/1/2010 | to | 6/30/2010 | 8.00% | 10.15% | 2.20% | 1.50% | 21.85% |
| 7/1/2010 | to | 12/31/2010 | 10.50%[4] | 7.65%[4] | 2.20% | 1.50% | 21.85% |
| 1/1/2011 | to | 12/31/2011 | 10.50%[4] | 7.65%[4] | 2.60% | 2.00% | 22.75% |
| 1/1/2012 | to | 6/30/2012 | 10.50%[4] | 7.65%[4] | 3.00% | 2.50% | 23.65% |
| 7/1/2012 | to | 12/31/2012 | 8.00% | 10.15% | 3.00% | 2.50% | 23.65% |
| 1/1/2013 | to | 12/31/2013 | 8.00% | 10.15% | 3.40% | 3.00% | 24.55% |
| 1/1/2014 | to | 12/31/2014 | 8.00% | 10.15% | 3.80% | 3.50% | 25.45% |
| **1/1/2015** | **to** | **12/31/2015** | **8.00%** | **10.15%** | **4.20%** | **4.00%** | **26.35%** |

[1] State and School Divisions merged July 1, 1997, and separated on January 1, 2006.

[2] All employer contribution rates shown since July 1, 1985, include the Health Care Trust Fund (HCTF) allocation.

[3] Legislation created an annual reduction equal to 1.0 percent of salary retroactive to July 1, 1991, to be taken during May and June of 1992.

[4] Senate Bills 10-146 and 11-076 required member contributions to increase by 2.50 percent and employer contributions to decrease by 2.50 percent.

## SCHEDULE OF CONTRIBUTION RATE HISTORY

### State Troopers[1]

| Years | | | Member Contribution Rate | Employer Contribution Rate[2] | Amortization Equalization Disbursement | Supplemental Amortization Equalization Disbursement | Total Contribution Rate |
|---|---|---|---|---|---|---|---|
| | | | Percent of Covered Payroll | | | | |
| 7/1/1945 | to | 6/30/1969 | 7.00% | 7.00% | — | — | 14.00% |
| 7/1/1969 | to | 6/30/1970 | 8.00% | 8.00% | — | — | 16.00% |
| 7/1/1970 | to | 6/30/1971 | 8.00% | 9.00% | — | — | 17.00% |
| 7/1/1971 | to | 6/30/1973 | 8.00% | 9.50% | — | — | 17.50% |
| 7/1/1973 | to | 6/30/1974 | 8.75% | 10.50% | — | — | 19.25% |
| 7/1/1974 | to | 6/30/1975 | 8.75% | 11.50% | — | — | 20.25% |
| 7/1/1975 | to | 8/31/1980 | 8.75% | 11.64% | — | — | 20.39% |
| 9/1/1980 | to | 12/31/1981 | 8.75% | 13.20% | — | — | 21.95% |
| 1/1/1982 | to | 6/30/1987 | 9.00% | 13.20% | — | — | 22.20% |
| 7/1/1987 | to | 6/30/1988 | 9.00% | 11.20% | — | — | 20.20% |
| 7/1/1988 | to | 6/30/1989 | 9.00% | 13.20% | — | — | 22.20% |
| 7/1/1989 | to | 4/30/1992 | 12.30% | 13.20% | — | — | 25.50% |
| 5/1/1992 | to | 6/30/1992 | 12.30% | 7.20%[3] | — | — | 19.50% |
| 7/1/1992 | to | 6/30/1993 | 11.50% | 12.20% | — | — | 23.70% |
| 7/1/1993 | to | 6/30/1997 | 11.50% | 13.20% | — | — | 24.70% |
| 7/1/1997 | to | 6/30/1999 | 11.50% | 13.10% | — | — | 24.60% |
| 7/1/1999 | to | 6/30/2001 | 10.00% | 13.10% | — | — | 23.10% |
| 7/1/2001 | to | 6/30/2002 | 10.00% | 12.60% | — | — | 22.60% |
| 7/1/2002 | to | 6/30/2003 | 10.00% | 12.74% | — | — | 22.74% |
| 7/1/2003 | to | 12/31/2005 | 10.00% | 12.85% | — | — | 22.85% |
| 1/1/2006 | to | 12/31/2006 | 10.00% | 12.85% | 0.50% | — | 23.35% |
| 1/1/2007 | to | 12/31/2007 | 10.00% | 12.85% | 1.00% | — | 23.85% |
| 1/1/2008 | to | 12/31/2008 | 10.00% | 12.85% | 1.40% | 0.50% | 24.75% |
| 1/1/2009 | to | 12/31/2009 | 10.00% | 12.85% | 1.80% | 1.00% | 25.65% |
| 1/1/2010 | to | 6/30/2010 | 10.00% | 12.85% | 2.20% | 1.50% | 26.55% |
| 7/1/2010 | to | 12/31/2010 | 12.50%[4] | 10.35%[4] | 2.20% | 1.50% | 26.55% |
| 1/1/2011 | to | 12/31/2011 | 12.50%[4] | 10.35%[4] | 2.60% | 2.00% | 27.45% |
| 1/1/2012 | to | 6/30/2012 | 12.50%[4] | 10.35%[4] | 3.00% | 2.50% | 28.35% |
| 7/1/2012 | to | 12/31/2012 | 10.00% | 12.85% | 3.00% | 2.50% | 28.35% |
| 1/1/2013 | to | 12/31/2013 | 10.00% | 12.85% | 3.40% | 3.00% | 29.25% |
| 1/1/2014 | to | 12/31/2014 | 10.00% | 12.85% | 3.80% | 3.50% | 30.15% |
| **1/1/2015** | **to** | **12/31/2015** | **10.00%** | **12.85%** | **4.20%** | **4.00%** | **31.05%** |

[1] State and School Divisions merged July 1, 1997, and separated on January 1, 2006.

[2] All employer contribution rates shown since July 1, 1985, include the HCTF allocation.

[3] Legislation created an annual reduction equal to 1.0 percent of salary retroactive to July 1, 1991, to be taken during May and June of 1992.

[4] Senate Bills 10-146 and 11-076 required member contributions to increase by 2.50 percent and employer contributions to decrease by 2.50 percent.

## SCHEDULE OF CONTRIBUTION RATE HISTORY

### School Division[1]

| Years | | | Member Contribution Rate (Percent of Covered Payroll) | Employer Contribution Rate[2] (Percent of Covered Payroll) | Amortization Equalization Disbursement (Percent of Covered Payroll) | Supplemental Amortization Equalization Disbursement (Percent of Covered Payroll) | Total Contribution Rate (Percent of Covered Payroll) |
|---|---|---|---|---|---|---|---|
| 1/1/1944 | to | 12/31/1949 | 3.50% | 3.50% | — | — | 7.00% |
| 1/1/1950 | to | 6/30/1958 | 5.00% | 5.00% | — | — | 10.00% |
| 7/1/1958 | to | 6/30/1969 | 6.00% | 6.00% | — | — | 12.00% |
| 7/1/1969 | to | 12/31/1969 | 7.00% | 6.00% | — | — | 13.00% |
| 1/1/1970 | to | 12/31/1970 | 7.00% | 7.50% | — | — | 14.50% |
| 1/1/1971 | to | 12/31/1971 | 7.00% | 8.50% | — | — | 15.50% |
| 1/1/1972 | to | 6/30/1973 | 7.00% | 9.25% | — | — | 16.25% |
| 7/1/1973 | to | 12/31/1973 | 7.75% | 9.25% | — | — | 17.00% |
| 1/1/1974 | to | 12/31/1974 | 7.75% | 10.25% | — | — | 18.00% |
| 1/1/1975 | to | 12/31/1975 | 7.75% | 11.25% | — | — | 19.00% |
| 1/1/1976 | to | 12/31/1980 | 7.75% | 12.10% | — | — | 19.85% |
| 1/1/1981 | to | 12/31/1981 | 7.75% | 12.50% | — | — | 20.25% |
| 1/1/1982 | to | 6/30/1987 | 8.00% | 12.50% | — | — | 20.50% |
| 7/1/1987 | to | 6/30/1988 | 8.00% | 11.50% | — | — | 19.50% |
| 7/1/1988 | to | 6/30/1991 | 8.00% | 12.50% | — | — | 20.50% |
| 7/1/1991 | to | 6/30/1992 | 8.00% | 12.20% | — | — | 20.20% |
| 7/1/1992 | to | 6/30/1997 | 8.00% | 11.60% | — | — | 19.60% |
| 1/1/2006 | to | 12/31/2006 | 8.00% | 10.15% | 0.50% | — | 18.65% |
| 1/1/2007 | to | 12/31/2007 | 8.00% | 10.15% | 1.00% | — | 19.15% |
| 1/1/2008 | to | 12/31/2008 | 8.00% | 10.15% | 1.40% | 0.50% | 20.05% |
| 1/1/2009 | to | 12/31/2009 | 8.00% | 10.15% | 1.80% | 1.00% | 20.95% |
| 1/1/2010 | to | 12/31/2010 | 8.00% | 10.15% | 2.20% | 1.50% | 21.85% |
| 1/1/2011 | to | 12/31/2011 | 8.00% | 10.15% | 2.60% | 2.00% | 22.75% |
| 1/1/2012 | to | 12/31/2012 | 8.00% | 10.15% | 3.00% | 2.50% | 23.65% |
| 1/1/2013 | to | 12/31/2013 | 8.00% | 10.15% | 3.40% | 3.00% | 24.55% |
| 1/1/2014 | to | 12/31/2014 | 8.00% | 10.15% | 3.80% | 3.50% | 25.45% |
| **1/1/2015** | **to** | **12/31/2015** | **8.00%** | **10.15%** | **4.20%** | **4.00%** | **26.35%** |

[1] State and School Divisions merged July 1, 1997, and separated on January 1, 2006.

[2] All employer contribution rates shown since July 1, 1985, include the HCTF allocation.

### State and School Division[1]

| Years | | | Member Contribution Rate (Percent of Covered Payroll) | Employer Contribution Rate[2] (Percent of Covered Payroll) |
|---|---|---|---|---|
| 7/1/1997 | to | 6/30/1998 | 8.00% | 11.50% |
| 7/1/1998 | to | 6/30/2000 | 8.00% | 11.40% |
| 7/1/2000 | to | 6/30/2001 | 8.00% | 10.40% |
| 7/1/2001 | to | 6/30/2002 | 8.00% | 9.90% |
| 7/1/2002 | to | 6/30/2003 | 8.00% | 10.04% |
| 7/1/2003 | to | 12/31/2005 | 8.00% | 10.15% |

[1] State and School Divisions merged July 1, 1997, and separated on January 1, 2006.

[2] The employer contribution rates shown include the HCTF allocation.

SCHEDULE OF CONTRIBUTION RATE HISTORY

## Local Government Division[1]

| Years | | | Member Contribution Rate | Employer Contribution Rate[2] | Amortization Equalization Disbursement | Supplemental Amortization Equalization Disbursement | Total Contribution Rate |
|---|---|---|---|---|---|---|---|
| | | | Percent of Covered Payroll | | | | |
| 1/1/1944 | to | 12/31/1949 | 3.50% | 3.50% | — | — | 7.00% |
| 1/1/1950 | to | 6/30/1958 | 5.00% | 5.00% | — | — | 10.00% |
| 7/1/1958 | to | 6/30/1969 | 6.00% | 6.00% | — | — | 12.00% |
| 7/1/1969 | to | 12/31/1969 | 7.00% | 6.00% | — | — | 13.00% |
| 1/1/1970 | to | 12/31/1970 | 7.00% | 7.00% | — | — | 14.00% |
| 1/1/1971 | to | 6/30/1973 | 7.00% | 7.50% | — | — | 14.50% |
| 7/1/1973 | to | 12/31/1973 | 7.75% | 7.50% | — | — | 15.25% |
| 1/1/1974 | to | 12/31/1974 | 7.75% | 8.50% | — | — | 16.25% |
| 1/1/1975 | to | 12/31/1975 | 7.75% | 9.50% | — | — | 17.25% |
| 1/1/1976 | to | 12/31/1980 | 7.75% | 9.86% | — | — | 17.61% |
| 1/1/1981 | to | 12/31/1981 | 7.75% | 10.20% | — | — | 17.95% |
| 1/1/1982 | to | 6/30/1991 | 8.00% | 10.20% | — | — | 18.20% |
| 7/1/1991 | to | 12/31/2000 | 8.00% | 10.00% | — | — | 18.00% |
| 1/1/2001 | to | 12/31/2001 | 8.00% | 9.43% | — | — | 17.43% |
| 1/1/2002 | to | 12/31/2002 | 8.00% | 9.19% | — | — | 17.19% |
| 1/1/2003 | to | 12/31/2003 | 8.00% | 9.60% | — | — | 17.60% |
| 1/1/2004 | to | 12/31/2005 | 8.00% | 10.00% | — | — | 18.00% |
| 1/1/2006 | to | 12/31/2006 | 8.00% | 10.00% | 0.50% | — | 18.50% |
| 1/1/2007 | to | 12/31/2007 | 8.00% | 10.00% | 1.00% | — | 19.00% |
| 1/1/2008 | to | 12/31/2008 | 8.00% | 10.00% | 1.40% | 0.50% | 19.90% |
| 1/1/2009 | to | 12/31/2009 | 8.00% | 10.00% | 1.80% | 1.00% | 20.80% |
| 1/1/2010 | to | **12/31/2015** | **8.00%** | **10.00%** | **2.20%** | **1.50%** | **21.70%** |

[1] The Local Government Division Trust Fund was the Municipal Division Trust Fund prior to January 1, 2006.

[2] All employer contribution rates shown since July 1, 1985, include the HCTF allocation.

## SCHEDULE OF CONTRIBUTION RATE HISTORY

### Judicial Division

| Years | | | Member Contribution Rate | Employer Contribution Rate[1] | Amortization Equalization Disbursement | Supplemental Amortization Equalization Disbursement | Total Contribution Rate |
|---|---|---|---|---|---|---|---|
| | | | Percent of Covered Payroll | | | | |
| 7/1/1949 | to | 6/30/1957 | 5.00% | 5.00% | — | — | 10.00% |
| 7/1/1957 | to | 6/30/1973 | 6.00% | 12.00% | — | — | 18.00% |
| 7/1/1973 | to | 6/30/1980 | 7.00% | 12.00% | — | — | 19.00% |
| 7/1/1980 | to | 8/30/1980 | 7.00% | 13.00% | — | — | 20.00% |
| 9/1/1980 | to | 12/31/1981 | 7.00% | 15.00% | — | — | 22.00% |
| 1/1/1982 | to | 6/30/1987 | 8.00% | 15.00% | — | — | 23.00% |
| 7/1/1987 | to | 6/30/1988 | 8.00% | 13.00% | — | — | 21.00% |
| 7/1/1988 | to | 6/30/2000 | 8.00% | 15.00% | — | — | 23.00% |
| 7/1/2000 | to | 6/30/2001 | 8.00% | 14.00% | — | — | 22.00% |
| 7/1/2001 | to | 6/30/2003 | 8.00% | 11.82% | — | — | 19.82% |
| 7/1/2003 | to | 6/30/2004 | 8.00% | 12.66% | — | — | 20.66% |
| 7/1/2004 | to | 12/31/2005 | 8.00% | 13.66% | — | — | 21.66% |
| 1/1/2006 | to | 12/31/2006 | 8.00% | 13.66% | 0.50% | — | 22.16% |
| 1/1/2007 | to | 12/31/2007 | 8.00% | 13.66% | 1.00% | — | 22.66% |
| 1/1/2008 | to | 12/31/2008 | 8.00% | 13.66% | 1.40% | 0.50% | 23.56% |
| 1/1/2009 | to | 12/31/2009 | 8.00% | 13.66% | 1.80% | 1.00% | 24.46% |
| 1/1/2010 | to | 6/30/2010 | 8.00% | 13.66% | 2.20% | 1.50% | 25.36% |
| 7/1/2010 | to | 6/30/2012 | 10.50%[2] | 11.16%[2] | 2.20% | 1.50% | 25.36% |
| 7/1/2012 | to | **12/31/2015** | **8.00%** | **13.66%** | **2.20%** | **1.50%** | **25.36%** |

[1] All employer contribution rates shown since July 1, 1985, include the HCTF allocation.

[2] Senate Bills 10-146 and 11-076 required member contributions to increase by 2.50 percent and employer contributions to decrease by 2.50 percent.

### DPS Division[1]

| Years | | | Member Contribution Rate | Employer Contribution Rate[2] | Amortization Equalization Disbursement | Supplemental Amortization Equalization Disbursement | Employer Contribution PCOP Offset[3] | Total Contribution Rate |
|---|---|---|---|---|---|---|---|---|
| | | | Percent of Covered Payroll | | | | | |
| 1/1/2010 | to | 12/31/2010 | 8.00% | 13.75% | 2.20% | 1.50% | (15.04%) | 10.41% |
| 1/1/2011 | to | 12/31/2011 | 8.00% | 13.75% | 2.60% | 2.00% | (14.72%) | 11.63% |
| 1/1/2012 | to | 12/31/2012 | 8.00% | 13.75% | 3.00% | 2.50% | (15.37%) | 11.88% |
| 1/1/2013 | to | 12/31/2013 | 8.00% | 13.75% | 3.40% | 3.00% | (14.51%) | 13.64% |
| 1/1/2014 | to | 12/31/2014 | 8.00% | 13.75% | 3.80% | 3.50% | (16.89%) | 12.16% |
| **1/1/2015** | **to** | **12/31/2015** | **8.00%** | **10.15%** | **4.20%** | **4.00%** | **(15.97%)** | **10.38%** |

[1] The DPS Division Trust Fund was established on January 1, 2010, and received the net assets of DPSRS.

[2] All employer contribution rates shown include the DPS HCTF allocation.

[3] An offset to the DPS Division rate is provided for under C.R.S. § 24-51-412. See Note 4—Contributions in the Financial Section.

## SCHEDULE OF CONTRIBUTION RATE HISTORY

### Employer Contributions to Health Care Trust Funds

| Division/Years | | | Percent of Covered Payroll Allocated from Employer Contribution to Health Care Trust Funds |
|---|---|---|---|
| **State Division[1]** | | | |
| 7/1/1985 | to | 6/30/1997 | 0.80% |
| 1/1/2006 | to | **12/31/2015** | **1.02%** |
| **School Division[1]** | | | |
| 7/1/1985 | to | 6/30/1997 | 0.80% |
| 1/1/2006 | to | **12/31/2015** | **1.02%** |
| **State and School Division[1]** | | | |
| 7/1/1997 | to | 6/30/1999 | 0.80% |
| 7/1/1999 | to | 12/31/2000 | 1.10% |
| 1/1/2001 | to | 12/31/2001 | 1.42% |
| 1/1/2002 | to | 12/31/2002 | 1.64% |
| 1/1/2003 | to | 6/30/2004 | 1.10% |
| 7/1/2004 | to | 12/31/2005 | 1.02% |
| **Local Government Division[2]** | | | |
| 7/1/1985 | to | 6/30/1999 | 0.80% |
| 7/1/1999 | to | 12/31/2000 | 1.10% |
| 1/1/2001 | to | 12/31/2001 | 1.96% |
| 1/1/2002 | to | 12/31/2002 | 2.31% |
| 1/1/2003 | to | 12/31/2003 | 1.69% |
| 1/1/2004 | to | 6/30/2004 | 1.10% |
| 7/1/2004 | to | **12/31/2015** | **1.02%** |
| **Judicial Division** | | | |
| 7/1/1985 | to | 6/30/1999 | 0.80% |
| 7/1/1999 | to | 12/31/2000 | 1.10% |
| 1/1/2001 | to | 12/31/2002 | 4.37% |
| 1/1/2003 | to | 12/31/2003 | 3.11% |
| 1/1/2004 | to | 6/30/2004 | 1.10% |
| 7/1/2004 | to | **12/31/2015** | **1.02%** |
| **DPS Division[3]** | | | |
| 1/1/2010 | to | **12/31/2015** | **1.02%** |

[1] State and School Divisions merged July 1, 1997, and separated on January 1, 2006.

[2] The Local Government Division Trust Fund was the Municipal Division Trust Fund prior to January 1, 2006.

[3] The DPS HCTF was established on January 1, 2010, and received the balance of the Denver Public Schools Health Benefit Trust.

### Employer Contributions to MatchMaker[1]

| Division/Years | | | Percent of Covered Payroll Available from Employer Contribution for MatchMaker (Maximum Match) |
|---|---|---|---|
| **State and School Division[2]** | | | |
| 1/1/2001 | to | 12/31/2002 | 3.00% |
| 1/1/2003 | to | 12/31/2003 | 2.00% |
| 1/1/2004 | to | 5/31/2004 | 1.00% |
| **Local Government Division[3]** | | | |
| 1/1/2001 | to | 12/31/2001 | 2.00% |
| 1/1/2002 | to | 12/31/2002 | 3.00% |
| 1/1/2003 | to | 12/31/2003 | 2.00% |
| 1/1/2004 | to | 5/31/2004 | 1.00% |
| **Judicial Division** | | | |
| 1/1/2001 | to | 12/31/2002 | 7.00% |
| 1/1/2003 | to | 12/31/2003 | 6.00% |
| 1/1/2004 | to | 5/31/2004 | 5.00% |

[1] Legislation enacted in 2004 ended MatchMaker contributions by June 1, 2004.

[2] State and School Divisions merged July 1, 1997, and separated on January 1, 2006.

[3] The Local Government Division Trust Fund was the Municipal Division Trust Fund prior to January 1, 2006.

# PRINCIPAL PARTICIPATING EMPLOYERS

## State Division Trust Fund[1,2]

| | 2015 | | | 2014 | | |
|---|---|---|---|---|---|---|
| Employer | Covered Active Members December 31 | Rank | Percentage of Total System | Covered Active Members December 31 | Rank | Percentage of Total System |
| State of Colorado | **50,684** | **1** | **91.67%** | 50,508 | 1 | 91.33% |

[1] Guidance under GASB 67 classifies a primary government and its component units as one employer. Due to this change, data for the number of members by employer for years prior to 2014 is not available.

[2] This schedule was compiled using the definition of an employer as promulgated by GASB 67. For all other purposes, the definition of an employer is governed by Title 24, Article 51 of the C.R.S., PERA's Rules, 8 CCR 1502-1, and, if applicable, the employer's affiliation agreement with PERA.

## School Division Trust Fund[1,2]

| | 2015 | | | 2014 | | |
|---|---|---|---|---|---|---|
| Employer | Covered Active Members December 31 | Rank | Percentage of Total System | Covered Active Members December 31 | Rank | Percentage of Total System |
| Jefferson County School District R-1 | **12,149** | **1** | **10.10%** | 12,184 | 1 | 10.19% |
| Douglas County School District Re 1 | **8,560** | **2** | **7.12%** | 8,345 | 2 | 6.98% |
| Cherry Creek School District 5 | **7,684** | **3** | **6.39%** | 7,670 | 3 | 6.41% |
| Adams-Arapahoe School District 28J | **5,667** | **4** | **4.71%** | 5,453 | 4 | 4.56% |
| Adams 12 Five Star Schools | **5,239** | **5** | **4.36%** | 5,261 | 5 | 4.40% |
| Boulder Valley School District RE2 | **4,637** | **6** | **3.86%** | 4,678 | 6 | 3.91% |
| Poudre School District R-1 | **4,485** | **7** | **3.73%** | 4,425 | 7 | 3.70% |
| Colorado Springs School District 11 | **4,390** | **8** | **3.65%** | 4,292 | 8 | 3.59% |
| St. Vrain Valley School District RE1J | **4,304** | **9** | **3.58%** | 4,189 | 9 | 3.50% |
| Academy School District #20 | **3,666** | **10** | **3.05%** | 3,660 | 10 | 3.06% |

[1] Guidance under GASB 67 classifies a primary government and its component units as one employer. Due to this change, data for the number of members by employer for years prior to 2014 is not available.

[2] This schedule was compiled using the definition of an employer as promulgated by GASB 67. For all other purposes, the definition of an employer is governed by Title 24, Article 51 of the C.R.S., PERA's Rules, 8 CCR 1502-1, and, if applicable, the employer's affiliation agreement with PERA.

## Local Government Division Trust Fund[1,2]

| | 2015 | | | 2014 | | |
|---|---|---|---|---|---|---|
| Employer | Covered Active Members December 31 | Rank | Percentage of Total System | Covered Active Members December 31 | Rank | Percentage of Total System |
| City of Colorado Springs | **3,099** | **1** | **25.45%** | 3,054 | 1 | 25.27% |
| Boulder County | **2,054** | **2** | **16.87%** | 2,067 | 2 | 17.11% |
| City of Boulder | **1,448** | **3** | **11.89%** | 1,413 | 3 | 11.69% |

[1] Guidance under GASB 67 classifies a primary government and its component units as one employer. Due to this change, data for the number of members by employer for years prior to 2014 is not available.

[2] This schedule was compiled using the definition of an employer as promulgated by GASB 67. For all other purposes, the definition of an employer is governed by Title 24, Article 51 of the C.R.S., PERA's Rules, 8 CCR 1502-1, and, if applicable, the employer's affiliation agreement with PERA.

## PRINCIPAL PARTICIPATING EMPLOYERS

### Judicial Division Trust Fund[1, 2]

| | 2015 | | | 2014 | | |
|---|---|---|---|---|---|---|
| Employer | Covered Active Members December 31 | Rank | Percentage of Total System | Covered Active Members December 31 | Rank | Percentage of Total System |
| Judicial Department | **317** | **1** | **94.91%** | 318 | 1 | 95.21% |

[1] Guidance under GASB 67 classifies a primary government and its component units as one employer. Due to this change, data for the number of members by employer for years prior to 2014 is not available.

[2] This schedule was compiled using the definition of an employer as promulgated by GASB 67. For all other purposes, the definition of an employer is governed by Title 24, Article 51 of the C.R.S., PERA's Rules, 8 CCR 1502-1, and, if applicable, the employer's affiliation agreement with PERA.

### DPS Division Trust Fund[1, 2]

| | 2015 | | | 2014 | | |
|---|---|---|---|---|---|---|
| Employer | Covered Active Members December 31 | Rank | Percentage of Total System | Covered Active Members December 31 | Rank | Percentage of Total System |
| Denver Public School District No. 1 | **15,929** | **1** | **100.00%** | 15,414 | 1 | 100.00% |

[1] Guidance under GASB 67 classifies a primary government and its component units as one employer. Due to this change, data for the number of members by employer for years prior to 2014 is not available.

[2] This schedule was compiled using the definition of an employer as promulgated by GASB 67. For all other purposes, the definition of an employer is governed by Title 24, Article 51 of the C.R.S., PERA's Rules, 8 CCR 1502-1, and, if applicable, the employer's affiliation agreement with PERA.

### Health Care Trust Fund[1]

| | 2015 | | | 2006 | | |
|---|---|---|---|---|---|---|
| Employer | Covered Active Members December 31 | Rank | Percentage of Totals System | Covered Active Members December 31 | Rank | Percentage of Total System |
| Jefferson County School District | **12,149** | **1** | **6.46%** | 12,168 | 1 | 6.58% |
| Cherry Creek School District | **7,620** | **2** | **4.05%** | 6,869 | 2 | 3.72% |
| Douglas County Schools | **7,419** | **3** | **3.95%** | 6,663 | 3 | 3.60% |
| Department of Corrections | **6,111** | **4** | **3.25%** | 5,644 | 4 | 3.05% |
| University of Colorado | **5,827** | **5** | **3.10%** | 5,432 | 5 | 2.94% |
| Aurora Public Schools | **5,331** | **6** | **2.84%** | 4,348 | 9 | 2.35% |
| Adams 12 Five Star Schools | **4,827** | **7** | **2.57%** | 4,684 | 6 | 2.53% |
| Boulder Valley School District | **4,428** | **8** | **2.35%** | 4,573 | 7 | 2.47% |
| Poudre School District RE-1 | **4,195** | **9** | **2.23%** | — | — | — |
| Colorado Springs Public Schools | **4,181** | **10** | **2.22%** | 4,462 | 8 | 2.41% |
| Memorial Health System | **—** | **—** | **—** | 3,779 | 10 | 2.04% |

[1] Any differences in the employer name and/or number of covered active members in this schedule compared to the schedules for the Division Trust Funds are due to separate guidance promulgated by GASB 44 and GASB 67.

### DPS Health Care Trust Fund[1, 2]

| | 2015 | | | 2010 | | |
|---|---|---|---|---|---|---|
| Employer | Covered Active Members December 31 | Rank | Percentage of Total System | Covered Active Members December 31 | Rank | Percentage of Total System |
| Denver Public Schools | **13,966** | **1** | **87.68%** | 12,248 | 1 | 92.99% |

[1] The DPS HCTF was established on January 1, 2010, and received the balance of the Denver Public Schools Retiree Health Benefit Trust, as required by SB 09-282.

[2] The difference in the employer name and number of covered active members in this schedule compared to the schedule for the DPS Division Trust Fund is due to separate guidance promulgated by GASB 44 and GASB 67.

# SCHEDULE OF AFFILIATED EMPLOYERS

## State Division

### Agencies and Instrumentalities

CollegeInvest
College Assist
Colorado Association of School Boards
Colorado Association of School Executives
Colorado Council on the Arts
Colorado High School Activities Association
Colorado Public Employees' Retirement Association
Colorado Water Resources & Power Development Authority
Colorado Community College System
Department of Agriculture
Department of Corrections
Department of Education
Department of Health Care Policy and Financing
Department of Human Services
Department of Labor and Employment
Department of Law
Department of Local Affairs
Department of Military and Veterans Affairs
Department of Natural Resources
Department of Personnel and Administration
Department of Public Health and Environment
Department of Public Safety
Department of Regulatory Agencies
Department of Revenue
Department of State
Department of the Treasury
Department of Transportation
Fire and Police Pension Association
General Assembly
Joint Budget Committee
Judicial Department
Legislative Council
Office of the District Attorneys
Office of the Governor
Office of Legislative Legal Services
Office of the Lieutenant Governor
Office of the State Auditor
Pinnacol Assurance
School for the Deaf and the Blind
Special District Association of Colorado
State Historical Society

### Institutions of Higher Education

Adams State University
Aims Community College
Arapahoe Community College
Auraria Higher Education Center
Aurora Community College
Colorado Mesa University
Colorado Mountain College
Colorado Northwestern Community College
Colorado School of Mines
Colorado State University
Colorado State University at Pueblo
Commission on Higher Education
Denver Community College
Fort Lewis College
Front Range Community College
Lamar Community College
Metropolitan State University of Denver
Morgan Community College
Northeastern Junior College
Otero Junior College
Pikes Peak Community College
Pueblo Vocational Community College
Red Rocks Community College
State Board for Community Colleges and Occupational Education
Trinidad State Junior College
University of Colorado
University of Northern Colorado
Western State Colorado University

SCHEDULE OF AFFILIATED EMPLOYERS

## School Division[1]

### Adams County
Adams 12 Five Star Schools
Adams County School District 14
Bennett School District 29J
Brighton School District 27J
Mapleton School District 1
Strasburg School District 31J
Westminster School District 50

### Alamosa County
Alamosa County School District Re-11J
Sangre de Cristo School District Re-22J

### Arapahoe County
Adams-Arapahoe School District 28J
Byers School District 32J
Cherry Creek School District 5
Deer Trail School District 26J
Englewood School District 1
Littleton School District 6
Sheridan School District 2

### Archuleta County
Archuleta County School District 50 Jt

### Baca County
Campo School District RE-6
Pritchett School District RE-3
Springfield School District RE-4
Vilas School District RE-5
Walsh School District RE-1

### Bent County
Las Animas School District RE-1
McClave School District RE-2

### Boulder County
Boulder Valley School District RE2
St. Vrain Valley School District RE1J

### Chaffee County
Buena Vista School District R-31
Salida School District R-32(J)

### Cheyenne County
Cheyenne County School District Re-5
Kit Carson School District R-1

### Clear Creek County
Clear Creek School District RE-1

### Conejos County
North Conejos School District RE1J
Sanford School District 6J
South Conejos School District RE 10

### Costilla County
Centennial School District R-1
Sierra Grande School District R-30

### Crowley County
Crowley County School District RE-1

### Custer County
Custer County Consolidated School District C-1

### Delta County
Delta County School District 50(J)

### Dolores County
Dolores County School District Re No. 2

### Douglas County
Douglas County School District Re 1

### Eagle County
Eagle County School District Re 50

### Elbert County
Agate School District 300
Big Sandy School District 100J
Elbert School District 200
Elizabeth School District C-1
Kiowa School District C-2

### El Paso County
Academy School District #20
Calhan School District RJ1
Cheyenne Mountain School District 12
Colorado Springs School District 11
Edison School District 54 Jt
Ellicott School District 22
Falcon School District 49
Fountain School District 8
Hanover School District 28
Harrison School District 2
Lewis-Palmer School District 38
Manitou Springs School District 14
Miami/Yoder School District 60 Jt
Peyton School District 23 Jt
Widefield School District 3

### Fremont County
Canon City School District Re-1
Cotopaxi School District Re-3
Florence School District Re-2

### Garfield County
Garfield School District 16
Garfield School District Re-2
Roaring Fork School District Re-1

[1] The list of employers in the School Division does not include charter schools operating within the respective public school districts and under the Colorado Charter School Institute.

SCHEDULE OF AFFILIATED EMPLOYERS

## School Division[1] (continued)

### Gilpin County
Gilpin County School District Re-1

### Grand County
East Grand School District 2
West Grand School District 1

### Gunnison County
Gunnison Watershed School District Re1J

### Hinsdale County
Hinsdale County School District Re-1

### Huerfano County
Huerfano School District Re-1
La Veta School District Re-2

### Jackson County
North Park School District R-1

### Jefferson County
Jefferson County School District R-1

### Kiowa County
Kiowa County School District RE-1
Plainview School District Re-2

### Kit Carson County
Arriba-Flagler Consolidated School District No. 20
Bethune School District R-5
Burlington School District Re-6J
Hi-Plains School District R-23
Stratton School District R-4

### Lake County
Lake County School District R-1

### La Plata County
Bayfield School District 10Jt-R
Durango School District 9-R
Ignacio School District 11 Jt

### Larimer County
Estes Park School District
Poudre School District R-1
Thompson School District R-2J

### Las Animas County
Aguilar Reorganized School District 6
Branson Reorganized School District 82
Hoehne Reorganized School District 3
Kim Reorganized School District 88
Primero Reorganized School District 2
Trinidad School District 1

### Lincoln County
Genoa/Hugo School District C-113
Karval School District Re 23
Limon School District Re 4J

### Logan County
Buffalo School District Re-4
Frenchman School District Re-3
Plateau School District Re-5
Valley School District Re-1

### Mesa County
De Beque School District 49 Jt
Mesa County Valley School District 51
Plateau Valley School District 50

### Mineral County
Creede Consolidated School District 1

### Moffat County
Moffat County School District Re No. 1

### Montezuma County
Dolores School District RE 4A
Mancos School District Re-6
Montezuma-Cortez School District Re 1

### Montrose County
Montrose County School District Re-1J
West End School District Re-2

### Morgan County
Brush School District Re-2 (J)
Fort Morgan School District Re-3
Weldon Valley School District Re-20 (J)
Wiggins School District Re-50 (J)

### Otero County
Cheraw School District 31
East Otero School District R1
Fowler School District R4J
Manzanola School District 3J
Rocky Ford School District R2
Swink School District 33

### Ouray County
Ouray School District R-1
Ridgway School District R-2

### Park County
Park County School District Re-2
Platte Canyon School District 1

### Phillips County
Haxtun School District Re-2J
Holyoke School District Re-1J

[1] The list of employers in the School Division does not include charter schools operating within the respective public school districts and under the Colorado Charter School Institute.

SCHEDULE OF AFFILIATED EMPLOYERS

## School Division[1] (continued)

### Pitkin County
Aspen School District 1

### Prowers County
Granada School District Re-1
Holly School District Re-3
Lamar School District Re-2
Wiley School District Re-13 Jt

### Pueblo County
Pueblo City School District 60
Pueblo County Rural School District 70

### Rio Blanco County
Meeker School District RE1
Rangely School District RE4

### Rio Grande County
Del Norte School District C-7
Monte Vista School District C-8
Sargent School District Re-33J

### Routt County
Hayden School District Re 1
South Routt School District Re 3
Steamboat Springs School District Re 2

### Saguache County
Center Consolidated School District 26 Jt
Moffat School District 2
Mountain Valley School District Re 1

### San Juan County
Silverton School District 1

### San Miguel County
Norwood School District R-2J
Telluride School District R-1

### Sedgwick County
Julesburg School District Re 1
Revere School District Re3

### Summit County
Summit School District Re 1

### Teller County
Cripple Creek-Victor School District Re-1
Woodland Park School District RE-2

### Washington County
Akron School District R-1
Arickaree School District R-2
Lone Star School District 101
Otis School District R-3
Woodlin School District R-104

### Weld County
Ault-Highland School District Re-9
Briggsdale School District Re-10
Eaton School District Re-2
Gilcrest School District Re-1
Greeley School District 6
Johnstown-Milliken School District Re-5J
Keenesburg School District Re-3
Pawnee School District Re-12
Platte Valley School District Re-7
Prairie School District Re-11
Weld School District Re-8
Windsor School District Re-4

### Yuma County
Idalia School District RJ-3
Liberty School District J-4
Wray School District RD-2
Yuma School District 1

### Boards of Cooperative Educational Services (BOCES)
Adams County BOCES
Centennial BOCES
Colorado Digital BOCES
East Central BOCES
Expeditionary Learning School BOCES
Grand Valley BOCES
Mt. Evans BOCES
Mountain BOCES
Northeast BOCES
Northwest Colorado BOCES
Pikes Peak BOCES
Rio Blanco BOCES
San Juan BOCES
San Luis Valley BOCES
Santa Fe Trail BOCES
South Central BOCES
Southeastern BOCES
Uncompahgre BOCES
Ute Pass BOCES

### Vocational Schools
Delta-Montrose Area Vocational School

### Other
Colorado Consortium for Earth and Space Science Education

[1] The list of employers in the School Division does not include charter schools operating within the respective public school districts and under the Colorado Charter School Institute.

SCHEDULE OF AFFILIATED EMPLOYERS

## Local Government Division

Adams and Jefferson County Hazardous Response Authority
Alamosa Housing Authority
Arapahoe Park and Recreation District
Aurora Housing Authority
Baca Grande Water & Sanitation District
Beulah Water Works District
Black Hawk-Central City Sanitation District
Blanca-Fort Garland Metropolitan District
Boulder County
Boulder County Public Trustee's Office
Boxelder Sanitation District
Brush Housing Authority
Carbon Valley Park & Recreation District
Castle Pines Metropolitan District
Castle Pines North Metropolitan District
Center Housing Authority
Central Colorado Water Conservancy District
Cheyenne Wells Housing Authority
City of Alamosa
City of Boulder
City of Castle Pines
City of Colorado Springs
City of Fort Morgan
City of Las Animas
City of Lone Tree
City of Manitou Springs
City of Pueblo
City of Wray
City of Yuma
Clearview Library District
Collbran Conservancy District
Colorado District Attorneys' Council
Colorado First Conservation District
Colorado Health Facilities Authority
Colorado Housing and Finance Authority
Colorado Library Consortium
Colorado River Fire Protection District
Colorado School District Self Insurance Pool
Colorado Springs Utilities
Columbine Knolls-Grove Metropolitan Recreation District
Costilla Housing Authority
County Technical Services, Inc.
Cucharas Sanitation & Water District
Cunningham Fire Protection District
Douglas County Libraries
Douglas County Housing Partnership
Durango Fire Protection District
East Cheyenne Groundwater Management District
East Larimer County Water District
Eastern Rio Blanco Metropolitan Recreation & Park District
Eaton Housing Authority
Elbert County Library District
Elizabeth Park and Recreation District
El Paso-Teller County Emergency Telephone Service Authority
Estes Park Housing Authority
Estes Park Local Marketing District
Estes Valley Fire Protection District
Estes Valley Public Library District
Forest Lakes Metropolitan District
Fremont Conservation District
Fremont Sanitation District
Garfield County Housing Authority
Grand Junction Regional Airport Authority
Grand Valley Fire Protection District
Green Mountain Water and Sanitation District
GVR Metropolitan District
Housing Authority of Arriba
Housing Authority of the City of Boulder
Housing Authority of the City of Colorado Springs
Housing Authority of the County of Adams
Housing Authority of the Town of Limon
Lamar Housing Authority
Lamar Utilities Board
Left Hand Water District
Longmont Housing Authority
Longs Peak Water District
Louisville Fire Protection District
Meeker Cemetery District
Meeker Regional Library District
Meeker Sanitation District
Montrose Fire Protection District
Montrose Recreation District
Monument Sanitation District
Morgan Conservation District
Morgan County Quality Water District
Mountain View Fire Protection District
Mountain Water and Sanitation District
Niwot Sanitation District
North Carter Lake Water District
North Chaffee County Regional Library
Northeast Colorado Health Department
Northeastern Colorado Association of Local Governments
Park Center Water District
Pikes Peak Regional Building Department
Pine Drive Water District
Plains Ground Water Management District
Pueblo City-County Health Department
Pueblo Library District
Pueblo Transit Authority
Pueblo Urban Renewal Authority
Rampart Regional Library District
Rangely Regional Library District
Red Feather Mountain Library District
Red, White & Blue Fire Protection District

SCHEDULE OF AFFILIATED EMPLOYERS

## Local Government Division (continued)

Republican River Water Conservation District
Rio Blanco Fire Protection District
Rio Blanco Water Conservancy District
Routt County Conservation District
Sable-Altura Fire Protection District
San Luis Valley Development Resources Group
San Luis Valley Water Conservancy District
San Miguel County Public Library
San Miguel Regional and Telluride Housing Authority
Scientific and Cultural Facilities District
Sheridan Sanitation District #1
Soldier Canyon Filter Plant
Statewide Internet Portal Authority
Steamboat II Water and Sanitation District
Strasburg Metropolitan Parks & Recreation District
St. Vrain Sanitation District
Tabernash Meadows Water and Sanitation District
Town of Alma
Town of Bayfield
Town of Crawford
Town of Dinosaur
Town of Eckley
Town of Estes Park
Town of Firestone
Town of Lake City
Town of Lochbuie
Town of Mountain Village
Town of Platteville
Town of Rico
Town of Rye
Town of Seibert
Town of Silver Plume
Town of Timnath
Tri-County Health Department
Tri-Lakes Wastewater Treatment Facility
Upper Colorado Environmental Plant Center
Upper Thompson Sanitation District
Washington-Yuma Counties Combined Communications Center
Weld County Department of Public Health and Environment
West Greeley Conservation District
Western Rio Blanco Metropolitan Recreation and Park District
White River Conservation District
Wray Housing Authority
Yuma Housing Authority

SCHEDULE OF AFFILIATED EMPLOYERS

## Judicial Division

1st-22nd District Court
Adams County Court
Alamosa County Court
Arapahoe County Court
Archuleta County Court
Baca County Court
Bent County Court
Boulder County Court
Broomfield County Court
Chaffee County Court
Cheyenne County Court
Clear Creek County Court
Conejos County Court
Costilla County Court
Court of Appeals
Crowley County Court
Custer County Court
Delta County Court
Denver County Court
Denver Juvenile Court
Denver Probate Court
Dolores County Court
Douglas County Court
Eagle County Court
Elbert County Court
El Paso County Court
Fremont County Court
Garfield County Court
Gilpin County Court
Grand County Court
Gunnison County Court
Hinsdale County Court
Huerfano County Court
Jackson County Court
Jefferson County Court
Kiowa County Court
Kit Carson County Court
Lake County Court
La Plata County Court
Larimer County Court
Las Animas County Court
Lincoln County Court
Logan County Court
Mesa County Court
Mineral County Court
Moffat County Court
Montezuma County Court
Montrose County Court
Morgan County Court
Otero County Court
Ouray County Court
Park County Court
Phillips County Court
Pitkin County Court
Prowers County Court
Pueblo County Court
Rio Blanco County Court
Rio Grande County Court
Routt County Court
Saguache County Court
San Juan County Court
San Miguel County Court
Sedgwick County Court
Summit County Court
Supreme Court
Teller County Court
Washington County Court
Weld County Court
Yuma County Court

## Denver Public Schools Division[1]

Denver Public School District No. 1

[1] The list of employers in the Denver Public Schools Division does not include charter schools operating within the Denver Public Schools school district.

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